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Malta Medical Journal
Volume 24 ● Supplement ● November 2012

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Malta Medical Journal
ISSN 1813 - 3339
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Published by: Faculty of Medicine and Surgery, University of Malta
Layout and Printing: Printwell Ltd

Front Cover
Logo of the VIII Malta Medical School Conference
The conference logo features the seal of the Malta Medical School, commemorating the founding of the Medical School (as the School of Anatomy) in 1676. The obverse, as depicted, shows the cotton plant (in reference to the founder of the School, Grand Master Nicholas Cottoner, along with the two serpents, traditionally a symbol of medicine. The inscription reads ‘SCHOLA ANATOMIAE AC CHIRURGIAE CONDITA MDCLXXVI, meaning ‘School of Anatomy and Surgery - Founded 1676’.

VIII Malta Medical School Conference
29 November – 1 December 2012

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IT Services, University of Malta
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FOREWORD
It is indeed a great pleasure for me to extend a very warm welcome to all our eminent guests, invited speakers and registrants to the Malta Medical School Conference. The First Malta Medical School Conference was held in 1989, since then it has been held regularly every three years and we are now in the eighth edition. This triennial Medical Conference remains the largest academic activity of the Medical School outside the formal undergraduate teaching programme. It is the venue where extremely valid research is presented. This Conference will follow the format of the previous conferences and will consist of plenary lectures followed by a wide collection of multidisciplinary sessions.

The success and popularity of this Conference has increased thanks to the hard work of several people, growing from strength to strength. Organising such an event is a very arduous task which requires the participation of a dedicated team. I was very fortunate that I had such a team working tirelessly together for the past eighteen months. It is through the dedicated and enthusiastic, support of these members that this event has finally materialized.

This year we had 750 abstracts submitted, the highest number so far to be submitted to any Malta Medical School Conference. This massive response shows the increasing extent and quality of the ongoing academic activity carried out locally by the various specialties, and attests to the growing popularity of the Conference.

This record number of submissions has meant that our Scientific Committee, chaired by Professor S Montefort, was faced with a particularly difficult task to adjudicate abstracts, and to formulate an exciting scientific programme that will generate a wide interest in all participants.

We have striven to produce a programme to attract all participants. Posters have been allotted a more prominent place in the conference, and for the first time, the authors of these posters will be allowed to give a short oral presentation of the poster.

I must also thank all the Pharmaceutical Exhibitors and Conference Sponsors without whose financial support, this event would be impossible.

I wish to thank all my colleagues who formed part of the Organizing Committee for all their work and support, as well as Ms Zvetlana Zerafa, Conference Secretary, other supporting staff at the Medical School, and many other individuals for their commitment and their patience. I would also like to thank our Dean of the Faculty of Medicine and Surgery, Professor Godfrey Laferla for his encouragement and support.

Last but not least I would like to thank all the participants and registrants, and I wish you all a pleasant and educational time at the Conference.

Dr Raymond Galea  
MD, FRCOG, Acc Spec O&G (Leuv), PhD, KM  
Chairperson,  
VIII Malta Medical School Conference
It was an honour and a privilege to be appointed chairman of the scientific committee of this VIII Malta Medical School Conference, especially as I was fortunate enough to be able to collaborate with some very illustrious clinicians and scientists forming part of this committee, all from our Alma Mater.

The response to our call for papers was over-whelming with over 700 abstracts being submitted both from Malta and abroad – more than a 50% increase over the record number of submissions in the last conference 3 years ago. Not only was the quantity of submissions very encouraging but also the quality of a good number of them was impressive. For this reason, this year we opted to decrease the number of plenary sessions and increase the number of parallel sessions with original presentations to 34 oral presentation sessions and 14 poster sessions. We also opted for some novelties in these sessions. In the oral presentation sessions we chose to ‘cross-fertilise’ associated specialties in the same session so as to attract participants from various fields to the same venue with a resultant interesting discussion and hopefully the sowing of potential future collaborations. The poster sessions have been converted to discussed poster sessions so the authors will have an opportunity to present and discuss their work with a wider audience and with some of younger doctors getting more experience in verbally presenting their work. There will still be the traditional poster exhibition for case reports and reviews.

We have also introduced pharmaceutical company-sponsored lunch meetings and also an Italian-Maltese seminar on drug development in the final session of the conference. The committee have invited various speakers who are experts in their field, some of whom are Maltese specialists who have established themselves away from our shores.

It is our sincere hope that these changes are successful and well received by this conference’s participants; to all of whom I augur an exciting and interesting three days of attendance to the sessions of their choice.

Professor Stephen Montefort
M.D., PhD [Soton], F.R.C.P. [Lond.],
F.R.C.P. [Edin.], F.R.C.P. [Glas.],
F.A.C.P., F.E.F.I.M., F.C.C.P.
Chairperson Scientific Committee
VIII Malta Medical School Conference
Welcome from the Dean

It gives me great pleasure to welcome all the participants to the VIII Malta Medical School Conference.

This triennial conference first saw the light in 1989 and a brief look at the programme shows the wide spectrum of the research our postgraduates are involved in. Variety is truly the spice of life and the restrictions of being on a small island are not proving an obstacle for excellence in this case.

With a small Medical fraternity, the local medical community find it immensely profitable to host meetings of this kind in order to ensure cross-fertilisation. This will ensure that our medical standards remain comparable to the best on the Continent and beyond.

As in the previous conferences, the present one is multi-disciplinary and encompasses a wide spectrum of medical and surgical specialties.

Indeed, judging by the number of submissions received, practically all specialties are represented and one can be truly proud of an academically vibrant Medical School.

May I take this opportunity to warmly greet our international guests and colleagues who have come over specifically to share their vast experience in their respective fields with us.

On behalf of Medical School, I must thank the members of the Organising Committee who have worked so hard for the success of this Conference as well as the sponsors without whose support, funding of the Conference would have been difficult. Last, but most certainly not least, my thanks also go to the Medical fraternity whose participation makes such events possible.

I wish the VIII Malta Medical School Conference every success.

Professor Godfrey LaFerla
M.D., Ph.D. (Glas.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), F.R.C.S. (Edin.), F.R.C.S. R.C.P.S. (Glas.), F.R.C.S. (Eng.)
Dean,
Faculty of Medicine & Surgery
The Organising Committee sincerely thanks the following sponsors for their support:

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Vivian Corporation

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Best Oral Presentation in Medicine - The association of Physicians of Malta
Best Poster Presentation in Medicine - The association of Physicians of Malta
Best Poster in Pharmacy - Malta Pharmaceutical association
Best Oral Presentation in Pharmacy - Department of Pharmacy, University of Malta
Best Oral Presentation in Obstetrics and Gynaecology - Malta Collage of Obstetrics and Gynaecology
Best Poster in Obstetrics and Gynaecology - Malta Collage of Obstetrics and Gynaecology
Best Oral Presentation in Paediatrics - Department of Paediatrics, University of Malta
Best Poster Presentation in Paediatrics - Department of Paediatrics, University of Malta
Best Oral Presentation in Surgery - Association of Surgeons in Malta
Best Poster Presentation in Surgery - Association of Surgeons in Malta
Best Overall Oral Conference Presentation - Medical Association of Malta
Best Overall Poster Conference Presentation - Medical Association of Malta
Guest Speakers

Mr Joe Aquilina  
*Lead Clinician Foetal Medicine*  
Honorary Senior Lecturer  
Queen Mary University of London  
UK

Ms Marina Bacac  
*Roche Pharma Research and Early Development*  
Roche-Glycart AG  
Switzerland

Mr John Camilleri-Brennan  
*Consultant Colorectal Surgeon and Lead Clinician for Colorectal Cancer and Colorectal Cancer Screening*  
NHS Forth Valley  
Scotland

Professor Rudolph Graf  
*Deputy Director*  
Max Planck Institute for Neurological Research  
Cologne  
Germany

Dr Sandy Gupta  
*Consultant Cardiologist*  
Whipps Cross and St. Bartholomew’s Hospital  
London  
UK

Dr Samy Hajdadj  
*Centre Hospitalier Universitaire Poitiers*  
Endocrinology, Diabetology & Institut National de la Santé et de la Recherche Médicale  
Poitiers  
France

Prof. Andrew M Hanby  
*Leeds Institute of Molecular Medicine*  
Yorkshire Cancer Research and Liz Dawn Pathology and Translational Sciences Centre  
St James’s University Hospital  
Leeds  
UK

Dr H.K. Makker  
*Consultant Respiratory Physician*  
North Middlesex and University College London Hospital  
Senior Lecturer Royal Free and UCL Medical School  
London  
UK

Dr Patrick Mallia  
*Clinical Lecturer*  
Department of Respiratory Medicine  
National Heart and Lung Institute  
Imperial College  
London  
UK

Prof. Michael O’Neill  
*Professor of English*  
Durham University  
UK

Prof. Michael W. Ross  
*Professor of Public Health and of Infectious Disease*  
University of Texas Health Science Center, Houston, U.S.A.

Dr Stuart Schembri  
*NRS Career Researcher and Consultant Chest Physician,*  
*Ninewells Hospital,*  
*Dundee,*  
*Scotland*

Mr Ferdinand Serracino Inglott  
*Clinical Director for Vascular and Endovascular Surgery*  
Manchester Royal Infirmary  
Manchester  
UK

Prof. Michael West  
*Professor of Organizational Psychology*  
Lancaster University Management School  
Lancaster University  
UK

Mr Charles Zammit  
*Consultant Breast and Endocrine Surgeon*  
Brighton & Sussex University Hospitals  
NHS Trust  
UK
Thursday, 29th November

07:30    Registration
08:30 – 09:00 Welcome
Dr Galea
Chairman VIII Malta Medical School
Conference
HE Dr George Abela
President of the Republic of Malta
09:00 – 09:45 Plenary I
09:45 -10:15 Coffee Break and Exhibition
10:15 - 11:30 Parallel Session 1
   Session 1A: Public Health
   Session 1B: Infectious Diseases
   Session 1C: Gynaecology
   Session 1D: Clinical Pharmacy
11:30 - 12:45 Parallel Session 2
   Session 2A: Molecular Sciences I
   Session 2B: Psychiatry
   Session 2C: Respiratory Medicine
   Session 2D: Biological Agents in Rheumatology & Gastroenterology
12:45 - 14:00 Lunch
14:00 - 14:45 Plenary II
14:45 - 15:15 Coffee Break and Exhibition
15:15 - 16:30 Parallel Session 3
   Session 3A: Paediatrics I
   Session 3B: Haematology/Oncology
   Session 3C: Orthopaedics
   Session 3D: Cardiology/
Cardiac Surgery
   Session 3E: Endocrinology
16:30 - 18:00 Poster Session 1
   P1 Cardiology/Nephrology
   P2 Public Health/Community Pharmacy
   P3 Imaging
   P4 Molecular Sciences
   P5 Surgery

Friday, 30th November

08:00    Registration
09:00 – 09:45 Plenary III
09:45 - 11:00 Parallel Session 4
   Session 4A: Obstetrics
   Session 4B: Pharmaceutical Sciences
   Session 4C: Vascular Surgery/
Neurosurgery
   Session 4D: Colon Cancer Screening/
Colorectal Surgery
11:00 – 11:30 Coffee Break and Exhibition
11:30 - 12:45 Parallel Session 5
   Session 5A: Paediatrics II
   Session 5B: General Surgery
   Session 5C: Neurology/
Neurosciences I
   Session 5D: Respiratory Medicine/
Public Health
12:45 - 14:00 Lunch
14:00 - 14:45 Plenary IV
14:45 - 15:15 Coffee Break and Exhibition
15:15 - 16:30 Parallel Session 6
   Session 6A: Nephrology/Urology
   Session 6B: General Medicine
   Session 6C: Imaging
   Session 6D: Geriatrics
   Session 6E: Neurology/
Neurosciences II
16:30 - 18:00 Poster Session 2
   P6 Pathology/Anatomy
   P7 General Medicine
   P8 Neurosciences
   P9 Anaesthesia/
Orthopaedics/Surgery
   P10 Pharmacy
Saturday 1st December

8:00 - 09:00 Registration

09:00 - 09:45 Plenary V

09:45 - 11:00 Parallel Session 7

Session 7A: Gastroenterology
Session 7B: Infectious Diseases/
Respiratory Medicine
Session 7C: Medical Humanities/
Ethics
Session 7D: Anatomy

11:00 - 11:30 Coffee Break and Exhibition

11:30 - 12:45 Parallel Session 8

Session 8A: Family Medicine
Session 8B: Medical Education
Session 8C: Molecular Sciences II
Session 8D: Anaesthesia/Intensive Care
Session 8E: Cardiology/
Diabetes Mellitus

12:45 - 14:15 Poster Session 3

P11 Diabetes/Endocrinology/
Obstetrics
P12 Obstetrics and
Gynaecology
P13 Gastroenterology/
Rheumatology/Nephrology
P14 Paediatrics/
Medical Education
P15 International workshop
on Drug Development
Preclinical, Clinical and
Bioethical aspects

14:15 – 14:30 Prize Giving
Closing Address
Professor G. LaFerla
Dean
Faculty of Medicine
and Surgery
Detailed Scientific Programme
Thursday, 29th November

07:30 Registration

08:30 – 09:00 Welcome
   Dr R Galea
   Chairman VIII Malta Medical School Conference
   HE Dr George Abela
   President of the Republic of Malta

09:00 – 09:45 Plenary I
   Chairpersons: N Azzopardi Muscat, J Zarb Adami
   Leadership and Teamwork for High Quality Care
   M West

09:45 -10:15 Coffee Break and Exhibition

Parallel Session 1

10:15 -11:30 Session 1A: Public Health
   Chairpersons: J Mamo, T Melillo Fenech

   OP1.001 Investing in the health of 41-60 year-olds: reaping returns in the 60+ population?
   A Sammut, N Calleja, D Gauci, JM Cachia, M Camilleri
   OP1.002 Needs assessment for the elderly in Malta: demographic overview from Phase 1 of the National Survey
   K Glonti, D Stoner, D Gauchi, N Calleja
   OP1.003 Hypoglycaemia and driving: an audit of insulin-treated Maltese diabetic drivers
   S Vella, MJ Cachia
   OP1.004 Victim profile in fatal road traffic accidents in Malta 1995-2011
   B Ellul, K England, D Grima, MT Camilleri Podesta
   OP1.005 Prevalence of tuberculosis, syphilis, hepatitis B and C among asylum seekers in Malta
   V Padovese, AM Egidi, T Melillo Fenech, B Farrugia, P Carabott, D Didero, G Costanzo, C Mirisola
   OP1.006 Temperature-related mortality in the Maltese islands for the period 1992-2010
   J Cauchi, M Cauchi
   OP1.007 Clinical activity and changes in workload in paediatrics: 1996-2011
   S Attard Montalto
Session 1B: Gastroenterology/Infectious Diseases
Chairpersons: J Pocock, T Piscopo  

**OP1.008** Pneumonias and mortality post-percutaneous endoscopic gastrostomy tube insertion
N Azzopardi, P Ellul

**OP1.009** Effects of influenza vaccination on a local population of patients with inflammatory bowel disease
J Schembri, VA Fenech, P Ellul

**OP1.010** Hepatitis C management in Malta
A Brincat, K Mifsud Taliana, M Rogers, N Azzopardi, M Deguara, J Pocock

**OP1.011** Treatment of hepatitis C with pegylated interferon alpha and ribavirin
D Mallia, C Galea, C Mallia Azzopardi, T Piscopo

**OP1.012** Lower gastrointestinal and hepatobiliary-pancreatic pathologies among patients with *Streptococcus gallolyticus* bacteraemias
S Chetcuti Zammit, S Sant, C Mintoff, N Azzopardi, P Ellul

**OP1.013** Prevalence of *Helicobacter pylori* in Maltese patients with dyspepsia
V Fenech, S Chetcuti Zammit, G Zahra, P Ellul

**OP1.014** Clinical performance in the management of sepsis in Mater Dei Hospital
D Bilocca, C Zammit, F Casha, B Vella, P Trapani Galea Feriol, J Zahra, A Spina, M Buttigieg

Session 1C: Gynaecology
Chairpersons: MW Ross, C Savona Ventura

**OP1.015** Occupational health and safety in female commercial sex workers
MW Ross

**OP1.016** Second look at ovarian carcinoma
M C Vassallo, D Chetcuti, M Refalo, A Aquilina, J Mamo

**OP1.017** Age distribution in patients with cervical intraepithelial neoplasia and carcinoma
S Grixti, A Micallef Fava, M Camilleri, J Mamo

**OP1.018** Lichen sclerosus in Maltese women
A Micallef Fava, M Camilleri, D Azzopardi Micallef, A Brincat, C Vella, J Mamo

**OP1.019** The significance of serum progesterone level in the corpus luteal phase in assisted reproduction cycles
M C Vassallo, O Tsar, K Vella, MP Brincat

**OP1.020** Dietary intolerance and gastrointestinal symptoms in women with pelvic endometriosis: blame it on the fertile crescent?
Y Muscat Baron, M Dingli, R Camilleri Agius, N Calleja
Session 1D: Clinical Pharmacy
Chairpersons: A Serracino Inglott, L Wismayer

OP1.021 Pharmacist intervention and pain relief in post-cardiac surgery patients
D Agius Decelis, J Galea, M Zarb Adami

OP1.022 Chronic renal failure and bone density
D Ghio, E Farrugia, LM Azzopardi, A Serracino Inglott

OP1.023 Management of severe allergic asthma with omalizumab locally
C Gouder, L West, S Montefort

OP1.024 Developing a course for pharmacist prescribing
A Fenech, A Serracino Inglott, LM Azzopardi

OP1.025 Development and review of documentation used for pharmaceutical care service within a paediatric rheumatology outpatients clinic
L Grech, D Aquilina, LM Azzopardi, A Serracino Inglott, V Ferrito, A A Borg

OP1.026 Drug information bulletin
A Brincat, LM Azzopardi, A Serracino Inglott, M Zarb Adami

OP1.027 Infliximab, osteoporosis and osteopenia in Crohn’s disease
N Azzopardi, P Ellul, C Saliba, G Laferla, G Grech

Parallel Session 2

Session 2A: Molecular Sciences I
Chairpersons: AG Fenech, G Grech

OP2.028 Determination of the phytochemical and pharmacological properties of selected Maltese medicinal plants
R Darmanin Ellul, E Attard, AG Fenech, A Buhagiar, R Ellul Micallef

OP2.029 Transcript variants and isoforms of the phosphatase PP2A catalytic subunit and its regulatory binding partners in haematological malignancies
C Saliba, S Baldacchino, D Mareh, R Avellino, PJM Valk, R Delwel, G Grech

OP2.030 Scoring genetic risk and biological/clinical endpoints in type 2 diabetes mellitus
NP Pace, A E Felice, J Vassallo

OP2.031 The influence of anti-asthma drugs on the transcriptional regulation of chemokine receptor 3 (CCR3)
GM Grech, AG Fenech, G Grech, R Ellul Micallef

OP2.032 Serum amyloid A in airway cells
D Butler, AG Fenech, G Grech, R Farrugia, B Ellul, R Ellul Micallef

OP2.033 Aspirin-induced apoptosis of the yeast Saccharomyces cerevisiae is mediated by oxidation of mitochondrial NAD(P)H
G Farrugia, W H Bannister, N Vassallo, R Balzan

OP2.034 Mutational analysis of c-KIT and PDGFRA receptors in gastrointestinal stromal tumours
C Busuttil, C Saliba, S Gauci, S Falzon, G Grech, J Degaetano
11:30 -12:45  **Session 2B: Psychiatry**  
*Chairpersons: A Grech, E Muscat*

**OP2.035** Use of endophenotypes in genetic studies of schizophrenia  
*A Grech*

**OP2.036** Depression in elderly Maltese residents in Malta  
*P Zammit, A Fiorini*

**OP2.037** Is a community-crisis house an effective and acceptable way of reducing the cost of mental health services?  
*D Chetcuti, N Labvani, R Bhattacharya*

**OP2.038** A new Mental Health Act for the 21st century: old problems new responses  
*M Camilleri, R Xerri, A Sammut, JM Cachia*

**OP2.039** Comparison of the quality of life of psychiatric male patient groups living in a community and a hospital setting: an analysis of the relative cost effectiveness  
*A Sciberras, J Vella Baldacchino*

**OP2.040** Demographic data on suicides in Malta over the past 10 years  
*MT Camilleri Podesta, E Felice, D Gauci, L Grixti, C Bondin, S Santucci, A Distefano*

---

11:30 -12:45  **Session 2C: Respiratory Medicine**  
*Chairpersons: H Makker, J Micallef*

**OP2.042** Practical approach to management of respiratory complications in neurological disorders  
*HK Makker*

**OP2.043** Comparing COPD care in Malta to other European countries: results from the European Respiratory Society COPD audit  
*E Gerada, J Bigeni, C Farrugia Jones*

**OP2.044** Standards of lung cancer management in a South East English trust  
*M Zahra Montefort, AJ Leonard*

**OP2.045** Benefits obtained following a 12 week pulmonary rehabilitation programme  
*A Sciriha, D Bilocca, C Fsadni, P Fsadni, E Gerada, S Lungaro-Mifsud, S Montefort*

**OP2.046** Perception of indoor and outdoor air quality in Maltese primary school children  
*P Fsadni, C Fsadni, S Montefort*

**OP2.047** Management of acute asthma in adults in the Emergency Department: are we following international guidelines?  
*C Gouder, R Asciak, J Farrugia Preca, R Pullicino, J Micallef, S Montefort*

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11:30 -12:45  **Session 2D: Biological Agents in Rheumatology & Gastroenterology**  
*Chairpersons: J Clark, F Camilleri*

**OP2.048** Screening prior to commencement of anti-tumour necrosis factor-alpha treatment in the Maltese population  
*K Cutajar, C Mizzi, V Vella, P Ellul*
OP2.049 Does smoking increase the need for the use of immunomodulator treatment in Crohn`s disease patients?  
P Ellul, N Azzopardi, C Saliba, D Grech Margeurat, G Laferla, G Grech

OP2.050 Are extra-intestinal manifestations and gallstones in Crohn`s disease patients associated with the use of immunomodulator therapy?  
C Azzopardi, P Ellul

OP2.051 Biological agents and malignancy  
B Coleiro

OP2.052 Biological therapy and infections  
P Ellul

OP2.053 Biological Agents - management in the perioperative period  
M Frendo

OP2.054 The safety of biological drugs in pregnancy  
V Fenech

Lunch Symposium (Sponsored by MSD)  
pages 19-20

Chairpersons: M Vassallo, A Borg

OP2.055 Efficacy of biologics in inflammatory bowel disease  
J Clark

OP2.056 Biologic use in paediatric and adolescent patients  
TM Attard

OP2.057 Newer biologic therapies  
C Mercieca

OP2.058 Utilisation and cost effectiveness of biological agents: the gastroenterology and rheumatology snapshot  
L Grech, V Vella

12:45 -14:00  
Lunch

14:00 -14:45  
Plenary II  
page xxxiv

Chairpersons: S Fava, J Azzopardi  
Diabetic nephropathy, from familial aggregation to gene discovery  
S Hadjadj

14:45 -15:15  
Coffee Break and Exhibition

Parallel Session 3

15:15 -16:30  
Session 3A: Paediatrics I  
pages 20-22

Chairpersons: V Grech, J Torpiano

OP3.059 Paediatric inflammatory bowel disease in the Maltese islands - a cross sectional analysis  
R Bondin, V Vella, T Attard

OP3.060 Increased recognition of eosinophilic enteropathy in children with food intolerance  
S Aquilina, J Degaetano, T Attard

OP3.061 The use of faecal calprotectin in children with chronic diarrhoea  
K Borg, J Degaetano, TM Attard
OP3.062 Epithelial EPCAM expression does not correlate with intestinal absorptive function in the milder phenotype of tufting enteropathy
J Gerada, C Scerri, J Degaetano, S Hill, M Vassallo, T Attard

OP3.063 Congenital nephrotic syndrome in Malta: a population-based study
V Said Conti, A Koziell, C Vella, R Parascandalo, A Mifsud, S Attard Montalto, R Trompeter, V Grech

OP3.064 Can stratification of risk factors for mononucleosis predict post-transplant lymphoproliferative disease in paediatric renal transplant recipients?
V Said Conti, C Smith, J Vigneswaran, SD Marks, J Breuer, R Shroff

OP3.065 Maltese paediatricians: experience of paediatric palliative care provision
N Galea

15:15 - 16:30
Session 3B: Haematology/Oncology  pages 22-24
Chairpersons: A Gatt, N Refalo

OP3.066 Thyroid nodules FNA cytology and thyroid cancer
M Gruppetta, A Abela, MJ Cachia, S Fava, J Vassallo

OP3.067 Use of thromboelastography and flow cytometry can lead to reduced platelet transfusions in patients with haematological malignancies
F Bonello, R Buttigieg, S Debono, P Brincat, P Gatt, T Lofaro, S Laspina, A Gatt, C Grima

OP3.068 Excellent survival rates in elderly patients with diffuse large B cell lymphoma come at a price
A Gatt, N Refalo, DJ Camilleri

OP3.069 When CML goes bad
P Brincat, A Betts, N Borg, M Farrugia, A Xuereb, DJ Camilleri

OP3.070 HPV genotype prevalence in cervical specimens with abnormal cytology reports: a pilot study from Malta
J Degaetano, G Zahra, M Taliana, M Meachen, R Busuttil, C Barbara

OP3.071 Pathology of papillary thyroid carcinomas reported at Mater Dei Hospital Malta
V Attard, E A Borg, A Betts, J Degaetano

OP3.072 Genotype – phenotype correlations in thyroid cancer complicating familial adenomatous polyposis
T Attard, S Septer, V Slowik

15:15 - 16:30
Session 3C: Orthopaedics  pages 25-27
Chairpersons: R Gatt, T Azzopardi

OP3.073 Characteristics and outcomes in patients sustaining a total rupture of the Achilles tendon with open operative management
K Sant, M Abela

OP3.074 The results of reconstruction of the anterior cruciate ligament using bone-patellar tendon-bone autograft
D Xuereb, L Attard, J Esposito

OP3.075 Complication and failure rates in partial femoral paediatric extendable tumour prostheses
J Maempel, M Coathup, S Cannon, T Briggs, N Calleja, G Blunn
OP3.076 Does gentamicin prophylaxis risk acute kidney injury after total joint arthroplasty?
D Seguna, K Sant, M Abela, M Borg

OP3.077 Magnetic resonance imaging versus arthroscopy as diagnostic tools in pathology of the knee: a retrospective analysis
S Zammit, M Portelli, S Grech, R Grech, I Esposito

OP3.078 Road traffic accidents associated spinal injuries in the Maltese Islands: a 10 year review with clinical recommendations
F Zammit Maempel, J Maempel

OP3.079 Aseptic loosening in extendable partial bone prostheses and the effect of the hydroxyapatite-coated collar
J Maempel, M Coathup, S Cannon, T Briggs, N Calleja, G Blunn

Session 3D: Cardiology/Cardiac Surgery  
Chairpersons: S Gupta, W Busuttil  
pages 27-29

OP3.080 CV risk and prevention - how low to go in 2013?
S Gupta

OP3.081 An audit of the management of acute chest pain at Mater Dei Hospital
R Mangion, D Cassar DeMarco, M Mercieca Balbi, D Muscat, C Mizzi, V Grech, T Piscopo, R G Xuereb

OP3.082 Initial TAVI experience in Malta
A Cassar, A Manche, A Fenech

OP3.083 Coronary surgery in the over 70s
A Manche

OP3.084 Ivabradine: a new option for heart failure patients
M Abela, J Caruana, A Cassar

OP3.085 Myocardial injury during coronary artery bypass surgery patient outcome and 1 year follow-up
K Schembri, J Desira, W Busuttil, A Manche, J Galea

Session 3E: Endocrinology  
Chairpersons: J Vassallo, M Cachia  
pages 29-31

OP3.086 Circadian endocrine therapy in adrenal insufficiency - development of modified-release formulations of hydrocortisone to replicate the physiological diurnal cortisol rhythm
M Debono, M Whitaker, H Huatan, G Tucker, A Taylor, J Newell-Price, W Arlt, R Ross

OP3.087 The clinical validity of measuring a 60-minute cortisol level at Synacthen test for suspected adrenal insufficiency
M Bezzina, S Vella, MJ Cachia

OP3.088 Lack of relationship between glycaemic control and response to bisphosphonates in active Charcot neuroarthropathy
J Bigeni, S Vella, MJ Cachia

OP3.089 Cortisol is associated with accumulation of visceral fat in women with common incidentally found adrenal adenomas
M Debono, A Prema, J Newell-Price
**OP3.090** Management of thyroid nodules: is fine needle aspiration being done when recommended?  
*R Magro, J Vassallo*

**OP3.091** Female sexual dysfunction in a Maltese diabetic population with type 2 diabetes mellitus  
*M Giordano Imbroll, E Saliba, K Sapiano, MJ Cachia*

**OP3.092** Prevalence and incidence of pituitary adenomas: a population-based study in Malta  
*M Gruppetta, C Mercieca, J Vassallo*

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**16:30 -18:00 Poster Session 1**

P1 **Cardiology/Nephrology**  
Chairpersons: *H Felice, E Farrugia*  
Pages 86-92

P2 **Public Health/Community Pharmacy**  
Chairpersons: *K Vincenti, A Anastasi*  
Pages 92-99

P3 **Imaging**  
Chairpersons: *S Zrinzo, K Saliba*  
Pages 99-105

P4 **Molecular Sciences**  
Chairpersons: *J Borg, N Vassallo*  
Pages 105-112

P5 **Surgery**  
Chairpersons: *P Zammit, G Caruana Dingli*  
Pages 112-119

**Case Reports:** CR01 – CR25  
Pages 182-190

**Reviews:** REV01 – REV15  
Pages 206-210
Friday, 30th November

08:00
Registration

09:00 – 09:45 Plenary III
Chairpersons: C Barbara, S Montefort
Coming in from the cold: rhinovirus infections in exacerbations of COPD and asthma
P Mallia

Parallel Session 4

09:45 - 11:00
Session 4A: Obstetrics
Chairpersons: M Brincat, Y Muscat Baron

OP4.093 Thermographic studies of the pregnant uterus
M Muscat, Y Muscat Baron, R Muscat Baron, M Brincat, KP Camilleri, C Azzopardi, S Cristina, O Falzon

OP4.094 The relevance of the IADPSG diagnostic criteria in a Mediterranean population
C Savona Ventura, J Vassallo, M Marre, B Karamanos, Mediterranean Group for the Study of Diabetes

OP4.095 Retrospective analysis of endocrine disorders in the Maltese pregnant population
K Vella, S Vella, C Savona Ventura

OP4.096 The association between maternal glucose-lipid metabolism and foetal birthweight
J Craus, C Savona Ventura, J Vassallo

OP4.097 Reducing post-partum haemorrhage
C Debbattista, N Mamo, A Micaleff Fava, D Azzopardi Micaleff, A Brincat, C Vella, J Mamo

OP4.098 Cerclage: tie a knot around the cervix
K Cutajar, D Chetcuti, S Grima, C Savona Ventura

OP4.099 The incidence and management of hepatitis B and C in pregnant women in Malta
D Azzopardi Micaleff, A Micaleff Fava, A Brincat, C Vella, J Mamo

09:45 - 11:00
Session 4B: Pharmaceutical Sciences
Chairpersons: L Azzopardi, M Zarb Adami

OP4.100 Investigating the anti-oestrogenic effect of synephrine
C Pace Bardon, C Shoemake, A Serracino Inglott LM Azzopardi

OP4.101 Drug design at the peroxisome proliferator-activated receptor
S Portelli, J Ciantar, C Mangani, C Shoemake

OP4.102 Creation of a 2D/3D molecular database for drugs used in malignant disease and immunosuppression
R Camilleri, C Shoemake, A Serracino Inglott, LM Azzopardi

OP4.103 Gastric amylase activity and the use of proton-pump inhibitors
C Galea, LM Azzopardi, G Laferla, A Serracino Inglott
OP4.104 The penetration of clindamycin in the peripheries
M Mifsud, J Vella, A Serracino Inglott, LM Azzopardi, G LaFerla

OP4.105 International Normalized Ratio testing and anticoagulation drug therapy monitoring
EM Mifsud, LM Azzopardi, A Serracino Inglott

OP4.106 Development and validation of medication assessment tools specific for rheumatoid arthritis
L Grech, B Coleiro, AA Borg, A Serracino Inglott, LM Azzopardi, V Ferrito

09:45 -11:00

Session 4C: Vascular Surgery/Neurosurgery  pages 37-38
Chairpersons: A Attard, A Zrinzo

OP4.107 Advances in the management of aortic aneurysms
F Serracino Inglott

OP4.108 An audit on venous thromboembolism prophylaxis in general and vascular surgical inpatients
A Zammit, D Grech Marguerat, J Psaila, A Attard, M Bezzina, D Grech

OP4.109 The impact of introducing a pure vascular surgery service on major lower limb amputation rates in Malta
K Cassar

OP4.110 Endovascular abdominal aortic aneurysm repair: the Maltese experience
L Reichmuth, K Cortis, A Mizzi, K Cassar

OP4.111 Carotid endarterectomy: the Maltese experience
L Caruana, K Cassar

OP4.112 Chronic subdural haematomas as major presentations of head injuries in Malta
S Agius, S Ansari, A Zrinzo

09:45-11:00

Session 4D: Colon Cancer Screening/Colorectal Surgery  pages 38-40
Chairpersons: J Camilleri Brennan, P Ellul

OP4.113 Screening for Colorectal Cancer: present and future
J Camilleri Brennan

OP4.114 Surgery for colorectal cancer in the elderly: is it safe?
A Farrugia, J Camilleri Brennan

OP4.115 A retrospective audit on colorectal polyp and cancer screening in Maltese patients with acromegaly: a comparison with the British Society of Gastroenterology guidelines
VA Fenech, J Gerada, S Azzopardi, S Dalli, M Gruppetta, J Vassallo, M Vassallo

OP4.116 Cardiopulmonary exercise variables predict postoperative in-hospital morbidity after major colonic cancer surgery: a blinded observational study
MA West, D Lythgoe, C Barben, MPW Grocott, S Jack

OP4.117 A review of colorectal resections in Malta
M Sammut, N Spiteri, D Grech Marguerat

OP4.118 Changes in objectively measured physical fitness after long course neoadjuvant chemoradiotherapy and a six week rehabilitation programme in locally advanced rectal cancer patients: a blinded interventional study
MA West, L Loughney, C Barben, GJ Kemp, S Jack, MPW Grocott
Coffee Break and Exhibition

Parallel Session 5

Session 5A: Paediatrics II  
Chairpersons: T Attard, R Parascandolo  
Pages 41-43

OP5.119 Paediatric casualty attendance and weather conditions - a relationship? 
A Camilleri Warne, V Grech

OP5.120 Attitudes and skills of Maltese paediatricians and trainees regarding childhood obesity 
S Aquilina, H Bedford, S Attard Montalto

OP5.121 Childhood type 1 diabetes mellitus in Malta: an alarmingly high incidence 
N Formosa, N Calleja, J Torpiano

OP5.122 Is continuous glucose monitoring superior to intermittent self-monitoring of blood glucose in diabetic children? 
N Formosa

OP5.123 Cost of preterm <35 weeks gestation on the Neonatal and Paediatric Intensive Care Unit in Malta 
N Galea, E Azzopardi, P Soler, R Parascandolo, S Attard Montalto

OP5.124 Safety features in inpatient neonatal and paediatric prescription charts which reduce the potential of medication errors 
A Cassar Flores, S Marshall, M Cordina

OP5.125 Epidemiology of neonatal sepsis on the Neonatal and Paediatric Intensive Care Unit in Malta 
D Pace, M Bailey, MA Borg, P Soler

Session 5B: General Surgery  
Chairpersons: C Zammit, G Laferla  
Pages 43-45

OP5.126 Developments in the management of axilla in breast cancer patients 
V Jenkins, H Harder, M Babar, S Merry, S Newbury, M Kissin, C Zammit

OP5.127 Auditing the outcomes of the first cases of minimally invasive inguinal hernia repair in Mater Dei Hospital Malta 
D Sladden, J Psaila

OP5.128 Surgical site infections: a study of the incidence and risk factors at Mater Dei Hospital Malta: a preliminary report 
C Caruana, M Cassar, C Mizzi, E Cilia

OP5.129 Excision margins in breast conserving surgery 
N Cassar, J Debono

OP5.130 Laparoscopic cholecystectomy: a 1 year experience from our institution 
M Borg, C Caruana, M Cassar

OP5.131 An audit of the management of acute pancreatitis 
M Sammut, C Caruana, L Sammut

OP5.132 Surgical treatment of non-melanoma skin cancer 
S DeGabriele, J Cutajar, N Spiteri, JE Briffa, FX Darmanin
11:30 -12:45  Session 5C: Neurology/Neurosciences I  
Chairpersons: R Muscat, G DiGiovanni  

OP5.133 Imaging of ischaemic stroke  
R Graf

OP5.134 Inactivation of the constitutively active ghrelin receptor attenuates limbic seizure activity in rodents  

OP5.135 Role of potassium channels in serotonin receptor signalling: implications for psychiatric disorders  
M Pessia

OP5.136 Stroke patients: interpretation of symptoms and presentation to hospital  
G Scicluna, M Mallia, M Gruppetta, F Theuma, S Aquilina, J Aquilina

OP5.137 Health-related quality of life and disability in young Maltese patients with spina bifida  
A Zammit, D Grech Marguerat, JP Camilleri, A Zrinzo, LV Zrinzo

11:30 -12:45  Session 5D: Respiratory Medicine/Public Health  
Chairpersons: M Balzan, C Gauci

OP5.138 Oxygen use in medical wards at Mater Dei Hospital: are guidelines being followed?  
R Magro, K Mifsud Taliana

OP5.139 Hospital admission in adults with asthma exacerbations: do demographic factors play a role?  
E Gerada, J Micallef, R Pullicino, M Gauci, S Montefort

OP5.140 Factors associated with circadian variation in asthma exacerbations at the Accident and Emergency Department in Malta  
C Gouder, J Farrugia Preca, R Asciak, J Micallef, S Montefort

OP5.141 The relationship between anaemia and chronic obstructive airway disease  
M Pace Bardon, M Camilleri, M Abela, F Lentini, S Montefort

OP5.142 Evaluation of the first year of a local Rapid Access Lung Clinic  
L Callus, M Buhagiar, N Delicata, J Micallef, C Zammit

OP5.143 A survey to assess smoking awareness and attitudes of staff at a local hospital  
J Azzopardi, S DeGiovanni, L Farrugia, N Calleja, C Gauci, A Buttigieg, S Montefort

OP5.144 Costing non-communicable disease  
N Calleja, D Gauci, PH Garthwaite

Lunch Symposium (Sponsored by Novartis)  
Chairperson: S Montefort

OP5.145 GOLD 2011 - Modern treatment of COPD: changing the future  
S Schembri
12:45 - 14:00  Lunch

14:00 - 14:45  Plenary IV

Chairpersons: B Ellul, J Debono
Breast Cancer: one disease or many?
A Hanby

14:45 - 15:15  Coffee Break and Exhibition

Parallel Session 6

15:15 - 16:30  Session 6A: Nephrology/Urology
Chairpersons: K German, J Farrugia Agius

OP6.146 A retrospective study on the outcomes of live-donor kidney transplantations in Malta
E Borg, J Psaila, A Attard

OP6.147 Haemodialysis adequacy at the renal unit
J Buttigieg, J Farrugia Agius, I Buhagiar, MP Vella, E Farrugia

OP6.148 Below target post-op arterial blood pressure but not CVP is associated with delayed graft function in renal transplantation
M Gingell-Littlejohn, H Koh, E Aitken, PG Shiels, C Geddes, D Kingsmore, M Clancy

OP6.149 The rate of nephrotoxicity in patients who underwent computed tomography angiography during the year 2011
E Borg, A Mizzi

OP6.150 Outcome of nephrectomies in Malta since 2000
G Busuttil, S Bujea, PA Zammit, S Mattocks, K German

OP6.151 Audit of mineral bone disease control in haemodialysis patients
D Vassallo

OP6.152 Prostate cancer in Malta: a survival analysis
PA Zammit, G Busuttil, E Calleja, A Mercieca, S Mattocks, K German

15:15 - 16:30  Session 6B: General Medicine
Chairpersons: M Farrugia, R Camilleri

OP6.153 The impact of the Medical Admission Proforma
D Bilocca, F Casha, C Zammit, R Aguis, A Moore, J Camilleri, E Plahha, M Pace Bardon

OP6.154 The use of Modified Early Warning Score in medical admissions
M Pace Bardon, E Plahha, C Zammit, D Bilocca, F Casha, R Aguis, J Camilleri, AM Moore

OP6.155 Audit on the use of D-Dimer in the diagnosis of deep venous thrombosis in patients presenting to the Emergency Department of Mater Dei Hospital
R Mangion, R Camilleri, S Reiff, K Vella

OP6.156 Audit on use of venous thromboprophylaxis in medical admissions at Mater Dei Hospital 2012
C Zammit, R Aguis, F Casha, D Bilocca, A Moore, J Camilleri, E Plahha, M Pace Bardon

OP6.157 Readmission rates within the Department of Medicine at Mater Dei Hospital
J Schembri, M Psaila, P Ellul, A Alkharazaa, M Vassallo

OP6.158 Cardiopulmonary resuscitation at Mater Dei Hospital
P Dingli, M Balbi, M Fenech, D Bilocca, A Cauchi, R Camilleri
OP6.159 Sudden deaths over a 10 year period occurring in young people due to natural causes  
  MT Camilleri Podesta, B Ellul, S Ali, D Grima, N Calleja, R Buttigieg, S Vella

15:15 -16:30  
Session 6C: Imaging  
  pages 55-57

  Chairpersons: A Samuel, A Mizzi

  OP6.160 Ultrasound-guided biopsy of breast lesions in a non-screening population  
  J Muscat, K Saliba, S Zrinzo

  OP6.161 Ultrasound-guided thyroid fine needle aspiration/biopsy: a one year experience  
  K Chircop, R Depasquale

  OP6.162 Impact of Joint Recommendations for Reporting Carotid Ultrasound investigations on estimation of internal carotid stenosis  
  S Galea, C Azzopardi, K Cassar

  OP6.163 Management outcome of incidental renal lesions detected on US and CT scans in Malta  
  E Vassallo, G Busuttil, A Mizzi

  OP6.164 The liver magnetic resonance imaging service at Mater Dei Hospital: past, present and future directions  
  L Reichmuth, A Mizzi

  OP6.165 How quickly do we investigate and manage subarachnoid haemorrhage in a UK neurosurgical centre?  
  P Borg, A Robson, T Hodgson, S Coley

  OP6.166 Radiological and surgical localisation of pathological parathyroid glands: a retrospective comparative study  
  C Camenzuli, A Micallef, A Cauchi, M Camilleri, J Psaila, A Attard

15:15 -16:30  
Session 6D: Geriatrics  
  pages 57-59

  Chairpersons: P Ferry, A Vella

  OP6.167 An audit on venous thromboembolism prophylaxis in a geriatric facility.  
  S Busuttil

  OP6.168 Audit on hip fracture major osteoporotic risk and risk lowering treatment in elderly patients at rehabilitation hospital Karin Grech  
  EG Bellia, M Psaila, J Cordina

  OP6.169 A review of the first six months of the orthogeriatric pilot project service at Mater Dei Hospital  
  J Muscat, P Ferry, J Cordina, A Vella

  OP6.170 Prescribing in the elderly - an audit on the adherence to the STOPP/START criteria in the Maltese acute medical hospital  
  A Zammit, S Dalli, M Falzon

  OP4.171 The use of antipsychotics in institutionalized elderly patients with dementia  
  V Bugeja

  OP6.172 Uncertainty over cardiopulmonary resuscitation status  
  MA Mohd Slim, J Grima, MA Vahedna

  OP6.173 Anaemia in elderly nursing-home residents in Malta  
  P Zammit, K Zammit
15:15 - 16:30  
**Session 6E: Neurology/Neurosciences II**  
*pages 60-62*  
**Chairpersons:** R Graf, N Vella  

**OP6.174** Management of subdural haematomas in Mater Dei Hospital: a 1 year review  
*M Borg, N Gamoudi, A Zrinzo*  

**OP6.175** Astro-axonal shuttling and its regulation by the beta 2-adrenergic tone: an *in-vivo* study  
*M Valentino, G Laureys, C Zammit, F Demol, M Cambron, R Muscat, R Clinckers, J De Keyser*  

**OP6.176** Polyphenolic compounds protect against targeting of mitochondria by amyloid aggregates  
*A Camilleri, C Zarb, M Ċaruna, T Hōgen, C Scerri, A Giese, N Vassallo*  

**OP6.177** The acute blockade of nigro-striatal pathway imposes pathological synchronization between cortex and basal ganglia  
*S Galati*  

**OP6.178** Gender differences in blood serotonin in chronic tension-type facial pain  
*AM Agius*  

**OP6.179** Dealing with end of life issues: what is not euthanasia  
*P Mallia*  

**OP6.180** Role of serotonin in epilepsy: focus on 5-HT2 receptors  
*G DiGiovanni*  

16:30 - 18:00  
**Poster Session 2**  

**P6 Pathology/Anatomy**  
*pages 119-126*  
**Chairpersons:** S Laspina, P Ċaruna  

**P7 General Medicine**  
*pages 126-132*  
**Chairpersons:** B Coleiro, B Ċaruna Montaldo  

**P8 Neurosciences**  
*pages 133-139*  
**Chairpersons:** M Valentino, C A Scerri  

**P9 Anaesthesia/Orthopaedics/Surgery**  
*pages 139-146*  
**Chairpersons:** E Melilo, I Esposito  

**P10 Pharmacy**  
*pages 146-153*  
**Chairpersons:** V Ferrito, C Shoemake  

**Case Reports:** CR26 – CR50  
*pages 190-198*  

**Reviews:** REV16 – REV30  
*pages 210-214*
Saturday 1st December

8:00 - 09:00 Registration

09:00 - 09:45 Plenary V

Chairpersons: R Galea, P Soler

Early pregnancy screening for pre-eclampsia and intrauterine growth restriction

J Aquilina

Parallel Session 7

09:45 -11:00

Session 7A: Gastroenterology

Chairpersons: M Vassallo, E Pullicino

OP7.181 The demographics of coeliac disease in the Maltese population

J Borg, N Azzopardi, M Vassallo

OP7.182 A prospective cross-sectional study evaluating the aetiology of anaemia in patients admitted to hospital under a gastroenterology firm that is part of an unselected medical take roster

J Gerada, E Carachi, J Pocock

OP7.183 Iron deficiency in Crohn’s: serum ferritin, disease location and inflammatory markers

N Azzopardi, P Ellul

OP7.184 Proton-pump inhibitors - use, misuse and abuse

R Pullicino, J Schembri, P Ellul

OP7.185 Retrospective analysis of the trends of incidence of oesophageal and gastric cancers in the Maltese Islands

C Mizzi, P Ellul, K England

OP7.186 Endotherapy for Barrett’s high-grade dysplasia and early cancer - a single-centre experience of EMR and RFA

JE Abela, JJ Going, AJ Morris, P Glen, HC McEwan, GM Fullarton

OP7.187 Preliminary results from the Maltese Metabolic Syndrome/Adenoma Study

N Azzopardi

09:45 -11:00

Session 7B: Infectious Diseases/Respiratory Medicine

Chairpersons: C Mallia Azzopardi, S Schembri

OP7.188 Prophylaxis and management of cytomegalovirus infections in heart transplant patients

C Fsadni, D Mallia, C Mallia Azzopardi, A Manche

OP7.189 Audit on the microbiological and antibiotic management of severe sepsis/septic shock in adult patients

R Abela, M Fenech, K Mifsud Taliana, A Buttigieg, M Mercieca Balbi, D Muscat, M Buttigieg
OP7.190 The management of prosthetic joint infection at Mater Dei Hospital
M Fenech, C Galea, L Micallef Grimaud, T Piscopo, C Mallia Azzopardi

OP7.191 Seasonal influenza vaccination rates in chronic asthma patients
R Asciak, J Buttigieg, L Mercieca, M Balzan

OP7.192 Audit on Klebsiella pneumoniae bacteraemia
S Chetcuti Zammit, J Sant, N Azzopardi

OP7.193 Improvements in the management and outcomes in hospital admissions with community-acquired pneumonia
R Callus, J Micallef, G Bezzina

OP7.194 Audit on use and care of peripheral intravenous catheters
D Seguna, J Sant, M Borg, E Tartari Bonnici

Session 7C: Medical Humanities/Ethics pages 67-68

Chairpersons: C Vassallo, B Ellul

OP7.195 ‘The Might of Healing Springs’: writing, health and disease in Shelley (and Mary Shelley)
M O’Neill

OP7.196 Feminisation and the Maltese medical profession
JM Cacciottolo, C Vassallo, GM Martin

OP7.197 A gynaecologist looks at the Torah
C Savona Ventura

OP7.198 After posthumanism: medicine and twenty-first century literature
I Callus

OP7.199 Sustainable and accessible healthcare in Malta: the common good concept
J Mifsud, P Pace

OP7.200 Ethical issues regarding the removal of the percutaneous gastrostomy tube: a European perspective
MC Pellegrini

Session 7D: Anatomy pages 68-70

Chairpersons: P Schembri Wismayer, I Stabile

OP7.201 Is scalp thinning the cause of baldness?
Y DeBattista, P Schembri Wismayer

OP7.202 Rib morphology
A Casha, A Manche, M Gauci, P Schembri-Wismayer, MT Camilleri Podesta, E Duca, R Gatt, JN Grima

OP7.203 Load bearing shell structures and rib cortical thickness
A Casha, A Manche, M Gauci, MT Camilleri Podesta, W Wolak, K Dudek, R Gatt, JN Grima

OP7.204 Heat shock modulators protecting normal cells during chemotherapy
C Fiott, C Saliba, P Schembri Wismayer

OP7.205 The effects of histone deacetylase inhibitors on leukaemia differentiation
A Cassar, KB Theuma, P Schembri-Wismayer
OP7.206 Investigation of heat shock proteins as regulators of haematopoietic stem cell expansion  
A Abdul-Aziz, C Saliba, P Schembri Wismayer

OP7.207 Effect of rib cage shape on spontaneous pneumothoraces  
A Casha, A Manche, C Giordimaina, M Gauci, W Wolak, K Dudek, R Gatt, JN Grima

11:00 - 11:30  Coffee Break and Exhibition

Parallel Session 8

11:30 - 12:45  Session 8A: Family Medicine  
Chairpersons: M R Sammut, G Abela  
pages 71-73

OP8.208 Defining practices in primary care  
M Fedotova, N Calleja

OP8.209 QUALICOPC a multi-country study evaluating quality costs and equity in primary care  
G Bezzina, P Scirtino, N Calleja, WLA Schäfer, WGW Boerma, PP Groenewegen

OP8.210 The knowledge, attitudes and practices of Maltese family doctors in health promotion and disease prevention  
L Grech, C Gauci, MR Sammut

OP8.211 Lifestyle prevention change and support: the views and attitudes of patients in Maltese family practice  
MR Sammut

OP8.212 Attitudes of family doctors attached to the Department of Family Medicine towards consulting and treating young adults  
P Mallia, B Ellul, J Abela

OP8.213 Floriana Health Centre repeat prescription clinic: a cross-sectional survey of users and analysis of the prescription clinic  
J Farrugia Preca, J Abela

OP8.214 The changing faces of future doctors: reflections of contemporary prospective patients in Star Trek over four decades  
V Grech

11:30 - 12:45  Session 8B: Medical Education  
Chairpersons: T Piscopo, K Cassar  
pages 73-75

OP8.215 Research involvement among 2011-12, Year 3 and 4, University of Malta Medical Students  
J Vella, I Stabile

OP8.216 An analysis of trainee clinical assessments within the Foundation Programme in Malta  
S Reiff, P Ellul

OP8.217 An analysis of Multi-Source Feedback within the Foundation Programme  
A Moore, J Camilleri, P Ellul

OP8.218 Factors influencing University of Malta medical graduates: decision to join UK Foundation Programme  
K Cassar, T Piscopo
**Session 8C: Molecular Sciences II**

Chairpersons: R Ellul Micallef, J Mifsud

**OP8.222** Over-expression of AIP protein in GH3 cells reduces cAMP signalling and growth hormone secretion

*R Formosa, A Xuereb-Anastasi, J Vassallo*

**OP8.223** Utilisation of a bespoke microarray for short interfering RNA design targeting neuroblastoma oncogenes

*D Ayers, PJR Day*

**OP8.224** Creating a high-throughput screening database to propose ligands capable of modulating the HIV-1 protease receptor

*C Micallef, C Shoemake*

**OP8.225** Isolation and functional analysis of a novel GABP-interacting co-factor E4TF-1 binding methyltransferase

*B Baron, K Sasaki, Y Kuramitsu, K Nakamura, P Schembri Wismayer*

**OP8.226** The mTOR inhibitor rapamycin sensitises solid tumour cell lines to isoprenoid induced toxicity

*M Farrugia, J Buhagiar, MT Podesta, G Grech*

**OP8.227** Interactions between valproate and olanzapine/quetiapine in bipolar disorder

*T Vella, J Mifsud, R Ellul Micallef*

**OP8.228** The influence of the C17T μ opioid receptor polymorphism on ligand-mediated signalling

*E Bajada, AG Fenech, R Ellul Micallef*

**Session 8D: Anaesthesia/Intensive Care**

Chairpersons: C Abela, M Buttigieg

**OP8.229** Organ donation audit: an assessment of deceased organ donation in ITU

*V Koehl, S Sciberras, C Abela*

**OP8.230** Neurological outcome in ITU survivors following cardiac arrest

*M Buttigieg, JP Vella*

**OP8.231** The impact of introducing a central line care bundle on the incidence of catheter related blood stream infections in the Intensive Therapy Unit

*CJ Abela, M Borg, D Xuereb, F Farrugia, C Tabone, C Fenech, B Vella*

**OP8.232** The efficacy of reducing blood transfusion after knee arthroplasties

*S Sciberras, M Bellizzi, K Crockford, S Paris*
Session 8E: Cardiology/Diabetes Mellitus  
Chairpersons: R Xuereb, S Fava

11:30 -12:45

OP8.236 Non-dipping heart rate and microalbuminuria in a type 2 diabetic population  
CJ Magri, RG Xuereb, S Fava

OP8.237 Relationship between thyroid status and clinical outcomes in patients presenting with acute coronary syndrome: preliminary results from a Maltese cohort  
R Mangion, S Vella, M Caruana, A Cassar, J Vassallo

OP8.238 Admission HbA1C and intravenous insulin therapy: predictors of prognosis in acute myocardial infarction  
S Chetcuti Zammit, MJ Cachia

OP8.239 Addressing the diabetes epidemic: the EUBIROD Project  
J Azzopardi, S Fava

OP8.240 Association of the incidence of type 1 diabetes with markers of infection and antibiotic susceptibility at a country level  
AG Abela, S Fava

OP8.241 Red blood cell distribution width and diabetes-associated complications  
CJ Magri, S Fava

OP8.242 Surrogate markers of insulin resistance predict type 1 diabetes incidence rates at a population level  
S Vella, M Bezzina, S Fava

12:45 -14:15

Poster Session 3

P11 Diabetes/Endocrinology/Obstetrics  
Chairpersons: J Vassallo, M Formosa

P12 Obstetrics and Gynaecology  
Chairpersons: A Scerri, J Mamo

P13 Gastroenterology/Rheumatology/Nephrology  
Chairpersons: J Pocock, PJ Cassar

P14 Paediatrics/Medical Education  
Chairpersons: S Attard Montalto, K Cassar
P15 International workshop on drug development: *pages 179-180*
preclinical, clinical and bioethical aspects
Chairpersons: A Serracino Inglott, L Saso

Case Reports: CR51 – CR76  
Reviews: REV31 – REV42  

14:15 – 14:30  
**Prize Giving**  
**Closing Address**  
Professor G LaFerla  
Dean  
Faculty of Medicine and Surgery
PLENARY SESSIONS
Leadership and teamwork for high quality care

M. West
Lancaster University, Lancaster and The Work Foundation, London

This session will describe cultures for high quality and safe patient care; how to implement key people management practices to deliver high quality care; the links between staff engagement and patient health outcomes and describe the steps for promoting staff engagement. Research evidence will be used to show the powerful links between team working and patient outcomes and the session will describe how to implement effective team working as opposed to ‘pseudo team working’ in health care HS organisations. The importance of clarity of purpose, leadership values and clear objectives in relation to quality of care will be illustrated with case studies from the UK NHS.

Disclosure: This work is funded by the Department of Health, UK

Diabetic nephropathy, from familial aggregation to gene discovery
S. Hadjadj
University of Poitiers, France

Diabetic nephropathy is a complex disease characterized by the interaction between genetic and environmental factors. The definition of the genetic background associated with diabetic nephropathy has dramatically changed the last few years, making it a good example of the use of genetic tools to improve our knowledge in complex diseases. The genetic basis of diabetic nephropathy is supported by the familial aggregation of diabetic nephropathy. Interestingly, the phenotype of diabetic renal disease was found not only for clinical diabetic nephropathy but also for pathological findings. Initial findings were further confirmed in a large nation-wide basis of offsprings concordant for type 1 diabetes evidencing that having a sib with diabetic nephropathy was a strong risk factor for diabetic nephropathy. The initial approaches to dissect the genetics of diabetic nephropathy used a candidate gene approach. In this strategy, genetic polymorphisms in pathways of pathophysiologial relevance are tested for their impact on the phenotype of interest namely diabetic nephropathy. These studies generated frequent discordant results. Additionally, a linkage approach was also used to address this question. Recently, the use of large-scale cohorts allowing an alternate strategy with no a priori hypothesis, namely genome-wide association studies helped to open new avenues in the field of type 2 diabetes. This strategy was also used for a more complex phenotype, such as diabetic nephropathy. Some interesting results were recently released. The confirmation of these discoveries however remains an important issue. The perspective of these findings are very important for both our understanding of diabetic nephropathy but also for their ability to open new research avenues possibly leading to drug development or diagnostic refinement.

Coming in from the cold: rhinovirus infections in exacerbations of COPD and asthma
P. Mallia
Imperial College London

Since being identified in the 1950s rhinoviruses were considered minor pathogens causing only minor illness in humans. However over the past 2 decades the development of new molecular diagnostic techniques such as PCR has led to a re-evaluation of the role of rhinoviruses in human disease and an appreciation that they are a major cause of significant clinical syndromes including asthma and COPD exacerbations. Much of our knowledge regarding the pathogenesis of rhinovirus infection has been obtained from human experimental infection studies in human volunteers. Our group has carried out experimental studies in both asthma and COPD and these studies have led to important insights into the mechanisms linking rhinovirus infection to asthma and COPD exacerbations and to the development of novel therapies.

Breast Cancer: one disease or many?
A Hanby

A historic perception amongst scientists and a prevailing one amongst the general public is that breast cancer is a single disease. Casual observations of the clinical progression of breast cancers by those charged with their treatment reveals a different story with bewildering un-predictability in natural history. Examination of the morphology of histology from these tumours also displays great diversity. Considered reflection points therefore to a range of biologies since both behaviour and morphology are governed by molecular events, just as are those differences seen between individuals in a species or, more so, between species. In this lecture I will take the audiences along some of the pathways that breast researchers and clinicians have been travelling along. It is a pathway that has taken us from a unified ‘breast cancer’ to the heterogeneity we now see. This route has many significant milestones - of which some of the more notable include that given by the Bloom and Richardson grading system and the cDNA profiling exercise documented by Perou et al. Achieving this progress has involved many investigators with a huge diversity of skills: clinical, morphological, and cytogenetic. This exercise has not, however, been a wholly academic one and has helped us form our current concepts of personalised medicine, which in turn informs how the right drugs are targeted to the right tumour with the maximum effect. The pathway has not however, been fully traversed and we have yet to derive focused treatments to match the diversity we see - meeting that challenge will take us ever closer to the elusive beast, ‘the cure’.

Early pregnancy screening for pre-eclampsia and intrauterine growth restriction
J Aquilina

The application of ultrasound in obstetrics and gynaecology evolved rapidly from the mid-80s to the mid-90s with significant advances in the application of uterine artery (UtA) Doppler screening for the prediction of uteroplacental complications in the second half of pregnancy. Work focused initially on linking UtA Doppler screening to the mid-trimester scan, and it became apparent that women who failed to modify UtA Doppler blood flow by 24 weeks represented one of the highest risk groups in pregnancy, in particular for the development of preterm IUGR and early-onset pre-eclampsia. Once a high-risk group had been identified, studies focused on finding ways to improve their outcome. While low-dose aspirin held out some hope, large
studies could not find an overall benefit. The next logical step was to investigate the use of UtA Doppler at the end of the first trimester (by linking it to the first trimester scan) and placental biomarkers to enable early identification of a high risk group and an earlier opportunity to start prophylaxis. However several studies confirmed that both first trimester UtA Doppler and placental biomarkers on their own failed as effective early screening tests with high sensitivity but poor specificity. Combining these modalities has however been shown to be a lot more promising. A recent multivariate analyses of multi-parameter testing involving UtA Doppler, biophysical and biochemical parameters demonstrated a 90% plus detection rate for early onset pre-eclampsia, at a 5% false-positive rate. This selected group will be the ideal cohort to assess effectiveness of prophylactic therapies that could modify the natural history of uteroplacental insufficiency.
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ORAL PRESENTATIONS
OP1.001
Investing in the health of 41-60 year-olds. Reaping returns in the 60+ population?
A. Sammut1, N. Calleja2, D. Gauci3, J.M. Cachia4, M. Camilleri5
1Office of the Commissioner for Mental Health and Older Persons, Ministry for Health, the Elderly and Community Care, Government of Malta; 2Directorate Health Information and Research, Ministry for Health, the Elderly and Community Care, Government of Malta

Introduction: Ageing brings an increased burden on healthcare systems. In Malta, cardiovascular disease is the main cause of morbidity and mortality accounting for 40% of all deaths. It is assumed that effective prevention strategies targeted at the middle-aged population would translate in better health outcomes in our elderly population.

Aim: To investigate how lack of awareness of conditions such as high blood pressure and high blood glucose level in the 41-60 year age group could influence the health status and the quality of life of future generations of elderly in our population.

Methodology: Two risk factors for cardiovascular disease namely raised blood pressure and raised blood glucose were identified for analysis. Data on self-reported perceptions and actual measurements for these two risk factors was available from studies performed in Malta in 1981, 1984, 2008 and 2010. The following exploratory analyses were carried out: A comparison of perception and measurement of the selected risk factors assessed in 2 cohorts aged 41-60 years at two different time points: (a) 1981/4 and (b) 2008/2010; An analysis of any changes in perception and measurement of these risk factors over time between the 1981/4 sample and a follow-up sample drawn from the first cohort 30 years later, now 60 plus years of age; In addition the findings were viewed in the light of the recently published NonCommunicable Disease Strategy and the former national health policy document Health Vision 2000.

Results: The gap between perceived and measured hypertension has decreased in the 41-60 group. This cannot but augur well for the future when the 41-60 cohort reaches the 60+ group. Nevertheless, the gap in awareness of diabetes has increased in the 41-60 group from one cohort to another. Diabetes tends to contribute heavily towards morbidity, hospital stays and mortality in Malta. A deeper lack of awareness in the 41-60s cannot but be the harbinger of more diabetic complications once this cohort achieves old age.

Conclusion: Improved perception for hypertension and diabetes in the 60+ group is not matched with better control of the condition. Medical intervention in the 41-60 group in the 2008/2010 sample has resulted in better control of the blood pressure, but not of blood glucose. These results highlight the need for stepping up the awareness and screening for these conditions especially in the 41-60 group coupled with better control. Only then can we enjoy health gains in the older population.

OP1.002
Needs assessment for the elderly in Malta – demographic overview from phase 1 of the National Survey
K. Glonti, D. Stoner, D. Gauchi, D. Cauchi, N. Calleja
Health Inf & Research Directorate, Government of Malta

Background: National Statistical Office (NSO) data at the end of 2010 showed that around 6% of the elderly Maltese population was aged 75 and older. The projected sharp increase in the elderly Maltese population will have significant implications for healthcare services and costs. This National Survey aims to assess the needs of the old-old and oldest-old population (75 years) and their caregivers over three phases. In this paper preliminary results are presented from Phase 1.

Aim: To display demographic results from Phase 1 of the national survey.

Methods: A representative sample of the elderly population aged 75 years and older (n = 9400), stratified by age group, gender and NUTS region, was selected. A telephone questionnaire-based survey was conducted among individuals residing in private households to assess respondents’ level of social isolation and to screen for individuals having moderate to severe limitations in the basic activities of daily living. This paper is an interim-analysis data collected during the first 30 days was analyzed.

Results: Out of a total of 3165 attempted contacts, 35% (n=1128) could not be contacted. 2.4% (n=77) cases were excluded due to a disconnected phone and 5% (n=160) refused to participate. Additionally, 0.6% (n=20) were deceased whereas 2.5% (n=81) who reside in homes for the elderly will be contacted for Phase 2 of the survey. Of the 1728 completed telephone interviews, 16.7% (n=288) were conducted through a proxy. 57% of participants were female. The majority of respondents (52.4%; n=906) were educated up to primary level, while a significant proportion (15.1%; n=261) had not received a formal education. There were no significant gender, regional or age group differences in level of education. 27.4% of respondents live on their own, while 25.6% live with their children in the same household, with no significant gender difference. Females were significantly more likely than males to live alone (OR: 1.5; CI: 1.4 – 1.6; p<0.001), and to state that they are not living with someone as a couple (OR: 1.906; CI: 1.7 – 2.1; p<0.001).

Conclusions: It appears that females are more likely to live on their own, possibly as a result of outliving their partners and not starting a new relationship with cohabitation. Findings at this stage are preliminary and should therefore be interpreted with caution.

OP1.003
Hypoglycaemia and driving – an audit of insulin treated Maltese diabetes drivers
S. Vella, M.J. Cachia
Diabetes and Endocrine Centre, Mater Dei Hospital, Msida, Malta; Department of Medicine, University of Malta Medical School, Msida, Malta

Background: Hypoglycaemia has been shown to adversely affect motor and cognitive function, thus impairing complex motor tasks, such as motor vehicle driving. Insulin treated patients should be advised to test their capillary glucose before driving, ensure an emergency carbohydrate supply, carry a glucometer at all times when driving and allow an adequate time to recover before resuming their journey should they experience hypoglycaemia in this setting. We sought to investigate the prevalence of hypoglycaemia among insulin treated drivers in Malta, its consequences, as well as compliance to established guidelines in this regard.

Method: We surveyed a representative sample of 121 drivers with insulin treated diabetes using a structured questionnaire. Patients were considered eligible if they had been treated with insulin for at least one year, had a current driving license, had driven within the preceding year and intended to drive in the future.

Results: 115 drivers (80 males, 35 females) with a median (range) age of 41.0 (19.0-76.0) years fitted the inclusion criteria for this audit. Median (range) duration of diabetes and insulin therapy were 13.5 (2-51) and 3.0 (2.0-7.0) years respectively. 81.7% of drivers were being treated with a twice daily insulin regime. Only five of the participating insulin treated patients should be advised to test their capillary glucose before driving, ensure an emergency carbohydrate supply, carry a glucometer at all times when driving and allow an adequate time to recover before resuming their journey should they experience hypoglycaemia in this setting. We sought to investigate the prevalence of hypoglycaemia among insulin treated drivers in Malta, its consequences, as well as compliance to established guidelines in this regard.

Conclusion: Improved perception for hypertension and diabetes in the 60+ group is not matched with better control of the condition. Medical intervention in the 41-60 group in the 2008/2010 sample has resulted in better control of the blood pressure, but not of blood glucose. These results highlight the need for stepping up the awareness and screening for these conditions especially in the 41-60 group coupled with better control. Only then can we enjoy health gains in the older population.
or ‘too low.’ 64.0% admitted that they never use a glucose meter when driving a vehicle. 31.7% of patients reported sustaining a self-treated hypoglycaemic event while driving in the previous year. 2.8% of drivers admitted to having been involved in a motor vehicle accident due to hypoglycaemia. 70.5% of participants indicated that they always carry a carbohydrate source while driving. 45.1% of drivers would stop driving to treat hypoglycaemia and rest for at least 30 minutes. 46.1% of drivers would drive off immediately after correcting hypoglycaemia in this setting. 28.2% of participants perceived a capillary glucose concentration of less than 3.9 mmol/L as being safe for driving.

Conclusion: This survey suggests that a significant proportion of insulin treated diabetic drivers have a poor understanding of the perils of hypoglycaemia in the setting of motor vehicle driving. Improving patient education is crucial in this regard.

OP1.004 Victim profile in fatal road traffic accidents in Malta, 1995-2011
B. Ellul1, K. England2, D. Grima1, M.T. Camilleri Podesta1
1Department of Pathology, Medical School, University of Malta, Msida, Office of Chief Medical Officer, Health Division, Valletta, 2Department of Anatomy, University of Malta, Msida

Introduction: Malta signed the EU policy to reduce road traffic fatalities by 2015 but data to provide a basis for local public health strategies is lacking.

Aims: This systematic review of fatalities from vehicular accidents in Malta, 1995-2011, aimed to collect comprehensive data relating to factors impacting on the origin and outcome of such accidents. As number of deaths is low, significant conclusions can only be drawn from long term studies.

Methodology: The National Mortality Register, Death Certificates, forensic post-mortem reports and media reports provided demography of victims, vehicle type, accident site and time, injuries sustained and site and time of death.

Results: 306 fatalities from motor vehicle accidents were registered in the National Mortality Register, 1995-2011, 18 per year. 293 records (235 males, 58 females) were available, comprising 50% drivers (142 males, 4 females), 16% passengers (30 males, 18 females) and 34% pedestrians (63 males, 36 females). The average age was 32, 30, 59 years respectively. Car drivers and motorcyclists respectively accounted for 26% and 21% of all fatalities. 3 cyclists died. 9 deaths were related to industrial, agricultural or sporting activities. 49% of accidents occurred at the weekend and 46% during the week, with no significant difference for drivers. While passengers were twice as likely to die at the weekend, more pedestrians died during the week. 122 accidents happened during the day (6am to 6pm) and 121 at night. Passengers and pedestrians were more commonly involved in daytime but interpretation was unclear as missing data amounted to 50 cases. 61% of drivers and 73% of passengers, 152, died on site while 73% of pedestrians, 141, died in hospital, with 19% of survivors dying within 24 hours. Head injury with significant intracranial haemorrhage, and skull fractures in the majority, was the main cause of death in 58%, 73% and 65% of drivers, passengers and pedestrians respectively. Aortic rupture and cerebral vertebral fractures, in 15% and 11% of victims respectively, accounted for deaths on site; aortic rupture caused death in 25% of passengers. Lower limb fractures correlating with the site of vehicular impact, were seen in 40% of pedestrians. A previous study dealt with toxicology in fatalities.

Conclusion: This paper provides basic data. Further analysis is required to correlate injuries to mechanisms and geographic site of accidents. Emerging trends identified include the first female car driver death in 2008 and a 3% increase in motorcyclist fatalities over the period 2007-2011.

OP1.005 Prevalence of tuberculosis, syphilis, hepatitis B and C among asylum seekers in Malta
V. Padovese, A.M. Egidi, T. Melillo Fenech, B. Farrugia, P. Carabott, D. Didero, G. Costanzo, C. Mirisola

Introduction: In the last years Malta has faced increasing immigration flows form Libyan coasts. Public Health policies addressed to prevent communicable diseases in centres for migrants are focused on TB screening, whereas no actions concerning STIs are implemented.

Objective: Define epidemiological profile of asylum seekers in Malta as regards to syphilis, hepatitis B, C and latent TB with the aim of supporting screening policies.

Methods: From December 2010 to June 2011, 500 migrants living in open centers were screened. A questionnaire focused on socio-demographics characteristic, medical and sexual history was administered, data collected in a specific database and analysed.

Results: 83.2% were from Somalia, 81.2% were males (average age is 26.5 years). Tuberculin test was positive in 225 migrants (45%) and 28 resulted affected by latent TB. No active TB cases were detected. Latent syphilis was diagnosed in 11 migrants, 3 with hepatitis C and 31 with hepatitis B.

Conclusion: Systematic screening of asymptomatic migrants in Malta is not suitable for hepatitis B and syphilis given the low prevalence observed. However it should be considered for hepatitis B. TST could be indicated as the first step of a two way screening protocol for migrants from countries with high TB incidence, but optimisation of screening protocols is needed for increasing cost effectiveness ratio and reducing unnecessary tests. Efficacy and cost effectiveness could also be achieved by further targeting screening to specific subgroups at high risk of reactivation such as HIV positive subjects and people affected by chronic diseases.

Disclosure: EU project called Mare Nostrum - common approach to upgrade asylum facilities in Italy and Malta.

OP1.006 Temperature related mortality in the Maltese islands for the period 1992-2010
J. Cauchi, M. Cauchi

Background: Temperature – related mortality is an association which is being increasingly studied across both the developed and developing world. It is a potential public health concern as many deaths attributed to temperature are likely to be preventable. Most studies focus on cities with large populations. There are however very few studies focusing on the particular climatic conditions of the central Mediterranean region with warm dry summers and mild wet winters. Malta, a densely populated small island state in the centre of the Mediterranean Sea offers a unique opportunity to explore the strength as its small geographical size limits temperature variation.

Method: A time series analysis was conducted using daily all-cause mortality counts and measures of mean temperatures for the period 1992 - 2010 for the Maltese islands. Potential confounders including days of the week, seasonality and secular trend were controlled for in the study. A generalised linear model assuming Poisson distribution was fitted to estimate the association. The temperature-mortality relationship was approximated by a V-shaped threshold model, assuming a linear increase above and beyond a unique threshold. The threshold temperature was identified as that minimizing the Akaike Information Criterion (AIC). Lag effects of temperature were included in the study with 0-3 day lag used for the effect of heat, and a 0-14 day lag used for the effect of cold.
Results: Results show an annual mean temperature of 19.41°C with an average annual mortality of 8.49 persons per day (ppd). The coldest month of the year was January, having the lowest daily mortality (10.66 ppd) whilst October had the lowest daily mortality figure at 7.20 ppd. The threshold temperature was found to be 28°C. An increase in mean temperature of 1°C above the threshold (heat effect) was found to increase daily mortality by 17.6% (14.8% - 20.5%) whilst a decrease of 1°C below the threshold was found to increase mortality by 2.21% (1.18% - 3.24%). On average, 94.0% of days in a year have temperatures below the threshold identified in the model.

Conclusion: Ambient temperature has a strong effect on daily all-cause mortality in Malta and appropriate public health strategies should be drawn up to prevent potentially preventable deaths. The results of the study are very similar to others conducted in the Mediterranean region, indicating a common pattern of effects.

OP1.007 Clinical activity and changes in workload in Paediatrics: 1996-2011
S. Attard Montalto
Department of Paediatrics, University of Malta, Msida;
Department of Paediatrics, Mater Dei Hospital, Msida

Introduction: Changes in the birth rate, population demographics, immigration, standards of health care as well as community-based services and education, amongst others, may all influence the in-hospital workload in Paediatrics.

Aim: This study reviewed the in-patient clinical workload in the Department of Paediatrics in the light of a decreasing birth rate, improved in-hospital and community services for children, over a 16 year period.

Method: Paediatric cases were defined as all children from birth to 14 completed years. National statistics for live birth rates in Malta were obtained from the Department of Health Information, whereas figures for paediatric and neonatal admissions, day cases, outpatient visits and reviews in Paediatric Accident and Emergency were obtained from the Annual Reports, Department of Paediatrics, for the period 1996-2011.

Results: During the study period, the live birth rate fell by 6% from 1996 to 2011. Newborn admissions to NICU remained constant at around 340 per annum (pa), in-patient admissions decreased by 10% (from 3,151 to 2,550 pa), casualty reviews dropped by 35% (11,831 to 7,773 pa), whilst both day care and the total outpatient workload increased by 66% (1,347 to 3,928 pa) and 70% (13,500 to 22,998 pa), respectively.

Conclusion: This 16 year review has clearly demonstrated a significant shift in the paediatric hospital workload in Malta from an in-patient bias in 1996 to increased day care and outpatient reviews in 2011. This shift is largely the result of improved hospital and, to a lesser extent, community day care health services, and can be increased further with augmented community care. Health resources and future Paediatric health care programmes will need to take heed of these trends, and must be designed and planned accordingly.

OP1.008 Pneumonias and mortality post-percutaneous endoscopic gastrostomy tube insertion
N. Azzopardi, P. Ellul
Department of Gastroenterology, Mater Dei Hospital, Msida

Introduction: Enteral feeding in patients with swallowing impairment can consist of nasogastric (NG) feeding or feeding via PEG tube.

Methods: This is a retrospective analysis of PEGs inserted at Mater dei between January 2008 and June 2010. Our primary aim was to compare the incidence of pneumonias while patients were being fed through an NG tube with the incidence of pneumonias during feeding via a PEG. We also analysed 7 day, 30 day and 1 year mortality post-PEG insertion.

Results: 97 patients (44 male) underwent PEG insertion in the period under study. 54 of the patients received NG feeds before PEG insertion. Patients were divided into 3 subgroups: NG feeding (n=54), 16 patients developed pneumonia during NG feeding, with a total of 32 pneumonias and 262 days in hospital. The duration of NG feeds was 7884 days and there was a frequency of 1 pneumonia every 246 days. PEG feeding after a period with NG feeding (n=54). 22 patients developed pneumonia during PEG feeding, with a total of 48 pneumonias and 455 days in hospital. The duration of PEG feeding was 36,238 days with 1 pneumonia every 775 days. PEG feeding without previous NG feeding (n=34). 12 patients developed pneumonia during PEG feeding, with a total of 28 pneumonias and 191 days in hospital. The duration of PEG feeding was 23,983 days with 1 pneumonia every 596 days. There was thus a higher rate of pneumonia in patients being fed via an NG tube (p<0.005). For patients being fed via PEG tube, the incidence of pneumonia was higher in patients with cerebral palsy (17 pneumonias) and Huntington’s disease (12 pneumonias). 47 patients were deceased at the time of data collection (Nov 2010), with 29 patients dying following a pneumonia. 1 week mortality post PEG insertion was 3.1%, 30 day mortality was 8.24% and 1 year mortality was 39.17%. All patients dying in the first week and 50% of those dying within 30 days of the procedure died following pneumonia.

Conclusion: This study shows a significant decrease in the number of pneumonias among patients receiving PEG feeds versus NG feeds. However, pneumonias are the major cause of death among PEG patients with a 62% all cause mortality and 50% 30 day mortality. The higher incidence of pneumonias in patients affected with certain pathologies may indicate that these patients might be more susceptible to pneumonias, whichever feeding modality is used.

OP1.009 Effects of influenza vaccination on a local population of patients with inflammatory bowel disease
J. Schembri, V.A. Fenech, P. Ellul
Department of Medicine, Mater Dei Hospital, Msida

Introduction: Safety data on influenza A (H1N1) vaccination in patients with inflammatory bowel disease in particular those on immunomodulators (IM) and/or biologies is limited.

Aims and methods: We conducted an observational study based on a cohort of patients who were identified as having stable inflammatory bowel disease (IBD) during February and March 2010. The aim was to evaluate the effects of influenza A (H1N1) vaccines, and to assess the risk of flare up of IBD symptoms following vaccination. Harvey Bradshaw index (HBI), in patients with Crohn’s disease (CD), and Partial Mayo Score (PMS), in patients with ulcerative colitis (UC), were used to monitor disease activity at baseline and 4 weeks following vaccination. Vaccination-related events were recorded within 7 days following administration of the vaccine(s).

Results: 21 patients were recruited (16 CD, 5 UC; 66.7% males; mean age 31.8, SD 14.0). 6 patients had also received seasonal influenza vaccination in addition to the adjuvanted H1N1 vaccine. Immediate mean follow-up period post-vaccination was of 34 days. The mean number of IBD medications per person was 2.0 (SD 0.7) with the commonest medications used being salicylates, which were prescribed to 16 patients. With regards to IM treatment, 8 patients were having...
azathioprine, 6 patients were having Infliximab, 6 patients were having dual IM treatment which consisted of Azathioprine and Infliximab and another 1 patient was having dual immunosuppressive treatment in the form of corticosteroids and Methotrexate. There were no treatment changes during the follow-up period. Local and systemic symptoms were reported in 71.4% and 14.3% respectively. The most common local symptom was pain, which was present in 71.4% of cases, whereas myalgia and malaise were the commonest systemic symptoms, reported in 14.3% of cases. Only one patient complained of fever following vaccination. Adverse events were not associated with any patient characteristics, specific immunomodulatory treatment or biologic. Four weeks after vaccination, absence of flare of IBD symptoms was noticed in all patients with UC and CD.

Conclusion: Despite the small sample size our study showed that Influenza A (H1N1) vaccines are well tolerated in IBD patients, including those being managed with immunomodulators and/or biological agents. The risk of IBD flare is not likely increased after seasonal influenza and H1N1 vaccines. Furthermore 24 months post-vaccination, no significant events that are possibly related to the vaccination have occurred.

### OP1.010

**Hepatitis C management in Malta**

A. Brincat, K. Mifsud Talliana, M. Rogers, N. Azzopardi, M. Dequarra, J. Pocock

**Introduction:** Hepatitis C is a common cause of chronic hepatitis and a leading cause of cirrhosis and liver failure.

**Aim and methods:** In this retrospective analysis, we have studied the characteristics and management of patients who had a positive Hepatitis C virus antibody test at the virology lab in Mater Dei Hospital between January 2008 and May 2012. Demographic data and details on the management of these patients were then obtained through the patients’ clinical notes.

**Results:** There were 1074 individuals with positive Hepatitis C virus antibody test between January 2008 and May 2012. 350 patients (male n=256 or 73.1%) were randomly selected and included in this analysis. 80.9% of patients were Maltese nationals, 10.9% were coming from African or Eastern countries and 6% were coming from Western countries (nationality was not found in 2.3%). Genotype of Hepatitis C: Genotype 1a: 8.6%, 1b: 2.5%, 2a: 0.3%, 3a: 6.9%, not known/ not analysed: 82%, 2.6% of patients had both Hepatitis B and C infection and 0.3% had both Hepatitis C and HIV. A liver biopsy was done in only 11.4% of patients, with 22.5% having histological evidence of fibrosis. The mode of infection was secondary to intravenous drug abuse in 70.6% of cases, following blood transfusions in 1.7%, vertical transmission in 0.9% of cases, sexual transmission in 1.7% and the cause was not identified in 25.1% of cases. Platelets were <130 x 10^9/l in 8.6% and bilirubin was >30 in 8.6% of patients. 4% of patients had episodes of encephalopathy and 2.3% of patients had documented varices. An Ultrasound of the abdomen was done in only 49.1% of patients (4.6% - nodular liver, 3.7% - ascites, 7.4% - splenomegaly, 1.7% - hepatocellular carcinoma). 21 patients (6%) received treatment with pegylated-interferon and ribavirin (one patient received two treatment courses). Patient selection for treatment takes into consideration various criteria – both individual patient issues, and systemic issues related mostly to cost and work-load involved. Amongst the treated patients, there were 17 patients who were infected with HCV genotypes 2 or 3. These were treated for 24 weeks, and an SVR was obtained in 15 patients (88%). In addition, there were 11 patients infected with HCV genotypes 1 or 4. These were treated for 48 weeks, and an SVR was observed in 4 patients (36%). There were another 3 patients that were HIV and HCV co-infected. In these cases, treatment duration was 48-72 weeks (adjusted according to response). Two of these patients experienced an SVR. The majority of patients (75%) experienced the common side effects associated with peg-IFN and ribavirin treatment – including headache, fever, fatigue and myalgias. In addition, 10 patients experienced depression – to various degrees. Treatment was interrupted in 2 patients due to treatment-associated neutropenia.

**Conclusion:** Although the number of patients included in this study is very limited, the percentage SVR obtained compares very well to outcome rates in international studies. The side effect profile that was observed in our patients also compares very well to the side effects that are expected with this treatment. Side effects observed were not usually treatment-limiting, except in a minority of patients.

### OP1.011

**Treatment of Hepatitis C with pegylated interferon alpha and ribavirin**

D. Mallia, C. Galea, C. Mallia Azzopardi, T. Piscopo

**Introduction:** The combination of pegylated-interferon (IFN)alpha and ribavirin is considered the ‘standard of care’ for chronic Hepatitis C (HCV) patients in Malta. The aim of treatment is a sustained viral response (SVR) – defined as the absence of HCV RNA at the end of treatment and 24 weeks later.

**Methodology:** A retrospective assessment of the number of chronic HCV patients that were treated with pegylated-IFN and ribavirin was carried out to study treatment outcome and frequency of side effects related to treatment.

**Results:** The number of chronic HCV patients that were seen by the infectious diseases firms over a six month period amounts to 76, proving that Hepatitis C infection is relatively common in Malta. Since 2006, a total of 31 patients have received treatment with pegylated-IFN and ribavirin (one patient received two treatment courses). Patient selection for treatment takes into consideration various criteria – both individual patient issues, and systemic issues related mostly to cost and work-load involved. Amongst the treated patients, there were 17 patients who were infected with HCV genotypes 2 or 3. These were treated for 24 weeks, and an SVR was obtained in 15 patients (88%). In addition, there were 11 patients infected with HCV genotypes 1 or 4. These were treated for 48 weeks, and an SVR was observed in 4 patients (36%). There were another 3 patients that were HIV and HCV co-infected. In these cases, treatment duration was 48-72 weeks (adjusted according to response). Two of these patients experienced an SVR. The majority of patients (75%) experienced the common side effects associated with peg-IFN and ribavirin treatment – including headache, fever, fatigue and myalgias. In addition, 10 patients experienced depression – to various degrees. Treatment was interrupted in 2 patients due to treatment-associated neutropenia.

**Conclusion:** Although the number of patients included in this study is very limited, the percentage SVR obtained compares very well to outcome rates in international studies. The side effect profile that was observed in our patients also compares very well to the side effects that are expected with this treatment. Side effects observed were not usually treatment-limiting, except in a minority of patients.
with SGB were analysed. Bacterial endocarditis was present in 9 patients (28%). 7 patients had both lower GI and Hepato-biliary-pancreas (HBP) assessment. 5 patients had only lower GI investigation. HBP assessment and 11 patients had no GI investigations. Lower GI investigation - 10 patients (31.25%) had a colonooscopy. Adenomatous polyps were diagnosed in 6 patients and 1 patient was diagnosed with inflammatory bowel disease. A further 2 patients had a barium enema which was normal. HBP assessment - 18 patients had HBP investigations. Liver cirrhosis was diagnosed in 5 patients. The underlying causes were Autoimmune hepatitis (2 patients), NASH (2 patients) and Hepatitis C (1 patients). Another 6 patients had ascending cholangitis (common bile duct stones - 5 patients; pancreatic cancer - 1 patient). SGB occurred more frequently with increasing age: < 40 years - 0 patients; 41-50 years - 3 patients; 51-60 years- 5 patients; 61-70 years - 5 patients; 71-80 years - 11 patients; 81-90 years - 8 patients. Survival at 6 weeks was 82%, 90 day survival was 76.4% survival. Two peaks in SGB diagnosis were noted - 2009 (11 patients) and 2011 (12 patients). Cultured SGB was universally sensitive to penicillins, cephalosporins and vancomycin, with an elevated sensitivity to levofloxacin. There was however an elevated resistance to tetracycline, erythromycin and clindamycin.

Conclusion: Although none of the patients with SGB had colonic carcinoma, 78.3% of patients who had GI investigations had a GI pathology which was diagnosed. This further reinforces the fact that all patients who are diagnosed with SGB should have both lower GI and HBP investigations.

**OP1.014 Clinical performance in the management of sepsis in Mater Dei Hospital**

D. Bilocca, C. Zammit, F. Casha, B. Vella, P. Trapani

**Aim:** To assess the clinical management being provided to patient with severe sepsis or septic shock in Mater Dei Hospital (MDH), and highlight areas which can be improved in the management of such patients.

**Background:** It is estimated that worldwide, 1,400 people die each day from sepsis, with up to 10% dying within one month of diagnosis. Comparatively, more people die from sepsis than from breast or colon cancer. Such data highlights the importance of treating sepsis quickly and efficiently to prevent these deaths. The surviving sepsis campaign was thus launched in Barcelona in 2002.

**Method:** The audit was carried out between December 2011 and August 2012. Patients were identified through positive blood cultures issued by the microbiology department. The clinical notes were examined 24 hours after these results were issued, to allow enough time for the caring team to make appropriate changes. Patients were then selected according to standard criteria for severe sepsis and septic shock. If these were present, the management documented in these patients’ clinical notes was recorded in a standard proforma.

**Preliminary results:** In the said time period, 190 patients had positive blood cultures. Out of these a total of 59 patients had criteria for severe sepsis and septic shock. 53% (n=31) were male and 47% (n=28) were female. The majority (35) were admitted to medical firms, while the rest (14) were cared for by surgical teams. According to the recorded vital parameters, most patients (64% n=38) developed sepsis within the first 24 hrs of their admission. The lung was the most common presumed source of sepsis (28% n=17) followed by urinary system/kidneys in 23% (n=14). Blood cultures were taken within the first 6 hrs of management in 73% (n=43) and most patients were on antibiotics after developing sepsis (94% n=56). These were in line with local guidelines in 47% (n=28). Cases were initially seen by FY1/FY2 doctors in 46% (n=27). BSTs were the patients’ first doctor encounter in 24% (n=14). 44% (n=26) were discussed with a senior doctor (HST/Consultant). The median time for this review to occur was 180mins. Formal ITU/HDU admission was documented in 21 patients (36%).

**Conclusions:** Although sepsis is a well known cause of death, the importance of quick and efficient management of such cases is sometimes overlooked. A local guideline together with a fast track pathway could aid to improve the management of septic patients.

**OP1.013 Prevalence of Helicobacter pylori in Maltese patients with dyspepsia**

V. Fenech, S. Chetcuti Zammit, G. Zahra, P. Ellul

**Background:** Dyspepsia occurs in up to 25% of the general population per year. The prevalence of Helicobacter pylori varies from 10% in patients between 18 and 30 years of age up to 50% in patients older than 60 years. Unfortunately, it is not uncommon practice for presumed H. pylori infection to be treated empirically in the community with triple therapy. Furthermore, patients are also treated for H. pylori after being tested serologically for it. However, this is an IgG based-assay. The emergence of antibiotic resistance (eg, clarithromycin, penicillins, cephalosporins and vancomycin, with an elevated sensitivity to levofloxacin. There was however an elevated resistance to tetracycline, erythromycin and clindamycin.

**Conclusion:** Although none of the patients with SGB had colonic carcinoma, 78.3% of patients who had GI investigations had a GI pathology which was diagnosed. This further reinforces the fact that all patients who are diagnosed with SGB should have both lower GI and HBP investigations.

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OP.015

Occupational health and safety in female commercial sex workers

M. W. Ross
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Introduction: Different methods for the assessment of the postoperative response to treatment of ovarian epithelial carcinoma exist. Non-invasive methods include CT scan and tumour markers as opposed to invasive methods necessitating surgery either laparoscopically or open surgery - laparotomy.

Aim: Review of gynaecological laparotomies to assess the histological findings and to estimate the rate of patients that needed second look laparotomy after chemotherapy for ovarian carcinoma. Method: The histological findings of all gynaecological laparotomies over a twelve month period from the 1st June 2011 until 30th June 2012 were reviewed and categorised based on origin of tissue and malignancy. Ovarian epithelial carcinoma cases were considered further and treatment modalities post-surgical reduction was noted. Second look laparotomy cases post chemotherapy were assessed to see if further cytoreduction was required.

Results: In total 502 gynaecological laparotomies were performed during the abovementioned period. Thirty nine cases out of 502 laparotomies had a diagnosis of ovarian carcinoma; thirty four of epithelial origin, two of sarcomatoid origin and three Krukenburg tumours with the primaries being breast and gastrointestinal in origin. There were three cases diagnosed with ovarian epithelial carcinoma which underwent second look laparotomies post chemotherapy. Two cases out of the three second look laparotomies required further cytoreductive procedures.

Conclusion: Second look laparotomy was initially reserved for surgical re-exploration of women diagnosed with epithelial ovarian carcinoma who were asymptomatic and had no clinical evidence of tumor following initial surgery and completion of a planned course of systemic chemotherapy. However, the term has been used to describe a second laparotomy/laparoscopy for cytoreduction of known recurrent/residual disease to improve the response to subsequent chemotherapy or to relieve symptomatic disease. The need for a second look procedure was based on the fact that epithelial ovarian carcinoma is usually limited to the peritoneal cavity for much of its natural history, and imaging modalities are unreliable for assessing small volume disease. Measurement of the serum concentration of CA-125 also lacks sensitivity for small volume residual disease. The use of laparoscopy or laparotomy as a second look post chemotherapy can indicate which patients may benefit from further cyto-reductive procedures such as chemotherapy.

OP.016

Second look at ovarian carcinoma

M.C. Vassallo, D. Chetcuti, M. Refalo, A. Aquilina, J. Mamo
Department of Obstetrics and Gynaecology, Mater Dei Hospital, Msida

Introduction: Different methods for the assessment of the postoperative response to treatment of ovarian epithelial carcinoma exist. Non-invasive methods include CT scan and tumour markers as opposed to invasive methods necessitating surgery either laparoscopically or open surgery - laparotomy.

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The preliminary results indicate that twenty-three women were diagnosed as having endometriosis. Four of 50 (8%) patients were eliminated because they failed to fill the data completely. Twenty-three of the remaining 46 patients were in the intervention group and 34 of the control group. The p values of the difference in analgesic consumption between the two groups were not significant; however, the difference in analgesic consumption between the two groups reached statistical significance possibly because the study was not suitably powered to reveal this. No significant differences were noted for most of the other aggregated gynecologic and general symptoms except for shorter menstrual cycles (p<0.01) and depression (p<0.05) in the women diagnosed with endometriosis.

**Conclusions:** Patients suffering from endometriosis in this study complained of significantly more gastrointestinal symptoms. A nonsignificant trend of dietary intolerance starch and dairy products was noted in the women shown to suffer from endometriosis. These findings may shed some light on the pathogenesis and the management of endometriosis.

**OP1.020**

*Dietary intolerance and gastro-intestinal symptoms in women with pelvic endometriosis – blame it on the fertile crescent?*

Y. Muscat Baron, M. Dingli, R. Camilleri Agius, N. Calleja

A comprehensive assessment of gastrointestinal, gynaecologic, and general complaints of a group of women with laparoscopically confirmed pelvic endometriosis was performed. The possibility of dietary intolerance in relation to the co-existence of endometriosis was also assessed.

**Methods:** This was a prospective, comparative study conducted on 57 patients who had had laparoscopies for various gynaecologic complaints. These women were recruited sequentially into the study so as to avoid selection bias (age range 20 to 55). Twenty-three patients were diagnosed with endometriosis while the other 34 did not have this pathology. Prior to laparoscopy these patients were asked through a telephone questionnaire about associated long-term gastrointestinal symptoms, dietary intolerance, and general and gynaecologic symptoms.

**Results:** Twenty-three women were diagnosed as having pelvic endometriosis. The remaining thirty-four patients were noted to suffer from pathology other than endometriosis. Gastro-intestinal symptoms such as dyspepsia (p<0.01) and diarrhoea (p<0.05) were significantly more common in the endometriosis group compared to the other group of women. Women with endometriosis complained of more gastrointestinal symptoms (33% vs. 31%) and food intolerance (26% vs. 14%) than the women without endometriosis. These differences between both groups did not attain statistical significance possibly because the study was not suitably powered to reveal this. No significant differences were noted for most of the other aggregated gynecologic and general symptoms except for shorter menstrual cycles (p<0.01) and depression (p<0.05) in the women diagnosed with endometriosis.

**Conclusion:** The preliminary results indicate that pharmacist intervention improved pain relief in post cardiac surgery patients. Analgesic compliance at the tailing off period was the more compliant. The p values of the difference in analgesic consumption between the two groups were not significant; however, the difference in analgesic consumption between the two groups reached statistical significance possibly because the study was not suitably powered to reveal this. No significant differences were noted for most of the other aggregated gynecologic and general symptoms except for shorter menstrual cycles (p<0.01) and depression (p<0.05) in the women diagnosed with endometriosis.

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OP1.022

Chronic renal failure and bone density
D. Ghiotto¹, E. Farrugia¹, L.M. Azzopardi², A. Serracino Inglott¹
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Introduction: Impaired kidney function may lead to bone disturbances, predisposing patients to fracture risk and increased morbidity and mortality. Aim: To identify risk factors predisposing bone loss and to evaluate bone density regression in Chronic Renal Failure (CRF) patients.

Method: A selectively recruited sample of 35 postmenopausal women volunteered to take part in the study carried out at Mater Dei Hospital (MDH). A group of CRF patients (n=17) having a low estimated glomerular filtration rate (less than 60ml/min/1.73m²) was approached during their regular renal care outpatient visit and were referred for a bone density test. A control group (n=18) was recruited during bone density scanning from the Gynaecology Clinic. During recruitment, a semi-formal interview was carried out on both CRF and control patients to identify other risk factors namely patients’ smoking status, dialysis use, if patient is on long-term corticosteroid therapy, lack of weight-bearing exercise and other health-related data. Relevant blood tests and bone density results were obtained from MDH software. The data was statistically analysed by PASW® version 18.

Results: Descriptive statistics was used to evaluate bone density regression in CRF patients by analysing T-score values of both groups. The analysis showed that with increasing age, lumbar and hip T-score values were lower in the control group than in the study group (t-test, p=0.036) owing to a reduced bone density and increased osteoporotic risk. This could be due to the fact that the control group patients were patients who were referred for the bone density and so are highly likely to be suffering from osteoporosis. Other general risk factors were found to be higher in the control group. None of the CRF patients smoke cigarettes, whilst 6 control group patient’s smoke daily. A greater number of control group patients (n=11) lack physical activity when compared to the CRF group (n=9).

Conclusion: The presence of other risk factors may account for the lower bone mass observed in the control group. The CRF patients did not present with higher bone disease risk compared to the control group. The bone mineral density of a patient was assessed by Dual-energy X-ray absorptiometry (DEXA). However, interpretation of DEXA in CRF patients is still subject to controversy. Bone biopsy may be considered as the gold standard for the diagnosis of specific bone diseases, but it is underused in the evaluation of osteoporosis in CRF due to its perceived invasiveness.

OP1.023

Management of severe allergic asthma with omalizumab locally
C. Goudier, L. West, S. Montefort

Introduction: Asthma is a chronic inflammatory airways disease, which in many patients is driven by an immuned asthma and has been introduced recently to Malta. Aim: To establish the response rate, tolerability and clinical effectiveness of omalizumab after 16 weeks of treatment in Malta.
prescribing. The modules generated a positive response from the panel of experts. Suggested amendments included giving more focus on topics namely prescribing models, medication errors and clinical management plans, and improving the general layout of the modules.

**Conclusion:** Through the processes of development and validation, relevant modules on pharmacist prescribing were created. The modules were well received and following the suggested improvements, they can be used to provide pharmacists and pharmacy students with a better understanding of the tasks associated with prescribing, and pave the way for aspiring pharmacists to provide a safe and efficient prescribing service which takes into account the needs of patients and other healthcare professionals.

**OP1.025**

**Development and review of documentation for pharmaceutical care service within a paediatric rheumatology outpatient clinic**

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**Background:** Paediatric rheumatology patients are followed up by one of the rheumatology Consultants who runs a monthly clinic at Mater Dei Hospital.

**Objectives:** To introduce a pharmaceutical care service specifically for paediatric patients in order to ensure patient safety, education and seamless care. To develop and evaluate a pharmaceutical care model documentation.

**Methods:** A pharmaceutical care model record sheet was compiled to document individual patient pharmaceutical care issues identified within the clinic and/or follow up visits or appointments. A referral checklist for healthcare professionals wishing to contact the clinical pharmacist was developed and reviewed. The individualized pharmaceutical care model together with the referral checklist for the health care professionals was pilot tested between January 2011 and June 2012.

**Results:** The individualized pharmaceutical care model includes mainly 3 sections. Section A records patient’s details and carer’s details, allergies, other co-morbidities and other comments. Section B consists of the first clinic date visit and drug history which is updated accordingly. Section C documents the pharmaceutical care plan. The pharmaceutical care plan categorizes drug therapy problems as actual or potential drug therapy problems, documents the pharmacist’s action, monitoring plans and seamless care requirements. Between January 2011 and June 2012, the clinical pharmacist attended 8 paediatric clinic sessions. A total of 39 pharmaceutical care issues were identified and resolved with a mean 3 care issues per patient. The majority of the drug therapy problems (n=33 out of a total of 39) were classified as actual drug therapy problems whereas 6 were classified as potential drug therapy problems relating to potential adverse drug reactions. Following the use of the pharmaceutical care model record sheet in 32 patients, the record plan model was amended to ease applicability and data retrieval for clinical purposes. No changes were made to Section A detailing patient’s details. Section B was changed to focus on drug history which made it easier to identify the drug treatment at any point in time. Section C was amended to include the date of visit for every pharmaceutical care issue identified whereas monitoring plans and seamless care requirements were merged together since in practice these were often both required.

**Conclusions:** The pharmaceutical care service was introduced within the local paediatric rheumatology clinic and the developed pharmaceutical care model documentation was found to be practical and useful.

**OP1.026**

**Drug information bulletin**

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**Introduction:** Drug bulletins are specialised periodicals intended to provide reliable information about medicinal products in a summarised form. These provide healthcare professionals with the latest advances in the pharmaceutical field.

**Aims:** To compile and setup an online bulletin intended to provide information on locally available medicinal products which have variations in the Summary of Product Characteristics and on medicinal products included in the Government Formulary List, and to evaluate the bulletin.

**Methodology:** Lists of locally available medicines that had undergone variations and medicinal products added to Government Formulary List were compiled with further information obtained from regulatory authorities and local agents. A concise article was written on each drug, reviewed by a panel of experts and subsequently published in the online bulletin. The latter was hosted on the website of the University of Malta within the site of the Department of Pharmacy. A pilot study was carried out to identify shortcomings in the online bulletin design. The validated questionnaire, created by Kwik Surveys was used to collate information regarding the impact of the online bulletin. The data obtained was coded and analysed using Microsoft® Excel Vista and IBM SPSS Statistics v.20.

**Results:** The online ‘Drug Information Bulletin’ published in December 2011, included 37 medicinal products that had undergone a variation in the Summary of Product Characteristics between January and June 2011 and 20 medicinal products were introduced in the Government Formulary List between January and November 2011. One hundred and forty-nine participants (N=223; 67%) completed the evaluation questionnaire of the online bulletin. The participants were: 27 medical practitioners, 34 pharmacists, 37 medical students and 51 pharmacy students; gender 35% (n=75) males and 65% (n=148) females, age range from 18 to over 66. The respondents agreed that the bulletin was: up-to-date, clear and concise (91%, n=136), user-friendly (97%, n=144), useful (95%, n=142), well designed (91%, n=136) and easy to access (87%, n=130). Ninety seven percent (n=145) of the respondents stated that the information present in the bulletin was new to them and that the bulletin helped them to keep informed.

**Conclusion:** The bulletin achieved its objective of delivering unbiased and impartial drug information about variations of medicinal products and medicines recently introduced in the Government Formulary List. It was positively evaluated by both healthcare professionals and students.

**OP1.027**

**Infliximab, osteoporosis and osteopenia in Crohn’s disease**

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**Introduction:** Osteoporosis is common among Crohn’s disease patients.

**Aims and methods:** The aim of our study was to establish which factors are associated with a greater risk of osteoporosis in Crohn’s disease. 83 Crohn’s disease patients were recruited. Informed consent was obtained to gather their phenotypic data in a database and perform a DEXA scan.

**Results:** Mean patient age was 39 years with mean disease duration of 9 years. Mean Z score spine: -0.4, Z score hip: -0.7, T score spine: -0.7, T score hip: -1.3. 30% of the
population had osteopenia and 6% had osteoporosis at the spine. 46% had osteopenia and 14% had osteoporosis at the hip. Factors which were associated with lower DEXA scores were younger age of disease onset (ANOVA p=0.024), patients on Infliximab (p=0.005), long-term steroid use (p=0.032) and low body mass index (BMI, p=0.004). Disease location (ANOVA p=0.851), disease behavior (p=0.911) smoking (p=0.181) and increasing age (>50 years) (p=0.128) were not associated with low DEXA scores.

Conclusions: Low BMI, early disease onset and long-term steroid use are risk factors for osteoporosis in Crohn’s disease. An important risk factor for low bone density is Infliximab. Lower Z-scores in patients on Infliximab may occur as these patients have more severe inflammation, requiring aggressive treatment. Turk et al. have shown that in Crohn’s patients, the proinflammatory cytokine TNF-α is associated with the osteoclastogenic receptor activator of NFKB-ligand, and inversely with bone density. A second explanation might be that low bone densities in patients on Infliximab are a side-effect of the drug. There is no data to suggest this. Studies-3 show Infliximab to have a beneficial effect on bone turnover markers in Crohn’s patients in the short term. Randomly controlled long-term trials are needed to evaluate the impact of Infliximab on bone density.

OP2.028
Determination of the phytochemical and pharmacological properties of selected Maltese medicinal plants
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Introduction: An inflammatory response is characterised by a sudden increase in the generation of free radicals. Overproduction of free radicals may cause indiscriminate host-tissue damage contributing to the aggravation of the inflammatory process. For many inflammatory conditions there is constant demand for better therapeutic alternatives, in part due to the unfavourable adverse effect profile of many existing drugs. It has become widely known that plant-based compounds act as key players in the modulation of inflammatory pathways. These include phenolic compounds, triterpenoids and alkaloids.

Aim: To delineate the phytochemical profile and determine the antioxidant properties of the local varieties of 4 selected medicinal plants chosen on the basis of ethnopharmacological records. The findings provide the basis for bioassays designed to determine the effect of the plant extracts on the release of the cytokines tissue necrosis factor-α and interleukin-β and on the transcriptional activity of NF-κB (nuclear factor-kB) and AP-1 (activator protein 1) in human cell lines.

Methodology: Extracts were prepared from the rind fraction of Aloe vera leaves and the whole aerial parts of Chilaidenus bocconei, Calendula suffruticosa and Ruta chalepensis using 5 separate solvent systems. In addition the crude gel and exudate fractions of Aloe vera leaves were also isolated. Each of the extracts obtained was studied for the total content of phenols, alkaloids and triterpenoids using optimized spectrophotometric assays. In addition antioxidant properties were studied using free radical-scavenging activity.

Results: The findings included a high total phenolic content in Aloe vera leaves; alkaloid levels in Ruta chalepensis that were comparable to those found in plants which are known accumulators of alkaloids; and notable levels of triterpenoids that were found in all the plants. These results strongly indicate that these local plants are potential sources of important metabolites that have been associated with anti-inflammatory activity. In addition a statistically significant correlation was found between total phenolic content and free radical-scavenging activity of the extracts.

Conclusion: Free radicals are involved in modulating gene transcription, particularly in relation to inflammatory cytokine production, partly through an activating effect on the transcriptional activity of NF-κB and AP-1. Therefore, these plant extracts hold promising activity against the inflammatory response. Further work is being carried out on cellular models of inflammation, in order to elucidate the molecular mechanisms underlying the pharmacological properties of the selected plants. These results could lead to the identification of sources of compounds with potential therapeutic value for inflammatory disease states.

Disclosure: The research work disclosed in this publication is partially financed by the Strategic Educational Pathways Scholarship (Malta). The scholarship is part-financed by the European Union- European Social Fund.

OP2.029
Transcript variants and isoforms of the phosphatase PP2a catalytic subunit and its regulatory binding partners in haematological malignancies
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Introduction: The importance of feedback mechanisms involved in suppression of growth factor-induced signals is gaining importance both to understand molecular mechanisms of disease and also as potential therapeutic targets. Our previous studies show that erythroid differentiation can be blocked by constitutive expression of the protein phosphatase 2 (PP2a) inhibiting subunit, immunoglobulin binding protein 1 (IGBP1). Moreover, another inhibitor of PP2a, the nuclear oncogene SET, is induced in leukemic cells, perhaps contributing to their differentiation arrest, hence leukemogenesis.

Aim: To identify transcript variants and isoforms of the protein phosphatase 2, catalytic subunit, alpha isoform (PP2aCA) and the inhibiting subunits IGBP1 and SET, using (1) human cell lines derived from haematopoietic disease, and (2) Chronic Myeloid Leukemia (CML) and Acute Myeloid Leukemia (AML) patient material.

Methodology: Total RNA was isolated from the respective human cell lines and patient samples (using either peripheral blood or bone marrow) following standard protocols. Complementary DNA (cDNA) was generated from the extracted total RNA using well established procedures. High Resolution Melting (HRM) analysis was used to scan the cDNAs for transcript variants and isoforms of the phosphatase subunit PPP2CA and its inhibiting binding constituents IGBP1 and SET. Principle component analysis clustered the various amplicons into different genotypic groups. The distinct genotypes were further analysed by direct sequencing.

Results: HRM analysis identified various PPP2CA variants and isoforms in patient material. Sequencing of these fragments revealed amongst others a novel point mutation on codon 114 (CCT->CCT) resulting in an amino acid change (Leu->Pro) which is situated near the substrate binding site. Quite interestingly, one of the detected PPP2aCA isoforms, lacking exon 5, was predominantly expressed in 15% of both CML (n=39) and AML (n=344) patients. IGBP1 and SET mutations in both human cell lines and patient material were also identified by HRM analysis. Sequencing confirmed that the human myeloid lineage U937 had multiple mutations in the coding region of SET. Moreover, the PPP2A point mutation (Arg20Lys) found in patient samples may have a significant effect on the regulation of this gene.
Conclusion: Mutations of the phosphatase enzyme and its regulatory subunits suggest ultimately deregulation of the PP2A activity. In fact, the newly discovered PP2A αA mutation is located in close proximity to the substrate binding site, further hinting such deregulation. Future studies will define the function of these variants in myeloid leukemias. This will eventually give an indication of the potential therapeutic targets in such patients.

OP2.030
Scoring genetic risk and biological/clinical endpoints in type 2 diabetes mellitus
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Introduction: Type 2 diabetes (T2DM), obesity and metabolic syndrome are common complex disorders with multiple genetic, dietary and lifestyle factors implicated in their pathogenesis. Recent genome-wide association scans using poorly characterized study populations have failed to identify risk alleles with strong effect sizes.

Aim: The aim of this study is to further define the genetic interplay between a small number of cognate genes from metabolic and inflammatory pathways on the likelihood of developing T2DM in adulthood and to relate the association of certain genetic profiles with biological and clinical endpoints and choice of treatment leading to personalization of care in T2DM.

Methods: Four hundred T2DM cases were recruited. Two hundred were newly diagnosed cases free from lifestyle and pharmacological intervention and two hundred had severe diabetic vascular disease. Following informed consent, anthropometric and biochemical parameters were measured, and genotyping of 30 cognate genes from metabolic/ inflammatory pathways carried out. Neonatal cord blood samples collected anonymously from the Malta Biobank were used as the control reference population in this study. Serum high-sensitivity C-Reactive protein (hsCRP) levels were determined by ELISA.

Results: Seven polymorphisms from metabolic/ inflammatory genes showed statistically significant association with T2DM with strong effect sizes. In the untreated T2DM cohort, three loci showed significant association with lipid profile, body weight and hsCRP levels. hsCRP levels demonstrated a strong positive correlation with body mass index. SNP type analysis showed that combining multiple genetic markers results in higher risk relative points of T2DM in both cohorts. Using cultured monocytes, over expression of fluorescent-tagged clones of one candidate locus and interfering RNA-mediated transcriptional silencing of two other loci was performed. These over expression and knockdown cell models will be used to carry out pan-genomic transcriptomes to determine which mRNA transcripts are up regulated or down regulated following genetic manipulation. RNA-sequencing of cultured monocytes treated with drugs will also be performed.

Conclusion: A panel of seven candidate genes has consistently demonstrated significant association with type 2 diabetes and metabolic syndrome in the Maltese population. These gene variants are physiologically relevant as they serve a functional role in inflammation, adipose tissue function and whole body metabolism. The recruited cohort of untreated newly-diagnosed T2DM serves to identify and explore genotype-phenotype association. The strong effect sizes of these alleles could be used to develop personal genetic susceptibility profiles for T2DM leading to personalization of care and prevention of chronic complications.

OP2.031
The influence of anti-asthma drugs on the transcriptional regulation of chemokine receptor 3 (CCR3)
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Introduction: Chemokine receptor 3 (CCR3), the major chemokine receptor expressed on eosinophils, binds promiscuously to several ligands, mainly the eotaxin family of chemokines which are up-regulated in inflammatory response. CCR3 expression in airway epithelial cells, has been reported to be upregulated in asthma, and has been proposed to play an important role in airway inflammation by amplifying the expression of chemokine transcripts. The promoter region of CCR3 gene has recently been characterized in the literature and contains promoter elements which include a TATA box and motifs for transcription factors such as NF-kB, AP-1 and GATA-1.

Aim: The aim of this study was to investigate the effects of transcription modifier anti-asthma drugs on the transcriptional regulation of the CCR3 promoter.

Methodology: pGL3E luciferase-based reporter deletion constructs were generated for the 1.6kb CCR3 promoter region, using standard cloning approaches in DH5α E.Coli cells. Each promoter construct was transfected to A549 cells in microwell plate format and stimulated with dexamethasone, cortisol, and theophylline, in a dose dependent manner.

Results: A CCR3 promoter tri-phasic response (i.e. activation at low concentration 10^{-7}M, repression at medium concentration 10^{-5}M, and activation at high concentration 10^{-4} M) to dexamethasone was observed, indicating a complex transcriptional regulatory mechanism. Unlike dexamethasone, cortisol did not activate CCR3 promoter activity at any of the concentrations investigated, but rather showed significant transcriptional repression at concentrations of 10^{-5}M and 10^{-4}M. Theophylline showed significant transcriptional repression at all three concentrations investigated (10^{-6}M, 10^{-5}M and 10^{-4}M).

Conclusions: Dexamethasone-induced transcriptional regulation of the CCR3 promoter in A549 cells appears to occur in a complex dose-dependent manner, potentially involving additional mechanisms besides the established NF-kB and AP-1 transcriptional pathways. Changes in CCR3 promoter activity in response to cortisol were different from those observed for dexamethasone, and can be explained by dose-related increases in transcriptional repression. Our results have also shown that theophylline significantly represses CCR3 promoter activity in the absence of glucocorticoids, suggesting that this may be another mechanism by which theophylline exerts its pharmacological effects.

OP2.032
Serum Amyloid A in airway cells
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Introduction: Acute-phase serum amyloid A (A-SAA) molecules, encoded for by SAA1 and SAA2 genes, are cytokine-inducible acute phase proteins. Increased A-SAA is implicated in various chronic inflammatory diseases including rheumatoid arthritis, asthma and COPD. Besides its major hepatic secretory source, extrahepatic A-SAA has been identified in bronchialalveolar lavage fluid, and has been claimed to be a potentially useful biomarker for airway inflammation. The cellular origin of airway-released A-SAA, however remains unknown.
Aims: This project aimed to (i) study cytokine-induced SAA transcriptional regulation in human airway related cell lines; (ii) develop a mature eosinophil cellular model by differentiation of EoL-1 cells; (iii) study in cytokine-stimulated differentiated EoL-1 cells; (iv) compare putative transcription factor motif maps of the human A-SAA gene promoters.

Methodology: The well characterised SAA2 promoter was used as a template for study. A PglL4.10-SAA2 luciferase reporter construct was generated, transfected into A549 (alveolar epithelial) and EoL-1 (endothelial) cells and stimulated with different concentrations of IL1β+IL6. Promoter activity was measured using dual luciferase reporter assays. EoL-1 differentiation was studied using a panel of cell densities and concentrations of apicidin or sodium butyrate, and was followed through morphological and qPCR-based CCR3 biomarker expression studies. An expression microarray approach combined with Ingenuity® pathway analysis was used to study IL1β+IL6-dependent gene regulation while cytokine-induced cellular A-SAA secretion was investigated using ELISA assays. Transcription factor motif maps were generated in silico using Transplorer®.

Results: SAA2 promoter activity was upregulated following IL1β+IL6 stimulation in A549 and EoL-1 cells, with maximal activity at 25ng/ml IL1β+200ng/ml IL6, and 4ng/ml IL1β+400ng/ml IL6 respectively. The greatest morphological changes in EoL-1 cellular differentiation occurred at 1x10⁶ cells/ml exposed to 300nM apicidin for 9 days, while the greatest increase in CCR3 expression (2.53 fold), occurred with 1000nM apicidin. Expression profiling showed that stimulation of differentiated EoL-1 cells with 1ng/ml IL1β+100ng/ml IL6 induced no differential A-SAA expression. This was corroborated by the absence of EoL-1-secreted A-SAA and the lack of promoter activity at the same cytokine concentrations. Pathway analysis revealed a network of differentially expressed genes related to airway inflammation. Transcription factor maps suggested that A-SAA genes are transcriptionally regulated by similar putative transcription factor profiles, also having reported roles in eosinophilic differentiation, airway calibre, mediation of inflammatory responses and extrahepatic SAA production.

Conclusion: Cytokine-induced SAA2 promoter activation occurs in alveolar epithelial cells and eosinophils, but the concentrations required suggest that this may be potentially only relevant in severe inflammation.

OP2.033
Aspirin-induced apoptosis of the yeast Saccharomyces cerevisiae is mediated by oxidation of mitochondrial NAD(P)H
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Research into the pro-apoptotic properties of aspirin can contribute towards a better understanding of its role as a promising preventive agent against colorectal cancer and other common cancers. In the present work, yeast was used as a model for the study of apoptosis, given its ease of manipulation, its well characterized genome and, most importantly, its retention of core cellular processes that are characteristic of mammalian apoptotic cell death. The principal aim of this study was to investigate the mechanisms by which aspirin induces apoptosis in mitochondrial manganese superoxide dismutase (MnSOD)-deficient yeast cells grown aerobically in non-fermentable ethanol medium (YPE) as observed in our previous studies. Superoxide dismutase enzymes constitute the primary defence against oxidative stress in aerobic organisms. In the present study we observed that aspirin-induced apoptosis of MnSOD-deficient yeast cells grown in YPE medium was associated with significant accumulation of superoxide radicals (O2-·) in the cell, as well as oxidation of mitochondrial nicotinamide adenine dinucleotide (NAD(P)H). The lack of mitochondrial MnSOD was not compensated for by a concurrent increase of cytosolic copper-zinc superoxide dismutase (CuZnSOD) activity. However, an observed increase in the activity of the E. coli iron superoxide dismutase (FeSOD) targeted to the mitochondrial matrix of MnSOD-deficient yeast cells, markedly reduced the aspirin-induced accumulation of mitochondrial O2-·, prevented apoptosis and enhanced the growth rate of the yeast cells. Furthermore, FeSOD not only prevented oxidation of mitochondrial NAD(P)H, but also significantly increased mitochondrial NAD(P)H levels. Taken together, our results demonstrate that aspirin-induced apoptotic cell death of MnSOD-deficient yeast cells grown in YPE medium is mediated by the early accumulation of mitochondrial O2-· and oxidation of mitochondrial NAD(P)H.

OP2.034
Mutational analysis of c-KIT and PDGFRA receptors in gastrointestinal stromal tumours
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Introduction: The pathogenesis of gastrointestinal stromal tumours (GISTs) is generally associated with activating mutations of the proto-oncogene tyrosine-protein kinase Kit (c-KIT). However, about 15% of GISTs do not harbour c-KIT mutations. It is estimated that 5% of these GISTs have mutations in the platelet-derived growth factor receptor α (PDGFRA). Accurate diagnosis of GIST has become very important since the availability of targeted therapy with tyrosine kinase inhibitors, such as imatinib mesylate. The routine work-up for GIST diagnosis includes immunohistochemistry for CD117 (c-KIT polyclonal antibody), as it is estimated that 95% of GIST cases show positive immunoreactivity. However, it can be observed that the routinely used immunohistochemical analysis does not provide complete sensitivity for GIST diagnosis, as there are nearly 5% of GISTs that are negative for c-KIT immunohistochemistry. Mutational analysis for c-KIT and PDGFRA can confirm the diagnosis of GIST, particularly in CD117-negative suspect GIST. Moreover, specific mutations have a prognostic and/or a predictive value for response to therapy.

Aim: To establish a fast and cost-effective method of testing to identify mutational profiles of c-KIT and PDGFRA in GIST cases diagnosed in Malta.

Methodology: GIST cases diagnosed in the last 12 years were retrieved from the archives of the Histology Section at the Pathology Department (Mater Dei Hospital). Haematoxylin and eosin staining and immunohistochemistry staining of CD117 were performed on serial sections of formalin-fixed, paraffin-embedded sections to identify tumoral areas. CD117-positive and negative tumoral tissue was sectioned and DNA was later isolated following standard protocols. Polymerase chain reaction (PCR) was used to amplify exons 9, 11, 13, and 17 of the c-KIT gene. Primers were designed to enable fusion of the amplified fragments, ultimately allowing sequencing of the concatemer in a single run. Future studies will utilize laser microdissection.

Results: Histologically examined GISTs were evaluated following CD117 immunohistochemical staining. Positive c-KIT immunostaining was present in 72% (n=36) out of a total of 47 GISTs. Currently, only one of the c-KIT positive GISTs was characterised by sequencing. A mutation in exon 11, which encodes the juxtamembrane domain, a known region harbouring numerous deletions, was identified.

Conclusion: This deletion is in a notable region of the c-KIT receptor known to activate its kinase activity. Moreover, exon 11 mutations are sensitive to imatinib mesylate. Hence, mutation analysis provides molecular classification of GISTs while predicting therapy outcome. Tumors with a wild-type c-KIT gene will be further screened for PDGFRA mutations.
OP2.035
Use of endophenotypes in genetic studies of schizophrenia
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Problems in the genetic studies of schizophrenia include the fact that there is a long and complex pathway between genes and the phenotype (schizophrenia). The phenotype is diagnosed purely qualitatively (clinically), and there are no biological test to confirm diagnosis. Also, the human brain is a very complex organ. It is not like other organs with a small number of common cellular types. Neurons are frequently distinct from one another in their cellular processes and in their local and regional networks. Considering these complexities, together with the likelihood of a continuous genetic liability of schizophrenia within the general population, genetic studies can be underpowered if they study only the phenotype of patients with schizophrenia versus to those not affected with schizophrenia. As a possible solution to this, research focused on ‘Endophenotypes’, that are quantitative markers of neurobiological or cognitive dysfunction. Since endophenotypes are measured quantitatively and represent effects more proximal to the genetic sequence than schizophrenia itself, their heritability may be simpler and more amenable to research. I will explain what endophenotypes are, and how they have been investigated in Schizophrenia. I will use examples from the Maudsley Family Study, which is the largest similar study in Europe on the subject and was conducted at the Institute of Psychiatry, University of London. I used to coordinate this study and perform its structural imaging part.

OP2.036
Depression in elderly Maltese residents in Malta
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Depression in older persons is associated with being placed in a nursing home. Studies have found that depression incidence in this population is higher than in the community and ranges from 35% to 80% (Jongenelis et. al. 2004, Lin et. al. 2007). Depression is linked to increased medical morbidity in nursing home residents, a relationship that also has been suggested for medical inpatients 150 subjects living in two nursing homes were included in the study. 67.3% (p<0.01) were found to be depressed. This was higher than in other countries. 12% of the total population had major depression while 55.3% had minor depression. Only 40% of those diagnosed with depression in this study had been so diagnosed prior to the study. Significant associations included low Barthel scores (therefore being dependent in ADLs), loneliness, being currently in pain, being asked directly if one was depressed, having high scores in the GDS, having a low level of satisfaction in the nursing home, having a high number of medical co-morbidities, having had a fracture in the past, being on an anti-depressant, being already diagnosed (past history) with depression, taking several medications, being widowed and suffering from OA (p<0.05). Multivariate analysis found significant associations between several variables including depression, pain, dependency, taking numerous medications and suffering from multiple medical conditions. These associations were similar to those found in published studies. The study also showed that those residents already diagnosed with depression were being treated inappropriately with low prescription levels of anti-depressants (40.6%). Besides, the psychological approach to treatment was non-existent. Recommendations include increasing staff education on this pathology, routine screening for depression on nursing home admission, reducing risk factors such as pain, appropriate treatment, regular auditing and further research on this subject. Limitations include the exclusion of residents with more severe levels of dementia as well as aphasics ones. In conclusion depression in elderly homes in Malta is highly prevalent but under-diagnosed. Several significant associations with this pathology were noted. In those residents who were already diagnosed the treatment was inappropriate with low prescription levels of the correct medications. There was also a lack of the multi-disciplinary approach to treatment.

OP2.037
Is a community crisis house an effective and acceptable way of reducing the cost of mental health services?
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Aim: Explore efficacy, patient acceptability and financial savings on a newly opened crisis house (CH). Assess whether CH offers a viable alternative to inpatient psychiatric admissions.

Background review: The evidence base for CH providing an alternative to hospital admission is poor. Presence of CH’s is patchy and service models vary significantly. This makes comparison and data interpretation difficult.

Method: Mean cost of an in-patient bed per day was established using the annual NHS mental health bulletin, and the mean daily cost per day for CH beds was calculated. Mean acute inpatient bed occupancy usage pre and post opening of the local CH service was compared (2009 and 2011) and monthly bed occupancy data for acute adult in-patient wards and the CH was recorded for 2011. CH service user feedback responses were thematically analysed. Mean admission HoNOS (Health of the Nation Outcome Score) for patients admitted to CH in 2011 were calculated, as well as mean change between admission and discharge HoNOS scores to measure impact of CH as an intervention for reducing global need for the patients.

Results: The average adult in-patient acute bed day reference cost for 2011 in the UK is £304. The average bed day reference cost for CH operating at 10 beds capacity in 2011 was £187. The mean annual inpatient occupancy reduced from 57.85% in 2009 to 86.03% in 2011 with the opening of the CH. Patient feedback showed 81% had positive experience of CH and 26% self-reported improved mental health. The mean total entry HoNOS was 15 with a mean reduction of 4 obtained through CH admission.

Conclusion: The introduction of CH in 2010 offered a successful alternative to inpatient care. Additionally, this offers an estimated cost saving of £114 per bed day (38% annual savings over in-patient admissions) assuming full occupancy. It is an acceptable alternative to hospital admission to the majority of the service-users. CH possibly contributed to reduction of bed pressure on the acute inpatient unit by approximately 12% though we acknowledge the relationship is complex and possibly multi-factorial.

Discussion and limitations: CH in Tower Hamlets is run on a model where it is embedded within the Home Treatment Team (TH HTT). Furthermore, health care costings are complex. There are other additional non-financial benefits to CH, including increasing patient choice, quality of care, reducing stigma and offering a less restrictive environment amongst others.
A new mental health act for the 21st century. Old problems, new responses

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Introduction: National mental health legislation within a country undoubtedly reflects the dominant way of thinking of that particular society, in particular its perceptions on mental illness and how this should be addressed. Over the past 20 years, there have been many changes in the way that society perceives mental ill-health and persons suffering from mental disorder. These changing perceptions, coupled with the increase in the awareness of the European and global burden of mental ill-health, as well as with newer developments of care and treatment of persons with mental disorders, have increasingly called for parallel changes in our legislation.

Aim: The aim of this paper is to present the advances in mental health care provision and in the safeguarding of the rights of persons suffering from mental disorder that are being proposed through the New Mental Health Act, 2011, which is currently awaiting its second reading in Parliament.

Methodology: A comparative analysis of the main features of the new Mental Health Act against the current Mental Health Act shall be undertaken. This shall include comparison of patient-focus, models of care, compulsory hospital stays, mental capacity, social inclusion, and special provisions for minors and persons involved in criminal proceedings.

Results: The new Mental Health Act brings with it a number of developments which mirror the change with which society now perceives mental illness and persons with mental disorders. These include a strong individualised patient-centred approach, the enshrining and safeguarding of patient rights across the whole spectrum of care, the introduction of checks and balances in the care process through the establishment of a Commissioner for the Promotion of rights of persons with mental disorders, enhancing new models of care with an increased shift to treatment in the community, strengthening of the multidisciplinary care approach, and individual multidisciplinary care plans with expected outcomes and timeframes.

Conclusion: The new Mental Health Act, 2011, shall be a crucial tool which is expected to protect the rights of persons with mental disorders and ensure the provision of state-of-the-art mental health services, care and rehabilitation as befits our society in the 21st century.

Comparison of the quality of life of psychiatric male patient groups living in a community and a hospital setting: an analysis of the relative cost effectiveness

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Introduction: Over the last number of years there has been a drive in Malta in line with the trend in other Western countries, to resettle long stay psychiatric patients back into the community. Many of these patients had been living at Mount Carmel Hospital for several years and were not deemed to be fully self-sufficient to lead an independent life in the community.

Aim: To determine whether male psychiatric patients living in different settings experienced the same quality of life. To determine the costs incurred to live in the respective settings.

Methodology: Thirteen male schizophrenic patients who were living in two hostels in the community and were assessed using the Maltese translation of both the Manchester Quality of Life Scale (MANS) and the Personal and Social Performance Scale (PSP). Furthermore, each patient was assessed using the BPRS to measure their psychopathology.

Demographic data on suicides in Malta over the past 10 years

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Introduction: The study is being carried out in collaboration with Richmond Foundation.

Aims: The aim of the study is to determine the demographic details of persons committing suicide, the mode in which suicide is committed, history of mental health problems and any precipitating factors. The ultimate aim of the study is to see whether more can be done with persons suffering from mental health problems to diminish the incidence of suicides.

Methodology: A template was prepared with the necessary data. The postmortem register for the past 10 years was reviewed and the relevant postmortem reports were then examined to fill in the appropriate data. This was then compared with the data held in the Health Information Unit to make sure that no cases were missed.

Results: The overall number of suicides over this 10 year period amounted to 325. The average number of suicides over this period remained fairly constant. The average age of those committing suicide was in the 25 to 34 age group. As found in other studies, males by far outnumbered females and accounted for 84% of cases in this study. By far the large majority of suicides were committed by hanging, jumping or overdose. As expected, there was a history of mental health problems in a significant number of cases.

Discussion: This study will be followed by looking up the psychiatric history of those persons who had a history of mental health problems.
OP2.042
Practical approach to management of respiratory complications in neurological disorders
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Patients with certain neurological diseases are at increased risk of developing chest infections as well as respiratory failure due to muscular weakness. In particular, patients with certain neuromuscular disorders are at higher risk. These conditions are often associated with sleep disordered breathing. It is important to identify patients at risk of respiratory complications early in the course of their disease, although patients with neuromuscular disorders often present in the acute setting with respiratory involvement. This talk on respiratory complications of neurological disorders, with a particular focus on neuromuscular disorders, explores why this happens and looks at how to recognize, investigate, and manage these patients effectively.

OP2.043
Comparing COPD care in Malta, to other European hospitals: results from the European Respiratory Society (ERS) COPD audit
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Background: Proper management of COPD can reduce exacerbations, which in turn reduces disease-related mortality. Aim: To find out how management of COPD exacerbations in Malta contrasts with other countries.
Methods: A total of 422 European hospitals took part. Every COPD patient admitted with an exacerbation to our hospital over 8 weeks, was included (n=112). The ERS COPD audit proforma and web tool was used. Data was processed by the Data Analysis Team. The authors take full responsibility for any inferences made in this abstract.
Results: The median length of stay was 5 days, while the European Median (EM) was 8 days; there is no early discharge. The 90-day mortality was 7.6% (12.5% vs. 69.5% EM). 45.5% of patients were on antibiotics on discharge (1.8% vs. 59.8% EM) or ICS + LABA (59.4mmHg EM). 49.1% of our cases satisfied GOLD criteria to be discharged on LAMA (6.1% vs. 59.8% EM) or B2 (13.2% EM). Still, this was COPD-related in only 37.5%.
Conclusions: Management of COPD in Malta needs to be optimised by establishing and adhering to local guidelines. Further interpretation into the reasons behind this is required including adjusting for the case mix. Hopefully 2012 data will show improvements that we hoped to achieve by combining the MDMs and including a thoracic surgeon.

OP2.044
Standards of lung cancer management in a South East English trust
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Background: As lung cancer treatment advances, the importance of multidisciplinary management and audit becomes ever more important. In the UK this is carried out by the National Lung Cancer audit using the LUCADA (Lung Cancer DAta) database and aims to record, and through risk adjustment, to start to explain the variation in results. Here we present the data pertaining to the East Sussex Healthcare NHS Trust for 2011. The Trust is made up of two separate hospitals, Eastbourne District General Hospital (EDGH) and Conquest Hospital Hastings (CQ). 2011 has been a year of change – till May the two sites held separate lung cancer multidisciplinary meetings (MDMs), neither of which were attended by a thoracic surgeon. Following data collected in 2010 the meetings were combined by videoconferencing and surgical input was also provided in this manner. This was because active treatment rates at EDGH and surgical resection rates at CQ were not meeting national standards.
Methodology: The data collected for LUCADA at both hospitals was analysed for four quality indicators:
- % histological confirmation rate (UK national average is 76%)
- % having active treatment (average 58%)
- % undergoing surgical resection – all cases excluding mesothelioma and small cell lung cancer (average 13.7%)
- % of small cell cancer (SCLC) patients receiving chemotherapy (average 65%)
Results: 131 cases presented at CQ and 135 at EDGH. The median age at presentation was 70 at CQ and 73 at EDGH. 67.9% had a performance status between 0 and 2 at CQ, compared to 74.8% at EDGH. Histology was obtained in 81.7% of cases at CQ and 81.5% at EDGH. Active treatment was given in 59.5% at CQ and 47.4% at EDGH – the Trust average was 53.4%, bringing us below the national average. Resection rate was 18.3% at CQ and 8.2% at EDGH. Though there was a big difference between the two sites, the Trust average (13.2%) is more or less in line with national average. The percentage of SCLC patients receiving chemotherapy was 56.3% at CQ and 69.2% at EDGH. The Trust average of 62.1% was below national average.
Conclusions: Unfortunately although acquisition of histology is good we are still lacking in terms of treatment standards. Further interpretation into the reasons behind this is required including adjusting for the case mix. Hopefully 2012 data will show improvements that we hoped to achieve by combining the MDMs and including a thoracic surgeon.

OP2.045
Benefits obtained following a 12 week Pulmonary Rehabilitation programme
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Introduction: Pulmonary Rehabilitation (PR) is a recommended standard of care in Chronic Obstructive Pulmonary Disease (COPD), but to date, there is no consensus of opinion regarding the optimal duration of the interventions.
Method: 30 subjects were recruited and a baseline assessment was carried, including the 6 Minute Walk test, blood investigations, St George’s Respiratory Questionnaire (SGRQ) and Hospital Anxiety and Depression scale (HADs). PR was delivered for 12 weeks with reviews done at 4 weekly intervals.
Results: Improvements in the walk test were reported after 12 weeks by 39% (p<0.01) of patients with an MRC score of 2 reported significant changes in the impact score (p=0.011) after 8 weeks and further improvement (p=0.004) at 12 weeks. Participants with an MRC of 3 reported significant changes after 12 weeks in the symptom scoring (p<0.004) (p Discussion: COPD is a condition which is thought to be irreversible. With PR coming to the forefront, there are ways and means to help in the management of this respiratory condition. This study shows that a PR increases the distance covered in 6 minutes and improves health related quality of life, anxiety and depression scores. Most of this change was noticeable by the 8th week and in subjects with an MRC of 2 and 3. One must though mention that the sample size was small and further research is needed.
Conclusion: In the present study it has been shown that a PR can help in Amelioration of exercise tolerance and Improvement in health related quality of life measures.

OP2.046 Perception of indoor and outdoor air quality in Maltese primary school children
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Introduction: Over the last few years indoor and outdoor air quality has been increasingly recognized as being one of the most important risk factors for the development of asthma in young children. During the first few years of life the lungs are still rapidly developing and are therefore more susceptible to damage from airborne pollutants.

Aim: The aim of this study is to determine whether there is a correlation between the children’s perception of indoor and outdoor air quality and the prevalence of childhood allergic conditions.

Methods: 191 pupils within the 9 to 11 age group attending five primary state schools in Malta were given a standardized questionnaire asking for wheezing, nocturnal cough, rhinitis and atopic eczema in the last 12 months. The pupils’ perception of school indoor and outdoor air quality based on a scale of 1 (poor) to 6 (very good) was also assessed. The classroom temperatures were logged continuously for 5 school days. Statistical analysis was carried so as to determine the correlation and significance of wheezing, nocturnal cough, rhinitis, eczema and indoor temperature with the perception of air quality.

Results: 17% of all the pupils reported wheezing in the past 12 months and the male to female distribution was equal with 48.17% and 51.83% respectively while 26.7% of the children reported nocturnal cough. Children attending school in Pembroke assigned the highest points to both indoor and outdoor air quality while those attending school in the Qormi area had the lowest points. The mean indoor temperature was 18.31 °C. There was a negative correlation between the perception of indoor air quality, wheezing and nocturnal cough (r = 0.24 p = 0.006; r = 0.31 p = 0.0003 respectively ). The perception of outdoor air quality did not correlate significantly with neither wheezing nor nocturnal cough (r = 0.31 p = 0.14; r = 0.15 p = 0.021). There was no significant relationship between the perception of indoor and outdoor air quality and rhinitis and atopic eczema. There was a positive correlation between indoor air temperature and the perception of indoor air quality (r = 0.34 p = 0.0004).

Conclusion: The study shows that the perception of indoor air quality is significantly related to the prevalence of wheezing, nocturnal cough and indoor air temperature while outdoor air quality correlates only with wheezing. This shows that several environmental factors must influence lower airway atopic disease but not nasal or skin allergic conditions.

OP2.047 Management of acute asthma in adults in the Emergency Department – Are we following international guidelines?

Introduction: International guidelines for the management of acute asthma are widely available. Despite this, various studies have identified gaps between clinical management and proposed guidelines. Given that the local prevalence of asthma is 6%, asthmatic patients contribute substantially to the number of Emergency Department (ED) visits. An asthma exacerbation can be defined as clinical worsening of disease or an asymptomatic decline in peak flows (Usro DL, 2010). Determining the severity of the exacerbation and evaluating treatment response are essential to provide optimal care to such patients.

Aim: To assess current local trends in acute asthma management in adults in the ED and compare them to proposed international guidelines.

Methodology: We conducted a retrospective audit during which the emergency department clinical notes of all adults who presented with acute asthma to the emergency department in the first 43 weeks of 2010 were reviewed.

Results: The cohort consisted of 244 subjects with a mean age of 44 years (14 to 95 years), the majority of whom were females (67.2%). The admission rate was 51.6%. Clinical parameters documented included respiratory rate, heart rate and the ability to complete sentences in 62.3%, 83.6% and 39.8% respectively. Pulse oximetry was measured in 84.8%, a CXR taken in 84%, an arterial blood gas in 67.2% and a white cell count in 67.6%. Whilst at the ED, 80.3% were given nebulised bronchodilators, 44.7% oxygen, 42.2% intravenous corticosteroids, 11.5% antibiotics and 3.7% intravenous magnesium. When comparing treatment prescribed to admitted and discharged patients, there was no significant difference for antibiotics (p = 0.85), nor for systemic steroids (p = 0.67). Pulse oximetry and PEFR monitoring was requested in 42.9% and 51.7% of admitted patients. Discharged patients were referred to their general practitioner in 22% of cases and to a respiratory specialist in 27.1% of cases.

Conclusion: Optimization and standardization of management of acute asthma in adults is necessary to improve patient management and hence compare with proposed international guidelines. With the implementation of a national guideline, we hope to improve outcomes of such patients, while reducing health care costs together with the hospital workload.

OP2.048 Screening prior to commencement of anti-tumour necrosis factor-alpha treatment in the Maltese population
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Introduction: Currently, immunomodulator therapy plays a major role in the management of inflammatory bowel disease. There are concerns regarding Immunomodulator therapy and the possibility of acquiring opportunistic infections. The European Crohn’s and Colitis Organisation issued guidelines in 2009 regarding screening prior to commencement of immunomodulator therapy.

Aim: The aim of the study was to assess if our local Screening practice in Malta adheres to the European Crohn’s and Colitis Organisation, 2009 Guidelines.

Method: Patients were identified by obtaining access to the pharmacy database (January 2010 till May 2011). Results regarding Hepatitis B Virus status, Varicella Zoster Virus status, QuantiFERON / Mantoux, Chest x-ray and Lymphocyt/e Neutrophil count were recorded. HIV status was not obtained due to failure of record of unique identification number. The results were compared to a previous audit performed the year before.

Results: A total of 37 patients were started on anti-TNF treatment, 16 of whom were males and 21 were females. Age range was 7years to 62years. Hepatitis B Virus status, Varicella Zoster Virus status, QuantiFERON / Mantoux, Chest x-ray and Lymphocyt/e Neutrophil count where evaluated. Results were compared to a previous audit which was performed the year before. 97.3% were HIV screened, 91.6% VZV screened, 89.2% were screened for TB using either quantiFERON test or the mantoux test, 78.4% had a chest X-ray and 100% had a CBC/lymphocyte count. An audit the year before, assessing...
Our data demonstrates there is no significant difference in the use of immunomodulator therapy (IM) and/or surgery in their CD management.

**Method:** Patients with a histological diagnosis of CD were recruited and classified as non-smokers, current smokers or ex-smokers according to their smoking status. Clinical data was collected from case notes.

**Results:** Of the 83 patients (42 female) recruited, their current mean age was 39 years (7-73 years). They had a CD duration post-diagnosis of 8.98 years (12 months - 32 years). 80.7% of patients were having IM therapy. The treatment prescribed was: azathioprine (26 patients), methotrexate (8 patients), Infliximab (15 patients) and dual IM therapy consisting of azathioprine and Infliximab (18 patients). 24.1% (20) of patients required CD-related surgery. 19 patients (22.9%) were smokers. 6 patients were ex-smokers and 58 patients were non-smokers. The table below depicts the characteristics of these patients in terms of surgery and need for IM therapy. Smokers: Ex-smokers: Non-smokers: Dual IM + surgery 2 3 2 Dual IM 4 1 10 Single IM + surgery 1 1 6 Single IM 9 0 18 Surgery 1 0 3 none 1 2 18 total 19 6 58 Statistical analysis demonstrated that smokers required IM therapy more frequently than non-smokers (p < 0.04). The introduction of biologic therapy for the treatment of inflammatory autoimmune disorders including various rheumatological conditions such as rheumatoid arthritis and spondyloarthropathies. Their potent suppression of the immune system has raised concern about their potential to allow the development of malignancies. This presentation will address the relationship between biological agents and the risk of malignancies, both new ones as well as recurrence of previous tumours.

**Conclusion:** Our data demonstrates there is no association between the presence of extra-intestinal manifestations of Crohn’s disease and the use of IM therapy.

**OP2.051 Biological agents and malignancy**

**B. Coleiro**

Biological agents are increasingly being used in the treatment of inflammatory autoimmune disorders including various rheumatological conditions such as rheumatoid arthritis and spondyloarthropathies. Their potent suppression of the immune system has raised concern about their potential to allow the development of malignancies. This presentation will address the relationship between biological agents and the risk of malignancies, both new ones as well as recurrence of previous tumours.

**OP2.052 Biological therapy and infections**

**P. Ellul**

The introduction of biologic therapy for the treatment of IBD has substantially changed its management. The safety concerns associated with biologic therapies include the increased risk of infection, autoimmunity, development of lymphoma and demyelinating disease, and the risk of worsening heart failure. Furthermore patients who are being administered biological treatment are at an increased risk of opportunistic infections. There are several strategies for minimizing the risks associated with biologic therapies. Pre-treatment strategies include taking a proper history from the patient, physical examination of the patient, screening and ruling out sepsis. Patients should always be screened for latent tuberculosis, exposure/immunity to varicella and hepatitis B.
status. Vaccination of patients against vaccine preventable diseases is highly recommended. During treatment, patients should be closely monitored and any symptoms that develop should be dealt with early. Education of physicians and patients is also important to allow the early detection of any adverse events. Thus, screening and vaccination are important factors in preventing sepsis related to the use of biological therapy.

OP2.053
Biological agents – management in the perioperative period

M. Frendo

Patients with rheumatoid arthritis, an inflammatory arthritis that can destroy joint structures, are most often treated with multiple disease-modifying antirheumatic medications to control disease activity. These medications have significant toxicities, most notably immunosuppression leading to increased risk of infection. Furthermore, certain disease-modifying antirheumatic medications have been reported to affect the healing process. Patients with rheumatoid arthritis may undergo many surgical procedures, often orthopedic interventions, including total joint arthroplasty, reconstructive surgeries or cervical stabilization, over the course of their lifetime. Managing the use of antirheumatic medications and their toxicities in the perioperative period is a challenging question, especially with regard to the biologic therapies such as antitumor necrosis factor alpha agents.

OP2.054
The safety of biological drugs in pregnancy

V. Fenech

There has been a major development of immunosuppressive treatment of rheumatological and gastrointestinal conditions over the past decades, leading to an increasing use of biological agents. But how safe are these drugs in pregnancy? Most of these diseases tend to affect women of child-bearing age, therefore there are issues concerning the safety of biological agents in pregnancy, mainly the risk of birth defects, miscarriages and pre-term delivery. These issues are brought up in women on treatment who are planning a pregnancy or in unforeseen pregnancies occurring while on treatment. Active underlying disease in itself is a risk factor for adverse outcome of pregnancy, so a balance has to be achieved with optimal disease control and medication which is safe in pregnancy. This should be discussed with the individual patients, ideally prior to conception. Biological agents are classified as Category B by the Food and Drug Administration (FDA). This means they are probably safe as no teratogenic effects were observed in animal studies, but adequate data in humans is still lacking. Most data comes from animal studies, case reports and observational studies. Data available in women on infliximab during pregnancy show no increase in miscarriages or foetal complications, suggesting that it is a safe medication to use in the preconception period and during at least the first 2 trimesters of pregnancy. This may be because infliximab is transferred to the foetus via the placenta in the second and third trimesters. However, the long-term effects of anti-TNF therapy in utero are still unknown. Available data is still too limited to claim safety of these drugs in pregnancy. There are conflicting views on their use, with some experts suggesting avoiding these drugs at the time of conception while others suggest discussing the benefit-risk ratio with the patient, especially if she has active disease, and stopping treatment after the second trimester and avoid dose escalation. Further data is needed in order to assess better the benefit-risk ratio of using biological agents in pregnancy.

OP2.055
Efficacy of biologics in inflammatory bowel disease

J. Clark

Biologic therapies have revolutionized the treatment and lives of patients with Inflammatory Bowel Disease (IBD) affording new options and renewed hope to clinicians and patients alike. Several landmark studies as well as a recent meta-analysis of 27 controlled trials have consistently demonstrated efficacy of biologics in the treatment of Inflammatory Bowel Disease (IBD) across a number of therapeutic endpoints including clinical response, clinical remission, steroid-free remission, reduction in steroid dose and in mucosal healing. In addition, the therapeutic and sustained efficacy of biologics in IBD has been shown to have a positive impact on the quality of life and work output of the patient as well as significantly reduced utilization of health care resources including hospitalization rates and surgery.

OP2.056
Biologic use in paediatric and adolescent patients

T.M. Attard

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The last decade has seen an explosion in the use of biologic agents in both pediatric and adolescent medicine especially gastroenterology. Broadening indications and increased confidence in their use have lowered the threshold for the introduction of these powerful agents but have also brought to the fore the myriad, some potentially serious adverse reactions including malignancy. This review will discuss the current rationale and practical aspects of use of biologics in children through young adults.

OP2.057
Newer biologic therapies

C. Mercieca

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The introduction of biological therapies has been a major breakthrough for patients with inflammatory arthritis. The heterogeneous clinical manifestation and disease severity have necessitated additional treatment options. Since the availability of the first TNF inhibitors more than 10 years ago, there is now a range of different biological therapies. Apart from targeting various inflammatory pathways, they also differ in their risk for, and expression of, adverse effects. These include the newer TNF inhibitors certolizumab (a pegylated Fab’ fragment of a humanized anti-TNF mAb) and golimumab (a fully human mAb) as well as non-TNF inhibitors abatacept (T-cell co-stimulation inhibitor), rituximab (B-cell-depleting mAb), anakinra (IL-1 receptor blocker) and tocilizumab (IL-6 receptor inhibitor). Most agree that the first biological option would be a TNF inhibitor in combination with methotrexate. However, primary and secondary failure to TNF inhibitors poses a serious concern. In conditions like in spondyloarthritis TNF inhibitors are the only option. In rheumatoid arthritis (RA) other biologic therapies are available. While switching to another TNF inhibitor is not an uncommon practice there is limited clinical evidence to support this approach. Switching to a different class of agent may prove a more effective option. All the non-TNF inhibitor therapies have demonstrated clinical efficacy in reducing disease activity in RA patients in large randomised placebo-controlled trials both when used in biologic naïve patients and following TNF inhibitor failure. Nonetheless, one has to recognise the lack of head-to-head trials. Tocilizumab might be particularly appropriate for patients with a high inflammatory response and those who are intolerant to methotrexate, given the good response in RA patients.

The newer biologic agents provide alternative treatments particularly in case of TNF inhibitors failure. They have enabled a greater proportion of patients to achieve adequate disease control and remission.
OP2.058
Utilisation and cost effectiveness of biological agents: the Gastroenterology and Rheumatology snapshot
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The development and introduction of biological agents to the armamentarium of drugs available in the gastroenterology and rheumatology fields has revolutionised the treatment paradigms of conditions such as rheumatoid arthritis, seronegative arthritis, ulcerative colitis and cromh’s disease. In both gastroenterology and rheumatology, the administration of biological agents have been shown to decisively improve and maintain the quality of life of patients who very often are young, working and sometimes breadwinners for a young dynamic family. A discussion of local practice and utilisation of biological agents at Mater Dei Hospital in comparison to international guidelines and evidence based practice in both specialties will be provided. The audience will be presented with examples from literature review documenting the cost effectiveness of biological agents in both specialties. This will be supported where necessary by evidence from the local patient population.

OP3.059
Paediatric inflammatory bowel disease in the Maltese Islands - a cross sectional analysis
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Background/aims: The incidence of inflammatory bowel disease (IBD) is on the rise in European countries and in the western world. Thus far, the pattern of disease in the Maltese paediatric population is unknown. Herein we describe the incidence, demographic and clinical characteristics of IBD in our population, under 19 years between 2009 and 2012.
Methods: A clinical database established in 2009 to track diagnosed paediatric patients with IBD followed by the Paediatric gastroenterology Service at our tertiary hospital was accessed and demographic, clinical including endoscopic-histologic and therapeutic regime data were synthesized for further analysis. The date of diagnosis was defined as the date of the first histopathology report revealing signs of IBD. Statistical inferences were made through Graphpad Instat®.
Results: A total of 41 patients were included in our study; this computes to an overall prevalence of 43 cases of IBD per 100,000, (corresponding paediatric population is estimated at 94,000). The disease distribution was Crohn’s disease (CD): 53%, ulcerative colitis (UC): 20%, and indeterminate colitis (IC) 27%. There was equal gender distribution in CD and IC whereas most (6/8) cases of UC were in males. Only one patient is dependent on low dose oral steroids for maintenance of disease remission; 29% of our patients are maintained in remission with first line treatment (Mesalamine and Budesonide). 39% required escalation to an immunomodulator as a steroid-sparing strategy whereas 29% require biologic therapy (infliximab, adalimumab). Only one case of UC needed total colectomy being refractory to immunomodulatory therapy (aplastic anaemia) and resistant to biologic therapy.
Conclusions: In the Maltese paediatric population, the prevalence of CD is similar to that of the European and western countries however the prevalence of UC is notably lower and this correlates with the fact that the incidence rates of CD are amongst the lowest in Europe, similar to other southern European countries. Most of our patients are responsive and in disease remission on standard medical management, the need for surgical referral is exceptional, only one patient is steroid dependent for maintenance management. A step up approach to management seems applicable to our population.

OP3.060
Increased recognition of eosinophilic enteropathy in children with food intolerance
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Background/aims: Food allergies are increasingly implicated in chronic gastrointestinal disease in children. Eosinophilic enteropathy (EE), including Eosinophilic Esophagitis (EEs) is the most consistently reported histopathologic pattern upon endoscopy-colonoscopy in children with food intolerance. The characteristics of food intolerance in the Maltese pediatric population is unknown. Herein we describe our observations on eosinophilic enteropathy in Maltese children referred to our tertiary referral pediatric gastroenterology service over 3 years.
Methods: A clinical database including all endoscopic procedures done through the pediatric gastroenterology service at Mater Dei Hospital (MDH) from 2009 through 2012 was accessed. The demographic data and endoscopic findings were accrued and the corresponding histopathologic findings were included in a study database for analysis. Biopsy findings including eosinophilic infiltrate that was defined as greater than normal for the corresponding anatomic location were included in our analysis. Patients who were otherwise diagnosed with Inflammatory Bowel Disease (IBD) by cross reference with our IBD database were excluded from our analysis. Statistical analysis was with GraphPad Instat®.
Results: EEs and EEs were diagnosed in 14 patients and 13 patients respectively; 2 patients were diagnosed with both – representing 6% of all patients undergoing esophagogastroduodenoscopy and colonoscopy during the period studied. This represents a prevalence of only 0.9 cases diagnosed per 1,000 children. Eosinophilic colitis was more common in females (2.5:1); EEs was equally distributed. Patients diagnosed with EEn and EEs were significantly younger (mean/SE: 6.3/1.4 years, 6.7/1.3 years respectively) than the population undergoing endoscopy (10.6/0.37 years; p=0.01). Esophageal biopsies from our population with EEs were reported with >15(1), >20(10), >40 (2), and >100 (1) Eosinophils per high power field; patients with EEs undergoing standard therapy and serial biopsy tended (4/5) to demonstrate clinical and histopathologic improvement.
Conclusions: Eosinophilic Enteropathy is diagnosed in a significant proportion of endoscopic studies in patients referred to our tertiary subspecialist service. Eosinophilic gastrointestinal inflammatory disorders are only recently being recognized as causing chronic gastrointestinal symptoms in Maltese children and in most cases represent food intolerance and a delayed hypersensitivity reaction that responds to standard management including dietary modification.

OP3.061
The use of fecal calprotectin in children with chronic diarrhea
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Background: Fecal calprotectin (FC) is a leukocyte intracytoplasmic protein that is highly sensitive and is established as predictive of gastrointestinal inflammatory pathology, most notably colitis. It is an established tool in the investigation of diarrheal disorders and can be used to monitor disease activity in Inflammatory Bowel Disease, including in children. Its role in the diagnosis of eosinophilic enteropathy (EE) and colitis (EC) is poorly defined. Locally, eosinophilic - allergic enteropathies are increasingly referred to clinical practice and reliable and cost effective diagnostic modalities are increasingly relevant to clinical practice.
Methods: We retrospectively studied all patients seen by our division between 2009–2012, and studied by faecal calprotectin determination as well as endoscopy and/or colonoscopy with biopsy; patients with short duration symptoms were excluded as were patients known or subsequently diagnosed with inflammatory bowel disease. Patients with EE and, or EC were compared to non EE/EC patients also studied by FC and endoscopy/colonoscopy. Relevant observations were accrued in a dedicated database (Excel), data was analyzed by SPSS version 20 and GraphPad Instat.

Results: Between 2009 and 2012; 120 pediatric patients (<16years) were studied by FC determination 30 had gastrointestinal enteropathy with biopsy within 9 months of FC determination; of these 6 had tissue eosinophilia described as moderately or markedly increased and associated with variable inflammatory changes. The mean (SE) FC in EE/EC patients and in controls were 18mg/l and 6.8mg/l respectively; the difference in the mean value of EE/EC to the control was significant at p<0.0001. The sensitivity and specificity of FC in predicting EE / EC on biopsy in non-IBD patients is 85 and 100% respectively (p= 0.0002).

Discussion: Faecal calprotectin is a non-invasive, easily performed cost-effective diagnostic test that may be clinically useful in the investigation of chronic diarrhea in children. Elevation in FC in IBD tends to be higher than in Eosinophilic enteropathy however in the latter group, FC is significantly higher than normal individuals. This contradicts earlier observations by Komarus and coworkers. In addition, normal FC is significantly predictive of the absence of colitis in children.

OP3.062 Epithelial EPCAM expression does not correlate with intestinal absorptive function in the milder phenotype of tufting enteropathy
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Background: Tufting enteropathy (TE) is a rare neonatal congenital disease, presenting with intractable diarrhoea and intestinal failure, usually requiring life-long total parenteral nutrition (TPN) or small bowel transplantation. Exon and intron manipulations in the EPCAM gene have been identified as the responsible defects in patients with TE. Aneodotal observations in the published literature suggested a higher incidence rate and a milder phenotype of TE in the Maltese population. However, no studies to date had been carried out on this cohort.

Aim: To study the clinical phenotype of the Maltese TE cohort, correlating it with EPCAM expression.

Methods: Medical records of eight Maltese patients with TE, including two sets of siblings, at Mater Dei Hospital, Malta, were retrospectively reviewed for the period 1982 – 2010. The clinical phenotype, including their nutritional requirements, and the histological appearances were compared with clinical outcomes. Immunohistochemical staining for EPCAM, using mouse monoclonal anti-EPCAM antibody, was analysed in small and large bowel mucosa of six of these subjects, as the other two had endoscopies done elsewhere, and in age and gender-matched controls. Results: The incidence of TE in the Maltese islands was calculated to be 6.98/100,000 live births. The median follow-up period in this cohort was of 17 years. None had phenotypic malformations and none succumbed to the disease. The first set of biopsies had shown either partial or severe small bowel villous atrophy in all patients, with evidence of mild colitis occurring in seven of them. Histological improvement was displayed in seven patients after a median of 13 years, including five with complete mucosal resolution. Two patients have been successfully weaned off TPN, of whom one demonstrated normal mucosal architecture, while the other still has residual villous atrophy. Immunohistochemical staining for EPCAM was negative in all patients, including both TPN-free patients, and positive in controls.

Conclusion: The incidence of TE in the Maltese islands is seven times higher that reported, suggesting a founder effect due to a higher degree of consanguinity. A predominant milder phenotype is evidenced by the longest follow-up period, excellent survival rates, fewer nutritional support requirements and lack of phenotypic malformations. Histological appearance, despite evidence of reversibility, does not correlate with clinical outcome. The absence of EPCAM gene expression in our cohort of patients. Despite its absence, however, as demonstrated in both TPN-free patients, sufficient absorptive capacity can be achieved to sustain physiologic requirements.

OP3.063 Congenital nephrotic syndrome in Malta: a population-based study
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Introduction: Congenital nephrotic syndrome(CNS) is a manifestion by heavy proteinuria, hypoalbuminemia with secondary oedema, and hyperlipidemia presenting in the first three months of life. The clinical course is quite uniform, with early onset oedema (including a large and oedematous placenta), ascites with abdominal distension, poor feeding, failure to thrive, developmental delay, thromboembolic complications and frequent bacterial infections. With treatment, survivors develop end- stage kidney disease in early childhood. Successful renal transplantation supports the aggressive medical management of infants with CNS.

Aim: To describe the clinical course of 17 patients who were diagnosed with CNS inMalta over the period 1982-2011. The genotype was established, were possible, and an attempt was made to relate this to the severity of the disease.

Methods: Infants born between 1982 and 2011 presenting with nephrotic syndrome by three months of age were identified from a computerised admissions database at St. Luke’s Hospital/Mater Dei Hospital. Clinical case notes were examined to identify key events in the patient history, clinical course and investigations. Genetic studies were undertaken on surviving patients and their first-degree relatives.

Results: 17 patients presented with CNS during this time period. Some data was incomplete/ missing from early case notes. Where data was available, the mean (range) gestation age was 37 weeks (33-40,m), mean (range) placental weight was 46.6% (25-90%) of birth weight. 4 patients were small for gestational age while 9 were appropriate for gestational age. The mean (range) day at presentation was 19 (1-60), 14/17(82%) presented with oedema and 3/17 were noted to have a large placenta and proteinuria. Mean (range) cord blood TSH was 10.3mU/L and mean (range)cord blood FT4 was 8.5pmol/L (5.6-11.8). Laboratory investigations at presentation showed low total serum proteins, albumin, thyroxine and calcium, with high serum triglycerides. We describe the course, complications and outcome of the disease for individual patients. The same homozygous exon 27 R1160X mutation was detected in 15/17 patients. The mutation status was not determined in the other 4 cases but all parents were heterozygous for R1160X mutation.
**Conclusion:** Important clues for early diagnosis are present at birth: a large, oedematous placenta and abnormal cord blood thyroid screen. The clinical course and outcome of CNS in such more severe manifestations is identical to that described in the literature. There exists a discordant genotype-phenotype characterized by variable clinical severity, apparently influenced by gender.

**OP3.064**

Can stratification of risk factors for mononucleosis predict post-transplant lymphoproliferative disease in paediatric renal transplant recipients?

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Post-transplant lymphoproliferative disease (PTLD) is a severe, life-threatening complication after stem cell or solid-organ transplantation and virtually always associated with the presence of Epstein–Barr virus (EBV) in the proliferating cells. The overall risk of PTLDs is related to the degree of immunosuppression, the type of allograft, the recipient’s age and pretransplantation EBV status. The mainstay of treatment is reduction in immunosuppression but the EBV viral load level which denotes increased risk has not been quantified.

**Aim:** Since To determine the EBV viral load, or change in viral load, associated with an increased risk of clinical symptoms and post-transplant lymphoproliferative disorder.

**Method:** 48 children transplanted between January 2009 and December 2010 were included retrospectively. Clinical findings and EBV viral loads (VL; DNA PCR in copies/ml whole blood, lower assay limit of detection of 100) at each clinic visit/admission were noted from the case notes. The study cohort was compared with post-renal transplant recipients with histologically-confirmed PTLD in the same centre over the previous 10 years.

**Results:** 48 patients received a renal transplant between January 2009 and December 2010 and were followed for a minimum of 6 months. Thirty-one patients (64.6 %) were male. The median age (range) at transplantation was 8.8 (1.5-16.3) years, 15 (32.2%) were <5 years, 6 (12.5%) were <2 years. In a total of 1707 clinic visits/ admissions, 72 (4.2%) were symptomatic. The median VL in the 72 symptomatic visits was 381 compared to 72,402 at the 72 symptomatic visits (p=0.0004). Current VL was highly predictive of symptoms (p<0.0001); the risk of symptoms doubled in children whose VL was 10,000-100,000 as compared to 1000-10,000. A current VL of >100 in the previous two weeks further doubled the risk of symptoms. No children in this study cohort developed PTLD. Over the past 10 years, 7 paediatric renal transplant recipients have developed PTLD. The median age (range) at transplantation was 9.8 (2.5-17.8) years, 1 (14.3%) was <5 years, none were <2 years. All 7 children had prior mononucleosis-like symptoms and detectable viraemia, with a median (range) peak VL of 3,900,000 (17,795-19,000,000). Thus, not all experienced high VL levels.

**Conclusion:** We concluded that while higher VLs are associated with EBV symptoms, a VL >100,000 together with rise of 0.5 logs or more in the previous 2 weeks was the best predictor for risk of symptoms and may provide a useful indicator to reduce immunosuppression.

**OP3.065**

Maltese paediatricians’ experience of paediatric palliative care provision

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**Aim:** To explore Maltese paediatricians’ experience of barriers and facilitators to paediatric palliative care provision.

**Introduction:** Paediatricians providing paediatric palliative care to children and families living with a life-limiting or life-threatening illness can encounter a variety of barriers during care provision. These barriers may impinge on the quality of palliative care that paediatricians provide resulting in personal distress. Facilitators to paediatric palliative care provision include all supportive measures that can help paediatricians improve their care provision, resulting in decreasing personal distress and greater satisfaction with the care provided.

**Methods:** Face-to-face, in-depth, semi-structured interviews were carried out with 11 paediatricians from a single institution between December 2011 and February 2012. The interviews were audio-recorded and then transcribed verbatim. Each transcribed interview was analysed using interpretative phenomenological analysis to identify emergent themes. The emergent themes from all the transcripts were then merged into super-ordinate themes to provide a collective interpretation of the all participants’ experience.

**Findings:** Three emergent themes were grouped into three superordinate themes: ‘struggling’, ‘emotional responses’ and ‘responding to needs’. Issues that were considered as barriers to paediatric palliative care provision included ‘uncertainty’, ‘conflicting loyalties’ and ‘organisational shortcomings’. These were interpreted by the participants as a source of disquiet and moral distress. ‘Emotional responses’ included both negative experiences which give rise to emotional distress and positive experiences resulting in the rewards of caregiving. Facilitators providing support to the participants and aiding them to improve their provision of palliative care were grouped under the theme ‘responding to needs’, which included ‘optimising efforts’ and ‘being knowledgeable’. For the participants these strategies meant less personal distress and increased satisfaction with the care they provided.

**Conclusion:** Maltese paediatricians experience many barriers to paediatric palliative care provision. They also display ambivalent emotional responses. Facilitators to care provision are perceived as clinical and personal assets. Institutional measures to help Maltese paediatricians to reduce their distress are recommended.

**OP3.066**

Thyroid Nodules, FNA cytology and thyroid cancer – a study

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**Introduction:** Thyroid nodules are very common and elucidating the nature of these thyroid nodules is an important task especially locally where a relatively high rate of thyroid cancer exists.

**Methodology:** Patients who had an ultrasound guided fine needle aspiration (FNA) of a thyroid nodule between January 2008 and June 2012 were retrospectively audited and their ultrasonographic and biochemical characteristics where analysed. For those patients who were operated nodule characteristics were correlated with thyroid histology.

**Results:** 397 thyroid aspirates performed on 376 patients were identified. Using The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC) 59.3% were classified as category II (benign), 15.4% as category IV (follicular) 4.8% as category V (suspicious for malignancy) and 8.4% as category VI (malignant). Statistical analysis of the subset of patients who were operated (n=97) yielded a positive predictive value.
for malignancy (for those who were classified according to TBSRTC categories V and VI) of 89.5%, a negative predictive value of 86.4%, sensitivity of 81.0% and specificity of 92.7%. The sensitivity improved to 95.2% when categories IV, V and VI were taken together and the specificity improved to 98.2% when category VI aspirates were taken alone. 42 patients who were operated had thyroid malignancy, of whom 41 had a papillary carcinoma and 1 patient had a medullary thyroid carcinoma. The mean age at presentation was 48.0 years (SD +/- 12.6yrs), the mean largest diameter of the papillary carcinomas was 1.8cm (SD +/- 6.6mm) and 48.8% had lymph node involvement. 58.5% of patients with malignant histology had more than 1 focus of malignancy in the thyroid. Analysing their ultrasound findings the mean size of thyroid nodule on ultrasound of these patients was 17.3mm (SD +/- 9.4mm), 53.7% had a hypoechoic nodule and 48.8% had microcalcifications. These findings differed from those who had a follicular adenoma on histology, where 13.0% had a hypoechoic nodule on ultrasound and 16.1% had microcalcifications.

Conclusions: These findings further establish that FNA of thyroid nodules is a very important and helpful tool in the management of thyroid nodules. Important characteristics of thyroid cancer are shown including the high rate of multifocality seen in our patient cohort.

OP3.067 Use of thromboelastography and flowcytometry can lead to reduced platelet transfusions in patients with haematological malignancies

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Objectives: BCSH guidelines recommend a platelet threshold of 10 x 10^9/L in cases without sepsis for prophylactic platelet transfusions. At our institution we follow this guideline and also transfuse platelets when platelets are less than 20 x 10^9/L in patients with concurrent infection. We studied clinical use of measuring platelet counts using Flowcytometry (FC) and also global coagulation using Thromboelastography (TEG) in patients with haematological malignancies.

Methods: This was approved by our local ethics committee and all patients gave informed consent. Platelets were counted in the ‘traditional’ way using a Sysmex analyser (PC) and Flowcytometry (FC). Citrated, ‘native’ whole blood TEG was carried out to assess global haemostasis as well as clinical assessment for bleeding.

Results: No bleeding was observed in any of the subjects. A total of 31 patient samples were analysed. Only those with platelet counts less than 20 x 10^9/L were included in the analysis. The mean pre transfusion PCs were 9.8 x 10^9/L and 13 x 10^9/L with the automated counter and FC respectively with a difference of 3.7 (p=0.0011). An excellent correlation was observed between the two counts (r=0.89 P <0.001) for routine analyser and FC respectively. Using the immunological PC, 18.2% would not have qualified for transfusion since the PC was >20 x10^9/L. TEG showed shortened R time in 69.6% of cases with a mean normal R time of 6.7m. Only 9% had a low α angle signifying hypercoagulable. The MA was reduced in the majority but 30.4% had even normal MA despite PCs 9/L.

Mean APTT was reduced at 26.7s with a normal fibrinogen (mean 3.4) prior to transfusion.

Conclusion: Our results show that almost 20% of platelet transfusions would have been avoided if the flowcytometric platelet count is introduced in routine care. Several TEG parameters were normal or hypercoagulable. If only the MA is taken in consideration, ~30% of transfusions could have been avoided. A prospective study is warranted to verify these observations.

OP3.068 Excellent survival rates in elderly patients with diffuse large B cell lymphoma come at a price

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Cases of lymphoma are on the rise in view of our ageing population. Haematologists are often faced with the dilemma of how aggressive one should be when treating very elderly patients hereby defined as >70 years, since very often similar patients have multiple co-morbidities and relatively poor performance status. The aims of this retrospective review were to define the survival rate and patient characteristics of an unselected group of patients who were over 70 years old when diagnosed with Diffuse Large B-Cell Lymphoma (DLBCL) from January 2010 to August 2012. 12 patients were identified with a mean age of 77.3 years (range 72-88years). 75% were female with an average ECOG performance status of 2. The mean Stage of the DLBCL was 2 with elevated LDH at 305 and ESR of 40/mm/hr. The eGFR was as expected at similar ages with a mean of 77. All but 2 patients were treated with standard infusional chemotherapy (mainly Rituximab, Cyclophosphamide, Adriamycin, Vinčristine and prednisolone or dexamethasone (R-CHOP). In patients with pre-existing cardiac problems the Anthracycline was substituted with Etoposide (R-CEOP). The other 2 patients received radiotherapy only since one had a very poor performance status and the other only had minimal disease in one groin (Stage 1 A) and multiple co-morbidities including cardiac arrhythmias and severe ischaemic heart disease. 3 patients died with a mean survival of 335.3 days. 2 patients died in remission from their lymphoma of conditions unrelated to the DLBCL. Almost 70% are alive after a follow-up time of 630 days. The mean number of days of hospitalisation was 43.3 days with many requiring antibiotic and GCSF support. It is evident that very elderly patients still have an excellent survival rate despite being older. 80% are still alive after a median of 28 months.

OP3.069 When CML goes bad

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Background: Chronic Myeloid Leukaemia (CML) is a haematological condition involving the uncontrolled proliferation of mature myeloid cells, characterised by the presence of the BCR-ABL fusion gene located on the Philadelphia (Ph) chromosome. The incidence of CML is 1-2/100,000 with a median age at diagnosis of 50-60 years, with men being slightly more often affected than women. Left untreated, chronic phase CML progresses through an accelerated and finally a blastic phase after a median of 3 years. Tyrosine kinase inhibitors (TKI) such as imatinib, are the first line therapy used in CML attenuating the constitutively active BCR-ABL, and thus suppressing proliferation. Mutations in
the fusion gene are found to cause resistance to therapy, and have prompted the development of successful 2nd and 3rd generation TKIs.

**Case summary:** A 98 year old male presented with incidental rectal bleeding and a full blood count showing a white cell count of 136x10^9/L, Haemoglobin 11.3g/dl and Platelets 160x10^9/L. The blood film and bone marrow were compatible with chronic phase CML, confirmed on cytogenetic studies which showed the Ph chromosome. The patient was prescribed Imatinib, however the response was poor and the condition rapidly progressed to AML, megakaryoblastic subtype (AML-M7). The patient was treated for AML, but few months into treatment, whilst on nilotinib and awaiting bone marrow transplantation, he presented with gingival bleeding, numb chin syndrome and generalized skin lesions. Biopsy revealed infiltration of immature monocytoid cells, thus confirming relapsed AML-M7, in the gingiva and skin. His blood counts at this point were almost normal with a bone marrow showing no overt relapse.

**Conclusion:** The case described is distinctive in that the patient presented with CML at a relatively young age with rapid transformation to AML-M7 from time of diagnosis. The malignant clones identified within the BM were resistant to conventional TKIs and chemotherapeutic drugs. Gingival and skin involvement is common in de novo AML-M7, though unusual as sites of relapse, especially in cases of transformed CML. The unexpected progression of this patient’s disease and his unusual presentation at relapse demonstrate the prognostic heterogeneity of CML and outline the importance of awareness among health care professionals, including dental professionals and dermatologists, regarding clinical features and complications associated with haematological malignancies.

**OP3.070**

**HPV genotype prevalence in cervical specimens with abnormal cytology reports: a pilot study from Malta**

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Previous studies among women worldwide have demonstrated that infection with specific types of human papillomaviruses (HPV) is central to the pathogenesis of cervical neoplasia. There is however no data concerning the prevalence of specific HPV types among women in Malta. We investigated 285 consecutive women with previous abnormal cervical cytology in Mater Dei Hospital following initiation of HPV DNA testing in May 2011. Cases for HPV typing were included in the study with abnormal cytology reports:

**Method:** A retrospective study, over a two year period, was carried out in order to determine the incidence of the different types of thyroid malignancies reported at Mater Dei Hospital in keeping with that reported in the literature. Approximately 25% of papillary carcinoma reported were papillary microcarcinomas with no infiltration beyond the thyroid gland. Such tumours may not need further treatment and this data will be crucial in developing protocols to determine further therapy, in terms of surgical and/or radioactive iodine treatment.

**Conclusion:** The relative incidence of the different types of thyroid carcinomas reported at Mater Dei Hospital is increasing and this data will be crucial in developing protocols to determine further therapy, in terms of surgical and/or radioactive iodine treatment.

**OP3.072**

**Genotype - phenotype correlations in thyroid cancer complicating familial adenomatous polyposis**

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Familial Adenomatous Polyposis (FAP) is an autosomal dominant disorder characterized by a heightened risk of colorectal and extracolonic, including extraintestinal cancer. FAP is associated with mutations in the APC gene localized on chromosome 5q21. The APC gene is an integral part of the beta-catenin signaling pathway. Extracolonic surveillance is critical in the post-colectomy FAP patient but is, in general, poorly defined. APC mutation genotype-phenotype correlations may be useful in defining specific subpopulations at risk. Thyroid involvement, most often papillary thyroid carcinoma (PTC), has been reported in as much as 1-2% but may be higher in certain populations. Hence our aim was to define the specific pattern of thyroid involvement including genotype analysis, in young patients with FAP in order to better focus our surveillance strategies.

**Methods:** PubMed was searched using “Thyroid Gland”[Mesh] OR “Thyroid Neoplasms”[Mesh] AND “Adenomatous Polyposis Coli”[Mesh] NOT (“Case Reports”[Publication Type] OR “Comment”[Publication Type] OR “Editorial”[Publication Type]). Pertinent articles were selected by two of the authors,
accessed and histologic, genotypic; codon-mutation or (gene) segmental involvement were recorded. A database was compiled. The mutation frequency distribution was compared to the published registry of FAP patients APC mutations in the UMD database.

**Results:** We included 17 studies including the requisite data on 126 patients; most were female (F:M 15:1). Tumor histology was reported in 90 patients; PTC was the most common tumor histology (74 patients). Less frequent histology included cribriform (15 cases), follicular (4 cases) and adenoma (2 cases). Codon mutations were reported in 71 patients. Codon 1061 mutations were significantly over-represented with 21 reported patients (32.39%). The odds ratio of thyroid cancer with Δ 1061 was 8.97 (p<0.001). Thyroid cancer with mutations in codon 1061 presented at an age range of 20-42 and an average age of 26.77. The most common mutation codon 1309 (12.89% in our reference database) had only 4 reported patients with thyroid cancer.

**Conclusions:** Thyroid cancer associated with FAP is more common in females and is most often PTC. Individuals with FAP harboring mutations in codon 1061 are at significantly higher risk of thyroid cancer. Further studies need to address targeted thyroid cancer surveillance in this population are needed to better define new evidence based standards.

**OP3.073**

**Characteristics and outcomes in patients sustaining a total rupture of the achilles tendon with open operative management**

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**Aims:** Achilles tendon ruptures are relatively common. We studied all presentations of total rupture of the Achilles tendon for any common characteristics and for differences in outcome scores with different operative management.

**Methodology:** Fifty one patients presented to Accident and Emergency Department with a clinical diagnosis of Rupture of Achilles Tendon were recruited in this study, starting from November 2007 to December 2010, such that a minimum follow-up period in December 2011 was 12 months. Three patients were lost to follow up with the remaining 48 patients included in the study. Patients were treated with open operative repair and subsequent plaster immobilisation of the ankle for a total of 6 weeks. The physical characteristics of the patients were recorded and patients scored using the Achilles tendon Total Rupture Score (ATRS).

**Results:** Forty four patients (91%) were males. The mean age was 41 years (interquartile range, IQR=34-46). Twenty five patients (52%) injured the left Achilles tendon with thirty three patients (68%) being injured during a sports activity. Fourteen patients (29%) did not present on the day of injury with a mean delay in presentation of 4 days. No patients were treated with fluorquinolones or steroids in the 6 weeks prior to the injury. Mean delay for surgery was 1.75 days after injury with open repair the only procedure used. Kessler stitch was done in twenty four patients (50%), Krackow stitch in twenty two patients (46%) and Bunnell stitch in two patients (4%). PDS was used in 38 tendons (79%) whilst Prolene was used in the remaining ten tendons (21%). Scores where compared between the Prolene group and the PDS group. There was no significant difference in outcome scores after one year between the two groups. One patient had a post operative infection which required skin grafting.

**Conclusion:** Open repair of the Achilles tendon is safe with a low rate of post operative complications with no difference between smokers and non smokers. The use of absorbable sutures will result in similar scores when using non-absorbable sutures at one year post operation.

**OP3.074**

**The results of reconstruction of the anterior cruciate ligament using Bone-Patellar Tendon-Bone autograft**

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**Objective:** To measure clinical outcomes of ACL reconstruction using B-PT-B Autograft and identify factors that contribute to this outcome.

**Method:** A group of 83 consecutive patients undergoing B-PT-B ACL reconstruction were retrospectively collected from 2005 to 2008. Exclusion criteria were revision grafts and patients who had undergone bilateral reconstructions before or after this time. A total of n=74 patients were included. These patients were scored using the IKDC subjective knee score. We also collected data from patients’ records for procedure and any complications. As a success metric we additionally gathered whether they had returned to the same level of sport. This data was then analysed to identify factors that could lead to a better or worse outcome.

**Results:** IKDC scores were excellent (IKDC 90-100) for 36.5%; very good (80-90) for 32.4%; good (70-80) for 20.3%; average (60-70) for 6%; below average (50-60) for 4.1%; and poor (<50) for 6.8%. For those who did sport (n=65), 60.0% returned to sport. The main cause for patients not returning to sport was due to fear of re-injury which was a significant 62.5% of this cohort. Excellent IKDC scores (90-100) seemed to be the only good indicator of patients returning to sport with a return rate of 88.6%. That said, very good IKDC scores (80-90) gave a return rate of 50%. Complications requiring further surgery or manipulation amounted to 16 (21.2%) and these included 2 patients (2.7%) who had re-rupture and needed to be revised. Anterior knee pain remains the biggest problem with 58.3% of patients complaining of residual anterior knee precluding patients to kneel down with ease.

**Conclusion:** B-PT-B ACL reconstruction remains a successful procedure giving good functional outcomes. In spite of that, return to sport is fraught with fear and anxiety. Success in this respect could be improved twofold. Firstly, patients could be counselled during the rehabilitation period to allay their anxiety. Secondly, keeping in mind that those who score very well on the IKDC score had the most returns to sport, enhancing functional outcomes helps to increase patients to return to sport.

**OP3.075**

**Complication and failure rates in partial femoral paediatric extendable tumour prostheses**

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**Background:** Extendable prostheses have made limb salvage a realistic alternative to amputation in paediatric oncology. Failure and complication rates are relatively high. Studies have looked at complication rates in massive tumour prostheses, but none specifically at extendable partial femoral replacements (EPFR) in paediatric oncological populations. Such studies are challenging due to low patient numbers, high mortality and revision rates. This study reviews survival of EPFR. Mode of failure, disease state, complication rates and outcomes are analysed.

**Methods:** Retrospective case series of 51 primary EPFR implanted between June 1994 and February 2006.

**Results:** 51 children (mean age 10.4 years at primary procedure) were followed to death (mean 2.5±2.2 years) or last clinical encounter (mean 8.6years, range 3-15.2), for 306
Implant years. Diagnosis was osteosarcoma in 39, Ewings Sarcoma in 10, chondrosarcoma and rhabdomyosarcoma in 1, with 40 distal, 8 proximal and 3 femoral shaft replacements. Mean length was 3cm and all were related to failure (p=0.035) and complication (p=0.004) rates. Disease status at presentation correlated with survival (p=0.003). 21 primary prostheses failed (mean 42.8months); 18 were revised, 2 underwent amputation. 1 was too unwell to have any procedure. At final followup, 16 patients were alive with their primary implant functioning at a mean 8.2 years. 6 of 18 revised primary prostheses, 4 had 1 further revision, 1 had 2 subsequent revisions, 1 had amputation, and 3 failed but were not re-revised. In total, 51 patients had 75 implants and there were 31 failed femoral prostheses. Commonest causes of failure were infection (29%), full extension (26%), and aseptic loosening (19%). 11 primary tibial component failures occurred (at mean 4 years), 5 through aseptic loosening. Patients suffered a mean 2.4 complications after EFPR. Younger patients had higher incidence of complications (p=0.046) & further operations (p=0.014). The commonest complication was fixed flexion deformity (45.1%) which resulted in a mean 2.7 extra procedures/patient. 2 infective complications were attributable to procedures performed for FFDP. 7 patients developed deep infection: 5 were treated successfully by stage 2 revision, 2 had amputation and a single-stage revision failed. 8 patients suffered no complications but of these, 6 died at a mean 13.6 months and 1 had non-specific shin pain. There was a significant relationship between pathological fracture at presentation and risk of infection (p=0.005) and amputation (p=0.002). 7 minor component revisions were performed, with 2 resulting complications.

Conclusion: This study provides specific insight into outcomes and complications with EFPR, not previously studied in isolation.

OP3.076
Does gentamicin prophylaxis risk acute kidney injury after total joint arthroplasty? D. Seguna, K. Sant, M. Abele, M. Borg

Background: Total joint arthroplasty is associated with an increased incidence of acute kidney injury (AKI). Prophylactic gentamicin is used to prevent Staphylococcal infection, but may aggravate AKI.

Aims: To determine factors contributing to post-operative AKI in Maltese patients undergoing elective total joint arthroplasty, with focus on the possible impact of gentamicin use at prophylactic doses.

Methods: All patients from a single firm undergoing elective total joint arthroplasty were studied over six months. Patients received gentamicin at induction as per protocol. Serum gentamicin levels were measured 24 hours post-operatively, creatinine levels were measured pre-operatively, at day one and two. AKI was staged using the RIFLE criteria. Significant rises in serum creatinine within 48 hours post-arthroplasty were also identified using Acute Kidney Injury Network criteria. Logistic regression models were developed to identify risk factors for patients showing abnormal post-operative creatinine levels and, independently, a significant rise in creatinine. Multiple regression models were developed to identify factors associated with increased post-operative gentamicin levels. Results: Forty-one patients were studied. 37% were males (mean age 69), 85% underwent total knee replacement and 15% underwent total hip replacement. Twenty-four-hour gentamicin levels ranged from <0.3 to 0.81 mg/L. Using RIFLE criteria, 63.4% did not sustain AKI, 24.4% were at risk of renal failure, 9.8% sustained kidney injury and 2.4% suffered acute kidney failure (n=41). None required dialysis or admission to ITU, nor died within 6 months of operation. When logistic regression was performed utilising abnormal post-op creatinine as the dependant variable, a model fit (chi-square = 8.12) was obtained which only retained patient age and pre-operative serum creatinine as significantly associated factors. The same analysis using creatinine rise within 48 hours as the dependant variable yielded a model fit that was also significant (chi-square = 5.018; p=0.0251) and which retained only post-operative gentamicin level. Multiple regression models for post-operative gentamicin level only identified patient age as a significant variable (p=0.017) but showed borderline trends of association for gentamicin dose (p=0.0527) and stage of chronic kidney disease (p=0.0527).

Conclusion: No patients developed AKI secondary to prophylactic gentamicin. No association between gentamicin dose or blood level and abnormal post-operative creatinine level was present, where the only significant factor was patient age. Thus gentamicin prophylaxis is not a major cause of AKI. Nevertheless, gentamicin is associated with increased creatinine. Therefore careful dosing is critical and should take into account patient age and pre-operative kidney function.

OP3.077
Magnetic resonance imaging versus arthroscopy as diagnostic tools in pathology of the knee; a retrospective analysis S. Zammit, M. Portelli, S. Grech, R. Grech, I. Esposito

Magnetic resonance imaging (MRI) is regarded as the best imaging modality for non-invasive evaluation of intra-articular knee pathology. Nevertheless, arthroscopy of the knee remains the ‘gold standard’ tool against which other diagnostic modalities are compared. We conducted a retrospective analysis on 192 patients who underwent an elective knee arthroscopy at Mater Dei Hospital in Malta, between September 2008 and February 2009. A pre-operative MRI examination of the knee was performed on all these patients. The purpose of this study was to determine the accuracy of MRI of the knee with the findings at subsequent arthroscopy. Specifically we studied six main groups namely partial anterior cruciate ligament (ACL) tears, complete ACL tears, medial meniscal tears, lateral meniscal tears, miscellaneous pathology and normal findings. McNemar’s test was used for statistical analysis. Our findings demonstrated a statistically significant difference between the results at MRI and arthroscopy in the evaluation of medial meniscal tears and complete ACL tears. Out of 192 patients, MRI failed to reveal 10 complete ACL tears and 7 medial meniscal tears which were subsequently diagnosed by arthroscopy. Furthermore, MRI falsely demonstrated 29 medial meniscal tears. Variable factors influence the surgeon’s decision in performing arthroscopy of the knee. Our findings suggest that although MRI of the knee remains a useful and important diagnostic tool, arthroscopic examination remains the definitive gold standard.

OP3.078
Road traffic accident associated spinal injuries in the Maltese Islands: a 10 year review with clinical recommendations F. Zammit Maempel, J. Maempel

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Introduction: Epidemiological studies describe road traffic accident (RTA) as the second commonest cause of traumatic vertebral fracture. Studies of RTA-associated spinal injury are rare. 15,000 RTA are reported annually in Malta & Gozo.

Malta Medical Journal Volume 24 Supplement November 2012
**Objectives:** To determine demographics, pattern and mechanism of injury, neurological outcome and associated injuries in patients with spinal injury after RTA. Methods: Retrospective review of cases/imaging of all 467 patients admitted to SLH/MDH with spine fracture between 03/2000 and 11/2009.

**Results:** 71 patients had vertebral fractures after RTA. 18 were pedestrians, 99 car-occupants and 10 cyclists (3 mechanism unknown). Annual numbers of RTAs and RTA casualties have decreased. Number of spinal fractures from RTA is markedly increasing. 44 males (mean age 36.7 years) were younger than 26 females (45.6 years; p = 0.05). Males were more likely to be car-occupants/cyclists (Odds Ratio (OR) = 1.9, p = 0.015). Patients with cervical-spine injury were more likely to have neurological deficit than those with Thoracic/Lumbar-spine injury (OR = 4, p = 0.046). Patients with thoracic-spine injury were more likely to have lower limb fracture (OR = 1.4, p = 0.015) and patients with lumbar-spine injury more likely to have head injury (OR = 2.91, p = 0.045). 45.7% of patients had head injury. 31.4% had multi-level spinal fractures (MLSF). These were more likely to have associated neurological deficit (OR = 4, p = 0.041) and upper limb fractures (OR = 5.6, p = 0.023). Discussion: Assessment of patients in A&E after RTA can be challenging, particularly if obtunded, multiply injured or agitated. This study highlights the importance of following ATLS protocol to prevent missed injuries. Concentrating exclusively on cervical spine clearance can result in missed spinal injuries. 1/3 patients with a vertebral fracture after RTA have MLSF. MLSF should alert the assessor to significant injury force and prompt careful assessment for neurological deficit or other injuries (particularly upper limb fractures). Based on these results, we suggest performing whole spine CT-scan in patients with one identified spinal fracture and neurological deficit or upper limb fracture. Other newly described relationships (eg., thoracic-spine/lower-limb fractures; lumbar-spine fracture/head injuries) should be borne in mind by assessing doctors and are especially useful in unresponsive patients. Mechanism of injury should prompt vigilance for related injuries (eg. car-occupants/thoracic extra-spinal trauma) but is not a substitute for thorough clinical examination. This study identifies interesting previously undescribed relationships and precautions that assessing doctors can employ to recognize associated injuries. The increasing number of RTA vertebral fractures despite falling numbers of RTA casualties is worrying and occurring despite improved vehicle design and perceived improvement in road-safety. Is local legislation effective? Further studies reviewing markers of high-energy RTA are called for.

**OP3.080**

**CV risk and prevention - how low to go in 2013?**

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Cardiovascular disease is the cause of around 17 million deaths a year globally; the developing countries and emerging economies account for about 80% of these deaths. The important INTERHEART study based on some 52 countries confirmed the causative role of established CV risk factors in all populations – notably smoking, hypertension, diabetes and hyperlipidaemia. We also acknowledge the role played by family history, unhealthy diet and physical inactivity. The concept of ‘lower is better’ could be justified for certain risk factors...may be ‘lower (but not too low)...’ is more prudent. The role of pharmacotherapy is critical to achieve such ambitious targets and modern combination therapies or ‘mini-polypropils’ are emerging as effective, tolerable and affordable (eg CCB/ACEI or ACE/diuretic or even a novel ACEI/statin/β-blocker/Aspirin combination). We still have a way to go to address the inequalities in cardiovascular health. The key issues will remain enhanced health education, preventative ...and targeted therapeutic strategies. The interplay of responsibilities of health professionals, the individuals and legislative health authorities – merits debate and discussion.

**OP3.079**

**Aseptic loosening in extendable partial bone prostheses and the effect of the hydroxyapatite coated collar**

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**Background:** Extendable prostheses permit limb salvage in paediatric patients with bone tumours adjacent to the physis. Extension offsets limb length discrepancy as the child grows. Aseptic loosening (AL) is a recognised complication. The implant stem must fit the narrow paediatric medullary canal and remain fixed while withstanding growth and increasing physical demands. Novel designs incorporate a hydroxyapatite coated collar (HACC) that manufacturers claim improves bone ongrowth and stability, providing even stress distribution in stem and shoulder regions and providing a bone-implant interface. Revision surgery is difficult with potential serious complications. For the pilot study, we assessed the relationship between bony ongrowth and AL. The study was conducted at the Department of Biomedical Engineering, University College London (UCL). We performed retrospective review of casenotes/imaging of all 467 patients admitted to SLH/MDH with spine fracture between 03/2000 and 11/2009.

**Results:** 21 (41.2%) primary femoral implants failed at mean 42.8 months, 5 through AL. 1 secondary implant was revised for AL. 2 implants displayed evidence of progressive AL but had not failed at last followup. 5 of 11 tibial component revisions in distal femoral replacement were for AL. Major complication occurred after revision surgery for AL: deep infection requiring 2-stage revision. Bony collar ongrowth was significantly higher in all 4 quadrants (anterior, posterior, medial and lateral) in the well-fixed as opposed to loose group, demonstrating a strong negative relationship in each quadrant between bony ongrowth and AL (p ≤ 0.001) despite the presence of patient growth as shown by increased bone:implant width ratio. In both groups, collar ongrowth was greatest in the posterior quadrant. **Conclusions:** AL has been confirmed as a common mode of failure in massive extendable endoprostheses. Revision surgery is difficult with potential serious complications. For the first time, a significant relationship between a well fixed implant stem and bony ongrowth onto HACC in the context of massive tumour implants has been demonstrated. This newly-proven relationship may result in longer-term implant survival and a reduced need for revision surgery. It is hoped that this study will provide the basis for further study of this relationship.
OP3.081
An audit of the management of acute chest pain at Mater Dei Hospital
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Aim: To compare two cohorts of patients admitted with chest pain in August 2008 and February 2010 and to assess whether the use of the chest pain guidelines published in 2009 made any difference in the management of these patients.

Method: The case notes of two cohorts of patients admitted with chest pain were reviewed. The first cohort was recruited in the first two weeks of August 2008 prior to the introduction of the chest pain guideline, whilst the second in the last two weeks of February 2010. The inclusion criteria of both audits was admission to hospital with chest pain. In this audit, the number of hours from registration at Accident and Emergency, to the time of laboratory registration of cardiac markers, was used as a surrogate of the time interval from onset of chest pain to cardiac marker sampling. Any further investigations, length of stay, diagnosis and readmission rates were also noted. T-tests were used to compare these. A p-value of <0.05 was taken to represent a statistically significant result.

Results: The number of patients in 2008 cohort was 109 patients (61% males), whilst that in 2010 was 196 (68% males). The number of patients presenting with typical chest pain was 37 (34%) in 2008, and 115 (58%) in 2010. Data about length of stay in 2010 was compared with data from 2008. 35% of patients were discharged by the first day of admission in 2010 as opposed to 39% in 2008 (p=ns). Patients in 2010 had a greater length of stay (p=ns). The most common diagnosis at discharge was nonspecific chest pain 36% in 2008 and 32% in 2010. There were more urgent EST’s and inpatient angiograms performed in 2010.

Conclusion: The introduction of troponins has surely made a difference in the management of our patients. This has also signified an increase in length of hospital stay and in the type of investigations we book. A dedicated chest pain unit might help in following the Chest Pain Management Guidelines more closely as regards timing and numbers of blood samples taken.

OP3.082
Initial TAVI experience in Malta
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Historically, around one-third of patients referred for Aortic Valve Replacement (AVR) for severe symptomatic aortic stenosis are turned down for surgery due to significant comorbidities. Trans-catheter Aortic Valve Implantation (TAVI) has been developed as an alternative to AVR in high risk patients. Twenty-six TAVIs were performed in Malta since June 2010. 17 were performed from the trans-femoral route, and 5 from the trans-apical route and 4 from the ascending aortic route. There was a 100% 30-day survival. There was 1 non-cardiac death 6 months after TAVI. 5 of the 17 transfemoral patients had an access site complication needing vascular surgery closure. One patient had a mitral valve bacterial endocarditis post procedure. All surviving patients had a definite improvement in NYHA class.

OP3.083
Coronary surgery in the over 70’s
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Introduction: Life expectancy and the demand for a satisfying quality of life are increasing yearly. The treatment of cardiovascular disease plays a role in achieving this goal.

Patients and methods: A retrospective analysis of our coronary surgical patient population from the start of the local cardiac surgical service in Malta in April 1995 until January 2012 (n=3557). Data and outcomes of patients over 70 years old (group A, n=785) were compared with those of patients under the age of 70 (group B, n=2772).

Results: The mean intervention rate was 3.2 times higher in group A (1902 versus 467 per million per year in group B). Repeat operations were performed in 0.51% in group A and in 0.47% in group B (p=ns). The mean intervention rate was 3.25±2.23 days, in group A and 3.32±2.28 days, in group B. The mean EuroSCORE risk stratification score was 4.8 for group A and 1.9 for group B. Triple coronary artery bypass grafting was the commonest procedure (group A average 3.1 grafts per case, group B average 3.2). There were significantly fewer single (p<0.001) and quintuple (p<0.001) grafts, and significantly more double (p<0.001) grafts in group A. The mean Parsonnet risk stratification score was 12.8 for group A and 4.4 for group B. The overall mortality was 2.7% in group A and 0.8% in group B (p<0.0001). Freedom from any post-operative complication occurred in 57.7% in group A and in 75.6% in group B (p<0.0001). Cardiac complications (except for usor operative MI and atrial flutter) were significantly higher in group A (p<0.0001), as were major neurological (p<0.001), renal (p<0.0001) and respiratory (p<0.02) complications as well as minor wound (p=0.03) complications. The mean length of stay on intensive care was similar (1.19±1.84 days for group A and 1.13±1.48 days for group B, p=NS). The average EDU stay was longer in group A (1.43±2.70 vs 0.97±3.68 days, p=0.006) as was the average CSW stay (4.00±3.33 vs 3.25±2.23 days, p<0.0001).

Conclusion: The demand for cardiac surgical intervention in the elderly is high and likely to increase if we are to follow the trend in more developed nations. Although mortality and morbidity remain significantly higher, taken in the context of the overall clinical problem, cardiac surgery has much to offer to this select and growing population.

OP3.084
Ivabridine – a new option for heart failure patients
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Introduction: Ivabradine (Procoralan®) is a newly approved anti-ischaemic drug, recently included in new European Society of Cardiology (ESC) Heart Failure guidelines. After evidence showed it decreased the risk of Heart Failure Hospitalisation, left ventricular systolic function and quality of life.

Audit objection: One can assume that local Heart Failure Clinic patients are the worst in terms of symptom persistence and cardiac function. These are often followed up at closer intervals by specialist nurses and cardiologists, managed optimally according to international guidelines. Taking into consideration the aforementioned points, CHF Clinic attendees were used as the patient cohort for a retrospective audit, so as to identify those who would benefit from the addition of Ivabradine, as recommended by ESC guidelines.

Methodology and inclusion/exclusion criteria: The patient cohort consisted of 267 patients, 98 (36.70%) fulfilling the inclusion criterion of Ejection Fraction ≤ 35%, as recommended by ESC. Patients who had an ejection fraction of ≥35% were excluded. Data was inputted and analysed using Microsoft Excel®. Categorical data was summarised using percentages.

Results: The 98 patients were divided into different groups, according to ESC Recommendations regarding the requirements for starting Ivabradine. These include: i) Normal Sinus Rhythm (NSR), ii) Maximization of Medical Therapy (on maximum tolerated doses of ACEI/ARB, B-Blocker and...
MR Antagonist) and iii) Heart Rate >70 (or >75 according to the European Medicine Agency (EMA)). In summary, 64 [65.31%] patients were NSR whilst 34 [34.69%] weren’t. Out of the latter NSR patients, 29 [85.29%] were assigned to an ACEI/ARB, B-Blocker and MR-Antagonist. These also include those patients who had a specific contraindication or intolerance to one or more of the three specified drug classes, amounting to 17 cases, including 7 cases of Asthma [41.87%], 5 cases of wheezy Chronic Obstructive Pulmonary Disease (COPD) [29.41%], 3 cases of hypotension [17.65%], 1 case each of bradycardia and hyperkalaemia [5.88% and 5.88%]. Out of the 29 patients who were NSR and medically optimized with respect to all tolerated drug classes, 16 [55.17%] patients had optimized doses whilst 13 [44.83%] patients weren’t. Finally, out of the aforementioned 29 patients, 21 [72.41%] had a heart rate of >70 beats per minute (16 [55.17%] if according to EMA) and thus eligible for Ivabradine, amounting to 21.43% (16.33% EMA) of patients with an ejection fraction ≤35% and 7.87% (5.99% EMA) out of all the patient cohort. 8 [27.59%] patients had a heart rate of <70 (13 [44.83%] if according to EMA), and thus not eligible.

**OP3.085**

**Myocardial injury during coronary artery bypass surgery, patient outcome and 1 year follow-up**

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3Coronary artery bypass grafting (CABG) is a common procedure in the treatment of ischaemic heart disease. The nature of patients being referred for surgery is changing and surgeons are accepting higher risk patients. This change in practice prompted an investigation into the effectiveness of myocardial protection during cardiac surgery. A case controlled prospective study was designed to this effect. Consecutive patients undergoing CABG at Mater Dei Hospital, Malta were recruited over a one year period. The effectiveness of myocardial protection was studied by measuring cardiac troponin I release as biochemical marker of per operative myocardial cell death. Clinical outcomes in terms of morbidity and mortality were recorded in the immediate post-operative period and during the first year post surgery. The cohort was retrospectively subdivided into two groups, A and B according to the peak troponin level released in the first 24 hours. Those patients with a peak troponin level of less than 5.5 ng/ml in the first 24hrs post op were assigned to group A and those patients with a troponin level greater than 5.5 ng/ml in the first 24 hours assigned to group B. The criterion troponin level of 5.5 ng/ml was based on several studies having shown a troponin level greater than 5.5 ng/ml as being associated with a higher morbidity and mortality. This stratification allowed us to compare these two groups both in the immediate and mid-term (12 months) intervals. Chi-squared test was used to compare the two groups. 172 patients were recruited from August 2010 to July 2011. 81 patients (47%) had a post operative peak troponin level of ≤ 5.5 ng/ml (group A) and 91 patients (53%) had a peak troponin level >5.5 ng/ml (group B). Both groups were similar for age (62.9 vs 66 years) sex (83.9% vs 82.4% males), diabetes mellitus (54% vs 49%) and hypertension (79.5% vs 78%) and logistic Euroscore (2.16 vs 2.89). The incidence of post operative renal failure (2 vs 11 p=0.02) and the use of intra aortic balloon pump (IABP) (2 vs 9 p=0.047) were significantly higher in group B. One year all cause mortality was 1 death in group A and 5 in group B. There was no difference in the incidence of post operative atrial fibrillation (15 vs 20 p=0.57), wound infection (10 vs 12, p=0.87), melaena (4 vs 4) and cerebrovascular accident (1 vs 1). The incidence of postoperative moderately elevated troponin levels indicates suboptimal perioperative myocardial protection in patients undergoing CABG and this can be improved. 53% of the study patients had a cardiac troponin level ≤35% and 5% were to be associated with a higher in medium term mortality and this study shows this trend but did not reach statistical significance. With respect to morbidity, this study has shown a statistical significant increase in immediate postoperative acute renal failure and use of IABP in the higher troponin group.

**OP3.086**

**Circadian Endocrine Therapy in Adrenal Insufficiency - development of modified-release formulations of hydrocortisone to replicate the physiological diurnal cortisol rhythm**


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**Background:** The stress hormone cortisol has a distinct circadian rhythm being high on waking and low at sleep onset. Loss of this circadian rhythm is associated with increased mortality and morbidity despite steroid (hydrocortisone) replacement in patients with adrenal insufficiency, including hypopituitarism, Addison’s Disease and Congenital Adrenal Hyperplasia (CAH). The problem is current formulations of hydrocortisone cannot replicate the normal physiological diurnal cortisol rhythm. To address this problem we developed a modified release formulation of hydrocortisone, Chronocort®. Our pilot formulation created an overnight rise in cortisol (Debono JCEM 2009; 94:1548) and controlled morning androgens in patients with CAH (Verma Clinical Endocrinology 2010; 72:441); however cortisol peak was too early and not sustained so that androgens escaped control later on in the day. The challenge we now address is the development of a formulation of hydrocortisone which matches key physiological cortisol circadian rhythm parameters accurately.

**Methods:** We defined key parameters of the cortisol circadian rhythm in 28 normal volunteers who had cortisol levels measured every 20 minutes over 24 hours using liquid chromatography tandem mass spectrometry. We then screened 6 different Chronocort® formulations. We tested formulations in dexamethasone suppressed healthy volunteers (n=6 per group) and compared the results to key physiological parameters of the cortisol rhythm: Geometric mean for Cmax, AUC (0-24hr) and Tmax.

**Results:** In normal individuals the morning peak was 594nmol/l, AUC 4697nmol/l/hr, Peak time 07:52. Release of hydrocortisone was achieved with a delay of 2-3 hours. Bioavailability was dependent on the degree of modified release. A 30mg formulation of Chronocort® gave a Geomean (10th-90th percentile range) Cmax of 693nmol/l (593–789nmol/l), AUC of 4520nmol/l/hr (4021–5211nmol/l/hr), >90% bioavailability and Tmax post-dosing of 8h(6h-10h), within the range for physiological cortisol levels: Cmax 423–955nmol/l, AUC 3560–6075nmol/l/hr, Peak time 05:54-09:06.

**Conclusion:** By producing a modified release formulation of hydrocortisone which can recreate physiological cortisol rhythm, we created a uniquely suited tool for glucocorticoid replacement with the potential to improve quality of life and reduce morbidity in patients with cortisol deficiency. Support: This research was funded by Diurnal Limited.
We carried out a retrospective audit of 4980 patients with a post-dexamethasone serum cortisol level at Synacthen test for suspected adrenal insufficiency.

**Method:** We performed a cross-sectional retrospective study of diabetic patients diagnosed with active CN at our diabetes clinic between August 2003 and October 2009. We retrospectively collected data on diabetes clinic visits at baseline and at the time of audit (October 2009), as well as differences in mean baseline SAP across retinopathy and nephropathy categories. Mean (±SD) baseline SAP were compared across baseline Hba1c quartiles using Kruskal-Wallis ANOVA. Differences between Hba1c values and SAP values were compared using the Wilcoxon matched-pairs signed-rank test. Spearman's correlation was used to correlate baseline Hba1c and Hba1c change with baseline and SAP change after bisphosphonate therapy.

**Results:** 21 T2DM patients (11 males, ten females) and one T1DM male patient with suboptimal glycaemic control (mean (±SD) Hba1c 9.32 (1.32) % presented with active CN. Mean (±SD) duration of diabetes at diagnosis was 15.7 (8.6) years, CN mostly involved the midfoot (20 patients vs two [hindfoot CN] and one [forefoot CN]. There was no significant difference in mean VPT between affected and unaffected legs (p=0.428), 62% of these patients had retinopathy; another 62% had evidence of nephropathy. Baseline Hba1c, albuminuria or retinopathy did not affect baseline SAP levels. Diagnosis of CN was accompanied by a reduction in mean (± SD) Hba1c (9.32 [1.32] % at diagnosis vs 8.49 [1.50] % at audit; p=0.07). Administration of bisphosphonates was associated with a significant reduction in mean (± SD) SAP at 6 months (110.42 [69.57] U/L at baseline vs 76.31 [35.33] U/L at 6 months; p=0.001) and 1 year (110.42 [69.57] U/L at baseline vs 78.54 [22.60] U/L at 1 year; p=0.008). SAP change did not correlate with baseline Hba1c or change in glycaemic control. Most patients maintained their full mobility.

**Conclusion:** Bisphosphonate therapy in active CN is associated with a significant SAP reduction; the magnitude of the latter is not influenced by an improvement in glycaemic control.

**OP3.087**

**The clinical validity of measuring a 60 minute cortisol level at Synacthen test for suspected adrenal insufficiency**

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**Background and aims:** The Synacthen test is a well established first line test to assess primary adrenal insufficiency. Concerns regarding this test include a lack of consensus regarding cut-off values and sampling times for the measurement of serum cortisol that best determines adrenal reserve. We set out to investigate whether (i) a clinic screening 9am cortisol is a reliable indicator of adrenal insufficiency based on a subsequent Synacthen test result, and (ii) measuring a 60 minute cortisol after the administration of 250 mcg tetracosactrin improves the clinical validity of a Synacthen test based on currently internationally used cut-off values for this test.

**Method:** We carried out a retrospective audit of 49 patients (8 males, 41 females) who underwent a standard short Synacthen test between January 2008 and October 2011. Patients eligible for this investigation included those presenting with (i) random serum cortisol <300 nmol/L or (ii) a random serum cortisol of 300-550 nmol/L and a history suggestive of hypocortisolism. Spearman’s correlation and significance analysis were used to compare screening, 0 minute, 30 minute and 60 minute serum cortisol levels using a two sided p value.

**Results:** The mean (SD) ages of participating male and female patients were 40.32 (13.50) and 43.75 (19.57) years respectively. 0 minute serum cortisol concentrations at Synacthen test were higher than clinic screening values (308.13 [132.74] vs 198.92 [92.33] nmol/L). Screening and 0 minute cortisol concentrations were moderately correlated (Spearman’s rho = 0.438, p=0.003). 0 and 60 minute serum cortisol levels were highly correlated (Spearman’s rho = 0.852, p<0.001). A weaker, albeit moderate, correlation was observed between 0 minute and 30 minute cortisol levels (Spearman’s rho = 0.438, p=0.002) and between 0 and 60 minute cortisol concentrations (Spearman’s rho=0.422, p=0.003). Synacthen test confirmed hypocortisolaemia in two patients based on established cut-off values (stimulated plasma cortisol > 580 nmol/L [at 30 or 60 minutes] and an incremental [0 vs 30/60 minute] rise of at least 200 nmol/L).

**Conclusions:** Our data suggests that a clinic 9am cortisol is an inadequate screening tool for adrenal insufficiency. Moreover, measuring a 60 minute cortisol level may not improve diagnostic yield in such patients. A larger scale study comparing the sensitivity and specificity of a ‘shortened’ (0 and 30 minute) synacthen test vs the standard short synacthen test (0, 30 and 60 minutes) is warranted.

**OP3.088**

**Lack of relationship between glycaemic control and response to bisphosphonates in active Charcot neuroarthropathy**

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**Aim:** Charcot neuroarthropathy (CN) is a chronic disabling complication of type 1 diabetes (T1DM) and type 2 diabetes (T2DM). We sought to characterise this condition in a Maltese diabetes cohort.

**Method:** We performed a cross-sectional retrospective study of diabetic patients diagnosed with active CN at our diabetes clinic between August 2000 and October 2009. We traced prevalent glycosylated haemoglobin levels (Hba1c) at baseline and at the time of audit (October 2009), as well as serum alkaline phosphatase (SAP) levels measured at diagnosis, 6 and 12 months after bisphosphonate treatment.

At audit, sensory perception in both lower limbs was compared at the hallux using a neurothesiometer. The Mann-Whitney test was used to compare mean (±SD) vibration perception threshold (VPT) values between affected and unaffected lower limbs, as well as differences in mean baseline SAP across retinopathy and nephropathy categories. Mean (±SD) baseline SAP were compared across baseline Hba1c quartiles using Kruskal-Wallis ANOVA. Differences between Hba1c values and SAP values were compared using the Wilcoxon matched-pairs signed-rank test. Spearman’s correlation was used to correlate baseline Hba1c and Hba1c change with baseline and SAP change after bisphosphonate therapy.

**Results:** 21 T2DM patients (11 males, ten females) and one T1DM male patient with suboptimal glycaemic control (mean (±SD) Hba1c 9.32 [1.32] % presented with active CN. Mean (±SD) duration of diabetes at diagnosis was 15.7 (8.6) years, CN mostly involved the midfoot (20 patients vs two [hindfoot CN] and one [forefoot CN]. There was no significant difference in mean VPT between affected and unaffected legs (p=0.428), 62% of these patients had retinopathy; another 62% had evidence of nephropathy. Baseline Hba1c, albuminuria or retinopathy did not affect baseline SAP levels. Diagnosis of CN was accompanied by a reduction in mean (± SD) Hba1c (9.32 [1.32] % at diagnosis vs 8.49 [1.50] % at audit; p=0.07). Administration of bisphosphonates was associated with a significant reduction in mean (± SD) SAP at 6 months (110.42 [69.57] U/L at baseline vs 76.31 [35.33] U/L at 6 months; p=0.001) and 1 year (110.42 [69.57] U/L at baseline vs 78.54 [22.60] U/L at 1 year; p=0.008). SAP change did not correlate with baseline Hba1c or change in glycaemic control. Most patients maintained their full mobility.

**Conclusion:** Bisphosphonate therapy in active CN is associated with a significant SAP reduction; the magnitude of the latter is not influenced by an improvement in glycaemic control.

**OP3.089**

**Cortisol is associated with accumulation of visceral fat in women with common incidentally found adrenal adenomas**

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**Background:** Incidentally found adrenal adenomas (‘incidentalomas’) are common, with a prevalence of 10% in those over 70yrs. In approximately 50% there is biochemical evidence of low-grade cortisol secretion impacting on the increased cardiovascular risk observed with ageing. In patients with Cushing’s syndrome obvious excess cortisol is associated with severe cardiovascular risk and insulin resistance, characterised by visceral obesity. In contrast, as patients with adrenal incidentalomas do not have the external classical Cushing’s features and obesity is prevalent in around 30% of the population it is unclear whether mild excess cortisol secretion contributes to an increase in visceral fat. In this clinical experiment we aim to show that patients with adrenal incidentalomas and mild cortisol excess do have significant visceral fat accumulation.

**Methodology:** We performed an observational, cross-sectional study of patients who had undergone a full incidentaloma protocol, including endocrinological and radiological tests. In 144 patients (86 women;58 men) with non-functioning or cortisol secreting incidentalomas, post-dexamethasone test (1mg ONDST or 48-hour 2mg LDDST) serum cortisol<50nmol/L or >50nmol/l, respectively, we measured the baseline visceral:subcutaneous (V:S) and visceral:total volume (V:TV) fat ratios in a 6.25mm CT-volume measured the baseline visceral:subcutaneous (V:S) and visceral:total volume (V:TV) fat ratios in a 6.25mm CT-volume.
Malta Medical Journal Volume 24 Supplement November 2012

OP3.090
Management of thyroid nodules: is fine needle aspiration being done when recommended?

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Introduction: Thyroid cancer may manifest with a suspicious thyroid nodule on ultrasound. The appropriate selection of patients for fine needle aspiration (FNA) is important to increase the diagnostic yield of thyroid cancer and decrease the number of unnecessary thyroid operations.

Aim: The aim of this audit was to determine whether FNA of suspicious thyroid nodules identified on ultrasound was being done when indicated, as recommended by the Medical Guidelines for Clinical Practice for the Diagnosis and Management of Thyroid Nodules published by the American Association of Clinical Endocrinologists, Associazione Medici Endocrinologi and European Thyroid Association.

Methodology: 335 ultrasound scans of the thyroid gland were requested by the medical firm in question between 2008 and July 2011 for estimating incidence figures. Prevalence and incidence of pituitary adenomas with in-depth analysis of their various subtypes in a well defined population, that of the Maltese islands.

Results: There was no statistically significant difference in age (p=0.494), education (p=0.190) and status (p=0.472) between the two groups. There was a clinically significant difference (p=0.0460) between the T score of sexual dysfunction in patients with diabetes when compared to controls. In the diabetic group, Pearson correlation showed no statistically significant difference between sexual dysfunction T score and age (p=0.011), duration of diabetes (p=0.367), T score of psychological adjustment to diabetes (p=0.696) and HbA1c (p=0.215).

Conclusions: Type 2 diabetes has a negative effect on sexual dysfunction in females.

Disclosure: Questionnaires partially sponsored by Lilly (Charles de Giorgio Ltd)

OP3.091
Female sexual dysfunction in a Maltese diabetic population with type 2 diabetes mellitus

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Objective: A prospective study was carried out designed to assess sexual dysfunction in women suffering from type 2 diabetes mellitus on the model of an earlier study by Bulent et al 'Sexual dysfunction in type II diabetic females: A comparative study'. We present the pilot study.

Method: Forty-one type 2 women with diabetes aged 42-65 years who attended the diabetes clinic at Mater Dei Hospital between January 2011 and August 2012 volunteered to take part in this study. This group was compared to forty-one non-diabetic volunteers aged 43-66 years. Sexual function was evaluated by the sexual function questionnaire, assessing sexual fantasies, experience and arousal as well as the quality of orgasm. Psychological adjustment to diabetes was evaluated by the psychological adjustment questionnaire, assessing attitude towards health care, the effect of diabetes on family and personal relationships, the job, home chores, leisure time activities and emotions. Haemoglobin A1c and lipid profile and albumin creatinine ratio were measured.

Results: The mean duration from initial ultrasound to FNA was 381 days. 52.2% of these patients had a repeat ultrasound before performing the FNA possibly because the ultrasound report was occasionally lacking with regards to the description of the presence or absence of abnormal lymph nodes (33.8%), microcalcifications (89.4%) and other suspicious features (96.7%). Out of these 25 patients, only 8 patients had a strong indication and 3 patients had a moderate indication for FNA. All the patients in whom the cytology showed the possibility of malignancy or was non-diagnostic were referred to surgery. In 135 patients, only 8 patients had a moderate indication for FNA on whom it was actually done. This improved from 12.5% in 2008 to 25.8% in 2009 and to 56.3% in 2010.

Conclusion: The ultrasound thyroid reports are frequently lacking in providing adequate information as recommended by the guidelines. This may result in unnecessary delay from ultrasound to FNA due to the need of a repeat ultrasound. Moreover, a better selection of patients in whom FNA is done is necessary as this has already been an improvement over the three years audited since ultrasound guided FNA has become more easily available at Mater Dei Hospital.
Results: The prevalence rates for PAs overall was 75.7/100,000, for Prolactinomas 35.0/100,000, for nonfunctioning PAs 25.6/100,000 and for GH-secreting PAs 12.5/100,000. The SIR for PAs overall was 4.27/100,000/yr, for Prolactinomas 2.05/100,000/yr, for nonfunctioning PAs 1.79/100,000/year and for GH-secreting PAs 0.31/100,000/yr. The overall prevalence for macroadenomas was 32.8/100,000 and SIR was 1.43/100,000/yr. The prevalence rate in males for PAs overall was 46.3/100,000 and SIR was 2.08/100,000/yr. For females the prevalence rate for PAs overall was 104.8/100,000 and SIR was 6.58/100,000/yr. Females had a lower proportion of macroadenomas than males (29.5% vs. 75.0%; p < 0.001) and macroadenomas tended to present at a later age compared to microadenomas (48 vs. 34.5; P < 0.001). The highest SIR was reached in the 30-39 age group at 7.42/100000/yr. Those tumours presenting with apoplexy had a prevalence rate of 2.87/100,000 and a SIR of 0.15/100,000/yr.

Conclusion: Our data confirm the considerable disease burden that PAs bear on health care resources. Males and females have similar prevalence and SIR rates for macroadenomas but there is a huge increase in SIR of females of child bearing age compared to males mainly due to a much higher rate of microadenomas. These observations may have important implications in terms of the economic burden and need for intervention.

OP4.093 Thermographic studies of the pregnant uterus
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Introduction: The most common variable measured in science is temperature. In pregnancy, due to its anatomical isolation, foetal temperature has till now eluded scientific evaluation. This study set out to detect these superficial temperatures and correlate them with ultrasonographic findings.

Aim: To investigate the superficial abdominal temperatures detected by thermography, and correlate the latter findings to structures found on 4D ultrasound. Methodology: 25 pregnant patients who recruited for the pilot study. For comparative reasons including standardization of methodology and a twin pregnancy, seven patients had to be excluded from the study. A thermographic image was taken of each patient sitting at a 45 degree angle, using a thermographic infra-red camera (FLIR Model SC7000). A 4D ultrasound was then carried out and measurements of liquor pools and amniotic fluid index were taken. Skin thicknesses from the epidermis to the rectus sheath were also measured using ultrasound at 5cm from the umbilicus at 12', 3', 6', and 9'o'clock. The thermographic images were assessed, and point temperatures of the ‘coldest’ area and the ‘warmest’ area were measured. Ethical approval and informed/ written consent have been obtained to carry out this study.

Results: The images were compared, and a correlation of the deepest liquor pool found on ultrasound and the ‘coldest’ area was found in 18 of the 24 patients recruited, thus making the ‘coldest’ area the temperature of the deepest liquor pool. Using Pearson’s co-efficient the data was analysed and correlations where found between the depth and temperature of the deepest pool (-0.51522 correlation), average skin/abdominal wall thickness with the temperature at the deepest pool (-0.57685 correlation), and the depth of the deepest pool on ultrasound and amniotic fluid index on ultrasound (0.47988 correlation).

Conclusion: This pilot study shows that thermography does assist in visualising the location of the deepest liquor pool. Correlations were found strongly suggesting that this innovative technique may be potentially enhanced to develop a new index of measurement of amniotic fluid.

OP4.094 The relevance of the IADPSG diagnostic criteria in a Mediterranean population
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Background and aims: The IADPSG diagnostic cut-off criteria will significantly increase the number of cases of diagnosed GDM in any population. This will have significant cost consequences possibly directed towards individuals who are exhibiting normal physiological changes of pregnancy. The relevance of the increased cost in those women who are labeled GDM by the IADPSG criteria but normal by the ADA criteria needs to be assessed.

Method: A prospective, non-interventional, eleven-center study from around the Mediterranean recruited a total of 1368 women who underwent a 75g oGTT at 24-32 weeks of gestation. These were divided into three groups: A. women diagnosed as suffering from GDM using the ADA criteria [n=119]; B. women diagnosed as GDM using IADPSG criteria but considered normal by the ADA criteria [n=245]; and C. women diagnosed as having normal GT using the IADPSG criteria [n=1004].

Results: The Group B women were found to have statistically significant different glycaemic profiles to both Group A and Group C women in regards to fasting, 1-hour and 2-hours blood glucose values, AUC, fasting insulin and HOMA-IR. In addition, Group B women had a statistically higher mean age [A=32.0 vs B=31.2 vs C=29.6 years], pre-pregnancy and third trimester BMI [26.8 vs 25.6 vs 24.2 and 30.5 vs 29.5 vs 27.6 kg/m2 respectively], and blood pressure readings [diastolic: 71.7 vs 69.1 vs 65.8 mmHg] than those with defined normal glycaemic indices [Group C]. Their characteristics showed lower values than the ADA-defined GDM women [Group A]. The infants born at term showed a non-statistically significant tendency to mean high birth weights than infants born to Group C women, but lower weight than ADA-defined GDM women [3348.1 vs 3352.2 vs 3293.1 gm]. 26.1% of the ADA-defined GDM women received insulin.

Conclusions: The study confirms that the women who are labeled abnormal by IADPSG but normal by ADA criteria do have high risk factor characteristics. Directing specific management, even if simply dietary advice, is a sound option.

Disclosure: The study was supported by a financial grant from the Mediterranean Group for the Study of Diabetes who is supported by an unrestricted educational grant from Servier.
We analysed data from Malta Medical Journal significant interrelationship between maternal BMI and the parameters. There appeared to be a definite statistically and HOMA_IR were also positively correlated to the glucose pregnancy BMI and the infant weight. The fasting insulin level between all glycaemic parameters [fasting, first and second loaded with 75g of glucose. A fasting insulin, glucose and lipid profile was taken after an overnight fast of at least 8 hours, before being 26 weeks]. A fasting insulin, glucose and lipid profile was with more than 95% being done in the third trimester [after 26 weeks].

OP4.095
Retrospective analysis of endocrine disorders in the Maltese pregnant population
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Objectives: Pregnancy in the presence of endocrine dysfunction is known to be associated with a higher risk of obstetric and neonatal complications. This study aimed to investigate the occurrence of endocrine disorders in a cohort of Maltese pregnant women.

Materials and methods: We analysed data from the National Obstetric Information System collected by the Public Health Information and Research Division, Malta for the years 1999-2009. All pregnancies delivering at a viable gestational age and occurring in women with reported endocrine dysfunction were identified and analysed in terms of maternal age, past obstetric history, gestational age at delivery, maternal body mass index (BMI), birth weight, Apgar scores and neonatal outcomes.

Results: A total of 163 pregnancies of a viable gestational age were reported in women suffering from known endocrine disorders. Thyroid dysfunction accounted for 84.84% of such pregnancies, hypothyroidism being commoner than hyperthyroidism (84.78% vs. 7.97% of patients with thyroid pathology). There were no statistically significant differences in maternal age, BMI, birth weight and Apgar scores between these two thyroid subgroups. 8.5% of hypothyroid patients had co-existing gestational hypertension. 5% and 23% of hypothyroid patients had a history of threatened and spontaneous miscarriage respectively; the corresponding figures for hyperthyroid patients were 18% in either category. Furthermore, we identified 20 patients with hyperprolactinaemia, three patients with a known pituitary adenoma, two patients with cerebral tumour, two patients with hypopituitarism and single cases of adrenal insufficiency and parathyroid adenoma.

Conclusion: To our knowledge, this is the first study investigating endocrine disorders in the Maltese pregnant population. It has shown that thyroid dysfunction is relatively common. The clinical implications of thyroid dysfunction in pregnancy warrant prevalence studies and may justify the need for screening.

OP4.096
The association between maternal glucose, lipid metabolism and fetal birthweight
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The association between maternal hyperglycaemia and fetal macrosomia is well known. This study aimed to assess the association between the maternal lipid profile and the fetal weight in relation to other maternal biochemical parameters.

Method: 309 randomly selected mothers were invited to attend for an OGTT between 24 and 32 weeks of gestation, with more than 95% being done in the third trimester [after 26 weeks]. A fasting insulin, glucose and lipid profile was taken after an overnight fast of at least 8 hours, before being loaded with 75g of glucose.

Results: The results showed a positive interrelationship between all glycaemic parameters [fasting, first and second hour] and area under the glucose curve and the maternal pre-pregnancy BMI and the infant weight. The fasting insulin level and HOMA_IR were also positively correlated to the glucose parameters. There appeared to be a definite statistically significant interrelationship between maternal BMI and the eventual infant birth weight. LDL correlated negatively with all the parameters analyzed. A significant correlation between maternal BMI and infant birth weight on the one hand and triglycerides and LDL was noted though the relationship was inverse in the latter. Maternal LDL levels were inversely related to maternal pre-pregnancy BMI. A similar relationship for fasting insulin and HOMA_IR and infant birth weight was noted. It is well known that maternal obesity has been linked with macrosomia. The fact that the LDL is showing an inverse relationship with fetal weight might be partly explained by the fact that overweight/obese women have lower LDL levels than their normal weight pregnant counter parts.

OP4.097
Reducing post partum heamorrhage
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Introduction: Postpartum haemorrhage (PPH) is a major cause of maternal morbidity and mortality worldwide. In 2000, the World Health Organization (WHO) aimed for a 75% reduction by the end of 2015.

Aims: To identify specific subsets of the obstetric population who are at increased risk for PPH To set up protocols to improve the management of patients with postpartum haemorrhage Method: All the patients with a documented PPH between 1st January 2000 and 31st December 2011 were traced using National Information Obstetrics System. Correlation between PPH, mode of delivery and parity was carried out.

Results: There were forty eight thousand deliveries with 15% elective and 14% emergency caesarian deliveries. PPH was associated with 0.59% of emergency caesarian deliveries compared 0.312% in elective caesarian operations. Primigravidae had a 0.43% incidence of PPH during normal delivery, compared with the multigravidae with an incidence of 0.265%. In contrast, multigravidae undergoing emergency caesarian sections are more likely to have postpartum haemorrhage 1.034% compared with 0.428% of primigravidae women undergoing emergency caesarian sections. There is no significant difference in PPH between primigravidae and multigravidae at elective caesarian sections.

Conclusion: Identifying patients who are at an increased risk of post-partum haemorrhage increases awareness and preparedness and therefore leads to timely management. Improving doctors’ and midwives’ index of suspicion of PPH, with better preparedness, availability of a postpartum haemorrhage box with adequate emergency supplies as well as close patient surveillance of patients at risk of PPH reduces morbidity and mortality.

OP4.098
Cerclage: tie a knot around the cervix
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Introduction: Cervical cerclage is highly controversial due to contradicting results in meta-analysis and individual studies. There is also little consensus regarding cerclage technique and timing of suture placement. Yet, it remains one of the most common prophylactic interventions in pregnancy to avoid mid-trimester or spontaneous preterm birth in high risk patients.

Aim: To analyse the indications for cervical cerclage, gestational age when cerclage done and efficacy in preventing mid-trimester loss and spontaneous pre-term in the Maltese general obstetric hospital department.

Method: A two year period (between 1st June 2010 till 30th June 2012) was chosen to analyse the data of antenatal
Results: The total number of cerclage cases registered was 91 yet only 78 patients had their medical records available at the time of study. Mean maternal age of cerclage was 32 years (range: 19-42 years) with the mean gestational age for cerclage procedure at 14 weeks (range: 12-21 weeks). 76 patients had a previous miscarriage with 9 in the second trimester. Indications for cervical cerclage included:

- Cervical incompetence (Empirical) - 21 patients
- Cervical Surgery (LLETZ/cone biopsy) - 14 patients
- Uterine abnormality - 9 patients
- Previous 2nd trimester miscarriage - 7 patients
- Multiple gestation (elective cerclage). (8 twin, 1 triplet gestation) - 9 patients
- Other - 8 patients
- No indication stated on the patient's file - 3 patients.

Mean gestational age of birth was 36+weeks (39 at Term-29wks, 21 pre-term and 5 undelivered) with 39 patients undergoing caesarean section (14 emergency caesarean sections), 29 patient normal vaginal delivery, one intrauterine death, 3 undergoing premature labour before 37 weeks and 5 patients have not delivered as yet. Most cerclages were removed at time of contraction onset or caesarean section.

Conclusion: The first use of cervical cerclage was to prevent recurrent foetal loss in women having mid-trimester miscarriage or spontaneous preterm birth suggestive of cervical incompetence. With prematurity being the leading cause of perinatal death and disability in modern times, the use of cerclage has remained the same. It is included in the management of women with multiple gestation (9.85% of sample), uterine anomalies (9.85%), history of cervical trauma/surgery (15.38%) and cervical shortening seen on ultrasound as stated by the RCOG Green-Top guideline 60. While cerclage may provide a degree of structural support, its role in maintaining the cervical length and the endocervical mucus plug as a mechanical barrier to ascending infection may be more important.

OP4.099
The incidence and management of hepatitis B and C in pregnant women in Malta
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Introduction: Pregnant women in Malta are offered antenatal screening for Hepatitis B and C. The prevalence of Hepatitis B in the Maltese population has been estimated at 1-2% while no such data is available for Hepatitis C.

Aim: To determine the incidence of Hepatitis B and C in the antenatal population. To review the literature regarding management of pregnant women who are positive for Hepatitis B or C.

Method: The blood results for Hepatitis B surface antigen (HBsAg) and Hepatitis C core antibody (the routine first line investigation done as screening for the respective infection) from 1st January 2009 to 31st December 2011 that were requested via the Antenatal Clinic in Mater Dei Hospital were collected. All the hepatitis B core IgM antibody and hepatitis B core antibody as well as the HCV virus blot and HCV RNA PCR tests carried out on the same population were traced. The results of these latter investigations were compared with the results of the primary screening test for Hepatitis B and Hepatitis C respectively. A review of the literature regarding management of Hepatitis B and C in pregnancy was then carried out.

Results: A total of 10,927 and 10,945 patients were tested for Hepatitis B and C respectively at the antenatal clinic between 2009-2011. There were 33 positive HBsAg results (0.30%), with only 7 of the 24 (21.21%) having a Maltese ID number. 25 of the 33 patients (75.76%) received appropriate follow-up testing via antenatal clinic for HBV core IgM antibody and HBV core IgM antibody. Of the 25 HBV antibody results, 24 were negative (96.00%) and 1 (4.00%) was positive, while 24 (96.00%) HCV core antibody results were positive and only 1 (4.00%) was negative. A total of 39 positive hepatitis C antibody results (0.36%) were identified, with 31 (79.50%) of these women having a Maltese ID number. All results reported as HCV AB ‘positive’ were followed by a positive HCV virus blot, which confirmed a positive result in all cases. Only 2 of these patients were tested for HCV RNA PCR; one was positive and the other was negative. Conclusion: In view of the risk of vertical transmission it is important to screen pregnant women for hepatitis B and C. It is of utmost importance to emphasise the need to follow guidelines when screening for hepatitis, requesting confirmatory tests and planning treatment.

OP4.100
Investigating the anti-oestrogenic effect of synephrine
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Introduction: Citrus aurantium is a major component of weight loss preparations in contemporary use. Synephrine is one of the most active components present in Citrus aurantium. It has sympathomimetic activity and has been associated with increased metabolic rates and oxidation of fats through an increase in thermogenesis and stimulated lipolysis. Research carried out by Arbo et al in 2008 hypothesised that synephrine could have an anti-oestrogenic effect. This was determined through the exposure of immature female rats to controlled doses of synephrine. Arbo et al claimed that the use of these products could be dangerous in developing women, owing to the fact that they could potentially interfere with hormonal routes, alter the menstrual cycle and also effect embryonic development.

Aim: To prove or otherwise the hypothesis by Arbo et al using an in silico approach and to design molecules with the potential to bind to, and act as antagonists at the oestrogen receptor (ER).

Method: PDB file 1ERE describing the bound coordinates of 17β-oestradiol (EST) with the ER was selected as a template for this study. The ligand binding affinity (LBA) of oestradiol for its cognate receptor was measured using XSCORE_v1.3. Synephrine isomers were sketched in Sybyl-X and a number of conformers (n=21) were generated for each isomer. Conformers were extracted and docked into the ER using XSCORE_v1.3 so that the LBA for each conformer could be calculated.

Results: The pKd of EST to its cognate receptor was found to be 7.23. This is a baseline measure against which all other successive results were compared. The pKd of the synephrine isomers ranged from 4.5-5 and were thus considered to be low.

Conclusion: From the results obtained using the in silico approach, the hypothesis by Arbo et al which states that synephrine is a high affinity ligand for the ER is not supported. Thus there appears to be no concern for the use of synephrine in dietary products due to its apparent low affinity for the ER. However the fact that moderate to low affinity was obtained provides momentum for the design of synephrine analogs with higher affinity for the oestrogen receptor.
OP4.101
Drug design at the peroxisome proliferator activated receptor
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Introduction: The recent withdrawal of the PPARγ agonist rosiglitazone from the market has led to a renewed interest in the PPARγ receptor as a target for Type II Diabetes Mellitus (T2DM) therapy. Literature has suggested that pharmacological action of different ligands at PPARγ is driven by the stabilisation of Helix 12 (H12), meaning that required therapeutic outcomes can be distinguished from unwanted clinical effects by partial H12 stabilisation. This may be achieved through the clinical use of Selective PPARγ Modulators (SPPARγMs), such as S-26948.

Methodology: Three distinct conformations of PPARγ – specifically those bound to rosiglitazone, farglitazar and INT131 (Protein Data Bank (PDB) depositions 1FM6, 1FM9 and 3FUR respectively) were identified. All three PDB entries were edited prior to lead docking, via the removal of a dimer for PDB entry 1FM6, removal of crystallised water molecules at a distance >5 Å, and extraction of ligand from its cognate binding pocket. S-26948 was constructed de novo in Sybyl-X® v1.1 and guided into the three conformations of the PPARγ Ligand Binding Pocket (LBP) using the ligand similarity suite algorithm in Sybyl-X® v1.1. This resulted in the identification of the 20 highest affinity S-26948 conformers for each PPARγ LBP conformation. Following docking, binding energies were calculated using Sybyl-X® v1.1 and in silico predicted LBAs (pKi) were calculated using X-SCORE® v1.3. Graphs of pKd and binding energies (y-axis) versus conformer number (x-axis) were plotted in each case. This enabled the comparison of pKd between the conformers of the different apo-receptor conformations. The best conformers for each LBP conformation were then chosen on the basis of the highest LBA and lowest binding energy values.

Results: Two conformers were chosen for PDB 1FM6, of which, one had a higher pKd, while the other had a lower binding energy. Visual representation using VMD® exhibited an alternative conformation of one conformer with respect to the other, and to the original ligand rosiglitazone. For PDB 1FM9 another two conformers were chosen; this time having similar conformations to the originally bound farglitazar. Only one conformer was chosen for PDB 3FUR, which exhibited an opposite conformation to INT131 when visualised in VMD®.

Conclusion: The chosen conformers will then be edited in order to create novel seeds, on which new structures can be identified. Therefore, this will enable the construction of a library comprising molecules of known affinity for PPARγ which also comply with Lipinski’s rules.

OP4.102
Creation of a 2D/3D molecular database for drugs used in malignant disease and immunosuppression
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Introduction: Medicinal chemistry is a subject where the students need to develop skills in recognizing characteristics in a drug structure and understand the implications of the chemical structure in drug use. The availability of computer developed molecular structures in 2D and more lately in 3D provides an excellent teaching support aid to help students better assimilate this information. The use of computer-aided teaching improves the way students look at the subject and keep them more interested.

Aims: To create two dimensional and three dimensional renderings of molecules and their receptors, to develop ligand: receptor complexes, to develop a searchable database.

Methodology: Drugs relating to malignant disease and immunosuppression were identified from the British National Formulary and data was entered into a Microsoft Excel Sheet. A 2D structure of each molecule was drawn using Symyx and data from each structure was collected and entered in the datasheet. PDB entries involving drug-receptor complexes of chosen drugs were searched, entries found were processed with VMD, creating 3D images and a 3D structure of each drug was drawn using Sybyl structure.

Results: A total of 80 drugs were generated of which 34 are complexed with their cognate receptor. The database has not been validated as a teaching tool. The database could be used as a teaching tool either during student teaching sessions or for use by students as a reference source. Application of use of the database in a teaching environment may be evaluated.

Conclusion: Classical lecturing methods need to be merged with computational aids in order to help students to understand even more and gain the best amount of knowledge possible. This is done for the students to tackle examinations but to ultimately apply the knowledge learned when needed during their practice.

OP4.103
Gastric amylase activity and the use of proton pump inhibitors
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Introduction: Proton Pump Inhibitors (PPIs) block the H+/K+-ATPase enzyme, thus increase gastric pH to such an extent where amylase may be present in the stomach. Hyperamylasaemia in gastric juice could explain symptoms of dyspepsia in patients who fail to respond to treatment with a standard dose of PPI.

Aim: To correlate any relevant patient history and drug history with α-pancreatic and total amylase activity found in gastric juice samples.

Methodology: Patients targeted are those receiving PPI therapy. Samples were taken from patients who were not on this therapy, as a means of control. Patient information recorded, included patient identity, past medical history, drug history, presenting complaint and diagnosis. The Riflotron was used to analyze α-pancreatic and total amylase in gastric juice. For each analysis, a blank and a spiked sample were analysed as internal method control.

Results: A total of 25 patient samples were analysed, 7 of which were on a PPI at the time when the gastric juice sample was collected and analysed. Samples analyzed had pH values between 1.23 and 8.38, pH, an indicator of PPI function, shows a positive relationship with amylase activity. Presenting complaints included dyspepsia, anaemia and possible coeliac disease. The most common diagnosis was gastritis (n=4), duodenitis (n=4), gastritis and duodenitis (n=2), hiatus hernia (n=7) and gastrooesophageal reflux disease (n=4). The presence of pancreatic α-amylase activity in patient samples gave an indication that some extent of duodenogastric reflux was present. Control patients activities were compared to PPI patients and a significantly lower amylase activity was seen in the former. This confirmed that it is only patients on PPIs who have significantly higher amylase activity present in their gastric juice, yet the role of the presence of this activity is yet unknown.

Conclusion: Different PPIs could differ in their effect on gastric amylase activity. Knowledge of the relation between gastric pH, gastric amylase activity and pathology could lead to an improved understanding of gastric physiology and function. However further data needs to be gathered.
Introduction: Patients suffering from peripheral artery disease (PAD) have poor circulation and conditions such as bacterial infections take longer to heal than would in a healthy individual. The vascular damage in the periphery leads to reduced levels of drug reaching the affected site.

Aim: To develop an innovative reproducible method using high performance liquid chromatography (HPLC) which would quantify Clindamycin in the peripheral circulation of patients suffering from PAD. Methodology: A method for determining the concentration of Clindamycin in plasma developed by Na-Bangchang et al (2006) was identified. The HPLC based method chosen was based on its simplicity, ability to reproduce, sensitivity of results and accuracy. Modifications are being made to improve upon such a method and make it suitable for analysis of small amounts of antibacterial in tissue. A reversed phase ACE® column of dimensions 250x4.6mm with a particle size of 5μm is used. Reversed phase columns are less affected by injection of biological fluids and are more suited to this type of analysis than other columns. A mobile phase consisting of 0.02M disodiumhydrogenphosphate (pH 2.9 adjusted by using orthophosphoric acid) and acetonitrile (9:30 v/v) is to be injected at a flow rate of 1ml/min and detected using UV/VIS detector set at a wavelength of 210nm.

Results: The HPLC unit was set up at the pharmacy department. Chromatographic runs have been carried out using a 1200 Infinity series HPLC. The first run utilised a mobile phase which was used in a study conducted by Na-Bangchang et al and this produced a well-defined peak of Clindamycin with a retention time of 4.5 minutes. Modifications of the mobile phase produced a peak of Clindamycin with a retention time of 3.25 minutes. Further spiking confirmed the presence of the drug. Calibration curves and internal standards will determine the relationship between the analytical response and the analyte concentration.

Concentration: The developed method is an innovative method of quantifying clindamycin in tissue which can be used in further studies that look into the impact of PAD and the amount of Clindamycin that reaches the peripheral tissues.

Methodology: Fifty POYC registered patients taking warfarin were recruited by convenience sampling from 7 community pharmacies. All enrolled patients were asked to visit the pharmacy on the same day that their venous plasma INR was scheduled to be monitored at the Anticoagulation Clinic (ACC) or health centre. For each patient, a capillary whole blood sample was obtained using the finger prick method and the INR was measured with an INR POC testing device. After the testing, an interview was carried out with the patients to assess their perceptions on the current and proposed INR testing system.

Results: Out of the 50 participants, 19 were males and 31 were females, with an average age of 73 years and age range between 26 and 89 years. The most common indication for anticoagulation was atrial fibrillation (34), followed by deep vein thrombosis (6), heart valve replacement (8), cerebral venous sinus thrombosis (1) and pulmonary embolism (1). From the interviews it was observed that the patients are not being given sufficient information about the anticoagulation treatment when attending for INR monitoring. Only 16 patients knew the meaning of INR. The majority of patients stated that the reason for the limited time for educational intervention is due to the nurses’ workload. All participants stated that they felt comfortable having their blood tested with the INR POC testing device and only 9 patients preferred venopuncture to fingerprick testing. They believe that the pharmacist is qualified to run this monitoring service, with 29 patients accepting that the pharmacist also performs warfarin dose adjustments. All participants had an overall good perception of the proposed framework, 41 of which are willing to start using the pharmacist-managed INR testing if the framework were to be implemented.

Conclusion: The study showed that the proposed framework was associated with a high level of patient satisfaction. These results promote the introduction of a national INR monitoring service to be made available in community pharmacies, where the current fragmented care INR testing service will be improved by making the community pharmacy a one-stop site for warfarin monitoring.
The prevalence of diabetes mellitus in the Maltese population is estimated to be around 10%. Major lower limb amputation rates in Malta between 2002 and 2007 ranged between 109 and 133 per annum (25-31/100,000 population/annum), higher than any other European country and comparable to some of the highest rates in North America. Until 2007 patients with vascular pathology were taken care of solely by general surgeons with an interest in vascular surgery. In 2007 a pure vascular surgeon was recruited to the National Health Service. The aim of this study was to assess the impact of introducing a pure vascular surgery service on major lower limb amputation rates in Malta.

Methods: Annual reports published between 2002 and 2011 by the Clinical Performance Unit at St Luke’s Hospital and subsequently Mater Dei Hospital, Malta were analysed. These reports provided data on the total number of operations performed each year. A prospective database was used to prospectively collect data on the total number of procedures performed by the vascular team. Results: In the period between 2002 and 2006 the number of major revascularisation procedures ranged between 15 and 24 per year (Mean 20/year). In 2008 there were 64 major revascularisation procedures performed and by 2011 this number had increased to 72 (360% increase). Between 2008 and 2011 a mean of 52 infrainguinal bypass procedures / year were performed by the vascular team compared to 12.7 procedures / year performed by all other teams. The number of major amputations decreased from a maximum of 133/year in 2003 to 85/year in 2011 (36% reduction) with a sustained reduction in numbers since 2008 (122 in 2008; 104 in 2009; 89 in 2010 and 85 in 2011).

Conclusion: The introduction of a pure vascular surgery service to the national health service in Malta has resulted in a significant increase in major revascularisation surgery (360% increase) which has been at least in part responsible for a significant decline in major lower limb amputation rates (36% reduction). The increasing population and prevalence of diabetes in Malta is likely to lead to an increasing need for vascular services to enable the current trend to be maintained.

**OP4.107**

Advances in the management of aortic aneurysms

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The way we manage aortic aneurysms has been completely changed by advances in stent graft technology. Endovascular repair has made a transition from being an experimental procedure, used to treat those patients too high risk for open surgery, to becoming the standard for treating infra-renal aortic aneurysms. Endovascular infra-renal aortic aneurysm repair has nearly eliminated the risk of death from aneurysm surgery. As stent-graft delivery devices get thinner and vascular surgeons gain confidence with percutaneous arterial closure devices the repair of infra-renal aortic aneurysms is changing to a day case procedure. Custom made devices allow us to treat juxta- and supra-renal aneurysms and, in the case of thoraco-abdominal aneurysms, branches on the main stent-graft allow an endovascular option for these cases too. In emergency situations where there is no time to manufacture such devices, the combination of off-the-shelf devices in what are now termed the chimney and sandwich techniques allow an endovascular option in nearly every patient.

**OP4.108**

An audit on venous thromboembolism (VTE) prophylaxis in general and vascular surgical inpatients

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Aim: Venous thromboembolism (VTE) is a leading cause of preventable inpatient morbidity and mortality. A significant body of high-level evidence is available to support prophylactic measures for VTE prevention. Despite this, there is an inadequate application of such measures. The aim of this audit was to observe current VTE prophylaxis measures applied to inpatients in surgical wards undergoing general or vascular surgical procedures at Mater Dei Hospital.

Methods: A convenience sample of the inpatient population admitted to Mater Dei Hospital in January 2012 for general and vascular surgical procedures was selected. A retrospective analysis of inpatient VTE prophylaxis measures was then carried out on patient discharge by means of a thorough review of hospital records. The data was transferred to a proforma, which was adapted from established guidelines and compared to accepted international practice (National Institute for Health and Clinical Excellence (NICE), UK - Venous Thromboembolism: Reducing the Risk [2010]).

Results: Sixty eight (n=68) patient records were reviewed, with a mean population age of 61 years and a female to male ratio of 1:1.3. Of the study population, 91.1% (n=62) had high-risk criteria requiring pharmacological prophylaxis. Of these, 1.6% (n=1) had high bleeding risk and 12.9% (n=8) had contraindications to low-molecular weight heparin (LMWH). Pharmacological prophylaxis was inappropriately omitted in high-risk patients without contraindications in 27.4% (n=19). In the treated group, 87.0% (n=40) had LMWH and 13.0% (n=6) had unfractionated heparin (UFH). Of the LMWH-treated patients, 2.2% (n=1) had a contraindication to its use, namely renal insufficiency. Recorded evidence of prescription of thromboembolic deterrent (TED) stockings, in patients without any contraindication, was only found in 7.6% (n=5).

Conclusions: Better dissemination of VTE prophylaxis guidelines is recommended. A suitable proforma, such as the one used in this audit, should be introduced and completed with each inpatient admission. This would improve compliance, documentation of treatment and highlight inappropriate management options.

**OP4.109**

The impact of introducing a pure vascular surgery service on major lower limb amputation rates in Malta

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Introduction: The prevalence of diabetes mellitus in the Maltese population is estimated to be around 10%. Major lower limb amputation rates in Malta between 2002 and 2007 ranged between 109 and 133 per annum (25-31/100,000 population/annum), higher than any other European country and comparable to some of the highest rates in North America. Until 2007 patients with vascular pathology were taken care of solely by general surgeons with an interest in vascular surgery. In 2007 a pure vascular surgeon was recruited to the National Health Service. The aim of this study was to assess the impact of introducing a pure vascular surgery service on major lower limb amputation rates in Malta.

Methods: Annual reports published between 2002 and 2011 by the Clinical Performance Unit at St Luke’s Hospital and subsequently Mater Dei Hospital, Malta were analysed. These reports provided data on the total number of operations performed each year. A prospective database was used to maintain data on the total number of procedures performed by the vascular team.

Results: In the period between 2002 and 2006 the number of major revascularisation procedures ranged between 15 and 24 per year (Mean 20/year). In 2008 there were 64 major revascularisation procedures performed and by 2011 this number had increased to 72 (360% increase). Between 2008 and 2011 a mean of 52 infrainguinal bypass procedures / year were performed by the vascular team compared to 12.7 procedures / year performed by all other teams. The number of major amputations decreased from a maximum of 133/year in 2003 to 85/year in 2011 (36% reduction) with a sustained reduction in numbers since 2008 (122 in 2008; 104 in 2009; 89 in 2010 and 85 in 2011).

Conclusion: The introduction of a pure vascular surgery service to the national health service in Malta has resulted in a significant increase in major revascularisation surgery (360% increase) which has been at least in part responsible for a significant decline in major lower limb amputation rates (36% reduction). The increasing population and prevalence of diabetes in Malta is likely to lead to an increasing need for vascular services to enable the current trend to be maintained.
Endovascular abdominal aortic aneurysm repair: the Maltese experience

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Introduction: Endovascular aneurysm repair (EVAR) for abdominal aortic aneurysms started to be performed in Malta in 2009. All EVAR procedures are performed in a vascular operating theatre by an endovascular team that includes a vascular surgeon and an interventional radiologist, using a mobile image intensifier. All patients have a completion on-table angiogram following the procedure and surveillance CT angiograms post-operatively where the maximum antero-posterior diameter is measured. Patients also undergo regular ultrasound scanning of the aneurysm sac.

Methods and materials: Operative data was collected for all EVAR patients during the period 12th January 2009 to 2nd July 2012. On-table angiograms and follow-up CT angiograms for all patients were reviewed using PACS system.

Results: 30 patients underwent endovascular abdominal aortic aneurysm repair during the study period. The age of the patients undergoing EVAR ranged from 55 to 87, and the median postoperative stay was 2 days. Mean pre-operative aneurysm diameter was 65.4 mm. 7 patients had not yet had any follow up at the time of this audit. Of the remaining patients 82.6 % had a significant decrease of aneurysm size (5 mm or more), 17.4% had no significant decrease and no patients had an increase in aneurysm size. Procedure related complications were recorded in 4 patients. To date, no aneurysms have ruptured post-procedure and no patients have had their EVAR converted to an open repair. The perioperative mortality rate in this cohort is 0%.

Conclusion: The results of EVAR carried out in Malta compare favourably with those reported in multicentre randomized controlled trials such as EVAR1. No perioperative mortality was observed in this cohort.

Carotid endarterectomy: the Maltese experience

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Introduction: Carotid endarterectomy significantly reduces the risk of cerebrovascular events in both symptomatic and asymptomatic patients with significant carotid stenosis. The recent American Heart Association/American College of Cardiology guidelines advise that carotid endarterectomy is only beneficial when the perioperative stroke or mortality rate is below 6%. The aim of this study was to review the results of carotid endarterectomy performed in Malta by one vascular surgeon.

Methods: All patients undergoing carotid endarterectomy between July 2007 and June 2011 were included in the study. Data was entered prospectively into a vascular database. Retrospective review of the case notes of all patients undergoing carotid endarterectomy was also performed. Demographics of the patient cohort as well as information about perioperative mortality, cerebrovascular events, cardiac events as well as any other complications were recorded. Information was also collected about any deaths and cerebrovascular events during the follow up period.

Results: 51 patients underwent carotid endarterectomy during the study period. The median age was 65 years (range 40-80 years) and 82% were male. 94% were symptomatic (65% CVA; 15% TIA; 10% amaurosis fugax; 4% TIA and amaurosis; and 1% asymptomatic). 6% had an internal carotid artery stenosis of 90% or more while the rest had a stenosis of 70% or more. 31% of patients also had significant contralateral carotid stenosis or occlusion. There was one postoperative mortality (1.9%) and one patient sustained a postoperative lacunar stroke (1.9%). There were no cranial nerve injuries and no bleeding requiring return to theatre.

Conclusions: The combined perioperative mortality and stroke rate in this cohort was 3.9% which is better than the results reported in the major randomised controlled trials. The perioperative death and stroke rate is well below the threshold level advised by the AHA/ACC.

Screening for colorectal cancer: present and future

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Colorectal Cancer is a major health problem. It is the third most common cancer in men (after lung and prostate cancer) and in women (after lung and breast cancer), and the second leading cause of cancer death. 95% of those diagnosed are over 50 years. Evidence from four trials showed that screening an asymptomatic population for faecal occult blood (FOB) with a guaiac-based test (gFOBT) reduced mortality from colorectal cancer. In addition, using a matched cohort study, it has been demonstrated that the Scottish Colorectal Cancer Screening Pilot, in place from 2000 -2007 and using gFOBT, reduced mortality from colorectal cancer by 27% in the screened population. The Scottish Bowel Screening Programme invites all men and women between the ages of 50 to 74 to participate in the programme through completion of a gFOBT at home every two years. Faecal Immunochemical Test (FIT) kits are used as second line testing in the programme if equivocal results are found with the initial gFOBT.
OP4.114
Surgery for colorectal cancer in the elderly: is it safe?
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Introduction: As the population ages, an increasing number of elderly patients are presenting with colorectal cancer. Surgical management of colorectal cancer in these patients poses a unique challenge as they have more co-morbidities and lower functional reserves.

Aims: This aim of this review is to analyse the outcome of surgery for colorectal cancer in patients over 75 years old and determine the best treatment strategy in this category.

Methods: A systematic review of papers published from 2002-2012 was carried out. The studies were identified by computer searches of PubMed and MEDLINE databases using the keywords colorectal cancer, elderly, geriatric, surgery and surgical management.

Results: A total of 22 studies were identified, with a total of 52935 patients. The smallest study had 24 patients while the largest study had 25,358 patients. The studies were in the main comparisons of postoperative outcomes between elderly and younger age groups. While the overall postoperative mortality rates were significantly higher in the over 75 age group, it seems that age itself is not a risk factor for surgery. The presence of co-morbid conditions such as diabetes, pulmonary, cardiovascular and renal disease increases the risk of postoperative mortality in the elderly. In most cases, these co-morbid conditions were classified using the American Society of Anaesthesiologists’ scoring system (ASA score). In fact, when comparing groups with similar ASA scores over and under 75 years of age, no significant difference was found in postoperative mortality. The elderly presented with more locally advanced disease a factor that increased the overall postoperative mortality. An increased risk of postoperative mortality has been demonstrated in elderly patients undergoing emergency surgery. Postoperative complications are also higher in the elderly patient with a poor physical function. Laparoscopic surgery was shown to be beneficial for elderly patients with low morbidity and mortality, as well as a shortened hospital stay.

Conclusion: Curative resection of colorectal cancer in the elderly is generally well tolerated. Age alone is not a predictor of morbidity and mortality; rather, it is the patient’s clinical status and the tumour stage which influences the outcome. Patients benefit from laparoscopic surgery. Stenting of obstructing colonic cancer may avoid emergency surgery and allow elective surgery to take place at a later stage.

OP4.115
A retrospective audit on colorectal polyp and cancer screening in Maltese patients with acromegaly: a comparison with the British Society of Gastroenterology guidelines
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Background: Acromegaly has been associated with an increased risk of colorectal polyps and cancer (CRC) and a 2.5 increased risk of mortality from CRC. In this respect, the British Society of Gastroenterology (BSG) guidelines advise CRC screening in this cohort of patients, the frequency of which depends on the activity of the underlying acromegaly and findings at the index colonoscopy. Screening is advisable as from 40 years of age and should be repeated after 3 years if an adenoma is detected or if IGF-1 levels are elevated. A repeat colonoscopy after 5 – 10 years is advisable if no adenomas are detected or if IGF-1 levels are normal. These guidelines were never audited amongst Maltese patients with acromegaly. Aim: To audit the colorectal polyp and cancer screening practice in Maltese patients with acromegaly.

Methodology: We retrospectively reviewed the case records of 38 Maltese patients with acromegaly, attending the Endocrine Clinic at Mater Dei Hospital, Malta, between 1980 and 2010. The data collected included demographic data, duration of illness, index and most recent levels of IGF-1 (adjussted according to age and sex), frequencies of colonoscopies and endoscopic findings.

Results: 38 Maltese patients (mean age 60.9 ±13.1 years, females n=22 (57.9%), males n=16 (42.1%)) with acromegaly were retrospectively studied. Their mean duration of illness was 16.3±4.9 years. 63% of patients had evidence of controlled disease (IGF-1 levels within the normal range for age and sex). Colorectal cancer screening frequency according to the BSG guidelines was only achieved in 29% (n=11) of patients. The remaining 71% (n=27) of patients either never had a colonoscopy (n=16) or had one at the initial stage of the disease but was not repeated thereafter (n=11). 22 patients underwent a total of 34 colonoscopies, of which 6 were suboptimal either due to poor bowel preparation or incomplete colonoscopies. No polyps or cancer were detected in 23 colonoscopies (67.6%). Adenomas (n=8) (left-sided n=6, right-sided n=2) were detected in 7 colonoscopies (20.6%), all of which were <1cm in size, while hyperplastic polyps (n=multiple) were detected in the remaining 4 colonoscopies (11.8%). None of the patients had colonic malignancy.

Conclusions: Colorectal cancer/ polyp screening, as per BSG guidelines, in Maltese patients with acromegaly was not achieved in 71% of patients. Adenomas were detected in 20% of cases, which is slightly less than the reported frequency (23%) of other countries. This is probably due to the lack of patient uptake. A change in practice should therefore be implemented in this cohort and the audit loop cycle repeated thereafter to ensure guideline adherence.

OP4.116
Cardiopulmonary exercise variables predict postoperative in-hospital morbidity after major colonic cancer surgery – a blinded observational study
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Introduction: Post-operative complications may be associated with patients having a reduced cardiopulmonary fitness. Cardiopulmonary exercise testing (CPET) has been used in the risk stratification of patients prior to major surgery, but has never been used in colonic cancer patients.

Aim: We aim to investigate the use of CPET in predicting in-hospital morbidity and length of stay in patients undergoing major colonic surgery.

Methodology: Since 2010 we prospectively observed 198 consecutive colonic surgical patients who underwent a CPET...
to assess their cardiopulmonary fitness prior to major elective surgery. All surgeons and anaesthetists were blinded to CPET results, and SRETP was reported by a consultant clinician scientist to assess their cardiopulmonary fitness prior to major rectal cancer surgery. All surgeons and anesthetists were blinded to CPET results, and SRETP was reported by a consultant clinician scientist to assess their cardiopulmonary fitness prior to major rectal cancer surgery. To investigate the effect of NACRT on physical fitness is largely unknown. Aim: To investigate the effect of NACRT and the effects of a six-week structured, responsive, exercise, training programme (SRETP) on objectively measured physical fitness in resectable rectal cancer patients. Methodology: We prospectively studied 18 consecutive patients (11 male and 7 female) with T3/4 N+ rectal cancer who completed a standardized 5-weeks of long course NACRT. All patients underwent a Cardiopulmonary Exercise Test (CPET) immediately before and after NACRT (Week 0), week 3 and week 6 of the exercise programme. All patients undertook a 6-week structured exercise programme on a training bike (30-40 minutes per session, 3 sessions per week). The training intensities were responsive to each CPET and were of a moderate to severe intensity. Results: Median age was 66 years. Mean body mass index was 26.1 kg/m². Post-NACRT illustrated significant reductions in Oxygen Uptake (VO₂) at Lactate Threshold (LT) (12.0 to 10.4 ml/kg/min; p<0.001), VO₂ at Peak (18.5 to 16.3 ml/kg/min; p<0.001), and VO₂ at Peak (18.5 to 16.3 ml/kg/min; p<0.001), Output (VO₂) at Lactate Threshold (LT) (12.0 to 10.4 ml/kg/min; p<0.001), and VO₂ at Peak (18.5 to 16.3 ml/kg/min; p<0.001) as assessed by CPET. This may increase perioperative risk and death rate was 15%. Complications included medical problems in 12.0%, wound complications (4.7%) and anastomotic leakage (1.7%). Conclusion: Whilst giving an insight to the local scene and data for comparison to figures abroad, this audit provides groundwork for investigating the management of colorectal pathology, pre-operatively, peri-operatively and post-operatively. The introduction of local protocols as to pre-operative patient preparation, peri-operative use of antibiotics, and post-operative management based on a future prospective study would ensure a step forward in the local management of colorectal bowel pathology.

OP4.118
Changes in objectively measured physical fitness after long course neoadjuvant chemoradiotherapy and a six week prehabilitation programme in locally advanced rectal cancer patients – a blinded interventional study

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Introduction: In the UK, it is standard practice for locally advanced rectal cancer patients to receive 5 weeks of long course neoadjuvant chemoradiotherapy (NACRT). However, the effects of NACRT on physical fitness are largely unknown. Aim: To investigate the effect of NACRT and the effects of a six-week structured, responsive, exercise, training programme (SRETP) on objectively measured physical fitness in resectable rectal cancer patients. Methodology: We prospectively studied 18 consecutive patients (11 male and 7 female) with T3/4 N+ rectal cancer who completed a standardized 5-weeks of long course NACRT. All patients underwent a Cardiopulmonary Exercise Test (CPET) immediately before and after NACRT (Week 0), week 3 and week 6 of the exercise programme. All patients undertook a 6-week structured exercise programme on a training bike (30-40 minutes per session, 3 sessions per week). The training intensities were responsive to each CPET and were of a moderate to severe intensity. Results: Median age was 66 years. Mean body mass index was 26.1 kg/m². Post-NACRT illustrated significant reductions in Oxygen Uptake (VO₂) at Lactate Threshold (LT) (12.0 to 10.4 ml/kg/min; p<0.001), VO₂ at Peak (18.5 to 16.3 ml/kg/min; p<0.001), VO₂ at Peak (18.5 to 16.3 ml/kg/min; p<0.001) and VO₂ at Peak (18.5 to 16.3 ml/kg/min; p<0.001) as assessed by CPET. This may increase perioperative risk and death rate was 15%. Complications included medical problems in 12.0%, wound complications (4.7%) and anastomotic leakage (1.7%). Conclusion: Whilst giving an insight to the local scene and data for comparison to figures abroad, this audit provides groundwork for investigating the management of colorectal pathology, pre-operatively, peri-operatively and post-operatively. The introduction of local protocols as to pre-operative patient preparation, peri-operative use of antibiotics, and post-operative management based on a future prospective study would ensure a step forward in the local management of colorectal bowel pathology.

OP4.117
A review of colorectal resections in Malta

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Objective: Colorectal resection is a common intervention performed in the Mater Dei Hospital theatres. Data regarding pre-operative, peri-operative and post-operative patient factors is lacking. This audit aims to assess the various factors and patient data that ultimately determine patient prognosis, thus providing a framework for improved local guidelines in this field.

Methods: Data of 170 consecutive patients who underwent colorectal resection in the first 6 months of 2010 was collected. Medical notes and iSoft were utilised to identify patient demographics, symptoms, diagnostic tools used, time elapsed from diagnosis to definitive treatment, management plans, intra-operative details, histology and post-operative complications. These data are unique, clinically meaningful and attainable when considering the use of a prehabilitation programme for major colorectal surgical patients.

Results: A total of 170 patients who underwent colorectal resection, in the first 6 months of 2010 was collected. 113 were male and 57 female. Mean age was 67 years, presenting complaints varied from abdominal pain, to change in bowel habit, to incidental findings. 64% of surgery performed was due to tumour, followed by diverticular disease (15%). Time in which operation was performed was strived as morning (60%) or duty (40%). The consultant was the main operator in 47.6% of cases, resident specialist in 42.9% and higher specialist trainee in 4.4% of cases. 92.35% of cases were open laparotomy cases, 5.89% were performed laparoscopically, whilst 1.76% started off as laparoscopic but were converted to open surgery. Use of stoma was documented in 37% of cases, together with an incidence of stoma-related complications in 11% in the early post-operative period. Use of antibiotics was documented, as well as duration of treatment. Anastomosis was stapled in 58%, staple and oversewn in 14% and hand sewn in 5%. 13.5% received blood products peri-operatively, 60% of these were elective operations. 14.7% of patients needed blood transfusion in the early post-operative period. Utilisation of drains was documented in 86% of cases. Only 7.33% of operations involving tumour resection had unclear margins. 53% of cases did not have any documented complication, whilst death rate was 15%. Complications included medical problems in 12.0%, wound complications (4.7%) and anastomotic leakage (1.7%).
OP5.119
Paediatric casualty attendance and weather conditions - a relationship?
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Introduction: Within the paediatric casualty department there is the general impression that attendance is affected by the weather in that patients tend not to attend in unfavourable weather. This study attempts to find a relationship between the number of people who attend paediatric casualty and daily weather. As a secondary outcome, this study relates the proportion of people who need admission in relation to the total number of patients visiting paediatric casualty.

Methodology: Data was collected from the 1st of January 2011 to the 31st of December 2011. The dataset was provided by the Patient Administration System (PAS) and included all male and female patients under the age of 14 who attended paediatric casualty on a daily basis. The daily total number of patients registered was split into those who were discharged and those who were admitted. The weather data was obtained from the Maltese Meteorological Office and included daily maximum, minimum and mean temperature, rainfall, maximum and minimum humidity, mean wind speed and most frequent wind direction. The data was then analysed using the Pearson correlation. The total registrations, discharges and admissions were each compared with each weather parameter.

Results: Just over three quarters of the patients who attend paediatric casualty are discharged. The relationship between the registered, discharged and admitted patients and temperature was statistically significant and showed that the lower the temperature the less patients attend paediatric casualty. The relationship between the registered, discharged and admitted patients and humidity was statistically significant and showed that the more humid it is the more patients attend paediatric casualty. The relationships between the registered, discharged and admitted patients and rainfall, wind speed and wind direction were not statistically significant. The relationships between the ratio (discharged/registered) and temperature and humidity were statistically significant.

Discussion: Most of the attendees do not need admission, implying that a significant proportion need not have attended paediatric casualty. A relationship was found between the number of people who attend paediatric casualty and the daily weather conditions with more people attending in warmer (and more favourable) weather. Rainfall has no significant effect on attendance. Financial savings could be made if staffing levels are tailored to patient flow. When analysing the ratio of patients who were discharged from all those registered the only weather variables to show a statistically significant relationship were temperature and humidity and they showed that the higher the temperature and the more humid it is the larger the proportion of patients who attend and discharged.

OP5.120
Attitudes and skills of Maltese paediatricians and trainees regarding childhood obesity
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Introduction: Malta has a poor record when it comes to childhood obesity. Paediatricians come in contact with children daily and therefore are important players in the fight against childhood obesity.

Aims: This study aimed to assess paediatric staff's attitudes towards managing overweight and obese children, explore barriers they experienced when looking after these children and determine perceived levels of skill and interest in training in childhood obesity management.

Methods: A questionnaire was distributed to all registered Maltese paediatricians (n=42) and specialist trainees (n=13), in both public and private sectors in Malta. Attitudes, barriers, perceived level of skill and interest in training in childhood obesity management were explored anonymously. Results were analysed with Microsoft Excel 2007 and an online statistical tool. Ethics approval was obtained.

Results: 52 participants responded to the questionnaire (94.5%). Most had considerable experience in paediatrics (1–10 years, 28.8%; 11–20 years, 30.5%; 21 or more years, 34.6%). More than 94% of respondents believe paediatricians play an important role in childhood obesity and recognise obesity as a serious health problem in Malta, affecting children's quality of life and psychological well-being. The commonest reported barriers in obesity management were: lack of patient motivation (96.2%), lack of support services (84.6%) and lack of parental involvement (82.7%). Doctors with 20 years experience or less felt more competent and comfortable managing childhood obesity than their more experienced counterparts. Overall, less than half of respondents felt either competent (49%) or comfortable (47.1%) managing overweight children. Perceived competencies were poorest for behavioural management, family therapy and parenting guidance. A third to half of respondents reported a high interest in a wide range of obesity management skills. 67.5% of respondents stated that they use past experience as their information source to manage overweight children, topping professional guidelines (37.3%), speciality training (31.4%) and medical school teaching (12%).

Conclusion: This study is the first attempt at assessing Maltese paediatricians' experiences when caring for overweight children, and identified a need to improve training programmes for Maltese paediatricians and trainees. The setting up of a multidisciplinary service for overweight children would probably facilitate the management of childhood obesity and is strongly recommended.

OP5.121
Childhood type 1 diabetes mellitus in Malta: an alarmingly high incidence
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Introduction: Diabetes is one of the most frequent chronic diseases affecting children and adolescents. Prospective large international registries and studies such as EURODIAB and DIAMOND have shown an increasing trend in the incidence of type 1 diabetes mellitus (T1DM) in most regions of the world over the last two decades. Evidence also shows that increases in incidence were highest in the younger age group. From studies in Europe and North America, the diabetic ketoacidosis rate at presentation varies from 15-47%.

Aim: To assess the incidence and mode of presentation of T1DM in children and adolescents younger than 14 years of age between January 2006 and December 2011 in Malta.

Methods: This was a nationwide prospective study which collected data from newly diagnosed T1DM children who presented to the only paediatric diabetes service in Malta. The degree of ascertainment was estimated to be 100%. Incidence rates by age group and year were estimated using real values of diagnosed patients and population statistics. The percentage of patients presenting with DKA, non-acute symptoms or asymptomatic hyperglycaemia was calculated for each year.

Results: From 2006 to 2011, 102 children under 14 years of age were diagnosed with T1DM. The age- and sex-standardised incidence rate over this 6 year period was 23.78/100,000 children/yr. Generally the incidence rate...
was highest in the 5-9 yr age group, followed by the 0-4 yr age group and finally the 10-14 yr age group. The proportion of patients presenting in DKA was high at 37%.

**Conclusion:** The incidence of T1DM in children/adolescents in Malta is one of the highest when compared to other European countries. A distinct shift to younger age at onset has been observed. DKA rate at presentation is still high in Maltese children but in 2011 a marked decrease in patients presenting with DKA has been noted. Further observation is needed to see if this decreasing trend persists.

**OP5.122**

**Is continuous glucose monitoring superior to intermittent self-monitoring of blood glucose in diabetic children?**

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**Introduction:** Blood glucose monitoring is an essential part of intensive diabetes management of type 1 diabetic children and adolescents. Intermittent self-monitoring of blood glucose (SMBG) is recommended in all current clinical guidelines of management of Type 1 Diabetes Mellitus (T1DM). Continuous glucose monitoring (CGM) is still a relatively new tool which can provide more detailed glucose data than SMBG including information on glucose trend and glycaemic variability.

**Aim:** This review seeks to establish whether sufficient evidence showing an additional benefit of CGMS on diabetes outcomes compared to intermittent SMBG alone is available. This should make us consider CGMS as a tool in the daily management of type 1 diabetic children in clinical practice.

**Methodology:** Electronic databases were searched using a specific search strategy. Hand searches of relevant journals and of reference lists of relevant articles were carried out. Studies eligible for inclusion were published randomised controlled trials (RCTs) investigating the efficacy of CGMS as an adjunct to SMBG in children and adolescents with T1DM, compared to intermittent SMBG alone. Included studies were evaluated for methodological quality. Data was extracted on study design and outcomes.

**Results:** The search yielded 5 RCTs comparing retrospective CGMS with SMBG involving 137 participants aged 2-19 years. The search also yielded another 8 RCTs and 2 follow on studies of 2 of the RCTs which compared real time (RT) CGMS with SMBG, involving 554 participants aged 1-18 years. Out of the 15 studies identified only 3 found a decreased exposure to hypoglycaemia. Satisfaction with CGM use and decrease in HbA1c was found, with regular CGM use being associated with a further decrease in HbA1c of up to 1%. Some of the trials confirmed a decrease in glycaemic variability and of time out of range with CGM use. Others found a decreased exposure to hypoglycaemia. Satisfaction with CGM was high but in spite of this most children chose not to use sensors regularly implying an increased treatment burden.

**Conclusion:** There is evidence that CGMS improves health outcomes in children but only if device is actually used regularly. This seems to be a problem with children and adolescents. Before it can be used routinely in clinical practice, user friendly devices need to be developed. More research is needed to confirm its impact on glycaemic parameters and its usefulness as a preventive tool of severe hypoglycaemia.

**OP5.123**

**Cost of preterm <35 weeks' gestation on the neonatal and paediatric intensive care unit in Malta**

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**Introduction:** Neonates who are born prematurely < 35 weeks’ gestation require admission to intensive care. They are at risk of acute and long term complications that may result in prolonged stay on intensive care.

**Aim:** To assess the financial costs of care of neonates who are born less than 35 weeks’ gestation and receive care on the Neonatal and Paediatric Intensive care Unit (NPICU).

**Methods:** Data including length of stay and treatment received was collected prospectively from patients’ notes of all neonates born <35 weeks’ gestation and admitted to NPICU between the 1st January 2011 and 31st December 2011. The average cost for each surviving neonate was calculated for each gestational age at birth, taking into account the medical and nursing costs, as provided by the financial office of Mater Dei Hospital.

**Results:** During this study period, 131 preterm neonates were admitted to NPICU. One hundred twenty-seven had been discharged from NPICU or died when the study closed. The total medical and nursing cost for this group of patients was approximately 1,250,000 Euro. Calculation of the average cost of care per each gestational age group of the surviving 115 neonates showed that the gestational age was inversely proportional to cost of care, hospital stay, the need for intensive medical and nursing care and use of total parenteral nutrition.

**Conclusion:** This study has shown that preterm neonatal care in Malta is costly. Measures to try and shorten the length of hospitalization of these neonates would result in decreased bed occupancy and decreased health care cost on NPICU.

**OP5.124**

**Safety features in inpatient neonatal and paediatric prescription charts which reduce the potential of medication errors**

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**Introduction:** Modications to the safety or design features of prescription charts have been shown to reduce the frequency of medication errors.

**Main objective:** To achieve consensus regarding which safety features should be included in the Mater Dei Hospital inpatient neonatal /paediatric prescription chart to reduce the risk of medication errors and enhance safety in these patients.

**Method and setting:** A literature search was carried out, using MEDLINE®, and CINAHL®, together with other references supplementing the search, to identify the epidemiology of medication errors in neonates and paediatrics and to identify which prescription chart safety features reduce medication errors in these patients. The safety features of international (four) and local draft (one) neonatal and / or paediatric inpatient prescription charts were compared through mapping. The main objective of this research project was achieved using the Delphi technique. The Delphi questionnaire was designed utilising 172 safety features from the mapping process and the literature search; participants were asked to score their agreement with the inclusion of these safety features in the local neonatal/paediatric prescription chart. The outcome measure was consensus: 70% consensus was aimed for. The Delphi process was carried out using an online custom survey software: SurveyMonkey®, and consisted...
of two rounds, carried out between July 2011 and September 2011. Eighteen Delphi panel members (medical prescribers, pharmacists and nurses) were recruited in this study. Results from each round were analysed to provide the percentage frequencies and number of participants who chose ‘Agree’, ‘Neutral’ and ‘Disagree’, and the response count for each safety feature.

Key findings: Consensus agreement was achieved for 85 safety features to be included in the local draft neonatal/paediatric prescription chart and for 2 safety features to be excluded from the local draft chart. Consensus was not achieved for 17 safety features.

Conclusion: Consensus has been achieved with regards to which safety features should be available in the local inpatient neonatal and paediatric prescription chart. Identifying the appropriate safety features forms part of an essential strategy to reduce the incidence of medication errors in these patients.

OP5.125
Epidemiology of neonatal sepsis on the Neonatal and Paediatric Intensive Care Unit in Malta
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Introduction: The neonatal period is marked by an increased susceptibility to infection primarily due to the immaturity of the neonatal immune system in addition to exposure to pathogens during birth and within the neonatal intensive care unit environment.

Aim: To describe the epidemiology of sepsis in neonates hospitalised on the Neonatal and Paediatric Intensive Care Unit (NPICU) at Mater Dei Hospital.

Methodology: All microbial isolates obtained during 2008-2011 from blood, urine and cerebrospinal fluid (CSF) cultures taken for suspected sepsis in neonates (≤28 days) admitted to NPICU and in preterm infants necessitating prolonged NPICU hospitalisation, were analysed retrospectively. Analysis of the antibiogram of all microbes was performed in order to rationalise antibiotic prescribing.

Results: Over the 44 month study period a total of 961 blood, 47 CSF and 74 urine cultures were taken, with significant pathogens being isolated in 9.5% (91/961), 19% (9/47) and 53% (39/74), respectively. A drastic change in the epidemiology of the infective microbes was noted in neonates >72 hours old, establishing the definition of late onset sepsis within our study. Gram positive organisms caused the majority of early onset bacteriaremias (21/26; 81%) of which Streptococcus agalactiae (Group B Streptococcus) was the predominant pathogen (11/26; 42%). Late-onset septicaemia was also predominantly caused by Gram positive bacteria (52/65, 80%) most frequently by coagulase negative staphyloccoci (CONS) (36/65, 55%), which were mainly isolated from pre-term infants with central lines who had been hospitalised for a mean of 23 days, and Staphylococcus aureus (8/65; 12%), half of which were methicillin resistant. Gram negative pathogens were isolated from 14% (9/65) of which 33% (3/9) were ESBL producing. Candidaemia caused 6% (4/65) of cases of late onset sepsis. Only 9 infants, 5 of whom had a ventricular drain or shunt, had microbiologically confirmed meningitis. Enterobacteriaceae caused 64% (25/39) of urinary tract infections all of which presented as late onset sepsis. In the absence of meningitis, the combination of penicillin and gentamicin for early onset sepsis and fluoxyacillin and gentamicin for late onset sepsis developing in neonates hospitalised on NPICU, were found to cover the majority of the isolates. For neonates with suspected meningitis the addition of cefotaxime is necessary. Septic infants with central lines or who have prolonged hospitalisation should receive antibiotics targeting resistant pathogens.

Conclusion: This is the first study describing the epidemiology of neonatal sepsis on NPICU in Malta. Epidemiological surveillance of pathogens is essential in rationalising antibiotic regimes.

OP5.126
Developments in the management of the axilla in breast cancer patients
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Introduction: Management of the axilla in breast cancer patients has lagged behind that of the management of primary breast cancer. With the advent of sentinel node surgery becoming the new gold standard, further developments, are aimed at avoiding the need for completion clearance in sentinel node positive disease.

Purpose: To elicit the views, experiences and preferences of women with clinically node negative breast cancer towards intra-operative sentinel lymph node biopsy (SLNB) analysis.

Methods: Focus groups with 14 women with breast cancer from two UK centres; one group had undergone the standard practice of waiting two weeks for results of their axillary surgery, the other had experienced the intra-operative SLNB analysis.

Results: Women generally were unaware about their lymph nodes, what their function is and how they are removed. Preference was indicated for intra-operative sentinel lymph node biopsy (SLNB) analysis provided clear descriptions were given about the risk of experiencing false negative and false positive results.

Discussion: Adopting an intra-operative analysis technique of axillary nodes was viewed as an excellent option by women from both centres. The immediacy of knowing the results was seen as a great advantage for their physical and psychological well being and more cost effective.

OP5.127
Auditing the outcomes of the first cases of minimally invasive inguinal hernia repair in Mater Dei Hospital, Malta
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Introduction: Minimally invasive inguinal hernia repair has been described as a feasible alternative to open surgery with the aim of decreasing post-operative recovery time and patient discomfort. The Transabdominal Extraperitoneal Procedure (TEPP) approach is the method that has been adopted in the cases audited within MDH. The first 20 cases were audited in order to evaluate our current practice and hopefully set a baseline for future comparison. This technique involves placement of a prosthetic mesh beneath the posterior wall of the inguinal canal which decreases risk of infected mesh and post-operative chronic pain syndrome. Besides this the minimally invasive operation allows for more rapid recovery, shorter hospital stays due to fewer cases of urinary retention and post-operative pain and less time off work.

Method: Majority of data was collected prospectively, whilst for the first two cases data was collected retrospectively. The time taken to complete the procedure and convert intraoperatively to an open procedure was recorded at time of surgery. Length of stay and immediate post-operative complications were recorded upon discharge from hospital. Patients were re-examined at 6 months, 1 year and 2 years post-operatively, and any recurrence or late complications were recorded.

Results: 20 patients were followed up for 2 years. Out of these 20 cases, 2 of the cases were converted to open and hence were not followed up. Another patient was not followed up due to intra-operative myocardial infarction. For the remaining 18, average length of surgery was calculated to be 97 minutes.
With regards to hospital stay majority of cases were one day cases. Four of the patients required a two day hospital stay, because of insulin dependence diabetes mellitus and post-operative nausea and vomiting. Majority of the patients required between 1 and 7 days off work. 3 patients out of the 20 had complications. One patient complained of groin pain for 1 week post-operatively. Another case resulted in a superficial wound infection. Finally, the third complication was scrotal pain and bruising lasting 6 weeks. One recurrence was detected one year post-operatively.

**Conclusion:** This was an audit of surgical practice designed to set a benchmark during the learning curve of the first twenty cases of this minimally invasive procedure. A trend was noted in the patient’s reaction to surgery as most quoted painless recoveries and rapid return to full function. Unfortunately both the patient’s desire to take days off work and incorrect discharge advise from medical staff kept them convalescent for longer. A re-audit is underway to compare outcomes 3 years after this learning curve and with appropriate discharge instructions. Greater numbers are needed to comment on recurrence rates, however one recurrence from 20 cases during the learning curve is not discouraging. A difference will be expected in the conversion rates on re-audit.

**OP5.128 Surgical site infections: a study of the incidence and risk factors at Mater Dei Hospital, Malta – A preliminary report**

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**Introduction:** Surgical site infections (SSIs) are wound infections following an invasive surgical procedure and are a major cause of morbidity and mortality, constituting around 14-16% of all nosocomial infections among hospital inpatients. They result in prolonged hospital stays, greater use of antibiotics and increased costs. The aim of this audit is to evaluate the incidence of SSIs in patients undergoing elective or emergency laparotomies and predisposing factors in the local population.

**Method:** Patients undergoing elective or emergency laparotomies for various surgical conditions are being offered to participate in this study. An informed consent was obtained after supplying the patient with an information leaflet, following which patient demographics and clinical details were collected. On the 7th postoperative day the patients were interviewed for any SSI symptoms. Patients with significant symptoms were reviewed by doctors participating in the study to confirm/exclude a SSI and manage them accordingly. This was repeated on the 30th postoperative day. Patients with concerning symptomatology between days 7 and 30 were asked to report to the investigators and were reviewed accordingly.

**Results:** Twenty nine patients were recruited to date, of whom one refused participation following initial consent and one patient was lost to follow up. 13.8% (4/29) of patients developed a SSI. All patients who developed a SSI had emergency surgery as opposed to 56% of patients with no SSI. The mean age was higher in the SSI group (70.3 vs 56.7 years). Seventy five percent of patients in the SSI group had an ASA of 3 or 4 when compared to 28% of patients with no SSI. The no SSI group had a higher BMI (26.1 vs 25). The wound classification was clean/clean-contaminated in 75% of patients who developed a SSI and contaminated/dirty in 25%. Only 8% of patients who had no wound problems had a contaminated/dirty wound. The operating time in the SSI group was marginally lower than the average. Two patients were not prescribed perioperative antibiotics and they did not develop wound problems.

**Discussion:** In this preliminary report the incidence of SSIs is 13.8% and there are also trends suggesting risk factors for development of SSIs in our population. The data is limited by the population size but more patients are being recruited into this study. This audit will provide us with information regarding the incidence and risk factors of SSIs which can then be translated to recommendations to the surgical teams, aiming to reduce the incidence and burden of SSIs.

**OP5.129 Excision margins in breast conserving surgery**

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**Introduction:** The ideal excision margins in breast conserving surgery are still a matter of debate. Various distances are accepted as adequate, ranging from cancer cells not touching excision margins (<1mm), between 1 and 5mm, between 5 and 10mm, and more than 10mm. American authors tend to accept distances of <1mm, whilst European authors tend to favour larger margins.

**Aim:** The aim of this study is to find whether there is any correlation between different resection margins and rates of recurrence of breast carcinoma.

**Methods:** All those patients who underwent breast conserving surgery cancer in 2009 were recruited into the study. Their notes were reviewed and their resection margins and any evidence of recurrence were noted.

**Results:** 120 patients underwent breast conserving surgery during the study period. 14% had resection margins of more than 10mm, 11% had resection margins of more than 5mm, 39% had margins of between 1 and 5mm, whilst 23% had margins of less than 1mm. 17% had cancer reaching resection margins, and mostly were re-operated. 5 patients (4%) had recurrence. The recurrences were not significantly associated with the excision margin distance, but rather with the biological activity of the cancer, like angiolymphatic invasion, grade and age at presentation.

**Conclusion:** As long as the tumour is completely excised, the resection margin distance seems not to be correlated with the recurrence rate. This may reflect improvement in treatment modalities, such as better chemotherapeutic agents and better adjuvant regimes.

**OP5.130 Laparoscopic cholecystectomy: a 1 year experience from our institution**

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**Introduction:** Laparoscopic cholecystectomy (LC) is the most common laparoscopic procedure performed at Mater Dei Hospital. This procedure is the treatment of choice for uncomplicated cholelithiasis. In our institution acute cholecystitis is mainly treated conservatively with a delayed cholecystectomy.

**Aim:** To analyze our experience of LC in 2011, and compare our results with international data.

**Methodology:** A search of all cholecystectomy procedures performed in 2011 was performed using the theatre computer database. Cases in which another procedure was carried out together with the cholecystectomy, were excluded. Data collected included rate of conversion to open, bile duct injuries (BD), bile leaks, postoperative collections, length of hospital stay and other complications. Data was collected from iSOFT, PACS and ECS.

**Results:** One hundred and ninety-five elective (195) cholecystectomies were performed in 2011. Twelve (6.2%) required conversion to open. There was 1 (0.5%) reported BD injury and 1 (0.5%) reported bile leak. Three patients (1.5%) developed a collection post-operatively. Other reported
complications included: 1 (0.5%) deep vein thrombosis, 1 (0.5%) port site infection, 1 (0.5%) reaction to antibiotics (skin rash) and 1 (0.5%) patient who developed acute renal failure, aetiology unknown and Clostridium difficile stool infection. The mean length of stay was 2.3 days, with a range of 0-40 days. The mean stay for the laparoscopic procedures was 1.9 days, and the mean stay for uncomplicated open procedures was 5.1 days. The median length of stay was 1 day. 13 (6.7%) of cases were performed as day cases.

Discussion: Conversion rates vary according to the institution and the experience of the surgeons performing the procedure. In our series, the conversion rate was 6.2% which is well within range of 1.5-15% of cases reported in the literature. The incidence of BD injuries (0.5%) falls within the reported rate of 0.3-2.7% in hospitals with various levels of experience. The international reported rate of bile leaks is 0.3-1% of procedures performed, compared to our reported rate of 0.5%. Similarly, our rate of postoperative collections (1.5%) is within the international reported rate of 0.5-5.8%. All other complications as a result of the surgery are well-recognized complications of laparoscopic cholecystectomy, and of any surgery requiring general anaesthesia.

Conclusion: This audit shows positive results that compare well with data from more experienced centres even though our numbers were smaller. This is promising for the expanding the use of laparoscopy for other procedures. Similar audits for other procedures are recommended.

OP5.131
An audit in the management of acute pancreatitis
M. Sammut, C. Caruana, L. Sammut

Introduction: Patients admitted to hospital with acute pancreatitis are at risk of complications and death. This highlights the importance of early diagnosis and adequate management of pancreatitis. Acute pancreatitis remains an important disease due to its increasing incidence. A number of international guidelines are available for the management of acute pancreatitis. Locally, at present there are no management guidelines for acute pancreatitis.

Methodology: 128 patients with a diagnosis of acute pancreatitis were retrospectively identified with an increase in amylase of >300IU/L. The data was collected from the medical notes, iSOFT, ECS and PACS software systems. The time period was from 1st September 2009 and 31st August 2010. Patient demographics, aetiology, investigations, morbidity, mortality and inpatient management for acute pancreatitis were reviewed.

Results: There were 144 episodes of acute pancreatitis (16 were readmission episodes). 28 episodes were severe and 116 were mild. There were 82 males and 62 females (age range - 17 years to 89 years (mean - 60.3 years) with an average length of stay of 11 days. In 135 acute pancreatitis episodes the highest amylase value was obtained on admission, of which 22 developed complications. Episodes with the highest amylase value after the first 24 hours had no complications reported. 25 cases required an ITU admission. 19 cases had a pleural effusion and 10 deaths occurred. Other complications were calculated and the most common aetiology (71 episodes). In 17 acute pancreatitis episodes, alcohol was the cause for the pancreatitis. The cause for pancreatitis was not identified in 32 episodes. 139 cases had conservative management. Inpatient monitoring was audited and reviewed. Antibiotics were prescribed in 98 cases on admission and in 12 post ERCP cases. 46 cases were prescribed antibiotics due to leukocytosis only. 36 cases were prescribed antibiotics with no reason documented. 10 cases with gallstone pancreatitis had an ERCP in the acute phase of the condition whilst 3 episodes had a delayed ERCP. Cholecystectomy for gallstone pancreatitis was done as a delayed procedure in 31 patients. 8 patients had early cholecystectomy. The rest of the patients were either not candidates for surgery due to medical co-morbidities or foreigners (5 patients), patients who refused the operation (7 patients) and patient deaths (6 patients). 14 patients were still on waiting list awaiting their procedure.

Conclusions: The incidence of pancreatitis locally is 32 per 10000 persons with a mortality rate of 7%. There is a high rate of patients with unidentified aetiology when compared to recommendations by international guidelines. Only a few patients with gallstone pancreatitis were noted have early ERCP/cholecystectomy done. Inappropriate prescriptions of antibiotics were also noted when this aspect was compared to international guidelines. Unnecessary repetitions of serum amylase were also noted. A management protocol guideline is recommended for the local management of patients with acute pancreatitis.

OP5.132
Surgical treatment of non-melanoma skin cancer
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Introduction: Non-melanoma skin cancer (NMSC) surgery makes up a significant part of any plastic surgeon’s theatre time. Incomplete excision of such lesions increases this workload, causes distress to patients who usually require further surgery and increases hospital costs.

Aim: To audit and improve surgical treatment of NMSC by the Plastic Surgery Unit.

Method: A database of all relevant lesions excised between 1st January and 31st December 2010 was created using Microsoft Access and all histology reports were thoroughly reviewed using iSoft Clinical Manager. Results were analysed, necessary management changes implemented and a re-audit was carried out for lesions excised between 1st January and 31st June 2012. Data was derived from databases of 2 plastic surgeons, the pathology department database, theatre records and personal logbooks. Keywords ‘basal’, ‘BCC’, ‘squamous’, ‘SCC’ and ‘lesion’ were used to determine operations relevant to this audit.

Results: In 2010, 433 lesions were excised from the 302 patients included (194 males and 108 females) as compared to the 144 lesions from 135 patients during the re-audit period. There were fewer false positive diagnoses in the 2011-12 assessment (8.86% vs. the initial 18.94%). Five re-excisions were performed due to an originally histologically incomplete excision and 3 of these (60%) were reported as ‘No residual tumour’. All of the NMSC removed 15.75% of cancers were incompletely excised in 2010 but a markedly reduced rate of 7.64% was seen in the re-audit. A notable improvement was seen with lesions on the face and scalp.

Conclusion: Strict guideline implementation led to better outcomes in NMSC management. Bettering an incomplete rate of 15.75% was a must despite the fact that this fell within the upper range reported in the literature. The new results now compare better with international data and a reduction in repeat operations was noted.

OP5.133
Imaging of ischemic stroke
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In ischemic stroke, which is caused by the occlusion of major cerebral arteries, loss of electrical brain function develops at higher residual blood flow levels than loss of membrane ion homeostasis and brain cell integrity. The range between these levels, or thresholds, has been termed “penumbra” and
describes a still viable zone experiencing moderate ischemic and metabolic stress surrounding the severely ischemic core. This penumbra zone will eventually undergo damage as a result of multiple pathophysiological processes giving rise to a centrifugal dynamic progression of the core region at the expense of the peri-infarct zone. Thus, identification of the penumbra and understanding the mechanisms of progressive damage have major clinical implications. The course of deterioration of the penumbra has been uncovered in space and time by quantitative imaging using positron emission tomography (PET). Combined sequential studies of blood flow and metabolism using 150-PET tracers ([15O]H2O; [15O] O2) identify the dynamic nature of the penumbra as a zone with decreased blood flow but temporarily elevated oxygen extraction resulting in a still preserved oxygen metabolism. Kinetic modeling of [18F]-2-fluoro-2-deoxy-D-glucose (FDG) uptake used as a PET tracer for glucose metabolism has revealed that elevated hexokinase activity and thus preserved glucose consumption identifies in a similar fashion penumbra zones in the blood flow gradient developing after arterial occlusion. Clinically, magnetic resonance imaging (MRI) has been more widely applied than PET for penumbra identification. The mismatch between perfusion- and diffusion-weighted MRI images (PWI/DWI mismatch) acts as a very strong surrogate marker even though penumbra regions may sometimes be overestimated compared to results derived from PET imaging. Experimental and recent human studies show that waves of depolarization resembling cortical spreading depression (CSD) arise spontaneously in penumbra zones. These waves termed peri-infarct depolarization (PID) seem to represent a major mechanism of infarct progression. Recent studies of blood flow responses linked to PID using real-time imaging with Laser Speckle Contrast Analysis show that these waves may propagate in a radial fashion outwards into peripheral regions. They may also propagate in a circular fashion around the core covering thereby, often recurrently, the whole penumbra. Since these blood flow responses are not hyperemic as is the case in physiological conditions but rather hypoemic, they are not compensatory with regard to the metabolic stress generated by repetitive repolarization but rather add to the ischemic stress. As a result, the penumbra suffers from a stepwise progressive deterioration leading to terminal depolarization and death.

OP5.134 Inactivation of the constitutively active ghrelin receptor attenuates limbic seizure activity in rodents
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Ghrelin is a pleiotropic neuropeptide that has recently been implicated in epilepsy, however its mechanism of anticonvulsant action is unknown. In this study we used the in vivo rat model for pilocarpine-induced limbic seizures, the mouse pilocarpine tail infusion model, transgenic mice with a growth hormone secretagogue receptor (GHSR) deletion, electrophysiology in hippocampal slices, EEG recording in freely moving rats, and HKE293 cells expressing the human GHSR to determine the role of the receptor in anticonvul- sion, desensitization, internalization and resensitization. Ghrelin (1.8 µg/g) also significantly increased seizure thresholds in the pilocarpine mouse tail infusion model in GHSR+/+ mice (p < 0.05). Experiments with transgenic mice ascertained that ghrelin requires the GHSR for its anticonvulsant effect. Unexpectedly, we found that GHSR−/− mice had a higher seizure threshold than GHSR+/+ mice when treated with pilocarpine (p < 0.05). We confirmed that ghrelin's potential to rapidly desensitize the GHSR is followed by internalization of the receptor and a slow resensitization process. This, together with our present novel findings that different ghrelin fragments possess similar agonistic potencies but different desensitization characteristics on the GHSR, led us to elucidate that ghrelin probably attenuated limbic seizures in rodents and epileptiform activity in hippocampal slices due to its desensitizing effect on the GHSR. To the best of our knowledge this constitutes a novel mechanism of anticonvulsant action whereby an endogenous agonist reduces the activity of a constitutively active receptor.

OP5.135 Role of potassium channels in serotonin receptor signalling: implications for psychiatric disorders
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Serotonin (5-HT) has been implicated in the aetiology of many psychiatric illnesses and in psychotomimetic effects of hallucinogens. 5-HT binds to a plethora of receptors (Rs) that belong to the superfamily of G protein-coupled receptors (GPCRs), except the 5-HT3 subtype which is a ligand-gated cation channel. 5-HTRs represent today the most common cellular targets for therapeutic drugs in neuropsychiatry. The classical view of functional monomeric GPCRs has recently been changed by compelling evidence suggesting that GPCRs function in vivo as homodimers and/or heterodimers and that this also applies for 5-HT. 5-HT produces complex electrophysiological effects modulating membrane conductance, especially acting at potassium channels. Indeed, K+ selective ion channels regulate numerous and heterogeneous neuronal functions including action potential duration, neurotransmitters’ release and cell excitability. In particular, K+ currents play a key role in the flexible properties of intracortical axons and contribute significantly to intracortical processing. Blockade of K+ channels is part of the mechanism underlying 5-HT-induced glutamate release from thalamocortical terminals. Furthermore, 5-HT receptors control the excitability of dopaminergic neurons from the ventral tegmental area and substantia nigra by modulating K+ conductance. In heterologous expression systems, a new potassium regulatory system of human K+ channel activity involves the dual coordination of both RPTPα and specific tyrosine kinases coupled to the 5-HT2C receptor. The major focus of this talk is to report recent evidence on the molecular identity of distinct 5-HT receptors, the regulation of CNS circuits by means of K+ conductance modulation and to provide an overview of new therapeutic targets for psychiatric disorders.
Methods: Children born with spina bifida between 1993 and 2003 were identified through the Malta Congenital Anomalies Registry, after obtaining ethics committee approval. The identified patients’ relatives were then contacted anonymously through the data controller at Mater Dei Hospital. The consenting respondents were subsequently sent a QoL questionnaire and a separate questionnaire. The Health-related QoL-SB questionnaire, developed by Parkin et al (1997) was used to evaluate QoL. This tool assesses 10 domains and can be answered by both child and parent. It is an established self-report instrument specific to spina bifida. The Barthel Score was used as a measure of activities of daily living (ADLs).

Results: A total of 35 children were born with spina bifida between 1993 and 2003, 6 of whom died in the perinatal period. The remaining patients had a mean age of 11.1 years, 48.3% (n=14) of whom were male. Of the 29 available patients, 11 consented to be contacted further. The mean age of the participants was 8.8 years, with 27.2% (n=3) being male. Of the respondents, 36.3% (n=4) suffered from urinary incontinence, 54.5% (n=6) had a ventriculo-peritoneal shunt for hydrocephalus. The mean Barthel Score was 75.5/100 (CI of 4.14-9). Mean QoL simplified to a scale from 0 to 100 was 83.6 (CI of 7-6.6). A positive linear correlation (r=0.79, p<0.006) was noted between the Barthel Index and QoL Score. A correlation was noted between control on urination and QoL (r=0.60, p=0.05). Sex and age were not related to QoL. The weak negative relation between treated hydrocephalus and QoL was not statistically significant (r=-0.42, p=0.20).

Conclusions: Although limited by sample size, a statistically significant influence of the ability to cope with ADLs and QoL was noted. Patients with urinary incontinence tend to score poorer in QoL and it could be a target for further improvement in children with spina bifida. Treated hydrocephalus was not significantly associated with a poor QoL.

OP5.138 Oxygen use in medical wards at Mater Dei Hospital: are guidelines being followed? R. Magro, K. Mifsud Taliana

Introduction: Oxygen is one of the commonest used drugs. The prescription, administration and monitoring of oxygen therapy in medical wards at Mater Dei Hospital were audited.

Aim: The aim of this audit was to assess whether oxygen use is appropriate according to the recommendations made by the British Thoracic Society guideline for emergency oxygen use in adult patients, namely that oxygen should be prescribed (including full details of delivery device, flow rate and target saturation range) and signed for on the treatment chart. Moreover oxygen saturation should be monitored and oxygen delivery adjusted according to target saturation in all patients on oxygen. Once the use of oxygen is discontinued, it should be crossed off the treatment chart.

Methodology: This audit was performed on 255 patients of whom 23.1% were on oxygen. Out of the patients on oxygen, 27.1% had a prescription for oxygen and this included a target oxygen saturation in only 17.7%. Moreover oxygen saturation monitoring was requested in only 33.9% of patients on oxygen. In those patients who had a prescription for oxygen in the treatment chart, it was never signed for by the nursing staff and the oxygen delivery system used was the same as that listed on the treatment chart in 62.5%. The most common devices used to deliver oxygen were the nasal cannulae and simple mask, followed by the 28% venturi mask.

OP5.136 Stroke patients’ interpretation of symptoms and presentation to hospital – a study G. Scicluna, M. Mallia, M. Gruppetta, F. Theuma, S. Aquillina, J. Aquilina

Introduction: Thrombolytic therapy for acute ischaemic stroke has been available at Mater Dei Hospital since October 2010. This treatment needs to be administered within three hours of symptom onset. Late presentation to hospital remains a major contributor to low numbers of thrombolysed patients.

Aim: To elucidate patients’ interpretation of their stroke symptoms and to investigate factors which influence timely presentation to hospital.

Methodology: All patients admitted to Mater Dei Hospital with an initial diagnosis of stroke or transient ischaemic attack between July and September 2011 were recruited prospectively. Data collected included the nature and time of first symptoms, the patients’ interpretation of these symptoms, knowledge on stroke and risk factors, past history of cerebrovascular disease, time and nature of medical assistance first sought and mode of transport to hospital.

Results: The cohort studied (n=54), of whom 59% were male, had an average age of 67.9 years (SD 10.4). The risk factors for stroke most frequently found in this group were hypertension (56%), hypercholesterolaemia (56%) and family history of stroke (41%). The symptoms most frequently reported were motor (70%), speech impairment (44%) and sensory (30%). The subjective sensation of ‘dizziness’ was reported by 28% of participants. Participants initially interpreted their symptoms as stroke in 33% of cases (n=18) whereas 48% reported that they did not suspect any particular cause. The perceived severity of events at symptom onset was reported as ‘serious’ by 41% and ‘not serious’ by 57%. Only 31% (n=17) recognised the brain as the organ primarily affected in stroke. 26% of patients sought medical attention within 30 minutes and 45% within 1 hour. 20% did not seek medical attention before 24 hours. 56% (n=30) of patients first received antithrombotic treatment before 3 hours. Of those patients who had an acute ischaemic stroke between July and September 2011, 6% had received a thrombolytic agent.

The symptoms most frequently reported were motor (70%), speech impairment (44%) and sensory (30%). The subjective sensation of ‘dizziness’ was reported by 28% of participants. Participants initially interpreted their symptoms as stroke in 33% of cases (n=18) whereas 48% reported that they did not suspect any particular cause. The perceived severity of events at symptom onset was reported as ‘serious’ by 41% and ‘not serious’ by 57%. Only 31% (n=17) recognised the brain as the organ primarily affected in stroke. 26% of patients sought medical attention within 30 minutes and 45% within 1 hour. 20% did not seek medical attention before 24 hours. 56% (n=30) of patients first received antithrombotic treatment before 3 hours. Of those patients who had an acute ischaemic stroke between July and September 2011, 6% had received a thrombolytic agent.

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OP5.137 Health related quality of life and disability in young Maltese patients with spina bifida A. Zammit1, D. Grech Marguerat1, J.P. Camilleri1, A. Zrinzo2, L.V. Zrinzo3

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Aim: Spina bifida is a neural tube defect and is the commonest, physically-disabling congenital anomaly. An impairment of the patients’ quality of life (QoL) is likely, given the chronic nature of this condition and its associated complications. We sought to assess the relationship between QoL and the degree and nature of symptoms in young patients with spina bifida in Malta.

Methods: The cohort studied (n=54), of whom 59% were male, had an average age of 67.9 years (SD 10.4). The risk factors for stroke most frequently found in this group were hypertension (56%), hypercholesterolaemia (56%) and family history of stroke (41%). The symptoms most frequently reported were motor (70%), speech impairment (44%) and sensory (30%). The subjective sensation of ‘dizziness’ was reported by 28% of participants. Participants initially interpreted their symptoms as stroke in 33% of cases (n=18) whereas 48% reported that they did not suspect any particular cause. The perceived severity of events at symptom onset was reported as ‘serious’ by 41% and ‘not serious’ by 57%. Only 31% (n=17) recognised the brain as the organ primarily affected in stroke. 26% of patients sought medical attention within 30 minutes and 45% within 1 hour. 20% did not seek medical attention before 24 hours. 56% (n=30) of patients first received antithrombotic treatment before 3 hours. Of those patients who had an acute ischaemic stroke between July and September 2011, 6% had received a thrombolytic agent.

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Conclusion: The results of this audit suggest that the standards for the prescription, administration and monitoring of oxygen therapy at Mater Dei Hospital require improvement. This could be improved by having a preprinted section for oxygen use that includes the target oxygen saturation in all hospital drug charts. A standard observation chart including details of the oxygen device and flow rate being used and the patients’ oxygen saturation would encourage improved monitoring of such patients and prompt action to be taken if the oxygen saturation falls outside target range. The setting up of local guidelines as well as medical staff education is also necessary to improve current practices.

Aim: To determine whether demography affects hospitalisation in asthma exacerbations in adults.

Methods: We included 100 asthmatics admitted with an acute exacerbation over 14 months; matched for age and sex with a 100 well-controlled asthmatics from asthma clinic. Information on sociodemographic variables, clinical and laboratory data was collected. Acute and convalescent (at 6 weeks) titres of serum immunoglobulin E (Se Ig E) and serum eosinophil count were taken. SPSS was used for statistical analysis.

Results: The study population was 73% female and the median age was 49 years. Univariate analysis using t-test and Chi-square showed a significant difference in compliance (p<0.0001), smoking status (p=0.007) and hospitalisation in the previous year between controls and cases (p=0.0001). There was no significant difference in: influenza immunisation (p=0.105), exhaled CO (p=0.83), BMI (p=0.27), Se Ig E levels (p=0.317), history of atopy (p=0.637), family history of atopy (p=0.121), level of education (p=0.210), age of asthma onset (p=0.320) and pets at home (p=1.0). The mean decrease in Se Ig E between acute and convalescent titres was 36.1%. There was no correlation between % predicted FEV1 on admission (as a measure of severity) with length of stay (p=0.376), white cell count (p=0.163), CRP (p=0.199), or Se IgE (p=0.767), however this was negatively correlated with eosinophil count (p=0.045).

Conclusions: A history of previous hospitalisation, non-compliance and smoking are significant risk factors for asthma exacerbations requiring hospital admission. An increased eosinophil count correlates with severity of the exacerbation.

Aim: To determine whether circadian patterns correlate with the utilization of emergency services by asthmatic patients and to identify factors associated with circadian variation which could affect asthma management in the A&E Department in our local hospital.

Methodology: A total of 244 adult patients with acute asthma exacerbations managed at the A&E Department between January and October 2010 were recruited. Data was collected prospectively from the clinical case notes. The 24 hour cycle was divided into six hour intervals. Patients were grouped according to their age, employment status, time lag from symptom onset to presentation at the A&E Department and the mode of referral.

Results: The peak time of presentation was between 6.00 and 11.59. Statistical analysis showed that during this time interval, there was a significant significance in the number of females when compared to males (p=0.018), and in patients who were self-referred as opposed to those referred by a general practitioner (p=0.001). Further analysis revealed no statistical significance when comparing age groups, employment status and time lag from onset of symptoms to time of presentation at the A&E department.

Conclusion: A circadian distribution for presentations with a peak in the morning which probably reflects the occurrence of asthma worsening in early morning and a nadir at night was identified in our study. Females and self-referred patients are more likely to present in the morning with asthma exacerbations. Understanding the significance of such factors could lead to improved management predicting peak asthma presentation at the A&E department.

Aim: To analyse the possible association between Chronic Obstructive Airway Disease and Anaemia

Method: 69 patients were included in this study; 34 with COAD were analysed as cases, as well as 35 eligible controls. Data was collected from patients’ case notes using a pro-forma which included age, gender, haematinics, renal, liver and thyroid function tests, inflammatory markers, smoking status, iron supplementation, potential causes of bleeding and other variables.

Results: The COAD group consisted of 23 males and 11 females with a mean age of 64.8yrs, whereas the control group consisted of 14 males and 21 females with a mean age of 66.0 years. The mean predicted FEV1 in the male COAD group was 54.1% as opposed to 69% in the female COAD group. In the case of male COAD vs Control patients the mean haemoglobin and haematocrit levels were 13.9g/dl and 42% respectively vs 13.5g/dl and 42% (p=0.51). 21.7% of patients with COAD were anaemic as opposed to 42.9% in the male control group. The anaemia in the male COAD patients was normochromic normocytic in 80% of cases and microcytic in 20% of cases. In the case of the female groups there were 11 patients in the COAD group and 21 patients in the Control arm. The mean haemoglobin and haematocrit level in the female COAD group was 13.4 g/dl and 39.6% respectively vs 12.9g/dl and 36.6% in the female control group (p=0.11). The prevalence of anaemia in the female COAD group was found to be 9% vs 39% in the control group. In the case of females 100% of anaemia encountered was normochromic.
Conclusion: There was no statistically significant difference in mean haemoglobin and haematocrit levels seen between the gender-matched COAD and control groups. Moreover, in this study we have noted that 21.2% of male and 9% of female COAD patients were anaemic, most of which was normochromic. Interestingly no alternative cause for the anaemia in these cases could be readily identified. However, unlike other similar studies, we are able to compare our findings to a control arm, in which the percentage of anaemic patients was significantly higher. This difference could be explained by compensatory mechanisms increasing haemoglobin production secondary to chronic hypoxaemia.

OP5.142
Evaluation of the first year of a local rapid access lung clinic
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Aim: The aim was to assess source and referral types, time to referral and diagnosis, diagnostic investigations and diversity of diagnosis in the first year of a Rapid Access Lung Clinic.

Method: All relevant data was collected from iSOFT and medical case notes. Data collected included patient demographics, past medical history including smoking history, occupational hazards, symptoms, examination findings, imaging and invasive diagnostic techniques and a final diagnosis.

Results: A total of 104 patients (71 males, 33 females) with a mean age of 62 years (range 15 to 92) were referred over the 12 month study period. The mean time to the first consultation was 10 days and that to a documented diagnosis was 32 days. Referral source was 38 from A&E department, 36 from inpatient referral, 18 from primary care and 11 had an undocumented or unavailable referral ticket. The diagnosis included: 35 had an infectious aetiology (of which 28 were malignancies), 31 had a malignant aetiology (11 of which were infections), 7 had a non-malignant aetiology and 1 had a diagnosis of benign pleural plaque. Of those patients diagnosed with malignancy, 6 patients were referred for surgical intervention and 22 patients referred for oncological assessment.

Conclusions: The Rapid Access Lung Clinic has achieved its target to minimise referral time with a diagnosis being achieved in just a month. The diversity of diagnosis shows that most referrals have a non-malignant aetiology with malignancy being present in only 26.2% of referrals. Most of the malignant diagnoses were made on bronchoscopy and CT guided lung biopsy, whereas serial chest radiography or CT scanning confirmed a benign aetiology.

OP5.143
A survey to assess smoking awareness and attitudes of staff at a local hospital
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Introduction: Rising smoking-related morbidity and mortality would be expected to lead to increased awareness among hospital staff regarding the harmful effects of cigarettes.

Aim: The aim is to assess the smoking habits of individuals working within a hospital setting who are directly or indirectly exposed to patients with smoking-related illnesses. The survey addresses health issues and attitudes towards smoking. The timing is opportune in that Mater Dei Hospital Msida is to be declared a totally smoke-free hospital.

Methodology: A questionnaire was compiled, based on various tools validated in the literature. These were distributed to all members of staff at our General Hospital, targeting more than 3600 individuals.

Results: 27.1% of male and 24.8% of female staff are active smokers. Males were significantly (p<0.001) more likely to have started smoking at a younger age than females. Almost half find difficulty in refraining from smoking in forbidden areas. Only 22.2% of smokers refrain from smoking in hospital. The highest percentage of smokers are in the youngest age group (18-25 years). 10.4% of doctors and 23.6% of nurses are active smokers. 25.7% of non-smokers had previously smoked, the greatest incentive for quitting being for health reasons. Most members of staff are aware of the adverse effects of smoking and a number have symptoms suggestive of smoking-related pathology.

Conclusion: Hospital staff mirror the general population with respect to smoking habits and comorbidities. This is unacceptable and emphasizes the need to implement harsher measures whilst educating our hospital staff so that these in turn may serve as educators to patients and hospital visitors.

OP5.144
Costing non-communicable disease
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The European Health Interview Survey 2008 provided data on respondents’ self-reported health and their use of various health services: the number of visits to a general practitioner and to a specialist in the previous 4 weeks, both in the public and private sector, together with the number of nights spent in hospital and number of daycare episodes over the previous year. Using available pricing data for each of these services, annual costs have been estimated for each type of respondent and projected onto the whole population using the prevalence figures for specified medical conditions. Pharmaceutical or surgical costs could not be estimated. We will report work on hypertension and diabetes. Based solely on EHIS, hypertension was estimated to result in 6.2 million euros additional healthcare costs while the estimate for diabetes was 9.3 million euros in excess annual healthcare costs to the Maltese health system, including both public and private funding. However, self-reported disease status is known to be prone to misclassification, which will bias these figures. Underreporting may occur due to individuals not being aware of their disease, while over-reporting may also occur due to some individuals being under the wrong impression that they are suffering from a condition. For example, a person may think they are hypertensive because of a single elevated blood pressure reading in the past. One way to eliminate such a bias would be to conduct a medical examination of each respondent and assess their hypertensive and blood glucose status, but this has been rarely done over the past years in Malta, due to the prohibitive
costs and logistics. We consider the use of data from other surveys to allow for misclassification, using a Bayesian statistical model that we have developed and implemented. For diabetes and hypertension, additional information is provided by the 1981 Diabetic Survey, the 1984 MONICA study and the pilot EHES 2010 study datasets. Analyses of EHIS 2008 were performed that exploit these other surveys. They yielded estimates of each respondent’s probability of being diagnosed as hypertensive or diabetic, had he/she been examined rather than just questioned. This gave more accurate estimates of the excess healthcare costs. For hypertension, the revised excess costs were now estimated to be 27 million annually while for diabetes they estimated to be 52 million annually. These figures are substantially higher than when misclassification is ignored.

### OP5.145
**GOLD 2011 - modern treatment of COPD: changing the future**

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Traditionally the percent predicted forced expiratory volume in one second (FEV1) has been the cornerstone of the diagnosis, classification and treatment of chronic obstructive pulmonary disease (COPD). Although FEV1 is a good predictor of all cause mortality independently of cigarette smoking, it is only weakly predictive of an individual’s symptoms and quality of life. Recently it is becoming evident that exacerbations are the key phenomenon in COPD as they are potentially preventable events that are strongly associated with decline in lung function, deteriorating health and the risk of death. In view of this the Global initiative for chronic Obstructive Lung Disease (GOLD) published new guidelines on the treatment of COPD in 2011 that include a combined COPD assessment which estimates an individual patient’s exacerbation risk. By using the modified British Medical Research Council (mMRC) questionnaire or COPD assessment tool (CAT) to assess patients’ symptoms, along with the exacerbation history and spirometry, the combined COPD assessment classifies patients into one of four risk categories which then guide treatment decisions. This presentation will describe the new COPD categories and the evidence behind them, discuss their limitations and detail the management of COPD in 2012 with the aim of preventing future exacerbations.

### OP6.146
**A retrospective study on the outcomes of live-donor kidney transplantations in Malta**

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**Aim:** To assess graft survival, morbidity and mortality of patients who underwent live-donor kidney transplantations in Malta since 1989.

**Methodology:** The list of patients, who underwent live-donor kidney transplantation in Malta, was accessed from the Transplant Register at Mater Dei Hospital. Patients, who underwent combined transplantations of kidney and pancreas, were excluded from the study. Demographic data, hospital stay, morbidity, mortality and graft function were assessed. Creatinine levels were measured before kidney transplant operation and 1 day, 2 days, 1 week, 1 month and 1 year after procedure. Patient’s demographics, creatinine levels and histology were accessed from medical files and local databases including LIS, PATHSA and ISOFT. We declare that this audit was done according to the provisions of the Data Protection Act.

**Results:** Of the 52 live-donor kidney transplantations, the majority of the recipients were male (73%) and the most common aetiology of renal failure was glomerulonephritis (41%) followed by pyelonephritis (37%), diabetes (24%), vascular disease (16%) and polycystic renal disease (16%). Of the recipients, 5% were children (6 months to 17 years) after operation. Causes of death were acute tubular necrosis, acute or chronic rejection. The 30-day mortality was 3.8%. The overall mortality to date was 36.5% (19 patients). Most of these cases occurred on average 12.9 years (range 1 month to 17 years) after operation. Causes of death were mostly cardiorespiratory in origin.

**Conclusion:** As per Transplant Register, there is an excess of patients awaiting kidney transplantation to the supply of cadaveric kidneys per year. Live donor renal transplantation is considered as the treatment of choice in end-stage renal failure patients. As this is a small subgroup, small numbers raise statistical issues concerning the conclusion of the data. Despite this, this study shows comparable results to international studies, indicating justification to continue live-donor renal transplant programme in Malta.

### OP6.147
**Haemodialysis adequacy at the renal unit**

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**Background:** Studies have shown that adequate dialysis is associated with the best patients’ survival. Clinical signs and symptoms alone are not sensitive indicators of dialysis adequacy and therefore the delivered dose of HD must be measured on a regular basis.

**Aim:** To measure the delivered dose of dialysis in patients undergoing Haemodialysis (HD) at the Renal Unit during December 2011 and to study for any difference in the dialysis dose delivered to patients having an arteriovenous fistula (AVF) and patients having a non-autogenous vascular access.

**Method:** All patients undergoing HD during December 2011 at the Renal Unit MDH were recruited. Pre-dialysis and post-dialysis serum urea samples were collected using standardized methods. Body weight before and after HD together with Ultrafiltration volume (UF) were also measured. The delivered dose of HD was measured using formal urea kinetic modelling and expressed as single pool Kt/V (spKt/V) calculated by the second generation Daugirdas formula. The urea reduction ratio (URR) was calculated using the pre and post serum urea values. The type of vascular access was noted for every patient. The minimally adequate HD dose recommended by international guidelines is a spKt/V ≥1.2.

**Results:** During the study period, 120 patients were undergoing HD at the Renal Unit. Twenty nine patients (24.2%) had incomplete data and were excluded. The mean pre-dialysis and post-dialysis serum urea were 26.89±6.51mmol/l and 10.23±7.42mmol/l respectively. The mean URR was 0.65±0.10 and the mean spKt/V was 1.30±0.34. Of all patients studied; 65.9% (n=60) had a spKt/V ≥1.2 and 64.8% (n=59) had a URR ≥0.65. Patients undergoing HD via an
OP6.148
Below target post-op arterial blood pressure but not CVP is associated with delayed graft function in renal transplantation
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Introduction: Delayed graft function (DGF) is a major issue in kidney transplantation and is associated with reduced graft and patient survival. Many underlying factors are not modifiable but reducing cold ischaemic time and machine perfusion, have reduced the DGF incidence. Peri/post-operative perfusion is also critical to the development of DGF. Protocols to optimise post-op graft perfusion vary widely. We investigate the effect of perioperative hypotensive episodes and other key donor and recipient variables on the incidence of DGF.

Methods: DGF was defined as dialysis in the first week post transplant or failure of creatinine to fall by 50% post transplant over a similar period. Post-operative management targeted a CVP of > 8cm H2O (measured hourly) and a MAP of > 100mmHg (measured every 15 minutes reducing to hourly). 149 consecutive renal transplants were performed. Demographic, clinical and biochemical data was prospectively collected for all patients in an electronic database and supplemented by review of clinical records. Data was analysed for factors associated with DGF by univariate and multivariate logistic regression analysis (SPSS).

Results: The occurrence of any recorded sub-target (70mmHg) MAP was significantly associated with DGF (peri-operative p=0.005; post-operative p=0.002) whilst the occurrence of a sub-target (8cm H2O) CVP amongst other variables was not. Of the donor variables, only donor type (Living vs Deceased) (p=0.001), donor age (p=0.019) and cold ischaemic time >12 hours (p=0.005) were significantly associated with DGF. Donor serum creatinine, donor hypotension, extent of HLA mismatch, the use of intra-operative diuretics and other relevant factors showed no association with DGF.

Conclusions: Most renal transplants are managed post-operatively outside critical care with intermittent CVP and limb blood pressure monitoring but routine continuous blood pressure monitoring is rare post-operatively. Since a fall in MAP below target levels was associated with an increased risk of DGF whilst a fall below target CVP was not, invasive ABP monitoring may therefore be more accurate than CVP in assessing renal perfusion and guiding fluid/inotrope management post-operatively. Such monitoring may allow avoidance of hypotension and reduce DGF. Cost effectiveness is likely to compare favourably to current best interventions such as machine perfusion.

OP6.149
The Rate of nephrotoxicity in patients who underwent computed tomography angiography during the year 2011
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Aim: To assess the rate of nephrotoxicity in patients who underwent computed tomography angiography (CTA) during the year 2011.

Method: The list of patients who underwent CTA in 2011 was accessible from the register at Department of Medical Imaging at Mater Dei Hospital. Local databases, Isot and Electronic Case Summary, were used to access patients' medical data. These included gender, age, comorbidities, CTA findings, creatinine and eGFR values. A graphical dataset was created to present creatinine and eGFR values before and after procedure.

Results: 372 patients underwent CTA. Of these, 321 were arterial lower limb investigations, 24 assessed carotid arteries, 15 imaged the aorta, 9 investigated upper limb arteries and 3 imaged the subclavian arteries. Approximately 70% of the patients were male and 30% were female. As regards comorbidities, 66% of these patients suffer from diabetes, 65% from hypertension, and 41% have an associated cardiac problem. 12.9% of the patients investigated, passed away during that same year. 22 patients (out of 372) were already on regular dialysis in view of their chronic renal failure. Only 1 patient developed acute on chronic renal failure and required urgent haemodialysis. She had a total of 4 dialysis sessions in 10 days. The dataset showing creatinine and eGFR values showed no significant difference before and after the procedure. Only 39 reports (10.5%) were normal whilst 333 CTA's (90.5%) detected an abnormality. From these, 66 (17.7%) detected an incidental finding. 34 of which (9%) required further investigations.

Conclusion: Clinically relevant renal dysfunction following computed tomography angiography is low. In view of the low rate of contrast-induced nephrotoxicity, this imaging modality remains the gold standard for evaluation of arterial disease in Malta.

OP6.150
Outcome of nephrectomies in Malta since 2000
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Aim: To audit the oncological results and perioperative outcome of nephrectomies performed in Malta since 2000.

Method: A retrospective index case list of all nephrectomies carried out by three urological surgeons at St Luke's and Mater Dei Hospitals from 2000 to March 2012 was compiled from departmental data. Presentation, prognostic factors, histology, radiological characteristics, surgical technique, post-operative morbidity and mortality, length of hospital stay, renal function and vital status were compiled from the case notes, Isot and PACS. Survival data was corroborated with death certificates obtained from the Department of Health Information. Clinical staging of all patients was revised using the TNM staging Internationale Contre le Cancer TNM staging 2009. Data processing was performed using a custom data application written in Microsoft Access. All the patients who underwent nephrectomy for clear cell renal cell carcinoma were stratified according to individual prognosis based on the Stage, Size, Grade, Necrosis Score Algorithm (SSIGN) developed by the Mayo clinic and recently externally validated in a European study. As the SSIGN score is validated for use only in clear cell renal cell carcinoma, patients whose pathology was not clear cell RCC were excluded from survival analysis, although these records were included in other analyses.
Results: Between September 2009 and March 2012, 319 nephrectomies were carried out at the Urology Unit, of these 288 were carried out for malignancy or suspected malignancy. Pathological investigation. 218 of these lesions were reported as clear cell RCC. Most of the nephrectomies performed during the study period were open radical nephrectomy (225), followed by open partial nephrectomy (34). The rest underwent simple nephrectomy, nephroureterectomy or laparoscopic procedures. One patient underwent combined radical nephrectomy and sternotomy for right atrial thrombus in combination with cardiothoracic surgeons. 19 of these patients had metastatic disease at diagnosis and nephrectomy was performed for cytoreductive or palliative purposes. Median hospital stay for all nephrectomies was 8 days and average ITU stay was 0.63 days, with a median of 0 days. 112 complications were recorded for the whole cohort; these included both minor and major complications. Twenty patients had two complications and fifty-one patients had one complication. Two patients died from perioperative complications. As of March 2012, 80 patients had passed away, 51 of these as a direct consequence of their renal cell cancer. 10 patients developed local recurrence and 43 developed metastatic disease during the follow-up period. Median duration of follow up was 1282 days. A Cox model reveals that there is a highly significant p<0.001 for SSIGN score greater than 6. With a 10 year cancer specific survival of >80% for a SSIGN score of 6 or less.

Conclusion: Overall, performance at the six satellite units compared well with Renal Registry data, however a variation in adherence to guidelines between different units was noted. This highlights the difficulties clinicians face when treating this complex condition. Moreover, there is no data showing that routine measurement of bone parameters improves patient outcomes, and the significance of modest derangements in parameters is unknown. It is however reasonable to suggest that bone parameters should be monitored with a frequency based on stage, rate of progression and whether specific therapies have been initiated.

OP6.152
Prostate cancer in Malta: a survival analysis
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Objectives: To audit prostate cancer diagnosis, management and outcome in Malta.

Methods: An index table of cases was obtained from the National Cancer Registry (NCR). This was corroborated by departmental records. A custom data application was written in Access to enable review and additional data capture of all the patients between 1996 and end 2010. Additional data was obtained from the paper records kept at NCR, iSoft and PACS and LIS pathology databases, departmental records, case records, private practice records and private laboratory data. The records kept at the oncology unit and paper records at the Mater Dei pharmacy are being analysed in view of additional data capture. All patients where staged using available tumour variables at presentation in line with the 5th Edition (2010) of the AJCC staging of prostate cancer. Data analysis was performed using SQL and Enterprise R incorporating additional packages, survival and Relserv. Incidence data was analysed by year and age profile and standardised to a European standard population using data from the National Statistics Office (NSO) utilising Excel. Mortality data was processed in the same fashion. Trends in this data were represented visually using Excel and R. Crude and relative survival estimates were also produced from the compiled data and life tables constructed from the national demographic review. Further analyses looking into the correlation between presenting age and looking into extended relative survival of Group I and IIA with long term PSA suppression as a surrogate for long term hormone suppression were performed.

Results: A total number of 1915 patients registered between end 1995 and end 2010. Incidence figures clearly show a drop in median age at diagnosis and a linear increase in total cases diagnosed whilst maintaining the same distribution. Age adjusted incidence is compares to the WHO ISRC figures. There were 347, 341, 384, 118, and 421 cases in stages IIIA III, IV respectively and 304 were not classified. Relative survival is preferred to disease specific survival in a disease of older age with prolonged survival as survival is a function of age and comorbidity. The relative survival by disease stage group is presented as a set of corrected Kaplan Meyer curves; these are similar to published AJCC figures.

Conclusion: The Maltese incidence and survival figures compare well with similar southern European population with opportunistic screening only. We expect these figures to change with the introduction of nationwide screening. Some minor deviations in the survival curves will need in depth subgroup analysis.
The impact of the medical admission proforma

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Aim: To assess the clerking performed during the acute medical take, and compare the results to a previous audit carried out before the medical admission proforma was introduced.

Method: The medical admission proforma used in the department of medicine was designed after lacunae in medical clerking were noticed in an audit performed in 2010. The same audit sheet was used for the said audit, and notes from patients admitted over a period of eight days were audited. Patients admitted using the neurology admission sheet were excluded as this was not compatible with the sheets recommended by the RCP and thus would have skewed results. A total of 300 cases were audited.

Results: There were important elements in the patients’ medical history which were previously overlooked, in which there was a significant improvement in documentation. There was a 33.1% improvement in the documentation of the drug history, and drug allergies were documented in 91% of the cases. There was also an improvement in the documentation of vital parameters. While the examination of the cardiovascular, respiratory and abdominal systems was documented in over 90% of cases, basic parameters such as oxygen saturation, blood glucose, respiratory rate and Glasgow coma scale were previously recorded in less than 50% of cases. Such parameters were documented in over 80% of cases when the admission proforma was used, since the parameter section in this proforma acted as a reminder for the admitting doctor. There was also an encouraging increase in the documentation of social history, where there were increases in the documentation of accommodation (44.8% increase) and mobility (12.1% increase). Such information is becoming more important, since the national health system is being stretched by the demands of an ageing population. Management plans for patients with social problems can thus be made earlier into their admission.

Conclusions: The acute medical take in the Mater Dei Hospital is a very busy one with an average of around 40 patients every day. This causes pressure on the medical staff which might influence the quality of documentation. Tools such an admission proforma can aid these doctors during their duties. This proforma has been welcomed by the medical BSTs who frequently used this booklet for admissions (90%). Perhaps encouraging the use of the proforma amongst other specialties would further improve the quality of medical clerking.

The use of Modified Early Warning Score (MEWS) in medical admissions

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Aim: To assess whether acute medical admissions are receiving the appropriate level of inpatient monitoring, parameter charting, senior involvement and selection of admitting ward based on a validated Modified Early Warning Score.

Background: The Modified early warning score (MEWS) is a simple standardised guide used internationally by hospital nursing & medical staff as well as emergency medical services to rapidly identify patients at risk of deterioration. The scoring includes systolic blood pressure, heart rate, respiratory rate, body temperature and level of consciousness are used to generate a single composite score which correlates to the degree of variation from normal physiological parameters. The more deranged the parameters, the higher the score and the higher the level of care required.

Methodology: Two hundred and seventythree acute medical patients were admitted between 2nd and 9th July 2012 and included in the audit. Data was collected from patients’ case notes within twenty-four hours from time of admission using an audit proforma. The correlation between MEWS and admitting ward, frequency of parameter recorded and senior involvement in patient care was analyzed using Excel.

Results: In 54% (n=146) of patients admitted, sufficient parameters to formulate a score were documented on admission and were therefore eligible for data analysis. 56% (n=82) of these had a score of 1 and only 12.3% (n=18) of patients had a score of 3 or more. There was a positive correlation between rising MEWS and more intensive level of care. Whereas 12% of those with a MEWS score of 1 were admitted to level 3 care (EAW1/CMW) this figure rises to 66% in those with a MEWS of 3 and 4. However there was no correlation between frequency of parameter requested by the admitting doctor and increasing MEWS e.g. 38% (n=5) of patients with MEWS 0 received 4-hourly parameter monitoring but no patient with MEWS 4 had the same frequency requested. Furthermore there were more inpatient reviews requested by A+E BST when compared to Medical BST’s and HST’s for the same level of MEWS (100% vs. 46% respectively for MEWS 3)

Conclusion: Despite the lack of an objective assessment tool such as MEWS, more unwell patients are being admitted to wards which offer higher level of care. However various pitfalls were identified including poor documentation of parameters by the admitting physician as well a weak correlation between degree of instability of patients’ condition and frequency of parameters and frequency of senior reviews requested.

Audit on the use of D-Dimer in the diagnosis of deep venous thrombosis in patients presenting to the Emergency Department of Mater Dei Hospital

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Introduction: In Mater Dei Hospital, the qualitative D-Dimer test (SimpliRED) is used to measure the concentration of the D-Dimer in venous blood to aid in the diagnosis of Deep Venous Thrombosis (DVT) at A&E. This forms part of the DVT assessment guideline followed at MDH since 2006. This audit aims to evaluate the sensitivity and specificity of the SimpliRED D-Dimer test when compared to subsequent diagnostic imaging in the context of the current protocol for assessment of DVT. The results are compared to similar studies in other hospitals.

Methods: The study included adult patients presenting to A&E with suspected DVT over a period of 12 months, from the 1st of June 2010 to the 31st of May 2011. Those patients who had both D-Dimer test and Doppler ultrasound were included in the study. Results of D-Dimer tests and ultrasound were extracted from electronic hospital database system (Soft and PACS).

Results: A total of 2233 valid D-Dimer results were issued in the 12 month period. 637/2233 (28.5%) were referred for Doppler ultrasound to assess for possible DVT. Of these 311/637 (48.8%) had a positive D-Dimer, and 326/637 (51.2%) had a negative D-Dimer. These figures were used to calculate the sensitivity (79.3%) and specificity (57.6%) of D-Dimer for predicting DVT prior to pre-test scoring. Exact 95% confidence intervals were calculated for sensitivity and specificity, 0.70, 0.86 and 0.53, 0.61 respectively. The more clinically relevant negative predictive value was 92.9.
Conclusion: The D-Dimer test used at Mater Dei Hospital as part of a strategy to diagnose DVT compares well to similar studies in terms of safety. The high negative predictive value gives Accident and Emergency doctors, local evidence supporting the use of the D-Dimer test as part of the MDH guideline to exclude DVT in low risk cases.

OP6.156
Audit on use of venous thromboprophylaxis in medical admissions at Mater Dei Hospital 2012
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Introduction: Venous thromboembolism (VTE) is a collective term for deep vein thrombosis (DVT) and pulmonary embolism (PE). VTE is common during and after hospitalization for acute medical illness and carries significant morbidity and mortality. In Malta, an audit on VTE prophylaxis in 2009 demonstrated a very low prescription rate amongst acute medical admissions at Mater Dei Hospital (6% prescription rates). A second audit was performed in 2010, following a series of educational events in the hope of improving on current practise; however results failed to demonstrate any improvement (3% prescription rates).

Aim: With the introduction of the medical admission form which includes a VTE prophylaxis section, the aim was to close the audit loop by re-auditing and assessing for appropriate (VTE) prophylaxis.

Methodology: Medical admissions were stratified for VTE risk in accordance with standard guidelines as having an increased VTE risk or no increased risk. Patients with contraindications for VTE prophylaxis were excluded and appropriate use of VTE prophylaxis was audited, using identical methodology to the 2009 and 2010 studies.

Results: Over a period of 7 days, 273 medical patients were admitted by medical and casualty doctors. 53 patients (19%) had a low risk of VTE. 88 patients (32%) had contraindications for VTE prophylaxis and were excluded. 130 patients (48%) had at least 1 indication for VTE prophylaxis and of these, 53 patients (41%) were prescribed appropriate prophylactic treatment. This is a definite improvement over 2 previously conducted audits by the same authors whereby only 6% and 3% of patients with indications for VTE prophylaxis were treated (VTE prophylaxis audits of 2009 and 2010 respectively).

Conclusion: With the introduction of the new medical admission form, current 2012 audit results have demonstrated encouraging prescription rates, on a par with European standards. Visible cues for prophylaxis probably act as reminder to admitting doctors.

OP6.157
Readmission rates within the department of medicine at Mater Dei Hospital
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Introduction and aim: Readmission rates have come under scrutiny and various healthcare systems have come up with their own ideas of how to curb readmission rates. The aim of our study was to identify medical patients who had been admitted within the previous 30 days to the medical department of Mater Dei Hospital through the Accident and Emergency Department.

Method: The study was conducted during February 2010. Patients admitted within the Department of Medicine were identified through the Accident and Emergency (A&E) medical admissions register and details regarding previous admissions were obtained via the hospital’s Patient Administrative System (PAS). Those patients who had been medical inpatients during the previous 30 days were taken into consideration. Clinical, social and demographic aspects were recorded as to try and identify possible causative factors.

Results: 156 patients out of a total of 1551 for the 30 day study period were readmitted patients. Thus, the medical readmission rate was of 10.1%. The mean patient age for readmitted patients was of 69.24 years (95% CI = +/-2.48 years) compared to a mean age of 66.26 years (95% CI = +/-0.89 years) for all admissions. Age, was significantly different between all admissions and readmission group (p=0.015 using Independent T Test for comparison of means). Meanwhile, gender was not statistically significant in determining readmission (p=0.61) with males constituting 57.1% (n=89) and 55% (n=853) of readmissions and all admissions respectively. In the readmitted group 63.5% were readmitted with the same diagnosis; 79.4% of patients did not live alone; 60.0% were self referred; 12.2% had a diagnosis of cancer and 29.5% were above the age of 80 years. Furthermore, congestive heart failure and respiratory diagnosis (COPD and pneumonias) were the most common reasons for readmission constituting 21.2% (n=35) and 22.4% (n=35) of readmitting diagnoses.

Conclusion: The 30-day readmission rate within the Medical Department at MDH of 10.1% is in line with re-admission rates in other centres. In our opinion, this rate can be further reduced through more palliative care services within the community and specialised follow-up clinics in the community dealing specifically with congestive heart failure and COPD.

OP6.158
Cardiopulmonary resuscitation at Mater Dei Hospital
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Aim: To assess the characteristics and outcomes of cardiopulmonary resuscitations at Mater Dei Hospital.

Methodology: Cardiopulmonary resuscitation (CPR) calls over an 11 month period were reviewed between July 2010 and September 2010 and April 2011- November 2011. Details regarding CPR calls were collected according to Utstein definitions from the patient’s notes.

Results: 91 CPR calls were logged over the 11 month period. Data for 84 of these calls was complete. The average age of patients involved was 74.3 years with a range from 38 to 90 years and 77% of patients were male. Hypertension, ischaemic heart disease and smoking were present in >50% of the cohort while diabetes mellitus and congestive heart failure were present in >40%. 3 peak times for CPR calls were noted: between 4 - 8 am; 10am - 2pm and 8pm - 12am with 33%, 20% and 16.5% being carried out within these periods respectively. 45% of CPR calls came from general medical wards and the patient was in a monitored bed in 23% of cases. 50% of patients had received anointment of the sick before the CPR call, 19% (n=16, 95% CI: 10.6% - 27.3%) of calls were pre-arrest calls while 81% (n=68, 95% CI: 72.6% - 89.3%) were calls for patients in cardiac arrest. Out of the latter in 3 cases (4%, 95% CI: 0.6% - 8.6%) CPR was successfully performed before CPR team arrival. In 12% (n=8, 95% CI: 4.3% - 19.7%) CPR was not performed by the CPR team as it was considered futile. In the remaining 57 pts (84%, 95% CI: 75.3% - 92.7%) CPR was carried out. Excluding patients in which CPR was considered futile (n=60), 19% (n=12, 95% CI: 9.1% -28.9%) had a shockable rhythm, 76% (n=46, 95% CI: 65.2% - 86.8%) had PEA/Asystole while in 3% (n = 2) rhythm was not documented. Sustained ROSC was achieved in 30% (n = 14, 95% CI: 16.8% - 43.2%) with non-shockable rhythms vs 50% (n=6, 95% CI: 21.7% - 78.3%) in pts with...
a shockable rhythm. Out of the survivors 7% (n=1) of the non-shockable arm were discharged alive vs 66% (n=4) in the shockable rhythm arm. 61% (n=32) of unsuccessful CPR with a non-shockable rhythm had a prognosis after resuscitation score (PAR) of ≥ 5.

Conclusions: Outcomes from CPR do not compare well with those from other university affiliated hospitals that have a survival to hospital discharge of up to 32%. The fact that few patients had anointment of the sick indicates that deterioration was undetected. This, together with a poor selection of patients who would benefit from CPR, partially explains our poor outcomes.

OP6.159
Sudden deaths over a 10 year period occurring in young people due to natural causes

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Introduction: Fortunately, sudden deaths in young people under the age of 40 years due to natural causes, are relatively rare. It was therefore decided to carry out a study to determine the frequency and the cause of death in such cases in Malta.

Aims: The aim of the study is to determine the demographic details of all such cases.

Methodology: A template was prepared with the necessary data. The cases over the period 2002 to 2011 were identified from the register kept in the mortuary and the relevant post-mortem reports were then examined. Toxicology studies were carried out in all cases to exclude drugs or alcohol as the causes of death.

Results: Seventy one cases were identified over the period studied. Of these cases, 11 occurred in young children aged between 0 and 2 years, of which 3 were diagnosed as SIDS and 4 were due to respiratory tract infections. The remaining cases occurred in people under 40 years of age and by far the largest proportion were deaths related to the cardiovascular system. These included 16 (22.5%) which were due to conditions related to ischaemia, 9 (12.7%) which were due to cardiac dysplasia and cardiomyopathy, 5 (7%) due to aeurysms and 6 (8.5%) due to pulmonary embolism. Other causes of death included cerebral oedema related to fits and acute bronchial asthma.

Conclusion: This study aims to put light on the various pathologies which may be encountered in sudden natural deaths occurring in young people.

Disclosure: Authors 1 to 4 act as medical court experts

OP6.160
Ultrasound guided biopsy of breast lesions in a non-screening population

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Aims: 1. To demonstrate the service uptake, provision and outcomes of sonographic guided biopsy in a non-screening population. 2. Discussion of formulation of local recommendations for management of breast lesions in a non-screening population.

Methods: The compilation of this study consists of a retrospective review of ultrasound guided biopsies carried out at the Medical Imaging Department, Mater Dei Hospital in a one year period (May 2011-May 2012). The data collected includes total number of biopsies, review of supplied clinical indications, age distribution of patients and their respective histological outcomes.

Results: A total of 182 patients were referred for ultrasound guided breast biopsies in the selected one year period. The average age of referred patients was calculated to be 52.6 years. The oldest patient to be referred was aged 87 years and the youngest was 19. Clinical information was available for 174 of these patients. Review of clinical details revealed that 55% of referrals (n=95) were for clinical symptomatology (e.g. palpable lumps, nipple discharge). Out of the 182 patients referred, 128 (70%) actually underwent image guided biopsy of an identified breast lesion. 53% (n= 71) of biopsied breast lesions were histologically benign. The youngest patient found to have a malignant breast lesion was 22 years old. Of the 57 malignancies identified, 58% (n=33) were aged 51-70. 2 malignancies (3% of all biopsied lesions) were identified in patients younger than 31 years of age. This constitutes 33% of the 8 biopsies carried out in this age group.

Conclusions: The largest population of patients referred for image guided biopsy of breast lesions lies in the 51-70 age group (63 patients) of which 52% (n=33) were confirmed to be malignant. However, 33% of the 8 lesions biopsied in the 19-30 age group were also confirmed to be malignant. Hence, the discussion in a multidisciplinary forum ensues as to what form local protocols may take and whether age can/should be confidently used as a recommended cut-off for biopsy or otherwise of a breast lesion.

OP6.161
Ultrasound guided thyroid fine needle aspiration/biopsy: a one year experience

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Background: Over the last few years, the number of requests for thyroid nodule sampling has been constantly increasing. Ultrasound-guided thyroid Fine Needle Aspiration (FNA) or biopsy techniques are well-recognised and safe outpatient procedures. The Medical Imaging Department (MID) follows the internationally recognised SRUCCS (Society of Radiologists in Ultrasound Consensus Conference Statement) guidelines, in determining which nodules should be sampled. Both suction and capillary methods for FNA are used in our department.

Aim: We aim to retrospectively audit the thyroid biopsy/ FNA practice at the MID, Mater Dei Hospital (MDH). The questions we aim to answer are as follows:

- What are our positive / negative predictive values (PPV/NPV) for this intervention?
- What percentage of our procedures provides an adequate cytological sample?
- What are we sampling? And are there any significant complications?
- How do we compare to internationally published data?

Methodology: A retrospective targeted search for thyroid FNAs or biopsies carried out between the 1st April 2011 and 31st March 2012 was performed using our Radiology Information System (RIS) / Picture Archiving and Communications System (PACS). A total of 211 interventions were identified. The cytological /histological results, obtained from our Hospital Information System (HIS), were reviewed. In those cases cytologically diagnosed as potentially malignant, the formal histological report of the thyroidectomy specimen was used as gold standard.

Results: Thyroid biopsy remains the gold standard technique with a 100% rate of adequate sampling. No statistical difference in sampling adequacy was noted between the two FNA technique’s used. Statistical analysis revealed that FNA provided an adequate sample in 86% of first attempts, with a single repeat attempt raising this figure to 96%. Nodule cytology was suggestive of papillary neoplasm in 17%, follicular neoplasm 18%, Hashimoto thyroiditis in 15%. Benign cytology was reported in 52%. Cross reference with formal histology gives a PPV of 88%. During the mean follow-up period of 9 months, only 1 patient with an initially
To assess the impact of the implementation of the Joint Recommendations for The Joint Recommendations on diagnosis of carotid stenosis in accidents and the possibility of a reduction in the number of radical or partial nephrectomy which are now supplemented by laparoscopic procedures, radiofrequency ablation and chemotherapy. Sometimes the nature of the renal mass remains equivocal on imaging and a renal biopsy must be carried out before the final decision can be made.

Aim: The purpose of this study was to determine the management and outcomes of patients diagnosed with incidental renal lesions on US and CT.

Methodology: A retrospective study was carried out which looked at all the patients diagnosed with an incidental renal lesion between 1-Jan-2008 and 31-Dec-2011. The data was collected from the picture archive and computing system at Mater Dei Hospital (PACS). Emphasis was made on the clinical details for the imaging request to confirm that these lesions were incidental. This information was obtained from patient files as well as their electronic case summaries whilst the histology was obtained from iSoft.

Results: The following results are based on a sample study of 19 patients. Tumour size: 16% were larger than 5cm (7.9 – 13cm); 84% were smaller than 5cm (1.5 – 4.5cm) Age range: 68% were aged 45-60years; 32% were aged 60 -75years Treatment: 86% had surgery, the remaining were treated non-surgically. Radiological/Surgical staging: 79% had no nodal or metastatic involvement at initial diagnosis (T1a-T3a N0 M0); 5% had retroperitoneal metastasis Histology: 21% were found to be oncocytomas, 68% were clear cell carcinoma and 5% papillary carcinoma.

Male/Female Predominance: 58% males, 42% females

Conclusion: The most striking result from our sample study is that 86% of our patients underwent surgery with excellent outcome and all patients are still alive till this day. Only one patient was diagnosed late precluding curative surgery. This indicates a good clinical outcome for patients with incidentally diagnosed renal tumours at ultrasound and CT.

OP6.164

The liver magnetic resonance imaging service at Mater Dei Hospital – past, present and future directions

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Aim: To characterize the liver MRI service provided by the Medical Imaging Department at Mater Dei Hospital and to assess its development over the last 5 years (2008 - 2012).

Method: Liver MRI reports, clinical and referral details and any relevant previous radiological investigations of all liver MRIs requested in the three month period April - June of years 2008 - 2012 were recorded (n = 84). Correlation with histology or other follow-up investigations was carried out where possible.

Results: Examination numbers initially remained stable at approximately 3 examinations per month (2008 - 2011). In 2012 the number rose by a factor of 4 to approximately 12 per month. The commonest reason for requesting a liver MRI in the years assessed was the further characterisation of liver lesions identified on CT (38%). The second commonest indication was the estimation of liver iron content (32%). Other indications included the characterisation of lesions first identified on ultrasound, identification of metastases and screening for hepatocellular carcinoma in cirrhotic patients. Recommendation to carry out an MRI in either radiology reports of previous examinations or MDT meetings have increased from 11% in 2008 to 100% in 2012, with most MRI recommendations now being made in the reports of the preceding investigation. The commonest result following MRI examination was the diagnosis of a specific focal liver lesion (42%) followed by iron content measurements (27.6%). Of all findings that were imaged with other modalities prior to MRI, findings were confirmed in 55 % of cases. A different diagnosis was reached in 13.5% of cases and in 13.5% of MRI
A retrospective audit of parathyroidectomy was performed in Mater Dei Hospital from January 2010 till June 2012. For every case, the surgery was carried out by the same consultant. The aim of this audit was to observe current VTE prophylaxis measures applied to surgical inpatients. Over the period studied, 32 parathyroidectomies were included in the analysis. 75% of enrolled patients underwent ultrasound examination, 75% received parathyroid scintigraphy scan and 28% were scanned using computed tomography. None of the 32 patients had PET-CT imaging pre-operatively. The incidence of correct localization using ultrasound technique reached 34% whilst for parathyroid scintigraphy and CT scan the rate reached 40% and 39% respectively.

**Conclusion:** Results achieved from this retrospective cohort analysis indicate that the most accurate imaging tool in terms of pathological parathyroid localization was parathyroid scintigraphy. This will be compared with internationally available data.

**OP6.167**

An audit on venous thromboembolism (VTE) prophylaxis in general and vascular surgical inpatients

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**Aim:** Venous thromboembolism (VTE) is a leading cause of preventable inpatient morbidity and mortality. A significant body of high-level evidence is available to support prophylactic measures for VTE prevention. Despite this, there is an inadequate application of such measures. The aim of this audit was to observe current VTE prophylaxis measures applied to inpatients in surgical wards undergoing general or vascular surgical procedures at Mater Dei Hospital.

**Methods:** A convenience sample of the inpatient population admitted to Mater Dei Hospital in January 2012 for general and vascular surgical procedures was selected. A retrospective analysis of inpatient VTE prophylaxis measures was then carried out on patient discharge by means of a thorough review of hospital records. The data was transferred to a proforma, which was adapted from established guidelines and compared to accepted international practice (National Institute for Health and Clinical Excellence (NICE), UK - Venous Thromboembolism: Reducing the Risk [2010]).

**Results:** Sixty eight (n=68) patient records were reviewed, with a mean population age of 61 years and a female to male ratio of 1:1.3. Of the study population, 91.1% (n=62) had high-risk criteria requiring pharmacological prophylaxis. Of these, 1.6% (n=1) had high bleeding risk and 12.9% (n=8) had contraindications to low-molecular weight heparin (LMWH). Pharmacological prophylaxis was inappropriately omitted in high-risk patients without contraindications in 27.4% (n=17). In the treated group, 87.0% (n=40) had LMWH and 13.0% (n=6) had unfractionated heparin (UFH). Of the LMWH-treated patients, 2.2% (n=1) had a contraindication to its use, namely renal insufficiency. Recorded evidence of prescription of thromboembolic deterrent (TED) stockings, in patients without any contraindication, was only found in 7.6% (n=5).

**Conclusions:** Better dissemination of VTE prophylaxis guidelines is recommended. A suitable proforma, such as the one used in this audit, should be introduced and validated.
completed with each inpatient admission. This would improve compliance, documentation of treatment and highlight inappropriate management options.

OP6.168
Audit on hip fracture, major osteoporotic risk and risk lowering treatment in elderly patients at Rehabilitation Hospital Karin Grech

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Aims: To calculate the 10 year probability of major osteoporotic and hip fracture risk in the elderly population at Karin Grech Hospital at the time of the audit. Another arm of the audit assessed whether the patients at risk were prescribed adequate treatment.

Audit tool: The World Health Organisation (WHO) fracture risk assessment tool (FRAX) was used.

Method: A pro-forma was filled for each of the 40 patients (n=40) assessed at Karin Grech Hospital. The risk factors for osteoporosis were entered into the on-line FRAX calculation tool, after checking the patient files, questioning the patients and measuring each patient’s height and weight. At the time of the audit there was no proviso for entering Malta as a country, so Italy was entered in the tool. Additionally a record of drugs prescribed for osteoporosis was entered into the pro-forma. The above data was input into the FRAX on line tool, resulting in a 10 year probability score for major osteoporotic fracture and hip fracture for every patient in the study. These were further categorised as having a low, medium or high 10 year risk of major osteoporotic or hip fracture. Furthermore, each patient’s probability of fracture was matched to the treatment or lack of treatment received. According to the WHO-FRAX guidelines, low risk patients should receive lifestyle advice and reassurance and reviewed at 5 years or sooner if required. Patients at intermediate risk should have bone mineral density (BMD) measured, and the fracture risk calculated to determine whether the individual’s risk lies above or below the intervention threshold. Those at high risk may be considered for treatment without the need to proceed to BMD.

Results: 40 patients (n=40) between the ages of 40 years and 90 years were eligible and recruited for the audit. 62% were in the low risk category and were off treatment. 28% were in the intermediate risk category. Of these only two of the eleven were adequately treated and none had their BMD measured. 10% fell in the high risk category and only 1 in four patients was adequately treated.

Conclusions: The majority of patients in the intermediate or high risk groups were not prescribed risk lowering treatment. The FRAX tool is an easy on line tool that can give a good pictorial image to help a patient in recognising the future risk of fracture. Additionally the tool may help reduce BMD ordering which in our experience takes a long time to organise. It must be stressed that the thresholds are for guidance, and final decision to treat or refer for BMD rests on the physician.

OP6.169
A review of the first six months of the Orthogeriatric pilot project service at Mater Dei Hospital

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Introduction: Elderly patients with fragility hip fractures are at risk of increased morbidity and mortality. The introduction of an orthogeriatric service in other centres overseas has proven to be effective in providing high quality care for such patients.

Aim: To review the demography and service given to patients being cared for on the orthogeriatric unit according to international guidelines (The care of patients with fragility fracture - Blue Book).

Methodology: Data was collected prospectively based on the UK National Hip Fracture Database – Audit Tool. Data from patients (65 years and over) admitted to the unit was collected and followed up at one and four months from operation. Prospective data was also collected from hip fracture patients admitted to other wards for comparison.

Results: A total of 85 patients were admitted. The mean age was 83 years and 79% were female. Average admission time was 4.5 hours and length of stay 9.5 days. Sixty nine percent came from their own home. Ninety two percent had an American Society of Anesthesiologists (ASA) Grade of 2 or more. Fifty eight percent had surgery within 48 hours of admission, 18% were delayed due to medical investigation/stabilisation while the rest were awaiting a theatre slot for surgery. Most of the patients (71%) were transferred to a rehabilitation unit for further care. Patients followed up at one month showed that 55% were still at a rehabilitation unit, 4% needed reoperation and 7% passed away. Bone protection medication was being given in 60% of patients followed up at one month.

Conclusion: The effectiveness of the orthogeriatric collaboration is still at its initial stages and it is evolving. Aiming for quality standard of care in this group of patients is the ultimate goal of the service. Data collection is still ongoing in order to improve and assess the viability of expanding the service to a wider population.

OP6.170
Prescribing in the elderly - an audit on the adherence to the STOPP/START criteria in the Maltese acute Medical Hospital

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Aim: An increase in life expectancy has brought about a corresponding increase in the percentage of elderly patients in the population. Older patients have a higher incidence of multi-morbidity, resulting in multiple prescriptions with complex interactions. The Screening Tool of Older Person’s Prescriptions (STOPP) and Screening Tool to Alert doctors to Right Treatment (START) have recently been developed to identify older patients with inappropriate prescriptions and patients with inappropriately omitted treatment. These accepted European standards were used to evaluate the awareness of appropriate geriatric prescribing in the Maltese Acute Medical Hospital, highlighting system-specific deficiencies.

Methods: Inpatients at Karin Grech Rehabilitation Hospital (KGH) between December 2011 and January 2012, who were older than 65 years and were transferred to KGH from Mater Dei Hospital (MDH) were identified. The patients’ hospital records were used to gather demographic and medical data, including treatment on discharge from MDH. This was transferred to proformas, which included the STOPP/START criteria.
A CPR policy at KGRH should be enforced, ideally

Introduction of standard documentation for CPR status

Encouraging a culture of shared responsibility with

Conclusions: This audit confirmed the suspicion that the prevalence of inappropriate prescriptions and omissions of treatment in acutely-ill hospitalised elderly is high. A high incidence of “high-level polypharmacy” was noted. This was accompanied by a paradoxical state of underprescribing, where evidence-based treatment was being inappropriately omitted.

OP6.171
The use of antipsychotics in institutionalized elderly people with dementia
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A small exploratory study was carried out at St. Vincent de Paul Residence (SVPR) aiming to examine local prescribing patterns of antipsychotics in institutionalized elderly patients with dementia. The study also aimed at exploring any associations between antipsychotic use and the age and sex of the patients, as well as level of cognitive impairment (as measured with the mini-mental state examination/ MMSE) and duration of institutionalization. Details of any antipsychotic dosing regimens were obtained and the use of other psychotropic drugs was assessed simultaneously. A random sample of 25 men and 25 women with dementia was chosen. A detailed proforma with all the above variables was filled in for each patient and the data subsequently analysed. The small sample size excluded any attempts at formal statistical analysis, which was beyond the scope of the study. Only 10 patients (20%) were on maintenance antipsychotics, a figure which has been found in larger similar studies in other institutional settings abroad, although the tendency for use of atypical agents was higher in the latter studies than in the present study (6 patients on conventional versus 4 patients on atypical agents). A higher rate of antipsychotic use was found in patients with more advanced dementia (29% in patients with MMSE scores <10, versus 13% in those with higher scores) as anticipated from previous studies, whilst no association with gender was found. A limited repertoire of four drugs, namely haloperidol, quetiapine, sulpiride and olanzapine, was found with most patients taking the former two. The lowest doses were found in the oldest patients (both 2 out of the 10 patents on antipsychotics who were >90 years taking haloperidol 0.5mg nocte). A notable finding was that out of 4 patients in the youngest age group (60-69 years), 2 (50%) were on antipsychotics, otherwise no difference was found between the other 10 year age groups (antipsychotic use between 15 and 20%). More severe behavioural and psychological symptoms of dementia may explain the early institutionalization of these younger patients. A larger study also found a similar trend for higher use of antipsychotics in younger patients. More of the recently admitted patients (25%) were on maintenance antipsychotics compared to those admitted earlier (16%). However atypical agents were less frequently used in the recent admissions (29% versus 66%).

This might reflect the recent body of evidence that atypical antipsychotics constitute a greater risk in this category of patients. Benzodiazepines were by far the most commonly prescribed psychotropic drugs with 60% of the studied patients taking one or more different types. Although not incriminated with the excess mortality and cerebrovascular risk associated with antipsychotic drugs, no studies have shown that they are a safer option. This finding is therefore still a cause for concern.

OP6.172
Uncertainty over Cardiopulmonary Resuscitation Status
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Aim: We set out to audit the status of patients in relation to Cardiopulmonary Resuscitation (CPR) and to see if there was continuity of CPR status between Mater Dei Hospital (MDH) and Karin Grech Rehabilitation Hospital (KGRH). We also wanted to analyse the perceived utility of scoring systems in CPR decision making.

Methodology: We collected data for all 233 patients at KGRH – this included admission and entire inpatient notes at KGRH as well as MDH admission notes and inpatient notes until first ward round. We noted all CPR status decisions and we scored patients using 3 morbidity scores - Pre-Arrest Morbidity Score (PAM), the Prognosis After Resuscitation Score (PAR) and the Modified PAM Index (MPI).

Results: 34 (14.6%) CPR decisions were made but only 31 (13.3%) CPR statuses were valid and documented at KGRH while 202 patients did not have a CPR status (86.7%). 3 (9.6%) were yes for CPR and 28 (90.3%) were not. 14 (45.2%) new CPR statuses were made at KGRH while 14 (45.2%) CPR statuses from MDH were missed by KGRH, 3 (9.7%) CPR statuses decided at KGRH were in conformity with status at MDH. 24 Consultants, 8 Resident Specialist/ Higher Specialist Training (HST), 1 Basic Specialist Training (BST) were the primary decision makers. 1 decision maker could not be identified due to illegible handwriting. 3 patients were deemed ‘NOT FOR CPR’ with PAM >6, 10 patients were ‘NOT FOR CPR’ with PAR >7 but 1 patient was ‘FOR CPR’, 8 patients were ‘NOT FOR CPR’ in MPI >6. 3 patients were ‘NOT FOR CPR’ within the combination criteria of PAM >6, PAR>7, MPI>6 scores.

Conclusions/recommendations:
• A CPR policy at KGRH should be enforced, ideally followed by one at MDH to allow for continuity of care.
• Introduction of standard documentation for CPR status - forms for patients - those who are ‘FOR CPR’ and one for ‘NOT FOR CPR’.
• A review of CPR decisions on admission to KGRH followed by weekly decision review.
• Encouraging a culture of shared responsibility with staff, patients and relatives in taking such decisions
• Re-auditting after implementation of CPR policy.
• Not enough evidence for use of these scoring systems in any future CPR policy.

OP6.173
Anaemia in elderly nursing home residents in Malta
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Anaemia is common in the elderly. It is of particular importance in the elderly because it is associated with reduction in quality of life and functional capacity. A total of 77 patients were included in the study. Mean haemoglobin (Hb) for all patients was 12.7 with a range of 7.6 and a SD of 1.8. There were 32 patients (41.6%) who had anaemia (Hb) for all patients was 12.7 with a range of 7.6 and a SD of 1.8. There were 32 patients (41.6%) who had anaemia according to the WHO criteria. From these, 9 (28.3%) patients had renal failure as the cause of the anemia, 3 (9.3%) had iron deficiency as the cause, 3 (9.3%) had pernicious anaemia, 1 (3.1%) had a recent acute bleed and 16 (50%) were idiopathic. Only 5 patients (15.3%) with anaemia were on any kind of treatment for this condition. Significant associations (p<0.05) using one way ANOVA
OP6.174
Management of subdural haematomas in Mater Dei Hospital: a 1 year review
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Introduction: Subdural haematomas (SDH) can be managed conservatively or surgically, depending on clinical and radiological features. Patients with an acute SDH of 10mm or more in size, having a midline shift of more than 5mm or having any global or focal neurological deficit should be considered for surgical management. Patients with a chronic SDH causing neurological deficit or mass effect on imaging should also be considered for surgical management. In the absence of the above clinical or radiological signs, there is no proven benefit for surgical management.

Aim: The aim of the audit is to analyse the clinical and radiological data of the patients managed surgically or conservatively for SDH, and compare the outcome and mortality with international literature.

Method: 45 patients admitted to the neurosurgical ward between October 2010 and September 2011 with SDH were included in the audit. Admission clinical data was obtained from discharge letters, and CT scans were analysed, and size and midline shift measured. Surgical outcomes were measured in terms of clinical improvement.

Results: Twenty-five percent (25%) of patients with an acute SDH, and 63.6% of patients with a chronic SDH were managed surgically. One hundred percent (100%) of the patients managed surgically fit the criteria for surgical management. Twenty-six percent (26%) of patients admitted with an acute SDH, which fit clinical or radiological criteria for surgical management were managed conservatively. Seventy percent (70%) of these patients had concomitant severe brain injuries, 15% had a stable repeat CT scan and 15% had no adequate documented reason for conservative management. Zero percent (0%) of patients admitted with a chronic SDH which fit clinical or radiological criteria for surgical management were managed conservatively. Zero percent (0%) of patients admitted with acute SDH and managed conservatively needed subsequent surgical management, compared to 18% of patients admitted with chronic SDH that were managed conservatively. There was a 55% improvement in clinical condition following surgical management of acute SDH, and 100% improvement of chronic SDH. Mortality of acute SDH was 28% and 8% for chronic SDH.

Conclusion: The above results show strict concordance with best medical practice in terms of conservative or surgical management. Compared to international literature, patients admitted with an acute SDH had a higher favourable outcome rate, and a lower mortality. Favourable outcome rates and mortality rates in chronic SDH equalled international data.
OP6.176
Polyphenolic compounds protect against targeting of mitochondria by amyloid aggregates
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Alzheimer’s disease and Parkinson’s disease are age-related neurodegenerative disorders in which formation of amyloid aggregates by amyloid-beta (Abeta) and α-synuclein (α-syn) proteins, respectively, are recognised critical events that occur early in the disease process. These aggregates cause disruption of mitochondrial function in neurons, initiating a pathophysiological cascade leading to bioenergetic collapse and ultimately neuronal cell death. The detailed mechanisms are, however, largely unknown. The aims of the study were thus to, (i) investigate destabilisation of mitochondrial phospholipid membranes by these amyloid aggregates and, (ii) explore the protective effect of select polyphenolic compounds on mitochondria. Exposure of mitochondria, isolated from human neuroblastoma SH-SY5Y cells, to amyloid aggregates induced a strong and dose-dependent release of cytochrome c, reflecting damage to the outer and/or inner mitochondrial membranes. Importantly, targeting of aggregates to mitochondria was shown to be dependent upon cardiolipin, a mitochondria-specific phospholipid known to play a critical role in launching apoptosis. Moreover, the ability of amyloid aggregates to damage mitochondrial membranes was confirmed using a liposome permeabilisation assay. In these assays, aggregates triggered leakage of fluorescent dye encapsulated in synthetic lipid vesicles having mitochondrial-like phospholipid membranes. Finally, six natural polyphenols, two synthetic drug-like compounds and black tea extract were tested for their ability to antagonise mitochondrial damage by Abeta and α-syn aggregates. We found that morin, rosmarinic acid, epigallocatechingallate and black tea extract were potent mito-protectants, and are thus promising “nutraceuticals” that may delay the onset of age-related amyloid diseases.

OP6.177
The acute blockade of nigro-stratal pathway imposes pathological synchronization between cortex and basal ganglia
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Experimental evidences in humans affected by PD have shown abnormally synchronized oscillatory activity at several structures of the basal ganglia (BG) – cortical loop. This excessive synchronization underlies motor deficit, being largely reduced or even abolished by dopamine or by deep-brain stimulation (DBS). In normal rats under urethane anaesthesia Subthalamic nucleus (STN) activity is driven by the slow wave cortex activity (SWA) producing a strong correlation between the two structures around 1 Hz. In parkinsonian animal models other BG structures such as globus pallidus (GP) and substantia nigra pars reticulata SNr becomes more powerfully correlated with the cortex. In order to understand the nature of the low frequency oscillations (LFO) within BG-cortical loop we simultaneously performed the electrocorticogram (ECoG) and single unit recordings from GP, STN and SNr before and in course of tetrodotoxin (TTX) block of the medial forebrain bundle (MFB). We found that the acute block of SNc signalling causes a fast and clear cut increase of coherence between cortex/GP and cortex/SNr parallel with a significant increase of STN and GP firing rate. In addiction preliminary data demonstrate that muscimol activation of the STN reverses the TTX-induced coherence between cortex and GP/SNr. Our data demonstrate that: i) we induced LFO in a normal BG network by acutely blocking the SNc signalling; ii) in parkinsonian state the cortex drive the GP activity through the STN; iii) SNc exerts a strong inhibitory tone on GP. In conclusion we hypothesize that GP represents the core relay structures of the BG physiologically floating between the inhibitory control of striatum and SNc and excitatory inputs from STN. The impairment of accurate control in PD leads to failure of the main BG function i.e. the motor program selection.

OP6.178
Gender differences in blood serotonin in chronic tension-type facial pain
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Objective: To study whole blood serotonin levels in patients with chronic mid-facial tension-type pain and to compare with normal controls. Peripheral blood serotonin is stored almost exclusively in platelets, which reflect intra-neuronal serotonin. In chronic facial pain low intra-neuronal serotonin may cause dysfunction of descending serotonergic inhibition of nociceptive pathways.

Setting: A busy community otolaryngology practice in Malta.

Study design, subjects and methods: 60 patients with chronic tension-type facial pain according to International Headache Society criteria and 40 controls were studied. Patients were symptomatic for at least 3 months, had normal naso-endoscopy and normal CT sinuses/brain. Other causes of pain such as facial migraine, trigeminal neuralgia or temporomandibular joint dysfunction were excluded.

Results: Two-thirds of patients with tension-type facial pain were women. Normal women had significantly higher blood serotonin than men (p=0.0001). Women with chronic tension-type facial pain had a significantly lower blood serotonin than normal women (p=0.05). In women whose facial pain persisted despite therapy, the blood serotonin was significantly lower than the group with chronic pain (p=0.048). The changes in men with chronic facial pain were not significant.

Conclusion: This study provides evidence of serotonergic dysfunction in chronic tension-type facial pain. Gender differences in blood levels point to different rates of serotonin uptake in men and women in tension-type facial pain.

OP6.179
Dealing with end of life issues. What is not euthanasia
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End of Life issues. Treatment at the end of life can bring considerable difficulty for family and staff alike. Whilst communication skills remain a pillar in the process, experience shows that what should be normal medical practice may cause difficulty with relatives of patients and staff alike. Such practices, such as stopping of futile treatment, or what is deemed extraordinary are still seen with doubt. Underlying is a lack of understanding of what is and what is not euthanasia. Even in countries with strong religious values, this should not be the case. A review of moral teaching is this regard along with examples from hospital experience is discussed and a tool for understanding conflict amongst principles is discussed.
OP.7.182
A prospective cross-sectional study evaluating the etiology of anaemia in patients admitted to hospital under a gastroenterology firm, that is part of an unselected medical take roster

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Background: Anaemia is a common finding in patients admitted to hospital. Identifying the underlying cause is vital in its management. Various studies have evaluated the etiology of anaemia in the elderly population, however very few studied this across all adult age groups.

Objective: To cite the etiology of anaemia in patients admitted to hospital under a gastroenterology firm, that is part of the unselected medical take roster.

Methodology: 132 adult (≥15 years) patients, with incidental or symptomatic anaemia that were admitted to Mater Dei Hospital, unselected under a gastroenterology firm, during May 2010 and May 2011, were prospectively studied. Patients with recurrent admissions during the study period were recruited once only. Anaemia was defined as below the lower limit of normal of our laboratory’s reference range (<13g/dl males, <11.5g/dl females). A thorough history and physical examination, together with a complete blood count, iron studies, vitamin B12/folate levels and renal profile were carried out in all patients. Additional tests such as thyroid and liver function, inflammatory markers, serum protein electrophoresis and upper/lower endoscopy were requested at the physician’s discretion, guided by the mean corpuscular volume. Causes of anaemia were classified as anaemia of inflammation (sepsis, non-GI malignancy or autoimmune disease), iron-deficiency anaemia, overt blood loss, other causes (renal disease, etc.) and unexplained.

Results: A total of 505 patients were admitted during the study period, of which 132 (26.1%) had anaemia. 14 were excluded as had incomplete data. 118 patients were included for analysis (mean age 69.9 ±16.1 years, females n=45 (38.1%), males n=73 (61.9%). Their mean haemoglobin was 10.0 ±1.8g/dl (normocytic 64.5%, microcytic 28.8%, macrocytic 5.9%, pancytopenia 0.8%). 83.1% (n=98) had 1 cause for anaemia, 16.9% (n=20) had 2 or more causes. Diagnosis included: Anaemia of inflammation 41.5% (n=49) (sepsis n=25, non-haematological/non-GI malignancy n=15, haematological malignancy n=8, autoimmune disease n=1); iron-deficiency anaemia 18.6% (n=22) (GI malignancy n=7, non-malignant GI lesion n=6, undetermined n=4, menstruation n=3, non-GI malignancy n=2); overt blood loss 8.5% (n=10) (upper GI n=6, lower GI n=2, respiratory n=1, urinary n=1); others 21.2% (n=25) (renal disease n=17, liver disease n=3, thalassaemia n=2, idiopathic thromocytopenia n=1); unexplained 10.2% (n=12). 85.7% of GI malignancy had microcytic anaemia, while 64% of non-GI malignancy had normocytic anaemia.

Conclusion: Sepsis, non-GI malignancy and GI lesions (malignant and non-malignant) were the primary causes of anaemia in this cohort of patients, each comprising about 20% of the cases. Renal disease comprised another 15%. No correlation could be found between malignancy and the degree of anaemia, however GI malignancy tended to be microcytic, while non-GI malignancy tended to be normocytic.
Iron deficiency in Crohn’s: serum ferritin, disease location, and inflammatory markers

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The major cause of anaemia in Crohn’s disease (CD) is iron (Fe) deficiency. A European study on 1137 patients with Inflammatory Bowel Disease showed that Fe deficiency is present in 81% of patients tested but only 18–30% of these patients received intravenous (IV) Fe replacement. The preferred route of supplementation in CD is IV. In this study we have analysed:

- number of CD patients undergoing serum ferritin analysis over a 1 year period
- number of CD patients with Fe deficiency
- correlation between disease location and Fe deficiency
- whether CD patients with Fe deficiency were treated with IV Fe
- correlation between CPR and serum ferritin level in CD patients

Methods: 123 patients (60 male) with CD were identified through the gastroenterology out-patients database. Haemoglobin, CRP and serum ferritin level were analysed through isoft® (April 2010-April 2011). Results: Serum ferritin was analysed in 32 out of 63 female patients and in 23 out of 60 male patients. Patients with normal serum ferritin levels (n=29), had predominantly colonic disease (L2 – 59.1%) with 13.6% having ileal (L1) and 27.3% having ileocolonic (L3) disease. Only 10.3% (3 patients) were anemic (Haemoglobin <11.5/dl in females or < 13 g/dl in males). 20.7% (6 patients) had elevated CRP and only 1 patient (3.4%) was receiving IV Fe. Patients with low serum ferritin (<30 ng/mL) (n=26) had predominantly ileal involvement (L3 - 52.4%, L1-16%, L2-28.6% ). 11 patients (42.3%) were anemic, with 26.9% (7 patients) having high CRP. Only 1 patient (3.8%) was treated with intravenous iron. 68 patients did not have their serum ferritin analysed. This was a heterogenous group (L1- 30.2%, L2-30.2%, L3-39.6%). 14.7% (15 patients) had normal serum ferritin levels (<15ug/mL) (n=13 patients) were anaemic and 19.1% (13 patients) had high CRP. None of the patients in this group were on intravenous iron.

Conclusions: Only 51 patients (41.5%) had their serum ferritin analysed in the period under study and only 1 patient with low ferritin and anaemia was treated with IV Fe. Low serum ferritin was found in 47.4% of patients tested. 22% of patients with evidence of low ferritin had an elevated CRP while 21% of patients with normal ferritin had an elevated CRP, suggesting a poor correlation between serum ferritin and CRP. A significant correlation between ileal involvement and low serum ferritin was found (χ2 p: <0.05). Patients with CD should undergo regular serum ferritin assessment and should be replaced with oral/intravenous Fe appropriately.

Proton pump inhibitors - use, misuse and abuse

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Introduction: Since their introduction, proton-pump inhibitors (PPI) have become standard treatment for a variety of conditions including dyspepsia, peptic ulcer disease and GERD. In order for PPI to work effectively, they should be taken before the first meal of the day, when most proton pumps become active. Because not all pumps are active at any given time, a single PPI dose will not inhibit all pumps. A second dose, if clinically indicated, can be taken before the evening meal.

Aim and method: To assess the prescribing patterns of PPIs among Maltese general practitioners (GPs). An online survey was sent to GPs working in Malta. The questions that were asked are listed below. 56 GPs replied and 1 GP decided to opt-out. This survey was performed over 2 months.

Results: 56 GPs replied the questionnaire and 1 further GP decided to opt out later on. The results are:

1. How often do you prescribe a PPI?
   - Once a month – 31.58%
   - Once a week – 29.82%
   - More than once a week - 36.84%
   - No answer – 1.75%

2. For which indications do you prescribe PPI’s?
   - NORD – 92.98
   - Dyspepsia – 75.44%
   - Prophylaxis in combination with NSAID’s – 73.68%
   - Acid – related Symptoms – 68.42%
   - Treatment of H. Pylori – 70.18%
   - Endoscopic diagnosis of peptic ulceration – 36.84%
   - Other – 5.26% (prophylaxis with oral steroids; night cough, laryngitis, laryngo pharyngeal reflux

3. When do you tell your patients to have a single dose of PPI?
   - Just before they sleep- 21.05%
   - At dinner time- 8.77%
   - Before lunch-time 5.26%
   - With their meal- 15.79%
   - With breakfast – 29.82%
   - None of the above-17.54

4. Do you advise your patients to take the PPI –
   - With food – 70.18%
   - After food- 12.28%
   - Before food- 7.02%
   - Before food- 35.09
   - Not timed- 38.6%
   - None of the above – 5.26%
   - No answer – 1.75%

Conclusion: This data demonstrates that PPI are widely uses for a variety of gastrointestinal pathologies. However, the suggested timing of this widely used drug is not adhered too. Thus, this may result in inadequate symptom relief for patients or higher (and maybe unnecessary) dosage of the prescribed PPI. This will lead to a higher economic burden and possible an increase in the incidence of adverse events.

OP7.185

Retrospective analysis of the trends of incidence of oesophageal and gastric cancers in the Maltese Islands

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Background and aim: Locally there are no studies showing any change in trends of oesophageal and gastric cancers. The aim was to verify if there is a trend of an increase in oesophageal cancer and a decrease in gastric cancer in the same time frame.

Patients and method: Data was retrieved from the National Cancer registry. The data includes the submitted data of oesophageal and gastric cancer diagnosed from 1993 to 2008. The anonymous data was entered into a tailored made database. Data was analysed in yearly and consecutive periods as follows; Period:1 1993 - 1996; Period 2: 1997-2000; Period 3: 2001-2004; Period 4: 2005-2008.

Results: The total number of patients who were diagnosed with oesophageal and gastric cancer between 1993 and 2008 was 1,024. Gender: From the total sample, 63% (661 patients) were male. Gastric carcinoma was diagnosed in 512 male patients. This constitutes 50% of the total amount of patients with oesophageal and gastric malignancy and 77.5% of all males in the study. Oesophageal cancer was present in...
On an intention to treat basis, therefore, 60 patients have been included in the study to follow-up was 9 months (3-41). Forty-three patients have an age of 69 (42 - 89) and an HGD:IMC ratio of 73:30. Median sessions. A total of 103 patients were enrolled with a mean device focally. RFA ablation was used to an internationally Flat neoplasia is treated with RFA, using the HALO 360 endotherapy, nodular areas of HGD and/or IMC are treated options including surgery (if fit). In patients consenting for patients are informed fully with regards to available treatment fitness are considered. Prior to commencement of treatment Patients with neoplasia are discussed at the regional MDT guidelines. Endoscopy is performed with narrow-band endoscopic mucosal resection (EMR) and radiofrequency ablation of our management protocol employing a combination of the largest cohort in the UK. Our aim is to assess the efficacy largely confined to the trial setting and our unit has treated...further our study. 30% of the total sample diagnosed with gastric cancer spanned between 21-100 years in male sample whilst 91-100 years in the female sample. The peak incidence of the sample diagnosed with gastric cancer was between 61-70 years of age for males (n=136) whilst 71-80 years of age for females (n=119). There was a steady increase in patients being diagnosed with both gastric and oesophageal carcinoma from one period to another. There was an increase of male to female ratio for the four periods for oesophageal carcinoma (from a ratio of 2.3:1 in the first period to a ratio of 3.3:1 in the last period - M:F). On the other hand there was no change in male to female ratio of gastric carcinoma when comparing the first to the fourth period. The incidence of oesophageal carcinoma had a steady increase over the four periods in the North area of Malta whilst a decrease in the North harbor and Gozo area. The incidence of gastric carcinoma increased in the South harbor area whilst decreased in the North harbor area. Minimal changes occurred in the remaining areas.

OP7.186
Endotherapy for Barrett’s high-grade dysplasia and early cancer - a single-centre experience of EMR and RFA J.E. Abela, J.J. Going, A.J. Morris, P. Glew, H.C. McEwan, G.M. Fullarton
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Introduction: Endoscopic ablation of Barrett’s high-grade dysplasia (HGD) and intramucosal cancer (IMC) is emerging as a recognised alternative to oesophagectomy. It is a largely confined to the trial setting and our unit has treated the largest cohort in the UK. Our aim is to assess the efficacy of our management protocol employing a combination of endoscopic mucosal resection (EMR) and radiofrequency ablation (RFA).

Methodology: All patients with Barrett’s Oesophagus are entered into a surveillance programme following BSG guidelines. Endoscopy is performed with narrow-band imaging which allows targeted as well as 4-quadrant biopsies. Patients with neoplasia are discussed at the regional MDT meeting where endoscopic findings, CT imaging, histology and fitness are considered. Prior to commencement of treatment patients are informed fully with regards to available treatment options including surgery (if fit). In patients consenting for endotherapy, nodular areas of HGD and/or IMC are treated with EMR, usually employing the inject/suck/cut technique. Flat neosulis is treated with RFA, using the HALO 360 balloon-based device circumferentially and the HALO 90 device focally. RFA ablation was used to an internationally agreed standard for the treatment of two HALO 90 targets and three HALO 90 sessions. A total of 103 patients were enrolled with a mean age of 69 (42 - 89) and an HGD:IMC ratio of 73:30. Median follow-up was 9 months (3-41). Forty-three patients have stable disease and have not completed maximal treatment and are as a consequence still in the treatment programme. These patients will not be considered further in this study.

Results: On an intention to treat basis, therefore, 60 patients exited the protocol. Three patients died of unrelated causes (2 cardiorespiratory, 1 lymphoma). Ten patients progressed to invasive disease after a median of 12 months with lesions in the peri-junctional area tending to be a cause of concern. Fifty patients (IMC in 26%) completed the protocol. In 49/60 patients (82%) resolution of dysplasia was achieved. Resolution of metaplasia was achieved in 40/60 (67%).

Conclusion: In common with other reported series, we demonstrate that endotherapy with EMR and RFA appears to be effective for Barrett’s neoplasia. Our results support it as an alternative to oesophagectomy. However, the risk of progression to invasive disease mandates further careful follow-up and evaluation.

OP7.187
Preliminary results from the Maltese metabolic syndrome/adenoma study N. Azzopardi
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Introduction: The metabolic syndrome or its individual components such as obesity, impaired glucose tolerance, hypertension, low high-density lipoprotein cholesterol, and hypertriglyceridaemia are believed to be associated with an increased risk of colorectal adenomas.

Aim: To analyse the association between the metabolic syndrome and the risk of adenomatous polyps in the Maltese population.

Method: Male and female patients above the age of 50 years undergoing a screening colonoscopy were recruited and their parameters, shown below, were entered into a database: Waist circumference: men > 40 inches (102 cm), women > 35 inches (88 cm) Body Mass Index (>25 kg/m2) Fasting serum triglycerides (>1.7) and / or serum High Density Lipoprotein (HDL) (< 1.03 in males, < 1.29 in females) or on anti-hyperlipidaemic treatment Blood pressure >130/80 mmHg or on anti-hypertensive treatment Fasting blood glucose > 5.6 mmol/L or on blood glucose lowering agents Patients undergoing colonoscopy for other reasons (including inflammatory bowel disease or symptoms suggestive of underlying malignancy) were not included in the study. Individuals having 3 or more of: central obesity, dyslipidaemia (elevated triglycerides or/and low HDL), hypertension or impaired glucose tolerance were included in the metabolic syndrome group. All colonic polyps found in these patients were studied histologically for the presence of adenomatous tissue.

Results: 62 patients have been included in the study to date (13th August 2012). Only 3 of the 23 patients (13.0%) who did not have metabolic syndrome had adenomatous polyps removed during colonoscopy. 15 of the 39 patients (38.5%) who had metabolic syndrome had histologically confirmed adenomatous polyps on colonoscopy. This gives a relative risk of 2.949 (Fishier’s exact test, p: 0.044). Among the patients with metabolic syndrome and adenomas, 93.3% had central obesity, 80% were hypertensive or on anti-hypertensive treatment, 40% had low HDL, 33.3% had hypertriglyceridaemia, 26.7% were on statins and 66.7% had impaired glucose tolerance.

Conclusion: These preliminary results suggest that the metabolic syndrome gives an increased risk of colonic adenomas. Central obesity appears to be strongly associated with adenoma formation. Further analysis may allow us to suggest earlier colonic screening in patients with the metabolic syndrome.
OP7.188
Prophylaxis and management of cytomegalovirus infections in heart transplant patients
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Introduction: Despite significant advances in the diagnostics and management of post-transplant cytomegalovirus (CMV) infections, this still remains a common complication affecting transplant recipients. In such at-risk patients, CMV infection causes significant morbidity and mortality as well as loss of graft function.

Aim: To investigate the frequency of CMV infection in patients who received a heart transplant locally between 1996 and 2011 and to review our methods of CMV prophylaxis, diagnosis and treatment outcomes.

Methodology: A retrospective assessment of locally performed heart transplant patients was carried out to identify those patients who tested CMV positive by PCR after heart transplant. Results: Four patients out of 12 locally performed heart transplants, developed CMV infection. Various organs were involved including the lung, brain and colon. CMV infection was diagnosed using qualitative molecular techniques and all were treated successfully with intravenous ganciclovir followed by oral valganciclovir.

Conclusion: Following the publication of The International Consensus Guidelines on the Management of Cytomegalovirus in Solid Organ Transplants’ in 2010, we propose that we develop locally adapted guidelines for the prophylaxis and treatment of CMV infections in solid organ transplants.

OP7.189
Audit on the microbiological and antibiotic management of severe sepsis/ septic shock in adult patients
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Introduction: Sepsis is a well-known complication of bacterial infections occurring in any body organ. It is associated with high morbidity and mortality especially if affecting patients at the extremes of age and with multiple co-morbidities. Early identification of sepsis, management with appropriate antibiotics and intravenous fluids and control of the potential source are critical and have been shown to improve patient outcomes.

Aim: To analyze the appropriateness of the microbiological management of adult patients with suspected severe sepsis/septic shock admitted to Mater Dei Hospital (MDH).

Methodology: Adult patients admitted to MDH between December 2011 and August 2012 with possible sepsis were identified through positive blood culture results issued by the hospital microbiology laboratory. Data was collected retrospectively for each patient by looking at the patient’s clinical notes. Cases that satisfied the severe sepsis/septic shock criteria were followed up to collect data regarding their timely investigation, diagnosis and treatment.

Preliminary results: 190 patients with positive blood cultures were identified. 59 patients (31 males and 28 females; average age 72.3yrs) satisfied the established criteria for severe sepsis/septic shock. 71% were diagnosed with sepsis within 24hrs of admission. The most common sources were lung (n=14) and urinary tract (n=10). Only four cases were amenable to immediate source control and in three of these, source control measures were performed within 6hrs of diagnosis. At least one set of blood cultures was collected within 6hrs of meeting sepsis criteria in 43 patients. However only in 65% were these cultures taken prior to antibiotic administration. 56 patients received an antibiotic after meeting the criteria for severe sepsis/septic shock. The most commonly administered antibiotics were piperacillin-tazobactam (n=22), meropenem (n=10) and intravenous co-amoxiclav (n=9). Microbiology/infection disease physician advice was only sought in 11 cases and antibiotic management was altered in seven of these. Hospital antibiotic guidelines were followed in only 28 cases. 16 patients were receiving antimicrobials prior to meeting the sepsis criteria and in 50%, treatment was changed to broader spectrum antibiotics. Gram-negative bacteria were cultured in the majority of cases (n=53). Escherichia coli being the most common (n=20). The isolated organism was sensitive to the empiric antibiotic used in 50.8% (n=39) of episodes. Antibiotics were changed in 25 cases when sensitivities were available.

Conclusion: Collection of cultures prior to antibiotic treatment should be emphasized. Compliance rate with hospital antibiotic guidelines is still low. More awareness, easier access and enforcement of these guidelines are necessary. Early involvement of microbiologists and infectious disease physicians should be encouraged to ensure proper antibiotic management.

OP7.190
The management of prosthetic joint infection at Mater Dei Hospital
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Introduction: Prosthetic joint infections (PJI) are a serious complication of joint replacements with a prevalence of around 2-2.4% of elective primary knee and total hip replacements. PJIs pose an increasing burden on patient morbidity and healthcare costs as the number of primary arthroplasties increases in our ageing population. Risk factors for PJI include patient factors such as age, immunosuppression and factors relating to surgery such as the complexity of the procedure and quality of post-operative care. Management of PJIs is often difficult due to delayed diagnosis and the presence of resistant or difficult-to-treat organisms that grow in biofilm, where they are protected from antimicrobial agents and the host’s immune response.

Aim: This case series evaluates retrospectively the local management and outcome of ten patients with PJI to illustrate the importance of establishing a local guideline for timely diagnosis and appropriate treatment.

Methodology: A list of patients with proven PJI through microbiology and/or histology was compiled from recent infectious disease consultations. Data was collected from the patients’ case notes onto a prepared form which was then analysed.

Results: Out of ten PJI patients (seven knees and three hips) three were early (within 3 months of joint replacement), three were delayed (3-12 months after joint replacement) and four were late (more than 12 months after joint replacement). Five different prophylactic antibiotic regimens were noted in the series including cefuroxime, ceftriaxone, ciprofloxacin, fluoxacillin, and gentamycin with fluoxacillin. Five out of ten patients were given empirical antibiotics prior to proper sampling for microbiology either prior to or during hospital admission. Three patients were culture-negative; three patients cultured MRSA (methicillin- resistant Staphylococcus aureus)

Conclusion: Inconsistencies in management between different patients are noted throughout the series particularly in empirical antibiotic prescribing and sampling for microbiology. Establishing a management guideline based on local susceptibilities and a multidisciplinary team would be an essential step towards improving outcomes of PJI patients. More awareness is also needed about the importance of early recognition of PJIs both in hospital and in the community.
OP7.191
Seasonal Influenza vaccination rates in chronic asthma patients
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Aim: To document influenza vaccination rates in asthma patients and to explore factors that influence vaccination rates.

Method: Adult patients with chronic asthma attending a hospital clinic (n=146, female =103, mean age 49.8±4.2, 29.66 male) were asked to fill in a questionnaire in January 2012 on influenza vaccination. The data collected was analysed using Microsoft Office Access®. Categorical data was summarised using percentages, and Fisher’s two-tailed exact test was used for categorical values. A p value of <0.05 was considered to be statistically significant.

Results: 51.39% used reliever medication less than twice per week. 4.79% were current smokers. 86(58.9%) of patients had experienced acute episodes in the previous year. 80 (55%, 40% of males, 61% of females) received the influenza vaccine this winter. 129 (88.6%) had been vaccinated in the past. 49 patients did not re-vaccinate because of fear of side effects (21), forgotten or had no time (12), were sick when vaccine was available (6), adverse media report (1), because of current pregnancy (5) and 4 thought the did not need it. Of the 41 patients who had experienced side effects in the past, 16 re-vaccinated this year. 78 of 125 (62.4%) of all patients who were advised to take the vaccine were vaccinated, while 10% of those not advised were vaccinated this year (p=0.0001). 78% of those who were advised to take the vaccine by a doctor were actually vaccinated. The mean age for patients who were vaccinated this year was 54 years, and mean age of patients who were not vaccinated this year was 42 years (p=0.0003). The main reasons given for taking the vaccine were: because of doctor’s advice (34%), to protect themselves (60%), and to reduce severity and frequency of asthma attacks (39%). Reasons given for not having the vaccine were: fear of side effects (40%), forgot or had no time to take it (19%), and did not know they should take it (12%).

Conclusion: The rate of influenza vaccination in asthmatic patients is low. Medical advice by a medical practitioner resulted in a higher vaccination rate. Fear of side-effects was main reason for non-vaccination.

OP7.192
Audit on Klebsiella pneumoniae bacteraemia
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Background: Klebsiella pneumoniae bacteraemia has been linked to a number of pathologies including solid tumours, haematological malignancies, liver cirrhosis, biliary tract infections and diabetes mellitus. However their relationship has been rarely documented. Klebsiella pneumoniae is known to increase morbidity and mortality.

Aim: To assess underlying co-morbidities in patients diagnosed with Klebsiella pneumoniae as well as any associated presentations, antibiotics administered and antibiotic sensitivities.

Methods: The case notes of all 186 patients known to have been Klebsiella pneumoniae bacteraemia between November 2007 and March 2012 at Mater Dei hospital were reviewed.

Results: 186 patients (89 females; 97 males) were included. Their mean age was 62 years (SD±21.3). Excluding the 11 patients who weren’t admitted to hospital, the mean length of hospital stay was 22.2 (SD±26.5), 51 patients died as in-patients following Klebsiella pneumoniae bacteraemia, 3 of which were extended-spectrum β-lactamase (ESBL) producing bacteria. 18 patients required Intensive Therapy Unit (ITU) admission. In all 14 patients tested Klebsiella pneumoniae ESBL positive. 49 patients had underlying diabetes, 41 patients had underlying solid tumours most of which were gastroenterological malignancies (colon malignancies - 10 patients; oesophageal malignancies - 1 patient; pancreatic malignancies - 5 patients) and urological malignancies (12 patients). 35 patients had been diagnosed with underlying haematological malignancies. 53 patients were immunosuppressed. 16 patients had liver cirrhosis. 27 patients were found to have ascites but only 10 patients were on prophylactic antibiotics. 21 patients had undergoing hepatobiliary infections. 28 patients presented with septic shock. Klebsiella pneumoniae bacteraemia was associated with underlying pneumonia (28 patients), urinary tract infection (35 patients) and meningitis (2 patients). Most strains were sensitive to aminoglycosides 100%, cephalosporins (89%), fluoroquinolones (80%) and penicillins (72%). Most common resistances recorded were to piperacillin/tazobactam (33%), penicillins (10%), fluoroquinolones (10%). Resistance to carbapenems was only recorded in 5.8% of the cases. There were only 2 cases of multi-drug resistant (MDR) Klebsiella pneumoniae.

Conclusions: Klebsiella pneumoniae is associated with a prolonged hospital stay and high in-patient mortality. Most common underlying co-morbidities include solid tumours and haematological malignancies. Pneumonias and urinary tract infections are the most common associated presentations. Occurrence of MDR Klebsiella pneumoniae bacteraemia is still very low in Malta.

OP7.193
Improvements in the management and outcomes in hospital admissions with community-acquired pneumonia
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Background: A local community-acquired pneumonia (CAP) guideline was published in October 2011 at Mater Dei hospital, Malta following the results of a previous audit. The main problems identified had been: time to first antibiotic, standardisation in antibiotic prescription and unnecessary admission of patients with low CURB65 scores. This had a negative impact on hospital bed occupancy and outcome.

Aim: To assess the impact on management of CAP with the introduction and implementation of a hospital guideline.

Method: All adult patients with radiological and clinical evidence of CAP admitted to Mater Dei Hospital through the Accident and Emergency Department over 28 consecutive days (1st February to 28th February 2012) were included. Data collected and analysed included: basic patient demographics; antibiotics prescribed and time of administration; CURB65 score and documentation; blood cultures, C-reactive protein (CRP) requests and 30-day mortality.

Results: A total of 140 patients (84 males, 56 females, average age 71 years (range 15-95)) were included. Our 30 day mortality for February 2012 was 20% (n=28). Forty patients (28.6%) were admitted with a CURB65 score of 0 or 1, two of whom died. The CURB65 score was documented in 8 patients. The average time to first antibiotic was 6 hours 36 minutes with a mean of 8.7 days treatment. Antibiotics were not prescribed according to guideline in 67.1% (n=68). Blood cultures and CRP on the day of admission were taken in 61 and 74 patients respectively.

Conclusions: Admission rates for CURB65 scores of 0 and 1 have decreased from 50.1% to 28.6% probably accounting for the increased 30-day mortality from 17.6% to 20%. This has reduced hospital bed days. The time to first antibiotic from registration in A&E has decreased from 7 hours 48 minutes to 6 hours 36 minutes though international guidelines aim for 4 to 6 hours from clinical assessment. Strict antibiotic choice prescription was erroneous in 61.3% which is a cause for concern, though most were related to unnecessary macrolides. CRP requests (an important severity
OP7.194
Audit on use and care of peripheral intravenous catheters
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Background: Peripheral intravenous catheters (PIVCs) are invaluable in patient care. They are a major aetiological factor for hospital-acquired infections, including bacteraemia, leading to increased morbidity, mortality and hospital stay. Correct insertion and maintenance of PIVCs are critical to prevent these complications.

Aim: To assess compliance with the infection control policy for insertion and maintenance of PIVCs. Special emphasis was given to the necessity, duration and visual inspection of phlebitis (VIP) score monitoring and documentation.

Method: Patients from two surgical and two medical wards with PIVCs were studied over a period between December 2011 and February 2012. Each PIVC was assessed in terms of total duration, insertion location, and completion of VIP score sheet, documentation on dressing. VIP scores and appropriateness of any subsequent intervention. Valid indications to justify presence of a PIVC were the need for intravenous hydration, drugs, blood products, fever, gastrointestinal causes and other causes such as patients undergoing surgical or radiological procedures on the same day.

Results: 151 patients having a PIVC were included. 47% of PIVCs were inserted at A&E, 43% in the ward and 7.3% in theatre. Date of insertion was documented on the VIP score sheet in 72.2% of cases and on the dressing in 24.5% of cases. In 17.9% no date of insertion was available. The mean duration of a PIVC was 1.7 days (range 0-7 days). Indication was not available in 28 cases. 18.5% were not indicated. Of all indicated PIVCs (n=123), 51.2% were required for intravenous administration of drugs, 30% were used for intravenous fluids +/- intravenous drugs or blood products, 14.7% were indicated for gastrointestinal reasons, 0.8% were febrile and 3.3% for other reasons. A decision regarding PIVC status was taken by the caring firm and documented in 41.1% of cases. The VIP score sheet was completed in 77.5% of cases and in all cases, the appropriate action was taken. Of the completed VIP scores, in 62 cases the VIP score was 0, in 2 cases the score was 1. No cases of phlebitis were identified.

Conclusion: 18.5% of PIVCs were not indicated and should have been removed. Although mean duration of a PIVC was low, there were still cases were PIVCs where left for longer than 72 hours without justification. PIVCs are used mostly for administration of intravenous drugs. Despite lack of adherence to the policy, no cases of phlebitis were identified.

OP7.195
The Might of Healing Springs: Writing, Health and Disease in Shelley (and Mary Shelley)
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Shelley figures prominently in any account of literature’s relationship with health and diagnosis of illness. We are more used to thinking of Keats as a poet-physician, but, after expulsion from Oxford, Shelley briefly considered training as surgeon and attended a course at St Bartholomew’s Hospital. Throughout his turbulent and creative life, he was passionately interested in theories about the causation of disease and the very nature of existence. This talk will reflect on his explorations in a range of works, including ‘Prometheus Unbound’ and ‘Adonais’ (and glancing at Mary Shelley’s cognate enquiries in ‘Frankenstein’); in particular, it will look at Shelley’s understanding of the relationship between life and death, and matter and spirit. Shelley raises fascinating questions about the value -- and potential limits -- of the new cross-disciplinary enterprise of medical humanities. The paper will argue that Shelley’s poetry demands we consider literature and medical humanities as good neighbours rather than identical twins.

OP7.196
Feminisation and the Maltese medical profession
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Participation of women within the medical profession in Malta is a relatively recent phenomenon and despite the fact that a medical school has been in existence since 1676, the first female doctor qualified in 1925. Until the early 1980’s, numbers of women qualifying were very small. This changed suddenly and in 1985, a watershed year, women accounted for 28% of doctors qualifying. In 2004, the male to female ratio reversed for the first time, and in 2008 women accounted for 62% of medical graduates. The demographic profile is consistent and mirrors that obtaining in other European countries, where reasons for this demographic shift included decline in prejudice and discrimination. It is generally also a reflection of changing community-specific social milieu. Review of pertinent literature suggests that women tend to gravitate towards certain specialties. Family medicine, paediatrics and obstetrics/gynaecology possibly afford closer interpersonal relationships and it is possible that women are generally more empathic and personalized in their approach to medical problems with strong psychosocial profiles. This may, however, be an inaccurate stereotype and the reasons may have more to do with flexible work patterns often sought by working mothers. In Malta, it may be that this significant change in gender composition of the medical profession is already affecting the organization and delivery of healthcare. The issues raised by feminisation have immediate and practical dimensions, given the rapid changes ongoing in society generally, and particularly in healthcare and the practice of medicine. Any human resources planning and future strategies for delivery of healthcare will need to take into account the effects that result from changes in gender composition of the medical workforce with the possibility of obligatory shared parental leave introduced as a means of creating an equal professional playing field. There is need for accurate information about the current role and level of utilization of women as a workforce in the delivery of healthcare and actual medical practice in Malta. Studies need to evolve in order to explore possible reasons for hurdles that women come across in their quest for medical educational attainment both at undergraduate and at postgraduate level. In tandem, it also becomes necessary to study patients’ viewpoints regarding gender issues in their interactions with male and female doctors.

OP7.197
A gynaecologist looks at the Torah
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The books of the Torah are a compendium of Judaism’s founding legal and ethical religious texts. They have a wealth of reflections that deal with the various human lifestyles including the reproductive cycle as perceived by human society at the time, thus looking at the issues relating to fertility/infertility and contraception; and on concepts

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There are times when life-sustaining Feeding tubes may be removed from patients in order to investigate when it is ethically possible to remove several of these strategies such as ensuring equitable access to healthcare, and its understanding of the concept of the Common Good. It has been proposed that the way in which different communities deal with the allocation of healthcare, depends on the moral self-understanding in that community and its understanding of the concept of the Common Good. In this paper it will be shown how, despite critiques, the understanding of concepts such as distributive justice, solidarity and subsidiarity in the Common Good are still extremely relevant in today’s secular society. The discussion will be contextualised by the assessment the various healthcare systems present in today’s pluralistic societies. The provision of healthcare in Malta will be used as a case study to illustrate how the principles of the Common Good, such as accessibility and sustainability, are being ascertained or otherwise in practice by means of strategies being developed by regulators, healthcare providers and other stakeholders. Many common denominators underline several of these strategies such as ensuring equitable access and reduction of health inequalities, reduction in waiting times, and seeking quality in service provision and delivery. Recommendations will be given, basing these strategies for the Common Good in healthcare, recognizing the interaction of multiple factors operating simultaneously in health seeking behaviour.

OP7.200
Ethical issues regarding the removal of the percutaneous gastrostomy tube: a European perspective
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Introduction: There are times when life-sustaining treatments can be legitimately withheld or withdrawn. The bioethical challenge lies in maintaining human dignity in a world where technological methods are constantly improving, one of these methods is through tube feeding. Yet when is aggressive treatment too aggressive? Is one who believes in intrinsic human value committed to indefinitely preserving human life in disregard of other factors? Can the concept of ordinary and extraordinary treatment, although predominantly Catholic ideas, apply when it comes to feeding tubes?

Aims: To investigate when it is ethically possible to remove a Percutaneous Endoscopic Gastrostomy tube and to highlight a European case such as that of Eluana Englaro in order to take a morally sound decision.

Method: Due to the nature of the subject, research was carried out through meticulous literature review.

Findings: Feeding tubes may be removed from patients in two situations. Either when in a persistent cognitively impaired state, when the patient may not have the capacity to get up and get food for themselves, open their mouths and swallow it but their digestive system works well and they are not dying and therefore the tube is sustaining their lives. The removal of the tube in these cases results in dehydration and a slow, painful death. The other situation involves not forcing food and water upon patients who have stopped eating and drinking as part of the natural dying process. This typically occurs, for example, at the end stages of cancer when patients often refuse nourishment because the disease has distorted their senses of hunger and thirst. In these situations, being deprived of unwanted food and water when the body is already shutting down does not cause a painful death.[1] Eluana Englaro (November 25, 1970 – February 9, 2009) was an Italian woman who entered a persistent vegetative state. Shortly after Englaro had started artificial nutrition and hydration, her father requested to have her feeding tube removed and to allow her to die “naturally”.

Conclusions: Unless the body is rejecting the nutrition administered, it is difficult to assume that a feeding tube is extraordinary treatment.

OP7.198
After Posthumanism: medicine and twenty-first century literature
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‘Medicine’ is the title of Granta 120 (2012), with this recent issue of the literary magazine confirming the irrepressibility of the medicinehumanities interface in contemporary literature and art. This paper takes its cue from this special issue to review how representations of that interface have changed over the last ten years. Through references to David Eagleman’s ‘Sum’ among other works, the paper argues that there has been a change in tone from a rather sensationalist pitching of transhumanism to a more sober depictions of the potential of biotechnology within posthumanist thought. In particular, the paper discusses the notion of predictive art and its relevance to the medical humanities and to medical contexts more broadly.

OP7.199
Sustainable and accessible healthcare in Malta – The Common Good Concept
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Health is a major unifying issue of life and the debate on sustainable healthcare centres on the dichotomy of the rights of a person to access healthcare, and the limited resources a community can provide to ensure availability of this healthcare. It has been proposed that the way in which different communities deal with the allocation of healthcare, depends on the moral self-understanding in that community and its understanding of the concept of the Common Good. In this paper it will be shown how, despite critiques, the understanding of concepts such as distributive justice, solidarity and subsidiarity in the Common Good are still extremely relevant in today’s secular society. The discussion will be contextualised by the assessment the various healthcare systems present in today’s pluralistic societies. The provision of healthcare in Malta will be used as a case study to illustrate how the principles of the Common Good, such as accessibility and sustainability, are being ascertained or otherwise in practice by means of strategies being developed by regulators, healthcare providers and other stakeholders. Many common denominators underline several of these strategies such as ensuring equitable access and reduction of health inequalities, reduction in waiting times, and seeking quality in service provision and delivery. Recommendations will be given, basing these strategies for the Common Good in healthcare, recognizing the interaction of multiple factors operating simultaneously in health seeking behaviour.

OP7.201
Is scalp thinning the cause of baldness?
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Aim: To assess whether scalp thickness and structure may play a role in causing baldness.

Method: Scalp samples were taken from 13 cadavers donated for medical teaching and research to the Anatomy Department. Of these, seven (7) had good heads of hair, two (2) were balding and four (4) were bald over most of the vertex of the skull. Skin samples from three areas were taken from each person. These areas were the vertex, the occipital region and the temporal region - in all cadavers the latter two regions were still covered in hair. Samples were fixed in formalin and then embedded in wax and sectioned.

Results: Although it is known that dermis thinning happens in balding, this research tested whether this is a scalp-wide phenomenon or whether it correlates with a particular area of the scalp. In fact scalp dermal thinning and layer compaction was markedly present in bald vertex samples but not in samples taken from occipital or temporal regions. Significant differences in dermal thickness were seen between different parts of the scalp in the same individual as well as between the same areas of the scalp in bald and not bald individuals for the vertex but not for the other areas.
Conclusion: It is therefore suggested that pressure effects due to gravity acting differently on different parts of the scalp and thus obliterating blood supply in scalp regions, may be a primary reason for the particular pattern of balding seen in male pattern alopecia.

OP7.202 Rib morphology
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Introduction: Human ribs are angulated. There are changes in rib angulation that occur with body growth. Rib angulation was correlated with the vectors of chest wall forces estimated by an ellipsoid biomechanical model using finite element analysis.
Aim: To measure changes in rib angulation that occur with body growth; to calculate the direction and magnitude of chest wall forces in an ellipsoid biomechanical model using finite element analysis techniques and to correlate the vector of the forces acting on the ribs with rib morphology.
Methodology: Rib dimensions and angulation were measured using thoracic CT scans from foetal, paediatric, adolescent and adult humans. Chest wall forces were modelled with an ellipsoid finite element analysis model. Comparisons were made between rib angulation and direction of chest wall forces, and between rib height and intercostal muscle force measured as the force vector perpendicular to the rib.
Results: There was a statistically significant correlation between rib angulation measured at the mid-axillary line and the direction of the vector of the resultant chest wall forces acting on ribs (p< 0.001). Rib height was significantly correlated to intercostal muscle force (p< 0.001), with both these parameters increasing with progressive rib number as one descends the chest wall (p=0.004 and p< 0.001 respectively).
Conclusions: In adults, ribs are angulated at the mid-axillary line such that chest wall forces run along their length. There was a statistically significant correlation between rib height and calculated intercostal muscle force in the foetus, ribs are horizontal and have equal height. There was a progressive increase in rib angulation with age, particularly in early childhood between 3-5 years age, as rib angulation increases to the direction of the resultant chest wall forces. With age, rib height is also progressively stretched in response to the increasing intercostal muscle force with increasing rib number. The increasing rib height with increasing rib number in adults is related to the increasing calculated intercostal muscle force.

OP7.204 Heat shock modulators protecting normal cells during chemotherapy
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Introduction: Heat shock proteins (HSPs), are a family of molecular chaperones, highly conserved amongst living organisms through evolution. They interact with proteins to aid in their correct folding, reverse the process of denaturation, and also deviate from the apoptotic pathway. Tumour cells are known to have high basal expression of HSPs, but a lower inductive expression of HSPs when compared to normal cells. Tex-OE® is a nutraceutical known for its reparative function on stressed cells via an HSP70-directed pathway. The negative effects of chemotherapy on patients are attributed to the deleterious effects of the cytotoxic drugs on normal cells, including myelosuppression. Considering the reparative function of Tex-OE® on the HSP inductive variation between normal cells and tumour cells, it may be possible to confer the protective effect of the Tex-OE®-induced HSP70 to the bone marrow during chemotherapy, thus reducing the myelosuppressive effect of the chemotherapy.
Aim: To study the cytoprotection instilled by Tex-OE® on normal cells and cancer cells when exposed to chemotherapy.
Methodology: Cancer cell lines and progenitor cells (obtained from cord blood) were treated with Tex-OE® and chemotherapy (cisplatin, cytarabine, doxorubicin, methotrexate or vincristine), sometimes using heat shock as an added stress. MTT and XTT assays were used to read the cytotoxic effects of these treatments while HSP70 ELISA was used to measure variations in HSP70 concentrations.
Results: Tex-OE® did not increase the HSP70 concentration in 3 cancer cell lines. Moreover, Tex-OE® used in combination with cisplatin and vincristine resulted in increased sensitivity of the cells towards the individual chemotherapies. There was increased sensitivity to vincristine in HL-66 and also in HCT-116, and to cisplatin in all cell lines. Tex-OE® also conferred a protective effect to progenitor cells obtained from cord blood.
Conclusion: From our results, Tex-OE® has shown promise as a cytoprotective agent that could protect the progenitor cell population and bone marrow when used in conjunction with chemotherapy.
Disclosure: The Grant for this project was obtained from MCST and was applied for together with the company whose testing we are carrying out, ICP - The Institute of Cellular Pharmacology.

OP7.205
The effects of histone deacetylase inhibitors on leukaemia differentiation
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Cancerous mutation of lymphogenous or myelogenous cells results in an abnormal proliferation of white blood cells. Chemotherapy is the mainstay of treatment but unfortunately has its own harmful effects. An alternative method of treatment is differentiation. All-trans retinoic acid (ATRA) has been used to treat acute promyelocytic leukaemia (PML) successfully. PML represents only 3% of leukaemia, and ATRA does not differentiate other types of leukaemia at 100% efficiency. Gene expression is carried out by fine control of coding and uncoding of DNA around histones. Histone acetylase uncoils DNA, allowing for a more transcriptionally active chromatin, whereas histone deacetylase gives rise to a coiled, inactive chromatin. A histone deacetylase inhibitor will consequently give rise to a higher degree of active chromatin which should in turn further expose retinoic acid receptor-α (RAR-α) sites on the DNA for ATRA to take effect. To better improve differentiation, in these experiments ATRA is being used in combination with several histone deacetylase inhibitors (HDACIs) with the aim of giving rise to a higher degree of differentiation. Several HDACIs, such as sodium butyrate (NaBu), sodium valproate (NaVal) and trichostatin A (TSA) were tested on different leukaemic cell lines, prior to adding the differentiation inducer ATRA. Pre-treatment was intended to alter the chromosomal conformation in order to increase the possibility that ATRA binds to the RAR-α sites and subsequently promotes differentiation. The degree of differentiation was calculated by the NBT reduction assay with respect to amount of viable cells as detected using the MTT assay. When used individually, histone deacetylase inhibitors only slightly differentiate leukaemia cells. The HDACIs working together and used prior to ATRA resulted in a significant degree of differentiation of HL60 cells (p<0.001). Pre-treating HL60 cells with NaBu at 50mM and TSA at 20mM prior to adding ATRA has decreased the required dosages of the HDACIs when compared to other publications. Similar results were achieved with other cell lines and different combinations of HDACIs used as pre-treatment. HDACIs do in fact seem to expose transcription sites allowing ATRA to act on RAR-α on the DNA and therefore progress differentiation. This will potentially increase the possibility of using ATRA treatment in differentiation therapy from one kind of leukaemia (PML) to a much broader spectrum.

OP7.206
Investigation of heat shock proteins as regulators of hematopoietic stem cell expansion
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Introduction: The capability to self-renew is fundamental for stem cells to expand their numbers during development. Self-renewal and differentiation of stem cells are tightly regulated by intrinsic and extrinsic signals. Molecular chaperones and co-chaperones, especially heat shock proteins (Hsp), play a role in modulation of protein conformation, complex-formation and degradation. The function of Hsp, which are associated with stress response and tolerance, is well characterized in differentiated cells, while information on their role in stem cells remains scant. Recent studies suggest a central role for heat shock proteins in immature CD34+ hematopoietic stem cells (HSC). Understanding the role of Hsp in HSC self-renewal is a crucial step towards medical solutions such as stem cell transplants for blood malignancies.

Aim: To investigate the effect of Hsp stimulation on expansion of HSC.

Methodology: CD34+ cells were isolated from Umbilical cord blood, expanded in serum free medium supplemented with a cytokine cocktail and treated with a Hsp stimulator, Tex-OE® (an Opuntia extract) at doses of 5ppm, 10ppm and 15ppm for 6 days of expansion. Cells were then analysed by flow cytometry for expression of CD34 and CD133 as early HSC markers. Results are expressed as % increase in CD34+ and CD133+ population between the control (untreated) and treated samples.

Results: The % of CD133+ CD34+ cells is higher in treated than untreated samples and as well increases with higher doses of Tex-OE® up to 15ppm, beyond which any increase is unbefriential. The increase in expression of these markers is statistically significant at 10ppm (p<0.05).

Conclusion: Our results demonstrate that Tex-OE® is able to maintain and expand a CD33+CD34+ HSC population, thus confirming that Hsp play an important role in HSC. The stem cell potential of these cells will be assayed using Human colony-forming assays and with further flow cytometric analyses.

Disclosure: This project is funded by the MCST; the funds were applied for together with ICP (Institute of Cellular Pharmacology) for which we are doing the testing.

OP7.207
Effect of rib cage shape on spontaneous pneumothoraces
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Introduction: Spontaneous pneumothoraces occur mostly in tall thin young males due to a congenital bulla bursting.

Aim: To demonstrate that spontaneous pneumothoraces occur in the apices because the tall thin rib cage shape predisposes any bulla present to rupture because of mechanical buckling.

Methodology: Rib cage measurements were taken from postero-anterior and lateral CXRs in 12 patients presenting with spontaneous pneumothorax and from 12 controls admitted with blunt chest trauma. Patients older than 30 years, females and non-Maltese were excluded. A finite element analysis of a normal lung model and a series of three similar lungs with a progressive reduction in antero-posterior depth were analysed to assess surface strain patterns on maximal inflation.

Results: Rib cage measurements showed that patients presenting with spontaneous pneumothorax are flatter in antero-posterior depth than controls (chest width to depth ratio 1.9 versus 1.7, p=0.19, ns). A series of finite element analyses of a model lung and lung models with reducing antero-posterior depth showed that buckling occurred near the apex in all cases, but was more pronounced with progressive flattening of the apices.

Conclusion: Flat chested individuals have an increased risk of apical lung buckling due to increased stress leading to visceral pleural failure and rupture. Weakened pleura at an apical bulla will burst under these conditions. This means that apical congenital bullae are more likely to burst in tall thin individuals. This particular rib-cage shape predisposes to spontaneous pneumothorax.
OP8.208
Defining practices in primary care
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Background: Seventy percent of general practice contacts in Malta occur in the private sector. In the 2008 Health Interview Survey, respondents were three times more likely to have attended a private GP consultation over a public consultation, while 40.5% of the sample reported having never had a public GP consultation in their lifetime.

Aim: To outline the nature of activity in private practice community care in Malta and to compare it to the public one.

Method: The study was conducted in four of five districts within the island of Malta according to the Nomenclature of Territorial Units for Statistics (NUTS) classification, 2003. Eight private family practitioners, two from each district, and eight public family practitioners from the same districts were chosen. A sample of four hundred patients, two hundred each from both the public and private sector was obtained. The information gathered included: (1) patients’ information (age/gender and reason for encounter), doctors’ procedures, diagnoses and referral or further actions; (2) GPs (General Practitioner) details (gender/year of registration/location/sector/employment). The reasons for encounter and diagnoses were coded according to ICD-10 (International Classification of Primary Care). The data collection sheets were filled in English and were filled in by the researcher, who personally attended the clinics in order to reduce the burden on GPs.

Results: Patients attending the public sector were significantly older than patients visiting the private sector (p=0.001), presented significantly less health complaints (p=0.024), while numbers of prescriptions and blood pressure check ups were significantly higher in the private sector (p=0.011 and p=0.013 respectively). No significant differences between the two sectors were found in distribution of referral tickets (p=0.073) and administration procedures (p=0.242), however the highest difference was found in referral tickets, which were more likely to take place in the public sector. The analyses of health education and health promotion demonstrated that doctors in the private sector are more involved in such tasks as health advice, motivation towards healthy lifestyle, smoking cessation etc., than their colleagues in the public sector. The difference was highly significant (p=0.001), as the vast majority of it took place in the private sector. Conclusion: This study highlighted the differences in practice between public and private primary care providers. Despite the fact that there is room for improvement in both sectors, private practice is more in line with the objectives of primary health care as defined by WHO (World Health Organization).

OP8.209
QUALICOPC, a multi-country study evaluating quality, costs and equity in primary care
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Aim: The aim of this study is to evaluate quality, costs and equity of primary care. The researchers of this study are trying to give an answer to the question what the benefits of primary care (PC) are and what effect the strength of a PC system has on the performance of health care systems.

Methods/design: QUALICOPC started in 2010 and will run until May 2013. Data will be collected in 31 European countries, Australia, Israel and New Zealand. The data collection is being done at three levels: the health care system, the general practitioners (GPs) practice and the level of the patient. Information at the practice and patient level is being collected through surveys among GPs and their patients. In Malta, 70 GPs were recruited. The data collection in Malta started in June 2012 and will run until August 2012. A fieldworker visits the GP practice and invites patients. Nine participants will fill in an anonymous questionnaire about their experiences with primary care and one patient fills in a questionnaire about what he/she finds important. The project is supported by the Malta College of Family Doctors.

Analyses: An important aspect of the study design is that the questionnaires of the patients can be linked to the questionnaires of their GPs. It can be explored to what extent the variation in outcomes (e.g. variation in quality of care between practices) can be related to the influence of the country, or differences between individual practices.

Discussion: Europe and some countries beyond are the laboratory of the QUALICOPC study. Little is known about the relation between structural arrangements of primary care (such as the payment system) and the performance of care. The QUALICOPC study responds to this by evaluating the effects of strong primary care on the performance of health systems. This would demand a deeper insight in professional behaviour of health care workers and their determinants and actions of patients. The outcomes of the study will be used to inform the European Commission, WHO and national authorities to contribute to effective health care policies.

Disclosure: The study is part of the QUALICOPC (Quality and Costs of Primary Care in Europe) project, co-funded by the European Commission under the Seventh Framework Programme (FP7/2007-2013) under grant agreement 242141. The study is coordinated by NIVEL, the Netherlands Institute for Health Services Research.

OP8.210
The knowledge, attitudes and practices of Maltese family doctors in health promotion and disease prevention
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Introduction: Family doctors are in a unique position to advocate health promotion and disease prevention, though it is known that this is not always given its due importance due to various reasons.

Aim: To assess the knowledge, attitudes and practices of Maltese family doctors in health promotion and disease prevention. The study also explores barriers in implementing health promotion and suggests ways of improving practices. Results of the study are compared with a similar international study (EUROPREV 2000). The results will inform on a strategy to enhance prevention measures at primary care level.

Methodology: A validated questionnaire was sent in 2011 to all Maltese general practitioners (GP) and GP trainees to elicit beliefs and attitudes in practice, barriers to implementing preventive medicine and personal health behaviours. The results were analysed statistically. A focus group was conducted to discuss the results, elucidate further data and develop a set of recommendations.

Results: An improvement was seen in health promotion practice since 2000. Family doctors reported that they believe that patients find it easier to access health promotion activities. Doctors are more health conscious and look after their own health better. However, they have difficulties...
Results: 494 patients were invited to attain the target of 400 participants (81% response). Seventy-seven per cent of smokers, ~60% of unhealthy eaters, inadequate exercisers and those with abnormal weight, and 11% of excessive drinkers thought they needed to improve their unhealthy lifestyles. Patients were more likely to think they needed to improve their eating habits, stop smoking and reduce their alcohol use if the GP/team initiated a discussion about their body weight / blood pressure, smoking habits and alcohol use respectively (p < 0.05). Thirteen per cent of smokers, 30% of excessive drinkers, and ~50% of patients with problems of diet, exercise and weight were confident they would succeed. Sixty per cent of patients with diet, exercise and weight problems, 50% of smokers and 8% of excessive drinkers would have liked their GPs’ support. Patients who thought they needed to improve their eating habits preferred support in the form of information leaflets and individual/group counselling (p < 0.05), while those who thought they needed to quit smoking preferred information leaflets, individual/group counselling and referral to special care (p < 0.05).

Conclusion: GPs and healthcare professionals need to discuss risky lifestyles with patients to help them personalise such risks, and should offer their support to those wishing to change so as to improve their confidence and chances of success. Such discussion and support are especially important for excessive drinkers.

OP8.212 Attitudes of family doctors attached to the Department of Family Medicine towards consulting and treating young adults

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There is a perceived concern that there is no law which governs the right of young adults, defined as ages 15-18, to be treated by doctors and to have their privacy protected from their parents or legal guardians. On the other hand doctors seem not to be covered by a specific law which allows them to see and treat this age group, although the Medical Council has expressed itself once in this regard. This study aims to assess the perception of doctors to seeing young adults alone and whether they feel that a law should be implemented to help them impart proper care to this age group, who are considered vulnerable because of their age and who may not express concerns and practices if in front of parents or guardians. The study was meant to be a pilot study including those doctors attached to the Department of Family Medicine, with a future study planned on a larger number. The significance and importance of the results however merited previous publication of this study as a sentinel. Doctors are largely concerned about the law and are sometimes reluctant to see young adults alone even if they feel that they should be able to do so. They acknowledge the rights of young adults and there seemed also to be a significant difference in attitude towards the sex of the doctor with respect to the sex of the patient. The importance of having a clarification of the law by an amendment is discussed.

OP8.211 Lifestyle, prevention, change and support: the views and attitudes of patients in Maltese family practice

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Introduction: General practitioners (GPs) are advised to consider their patients’ views and attitudes in order to facilitate the success of preventive and health promotion interventions.

Aim: This study explored patients’ views and beliefs about the importance of lifestyle and preventive interventions, and assessed their readiness to make lifestyle changes and to receive support from GPs.

Methodology: Ten Maltese GP practices (5 private practices and 5 health centres) participated in a cross-sectional survey conducted by the European Network for Prevention and Health Promotion in Family Medicine / General Practice in primary care practices across 22 European countries during 2008-9. From each practice, 40 consecutive patients stratified by gender and age (10 males and 10 females aged 30-49 years, and 10 males and 10 females aged 50-70 years) were asked to complete a purposely-designed and piloted questionnaire.

Results: 494 patients were invited to attain the target of 400 participants (81% response). Seventy-seven per cent of smokers, ~60% of unhealthy eaters, inadequate exercisers and those with abnormal weight, and 11% of excessive drinkers thought they needed to improve their unhealthy lifestyles. Patients were more likely to think they needed to improve their eating habits, stop smoking and reduce their alcohol use if the GP/team initiated a discussion about their body weight / blood pressure, smoking habits and alcohol use respectively (p < 0.05). Thirteen per cent of smokers, 30% of excessive drinkers, and ~50% of patients with problems of diet, exercise and weight were confident they would succeed. Sixty per cent of patients with diet, exercise and weight problems, 50% of smokers and 8% of excessive drinkers would have liked their GPs’ support. Patients who thought they needed to improve their eating habits preferred support in the form of information leaflets and individual/group counselling (p < 0.05), while those who thought they needed to quit smoking preferred information leaflets, individual/group counselling and referral to special care (p < 0.05).
To analyse the relationship between staff group and
respectively. Responses were analysed with descriptive and
electronic questionnaire was sent to all MDIII (n=112) and
old curriculum. Both cohorts were taught research methods
aim of the study was to examine the involvement in EBM and
study was conducted among MDIII and MDIV students. The
J. Vella, I. Stabile
students
Year 3 and 4 University of Malta medical
Science fiction is ubiquitous in everyday life, and Star
Trek (ST) has become part of popular culture. Doctors play
important roles in these episodes. This paper explores
depictions of these individuals over the four decades since
the inception of the original series. ST demonstrates that
doctors have reflected the shifting expectations of the general
public in that medics have morphed from an old-style
country doctor, to a supermom, to a genetically engineered
citizen. This paper explores the changing faces of future doctors:
reflections of contemporary prospective patients in Star Trek over four decades
V. Grech
Science fiction is ubiquitous in everyday life, and Star
Trek (ST) has become part of popular culture. Doctors play
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doctors have reflected the shifting expectations of the general
public in that medics have morphed from an old-style
country doctor, to a supermom, to a genetically engineered
human, to a sentient, computer-generated hologram and to an alien who uses also uses natural healing methods.
Doctors are expected to provide total accessibility, the ability to utilise natural remedies when possible, compassion and
unstinting commitment to their patients and their profession, infallibility and broad skills with flexibility that allows them to
deal with virtually anything, in anything. These capacities appear desirable even if the traditional doctor is replaced by a
machine, a warning that it would behove the profession to heed.

OP8.215
Research involvement among 2011-12
Year 3 and 4 University of Malta medical students
J. Vella, I. Stabile
Evidence-based medicine (EBM) and research are core aspects of contemporary medical education. A retrospective
study was conducted among MDIII and MDIV students. The
aim of the study was to examine the involvement in EBM and
research in these two cohorts of medical students, chosen
because the former are the first class completing the new
curriculum and the latter are the last class completing the old
curriculum. Both cohorts were taught research methods
simultaneously between October 2011 and January 2012. An
electronic questionnaire was sent to all MDIII (n=112) and
MDIV (n=86) students, of whom 41% and 45% responded respectively. Responses were analysed with descriptive and
inferential statistics. Three true-false questions regarding application of statistical knowledge to clinical scenarios were
asked of both groups. MDIII and MDIV students scored a mean of 57% and 49% correct answers, respectively. The
Chi-squared test did not reveal significant difference (p=0.9, α0.05). There was no significant difference in the number of
students accessing the University of Malta journal database (p=0.7, α0.05) with an average of 32% reporting access in both
groups (n=85). No significant difference was found between
groups in the reported number of extracurricular presentations given (p=0.2, α0.05), research undertaken (p=0.05, α0.05) or attendance in EBM seminars and workshops (p=0.17, α0.05). The reported Involvement of all respondents (n=85) in these three activities was of 29%, 28% and 44% respectively. A total of 8% of all respondents (6.5% in MDII and 10.2% in MDIV), reported presenting
their research via a poster or audiovisual presentation (p =0.53, α0.05) while 2% had their research published (p = 0.53, α0.05). The NICE guidelines (45%), PubMed (47%) and Cochrane library (29%) websites were accessed between 1 and 5 times during the year by both cohorts; no significant difference was found between the two groups. Almost 85% of MDIII and 90% of MDIV respondents were in agreement with the inclusion of completion of a research project as a compulsory requirement in the undergraduate medical curriculum. The study suggests that while some research initiatives are occurring among MDIII and MDIV students, more effort needs to be focused on increasing this involvement. Respondents reported lack of opportunities and lack of time as the main deterrents while pro-activity and students' organisations events were marked as main motivators. Due to the study limitations it is suggested that this survey be conducted annually in all undergraduate classes.

OP8.216
An analysis of trainee clinical assessments within the Foundation Programme in Malta
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Introduction and aim: Mini-Clinical evaluation exercises (CEX) and Case-based discussions (CbD) are mandatory assessments in the Foundation Programme (FP). A trainee needs to complete a minimum 6 of each in order to complete the minimum requirements to achieve FY competence. A CEX assesses the doctors' abilities in history taking, physical examination skills, communication skills, critical judgement, professionalism, organisation/efficiency, and overall clinical care. A CbD assesses the doctors' abilities in medical record keeping, clinical assessment, investigations and referrals, treatment, follow-up and future planning, professionalism, and overall clinical judgement. The aims of this retrospective study were:
• To analyse the number of doctors who were flagged with any type of concern
• To analyse the relationship between staff group and the overall grades given.
Methods: Data was obtained from the NHS eportfolio - Malta database. The assessments received by FP Malta for trainees in FY1 and FY2 between the 11th July 2011 and 15th July 2012 were anonymised and analysed using the Statistical Package for the Social Sciences.
Results: A total of 917 CBDs and 924 CEXs were received and analysed. Assessors included Consultants, Resident Specialists, Higher Specialist Trainees, Basic Specialist Trainees, Family physicians and Others. Consultants awarded statistically significant less points to FY2s in both CEXs and CBDs when compared to more junior staff, an average of 4.75 and 4.68 respectively; while the BSTs awarded statistically significant less points to the FY1’s with
4.73 and 4.60 points on average respectively. There was no statistically significant difference in points awarded among senior staff to FY 1’s in both CEXs and CBD with an average consistently close to 5 in both assessments. There were 4 assessments in total which highlighted concern, belonging to 2 FY 1’s and 1 FY 2; the FY 1 who had 2 assessments with concerns, also received 2 negative markings in the same assessment. These assessments were made by 1 Consultant, 1 Resident Specialist and 2 HST’s). GP’s consistently gave FY2’s higher marks than Consultants in both CEX’s and CBD’s.

**Conclusion:** The only trend being BST’s mark FY1’s lower, while Consultants give less marks to FY2’s; there was no difference as to who trainees ask for clinical assessments. This is unlike MSF’s, where 2 separate studies in the UK and in Malta have shown that senior staff are more likely to point out difficulties in trainees.

**OP8.217**

**An analysis of multi-source feedback within the Foundation Programme**

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**Introduction:** MSF is a mandatory assessment in the Foundation Programme. The current tool that is used is the validated team assessment of behaviour (TAB). This assesses doctors on 4 domains: Maintaining trust and professional relations, verbal communication skills, team-working, and accessibility. The rating for each domain can be one of four - no concern; some concern; major concern or unable to comment. A space for free text comments is available for each domain. The assessment tool is completed electronically. To ensure quality feedback, the trainee can only see the overall feedback and not who completed any particular form or gave any particular feedback. Feedback to the trainee is then provided by the educational supervisor. Remedial action is undertaken as appropriate.

**Aim:** The aims of our retrospective analysis were:

- To analyse the amount of doctors who had an MSF
- To assess if medical students using e-learning are in line with the team.

- any type of concern and
- To assess if there is any relationship between the number of MSF submitted and number of concerns

**Method:** Data was obtained from the eportfolio Malta database. The anonymised MSF’s for the doctors in the FP School Malta between July 2009- July 2010 were entered into an Excel spreadsheet and analysed using chi tests through the Epi Info™ (CDC) statistical package.

**Results:** 1868 MSF assessments from 83 FP doctors (50 FY1 / 33 FY2) were analysed. 52 FY doctors were female. The majority of assessments (97.86%) did not show any concern in any of the 4 domains. However, at least one concern was raised at 21.7% doctors (12 FY1 doctors / 6 FY2 doctors). Of these, 10.8% had more than 1 MSF report with some concern. The chance of concern was statistically significantly higher when the MSF was completed by a more senior doctor rather than an FY doctor or a nurse (p=0.016).

**Conclusion:** This is the first analysis in Malta on MSF among doctors. In our opinion besides indicating when the MSF’s should be performed and the minimum number that need to be submitted, it should also be mandatory that a certain proportion of TAB should be done by specific people such as the clinical supervisor, BST and HST working with the team.

**OP8.218**

**Factors influencing University of Malta Medical Graduates’ decision to join UK Foundation Programme**

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**Introduction:** The Malta Foundation Programme was established in 2009 in an attempt to reduce the significant proportion of University of Maltamedical graduates who until then were choosing to join the UK foundation programme. Between 2007 and 2011, the proportion of University of Maltamedical graduates opting to leave Malta declined from 36% to just over 13%. This declining trend was reversed in 2012.

**Aim:** To explore the reasons why some medical graduates applying to join the Malta Foundation Programme choose to join a UK foundation programme.

**Methods:** An online survey was developed after exploratory interviews were conducted with trainee representatives and foundation programme trainers and potential factors influencing medical graduates’ choice of foundation school were identified. The survey was distributed electronically (Lime Survey) to all applicants to Maltese Foundation programme (July 2012 entry) and who were offered a post with Malta Foundation School.

**Results:** The response rate was 65.5% (86 respondents). The majority were from University of Malta (75.6%), 2.3% from a UK Medical School, and the remaining 22.1% from other EU Medical Schools. Of these 75.6% chose to join the Malta Foundation Programme, 20.9% a UK Foundation Programme and another 3.5% other training programmes. Of the cohort who opted to join the Malta Foundation Programme the main reasons were: ‘I chose were foundation programme is better’ (64.2%) and ‘I prefer to undertake my training where I have support from family and friends’ (70.2%). Of those who chose to join a UK foundation programme the main reasons identified were: ‘I choose where post foundation training is better’ (70.6%), ‘I chose where there are better chances of furthering my career’ (76.5%), ‘I always wanted to travel abroad to experience a different health care system’ (88.9%), ‘I always wanted to travel abroad to experience different cultures’ (83.4%).

**Conclusions:** The results of this survey indicate that the vast majority of applicants are well informed about the Malta Foundation Programme and are convinced of the quality of the training programme. The reasons why applicants choose to join a UK Foundation Programme are not related to the quality of the Malta Foundation Programme but are mainly because of the perceived better quality of training beyond foundation level and improved future career prospects in the UK. The main reason however appears to be a desire to experience the adventure of travelling abroad and working in a different health care system.

**OP8.219**

**E-learning: are all users in front of the computer all of the time?**

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**Introduction:** E-learning has been shown to be an effective useful tool in medical education.

**Aim:** To assess if medical students using e-learning are in front of the screen while using the E-lectures.

**Method:** 87 final year medical students were encouraged to complete an online respiratory course (13 streamed lectures + 13 quizzes). A Moodle E-learning management system, collected data regarding login and logout times, number of slides viewed, total time on module, and quiz scores. Project was part financed through EU funds ESF.19(Malta). Articulate software was used for streaming.

**Results:** 6 lectures with corresponding quizzes were analysed for 43 medical students who completed all modules. 65.5% (Male – 66.7%, Female 64.1%) of the lectures were completed within expected time frame; 19% of lectures logged
OP8.220
The role of radiology in medical undergraduate education – beyond a new horizon
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Background: Major advances have taken place within clinical radiology over the past two decades. Despite the fact that tomorrow’s doctors are being trained in a new clinical era where imaging has become an integral part of modern patient management, radiology still remains under-represented in many undergraduate (UG) medical curricula throughout Europe especially the United Kingdom.

Methods: The relative lack of formal radiology teaching content in the University of Dundee UG medical curriculum, prompted a review of what is currently existing in order to identify any recommendations made by the Royal College of Radiologists (UK) that were not being met with, such as to devise a framework by which these can be integrated into the existing medical UG curriculum.

Results: The objectives of this framework are to enhance the awareness of the importance of clinical radiology teaching to medical students, ensuring that it is appropriately represented and integrated into the UG medical curriculum.

Conclusions: This presentation discusses the framework recommendations for curriculum content, design, delivery and implementation, tailored to the needs of the local university in light of the challenges confronted by a busy national health service clinical radiology department in undertaking such an enterprise.

OP8.221
The value of trainees in a radiology department: a four year retrospective study
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The productive value of trainees within the radiology department at Mater Dei Hospital was measured retrospectively. Productivity was measured in three ways: (1) independent workload contribution, (2) impact on on-call services, and (3) impact on day-to-day practice as perceived by consultant radiologists. Data were collected using a retrospective search on picture archiving and communication system and the radiology information system (PACS/RIS), analysis of trainees and consultant rotas, and a questionnaire to both consultants and trainees in all years of study. Where possible, productivity was quantified in terms of number of programmed activities (PAs). However, enumerating the number of hours per week spent engaged in “non-countable” activities (multi-disciplinary meeting (MDM) preparation, interventional and procedural work, and conducting formal teaching) was difficult to quantify. The trainees and consultants contribute to the department in terms of whole-time equivalent (WTE) is thus more difficult to quantify reliably. The contribution of independent work by trainees in a single week was 35.1 PAs (or 4.4 PAs per trainee per week). This varies depending on the year of training and increases with progression of training as trainees become confident in more modalities independently. A more senior trainee will be able to take more responsibility and, therefore, reduce the burden of consultant supervision and increase independent productivity. As part of their educational responsibility, consultant radiologists revise preliminary reports created by trainees to ensure reporting accuracy, completeness and clarity. Generally, consultants are increasingly happy to leave trainees unsupervised as they progress through their training. This is particularly true for CT and MRI, but less so for interventional procedures. Based upon objectively measurable areas of service provision, the enrolment of trainees yields considerable benefit, both in terms of workload and economically. Having trainees within a radiology department is perceived to stimulate ongoing consultant education. Furthermore, trainees are a fundamental requirement to have future competent radiologists to improve current standards and efficiency, meeting increasing demand for radiological investigations and interventions and paving the way towards a brighter, sub-specialized future.

OP8.222
Over-expression of AIP protein in GH3 cells reduces cAMP signalling and growth hormone secretion.
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Mutations in the Aryl hydrocarbon receptor-interacting protein (AIP) gene have been linked to familial cases of pituitary adenomas. Analysis of the protein support its role as a tumour suppressor since mutations cause a loss-of-function with reduced protein interactions and over-expression of wild-type AIP reduces cell proliferation. AIP interacts with a number of interesting proteins, among them are the phosphodiesterases, PDE4A5 and PDE2A, the G proteins, Gs and G13, survivin, RET, nuclear receptors and others. However, the mechanism by which AIP dysfunction causes increased susceptibility to pituitary adenomas remains unknown. Owing to AIP’s interaction with the phosphodiesterases and G proteins, we investigated the effect of WT and mutant AIP proteins on cAMP signalling and its downstream effectors in cell cultures. Wild type AIP, R304X- AIP mutant and empty vector were transfected into GH3 and COS-7 cells using standard transfection techniques. cAMP signalling was analyzed using cAMP assays, CRE-promoter luciferase assays, real-time PCR and finally growth hormone (GH) assays. Wild type AIP was able to reduce cAMP signalling both at the total cAMP level, luciferase activity of cAMP-driven promoter and target gene expression when compared to the empty vector and R304X mutant. Additionally, analysis of GH secretion which occurs after cAMP cascade activation, was also slightly but significantly reduced in wild type over-expressing GH3 cells. Addition of IBMX, a phosphodiesterase inhibitor, did not reverse the effect of AIP on cAMP signalling or GH secretion, indicating that this effect occurs independently of the AIP-phosphodiesterase interaction. AIP protein appears to inhibit pituitary cell proliferation by maintaining...
a low cAMP threshold, activation of which is known to cause tumour formation and thereby also influencing GH secretion. However, this effect appears not to be mediated by the AIP-phosphodiesterase interaction, suggesting G protein involvement in mediating this outcome.  

Disclosure: Research was funded by the MGSS 2008 Grant.

OP8.223  
Utilisation of a bespoke microarray for short interfering RNA design targeting neuroblastoma oncogenes

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Neuroblastoma is the most common tumour occurring in infants and is also the third most common cancer presenting in children under the age of five. First line treatment for children afflicted with advanced neuroblastoma activity usually involves the use of chemotherapeutic agents having a high degree of cytotoxicity. However, the main problems associated with the use of chemotherapeutic agents are the dose-dependent adverse effects which occur mainly due to the lack of specificity of the drug to interact solely with the tumour cells, and the risk of the emergence of cytotoxic drug resistance tumours. Most certainly, the recent discovery of interference RNA (RNAi) has allowed researchers to explore new avenues leading to the control and treatment of a wide spectrum of disease conditions, having the common characteristic of over-expressed individual genes. Thus, the RNAi may be exploited for inducing knockdown of specific individual genes which are known to play a part in the development of the disease condition. In the context of neuroblastoma, RNAi therapy may be utilized for inducing knockdown of specific oncogenes such as MYCN and DDX1. However, the design of an efficient RNAi therapy has to overcome a multitude of therapeutic hurdles, namely factors such as target gene secondary structure effects, off-targeting effects and method of delivery to target tumour cells. The use of bespoke microarray technology, together with the recent emergence of nanotechnology, proves to be highly useful in the quest to design effective and selective anti-oncogene therapies. The project entails the identification of suitable neuroblastoma oncogene – specific oligonucleotides (oligos), via the utilization of customised microarrays. Our experimental design consists of tiling microarrays bearing 21mer oligo probes, each of which being unique to designated complementary regions on the neuroblastoma oncogene transcript. This novel method for short interfering RNA (siRNA) design allows for the inclusion of oncogene secondary structure effects on siRNA accessibility, thus giving this method an added advantage over commonly available web-based siRNA design software applications. Ultimately, we are hopeful that the siRNA duplexes developed using our method will have enhanced neuroblastoma oncogene knockdown properties. Additionally, we are developing customized nanoparticles specifically adapted for the uptake, systemic transport and targeted delivery to neuroblastoma tissues. Ultimately, this project will be able to provide a siRNA therapy against neuroblastoma oncogenes with a highly selective and protective nanoparticle delivery system to ascertain therapeutic efficacy in the paediatric patient suffering from neuroblastoma.  

Disclosure: Representative data from this study was shared with Medipol sa(Switzerland) for possible development of a siRNA/nanoparticle - based therapy for neuroblastoma.

OP8.224  
Creating a high-throughput screening database to propose ligands capable of modulating the HIV-1 protease receptor

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Introduction: The emergence of Acquired Immunodeficiency Syndrome (AIDS) and the identification of the Human Immunodeficiency Virus (HIV) as its causative agent three decades ago resulted in significant effort to identify pharmacotherapeutic agents capable of disrupting the lifecycle of the virus, specifically its type 1 variant (HIV-1).  

Aim: This study aimed at constructing a library of de novo structures with demonstrable affinity for the HIV-1 Protease Ligand Binding Pocket (HIV-1 PR_LBP). These molecules could be of use in the identification of hits for further iterative optimisation in clinically useful agents.

Methodology: Baseline information regarding ligand binding modality and affinity was obtained through analysis of the pdb crystallographic depositions describing the HIV-1 PR enzyme complexed with small molecule inhibitors namely 1EBW, 1EBY, 1EBZ, 1EC0, 1EC1, 1EC2, 1EC3, 1D4H, 1D4I, 1W5Y, 1W5X and 1W5Y currently available on the Protein Data Bank (PDB). Molecular visualisation and modelling was carried out using SYBYL® 1.1 and in silico predicted Ligand Binding Affinity (LBA) was quantified using XSCORE_V1.3. The de novo design phase of the study was based on the utilisation of the bound coordinates of Lopinavir. This particular HIV-1 PR inhibitor was selected as a template owing to its superior in vivo activity and unique binding modality. Based on literature derived data, the cyclic urea moiety of Lopinavir was retained as a seed fragment, overlaid onto its counterpart moiety and placed into the HIV-1 PR_LBP with growth being allowed according to defined parameters utilising the genetic algorithm embedded in the GROW module of LIGBUILDER®V1.2.

Results: The result was the identification of 200 de novo designed structures with a predicted in silico LBA (pKd) ranging between 9.63 and 10. A smaller cohort (n=35) was also Lipinski Rule of 5 compliant.

Conclusion: The implication of this study consequently is that this series of novel structures may be compiled into a library that may be of utility in High-throughput screening (HTS) processes and future iterative optimisation.

OP8.225  
Isolation and functional analysis of a novel GABPα-interacting co-factor, EqTF-1 Binding Methyltransferase (EBM)

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GA-binding protein α (GABPα – also NRF-2 or E4TF-1), is the only ETS factor that forms obligate hetero-di or tetramers (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain. The GABP complex can further recruit other co-factors (with GABPβ) due to the absence of a transactivation domain.

Aim: The identification of 200 de novo designed structures with a predicted in silico LBA (pKd) ranging between 9.63 and 10. A smaller cohort (n=35) was also Lipinski Rule of 5 compliant.  

Conclusion: The implication of this study consequently is that this series of novel structures may be compiled into a library that may be of utility in High-throughput screening (HTS) processes and future iterative optimisation.
Results: The C32 and PC3 cell lines were sensitive to rapamycin treatment, resulting in a decrease in cell viability by more than 20%, but retaining a constant growth curve thereafter. A549 was not sensitive to rapamycin at all concentrations tested. For all combinatorial treatments, 50ng/ml rapamycin was selected. The viability of PC3 and C32 cell lines decreased significantly by the combinatorial effect of 50ng/ml rapamycin and isoprenoids. Although apoptosis was enhanced after sensitisation with rapamycin, other mechanisms of loss of cellular viability have a major role.

Conclusion: Our results show a statistically significant reduction in IC50 of various isoprenoids, following pre-sensitisation with 50ng/ml of rapamycin in the prostate cell line (PC3) and the melanoma cell line (C32). Hence this novel combination of drugs targeting two mechanisms that converge on a common target, provide a higher efficacy compared to using either drug on its own. This merits further investigation to characterise the mechanism/s of viability suppression in the solid tumour cellular models.

Interactions between valproate and olanzapine/quetiapine in bipolar disorder

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A combination of valproate with an atypical antipsychotic provides synergistic mood stabilizing, anti-depressant and anti-psychotic action in bipolar and schizoaffective disorders. Reports of rare, but serious, adverse drug reactions occurring on the addition of valproate to olanzapine and quetiapine monotherapy indicate a possible drug-drug interaction (DDI). The aim of this study was thus to compare the plasma concentrations of quetiapine and olanzapine of patients concurrently taking valproate with that of patients on antipsychotic monotherapy. To achieve this aim, an HPLC-UV method for the analysis of quetiapine and olanzapine in human plasma was developed and used with a routine valproate therapeutic drug monitoring service. Bipolar disorder patients being treated with valproate/olanzapine, valproate/quetiapine or valproate/olanzapine/quetiapine monotherapy (controls) were recruited from Mount Carmel Hospital. Plasma concentrations of the antipsychotics were measured and compared with those of patients not on the combination to assess the possible effect of valproate on quetiapine and olanzapine concentrations. Seventy-seven patients were recruited, 32 were included in the test groups and 45 in the control groups. An HPLC-UV method was successfully validated for the analysis of quetiapine serum concentrations using a Supelcosil™ LC-CN column and a mobile phase consisting of 0.05M potassium dihydrogen phosphate, acetonitrile and methanol (55:18:22 v/v/v). Detection wavelength was set to 214nm. The method exhibited an intra-day precision of 2.83% and inter-day precision of 2.35% at the average quetiapine plasma concentration (445ng/mL). The method was found to be 97% and 79% accurate at 471ng/mL and 79% accurate at 48ng/mL. The absolute recovery of the analyte stood at 47%, and at 80% for the internal standard (risperidone). An R2 of 0.9994 revealed excellent method linearity. The LOD and LOQ were found to be smaller than the concentration lower than half the lower limit of the therapeutic window of quetiapine (30ng/mL).

The extraction and HPLC-UV procedures were found to be suitable for the quantitative analysis of quetiapine in human plasma, but not for olanzapine. The comparison of quetiapine plasma concentrations between test and control groups did not reveal statistically significant results. However, some patients’ plasma concentrations were not measured in the methodology. However, clinical reviews of individual patients revealed low plasma concentrations of quetiapine and valproate in a patient non-responsive to treatment, while another patient on olanzapine/valproate developed neutropenia possibly due to a DDI. The implementation of a quetiapine and olanzapine TDM service at Mount Carmel Hospital would provide a powerful tool to clinicians, enabling them to routinely monitor plasma concentrations of the antipsychotics.

Disclosure: The research work disclosed in this publication is partially funded by the Strategic Educational Pathways Scholarship (Malta). The scholarship is part-financed by the European Union – European Social Fund (ESF) under Operational Programme II – Cohesion Policy 2007-2013, “Empowering People for More Jobs and a Better Quality of Life”.

OP8.226
The mTOR inhibitor, rapamycin, sensitises solid tumour cell lines to isoprenoid induced toxicity
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Introduction: Protein prenylation is a post-translational addition of a lipophilic farnesyl or geranylglycerol moiety derived from the pyrophosphate substrates, intermediates of the mevalonate pathway. Prenylation of Ras-related small GTP-binding proteins and heterotrimeric G proteins constitute protein activation events associated with cellular proliferation. The monoterpenes limonene and perillyl alcohol inhibit protein isoprenylation resulting in cell cycle arrest and induction of apoptosis. Clinical trials of d-limonene and perillyl alcohol resulted in dose limiting toxicity. Reducing the dosage of isoprenoids while maintaining the anti-proliferative effect is a challenge. Interestingly, the limiting factor of the mevalonate pathway, HMG CoA reductase, is controlled at translation level and hence sensitive to mTOR activity.

Aim: The purpose of this study was to investigate the dose response using a combinatorial treatment of isoprenoids and rapamycin (mTOR inhibitor), on various solid tumour cell line models.

Methodology: 3 solid tumour cell lines, namely PC3 (prostate) C32 (melanoma) and A549 (lung) were chosen on the basis of sensitivity to the mTOR inhibitor, rapamycin. Cytotoxicity assays using XTT were performed on the cell lines treated with Limonene, Perillyl alcohol and α-Pinene. In this study XTT assays were used to quantify viable cells in combination. Dosages at IC50s were used to measure apoptosis by Annexin V staining and flow cytometry.

Results: The C32 and PC3 cell lines were sensitive to rapamycin treatment, resulting in a decrease in cell viability by more than 20%, but retaining a constant growth curve thereafter. A549 was not sensitive to rapamycin at all concentrations tested. For all combinatorial treatments, 50ng/ml rapamycin was selected. The viability of PC3 and C32 cell lines decreased significantly by the combinatorial effect of 50ng/ml rapamycin and isoprenoids. Although apoptosis was enhanced after sensitisation with rapamycin, other mechanisms of loss of cellular viability have a major role.

Conclusion: Our results show a statistically significant reduction in IC50 of various isoprenoids, following pre-sensitisation with 50ng/ml of rapamycin in the prostate cell line (PC3) and the melanoma cell line (C32). Hence this novel combination of drugs targeting two mechanisms that converge on a common target, provide a higher efficacy compared to using either drug on its own. This merits further investigation to characterise the mechanism/s of viability suppression in the solid tumour cellular models.
OP8.228

The influence of the C17T mu opioid receptor polymorphism on ligand-mediated signalling

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Introduction: Opiate dependence is commonly managed using pharmacological substitution therapy which may include methadone, buprenorphine or a buprenorphine/naloxone combination. Published clinical studies suggest that genetic variability of the human mu opioid receptor (OPRM1) may contribute to the degree of opiate dependence in patients. The C17T and A118G receptor variants have been particular focus for such studies. However there is little in vitro molecular signalling data which complements these clinical observations. Moreover, the molecular functional response of specific human OPRM1 receptor variants has only recently started to emerge.

Aim: This project aimed to study ligand-mediated signalling of the human C17T OPRM1 receptor variant, and compare it to that of the wild type receptor.

Methodology: Wild type OPRM1 receptor cDNA was cloned into the mammalian expression vector pCI-neo and site-directed mutagenesis was used to generate the C17T variant. Transiently transfected COS-7 cells expressing wild type and C17T OPRM1 receptors were exposed to the opioid ligands morphine, methadone, buprenorphine, β-endorphin and the antagonist naloxone in the presence of the phosphodiesterase inhibitor 3-isobutyl-1-methylxanthine (IBMX) and the adenyl cyclase activator forskolin. Changes in intracellular cAMP concentrations were used as a functional index of receptor signalling, and were quantified by cell lysis followed by ELISA assays.

Results: The C17T OPRM1 variant showed a statistically significant reduction in receptor signalling compared to wild type, when exposed to buprenorphine (p = 0.0269), while a similar but not significant trend was observed in methadone-treated cells. Such changes were however not evident for morphine or β-endorphin.

Conclusion: The observed results suggest that OPRM1 C17T individuals may be less responsive to buprenorphine treatment than wild-type patients and may therefore potentially require higher doses in order to exhibit similar clinical efficacy. This has pharmacogenetic relevance in view of the role of buprenorphine in opiate-addiction therapy. Further studies are however required in order to clinically confirm these observations in patients.

OP8.229

Organ donation audit – an assessment of deceased organ donation in ITU

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Introduction: Since the first successful kidney transplantation in 1954, organ donation has become established international practice to treat end stage organ failure. Even though the number of organ donors and transplants are steadily rising, there are still long waiting lists worldwide. Currently in the EU approximately 50,000 patients are waiting for an organ. The European parliament therefore felt the need to establish guidelines dealing with the quality and safety standards for the procurement, transport and use of organs (EU directive 2010/45/EU). It was agreed that one important step towards increasing the deceased donations to their full potential is the data collection on national donation activity.

Aims:

• To determine whether every patient fulfilling the criteria for organ donation is identified as a possible donor in ITU in order to assess whether there is any potential to increase the number of organ donors in Malta.

Methodology: This was a prospective observational audit. We collected data from patients who died in ITU aged 75 years or less in 2011. A special data collection form was designed in accordance with the requirements of this audit. The data was collected either by the working staff in ITU or using the ITU database.

Results: 125 patients aged 75 years or less died in ITU in 2011 (mean age 60 years). The main group of patients died after CPR (24 patients). 25 patients succumbed to major head injury or major neurological pathology. Out of these 49 possible organ donors only 18 underwent brainstem testing, of which 14 were referred for organ retrieval. Ultimately organs were retrieved from 10 patients (the actual donors). Reasons for exclusion from organ donation were diverse including family refusal, positive hepatitis screening or death before retrieval.

Conclusion: Data collection on organ donation activity within the EU could show that Malta has already a high donation rate in comparison to the rest of Europe. In 2010 the donation rate in Malta was 22.5 per million population (EU average: 18 pmp). For 2011 we estimated an even higher donation rate of 30 pmp. However our data suggests that there might still be potential to increase the number and that we need to look more closely into the processes of identifying potential donors, performing early brainstem testing and avoiding logistic problems. Moreover data collection should be continued as it could help to identify possible obstacles.

OP8.230

Neurological outcome in ITU survivors following cardiac arrest

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Objective: This retrospective analysis aimed to monitor the long term, 6 month, neurological function and outcome in patients admitted to intensive care after a confirmed cardiac arrest, be it out-of-hospital or in-patient at Mater Dei Hospital. This was achieved using the validated Cerebral Performance Categories (CPC) scoring system.

Methodology: Anonymous patient data was collected from ITU records pertaining to all cardiac arrest survivors admitted to ITU over the period 1-1-11 to 31-12-11. Phone interviews were carried out by a single interviewer to all patients/surviving relative. A bilingual questionnaire was used to provide insight into all the CPC sub-criteria (consciousness, daily neurological impairment, cerebral function) The patient was assigned an overall score as per CPC system 1-5.

Results: The population studied was the total number of cardiac arrest survivors admitted to ITU in 2011. The population totalled 62 subjects. These were subdivided by age, sex and source (out of hospital vs in-patient). Of a total 60, 28 patients were discharged to ward. At 6 months, 18 of these 28 patients achieved a score of 1-4 (were still alive), 11 achieving a score of 3 or 4 whereas 5 patients achieved a score of 1 or 2.

Conclusion: From these results we can see that a total of 28 patients survived cardiac arrest up to discharge from intensive care in 2011. From these 28, only five patients achieved scores in keeping with adequate neurological function at 6-months.
OP8.231
The impact of introducing a Central Line Care Bundle on the incidence of Catheter Related Blood Infections in the Intensive Therapy Unit
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Introduction: Catheter related blood stream infections (CRBSIs) and MRSA bacteremia are well recognised causes of serious morbidity and mortality in patients admitted to the intensive therapy unit. While central venous catheters (CVC) are an essential part of the life saving measures undertaken in an intensive care setting, they can also become the source of hospital acquired infections. There is strong evidence that adherence to care bundles can reduce the incidence of CRBSIs. The central line care bundle includes measures for strict aseptic central line insertion technique, choice of appropriate catheter and site, proper handling and maintenance of the line, as well as early removal when the line is not necessary any longer.

Methods: Through participation in an EU funded project (IMPLEMENT), the Intensive Therapy Unit of Mater Dei Hospital, in collaboration with the Infection Control Department, introduced a CVC care bundle similar to that pioneered by the Institute for Health Improvement (IHI) of the USA. The project included educational programmes addressed to the Intensive Therapy team (doctors, nurses, physiotherapists etc) and also the introduction of new standards in the sterile insertion and care of CVC, including a bedside bundle documentation form.

Results: We present the process of implementation and details of measures used to bring about this change in patient care. The acquired BSI rate for the ITU in 2009 (before introducing the care bundle) was 7.2/1000 patient days, considerably above the EU average 4.2/1000 patient days. Following introduction of these initiatives, our ICU acquired BSI rate impressively reduced to 3.84/1000 patient days - a reduction of almost 50% in just two years. Furthermore this was achieved in the background of a increase in patient bed days. In the course of the implementation phase, we already noticed a decrease in the incidence of blood stream infections and MRSA bacteremia, which we believed was a direct result of the education campaign and elements of this care bundle. We also document an increase compliance with hand hygiene policies and alcohol consumption in ITU.

Conclusion: We believe that an important aspect of the success of this initiative was the use of a multidisciplinary team methodology. We suggest ways how similar initiatives addressing to the Intensive Therapy team (doctors, nurses, physiotherapists etc) and also the introduction of new standards in the sterile insertion and care of CVC, including a bedside bundle documentation form.

Aim: We sought to investigate the reduction of transfusion of blood products with the peri-operative use of tranexamic acid.

Method: This was a retrospective audit of the use of tranexamic acid, over a period of four months. Two consultant anaesthetists regularly use tranexamic acid, whereas one consultant did not. Hence patients who had received tranexamic acid (Group TXA) could be compared to those who did not (Group C). We excluded patients who were on oral anticoagulation, and those who already had had thrombotic events in the past. The primary outcome investigated was the number of transfusions each group had. Secondary outcomes were: haemoglobin drop after surgery; thrombotic events; complication rates. We also sought to check if the dose and timing of tranexamic acid could have any difference in the primary or secondary outcomes.

Results: 70 patients were analysed. The preoperative mean haemoglobin was not statistically different between the two groups (Group C: 13.2, Group TXA: 13.1, p=0.861). More patients in Group C had a general anaesthetic rather than a neuroaxial anaesthetic. All but one transfusion occurred in Group C. In total, 11 units were transfused in 4 patients in Group C, and 2 units in one patient in Group TXA. This was not statistically significant on univariate analysis ( Group C: 15.3%, Group TXA: 2.6%, p=0.095), but on multivariate analysis nearly reached significance (p=0.053). The haemoglobin drop was also significantly higher in patients who did not receive tranexamic acid (Group C: 3.05 g/dL vs Group TXA: 1.71 g/dL, p=0.000008). This was confirmed with a multivariate analysis for correction of a number of factors. One calf DVT occurred in Group TXA - this was in a patient who had had 4 units of FFP transfused. However, the study was under-powered to compare any complications. Most patients received the tranexamic acid before tourniquet inflation, so comparison between the different timings was difficult to make from this study.

Conclusion: The use of tranexamic acid is a cheap way of reducing the need for blood transfusions when given peri-operatively for knee arthroplasty. A dose of 1g is sufficient to reduce haemoglobin drop after surgery by 44%.

OP8.232
The efficacy of reducing blood transfusion after knee arthroplasties with peri-operative administration of tranexamic acid
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Introduction: Knee arthroplasty is the second most common orthopaedic procedure, after knee arthroscopy. It is associated with considerable morbidity, and a known complication is blood loss, even though a tourniquet is used intra-operatively.

Aim: To elucidate the anaesthetic and analgesic techniques that are currently in use in the management of patients undergoing total knee replacement and to determine the efficacy of these techniques.

Methodology: 106 patients, undergoing total or unicompartmental knee replacement between February and May 2011 were enrolled in the study. Each patient was interviewed on the evening of the day of surgery and every morning thereafter until discharge, up to a maximum of five days post-op. During daily interviews each patient was asked to describe the extent of post-op pain at rest, during movement and during ambulation using numerical pain scores (0-10). Each patient was also assessed daily for incidence of side-effects such as nausea, vomiting, hypotension, cardiac events, respiratory depression as well as residual neurological impairment in lower limbs after regional techniques or subarachnoid blocks. The primary anaesthetic technique given was recorded for each patient, along with details of the modalities of analgesia used. The data collected showed a high incidence of high pain scores in the early post-operative period. On the evening following surgery and the first day post-op, 42.5%...
Across the whole cohort, 42% had a worst New CS analgesia guidelines incorporating the Positive post-Caesarean Section (CS) analgesics and NSAIDs. The audit identifies the need to devise better Effective post-Caesarean Section (VAS) scores was not taking regular analgesia or taking paracetamol and NSAIDs. Secondly, nurses need to be more mindful of prescribing NSAIDs and codeine together with paracetamol for moderate to severe pain, not ideal, leading to reduced efficiency of the system. Thus the authors recommend a two-pronged education campaign: firstly, prescribers need to be more mindful of prescribing NSAIDs and codeine together with paracetamol for moderate to severe pain, such as following hernia repair. Mirena insertion patients should get regular paracetamol and NSAIDs. Secondly, nurses need to be educated on issuing patient information that reflects the positive as well as the negative effects of pain relief, encouraging patients to opt for analgesia if in pain.

**Conclusions:** The audit identifies the need to devise better post-op pain protocols with respect to the management of this patient population.

**OP8.234**

**An audit of Day Care Unit postoperative pain management in 100 consecutive patients**

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**Introduction:** The 'Take-Home Analgesia Scheme' is a scheme currently in place at the Day Care Unit (DCU), Mater Dei Hospital, Malta. The analyses available within the scheme comprise paracetamol, diclofenac and codeine. Any combination can be prescribed on a pre-filled form, which is filled out by the attending surgeon or anaesthetist while the patient is in theatre. The corresponding pre-packed analgesics are then dispensed by the caring nurse in the DCU prior to patient discharge home.

**Aim:** To assess the effectiveness of current DCU postoperative pain management on discharge home, by comparing current management to standards, as outlined by the Royal College of Anaesthetists (RCA); Raising the Standard: A compendium of audit recipes (2006).

**Methodology:** Data on 100 consecutive surgical patients attending the Mater Dei Hospital DCU, meeting inclusion criteria, was collected between the 13th July and 5th August 2011. Patient details, operation details, and details of pain relief prescribed were collected. A telephone interview was then conducted approximately 24 hours postoperatively. Data collected included patient satisfaction, worst Verbal Analogue Scores (VAS) and analgesia consumption patterns.

**Results:** Across the whole cohort, 42% had a worst VAS85%; the average worst pain score of VAS was 4.5, and the lowest post trigger finger release (2.75). 57% of Mirena insertion patients were prescribed no analgesia at all. In all procedures, a large proportion of those with high pain scores was not taking regular analgesia or taking paracetamol alone. 16% of patients were prescribed codeine, and only 9% took it, with the most cited reason being fear of side effects.

**Conclusion:** The take-home analgesia scheme appears to be safe; nurses consistently dispensed the correct drugs to patients, and there was no duplicate dosing by patients. However, the prescribing patterns and patient compliance were not ideal, leading to reduced efficiency of the system. Thus the authors recommend a two-pronged education campaign: firstly, prescribers need to be more mindful of prescribing NSAIDs and codeine together with paracetamol for moderate to severe pain, such as following hernia repair. Mirena insertion patients should get regular paracetamol and NSAIDs. Secondly, nurses need to be educated on issuing patient information that reflects the positive as well as the negative effects of pain relief, encouraging patients to opt for analgesia if in pain.

**OP8.235**

**The introduction of new Caesarean Section analgesia guidelines (2010) at the obstetric delivery suite at Mater Dei hospital: preliminary data of the post-interventional audit**

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**Introduction:** Effective post-Caesarean Section (CS) analgesia is important to ensure maternal wellbeing and allow adequate care of the newborn. A pilot study (October 2008 - January 2009) involving 58 mothers was conducted to assess the efficacy of post-operative analgesia. At the time Fentanyl was the opioid used in regional anaesthesia and on demand intramuscular Pethidine was the prevalent analgesic administered postoperatively. Results showed a high mean worst Verbal Analogue Score (VAS) of 7.54 (+/-1.75). Morphine Patient Controlled Analgesia (PCA) usage was low (3.5%) and non-opioid analgesics were underused.

**Aim:** New CS analgesia guidelines incorporating the National Institute of Clinical Excellence (2004) standards were introduced at Mater Dei in 2010. Namely: >90% of mothers should have a VAS of ≤5, intrathecal Diamorphine for regional anaesthesia, Phenylephrine infusion to maintain blood pressure intra-operatively, Morphine PCA postoperatively and Paracetamol and NSAIDs to be administered at the end of surgery and then prescribed regularly, mandatory hourly monitoring of parameters for the first 12 post-operative hours, and >90% of patients satisfied with the pain relief received. The aim of the audit was to measure achievement of these standards.

**Methodology:** Data collected included: patient demographics, use of diamorphine, morphine PCA, other analgesic, antiemetic and antipruritic agents, VAS, satisfaction scores and complications.

**Results:** 300 mothers were interviewed after May 2010. Spinal anaesthesia was employed in 292 (97.3%) cases of which 277 (94.9%) received Intrathecal Diamorphine. An intravenous Phenylephrine infusion was used to maintain BP intra-operatively in 199 (66.6%) cases. Paracetamol was administered infra-operatively to 97.3%, and prescribed and administered regularly post-operatively to 93.4% and 90% of mothers respectively. Diclofenac was administered infra-operatively to 92%. 88% were prescribed regular NSAIDs and 84.7% received them regularly post-operatively. Morphine (PCA) was prescribed to 286 (95.3%) cases. Regular monitoring was performed in 94% of mothers. The mean worst VAS was 2.92 (+/- 2.32) vs 7.54 (+/-1.75) in the pilot study (p<0.0001). Use of intrathecal diamorphine was associated with a significantly longer mean time to worst pain score (8.90 vs 4.18 hours, p<0.0001), although its use was associated with a greater incidence of pruritus (p=0.012). The mean satisfaction score was 8.67 (+/-1.28) and 95% gave a satisfaction score of >7.

**Conclusions:** The new guidelines were well adhered to, safe and effective, as both mean current and mean worst VAS were significantly decreased. Over 90% of mothers received intrathecal Diamorphine, Morphine PCA and simple analgesics intra-operatively. The incidence of complications was low (<2.5%).
Non-dipping heart rate and microalbuminuria in a type 2 diabetic population

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Purpose: There is increasing interest in the association between non-dipping heart rate and target organ damage. However, this has not been adequately studied in diabetic patients. The aim of the study is to identify factors that are independent predictors of non-dipping heart rate in a type 2 diabetic population which is at high risk of cardiovascular disease.

Methods: One hundred eighty six type 2 diabetic subjects with mean diabetes duration of 18.3 (± 9.5 years) were recruited. All participants had proliferative retinopathy, thus enabling analysis of factors independent of glycaemic control. All underwent 24-hour BP and heart rate monitoring, and were assessed for markers of inflammation (erythrocyte sedimentation rate and high-sensitivity C-reactive protein), insulin resistance as well as albuminuria, presence of peripheral neuropathy (as assessed using vibration perception thresholds) and peripheral vascular disease. Data were analysed using SPSS version 20.0. Subjects whose night-time heart rate did not decrease > 10% as compared to day-time readings were classified as non-dippers. Independent samples t-test and Mann-Whitney U test were performed for parametric and non-parametric variables respectively, while categorical variables were analysed using chi-squared test. Multivariate regression analysis ensued to identify independent predictors of non-dipping heart rate. Logarithmic transformation was performed when variables were not normally distributed.

Results: Univariate analysis revealed that non-dippers had significantly higher logarithmic albumin-creatinine ratio (ACR) (p=0.001) and higher platelet count (p=0.014). Also, non-dippers were more likely to be on β-blockers (p=0.037). There was no difference between dippers and non-dippers as regards age, glycaemic control, diabetes duration, markers of inflammation, insulin resistance as well blood pressure status. Binary logistic regression analysis showed that logarithmic ACR (p=0.001) and platelet count (p=0.026) were independent predictors of non-dipping heart rate, even when correcting for β-blocker use.

Conclusions: In this high risk type 2 diabetic population with diabetes of long duration, non-dipping heart rate was independently associated with ACR and platelet count. Non-dipping heart rate might give us an indication of underlying generalized atherosclerosis in diabetic patients. This merits further study.

Relationship between thyroid status and clinical outcomes in patients presenting with acute coronary syndrome – preliminary results from a Maltese cohort

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Background: Subclinical hypothyroidism has been associated with systolic and diastolic dysfunction, dyslipidaemia and congestive heart failure. Evidence for a clear association between subclinical hypothyroidism and other cardiovascular events and mortality remains lacking. The prevalence of thyroid dysfunction among patients presenting with acute coronary syndrome (ACS) in Malta is unknown. We sought to characterise this patient population, as well as assess the impact of thyroid function on cardiovascular outcomes, morbidity and mortality.

Method: We carried out a prospective, case controlled, population based study of patients presenting with ACS at St Luke’s and Mater Dei Hospitals, Malta between February 2002 and June 2003. Serum for thyroid function estimation, urea and electrolytes, creatinine, lipid profile, creatinine phosphokinase as well as plasma samples for glucose and glycosylated haemoglobin estimation were collected within 24 hours of presentation. Patients treated for thyroid dysfunction, or on beta-blockers / amiodarone at presentation were excluded. We captured data pertaining to cardiovascular risk factors, complications (including mortality), duration of hospital stay and readmissions with coronary and other events over a subsequent ten year period. Mann-Whitney U and Chi Square tests were used to respectively compare continuous variables and categorical variables respectively, using a two-tailed p value.

Results: 99 patients (40 males, 59 females) had thyroid function data measured on admission with ACS. Mean (± SD) values for age, thyroid stimulating hormone (TSH) and free thyroxine (FT4) concentrations were 63.55 (± 12.85) years, 4.02 (± 8.32) mIU/L and 16.08 (± 5.45) pmol/L respectively. Age did not correlate with TSH or FT4 in this cohort; neither were there any gender related differences in these variables. 63 (63.6%) of patients were euthyroid, 19 (19.2%) had subclinical hypothyroidism, 8 (8.1%) were overtly hypothyroid, 3 (3.0%) had subclinical hyperthyroidism whereas 6 (6.1%) were overtly hyperthyroid. 20 (20.2%) patients were known to suffer from diabetes at presentation; glycaemic status had not been determined in 36 subjects. 35% of diabetic patients presenting with ACS were hypo/hyperthyroid. There were no gender related differences in glycaemic status (diabetic vs non-diabetic) and thyroid disease category (euthyroid vs hypo/hyperthyroid). Female patients with abnormal thyroid function were significantly younger than their male counterparts (60.84 ± 12.53 [females] vs 70.29 ± 13.12 [males]; p=0.010). 34 (34.3%) patients died during the ten year observation period whereas 7.1% were lost to follow-up.

Conclusion: Thyroid dysfunction is common among patients presenting with ACS in Malta. Further analysis of this dataset is ongoing.

Admission HBA1C and intravenous insulin therapy: predictors of prognosis in acute myocardial infarction

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Background: Diabetes is a poor prognostic factor for myocardial infarction (MI). It has been shown in various studies that patients with diabetes fare much worse than their respective counterparts.

Aim: To prove that HBA1C on admission predicts the type of myocardial infarction a patient suffers.

Methods: Seventy patients (fifty males, twenty females) admitted to Mater Dei Hospital after having suffered an acute myocardial infarction (AMI) between January and July 2010 were recruited. These patients had either established type 2 diabetes mellitus or an admission blood glucose (BG) of more than 11.0 mmol/L.

Results: Improvement in mean BG level was poor, with a reduction from 10.54 to 9.47 mmol/L over the six days of admission. 40% of patients treated with intravenous insulin and oral hypoglycaemic agents (OHAs) suffered a hypoglycaemic episode. Males had a relative risk ratio of 7·33 (p<0·018) of suffering a non-ST segment myocardial infarction
There were statistically significant negative correlations between the incidence of T1DM and mortality from infectious and parasitic diseases ($r=-0.35$, $p=0.007$), mortality from respiratory infections ($r=-0.29$, $p=0.034$), mortality from tuberculosis ($r=-0.36$, $p=0.007$), mortality from diarrhoeal diseases ($r=-0.33$, $p=0.013$) and total infectious disease mortality ($r=-0.36$, $p=0.006$). There was a positive correlation between T1DM incidence and susceptibility of S. pneumoniae to penicillin ($r=0.48$, $p=0.022$), erythromycin ($r=0.52$, $p=0.044$), doxycycline ($r=0.70$, $p<0.001$), S. pneumoniae ($r=0.64$, $p=0.002$), and between T1DM incidence and lowest antibiotic susceptibility of S. pneumoniae ($r=0.69$, $p<0.0001$). There were no statistically significant correlations between the incidence of T1DM and antibiotic susceptibility of H. influenzae. 

**Conclusion:** In this study we found a negative correlation between country incidence of T1DM and its mortality from infectious diseases. Mortality from infectious diseases is a strong marker of the total infectious burden. It also depends on the virulence of prevalent strains and on the adequacy of health care. We found that the incidence of T1DM was positively correlated with the susceptibility of Strep. pneumoniae to all antibiotics which we studied. However, we failed to observe any statistically significant correlation with antibiotic susceptibilities of Haem. influenzae. Increased antibiotic susceptibility of a given organism may be an indirect marker of a low degree of exposure of the community to it. Our results provide support for the hygiene hypothesis, namely that diminished bacterial exposure in early post-natal life results in increased risk of developing T1DM. The consistency of our results as well as the highly statistically significant results of most of the associations studied reinforce the validity of our findings.

**OP8.241 Red blood cell distribution width and diabetes-associated complications**

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**Introduction:** Red blood cell distribution width (RDW) has been shown to be a marker of increased cardiovascular morbidity and mortality in a number of populations. However, the relation between RDW and diabetic nephropathy has only been investigated once while the relation between RDW and diabetic nephropathy as well as peripheral arterial disease (PAD) in a diabetic population has never been investigated.

**Aim:** The purpose of this study was to investigate whether there is any significant association between RDW, nephropathy, neuropathy and PAD in a type 2 diabetic population.

**Methodology:** This study included 196 diabetic patients (114 male, 82 female) with proliferative diabetic retinopathy. Subjects were investigated by questionnaires,
Results: The mean incidence rate for T1DM in males was significantly correlated with mean BMI in males \((r = 0.533, p < 0.001)\), mean SBP in males \((r = 0.304, p = 0.035)\) and mean TC in males \((r = 0.644, p < 0.001)\) and females \((r = 0.627, p < 0.001)\). We also correlated mean incidence rates for T1DM in females, reporting significant associations with mean BMI in males \((r = 0.546, p < 0.001)\), mean SBP in males \((r = 0.350, p = 0.015)\), mean TC in males \((r = 0.652, p < 0.001)\) and mean TC in females \((r = 0.633, p < 0.001)\). In multiple regression analyses, mean TC concentration emerged as the sole significant predictor for T1DM in males \((F[3, 44] = 11.126, p < 0.001, \text{adjusted } R^2 = 0.393)\), unlike BMI and mean prevalent SBP. Likewise, mean TC concentration emerged as the only significant predictor of T1DM incidence for female patients \((F[3, 44] = 10.287, p < 0.001, \text{adjusted } R^2 = 0.372)\).

Conclusions: To our knowledge, this is the first study investigating the relationship between surrogate markers of the metabolic syndrome and T1DM at a population level. Our data could explain, at least in part, the increasing incidence of T1DM reported in many countries.
POSTER PRESENTATIONS
P1.01
Mitral valve repair - the Maltese experience
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Introduction: Even though there is no randomized controlled trial comparing the results of mitral valve replacement and repair, several observational studies and registries have shown that, when feasible, valve repair is the optimal surgical treatment in patients with severe mitral regurgitation. This is because, even though more training is needed for optimal results, in experienced hands, repair has a lower perioperative mortality, improved survival, better preservation of postoperative LV function, and lower long-term morbidity when compared to mitral valve replacement, as outlined in the recent ESC/EACTS guidelines 2012. The purpose of this cross-sectional study was to analyse the outcome of mitral valve repair performed till now in the Maltese Islands.

Methods: Patients who had a mitral valve repair performed by a single operator were contacted and an echocardiogram was performed for assessment of their mitral valve and left ventricular function. The latter was measured using Simpson’s method. For those subjects who had passed away, their medical notes were reviewed to assess the cause of death.

Results: The first mitral valve repair was done in 1997. Over an 11-year period, 15 mitral valve repairs were performed of which 4 had associated coronary artery bypass grafting. Out of the 15 repairs performed, only 1 patient required a re-do surgery with conversion to mitral valve replacement. Two patients died of unrelated causes (caecal carcinoma with metastases and prostate carcinoma, respectively). Another one died years after the intervention secondary to congestive heart failure and ischaemic heart disease. Of the remaining eleven patients, ten could be adequately assessed with follow-up echocardiography. Only 1 patient had mild mitral regurgitation while the rest did not have any residual mitral regurgitation. All the subjects had preserved left ventricular function with the mean (± standard deviation) ejection fraction in the sample analysed being 66.7 (± 10.7) %.

Conclusions: In well-selected patients and in experienced hands, mitral valve repair is a safe and efficacious treatment modality in patients with significant mitral regurgitation. In spite of being a low-volume centre, the results obtained till now in Malta are promising and encourage increasing use of this technique.

P1.02
The Maltese heart transplantation program: results at 15 years
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Introduction: Cardiac transplantation is an established modality of treatment for selected patients suffering from severe, end-stage heart failure, when maximal medical therapy has become ineffective.

Methods: Operative and late outcomes, at 15 years after heart transplantation, were evaluated in a retrospective analysis of mortality and morbidity. All data was derived from the transplant database.

Results: Fifteen transplants were performed between 1996 and 2011. There were 2 operative deaths (13% mortality) and one death at 8 years (15 year-survival 80%). Four patients underwent a major surgical intervention and five further patients required hospital admission for other complications. Four patients never required hospital admission after their transplant. Eleven long-term survivors enjoy an unrestricted life, whereas one patient is troubled with recurrent gout.

Conclusions: Results of heart transplantation can be gratifying, even when performed in a low-volume centre.

P1.03
Ad hoc vs elective PCI in Mater Dei Hospital Malta (2010-2011)
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Introduction: Initially, percutaneous coronary intervention (PCI) was performed as a staged procedure, where diagnostic catheterisation and angioplasty were carried out on two separate occasions. The term ad hoc PCI refers to coronary intervention performed at the time of diagnostic coronary angiography. The advantages of ad hoc PCI include a single catheterisation lab visit with reduction in the patient’s hospital stay and anxiety, convenience for the physician, potential reduction in incurred expenses, lower risk of contrast induced nephropathy and improved access site management. Potential disadvantages are inappropriate informed consent and the need for immediate decision making. During ad hoc PCI surgical cover may not always be available and catheterisation lab schedule times may not allow prolonged procedures.

Aim: The aim of this audit was to identify how the number of ad hoc PCI’s carried out at the catheterisation laboratory in Mater Dei Hospital (Malta) in the 2010-2011 period compared with the number of elective PCI’s.

Methodology: Interventions performed at the Mater Dei Hospital catheterisation laboratory from 1st November 2010 through to 31st October 2011 were analysed using Cardiology Investigations & Patient Records (CIPR) software. All procedures performed were assessed on a day-to-day basis; the patients showing records for both a coronary angiogram and PCI on the same day were considered as ad hoc PCI. Age, ID, and location of stents for ad hoc PCI patients were recorded. Total, elective and primary PCI counts were obtained and analysed from the CDARCHIVE database.

Results: Out of 845 PCI procedures in the November 2010 - October 2011 period, 418 (49.47%) were ad hoc, 265 (31.36%) were elective and 162 (19.17%) were primary interventions. It was also observed that the three most commonly stented vessels with regard to ad hoc PCI, in order, were the right coronary artery, the left anterior descending artery and the left circumflex artery.

Conclusion: This audit has shown that, ad hoc procedures constituted the majority of PCI’s in the Mater Dei Hospital catheterisation lab during the November 2010 - October 2011 period. It has been shown by previous authors that ad hoc PCI can be performed safely and effectively, with lower risk of no-reflow and peri-procedural myocardial infarction, lower contrast volumes and fluoroscopic times, together with a lower risk of access site injury. There is also a lower 3-year mortality in those patients undergoing ad hoc PCI. Therefore it is reasonable to consider ad hoc PCI as adequate practice.

P1.04
Time for coronary angiography in Non-ST Elevation Myocardial Infarction
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Background: The European Society of Cardiology (ESC) Guidelines on Acute Coronary Syndromes (ACS) in patients presenting without persistent ST-segment elevation (2011) recommend that in such patients, a diagnostic coronary angiogram (CA) should be performed within 72 hours of admission. The purpose of this study is to see how many days elapsed from the diagnosis of non-ST elevation myocardial infarction (NSTEMI) to CA, and the length of in-hospital stay.

Methods: Data of 51 patients admitted to Mater Dei Hospital (MDH) with a diagnosis of NSTEMI from 6th October 2011 to 16th January 2012 and who needed a CA was collected from the Critical Coronary Care Unit (CCCC) admission book, electronic case summary (ECS) and Cardiac Investigation and Patient Records (CIPR). The number of days from admission to CA and to discharge (LOS) was calculated.
Results: Time to CA was from 0 to 31 days, mean ± standard deviation (SD) was 4.92 ± 4.66 days (mean 4). LOS was from 2 to 41 days, mean ± SD was 7.29 ± 3.71 days (median 6).

Conclusions: The current recommendations for CA and LOS in NSTEMI are not being followed. The authors recommend that necessary measure be taken in order to adhere to current guidelines.

P1.05 Iatrogenic femoral pseudoaneurysms: are they a significant problem in our institution?

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Aim: Pseudoaneurysms (PAs) occur after incomplete haemostasis of a punctured artery. The resulting extravasation of blood into the subcutaneous tissues is contained within a pseudocapsule of fibrous tissue. PAs are becoming increasingly prevalent with the widespread use of endovascular procedures. Incidence rates quoted in literature are between 0.05% and 4%, and as high as 16% per year. The aim of this study was to assess the incidence of iatrogenic femoral pseudoaneurysms in our institution. The factors that increased the risk of pseudoaneurysm formation in our department were also assessed.

Method: A retrospective review of the patients who developed an iatrogenic pseudoaneurysm was performed from March to December 2011. Their hospital files were reviewed and the following demographics were studied: gender, type of procedure, sheath size, type of anticoagulation used, ward where femoral sheath was removed, time to diagnosis and management.

Results: There were 12 patients who developed an iatrogenic pseudoaneurysm from March to December 2011, four females and eight males. 4 patients had undergone coronary angiograms and 8 patients had undergone a percutaneous intervention. 10 patients were on low molecular weight heparin. No PAs were noted when using a 4F sheath. The average time to diagnose a PA in our department was approximately 2 days. Most of the PAs in our department were managed via thrombin injection.

Discussion: A total of 2,026 invasive procedures were performed from March to December 2011 via femoral approach. Only 12 patients were found to have a PA, in total. Hence the incidence rate of catheterisation pseudoaneurysm in Mater Dei Hospital from March till December 2011 was 0.5%. Our incidence rate of iatrogenic pseudoaneurysms compares well with literature (0.5 to 2%). Ideally, the incidence of PAs should have been studied by performing ultrasound studies on all the patients undergoing femoral procedures. Unfortunately this would have caused an increased load on the Radiology Department, hence this could not be performed.

Conclusion: Iatrogenic pseudoaneurysms are not a problem in our institution as the incidence falls within the norm. Changes have also been suggested within this audit, so as to further lower the incidence of iatrogenic pseudoaneurysms.

P1.06 Assessing the outcome of patients who underwent a primary percutaneous coronary intervention

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Introduction: Patients presenting to A&E with acute ST-elevation myocardial infarction (STEMI) of less than 12 hours from onset of chest pain are usually candidates for primary percutaneous coronary intervention (PPCI).

Aim: To assess the patients’ outcome after 12 months of their admission and proceeding to PPCI, by performing a retrospective audit.

Methodology: Data of patients admitted with STEMI and proceeding to PPCI between 1st of January 2011 to 30th of June 2011 were analyzed. A total of 105 patients were recruited, identified and analyzed by using the CIPR software. Any additional target vessel revascularization after their admission was also assessed. Survival outcomes of these patients were determined by data obtained from the Department of Information, Health and Research.

Results: Out of the 105 patients having PPCI, the majority were men (81%). 9 of the 105 patients (8.6%) died within one year, 5 were men (4.8%) and 4 female (3.8%) with their age varying between 67 years and 95 years. 21 patients (20%) had repeat coronary angiography, with 10 (9.5%) requiring further PCI. 6 patients (5.7%) were re-admitted due to another episode of chest pain, out of which 1 of them presented with another acute MI requiring PPCI. The other 5 patients underwent an inpatient coronary angiogram, with 2 proceeding to PCI. 2 patients (1.9%) were admitted for pacemaker insertion after episodes of fainting. 66 patients (63%) did not experience any other cardiovascular related episodes.

Conclusion: This retrospective audit showed that over a 6 month period there were 105 admissions with acute MI that were candidates to have PPCI. These patients were followed up for a year; there was 8.6% death rate, 5.7% re-admissions due to another episode of chest pain and 1.9% admission for pacemaker insertion. From the 20% of patients having a repeat coronary angiogram only 1 patient (0.95%) had target vessel revascularization while from the remaining 20 patients (19%), 9 patients (8.6%) had other vessel PCI where 1 patient (0.95%) died after 3 months. There was 1 patient (0.95%) that after restudy was referred for CABG due to triple vessel disease, while 63% of the total patients, did not present with any cardiovascular associated events.

P1.07 The effect on Poisson ratio of loss of structural elements in stents

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Introduction: This work investigates removal of structural elements (ribs) within auxetic or conventional stents (cellular systems), which results in a change in the mechanical properties, in particular the Poisson’s ratio.

Aim: To investigate whether Zero Poisson ratio systems can be designed simply by removal of ribs within cellular structures and thus opening the possibility of designing cellular structures with varying Poisson’s ratios.

Methodology: Rows of honeycombs were connected together in the x-direction (termed as crown) and connected together in the y-direction with a random number of ribs. Finite element analysis simulations were carried out in Ansys using the element ‘PLANE82’. The boundary conditions were set up in such a way that the bottom most nodes were constrained not to move in the y-direction while the left-most nodes were constrained not to move in the x-direction. A number of simulations were carried out where the number of missing ribs between crown layers was varied from 1 to 7. In each case, the angles between the horizontal and vertical ribs was varied between 90° and 160°. Note that when the angle is smaller than 90°, a re-entrant system is present while when it is larger than 90° a conventional system is present.

Results: With a higher amount of missing ribs in the y-direction, the more the Poisson’s ratio value approached zero. The Young’s modulus decreased with a larger number of
missing ribs in the y-direction. For loading in the x-direction, the Poisson’s ratio was not affected by removing the ribs in the vertical direction. Young’s modulus for loading in the x-direction was independent of the number of missing ribs in the y-direction (as crowns have remained intact).

Conclusion: The Poisson’s ratio for loading in the direction of the deleted ribs will tend to zero as the number of deleted ribs in the y-direction increases while leaving crowns with no missing ribs. Varying the density of deleted ribs will result in a structure with varying Poisson’s ratio.

P1.08
Low molecular weight heparin in ST-Acute Coronary Syndrome – auditing the learning curve and future implications at Mater Dei Hospital
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Introduction and aim: Primary Percutaneous Coronary Interventions (PCI). Due to its infancy locally, this audit was set up, so as to assess how low molecular weight heparin (LMWH) was administered, comparing results to the European Society of Cardiology (ESC) recommendations and Summary of Product Characteristics (SPC).

Methodology: Details of patients who underwent urgent revascularisation for ST-Acute Coronary Syndrome (ST-ACS) in the period between January and July 2011 were made available from the Catheterisation Lab’s database, with 28 patients identified as having been treated with LMWH. Data was obtained retrospectively through case notes review and was inputted and analysed using Microsoft Excel®, with categorical data presented as percentages.

Results: 25 [89.3%] used only LMWH for anticoagulation, 2 [7.1%] used both LMWH and Unfractionated Heparin (UFH), and 1 [3.6%] used LMWH and fibrinolytic therapy (streptokinase). With respect to age, there were 25 [89.3%] who were >75 years and 3 [10.7%] who were ≥ 75 years. All 28 patients received LMWH subcutaneously (SC). Those <75 years were all [100%] correctly given the SC formulation as a 1mg/kg bd dose. 100% of patients ≥75 years where correctly given the SC formulation as a 1mg/kg bd dose. Of the patients <75 years, 23 [92%] where correctly given the recommended 0.75mg/kg bd dose. Out of the <75years patient group, 18 [72%] were correctly given an IV and then SC dose within a 30 minute time frame, boosting up the LMWH plasma concentration needed for urgent revascularisation. This was however not the case in 7 [28%] patients. 1 case [3.6%] was re-anticoagulated with UFH during PCI, despite the last LMWH being given <8hours before. 1 other case [3.6%] was given UFH and not IV LMWH (0.75mg/kg), because the last LMWH was given >12hours before. With respect to duration of treatment, 4 [14.3%] cases had LMWH stopped prematurely.

Conclusion: Misconceptions about the regime were clearly present, with half of the cases (14 patients) administered LMWH not according to current international guidelines. Local protocols are currently in development, so as to standardize administration, according to the latest evidence-based results.

P1.09
Sharp increase in incidence of acute myocardial infarction on introduction of troponin I
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Background: Cardiac troponins play a central role in establishing a diagnosis of acute myocardial infarction (AMI). Troponins are more specific and sensitive than the traditional cardiac enzymes such as creatine kinase (CK) and its isoenzyme MB (CK-MB). Troponin I was introduced simultaneously with the publication of the Acute Chest Pain Management Guideline in Mater Dei Hospital (MDH) in June 2009. This followed closely the Guidelines presented by the European Society of Cardiology (ESC), where troponin I was the cardiac biomarker of choice for the diagnosis of acute myocardial infarction (AMI).

Aim: To evaluate the effect of the introduction of troponin I at MDH on the diagnosis of AMI.

Methods: The data of hospital discharges with a main diagnosis of AMI (ICD-10; Code 121) for the years 2009, 2010 and 2011 was collected from the Hospital Information System. These were subgrouped according to gender and age. The Electronic Case Summary (ECS) data was then reviewed to subclassify AMI into ST elevation myocardial infarction (STEMI) and non-ST elevation myocardial infarction (NSTEMI).

Results: There were 427 patients (307 males) with a diagnosis of AMI in 2009, 558 patients (402 males) in 2010, and 880 patients (581 males) in 2011. Of these, 165 patients (39%) had a diagnosis of NSTEMI in 2009, 289 patients (52%) in 2010, and 523 patients (59%) in 2011.

Conclusions: The introduction of troponin I in MDH has led to a marked increase in the diagnosis of AMI and in particular of NSTEMI. This has improved the management of patients presenting with AMI.

P1.10
The current length of hospital stay after acute ST elevation myocardial infarction at Mater Dei Hospital
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Objectives: Hospital length of stay influences cost of care. The aim of this study was to identify current length of hospital stay in patients with acute ST elevation Myocardial Infarction (STEMI) in Mater Dei Hospital (MDH) and to assess the underlying clinical, demographic and hospital-related factors that resulted in a hospital stay exceeding 10 days.

Methods: All patients admitted with a diagnosis of STEMI to the Critical Coronary Care Unit (CCCU) of MDH during the period 1st October 2011 to 31st January 2012 were retrospectively analyzed. Data collection was obtained from 3 main sources: the CCCU admission book, electronic case summary and patient medical records. Patients with a hospital stay of more than 10 days were assessed for pre-STEMI determinants namely diabetes mellitus, hypertension, hypercholesterolaemia, anaemia, tobacco use, previous coronary events, congestive heart failure, stroke, and renal failure; for peri-STEMI complications, namely pulmonary oedema and cardiogenic shock; and for post-primary Percutaneous Coronary Intervention (PCI) complications including pseudoaneurysm, bleeding, and contrast-induced nephropathy (CIN).

Results: There were 84 patients (69 males) admitted with STEMI, age 32 to 94, mean 61 years. The mean (± SD) length of stay was 7.94 ± 5.53 days (median 6). There
were 10 patients (12%) who had a hospital stay of >10 days of whom 3 underwent a primary PCI, 6 were treated with thrombolysis and 1 did not receive revascularization treatment due to late presentation. These patients had 1 or more of the following complications: sepsis, anaemia, hospital-acquired pneumonia, CIN, atrial fibrillation, deterioration in renal function, lower gastro-intestinal bleed, upper gastro-intestinal bleed, hyperkalaemia, acute confusional state, cardiogenic shock, cardiac arrest, and pulmonary oedema. Social reasons contributed to a delayed discharge from hospital in 2 patients, while coronary artery by-pass surgery was the underlying determinant for delayed discharge in 1 patient.

Conclusion: The current median length of hospital stay after acute STEMI in MDH is 6 days. Medical complications are the main determinant for a prolonged hospital stay after acute STEMI.

P1.11 Auditing the use of continuous cardiac monitoring at Mater Dei Hospital
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Introduction: In order to improve efficiency with the use of continuous cardiac monitoring, an audit was set up to compare local practice with American Heart Association (AHA) recommendations (Class I – monitor indicated, Class II – monitoring may be of benefit, Class III – not indicated).

Method: All medical admissions and all in-patients who were transferred to cardiac monitor beds over an 8 day period in July 2012 were included prospectively (excluding patients admitted directly to Intensive Therapy Unit (ITU)), with data inputted and analysed using Microsoft Excel®. Categorical data was summarised using percentages.

Results: The patient cohort consisted of 300 patients, with 160 fulfilling the inclusion criteria (monitor indication excluding ITU transfers). The commonest indications included chest pain syndrome (n=40 [22.7%]), syncope (n=27 [15.3%]), rule-out MI (n=24 [13.6%]) and NST-ACS (n=15 [8.5%]) – some patients had more than one indication. 96 [60%] were admitted to normal beds without cardiac monitoring (no documented reason in 78 [81.3%], no monitor beds available in 10 [10.4%], monitor beds tight in 5 [5.2%], negative cardiac enzyme levels in 3 [3.1%]). 40% and 60% of cases had Class I and Class II indications. 70 patients where on cardiac monitor bed, 64 [91.4%] had an indication for monitoring (Class I [38%], Class II – monitoring may be of benefit, Class III – not indicated). 70 patients who were on cardiac monitor bed, 64 [91.4%] had an indication for monitoring (Class I [38%], Class II – monitoring may be of benefit, Class III – not indicated). 54 [77.1%] were admitted directly to monitor bed and 16 [22.9%] transferred during admission (new biochemical result-rise in troponin in 6, electrocardiogram changes in 1, no monitor bed previously available in 4, monitor beds tight on admission in 2, postoperative complications in 3). Out of the 64 monitored patients, 79.8% and 29.2% of cases had Class I and II indications respectively. In the monitored group, there was an average time lag of 48 minutes from request of monitor bed to its availability (range 0 minutes – 8.8 hours). For patients on cardiac monitor beds, there was daily documentation in patients’ notes of the need for continued cardiac monitoring in 68.9%, and monitor events were documented in the patients’ notes in 69.9%. With respect to management and morbidity outcome in monitored patients, 10 [14.3%] underwent invasive procedures in view of recorded monitor events and 1 [1.4%] was transferred to ITU. 3 [4.3%] patients required cardiopulmonary resuscitation (CPR) and 2 [2.9%] died within 3 days of admission. In the non-monitored group, 3 [3.1%] patients were not for CPR, 1 [1.0%] needed ITU admission and 4 [4.2%] patients died within 7 days from admission.

P1.12 Aspirin desensitisation: our centre’s experience
P. Dingli, R.G. Xuereb

Introduction: Aspirin (ASA) is irreplaceable in patients requiring dual anti-platelet therapy in the setting of percutaneous coronary interventions. Patients may be denied treatment because of a history of ASA or non-steroidal anti-inflammatory drug (NSAID)-induced urticaria or angio-oedema. Aspirin challenge-desensitisation may allow aspirin therapy in such patients. Prevalence of hypersensitivity or intolerance is 10% for asthmatic patients while the prevalence of urticaria due to ASA exposure varies between 0.07%-2% in the general population. Clinical manifestations are usually dose-dependent and occur within minutes to hours. Aspirin hypersensitivity is not IgE mediated but pharmacologically mediated, being related to inhibition of Cox-1. No in-vitro test that can identify aspirin hypersensitivity exists. Only oral, bronchial or nasal challenge tests can definitely make the diagnosis.

Methodology: We used a challenge desensitisation test in 6 patients (average age 53 years, range 37-87 years). All 6 patients had been admitted with non ST segment myocardial infarction and had a history of cutaneous sensitivity to aspirin in the form of urticaria. All 6 patients were to undergo angio-graphy with a view to percutaneous intervention if feasible. The desensitisation was carried out between 2-5 days post myocardial infarction. A protocol based on the work of Rossini and Wong was used. The protocol was carried out over 180 minutes with doses of 1mg, 5mg, 10mg, 20mg, 40mg, 80mg, 160mg being given orally at 30 minute intervals. Acetyl salicylic acid in solution form at a strength of 1mg/ml was prepared by dispersing chewable aspirin tablets in water. Patients were not pre-treated with anticholinergics, antihistamines or short-acting b-agonists. Patients were kept in a monitored area and were examined for development of adverse reactions prior to the administration of each dose together with blood pressure, pulse and peak expiratory flow monitoring. Patients were examined every 30 minutes until 3 hours after the procedure. Low dose aspirin was continued on a daily basis to prevent resensitisation.

Results: All 6 successfully completed the aspirin desensitisation procedure. One patient had a localised area of urticaria which subsided spontaneously. During a mean follow up of 6.8 months all patients continued to take aspirin uneventfully.

Conclusions: This case series confirms that rapid aspirin desensitisation is a safe and effective procedure even without pre-treatment.

P1.13 The influence of cardiac rehabilitation on smoking cessation in ST segment elevation myocardial infarction patients
V.I. Cassar, J. Cassar, J. Fenech, P. Dingli, R.G. Xuereb

Aim: Cardiac rehabilitation for ST segment elevation myocardial infarction (STEMI) patients was introduced at Mater Dei Hospital (MDH) in March 2011. One of the main aims of cardiac rehabilitation is to help patients quit smoking. The objective of this study was to compare the smoking cessation rate in STEMI patients prior to, and post, introduction of cardiac rehabilitation at MDH.

Methods: STEMI patients admitted to the Critical Coronary Care Unit (CCCU) in the 5 months prior to, and in the 8 months following, the introduction of cardiac rehabilitation were contacted over the phone and were asked to participate in a questionnaire regarding their smoking history and to attend for carbon monoxide (Co) testing.

Results: There were 76 patients admitted to CCCU with STEMI during the study period of whom 38 (50%)...
were contactable. 10 patients (26%) (mean age 60 years) had been admitted prior to (Pre-Rehab group) and 28 pts (74%) (mean age 56 years) had been admitted post introduction of cardiac rehabilitation (Rehab group). Out of those that had been offered rehabilitation 14 (50%) had attended. The mean number of cigarettes smoked per day at the time of STEMI was 29.8 in the Pre-Rehab group and 38.5 in the Rehab group. At the time of contact 3 patients (30%) of the Pre-Rehab group vs 10 patients (36%) of the Rehab group were still smoking. 9 patients (90%) of the Pre-Rehab group vs 28 pts (100%) of the Rehab group had tried to stop. 5 patients (50%) of the Pre-Rehab group had been advised pharmacological therapy to help them quit vs 21 patients (75%) in the Rehab group. 2 (20%) of the Pre-Rehab group had taken pharmacological therapy vs 14 patients (50%) in the Rehab group. The number of patients who attended smoking cessation classes was 4 (4%) in the Pre-Rehab group vs 14 (50%) in the Rehab group. 10 patients (26%) accepted to attend for CO monitoring to confirm the quit status. All patients who attended were verified to have quit.

Conclusions: The prevalence of smoking despite having sustained a serious cardiac event is still high. Cardiac rehabilitation failed to improve smoking cessation rates amongst STEMI patients despite better advice and better use of pharmacotherapy. This could partially be explained by the fact that only 50% of STEMI patients attend for rehabilitation.

P1.14 Ischaemic cardiac pain and vessel distribution involved: a correlation of blood vessel involvement and pattern of ischaemic referred pain both vertically and laterally

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Introduction: Ischaemic cardiac pain is very common and also extremely varied from one patient to another. The distribution of this pain can be related to which coronary artery was occluded or narrowed.

Aim: To determine if there is a relationship between referred ischaemic cardiac pain and the vessel distribution involved.

Methodology: A number of patients admitted to the Critical Coronary Care Unit (CCCU) with chest pain and whom an angiogram was performed (a total of 45 patients) were asked about the pattern of pain they felt during the ischaemic attack. The information provided by the patient was cross-checked with the patient’s case notes so that any differences could be cleared with the patient him/herself. A copy of the diagram showing which vessels are occluded or narrowed was obtained for each case. A number of angiogram still images were also obtained. The results were then presented in a table format so that these can be compared more easily.

Results: From the cases collected, one would note that there is no definite trend observable. However, one may note that the following five patterns were present in a few of the cases:

- When the left anterior descending coronary artery (LCA) was involved, pain was felt in the left upper limb
- When the posterior descending coronary artery (PDA) was involved, pain was felt in the shoulder
- When the right coronary artery (RCA) was involved, pain was felt in the jaw and/or the neck
- When the left circumflex coronary artery (LCx) was involved, pain was felt in the chest
- When there was central chest pain, both RCA and the left coronary artery (LCA) were involved

However, it was noted that when the PDA was involved, shoulder pain was not always present and when there was pain in the left upper limb, the LAD was not always involved.

P1.15 Maternal sinus bradycardia preceding hypertensive disorders of pregnancy

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It is becoming increasingly apparent that hypertensive disorders of pregnancy may display atypical presentations. Non classical presentation of hypertensive disorders of pregnancy may lead to delay in diagnosis increasing the risk for maternal and foetal morbidity and mortality. The seventh report of the Confidential Enquiries into Maternal Deaths in the United Kingdom, issued in 2007, showed that eclampsia or pre-eclampsia was the 2nd commonest cause of direct maternal deaths. In this case-series, four cases are described whereby newly diagnosed maternal sinus bradycardia preceded maternal hypertension and also pre-eclampsia. Three of these cases occurred in the post partum period whereby maternal bradycardia preceded hypertension. In the other case, maternal sinus bradycardia was observed at 34 weeks gestation, which was followed by severe pre-eclampsia requiring premature delivery. In each of these cases, the maternal sinus bradycardia did not persist for more than two days, although the degree of bradycardia varied from 53 bpm to 56 bpm between patients. In three of the cases, the patients complained of dyspnoea due to pulmonary oedema. In the pathogenesis of pre-eclampsia, endothelial damage may occur and consequently lead to oedema in various parts of the body such as lungs, lower limbs, brain. The transient sinus bradycardia may be due to oedema in the cardiac tissue in the region of the sino-atrial node, thus affecting the baseline heart rate. In the nonpregnant woman myocarditis induced inflammation may lead to arrhythmias including sinus bradycardia. Alternatively sinus bradycardia may be an initial reaction to a sudden rise in blood pressure in an effort to maintain stroke volume. These cases suggest that maternal sinus bradycardia may be an early presenting sign of pregnancy induced hypertension and pre-eclampsia. If maternal sinus bradycardia in pregnancy is detected, it should prompt more in-depth investigation and observation so that timely management is instituted so as to pre-empt deterioration of hypertensive disease.

P1.16 The effect of valvular heart disease on outcome of pregnancy

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Introduction: Pregnancy in patients with valvular heart abnormalities poses a recognised increased risk for both maternal and foetal complications.

Aim: To assess the association between valvular heart disease (VHD) and pregnancy outcomes and comparing these outcomes to those of the total pregnant population during the same period of time.

Methodology: A retrospective evaluation of 86 pregnancies (over a 10 year period) in women with VHD was made and this was compared with the total population over the same period. This information was obtained from the Malta National Obstetrics Information System (NOIS).

Results: Despite the recognised increased risk, local women with VHD did not have a higher incidence of obstetric complications. The only complications recorded were a single

Conclusion: There is some line of evidence, but for a more accurate result further study in terms of cases should be produced. The implications of more accurate results could help the cardiologist in having an idea of the vessels involved before doing the angiogram.
case of gestational diabetes and four cases of pregnancy-induced hypertension. No mortality was recorded in the VHD patient group (n=0 in VHD patients vs n=4 in the general population). Moreover, VHD had no effect on fetal outcome: no increased preterm delivery (10.5% vs 7.2%, p = 0.3657), no increased intrauterine growth retardation (3.5% vs 6.14%), and a similar distribution of birth weight as the general population.

**Conclusion:** Pregnancy in Maltese women with VHD is not associated with marked increase in maternal morbidity or with unfavourable effect on foetal outcome.

**P1.17**

**Improvement in kidney function after cardiac resynchronization therapy**

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**Aim:** To study the effect of Cardiac Resynchronization Therapy (CRT) on kidney function in patients with Chronic Kidney Disease (CKD).

**Method:** All patients who underwent de-novo implantation of CRT between January 2007 and June 2011 at Mater Dei Hospital were recruited in this study. All patients had NYHA function class III/IV, Left Ventricular Ejection Fraction (LVEF) <53%, QRS >120 ms and were on optimal medical therapy. Kidney function was expressed as Estimated Glomerular Filtration Rate (eGFR) calculated using the modification of diet in renal disease (MDRD) equation. Serum creatinine and urea values were collected retrospectively both before and 5-7 months after device implantation.

**Results:** A total of 76 patients underwent de-novo CRT implantation. Twenty seven (27) patients were excluded because of incomplete data and 1 patient was excluded because of end-stage kidney failure on haemodialysis. The rest of the patients (n=48) were divided into Group A (n=28, 58.3%) comprising patients with eGFR ≥60 mL/min/1.73m² and Group B (n=20, 41.7%) comprising patients with eGFR <60 mL/min/1.73m². 92.9% of patients in Group A and 95% of patients in Group B were males. Mean age of patients in Group A was 59.39 (95% confidence interval [CI]: 55.15 to 63.63) while mean age of patients in Group B was 66.45 (95% CI: 63.26 to 69.64). Group B patients were significantly older than Group A patients (p = 0.0142; 95% CI: 1.40 to 12.69). 28.6% (n=8) of patients in Group A and 48.5% (n=9) of patients in Group B had diabetes mellitus (p = 0.36). There was a significant improvement in eGFR after CRT implantation in Group B patients (p = 0.028; 95% CI: 0.67 to 16.63), whilst no changes were observed in Group A patients.

**Conclusion:** Patients with an eGFR <60 mL/min/1.73m² showed a significant improvement in their kidney function after CRT implantation despite being significantly older. This may be attributed to enhanced cardiac output and kidney perfusion, decreased central venous pressure and renal venous pressure and various neurohormonal effects.

**P1.18**

**Prevalence of serum parathyroid hormone abnormalities in Maltese chronic dialysis patients**

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**Background and aim:** Parathyroid hormone (PTH) is the major determinant of rates of bone remodelling and turnover in dialysis patients with chronic kidney disease and mineral bone disorder (CKD-MBD). KDIGO (Kidney Disease: Improving Global Outcomes) evidence-based guidelines suggest that the target range for PTH should be between 2 and 9 times the upper limit of normal for the assay used. The prevalence of serum PTH abnormalities in Maltese dialysis patients is unknown. It is also unknown as to whether chronic haemodialysis (HD) and peritoneal dialysis (PD) patients differ with respect to serum PTH levels.

**Methods:** During 2011 all stable chronic dialysis patients at the Renal Unit, Mater Dei Hospital under the care of the authors, had several serum PTH measurements performed by immunoassay, measuring PTH 1-84. For each patient, the average serum PTH level was computed.

**Results:** In PD patients, 22.7% were at the high extreme of PTH level and clearly hyperparathyroid, whereas 25% were < 2 times the upper limit of normal PTH reference. Corresponding values for HD patients were 40.6% and 12.5%.

**Conclusions:** (i) There is a surprising and worrying high rate of hyperparathyroid or high turnover bone disease in Maltese dialysis patients; (ii) HD patients have nearly double the prevalence or risk of hyperparathyroidism as opposed to PD patients. Conversely, adynamic or low turnover bone disease is twice as common in PD as in HD patients; (iii) Only 47% and 52% of the prevalent HD and PD patients respectively have serum PTH values within the limits set by the KDIGO and UKRA guidelines. Strategies to tackle CKD-MBD in the local setting include much better control of serum calcium and serum phosphate levels, better and more frequent PTH monitoring, judicious use of Vitamin D analogues and calcimimetics and the appropriate referral for parathyroidectomy.

**P1.19**

**Ionic dialysance and urea kinetic modelling in the modern Renal Unit**

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**Background:** Ionic dialysance (ID) is a real time, non-invasive and automatically computed measurement of haemodialysis (HD) dose (expressed as Kt/V) which can be utilized both as a predictor during the HD session and as a monitor of the delivered dose at the end of the treatment session.

**Aim:** To compare in-vivo the Kt/V calculated by ID and that calculated by the gold standard urea kinetic modelling (UKM).

**Method:** All patients undergoing HD during December 2011 at the Renal Unit MDH were recruited. The ionic dialysance Kt/V (KIDt/V) was calculated using the DIASCAN™ Monitoring System (Hospal–Gambro®). The dialysate conductivity was measured both at the outlet and inlet of the dialyser, followed by automatic adjustment of the inlet conductivity by 1.0mS/cm for 2min. The KIDt/V was automatically computed by dividing the Depurated Volume by the Volume of Distribution as calculated by the Watson formula. The delivered dose of HD was independently measured by formal UKM using the single pool Kt/V (spKt/V) calculated by the second generation Daugirdas formula. The pre-dialysis and post-dialysis serum urea samples were collected for all patients using standardized methods. Body weight before and after HD together with ultrafiltration volume were also measured. The minimally adequate HD dose recommended by international guidelines is a spKt/V ≥1.2.

**Results:** During the study period, 120 patients were undergoing conventional HD at the Renal Unit. Thirty one patients (25.8%) had incomplete data and were excluded. The correlation coefficient of spKt/V (calculated using UKM) and KIDt/V (calculated using real time ID) was 0.801 (p<0.0001). The mean spKt/V was 1.31±0.34 and the mean KIDt/V was 1.11±0.32 (p=0.0002). The KIDt/V underestimates the delivered dose by 15.12% when compared with the gold standard spKt/V. By calculating Kt/V using the ID and the UKM; 36.7% and 66.3% of the patients undergoing HD achieved a Kt/V ≥1.2 respectively.
Conclusion: This study shows a strong correlation between the Kt/V (HD delivered dose) calculated using ID and UKM. Despite this, the Kt/V as calculated using ID and UKM differ significantly and ID underestimates the real delivered dose by 15.12%. Then again, ID is non-invasive, economical, automatic and relatively easy to use which makes it ideal for routine use. Although international guidelines still recommend the spKt/V as the preferred method for accurately measuring HD dose, these advantages make ID a useful biofeedback instrument for monitoring trends in the delivered HD dose and therefore ensuring HD adequacy.

P1.20
The role of anaemia in the risk and evolution of patients with myocardial infarction
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Introduction: Definition of MI (Myocardial Infarction) and anaemia.

Objectives/purpose: Investigate the number of patients with MI (alive + deceased) in the year 2010 in Spitalul Judetean Oradea + anaemic patients. Using the results to analyse how anaemia plays a role in the risk and evolution of patients with MI.

Material and method: Number of patients with MI in 2010 =148 from which 61 were anaemic. From the 148 patients, 59 were deceased from which 27 were anaemic. Parameters investigated - age, sex, body mass index, Killip classification, cardiac enzymes (CK-MB, Troponin), location of MI, blood pressure, smoking, family history of ACS, MI, diabetes, glucose, haemoglobin, no. of RBCs, cholesterol, triglyceride, serum creatinine, treatment and mortality.

Results: Average BMI for MI patients = 26.48kg/m2. Location of infarct (deceased) – anterior 52% (26%), anteroinferior 4% (3%), anterolateral 13% (6%), anterosetal 8%, inferior 38% (12%), inferolateral 5% (1%), lateral 6% (2%), posteroinferior 3% (3%), NSTEMI 19% (6%).

- Average systolic BP = 137.28mmHg.
- High blood pressure - 52.7% from which 44.26% were anaemic.
- Deceased – 49% from which 42.86% were anaemic + hypertensive.
- Smoking – 25.68% smokers from which 18.42% deceased.
- 14.75% smokers + anaemic, from which 55.55% were deceased.
- History of previous MI – 13% anaemic, from which 63% were deceased.
- Diabetes mellitus – 72% non-diabetic, 16% diabetic, 13% diabetic + deceased.
- Anaemic patients - 29% diabetic from which 61% deceased.
- Blood glucose levels – Normal 36%, High 64%.
- Deceased patients – High 45%, anaemia + high 26%, normal 29%.
- Cholesterol values – High 22%, normal 78%. Deceased + anaemic = 50%.
- Cardiac troponin T (CtnT) - High 71.3%. Deceased + high - 57.89%.
- Anaemic + high CtnT - 69.57% from which 21.05% were deceased.
- Killip class – the higher the Killip class the more the number of anaemic and deceased patients.

Conclusion: Anaemia is an independent risk factor which plays a detrimental role. It lowers the threshold to obtain a MI. It is a negative prognostic factor for patients with co-morbidities (e.g. diabetes, HBP, dyslipidaemia), such patients are more easily prone to the complications of MI e.g. cardiogenic shock, arrhythmias. Their rate of mortality is increased in comparison to non-anaemic patients with the same co-morbidities.
**P2.03 First national mapping survey of indoor radon levels in the Maltese Islands**

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The first national survey to determine average annual indoor radon levels in dwellings, schools and public places in the Maltese Islands and to identify any areas with higher than average radon concentrations, was conducted by the Environmental Health Directorate within the Superintendence of Public Health. Indoor radon measurements were carried out over a total period of 1 year starting in November 2010 (2 x 6 month periods representing winter and summer months) using systematic screening on a geographical basis using a 5km x 5km grid map system. A total of 85 randomly selected locations, 5-6 locations per grid, were monitored for indoor radon, using etched track detectors obtained from and analysed by a laboratory validated by the Radiation Protection Division of the Health Protection Agency, UK. Results of this national survey indicate that 0% of dwellings in Malta and Gozo were above the more recent World Health Organisation(WHO) recommended indoor radon reference level of 100Bq/m³, and well within the European Commission (90/143/Euratom)recommended annual indoor radon gas concentration levels of <400 Bq/m³ for older dwellings and <200Bq/m³ for future dwellings.

**P2.04 The number of cases and deaths of common cancer sites predicted for 2020 in Malta**

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**Introduction:** The cancer burden worldwide is on the increase. Does local data regarding cancer burden, according to cancer site and gender, predict a similar trend in Malta?

**Aim:** To provide information on the predicted number of cases and deaths of some of the common cancer sites in Malta, based on current data available at the National Cancer Registry and National Mortality Registry, and using EUROPOP projections for the year 2020.

**Method:** Crude numbers of cases and deaths due to some of the common cancer sites were recorded and averaged for the years 2007-2009. From this data, age-gender specific number of cases and deaths within 5-year age groups were compiled. Using EUROPOP projected population, an estimate of the number of cases and deaths for 2020 was made.

**Results:** In the male population, there is a predicted increase in the distribution of lung cancer (2007-2009: 128 cases, 15.3% of all cancer sites, and 2020: number of cases 174, 15.6% of all cancer sites) and prostate cancer (2007-2009: 157, 18.8% and 2020: 223, 20.0%). There is a predicted marginal decline of colorectal cancer (2007-2009: 123, 14.7% and 2020: 162, 14.5%). The data predicts a stable distribution in the number of deaths of lung cancer (2007-2009: 119 deaths, 25.5% of all cancer site deaths, and 2020: 162, 25.6%), colorectal cancer (2007-2009: 60, 13.0% and 2020: 84, 13.2%), and prostate cancer (2007-2009: 32, 7.0% and 2020: 47, 7.4%). In the female population, there is a marginal decline in distribution of breast cancer (2007-2009: 274, 33.4% and 2020: 321, 32.4%). There is a predicted stable distribution for colorectal cancer (2007-2009: 94, 11.5% and 2020: 118, 11.9%) and cancer of the cervix (2007-2009: 12, 1.4% and 2020: 13, 1.3%). The deaths distribution of breast cancer is predicted to decline (2007-2009: 78, 21.3% and 2020: 96, 20.3%), while there is a stable number of deaths distribution for colorectal cancer (2007-2009: 49, 13.4% and 2020: 64, 13.6%) and cancer of the cervix (2007-2009: 4, 1.1% and 2020: 5, 1.1%).

**Conclusion:** The data shows varying results in the number of cases and deaths of cancers according to site and gender, e.g. prostate cancer in males shows an increased number of cases and deaths. One of the attributable limitations for such findings is the development of new technology.

**P2.05 Blood lead levels in Maltese children and adults**


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**Introduction:** Over the last decades a number of public health measures which banned the use of lead in gasoline, lead containing fuel in bakeries, the sale of lead-based paint for domestic use, have considerably reduced blood lead levels in the Maltese population, which in the early 1980’s were found to be among the highest in a number of countries. Mean blood lead levels in the Maltese adult population dropped from 243Ug/l in 1981 to 59Ug/l in 2005. The level of lead in blood that defines childhood lead poisoning has been adjusted repeatedly by the US Center for Disease Prevention and Control (CDC) from 600Ug/l in the 1970s down to 100Ug/l in the early 1990s, the level that remains to date. Although a cut-off limit has been established, evidence shows that there is no safe level for blood lead in children and exposure to low levels of lead is associated with neurobehavioural damage.

**Methodology:** In view of this evidence, the Environmental Health Directorate in collaboration with the Paediatric Department and Toxicology Laboratory at Mater Dei Hospital conducted a study aimed to determine current blood lead levels in a convenience sample of 120 Maltese children aged 4 to 14 years attending paediatric out-patients at Mater Dei Hospital and requiring blood investigations for other medical reasons. The study was conducted between July 2011 and January 2012. In a separate study, the Environmental Health Directorate in collaboration with the Toxicology Laboratory at Mater Dei Hospital estimated blood lead levels for a representative sample of 221 adults above the age of 18 years, as part of the European Health Examination Survey (HES) Pilot study 2010. The fieldwork was conducted in November and December 2010 over a period of 8 weeks.

**Results:** Results for blood lead levels in the child study population were well below the acceptable level of 100Ug/l (median 20Ug/l, max 84Ug/l, min 10Ug/l, mean 23 Ug/l). All results for the adult population studied were well within acceptable limits, apart from 2 samples obtained from individuals who had been exposed to lead occupationally, who were referred to an occupational health physician.

**Conclusions:** It is evident that the public health measures taken to reduce population exposure to lead have been successful over the years and low blood lead levels have been maintained. However, given recent evidence that even low exposures to lead may be harmful, especially in childhood, public health efforts to prevent exposure to lead should be upheld.
**P2.06** Paediatric referrals for treatment abroad 1991-2011: effect of local subspecialisation and visiting consultant clinic

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**Introduction:** Paediatric referrals for tertiary care to the UK comprise approximately 33% of all referrals annually. Although this service provides excellent health care options to local children, it adds significant costs to the Health Division and patients’ families who have the additional burden of travel for health intervention in a foreign country.

**Aim:** This study reviewed all Paediatric referrals to the UK over the period 1991-2011. Changes in referral patterns for individual subspecialties and the effect or otherwise, of the advent of local and visiting consultant clinics (VCCs) were assessed.

**Method:** Paediatric cases were defined as all children from birth to 14 completed years. Statistics for referred cases were obtained from the Treatment Abroad Database, Division of Health, and the Annual Reports, Department of Paediatrics.

**Results:** Although the total number of annual individual case referrals increased from 69 in 1991 to 107 in 2011, the total number of referred case ‘events’ increased from 69 to 157, reflecting an increasing trend of multiple referrals for the same patient within the same calendar year. Whereas cardiac cases made up 46% (n=32) in 1991, these decreased to 19% (n=21) in 2001 and 12% (n=16) in 2011. This change can be attributed to increased VCCs and services and the appointment of a paediatric cardiologist in 2001. Similarly, neurological, renal, gastroenterological and oncological cases decreased from a maximum of 18, 16, 25 and 21% to 11, 6, 2 and 14%, respectively, in the same time period. These changes can be mapped, to varying degrees, with the advent of VCCs and local consultant appointments. Other medical subspecialties such as endocrine and infectious diseases, as well as general surgery, remained steady below 7% of all referrals at all times. In contrast, surgical subspecialty referrals increased significantly with orthopaedic, ophthalmology and ENT cases making up 0% for all three in 1991, peaking at 24, 18 and 13%, respectively, in 2001. The appointment of a paediatric orthopaedic surgeon is likely to have contributed to the reduction of orthopaedic cases to 9% in 2011, but the percentage of ophthalmic and ENT referrals remain high at 23 and 13%, respectively.

**Conclusion:** This 20 year review has shown that paediatric referrals for tertiary care abroad can be somewhat offset by increasing local subspeciality services and the introduction of VCCs. The latter, however, often ‘raise the bar’ in terms of healthcare expectations and treatment options and, therefore, may generate new referrals whilst abolishing others.

**P2.07** The cost burden of ulcerative colitis on the Maltese healthcare system

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**Methods:** A retrospective study was carried out on 50 patients who had a histological diagnosis of UC, at least 1 year prior to their recruitment into the study. The medical records of these patients were reviewed to collect information on the type and amount of hospital care they required. The costs for one out-patient visit, colonoscopy, total colectomy with pouch formation and one day in-patient hospital stay were obtained from the Finance Department of Mater Dei Hospital. Total costs were calculated and sub-group analysis was performed for the total costs for patients who were admitted to hospital versus patients who were managed as out-patients.

**Results:** On average each patient spent 13.2 years suffering from UC (range 1-52 years). The average number of out-patient visits was 8.52 visits per patient (range 1–34 visits) while the average number of colonoscopies was 3.56 colonoscopies per patient (range 1-11 colonoscopies). Hospital admissions ranged from 1 to 11 admissions per patient, with 48% having no admissions. The average in-patient stay was 18.16 days per patient (range: 0-summative total of 161 days). Six patients (12%) required a total colectomy with pouch formation. Total hospital cost for these 50 UC patients was Euro 331,775 – 4.5% was spent on out-patient visits; 23% on colonoscopies and 72.5% on in-patient hospital stay (11.6% of this was incurred due to surgical procedures). Total cost for patients who were never admitted to hospital was Euro 154.80 per year of disease (Total - Euro 35, 684). While the total cost for patients admitted to hospital was Euro 826.5 per year of disease.

**Conclusion:** This study demonstrates the high costs incurred when managing UC patients as in-patients. The basic direct cost for patients who were admitted to hospital was 5.3 times higher (Euro 671.7) for each year of disease. The total direct costs were an underestimate as no costs for blood investigations and medications were taken into account as no accurate cost for these was available. However, none of the patients were administered any anti-TNF-alpha drugs. Furthermore, indirect costs were not calculated. At present the major expense occurs when UC patients are admitted to hospital. Would anti-TNF-alpha drugs just shift the direct cost from in-patient to out-patients with a reduction in indirect costs?

**P2.08** The prevalence of unplanned pregnancy in Malta

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**Background:** Unplanned pregnancy has been associated with inadequate prenatal care and adverse health outcomes in both infants and mothers. In view of this, several countries have introduced pre-conception care clinics with the aim of improving women’s health and decreasing rates of unplanned pregnancy.

**Aim:** To explore the prevalence of unplanned pregnancy in Malta.

**Methods:** In 2007, the National Obstetric Information System (NOIS) within the Department of Health Information and Research collaborated with the Department of Obstetrics and Gynaecology to develop an updated Antenatal Booking Sheet for use at the mother’s first hospital antenatal visit. This booking sheet included a more detailed and extensive history-taking checklist than the previous one, with the aim of improving both clinical care and enabling more comprehensive public health surveillance. One of the questions included in this new Antenatal Booking Sheet asks whether the current pregnancy was planned or not. The updated Antenatal Booking Sheet was fully implemented at Mater Dei Hospital and Gozo General Hospital in January 2008. Data regarding pregnancy intention was appended to the routine obstetric dataset for the years 2008-2010 and analysed using MS Excel and Epi-Info.

**Results:** There were 12,218 deliveries in the three-year period under study. Of these deliveries, 3,848 (31.5%) were reported as unplanned, 7,223 (59.1%) were reported
The study was conducted birth to fewer children. Changing with more unmarried and older mothers giving lower birth rates with the latter experiencing the lower rates. The socio-demographics of the maternal population are substantially with an increased use of spinal and epidural anaesthesia in Malta. There has not been a similar increase in the time period. Elective Caesarean rates were shown to increase in Malta. The number of neonatal and in-utero transfers is islands with a five-fold increase in Gozo, double the increase of deliveries, island to island transfer, primiparous and multiparous rates, assisted and non-assisted deliveries, delivery complications and mortality rates of these islands were compared.

**Conclusion:** The significant rate of unplanned pregnancy in Malta indicates the need for the country to explore possibilities for pre-conception care and advice to all women of childbearing age.

**P2.09 Obstetric and neonatal care in the Maltese Islands**

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**Aims:**

- To analyse the obstetric and neonatal statistics of deliveries conducted in Gozo over a ten year period (1999-2008).
- To compare the number of births, the trends of primiparous and multiparous pregnancies and to compare the trends of assisted, non-assisted and converted assisted deliveries and related complication rates.
- To compare the maternal and neonatal mortality.

**Methods:** The National Obstetric Information System (NOIS) is a reporting technique used to acquire information on birth events in the Maltese Islands. The data for Malta and Gozo over a ten year period (1999-2008) was acquired following ethical permission and the birth statistics for the two islands were calculated and compared. The number of deliveries, island to island transfer, primiparous and multiparous rates, assisted and non-assisted deliveries, delivery complications and mortality rates of over 40,000 births were calculated.

**Results:** The annual birth rate of the Maltese Islands is decreasing with an 11% drop seen during the study period; the birth rate in Gozo falling at the faster rate. There have been a consistent number of births by Maltese mothers giving birth in Gozo with percentages of total births in Gozo varying between 6.5% and 11.8%. The number of births to Gozitan women occurring in Malta has also remained stable at around 0.3% of the total births in Maltese based hospitals. The numbers of births to single mothers increasing on both islands with a five-fold increase in Gozo, double the increase in Malta. The number of neonatal and in-utero transfers from Gozo to Malta were seen to be decreasing over the study period. Elective Caesarean rates were shown to increase substantially with an increased use of spinal and epidural anaesthesia in Malta. There has not been a similar increase in Gozo. There is no epidural service during labour in Gozo but more Caesarians are performed under regional anaesthesia. There was no change in maternal or neonatal mortality over the time period.

**Conclusions:** Malta and Gozo are both experiencing lower birth rates with the latter experiencing the lower rates. The socio-demographics of the maternal population are changing with more unmarried and older mothers giving birth to fewer children.

**P2.10 Smokers among students of first and second year Faculty of Medicine in Foca**

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**Introduction:** The greatest threat for public health in the Republic of Srpska is smoking. 1.3 billion people smoke worldwide, while 4.9 million deaths occur as a result of smoking. If this rhythm continues until 2020, the number of deaths caused by smoking would be doubled. Tobacco smoke contains over 50 identified carcinogens. Currently 14000-15000 young people in high-income countries and 68000-84000 in the less developed countries are becoming daily smokers. Republic of Srpska has 28.7% of current smokers and occasional 2.3%, indicating, that smoking is socially accepted behaviour of citizens that affects not only the health and quality of life but also the social and economic costs to society as a whole.

**Objective:** The purpose of this study is to determine the number of medical students of the first and second year who actively smoke, and for what reasons they began to consume tobacco products.

**Material and methods:** The study was conducted among students of first and second year of Medical Faculty in Foca.

**Results:** Out of 179 surveyed students, 40 of them are active smokers, and 3 are occasional smokers.

**Conclusion:** The implementation of existing and launching of new, more aggressive health promotion programs among students would be a positive step in their smoking cessation and health promotion.

**P2.11 Obstetric and neonatal care in small states with less than 50,000 inhabitants**

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**Aims:** To compare the results of obstetric and neonatal outcomes in Gozo with Gibraltar, Liechtenstein and the Faroe Islands; all of which have similar populations and health systems.

**Methods:** The obstetric data for Gozo over a ten year period (1999-2008) was acquired following ethical permission from the National Obstetric Information System (NOIS) and the birth statistics for the islands were compared. The number of deliveries, island to island transfer, primiparous and multiparous rates, assisted and non-assisted deliveries, delivery complications and mortality rates of these islands were compared.

**Results:** The data available for the four islands differs due to the different methods of data collection. The Gozitan and Liechtensteiner birth rates are comparable and both show a progressive decrease in birth rate; this is however not observed in the Faroe Islands or in Gibraltar where the rates have remained steady at c.13 births per 1000 population. The numbers of neonatal and in-utero transfers from Gozo and Gibraltar to the nearest tertiary facility remained stable over the study period. The number of Caesarean procedures in Gozo remained stable whereas the rate of operative procedures in Gibraltar have shown a gradual increase. Births to married mothers are decreasing in both Gozo (20%) and Liechtenstein (20%); with Gozo also showing a five-fold increase in unmarried mothers. The majority of births occur in the 25 – 34 year age group in all the islands. Constant levels of births to women aged between 15 and 19 occur in Gibraltar and Liechtenstein whereas Gozo has shown a slight increase in births in the same age group. Gibraltar and Gozo both show a gradual decrease in forceps use and a slight increase in ventouse use. The islands show a gradual increase in primiparous deliveries mirrored by a decrease in multiparous deliveries.
Conclusions: The healthcare centres available in Gozo require an investigation into possible reforms. Data is needed to ensure that the most effective strategies for safe motherhood are integrated into essential service packages. Obstetric care in Gozo is comparable with that of other small island communities with similar populations and health systems.

P2.12 Comparative costs of cardiovascular drugs
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Introduction: Cardiovascular disease (CVD) accounts for 17 million deaths worldwide, making it a leading cause of death in most countries. Malta compares similarly since in 2011, CVD accounted for 38% of all deaths.

Aim: To obtain the costs of all cardiovascular drugs found in the community setting and statistically compare the prices between generic and proprietary products.

Methodology: A list of authorised medicinal products available in the community setting was obtained from the Malta Medicines Authority website. Collection of cardiovascular drug prices was carried out between December 2009 and December 2011. Originator and generic products were distinguished by going through the dossier and with the help of community pharmacists. When comparing prices the Defined Daily Dose (DDD) was used obtained from the World Health Organisation Collaborating Centres for Drug Statistics Methodology website, was preferred as the unit of comparison. The cost per Defined Daily Dose of each active pharmaceutical ingredient was then calculated. Statistical tests on the data were carried out using SPSS version 17.

Results: 162 cardiovascular medicines were covered in this study of which 108 were originator drugs and 54 were generic drugs. The Kollmogorov-Smirnov p-values (0.212 and 0.161) for the originator drug and generic drug indicate a normal distribution. The average cost of originator drug was found to be (€0.7007 per DDD) whereas the cost of the generic drug was found to be (€0.4342 per DDD). The 95% confidence interval stipulates that the difference in price between the generic and originator drug may vary between €0.1843 per DDD and €0.3487 per DDD in the future.

Conclusion: The results show that there are a large number of drugs where generics are not available in the community setting. On average the discount of generics compared to originators is only 38%. This is still very low considering that other countries in the European Union have much cheaper generic drugs available. From the data obtained the average discount of generics compared to originators will vary between 26.3% and 49.8% in the future.

P2.13 Preparing Continuing Professional Development resources for pharmacists
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Introduction: Continuing Professional Development (CPD) is a lifelong learning process that is very relevant to the pharmacy profession where developments in pharmaceutical sciences and patient management are taking place with the introduction of innovative treatment modalities.

Aim: To produce evidence-based updates on three chronic disease states.

Methodology: CPD resources available on the websites of the American Society of Health-System Pharmacists, the American Pharmacists Association and the Royal Pharmaceutical Society of Great Britain were reviewed and those relating to chronic disease classified. The data collected from this preliminary study indicated that venous thromboembolism, diabetes mellitus and coronary artery disease are the three most frequently cited chronic disease states for which updates were reported. Updates drawing on these conditions were subsequently prepared for the local scenario. The updates were designed using Microsoft Office PowerPoint 2007 and structured according to a common framework including the following headings: abbreviations, definitions, epidemiology, aetiology, pathogenesis, symptoms and signs, investigations and diagnostic tests, management, secondary prevention and prophylaxis, and a bibliography. Evidence-based scholarly literature including research papers, reviews, articles, clinical practice guidelines and textbooks were used in order to compile the updates. An expert panel consisting of a general physician, cardiologist, diabetologist and six pharmacists was identified to participate in the validation of the prepared updates.

Results: A total number of 709 CPD resources were reviewed in the preliminary study, out of which 243 were related to chronic disease. The 10 most frequently cited chronic disease states are: venous thromboembolism (8.91%), diabetes mellitus (7.69%), coronary artery disease (6.07%), arrhythmias (5.26%), mood disorders (4.05%), breast cancer (4.05%), Parkinson’s disease (3.64%), chronic renal disease (3.64%), chronic obstructive pulmonary disease (3.24%), overactive bladder (3.24%). The resources developed for the local scenario were successfully validated, with all experts agreeing that the updates were well researched and accurately presented. With regard to the design of the updates, it was suggested to make use of hyperlink technology as this would enhance browsing through the resources.

Conclusion: The developed resources serve as a means of updating pharmacists on recent advances in the management of specific chronic conditions. Access to these resources could be made possible by means of an online platform. The latter may prove to be instrumental in establishing an online repository of information.

P2.14 Prescribing of analgesics in community pharmacy
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Introduction: During adolescence a shift from childhood to independence occurs and this transition impacts on the practices of self-care and use of non-prescription medications.

Aim: To examine the non-prescription use and self-administration of over-the-counter analgesics for ear and throat, head, muscle, joint and back, stomach and menstrual pain.

Methodology: A self-administered questionnaire from a previous study carried out by Chambers et al (1997) was adapted and translated to Maltese. Ethics approval was granted by the University Research Ethics Committee. An explanatory letter and parent and participant consent forms were presented to participants asked to complete the questionnaire. Questionnaires were distributed through 6 schools to 687 students aged 14 to 18. Data was analysed using Microsoft Office Excel 2007 and SPSS 17.0.

Results: The final sample was made up of 444 students (174 male, 290 female) with a mean age of 16.5 years. Paracetamol was the most common type of medication used in all types of pain, its highest use being in head pain (74%). Parents were the most popular choice as a source of medication (34-42%) and information (31-44%). Out of the 36 participants, 30 were 16 years old or younger. Of the 99 respondents who indicated the type of medication they took for stomach pain, only 16 chose a non-steroidal anti-inflammatory drug. The mean ages at which students reported beginning to self-administer medication ranged from 13.3 years (muscle, joint and back pain) to 14.1 years (ear and throat pain).
**Conclusion:** With pharmacists, doctors and teachers ranking lower than parents and guardians as sources of information about medication, it would seem that children and adolescents have few opportunities to learn how to use medicines appropriately and from the people qualified to give the proper information. Recommendations for further study include proposing guidelines for community pharmacists responding to scenarios for pain management in this specific group. The option of creating an educational website targeted to adolescents may be considered particularly to eliminate the few cases of inappropriate use of medicines such as aspirin.

**P2.15**

**Drug administration system in elderly patients**

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**Introduction:** A drug distribution system that limits risks of medication administration errors is desired in any hospital.

**Aim:** To identify and measure the incidence of medication errors in the elderly institution, St. Vincent de Paul Residence (SVPR).

**Methodology:** A prospective direct-observation study was set up. Nurses in the wards were informed about the aims and structure of the study but the word ‘error’ was not mentioned in order to avoid bias. SVPR uses a ward pharmacy system where drugs are sent in bulk from the pharmacy store to the ward stock. No transcription of the treatment chart occurs by pharmacists. An observation sheet developed by Meli (2011) for use at the Rehabilitation Hospital Karin Grech was adopted, re-evaluated and re-validated by 3 pharmacists. An observation of 2 weeks in SVPR was carried out in order to test the practicality and feasibility of the methodology. All data were recorded on the sheet and then compared with the actual drugs and dosages prescribed for the patients. Following the observation sessions, a prescription error sheet was developed for chart reviewing of the treatment charts to be able to determine the stages at which errors can occur. The sheet was also validated by 3 pharmacists.

**Results:** Six administration rounds were observed in 6 different wards at SVPR. Out of the 144 opportunities for error observed, the medication error rate was of 36.6% (n=52). The most common type of drug administration errors were drug left next to the patient 14.6% (n=21), followed by tablets crushed or capsules opened without authorisation 11.1% (n=16), treatment chart not signed after administration 4.2% (n=6) and drugs not administered with adequate amount of fluid 6.3% (n=9).

**Conclusion:** Findings from this study led to identification of common drug administration errors and may help to improve medication administration systems at SVPR. Direct observation may be of concern due to the effect of the observer on the nurse, however this Hawthorne effect wears off after a few days.

**P2.16**

**Auditing of the standard operating procedures of clinical pharmacy services at Rehabilitation Hospital Karin Grech**

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**Introduction:** Auditing of professional services provided in the healthcare sector is a process that is gaining importance and in some instances is a requirement. The setting of this project was the Rehabilitation Hospital Karin Grech (RHKG). It consists of five wards with 155 beds. The hospital opened two other wards during the audit.

**Aims:** To audit the Standard Operating Procedures (SOPs) implemented at the RHKG, to determine if best practice was being delivered and to check if there was room for improvement.

**Methodology:** SOPs implemented at RHKG Pharmacy were identified, namely: patient admission, patient profiling, patient discharge, prescription monitoring and patient medication trolley check. The SOPs were used as the accepted standards for best practice against which actual practice had to be measured. Audit techniques used were observation and documentation. Audit tools were created for each SOP to be used as checklists to document the observations. Data collected was analysed using IBM SPSS Statistics v20.0 using the chi-square test. Convenience sampling was the method of sampling applied.

**Results:** Auditing of the SOPs ‘Patient Admission’ and ‘Patient profiling’ was carried out. Seven admissions and seven patient profiles for each of the six pharmacists at the RHKG were audited. The pharmacists carried out all the admissions and patient profiling according to the relevant SOPs during the three months when the study was undertaken. Steps in Patient Profiling SOP were recommended to be changed or removed as they were no longer applicable. Such steps include: Electronic documentation of pharmaceutical care issues to be removed, and the amendments to the steps ‘Place from where the patient was admitted from the Inter-Professional Clinical Documention (IPCD), ‘Carer’s name and telephone number from IPCD’, ‘Reason for referral from IPCD’, ‘Past Medical History from IPCD’, ‘Adverse drug reactions from IPCD’, ‘Mental Score Questionnaire from IPCD’.

**Conclusion:** Pharmacists at RHKG followed both procedures correctly for each patient thus ensuring quality and standardisation of professional services when admitting a patient and when profiling a patient. The auditing exercise highlighted the significance of the pharmacists’ interventions to identify and correct any discrepancies and missing information related to drug therapy.

**P2.17**

**Methods for the dissemination of protocols on the common cold**

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**Introduction:** In 2009 Mercieca validated previously developed treatment protocols to support community pharmacists in responding to symptoms of common cold.

**Aim:** To evaluate the current dissemination method for the developed protocols on the common cold and investigate the impact of an electronic version.

**Method:** An electronic version of the protocol handbook by Mercieca (2009) through a website was developed. A pharmacist questionnaire in order to evaluate the current protocol handbook and website was developed. Validity and reliability testing were carried out. Information on website access and a copy of the questionnaire were sent to all community pharmacies (n=209) in Malta and Gozo. Data was analyzed using statistical software SPSS version 20.

**Results:** Out of the 209 community pharmacists who were invited to participate in the study, 154 responded to the survey (74% response rate) and of these 111 (72%) were female. Fifty eight percent (n=83) stated of having come across the protocol handbook before during their practice, and of these 59% (36) stated that they used the handbook. Pharmacists rated both dimension (84%) of the booklet and number of pages (83%) as being good. The majority of pharmacists (68%) agreed that the handbook is a practical dissemination tool for common cold protocols. Fifty eight percent stated that the handbook is an effective method for dissemination of protocols which could be supplemented with other formats, such as the website. Seventy nine percent agreed.
that an electronic format would increase use of protocols in community pharmacies. 72% agreed that a website would be more practical. The online version of the non-prescription protocol (NPP) and prescription protocol (PP) were rated as being more practical compared to the protocols in the handbook (p<0.05).

Conclusion: This study showed that the booklet as a dissemination method is effective. Electronic formats such as the developed protocol website seem to complement the booklet to promote their use and make such protocols more accessible and user-friendly for community pharmacists.

P2.18
Audit of prescribing patterns in women with epilepsy of child bearing age
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Background: The prevalence of epileptic patients on treatment for the Maltese population is about 2000. Women with Epilepsy (WWE) of child bearing age are a specific patient cohort requiring careful consideration of their anti-epileptic medication in view of teratogenicity and appropriate counselling to this effect. Compliance and seizure control are also of utmost importance.

Aim: This audit aims to assess the prescribing patterns of anti-epileptic drugs (AEDs) in WWE of child bearing age as well as any documented advice given with regard to pregnancy.

Method: The case notes of all WWE (70 patients) between the ages of 15 and 50 years who attended the neurology clinic between June and July 2012 were reviewed. Demographic data, age of onset, type of epilepsy, AEDs and concomitant folinic acid use were recorded. With regard to pregnancy issues, the number of pregnancies, AEDs taken during gestation, changes in treatment in preparation for pregnancy and documentation of advice related to pregnancy were noted.

Results: The mean age of the patients studied was 31 years, with the mean age at diagnosis being 17 years. 60 patients suffered from generalized epilepsy. The majority (43 patients) were idiopathic. The rest had a known cause for their epilepsy (3 patients – post-infective; 16 patients – structural causes; 3 patients – neonatal complications; 3 patients – specific epilepsy syndromes; 2 patients – drugs and alcohol). The majority of patients were on monotherapy. Only 27 out of the 70 patients studied were on 2 or 3 anti-epileptic drugs. 25 patients were on levetiracetam, 19 on phenytoin, 21 on sodium valproate, 17 on carbamazepine, 8 on lamotrigine, 3 on topiramate, 2 on pregabalin, 1 on ethosuximide and another patient on gabapentin. 79% of the patients were taking folic acid. 56 pregnancies were documented. The use of AEDs was reported in 40 pregnancies with sodium valproate being used in only 7 of these. Pregnancy related advice was only documented in 18 case notes. There were 16 reported changes in AEDs related to pregnancy.

Conclusions: The prescribing patterns in WWE of child bearing age are inevitably affected because of pregnancy issues. 23% of the patients had treatment changes in preparation for pregnancy while sodium valproate used widely in other epileptic patients was only used in 7 pregnancies carried to term as it is the AED with the highest level of teratogenicity. Still, documentation of advice related to pregnancy was very poor and needs to be optimized.

P2.19
Doping in sport: the Maltese scenario
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Introduction: The use of substances to enhance performance is common amongst sportspersons of all categories and ages. Worldwide the World Anti-Doping Agency (WADA) is responsible for the research, education and development of anti-doping policies, rules and regulations. The World Anti-Doping Code (WADC) harmonises anti-doping policies internationally. Malta was declared fully compliant by WADA only early in 2012, although doping tests had been carried out on a Federation basis by some sports associations previously.

Aims: To evaluate the knowledge of the WADC and to assess the prevalence of doping amongst Maltese sportspersons. It was also aimed at evaluating the knowledge of community pharmacists (Ps) and general practitioners (GPs).

Methodology: Validated questionnaires, administered to each of the three groups were used to collect the data. The questionnaires each contained four sections which measured socio-demographic variables, knowledge of the WADC and the Prohibited List – International Standard and exposure to education on doping in sport.

Results: A total of 97 sportspersons, 99 Ps and 55 GPs returned the questionnaires. The meaning of WADA was interpreted correctly by 37.1% of sportspersons, 51.5% of Ps and 67.3% of GPs. Knowledge of the ‘Prohibited List – International Standard’ proved to be poor, with the majority of participants not being familiar with the list (73.2% sportspersons, 84.8% Ps; 65.5% GPs). An overall score of 5.65 of 18 was obtained by sportspersons when they were tested on their knowledge of the status of specific drugs in the Prohibited List. Health care professionals (HCPs) also obtained low scores when queried on the status of specific drugs (Ps: 4.66; GPs: 4.13 of a possible score of 19). This indicated a widespread lack of knowledge on the Prohibited List. With regard to dispensing and prescribing doping substances, 8.1% of Ps and 9.1% of GPs stated that they had been approached for prescriptions or to dispense banned substances to a group of sportspersons. Only 32.0% of sportspersons, 13.6% of Ps and 3.6% of GPs considered themselves to be knowledgeable on doping in sport.

Conclusion: This study showed that there is a widespread lack of knowledge about illicit doping in sports and its consequences among HCPs and sportspersons in Malta. This may be due to various factors such as the lack of regular doping tests to date and the lack of an effective national anti-doping strategy and education campaigns.

P2.20
Compliance with the new European bioequivalence guideline: development of a tool for assessment
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Introduction: Bioequivalence studies must be carried out in accordance with the current bioequivalence guideline unless adequately justified. The bioequivalence guideline has recently been revised in line with set standards required in guideline development and revision. Literature supports the fact that tools for application bearing a different format to the guideline should ideally be developed. To date there is no application tool for the bioequivalence guideline.

Aim: To develop a tool based on the bioequivalence guideline as a potential instrument to assess compliance of bioequivalence studies with the bioequivalence guideline, and test its applicability through a pilot study.

Methodology: A list of items was compiled and experts for a Delphi study were recruited from national competent authorities from European member states/ European economic area and the European Medicines Agency’s pharmacokinetic expert database. The experts were asked to rate the importance of each item in assessing compliance to the bioequivalence guideline. Following the Delphi study, the comments on consensus items and the
P2.21
Needs assessment for the elderly in Malta—assessing difficulties of performance in activities of daily living among elderly aged 75 years and older – results from the national survey
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Health Information and Research Directorate

Background: Nine activities of daily living (ADLs) are essential self-care tasks performed by any individual on a daily basis. Being limited in one or more of these essential daily life skills might indicate a dependency on other people and services.

Aim: To display the spread of difficulties in performance of activities of daily living from Phase 1 of the national survey. For each ADL, the number of respondents who reported any difficulty was recorded. The number of respondents who had performed a normal or a failed assessment was also recorded. A chi-square test was used to investigate any differences between the results for education, age and gender.

Results:
- Ninety-nine percent had received education.
- Ninety percent of women reported difficulties experiencing at least one ADL compared to 51 percent of men.
- There was no significant difference between age group and ADL difficulties.
- Lack of formal education was associated with reporting difficulties in ADLs.

Conclusion: The tool proved useful in measuring compliance to the guideline and can be used as an application tool to the bioequivalence guideline.

P3.01
Developing a 2020 vision of the Magnetic Resonance Imaging service portfolio for Malta through a formal research process - initial results
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Introduction: The rapid expansion in imaging technology, changes in European legislation and role development aspirations of the various professions practicing within diagnostic and interventional imaging are leading to change in the role of diagnostic radiographers across Europe. In particular, in some countries radiographers are moving towards a higher role in the management of medical imaging service units devoted to the special modalities, ie, computer tomography, Magnetic Resonance Imaging (MRI), diagnostic nuclear medicine and diagnostic ultrasound. The same holds true in Malta where MRI radiographers also seek a higher role in the management of MRI units. However, such an elevated level role would require a level of knowledge, skills and competence which would involve substantial further learning. Owing to limitations on the time available for CPD activities it is proposed that such educational activities be tailored to the envisaged local MRI service portfolio.

Aim: The aim of this study is to develop a 2020 vision of the MRI service portfolio for Malta through a formal research process.

Methodology: The service portfolio is being developed through document analysis and semi-structured interviews conducted with representatives of the various stakeholders (policy makers, radiologists, radiographers, medical physicists, patient advocates, vendors’ representatives and referrers).

Results: The initial results arising from the interview data will be presented at the conference.

Conclusion: The results of the study would inform future CPD curricula for MRI radiographers in Malta.

P3.02
A study to evaluate women’s satisfaction of the Maltese breast screening programme
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Introduction: A large body of evidence has demonstrated that the physical, psychological and social aspects associated with, and resulting from, the screening process increase or decrease client satisfaction. Previous studies regarding client satisfaction with mammography screening have focused on diverse but specific aspects of the screening pathway, and although such studies have been undertaken in other European countries, local factors had never been explored since the local programme’s inception.

Aim: To evaluate local women’s satisfaction of the Maltese Breast Screening Programme (MBSP) in its prevalent call by evaluating factors that enhance and decrease client satisfaction while analyzing client experiences.

Methodology: Quantitative and qualitative methods were used through a telephone interview survey. Data was collected retrospectively from a purposively defined, random sample of 380 women born between 1950 and 1954, comprising those who received a normal result and those recalled for further tests. Thematic analysis was applied to women’s responses, which were grouped into five themes: accessibility, efficiency, perception, supportive care and acceptability.
Results: Women’s experiences of their screening appointment, care perception and overall programme were described in a very positive way, with the majority of clients willing to re-attend and recommend the programme. All clients were very satisfied with the unit’s environment. However, a minority of participants (29.74%) faced difficulties in accessibility, resulting in less programme satisfaction. A strong correlation was found between discomfort and pain. Those who found mammography ‘severely uncomfortable’ also found it ‘severely painful’ (67.6%), which had a less excellent result on client satisfaction. Women related this negatively to radiographers’ confidence, care and communication, coinciding with other findings. The radiographer’s gender was also an impacting factor to women’s screening adherence due to the intimacy of the procedure. More than half of participants experienced anxiety prior to mammography (56.3%) and higher anxiety (92.3%) when recalled. Although the majority were very satisfied with the overall communication, biopsied women were less satisfied than non-biopsied women. Nonetheless, the majority would re-attend and all clients would recommend screening to others.

Conclusion: Our results concur with earlier studies showing high satisfaction among women in other breast screening programmes. This study contributes to a holistic approach of client satisfaction at the MBSP and will assist the implementation of future strategies.

P3.04 Ultrasound assessment of the acute abdomen in the paediatric patient
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Aims: Radiological investigations play an essential role in the assessment of acute abdominal pathology. In the paediatric population, ultrasound is the first line investigation of choice as it is non-invasive, does not incur a radiation dose and has excellent spatial resolution. The aim of this presentation is to review the sonographic appearance of a variety of common and uncommon pathologic processes that may present with acute abdominal pain in the paediatric patient.

Method and materials: A retrospective review of cases discussed at the paediatric surgical multi-disciplinary team meetings in our centres was performed. Reports from these studies were analysed, with images of selected studies presented here as a pictorial review. MRI, CT and fluoroscopic imaging findings are also presented for correlation.

Results: A variety of causes of acute abdominal pain were identified, covering benign and malignant pathologies, uncommon pathologies and unusual presentations of more common conditions. The pathology encountered also varies depending on the age of the paediatric patient.

Conclusion: Ultrasound is a valuable tool in the evaluation of the acute abdomen in the paediatric patient. This pictorial review should encourage optimal use of the available radiological investigations for acute abdominal pathology and highlight the uses and limitations of this modality.

P3.05 An audit of neonatal ultrasound examination for developmental dysplasia of the hip
S. Zammit, S. Gnanappiragasam, C. Fernando, T. Azzopardi

Introduction: Developmental dysplasia of the hip (DDH) is an important cause of childhood disability. Its true incidence is unknown, largely because there is no ‘gold standard’ for screening or diagnosing the condition. In Malta, newborns are routinely assessed clinically for DDH soon after birth and again prior to discharge. Those who have known risk factor, or who are found to have a positive clinical finding suggestive of DDH, are referred for ultrasound screening. The aim of this audit was to assess the indications for ultrasound examination for DDH carried out in Mater Dei Hospital, Malta, and to assess the incidence of DDH.

Patients and methods: 77 ultrasound examinations for DDH were carried out in 69 patients (25 males, 44 females) aged 1 day to 33 weeks between 1st October 2011 to 31st January 2012 in Mater Dei Hospital. Out of 67 patients who were newly referred for ultrasound examination for DDH during the study period, 11 were re-referred for a repeat ultrasound. The PACS system was used to assess the indications for ultrasound referral and to access the results. The Graf classification system was used by the radiologists to evaluate the hips in screening for DDH, with Graf types Ia and Iib considered normal, and type IIa or more considered abnormal. Data regarding births was obtained from the Department of Health Information and Research. The data was organized in a Microsoft Excel sheet.
Results: The number of births in Mater Dei Hospital during these 4 months was 1318. 67 newborns were referred for ultrasound examination to exclude DDH. The indications for referral were at examination in 24 cases, for a breech presentation in 33 cases, and for another reason in 10 cases. The follow-up ultrasounds done during the study period were normal in 9 cases and abnormal in one patient who required treatment for DDH. This was a child with spina bifida.

Conclusion: The method of screening for DDH is controversial. Estimates of the incidence of DDH in infants vary between 1.5 and 20 per 1000 births. A study in which ultrasound examinations were performed in all newborns showed a sonographic DDH incidence of 69.5 per 1000. Our data shows an incidence of DDH of 0.76 per 1000 births, but a sonographic incidence of 9.1 per 1000, in selected high-risk patients. Clinical examination which includes the Barlow and Ortolani is essential in diagnosing pathological hips. Long term studies are awaited to determine whether universal screening of all babies with ultrasound in addition to physical examination would improve outcomes.

P3.06
Hip sonography for developmental dysplasia in a dedicated paediatric clinic: one year on
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Aims: To demonstrate the service uptake, provision and outcomes of sonography for possible Developmental Dysplasia of the Hip (DDH) in a ‘dedicated’ Higher Specialist Trainee led (Consultant Radiologist supervised) ‘Paediatric List’. To assess compliance with recommendations after Graf for the diagnosis and management of Disorders of Hip Maturation namely typing of hip as accurately and as early as possible.

Methods: The compilation of this study consists of a retrospective review of hip sonography for DDH at the Medical Imaging Department, Mater Dei Hospital, in a dedicated ‘Paediatric List’. The data collected includes total number of hip sonograms for DDH performed during the first year, analysis of supplied reasons for examination, imaging findings and typing after Graf.

Results: A total of 169 hip scans for DDH were performed on referral by Paediatricians and Orthopaedic Surgeons. The average age at initial imaging was 8.2 weeks. Clinical information was available for 168 of these scans. breech presentation was the indication for 44% (n=74) of scans. Abnormal clinical examination (Ortolani/Barlow/Abduction test positive) was the indication in 2% (n=3) but the presence of clicks on examination made up 29% (n=48). Other indications for assessment included family history of DDH (4%) and associated anatomical deformities e.g. club foot (4%).10 repeat scans for physiological immaturity were carried whereas evidence of a severely deficient bony roof (Type 2c) was demonstrated in 2 cases which were consequently treated in Pavlik harnesses and referred for ultrasound follow up. A single dented (Type D) hip was demonstrated in a baby with spina bifida. Out of 3 cases of older infants and children being referred for sonographic assessment for DDH at 22 weeks, 35 weeks and 9 years of age respectively, only one examination could be performed conclusively, as ossification of the nucleus of the femoral head rendered the modality impractical.

Conclusions: Average age of 8.2 weeks at initial assessment is in keeping with the standards set – recommendations stating that best results are attained when treatment is instituted prior to 12 weeks of age. The clinical indications for referral constitute the known risk factors for DDH in 94% (n=138 out of 147 initial scans with documented clinical details).

P3.07
Ionizing radiation for non-acute small bowel imaging in Crohn’s disease patients
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Introduction: Radiation exposure from diagnostic imaging of the small bowel is common in Crohn’s disease (CD) patients. Increased risk of malignancy has been associated with radiation exposure. For solid cancers this follows a linear-no-threshold model for leukaemia of 1 per 1000 Gy to a population of mixed ages, the life time attributable risk (LAR) of solid organ malignancy is 8 per 1000 of exposed persons for males and 13.1 per 1000 for females. This varies according to age of exposure - exposure to 100mGy at age 10 confers a risk of 1.23% for males (2.53% for females); at age 30 this is 0.6% for males (1% for females) and at age 50 it is 0.51% for males (0.68% for females). 100mGy exposure confers a LAR (in a linear-quadratic model) for leukemia of 1 per 1000 for males and 0.72 per 1000 for females. This varies from 1.2 per 1000 exposed males at age 10 (0.86 for females) to 0.84 per 1000 males exposed at age 30 (0.49 for females). The risk remains the same for males aged 50 and decreases to 0.30 per 1000 females exposed aged 50.

Aim: To determine the cumulative ionizing radiation exposure in mGy secondary to non-acute small bowel (SB) imaging in CD patients.

Methodology: Patients were identified from our database. Their SB investigations were extracted. Radiation exposure for the procedures was obtained from the Physics Division of the Radiology Department.

Results: 80 CD patients (males - 42 patients) were identified. The time since the diagnosis of CD varied from 41 years to 5 months (mean - 8.6 years). 56 patients (30 males) were exposed to ionizing radiation to image the SB. 15 male and 5 female patients had SB stricturing disease. 2 female patients had fistulising SB disease. Cumulative ionizing radiation secondary to non-acute small bowel imaging was as follows: <50mGy – 38 patients; 50-100mGy – 11 patients; 100-150mGy 6 patients; >150mGy – 1 patient.

Conclusion: 70% of the CD patients were exposed to diagnostic ionizing radiation to image the small bowel. This radiation exposure reached more than 50mGy in 15% of patients and more than 100mGy in 8.75% of our Study group. These results demonstrate the high ionizing radiation with the possible consequences that CD patients are exposed to throughout their lifetime. Thus we suggest that efforts should be done to image the small bowel by non-ionizing radiation such as MRI. In places where this is not available the request for ionizing radiation should only be done by specialists in close liaison with the radiologists.

P3.08
Measurement of eGFR before contrast enhanced computed tomography
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Introduction: Contrast induced nephropathy is a recognised complication of intravenous contrast administration in computed tomography (CT). Caution may be implemented if the estimated glomerular filtration rate is known prior to the procedure. This would allow the radiologist to decide prior to performing the CT scan whether contrast should be administered. It would also allow the referring doctor to decide on whether intravenous hydration is necessary prior to the procedure.

Aim: To determine how many CT requests have an invalid eGFR value at the time of request. An invalid eGFR was one in which no appropriate numerical value was provided.
Contrast induced nephropathy - audit of a vascular firm
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Introduction: Contrast induced nephropathy (CIN) is a recognised complication of contrast intravascular studies and it continues to be a common form of iatrogenic Acute Renal Failure, accounting for 11-12% of all cases. Our aim was to start the audit cycle for our practice and compare the rates with ones published in international literature.

Aim: To determine the incidence of CIN within patients of one vascular firm.

Methodology: Patients under the care of one vascular firm, who underwent a contrast study between June 2010 to April 2011 were included in the audit (firm database used). Creatinine levels before and after the procedure were recorded using iSoft® Clinical Manager. The percentage difference between the pre- and post-procedural creatinine was then calculated. CIN was taken to be an increase of more than 25% in creatinine levels.

Results: A total of 278 patients were included in the audit. 44.2% (n=123) of patients included were women whilst 55.8% (n=155) were male. Mean age was of 72.8 years. 45.8% (44) started with pre-procedure creatinine levels of more than 160µmol/l. 18.3% (34) had creatinine levels of more than 150µmol/l. 18.4% (n=115) of the patients exposed to contrast developed CIN. In addition, 41.4% (n=115) of the patients included had a reduction in their creatinine after contrast developed CIN. In addition, 41.4% (n=115) of the patients exposed to contrast developed CIN. In addition, 41.4% (n=115) of the patients exposed to contrast developed CIN.

Conclusion: Published literature quotes a percentage incidence of CIN in the range of 12-26% since most patients included had a reduction in their creatinine after contrast exposure. Our result of 18.3% is approximately 20% lower than the published rates. This is probably due to the low number of patients who had a significant increase in their creatinine levels.

Radiation awareness amongst clinicians in Malta
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Aim: To evaluate the knowledge of ionising radiation doses incurred during common imaging investigations among referring doctors at Mater Dei Hospital, Malta.

Method: An anonymous questionnaire was completed by doctors from different specialties and grades. The questionnaire comprised 11 multiple choice questions. 9 of these questions assessed the knowledge about ionising radiation doses imparted during different investigations, 2 questions concerned the risk of fatal cancer induction and 1 question dealt with the effects of radiation that comes with each imaging modality. Doctors were asked to fill in the questionnaire and immediately return to the surveyors. The participants were also asked whether they had received any formal training regarding ionising radiation.

Results: In total, 138 questionnaires were completed. The mean score (correctly answered questions) was 41%. All radiation doses imparted by investigations involving ionising radiation were underestimated. The underestimation factor was greatest for the dose of an abdominal radiograph (5.1). 9 and 34 clinicians incorrectly answered that an ultrasound of the
PACS, iSoft, Electronic case axis rotational angiography may prove to be an important doses of radiation, contrast and shorter acquisition time. Dual biplane machines. Thus, patients benefit by significantly lower contrast used, and acquisition time in both monoplane and values for dose area product, fluoroscopy time, amount of medical doses. (albeit not statistically significant due to the relatively small increase was less with dual axis rotational angiography compared to Conventional Coronary angiography showed that dual axis rotational angiography had lower radiation dose with patient body mass index.

**Aim:** To determine whether Dual Axis Rotational Angiography when compared to Conventional Coronary Angiography differs significantly: a) in radiation, contrast loads, and acquisition time, b) when comparing radiation dose with patient body mass index.

**Methodology:** Patients referred for the investigation of coronary artery disease. It utilises x-ray radiation and iodine, which should be kept to the minimum possible dosages while ensuring diagnostic accuracy. Dual Axis Rotational Angiography is an alternative technique wherein the C-arm rotates around the patient in a pre-programmed single acquisition, exposing the entire coronary artery at different angiulations.

**Results:** Tests comparing monoplane dual axis rotational angiography and biplane dual axis rotational angiography with monoplane coronary angiography and biplane coronary angiography showed that dual axis rotational angiography was significantly superior in almost all values measured (p<0.01). Percentage reductions ranged from 12% - 41% (contrast) to 14% - 71% (procedure time). Comparing dose area product with patient body mass index, demonstrated that while radiation dose correlated positively with the latter, the increase was less with dual axis rotational angiography (albeit not statistically significant due to the relatively small number of patients enrolled in the study).

**Conclusion:** Dual axis rotational angiography had lower values for dose area product, fluoroscopy time, amount of contrast used, and acquisition time in both monoplane and biplane machines. Thus, patients benefit by significantly lower doses of radiation, contrast and shorter acquisition time. Dual axis rotational angiography may prove to be an important milestone in the refinement of coronary angiography.

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**P3.13 Complications of percutaneous CT guided lung biopsies performed at Mater Dei Hospital between 2009 and 2011. E. Vassallo, A. Mizzi**

**Introduction:** CT guided lung biopsy is a relatively safe and accurate procedure to obtain histology of pulmonary lesions, usually those deemed inaccessible by bronchoscopy. In the literature the incidence of pneumothorax following biopsy varies between 0 to 61%. Locally the co-axial technique is the technique of choice. The advantage with the co-axial needle is that the pleura is pierced only once, still permitting multiple core biopsies to be obtained.

**Aim:** To audit the complication rate of percutaneous CT guided lung biopsies performed at Mater Dei Hospital.

**Methodology:** A retrospective audit was carried out taking into account all lung biopsies performed between 01/01/2009 until 31/1/2011. The necessary information was retrieved from the Radiology Information System. A total of 83 patients (64 men and 19 women; mean age, 68 years) with a pulmonary lesion/s, who underwent CT-guided lung biopsy were studied.

**Results:**
- Total number of lung biopsies = 83
- Total pneumothorax rate was 18/83 = 21.7% (compared to 20.5% in UK national survey – BTS guidelines)
- 1 case had needle aspiration 1/83 = 1.2%
- 3 cases had chest drain insertion 3/83 = 3.6% (compared to 3.1% in UK national survey – BTS guidelines)
- No mortalities complicated these procedures.
- Other complications included: haemoptysis (8.4%), pulmonary haemorrhage on CT (14.5%), procedure abandoned (1.2%).

**Conclusion:** The complication rate of CT guided lung biopsies are comparable to accepted rates in the literature.

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**P3.14 Audit of inferior vena caval filters, carried out in the Medical Imaging Department of Mater Dei Hospital between 2008 and 2012 S. Aquilina, A. Mizzi**

**Department of Medical Imaging, Mater Dei Hospital, Msida**

**Aim:** To audit insertion of Inferior Vena Cava (IVC) filters, carried out in the Medical Imaging Department at Mater Dei Hospital over a period of 4 years, to assess whether indications for insertion reflect current guidelines.

**Materials and methods:** PACS, iSoft, Electronic case summaries and clinical notes where analysed looking at indications in requests, source of referral, images, reports, complications (early and late), data of retrieval, type of filter used and level at which it was deployed, and site of access.

**Results:** 55 filters were placed with no significant year-on-year trend towards increasing use. Mean age for male patients was 58.1 years and for females 78.3 years. 65.5% of patients were referred from the Medical department, 30.9% from the Surgical department, 1.8% from ITU and another 1.8% from the Gynecology Department. All filters were inserted for absolute indications. 69.1% were required to prevent pulmonary embolism in patients who had Deep Vein thrombosis (DVT) and in whom anticoagulation treatment was contraindicated (active internal bleeding was the most common indication). 14.5% of filters were required in patients who, despite being on anticoagulation with INR within the therapeutic range, still suffered pulmonary embolus. 18.2% of patients required insertion of filter following development of complication to anticoagulation. Trapeze filter was used in 38.1% and Optease in 5.45% of cases, whereas in 56.4% of reports the filter type was not specified. No immediate or
late complications associated with the procedure or the filters were documented. 12.7% of filters were deployed above the renal vein, 58.2% were deployed below the renal vessels. No documentation regarding level of deployment was found in 30.9% of reports. The femoral vein was used as site of access in 55.4% of cases and jugular vein in 20.0% of cases. No records of site of access were found in 21.8% of cases. Sonographic guidance was documented in 5 cases however the reason for this was only specified in 2 cases. Filter retrieval was planned in 3 cases and carried out in 2 cases.

**Conclusion:** IVC filter insertion at the Medical Imaging Department in Mater Dei Hospital follows clinical practice guidelines described by the Society of Interventional Radiology. More detailed documentation of these procedures is required.

P3.15

**The compartment-based approach in spinal imaging**

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**Introduction:** Spinal pathology can present a diagnostic dilemma unless a careful methodological approach is followed. Presentation may occur in an acute setting and hence familiarity with a compartment-based approach is imperative.

**Aim:** To demonstrate how the anatomical spinal compartment affected by the pathological process can aid in narrowing the differential diagnosis and hence facilitate radiological interpretation.

**Methodology:** Typical radiological examples will be demonstrated in order to show how anatomical localisation can be performed on cross sectional imaging and how this may facilitate the diagnosis and management decisions. A differential diagnosis based on such localisation becomes an essential tool in image interpretation.

**Results:** A basic knowledge of spinal anatomy and radiological concepts is essential when imaging spinal pathology. Pathological processes may either occur within the spinal column or the central canal. Incidental findings outside the spine itself are not uncommon and should not be overlooked. The spinal canal can be divided into three anatomically distinct spaces, namely the intramedullary compartment, the intradural extramedullary compartment and the extradural (epidural) space. Localisation is not always straightforward and one should be familiar with radiological features that aid in determining the involved anatomical compartment. Familiarity with this technique allows the interpreting radiologist to utilise such a compartment-based approach which often proves to be a problem solver.

**Conclusion:** The ability to localise pathology to one of the main anatomical compartments is essential in spinal imaging. The radiologist needs to be familiar with a list of common differential diagnosis based on such a compartment-based approach.

P3.16

**Assessment of the diagnostic quality of PA chest radiographs based on anatomical image criteria**

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**Introduction:** Chest X-rays (CXRs) are common radiological investigations used to enable clinicians to image the heart, airways, lungs, blood vessels, vertebrae and bones, therefore helping with the diagnosis and management of patients.

**Aim:** The aim of this audit is to improve the quality of chest X rays in a local department in order to take full advantage of the information that this simple but effective method of investigation can provide. By improving their quality, clinicians will have a better chance of making an accurate and thorough assessment and therefore patient care will be improved.

**Methodology and standards:** Two hundred CXRs done at Mater Dei Hospital between July 30th and August 4th, 2012 were chosen randomly. Only PA views were included in the study and CXRs done in the acute period were excluded. The X rays were analyzed and compared to the guidelines issued by the American College of Radiology and the European Commission.

**Results:** More than 97% of studies followed 7 of the 10 criteria. However 12% of chest X rays had a poor inspiratory effort, 20% of studies showed patient rotation and 38% showed that patients were not in an optimal position as the mediastinal borders of the scapulae were not outside the lung fields.

**Conclusion:** Results show that the quality of CXRs still needs improvement. The implementation process is being carried out at present through education of colleagues by giving out leaflets and putting up posters of these guidelines. We plan to close the loop in three months time with the aim to show 100% adherence to guidelines and improve patient care.

P3.17

**Missed lung cancers in chest radiographs: A retrospective study of patients diagnosed with lung cancer in 2009 and their chest x-rays prior to diagnosis**

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**Introduction:** Chest x-rays are often the first imaging investigation carried out in patients with symptoms caused by lung cancer. Moreover, chest x-rays are commonly performed for other reasons and asymptomatic lung cancer may be incidentally discovered. Prompt identification of lesions on chest x-ray and recommendation of appropriate follow-up are of paramount importance if lung cancer is to be successfully treated at an early stage of the disease.

**Aim:** To assess reporting accuracy of chest radiographs in patients subsequently shown to have lung cancer and whether proper follow-up was recommended.

**Standard and targets:** Abnormality on a chest x-ray suggestive of malignancy should be reported as such and appropriate action recommended. In patients with proven lung carcinoma: 1) The lesion should be identified in >75% of chest radiographs performed within one year of the diagnosis; 2) When a lesion is reported, appropriate further investigation should be recommended in >95% of cases. These targets were used by the Royal College of Radiologists in the 2005 UK national audit.

**Methods:** 175 patients were diagnosed with lung cancer in Malta in 2009. This data was obtained from the Maltese cancer registry. Cases without a chest x-ray prior to the diagnosis and with metastatic lesions were excluded. In total, 119 cases and 275 chest x-rays were included in this audit. The x-rays were peer-reviewed and findings were compared to the original reports. Reports were categorized as adequate or inadequate depending on whether the lesion (if visible) was identified and whether appropriate follow-up was recommended.

**Results:** 71.4% of lesions were identified on chest x-ray within one year of diagnosis. Appropriate follow-up was recommended in 76.8% of cases. 13% of reports went unreported. Therefore both targets were not reached with a relatively large discrepancy noted especially regarding the recommendation of appropriate follow-up.
**Conclusion:** The main area of concern is the recommendation of appropriate follow-up investigations in the radiology report when suspicious lesions are identified on chest x-ray. Furthermore, a slight increase in the rate of identification of lesions is also desirable. Review of missed lesions in discrepancy meetings and the introduction of guidelines regarding recommendation of follow-up may help to improve the results of future re-audits. A separate audit about the rate of unreported x-rays was carried out in 2010, therefore the rate of unreported x-rays may have changed since then (re-audit is required).

**P3.18**
**To assess the ability of first-frame anterior planar data in DaTSCAN SPECT to distinguish normal from abnormal scans**

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**Aim:** To assess the ability of first-frame anterior planar data in DaTSCAN SPECT to distinguish normal from abnormal scans.

**Method:** The ratio of basal ganglia to background counts (BG/bkd) was calculated as the endpoint using first anterior planar 42-second frame in 38 SPECT studies. These studies consist of an equal number of abnormal and normal SPECT studies. They were compared to semi-quantification based on the full dataset using visual assessment by an experienced observer which is the gold standard. This was a blind study with one experienced and one inexperienced observer.

**Results:** There was a significant difference between the BG/bkd on the left and right sides between normal and abnormal scans for SPECT (p<0.001) and planar data (p<0.00001). The SPECT and planar BG/bkd ratios for 17 visually abnormal scans were below 1.4. The SPECT and planar BG/bkd ratios for 16 visually normal scans were equal to or above 1.4. There were 43 visually normal and abnormal scans that overlapped with a SPECT BG/bkd ratio above 1.4 and a planar ratio below 1.4. An unpaired T-test was used to show significant differences for data collected by inexperienced and experienced observers for normal and abnormal scans for SPECT and for abnormal scans for planar. There was no significant difference between data obtained by the inexperienced and experienced observers for scans in planar.

**Discussion:** Previous work has been conducted showing similar results but without any overlap. This may be due to previous work consisting of normal scans from healthy volunteers. However, this study obtained normal scans from patients referred to the nuclear department with similar symptoms to Parkinson’s disease. Also, consistent head positions were maintained by the same operator in the study. Nevertheless, the need for standardisation of semi-quantitative analysis is highlighted. The next step would be further investigation with experienced observers and standardised method.

**P3.19**
**Correlation between ultrasonographic characteristics of testicular tumours and histopathology**

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**Introduction:** Testicular tumours can be broadly divided into germ cell tumours (GCTs), accounting for approximately 95% of all primary testicular tumours, and non-GCTs, of which sex cord-gonadal stromal tumours make up the major part. GCTs are further subdivided into seminomas and non-seminomas.

**Aim:** To correlate the histopathological tumour types with the ultrasonographic characteristics of the testicular lesion.

**Methods:** All testicular US carried out within a 1 year period ranging from July 2011 to July 2012 were reviewed for the presence of testicular tumours. Images of the tumours obtained were assessed based on size, echogenicity, homogeneity and the presence of calcifications. Histopathological tumour types were obtained from histology reports following orchiectomy.

**Results:** 10 testicular tumours were found within this period; 5 seminomas, 4 non-seminomas and 1 non-GCT. Preliminary review of the characteristics of the lesions on US reveals an increase in heterogeneity and cystic appearance in non-seminomas compared to a homogeneous appearance displayed by seminomas. The period studied will be extended in order to obtain a greater sample for correlation.

**Conclusion:** US plays an important role in the diagnosis of testicular tumours. Analysis of the US characteristics of a testicular tumour may help predict the histopathological type, particularly in the distinction between seminomas and non-seminomas.

**P4.01**
**The potential role of the homeobox gene, Hhex in haematopoietic progenitor expansion**

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**Background:** The decision of an erythroid progenitor to proliferate or differentiate is regulated at the level of (i) transcription; (ii) recruitment of transcripts to polysomes for protein synthesis and (iii) signal transduction activating functional effectors. We utilized a factor sensitive erythroid progenitor cell model to study the gene expression profile of cells under proliferative signals. We have shown previously that translation control is an extremely important level of regulation that controls the balance between proliferation and differentiation of erythroid progenitors. This led us to investigate those transcripts that are shifted to polysomes in cells stimulated by erythropoietin (Epo) or stem cell factor (SCF).

**Aim:** to investigated the effect of growth factors on the expression of Hhex in erythroid progenitors.

**Methodology:** We utilized a factor sensitive erythroid progenitor cell model (11); murine foetal liver derived) to study the gene expression of cells under proliferative signals using SCF and Epo. In addition to total RNA, we isolated polysome bound mRNA transcripts. Sucrose gradients were used to centrifuge cell lysates at high speeds, separating free RNA from polysome bound RNA. Microarray experiments revealed a subset of transcripts that are regulated at transcription and those loaded on polysomes. Data was validated in a separate experiment using Real time PCR. To assess the function of Hhex, the coding sequence was cloned in a mammalian expression vector and overexpressed in
primary bone marrow cells. The transduced cells were plated in semi-solid media and colonies were counted after 5 days and one colony was assessed clonogenic potential.

Results: The transcription factor, Hhex is 15-fold upregulated upon addition of SCF. In addition, Hhex transcript is selectively recruited to polysomes upon SCF addition in a PI3K-dependent manner. Secondary plating showed a significant increase in colony number in the Epo sensitive and GM-CSF sensitive cells transduced with Hhex. Of interest the colony size was significantly increased when compared to control cells.

Conclusion: Our results show a potential role of Hhex in haematopoietic progenitor expansion, supported by the enhanced clonogenicity of primary murine cultures in both erythroid and myeloid lineages. To understand the mechanisms of Hhex deregulation, it is imperative to study its role at different maturity stages of lineage commitment and maturation. Hence, the expression and mechanism of Hhex function will be studied in human cellular models targeting various maturity stages, and in a cohort of Acute Myeloid Leukaemia (AML) patients representing different stages of maturity.

P4.02 Development of in vitro erythroblast cultures for transfusion purposes  
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Introduction: The demand for Red Blood Cell (RBC) transfusion is continuously increasing while the supply is not always sufficient. As there is no appropriate alternative to RBC transfusion, the in vitro manufacture of RBCs is a potential means to ensure an adequate and safe supply of blood products. Our previous studies developed an erythropoiesis model to culture human erythroblasts in vitro using media supplemented with Erythropoietin (Epo), Stem Cell Factor (SCF) and Dexamethasone (Dex) to allow survival, proliferation and self renewal capacity.

Aim: To enhance erythroblast growth capacity in vitro by constitutive activation of SCF and Epo signaling and investigating the cooperative mechanisms with Dex resulting in induced self renewal potential.

Methodology: Haematopoietic progenitors were isolated using Magnetic cell sorting. The CD34+ fraction was cultured in specific media and characterised by flow cytometry. The CD34- fraction was also kept in culture for transfusion purposes and maturation. Hence, the expression and mechanism of Hhex function will be studied in human cellular models targeting various maturity stages, and in a cohort of Acute Myeloid Leukaemia (AML) patients representing different stages of maturity.

Results: The erythroblast culture originating from the CD34- fraction was improved by a co-culture of a stromal cell layer. This co-culture showed enhanced proliferation and retained a mean erythroblast diameter of 9.5µm. In the absence of the stromal layer an erythroblast diameter of 8.5µm was obtained, with continuous cell purification. The transcription factor multiplex profile of cultured erythroblasts showed a specific transcription activation upon the addition of Epo and Dex inducing CREB and NFAT activity. The CD34+ cell culture retained an immature cell morphology and the capacity to differentiate into erythroblasts upon culturing in a selective media (ESD).

Conclusion: The identification of the co-culture system merits further investigation. Studying the mechanism of self renewal of erythroblasts and expression of Jak2 and eKit will assess the possibility of factor-independent growth of the blasts. The outcome could provide key insights into mass production of erythrocytes in culture which would eventually allow additional research for production of transfusion-compatible erythrocyte units.

P4.03 Novel technique to detect receptor tyrosine kinase mutants in core binding factor leukaemia patients  
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Aim: To characterize proto-oncogene tyrosine-protein kinase Kit (c-KIT) mutations associated with core binding factor (CBF) leukaemia patients using a new technique that allows the concatenation of exons into one amplicon followed by a single sequencing reaction.

Methodology: A cohort of 29 de novo Acute Myeloid Leukaemia (AML) patient complementary DNA (cDNA) was provided by the Haematology Department (Erasmus Medical Centre). Real-Time Polymerase Chain Reaction (RT-PCR) was used to amplify the fragments of interest in the c-KIT gene. The presence of the double-stranded DNA-binding fluorescent dye, EvaGreen® did not only permit to follow in real time the increase in DNA concentration but also to measure the rate of fluorescence loss at 0.1°C intervals, giving a High Resolution Melting (HRM) plot. Variations in exon 8 and 17 of the c-KIT gene were scanned by HRM analysis. In addition, primers were designed to amplify both fragments separately with overlapping primer ends. These amplicons were then subjected to a second amplification by PCR and the resulting concatenator was then sent for sequencing.

Results: CBF alterations were identified in 52% (n=15) of the 29 AML patients. A total of 8 inversion (inv) (16) and 7 translocation (1) (8;21) mutants were characterised. Three c-KIT mutations identified in the cohort by HRM, co-occurred with CBF inv (16) translocation. Sequencing of the c-KIT concatenator, following the newly established procedure described in this study, showed the presence of an exon 8 deletion and 2 point mutations on exon 17 (both Asp816Val), confirming the HRM results.

Conclusion: The innovative method utilized in this study allows simultaneous sequencing of fragments amplified from different parts of the genome. The use of this technique to identify c-KIT mutants in core binding factor leukaemias, provides the tool to develop multiplex pharmacogenetic screening using the sequencing technology.
P4.04
Optimisation of abiraterone based non-steroidal lead molecules
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Introduction: Management of castration resistant prostate cancer is limited by androgen receptor reactivation resulting in loss of remission. Significant improvement was witnessed in April 2011 Food and Drug Administration with the approval of CYP17A1 inhibitor abiraterone for use in combination with prednisone for metastatic castration resistant prostate cancer treatment. Recent study indicated that abiraterone exhibits antagonist activity towards the androgen receptor in addition to CYP17A1 inhibition. Abiraterone must be given with a low dose glucocorticoid in order to avoid side effects that would otherwise result from an accumulation of ACTH including fluid retention, hypokalaemia, and hypertension.

Aim: Through this study we report the use of abiraterone as a lead molecule in the de novo design of novel non-steroidal AR antagonists suitable for long term management of prostate cancer.

Methodology: Metribolone has demonstrable in vitro and in vivo high affinity for the AR thus this computed figure was established as a benchmark against which the affinity of abiraterone and de novo designed non-steroidal molecules could be compared. Molecular modelling of abiraterone was carried out in SYBYL and involved the removal of moieties extraneous to the 3-pyridyl group in order to allow freedom of growth within the ligand binding pocket of the androgen receptor. This process effectively represented an attempt to eliminate the steroidal backbone inherent to abiraterone with consequent elimination of the steroidal side effects associated with their long-term use.

Results: Binding affinities of abiraterone manually superimposed onto the steroidal scaffold of metribolone (pKd 7.16) and abiraterone that was allowed limited rotation (pKd 7.23) were comparable to metribolone (pKd 7.44). The de novo structure generated an 8 analogue molecular series with affinities ranging between 5.26 and 7.23.

Discussion: The value of this study stems from the fact that the abiraterone moiety associated with CYP17A1 inhibition was retained in a de novo exercise that aimed to identify novel non-steroidal structures bearing a similarity to abiraterone, but which also showed high affinity for the androgen receptor. The implication of this is that these identified novel structures would have the potential to simultaneously inhibit CYP17A1, hence mimicking the identified mode of action of abiraterone, as well as the androgen receptor- consequently retaining the traditional approach to prostate cancer management.

Conclusion: This study generated sufficient analogues that may be proposed for further molecular optimisation to yield innovative non-steroidal high affinity molecules with superior side-effect profiles for the management of prostate cancer.

P4.06
Familial febrile seizures (FEB): identification of a novel genetic locus on Chromosome 20
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Aim: Epilepsy is a chronic disorder of the CNS characterised by recurrent seizures unprovoked by an acute systemic or neurologic insult, and by neurological, cognitive, psychological and social consequences. Genetic factors are suspected to have greater influence in idiopathic rather than symptomatic epilepsies. Causative mutations in genes have been found for several single-gene conditions such as familial febrile seizures (FEB). A previous genetic study in a Maltese family had isolated a region on chromosome 20 as being of interest in such conditions. The aim of this study was perform a linkage study to fine tune the region by using short tandem repeat markers.

Method: Thirteen family members were studied. Seven members had a phenotype compatible with FEB. Fluorescent methods were used to genotype STR markers at an average spacing of 2cM on chromosome 20. The genetic position of markers given in cM using the deCODE map. This involved a total of 332 genes, from D20S1085 to the end of the telomere. Multipoint parametric and non-parametric linkage analysis were also undertaken. PCR optimisation for the 7 primer pairs at 4 different temperatures was undertaken using an ABI 9700 thermal cycler. Forward and reverse primers were designed using the reference sequences of the NCBI transcript.
Results: A region of about 5 cm with a total of 84 genes was identified, i.e., a narrowing by 48 genes on cytogenic band 20q13.3. The area was identified as being that of a coding gene for Nkain4 family proteins. These proteins may function as subunits of pore or channel structures in neurons or affect the function of other membrane proteins.

Conclusion: Loss-of-function mutations in Na+ channels and loss of sodium currents can cause epilepsy, most likely due to decreased function of inhibitory neuron. No specific disorders have yet been associated with this gene. This study has identified a novel locus of interest and thus a better understanding of FEB.

P4.07 Optimization of an imaging cytometry protocol to observe the cellular distribution of haemoglobin F in F-erythrocytes


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Introduction: Haemoglobin (Hb) contains two α-like and two β-like globin chains. Around birth, a shift from γ- to β-globin gene expression causes a switch from fetal haemoglobin (HbF) to adult haemoglobin (HbA). Residual amounts of HbF are synthesized throughout life, in some erythrocytes termed F-cells. Carriers of mutations for hereditary persistence of fetal haemoglobin (HPFH) show variably elevated (10-40%) HbF levels; they are otherwise normal. Increased HbF levels ameliorate symptoms of β-haemoglobinopathies (β-thalassaemia, sickle cell anaemia). Krüppel-like factor 1 (KLF1) plays a central role in the developmental globin gene switching mechanism; KLF1 haploinsufficiency is one cause of HPFH. The exact cellular mechanism of HPFH and the variation in HbF levels expressed are as yet unexplained; the latter may be due to differential expression of modifier genes acting in concert with KLF1 to regulate the switch. The KLF1 interactome can be further defined by identifying potential molecular targets and observing their expression at the cellular level in comparison with HbF expression and distribution in F-cells. To date, the mean corpuscular HbF (MCHbF) is estimated by dividing the amount of HbF, determined by high-pressure liquid chromatography, by the number of F-cells, obtained by flow cytometry. Since HbF may not be equally distributed among F-cells, an imaging cytometry protocol enables the quantification of HbF in each F-cell based on fluorescent emission measurements.

Aim: To optimize a fluorescence imaging cytometry protocol to observe individual F-cells for HbF.

Methodology and results: An intracellular anti-HbF antibody-labeling technique was optimized for use with the Nikon Eclipse Ti inverted fluorescence microscope. It was used on fresh whole blood samples of individuals with normal haematological parameters to quantitatively observe individual F-cells for the presence of HbF to assess its distribution, by comparing the imaging results to those obtained by flow cytometry. A list of potential molecular targets was also obtained by analysis of expression data from previous studies, to be used in further fluorescence cell signalling protocols for comparison of target expression with HbF expression and distribution.

P4.08 An in depth evaluation of a novel series of semi-synthetically designed ACE inhibiting molecules

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Introduction: Crataegus monogyna is mainly used in the treatment of cardiac and circulatory system disorders. In vitro and clinical studies are indicative of the fact that the hydroethanolic extract of Crataegus monogyna has ACE inhibitory activity.

Aim: This study sought to establish whether or not the nature of the bound template ligand, in this case enalaprilat and lisinopril, yields new and alternative information regarding the possible binding modalities of the active principles of the triterpene extract of Crataegus monogyna.

Methodology: The X-ray crystallographic depositions 1UZE and 1O86 describing the bound co-ordinates of enalaprilat and lisinopril with ACE respectively were used. Possible binding conformations for β-amyrin, oleanolic acid and ursolic acid were generated using enalaprilat and lisinopril as template ligands. The Ligand Binding Affinity (LBA) of each was calculated and the best binding conformation of each tripepe was established.

Results: Results indicate that these naturally occurring terpenes possess in silico predicted ligand binding affinities that are superior to both the small molecule captorpril and the larger molecules enalaprilat and lisinopril.

Conclusion: The hypothesis that the triterpenic extract of Crataegus monogyna has ACE inhibitory activity was further corroborated.

P4.09 The role of tumor necrosis factor-receptors in pregnancy with normal and adverse outcome

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TNFα receptors, TNF-R1 and TNF-R2, mediate the biological activities of the multifunctional cytokine, tumor necrosis factor alpha, TNFα. These receptors have a central role in human pregnancy. Although each receptor induces distinct intracellular signals, they also have cooperative and overlapping effects. The membrane bound TNF-R1 carries out most of the pro-inflammatory activities of TNFα, especially those that are rapid, while TNF-R2 is involved in the late long-term effects of this cytokine. The soluble forms of these receptors can bind to TNFα, neutralizing its effects. In normal human pregnancy, TNFα receptors are present in the maternal circulation, placenta, amniotic fluid, and coelomic cavity. Changes inTNFα and its receptors are associated with adverse pregnancy outcomes, including miscarriage, preterm labor and pre-eclampsia. Advances in anti-TNFα therapy may have potential use in the management of complicated pregnancies.
A novel method for the therapeutic drug monitoring of chiral fluoxetine in biological samples

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Aims: Fluoxetine, a chiral molecule administered as a racemic mixture of its enantiomers, (R)-fluoxetine and (S)-fluoxetine, is a selective serotonin reuptake inhibitor. The main metabolite of fluoxetine in the body is the demethylated product norfluoxetine. The pharmacokinetics of fluoxetine are complex since it has a long half-life and norfluoxetine, which is also pharmacologically active, has an even longer half-life. The side effects of fluoxetine may be severe and its use in paediatrics and adolescents is debatable. Fluoxetine is mainly metabolised by CYP2D6 enzymes in the body and its analysis in plasma is a challenging task. The aim of this research was to develop a novel, and reproducible method for the separation and measurement of the enantiomers of fluoxetine and norfluoxetine to assist in therapeutic drug monitoring of this drug.

Method: A novel high-performance liquid chromatographic technique was also developed for the analysis of norfluoxetine in urine and saliva of psychiatric patients admitted at the Psychiatric Unit of Mater Dei Hospital. The samples were extracted by liquid-liquid extraction, using either chloroform or hexane in alkaline environment as the primary extracting agents and after derivatisation, derivatised norfluoxetine was quantified on a C18 column. The derivatisation reagents consisted of o-phthalaldehyde and fluorescamine. Norfluoxetine-o-phthalaldehyde and fluorescamine molecular complexes were measured by absorbance at 340nm, while norfluoxetine-fluorescamine molecular complexes were measured at 390nm.

Results: Intraday and interday analysis for the technique proved acceptable. The HPLC technique was applied in the determination of cumulative urinary excretion studies. Cumulative amount of norfluoxetine excreted by three patients was equal to 39,489ng, 136,707ng and 32,617ng respectively. Correspondingly, half-life of norfluoxetine in these patients was equal to 390,75,395,395 and 295,346,346 respectively. The rate constant of norfluoxetine in these patients was equal to 75,395mgh/L, 295,346mgh/L and 99,602mgh/L respectively. The rate constant of norfluoxetine in these patients was equal to 99,602mgh/L, 295,346mgh/L and -0.00609h respectively. Correspondingly, half-life of norfluoxetine in these patients was equal to 113.4h, 113.8h and -0.00611h respectively.

Conclusion: No linear relationship between in vitro and in silico LBA data could be established. The de novo designed analogs families contain novel structures with the inbuilt prerequisites of affinity, predicted bioavailability and hydrophilicity. The identified optimum conformation of each considered statin was then used in order to create seed structures which were planted into the rosuvastatin bound co-ordinates and 3D volume occupied by rosuvastatin. Molecules were allowed movement and single bond rotation within the LBP that allowed identification of the highest affinity conformers. The de novo designed molecules represent viable leads for iterative optimisation which could lead to the identification of novel high potency, low side effect profile drugs. It is consequently planned to include these in a molecular library for further use.

Design of novel 3-hydroxy-3-methylglutaryl-CoA reductase inhibitors

D. Formosa

Introduction: In humans cholesterol is derived from its de novo biosynthesis in the liver. The process requires more than 20 enzymatic steps that involve 3-hydroxy-3-methylglutaryl-CoA reductase (HMGR). HMGR is a transmembrane protein which catalyses the conversion of 3-hydroxy-3-methylglutaryl-CoA (HMG-CoA) to mevalonate. Cholesterol is one of the products in the mevalonate pathway; consequently, inhibition of the conversion of HMG-CoA to mevalonate inhibits cholesterol biosynthesis.

Aim: This project targeted the HMGR in an in silico drug design study which aimed to identify new analog series of molecules with the potential for development into novel hypercholesterolaemic drugs with higher bioavailability, ligand binding affinity, synthetic feasibility and a low side effect profile.

Method: Study 1- Crystallographic depositions describing a complex of the catalytic portion of HMGR bound to rosvastatin(1HWL), atorvastatin(1HWK), simvastatin(1HW9), fluvastatin(1HWD) and cerivastatin(1HWJ) were identified from the Protein Data Bank (PDB). The ligands were separated from their respective cognate ligand binding pockets (LBP) and their in silico predicted binding affinity for the respective complexes was estimated using SCORE®. In vitro inhibitory rate constant (Ki) data of all these ligands for the HMGR were obtained from literature reviews and a graph of log in vitro binding affinity against the log in silico predicted (pkd) data was plotted, in an attempt to establish a correlation between the two variables. Study 2- All the statin molecules used in the study were guided into the rosuvastatin bound conformation of the HMGR based on the bound co-ordinates and 3D volume occupied by rosuvastatin. Molecules were allowed movement and single bond rotation within the LBP that allowed identification of the highest affinity conformers. The identified optimum conformation of each considered statin was then used in order to create seed structures which were planted into the rosuvastatin bound co-ordinates of the HMGR_LBP. Novel structure growth was then allowed within the LBP in a user driven modality, taking into account Lipinski’s Rule of 5 and log P parameters of rosuvastatin.

Results: In vitro inhibition constant Ki data of all these ligands for the HMGR were obtained from literature reviews and a graph of log in vitro binding affinity against the log in silico predicted (pkd) data was plotted, in an attempt to establish a correlation between the two variables. Study 2- All the statin molecules used in the study were guided into the rosuvastatin bound conformation of the HMGR based on the bound co-ordinates and 3D volume occupied by rosuvastatin. Molecules were allowed movement and single bond rotation within the LBP that allowed identification of the highest affinity conformers. The identified optimum conformation of each considered statin was then used in order to create seed structures which were planted into the rosuvastatin bound co-ordinates of the HMGR_LBP. Novel structure growth was then allowed within the LBP in a user driven modality, taking into account Lipinski’s Rule of 5 and log P parameters of rosuvastatin.

Conclusion: The de novo designed molecules represent viable leads for iterative optimisation which could lead to the identification of novel high potency, low side effect profile drugs. It is consequently planned to include these in a molecular library for further use.
drug of interest and their target receptor was depicted. Entries in the protein data bank (PDB) were searched for. The allied receptor of a particular drug ligand was identified from here and consequently read into VMD®, a computational program that allows molecular modelling. These drug molecules where then constructed in 3D from scratch using Sybyl-X®.

Results: Five graphical representations demonstrate results obtained in this study so far. Each drug was depicted in its 2D/3D format, and were applicable its apo and holo form, and the specific drug residing in its ligand binding pocket were also demonstrated.

Conclusion: With the introduction of novel drug design principles into the overall pharmacy stream, it followed naturally that the inclusion of various visual aids improved the traditional approach of tuition of such a subject. In fact, with the help of educational media tools and various teaching methods, educators have embraced such a challenge in teaching this subject.

P4.13 NOD2/CARD15 mutations and phenotypic expression of Crohn’s Disease in Malta
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Background: Crohn’s disease (CD) is a chronic inflammatory disorder of the gastrointestinal tract with variations in localization and behaviour. Mutations in the NOD2/CARD15 gene on chromosome 16q have been implicated in the pathogenesis of the disease and three main sequence variants, all single nucleotide polymorphisms (SNPs), have been identified in North American and European populations. Data from mainland Europe has demonstrated a prevalence of 25-50% within CD patients. The genetic structure of the Maltese population includes Near Eastern, Arab, Mediterranean and North African genetic components.

Aims: The aim of the study was to analyse the prevalence of the Arg702Trp, Gly908Arg and Leu1007fsinsC mutations in the NOD2/Caspase- activation recruitment domain 15 (CARD15) gene and their correlation with the phenotypic expression in Maltese CD patients.

Method: Patients with a histological diagnosis of CD were consecutively recruited. Their phenotypic features, medications, investigations, surgical interventions were recorded in a dedicated database. All patients were genotyped for Arg702Trp, Gly908Arg and Leu1007fsinsC.

Results: 83 patients (42 female) were recruited. Their current mean age was 39 years (7-73 years). They had CD duration post-diagnosis of 8.98 years (range: 12 months to 32 years). 80.7% of patients were having immunomodulator (IM) therapy. 26 patients were being administered azathioprine; 8 patients were being administered methotrexate; 15 patients were being administered Infliximab and 18 patients were on dual IM therapy - azathioprine and infliximab. 16 patients were having 5-ASA as their only medication. 24.1% (20) of CD patients required surgery due to their underlying disease. In total, they had 27 surgical interventions. Extra-gastrointestinal manifestations were present in 21.7% of patients. 10 patients (12%) had genetic mutations: Arg702Trp-3 patients; Gly908Arg – 3 patients and Leu1007fsinsC – 4 patients. Comparative analysis of phenotype characteristics and the above genetic mutations did not demonstrate any relationship between the presence of these mutations and disease location, disease behaviour, age of onset and the use of immunomodulator treatment. However patients with the NOD2/CARD15 mutations were more likely to require CD related surgery (p = 0.01 – Fisher exact 2-tailed test) than those patients without any mutations.

Conclusions: In our study group only 12% of our patients had one of the mutations. Confidence intervals (quadratic equation of Fliess) demonstrated a statistically lower prevalence of the NOD2/CARD15 mutations compared to other European populations (p < 0.05). This data from Maltese patients with CD demonstrates the low prevalence of this mutation in our population when compared to other European countries. Our future research on the innate immune pathway will be directed towards TLR4 and CARD 9 mutations.

P4.14 Prevalence of the common coding variant rs2241880 of the ATG16L1 gene in Maltese Crohn’s disease patients
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Introduction: In Crohn’s disease the ATG16L1 (rs2241880) polymorphism affects Paneth cells and impairs autophagosome formation specifically after activation of nucleotide-binding oligomerisation domain 2 (NOD2). Studies from Europe, Australia and New Zealand have shown an increased frequency of the ATG16L1 rs2241880 SNP allele in Crohn’s disease patients versus controls while studies from Korea, Japan and East Asia revealed no positive association of this gene with Crohn’s disease.

Aims and methods: We have studied the prevalence of the ATG16L1 rs2241880 polymorphism among Maltese Crohn’s disease patients and age-matched controls and the association between the ATG16L1 genotype and phenotype of these patients. 83 patients diagnosed with Crohn’s disease through histological, radiological and endoscopic findings and 91 controls were recruited. Genotyping for the common coding variant rs2241880 of the ATG16L1 gene involved:

DNA extraction (whole blood)
• Gradient Polymerase Chain Reaction (PCR)
• PCR
• Quantitative PCR (qPCR) and High Resolution Melt (HRM) for exon 9 (Thr300Ala) of the ATG16L1 gene with rs2241880 primers using 5X Hot FirePol® EvaGreen® qPCR Mix Plus
• Restriction Fragment Length Polymorphism (RFLP) with the SfaiNI/Lwle enzyme (to confirm the HRM results)

Results: 7% of the Crohn’s population were homozygous, 53% were heterozygous and 40% were wild type for the rs2241880 variant versus 14%, 50% and 36% of the control population. There was no statistical difference in the prevalence of the rs2241880 mutation between control and Crohn’s disease populations (χ² p=0.328). The phenotypes of patients with different ATG16L1 polymorphisms were then compared. There was no statistically significant difference in gender (χ² p=0.623), disease location (Fisher’s exact test p=0.885), disease type (Fisher’s test p=0.205), and patients on azathioprine (χ² p=0.394) or on biologicals (χ² p=0.437). Only the age at diagnosis was significantly different (Fisher’s test p=0.047) between the 3 subgroups.

Conclusion: Susceptibility genes differ among Crohn’s disease populations in different geographical regions. In Malta there was no significant difference in the prevalence of ATG16L1 mutant genes between Crohn’s and control populations. A similar pattern to that found among European populations would be expected in Malta, though a comparison with North African populations would be interesting to carry out.
**P4.15**

**Identification of microRNAs contributing to neuroblastoma chemoresistance**

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**Background:** The emergence of the role of microRNAs (miRNAs) in exacerbating drug resistance of tumours is recently being highlighted as a crucial research field for future clinical management of drug resistant tumours. The purpose of this study was to identify dys-regulations in expression of individual and/or networks of miRNAs that may have direct effect on neuroblastoma (NB) drug resistance.

**Methods:** Individual subcultures of chemosensitive SH-SY5Y and UKF-NB-3 cells were rendered chemoresistant to doxorubicin (SH-SY5Y, UKF-NB-3) and etoposide (SH-SY5Y). In each validated chemoresistance model, the parental and subcultured cell lines were analysed for miRNA expression profiling, using a high-throughput quantitative polymerase chain reaction (RT-qPCR) miRNA profiling platform for a total of 668 miRNAs.

**Results:** A total of seven miRNAs were found to be differentially expressed (higher than 2-fold change) within all three NB chemoresistance models. Four miRNAs were upregulated in the subcultured chemoresistant cell line. Three miRNAs were found to be downregulated in the chemoresistant cell lines for all models.

**Conclusions:** Based on the initial miRNA findings, this study elucidates the dys-regulation of seven miRNAs in three separate NB chemoresistant cell line models, spanning two cell lines (SH-SY5Y & UKF-NB-3) and two chemotherapeutic agents (doxorubicin & etoposide). These seven miRNAs may thus be possibly linked to chemoresistance induction in NB. Such miRNAs are good candidates to be novel drug targets for future miRNA based therapies against aggressive tumours that are not responding to conventional chemotherapy.

**Disclosure:** A US patent application was based on this data.

**Aim:** The purpose of this study was to investigate the incidence of increased Akt activation in triple negative breast cancers in Malta by immunohistochemical staining, and the effect of FTY720 on the activation of Akt in two human breast cancer cell lines.

**Methodology:** A serine-473 Akt1 antibody (p-Akt (S473)) was used to investigate the activation of Akt in triple negative breast cancer cases in the Maltese population. Scoring of stained sections was performed on the basis of intensity. Furthermore, the effect of FTY720, a pharmacological activator of the phosphatase PP2A which negatively regulates Akt activity, on the activity of Akt in two human breast cancer cell lines: MCF-7 and HCC1937, was investigated. This was tested under conditions of starvation, and also Akt stimulation by IGF-1 using In-Cell Western blotting. HCC1937 was of particular interest since it is also negative for ER, PgR, and HER2, and is known to have enhanced Akt activity.

**Results:** 27% of triple negative breast cancer patients had an elevated level of p-Akt (S473). FTY720 at a concentration of 1µM, which did not affect cell viability, was shown to suppress Akt activation in MCF-7 and HCC1937 cells subjected to IGF-1, an activator of Akt.

**Conclusion:** The subset of triple negative having elevated Akt activation (27%) would be eligible for treatment using therapies which target the PI3K/Akt pathway, such as kinase inhibitors or phosphatase activators. The in vitro experiment using FTY720 suggests that it is a potential drug for use in adjuvant therapy in breast cancer cases having a high p-Akt (S473).

**P4.16**

**P-Akt as a biomarker of a subset of triple negative breast cancer patients potentially sensitive to the pp2a activator, FTY720**

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**Introduction:** The most commonly used biomarkers to predict the response of breast cancer patients to therapy are oestrogen receptor (ER), progesterone receptor (PgR), and HER2. Patients positive for these biomarkers are eligible for specific therapies including anti-oestrogen therapy for ER and PgR positive patients, and trastuzumab, a monoclonal antibody, in the case of HER2 positive patients. Patients who are negative for all three biomarkers, the so-called triple negatives, however, derive little benefit from such therapies and are associated with a worse prognosis. The PI3K/Akt pathway has been found to be activated in triple negative breast cancer cases, providing a possible target for therapy. Patients having an elevated activation of the PI3K/Akt pathway could benefit from therapies targeting this pathway. Possibilities include using inhibitors of the PI3K/Akt pathway, or drugs which activate phosphatases involved in the pathway such as FTY720 which activates the phosphatase PP2A.

**Aim:** Defining disease risk groups through quantification of genetic heterogeneity across single cells and populations of chronic myelogenous leukaemia cells

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**Introduction:** Chronic myelogenous leukaemia (CML) occurs following expansion of a cell population that has acquired a BCR-ABL fusion gene. Primitive CML cells are less responsive to tyrosine kinase inhibitors (TKIs) and treatment forms a reservoir of tyrosine kinase resistant subclones. These subclones have been shown to include a resistant population with high BCR-ABL mRNA and protein expression. Adherent subclones with high diversity in BCR-ABL expression may therefore be important in development of residual disease. Previous studies have analysed bulk cell populations but the significance of BCR-ABL expression heterogeneity at the single cell level is unknown. To investigate the nature and significance of such heterogeneity we measured BCR-ABL levels (genomic, mRNA and protein) in K562 cells in both single and bulk cell populations in adherent and non-adherent cells.

**Aim:** The purpose of this study was to identify dys-regulations in expression of gene expression in single and/or network of genes that may have direct effect on neuroblastoma (NB) drug resistance.

**Methodology:** A serine-473 Akt1 antibody (p-Akt (S473)) was used to investigate the activation of Akt in triple negative breast cancer cases in the Maltese population. Scoring of stained sections was performed on the basis of intensity. Furthermore, the effect of FTY720, a pharmacological activator of the phosphatase PP2A which negatively regulates Akt activity, on the activity of Akt in two human breast cancer cell lines: MCF-7 and HCC1937, was investigated. This was tested under conditions of starvation, and also Akt stimulation by IGF-1 using In-Cell Western blotting. HCC1937 was of particular interest since it is also negative for ER, PgR, and HER2, and is known to have enhanced Akt activity.

**Results:** 27% of triple negative breast cancer patients had an elevated level of p-Akt (S473). FTY720 at a concentration of 1µM, which did not affect cell viability, was shown to suppress Akt activation in MCF-7 and HCC1937 cells subjected to IGF-1, an activator of Akt.

**Conclusion:** The subset of triple negative having elevated Akt activation (27%) would be eligible for treatment using therapies which target the PI3K/Akt pathway, such as kinase inhibitors or phosphatase activators. The in vitro experiment using FTY720 suggests that it is a potential drug for use in adjuvant therapy in breast cancer cases having a high p-Akt (S473).
Results and conclusion: Continuous passage of K562 cells in suspension demonstrated presence of a small fraction (K562 cells 5% + 2.1%) to be adherent to culture plastic ware (K562/Adh). BCR-ABL gene amplification was present in K562 cells (approx 13 fusion signals per cell) by FISH, with no significant difference in copy number between K562/Adh and K562/NonAdh (p=0.822). qPCR analysis of genomic DNA from K562/Adh and K562/NonAdh showed an increase in BCR-ABL gene copy numbers in both relative to the Jurkat cells, with no statistical significance (p=0.117). RT-qPCR showed upregulation of BCR-ABL mRNA in K562/Adh cells compared to K562/NonAdh in both single and bulk cells (p<0.0001). PLA and flow cytometric assays displayed higher expression of phospho-BCR-ABL protein in K562/Adh cells than K562/NonAdh cells. These results demonstrate, at both the single and bulk cell level, existence of an adherent subpopulation of K562 cells with higher level of heterogeneity in mRNA and protein expression of BCR-ABL which are resistant to Imatinib, suggesting the possibility that a similar subpopulation of cells in CML may cause clinical resistance.

P4.18
Association of the A1330V polymorphism of the low-density lipoprotein receptor-related protein 5 gene with bone mineral density and fracture risk in Maltese postmenopausal women

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Introduction: The Low-density lipoprotein receptor-related protein 5 (LRP5) is involved in osteoblast differentiation, making it an important determinant of bone mass and strength. The single nucleotide polymorphism, SNP (C>T) at position 1330 in exon 18 results in a missense substitution of alanine to valine (A1330V) which has been associated with low bone mineral density (BMD) and increased fracture risk.

Aim: To investigate the influence of the A1330V polymorphism on BMD and different low-trauma fractures in Maltese postmenopausal women.

Methodology: 1043 women between 40 and 79 years were recruited and their BMD measured by dual-energy X-ray absorptiometry. Subjects without a history of a fragility fracture were subdivided in three groups: normal (n=223), osteopenic (n=271), and osteoporotic (n=282) according to their BMD. The remaining 267 were fracture cases who had a normal (n=12), osteopenic (n=107) or osteoporotic BMD (n=148). Genotyping was performed by polymerase-chain reaction and restriction enzyme digest.

Results: The genotype distributions were as follows: normal controls CC (78%), CT (21%), TT(1%); osteopenic subjects CC (78%), CT (20%), TT (2%); osteoporotic subjects CC (68%), CT (28%), TT (4%); and fracture cases CC (69%), CT (27%), TT (4%). In the total study group, the A1330V SNP was associated with reduced lumbar spine BMD (TT: OR 2.8 [0.9-8.7], p=0.07; CT: OR 1.7 [1.2-2.6], p=0.01). Women without a fracture history had an increased risk of osteoporosis when carrying one or both copies of the minor allele T (CT: OR 1.6 [1.0-2.4], p=0.04; TT: OR 10.6 [1.4-80.5], p=0.03). No significant difference was observed between osteopenic subjects (without fractures) and normal controls. When comparing fracture cases to normal controls, women carrying CT/TT genotypes had an increased fracture risk than women with the CC genotype (CT: 1.6 [1.0-2.4], p=0.05; TT: OR of 8.3 [1.0-67.0], p=0.05). All fracture cases homozygous for the T allele had an osteopenic or osteoporotic BMD; fracture risk was partly attenuated by BMD adjustment (TT: OR 2.5 [0.2-27.7], p=0.45) and remained unchanged in carriers of the A1330V SNP (CT: OR 1.4 [0.7-2.8] p=0.31). The TT genotype was the most common among subjects with a wrist, humerus or hip fracture; however the difference was not significant (p>0.05).

Conclusion: The results indicate that the A1330V polymorphism is associated with reduced BMD and increased fracture susceptibility in Maltese postmenopausal women.

P4.19
Inflammatory cytokines in maternal circulation and placenta of chromosomally abnormal first trimester miscarriages

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The impact of abnormal placental karyotype on the inflammatory response within the villous tissue and peripheral circulation of women with miscarriage was evaluated. Villous (n=38) and venous blood samples (n=26) were obtained from women with missed miscarriage. Tissue chromosome analysis indicated 23 abnormal and 15 normal karyotypes. Concentration of tumour necrosis factor alpha (TNFa), TNF-R1 and TNF-R2, and interleukin (IL)-10 were measured using flow cytometric bead array in fresh villous homogenate, cultured villous extracts, culture medium, maternal whole blood, and plasma. Plasma TNFa/Il-10 ratios were significantly (p<0.05) lower in miscarriages with abnormal karyotype. In the normal karyotype group, there were significantly higher levels of TNFa (p<0.01), IL-10 (p<0.01), TNF-R1 (p<0.001), and TNF-R2 (p<0.001) in the villous extracts and culture-conditioned medium compared to normal karyotype group. In miscarriage with abnormal karyotype, there is an exacerbated placental inflammatory response, in contrast to miscarriage of normal karyotype where maternal systemic response is increased. Our data illustrate that the mechanisms leading to amiscarriage may depend on the karyotype of the conceptus. We suggest that there is a local functional disturbance in the karyotypically abnormal placental tissue while, in the case of a normal karyotype miscarriage, rejection occurs due to a maternal systemic inflammatory response.

P5.01
Audit of suspected breast cancer referrals to breast clinic

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Introduction: The latest NICE guidelines published in April 2011, set standards about features suggestive of possible breast malignancy and referral timelines for different breast complaints. It divides referrals into urgent and non-urgent; urgent cases should be seen within two weeks of referral. In Malta, patients presenting with breast problems are usually referred to the breast clinic, which has been set up more than ten years ago to provide specialist surgical assessment of such patients.

Aim: The primary aim of this audit was to assess whether referrals for suspected breast cancer were in line with the referral guidelines issued by the NICE in April 2011.

Methodology: 113 random referral tickets of women reviewed at the breast clinic between July and December 2011 were analysed.

Results: Two of the patients referred were male and the mean age of the sample was 50.5 years. 60.2% of suspected breast cancer referrals were found to have a history or examination findings indicative of possible breast malignancy. Of these, 4 patients (6.7%) were seen within the
two week target. The commonest reason for referral was lone breast pain (23.7% of referrals), followed by a non-significant or unclear family history of breast cancer (20.4%). 59.3% of referrals were signed by general practitioners, while the referred was illegible or lacking enough contact details in 23.9% of the tickets. Findings on breast examination were documented in only 46% of the tickets. 41.6% of the referring doctors specifically requested mammography to be done.

**Conclusion:** Woman with breast-related concerns often present to general practitioners. These women should be assessed for possible red flags in the history and examination which may be indicative of possible breast malignancy, and if present, they should be referred promptly for specialist review. Unnecessary referrals increase wait time for patient evaluation at the breast clinic. Referral tickets must include the features suggestive of possible breast malignancy, examination findings, and contact details. This audit indicates that the quality of referrals to breast clinic is suboptimal.

**P5.02** Compliance to Breast multidisciplinary team meeting (MDT) decisions

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**Background and aim:** Multidisciplinary team meetings (MDT) have been the mainstay of breast cancer management in Malta for the last 10 years. Evidence has shown improved results in units where an effective MDT is in place. The aim of this study was to look at deviations from MDT decisions and identify ways of maximizing compliance.

**Method:** 56 patients discussed at the MDT over a 5 week period were studied. The decision taken at MDT was compared to the management as derived from the patient notes. Any deviation from the management plan was analysed as to type and reason for change.

**Results:** Full compliance occurred in 77%. Non-compliance in 9 (16%) out of 31 patients was patient-driven. Refusal of investigation occurred in 2/13 patients (15%). Deviation in planned surgical procedure in 8/13 patients, half of these patients driven, 3 had axillary clearance performed instead of sentinel node biopsy due to technical problems and one did not have an immediate reconstruction as planned due to delays in obtaining adequate implant. The remaining 3 patients refused chemotherapy.

**Conclusion:** Significant deviations to MDT decisions are mainly patient driven. Compliance may be improved by better organization of sentinel lymphnode harvesting and more patient involvement in decision taking through a named Breast Care Nurse.

**P5.04** Number of wires required for median sternotomy closure

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**Introduction:** The use of biomechanical techniques can help model the forces that act on median sternotomy closures and determine the mechanisms of median sternotomy dehiscence. This can guide changes in sternal wiring techniques in order to reduce the appreciable morbidity and mortality of median sternotomy dehiscence.

**Aim:** To model the human thorax and use this model to quantify the forces on the rib cage and sternum. The model could help determine the mechanism behind sternal dehiscence.

**Methodology:** The model was based on measurements from CT scans of 8 randomly chosen male Maltese thoracic cavities. The CT data was compared to ideal ellipsoids. The magnitude of thoracic forces on coughing was modelled using finite element analysis (FEA) techniques based on an ellipsoid shell.

**Results:** An FEA model of the thorax was successfully created using CT measurements of the dimensions of the rib cage for eight subjects. The subjects’ dimensions had no statistical difference using a single factor ANOVA test. The correlation between chest wall measurements from CT data and ideal ellipsoids was significant (p < 0.001) and showed a close fit (correlation coefficient 0.99 for both thoracic minor and major semi-axes). There was a significant correlation (p < 0.001) between circumferential rib load and rib level with a progressive increase on rib load on the sternum from the first to seventh rib. A conventional closure of six sternal wires could delishe due to moments pivoting at the manubrium of the sternum when subjected to prolonged maximal coughing, leading to wire-cutting through bone occurring maximally at the lower end of the sternum.

**Conclusion:** The human chest wall closely fits an ideal ellipsoid shape. During coughing, the circumferential force at the lower end of the chest is double that of the upper part. The increased stress caused by the lateral pivoting action of the lower ribs in the costal margin, leads to increased bone stress in the lower sternum, explaining the increased risk of dehiscence in the lower part of the sternotomy. Biomechanical stability of the standard six wire sternal closure could be improved by the addition of 1 to 2 extra wires located towards the lower end of the sternum.
**P5.05**

**Broviac or Portacath: a patient’s perspective**

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**Introduction:** Vascular access for the administration of drugs or blood withdrawal is a common problem in patients undergoing chemotherapy. Two tunneled modes of venous access are used in our unit, namely the Broviac catheter with an entry point in the anterior chest wall, and the Portacath, a totally implantable device. We carried out a survey in order to gauge patient satisfaction or otherwise with these devices.

**Methods and materials:** Telephone interviews were conducted with 20 patients in group A (Broviac) and group B (Portacath). The patients’ data was anonymised. Statistical analysis was performed using Excel software (Microsoft, Redmond, USA). Pearson’s chi squared test was used to assess differences between categoric variables and students t test was used to assess differences in populations. Differences were considered significant for p values less than 0.05.

**Results:** In group A, a total of 28 lines were inserted: 16 patients received one line, one patient received 2 lines, 2 patients received 3 lines and one patient received 4 lines. The average use of a Broviac catheter was 3.3±1.9 months. In group B, each patient received 1 line. The average use of a Portacath was 5.1±3.3 months (p=0.013). Line blockage was experienced in 13 patients in group A and 4 patients in group B (p=0.004). Inability to withdraw blood was experienced in 3 patients in group A and 2 patients in group B (p=NS). Line infection resulted in explantation of the device in 7 patients in Group A (once in 2 patients, twice in 2 patients, 3 times in 2 patients and 4 times in 1 patient) and in one patient in group B (p=0.012). Six patients in group A and 2 patients in group B felt their body image was affected (p=NS). Fifteen patients in group A and none in group B felt restricted with bathing, swimming or some other exercise (p<0.0001). Two patients in group A and one patient in group B curtailed their socializing because of their device (p=NS). Nineteen patients in group A and 18 patients in group B said they would accept another similar device if the need arose (p=NS).

**Conclusions:** Patient satisfaction was high in both groups. The Portacath was used for a longer period of time and was less prone to blockage and infection. Patients with the Portacath were able to partake in certain activities, which were not possible with the Broviac.

**P5.06**

**A national major amputation register for Malta**

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**Introduction:** The human dimension of major lower limb amputations, the cost of prosthetic fitting and supply together with the labour intensive rehabilitation process that follows major limb amputation surgery instigated efforts for the setting up of a National Amputee Register. The main objective of such a register was to allow assessment of resource requirements through accurate documentation. The National Major Amputation Register was designed to provide the information required to allow for future planning of resources requirements.

**Aim:** To collect data at various points in the care pathway of patients undergoing major limb amputation. These include surgical milestones, rehabilitation milestones and functional outcomes achieved at the end of the process.

**Methodology:** A multidisciplinary task force was set up including all stakeholders from both the inpatient and outpatient setting, medical social work and representatives of the local Amputee Association. The task force determined the data to be collated. An Access database with over 45 different fields was set up. All patients undergoing major limb amputation in Malta and Gozo were entered into the register as from 1st June 2010. All data in this database was entered by the health care professionals treating the patients and collated prospectively.

**Results:** One of the goals of this taskforce is in fact to review, analyse and discuss the data collected. The total number of patients throughout this 2 year period was that of 160 patients with the biggest number being transtibial amputations. The eldest patient on the database was 100 years old and the youngest 15 years of age with the mean age being that of 71 years. The average length of stay at MDH was that of 24 days with 77 days being the longest stay and 3 days the least stay. This information and other information when discussed with other fields of the register gives clearer ideas of outcomes being achieved at the end of rehabilitation and helps in planning services whilst identifying gaps in the services.

**P5.07**

**Foam sclerotherapy: the Maltese experience**

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**Objectives:** To describe demographics and outcomes of a new sclerotherapy (FS) service for venous disease at Mater Dei Hospital, Malta.

**Methods:** A consecutive series of patients undergoing FS were prospectively entered into a database and the results analysed. Medical notes of patients were also reviewed. Patients underwent detailed venous duplex scanning before and after each intervention and at follow-up visits.

**Results:** 121 patients underwent a total of 204 FS procedures between November 2008 and October 2011. 74% were female and 78% of the procedures were done in female patients. 151 (74%) of procedures were done in patients above the age of 50 years. 74 (37%) interventions were for recurrent varicose veins and 113 (55%) for chronic venous insufficiency (CEAP4-6). 77 (38%) patients had active or healed venous ulceration as the indication for treatment. 83% of ulcers healed after foam sclerotherapy during the follow up period. 88.3% (143/162) of veins treated were completely occluded while 11.7% (19/162) were partially occluded. In the majority (64%) only one treatment session was required. One patient sustained an anaphylactic reaction to the sclerosant. No deep vein thromboses, cardiovascular events, pulmonary embolism or other major complications were reported. Skin staining was reported in 21.5% of cases.

**Conclusions:** Foam sclerotherapy is a safe and cheap treatment modality resulting in high rates of venous ulcer healing and successful venous occlusion and a very low complication rate. The success rate of foam sclerotherapy in Malta is comparable to that reported in the literature.

**P5.08**

**Problems post-angiography - a prevention proforma**

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It was observed that junior doctors at a busy District General Hospital were uncomfortable assessing post-angiography patients. A problem compounded by often being the first doctors asked to carry out this assessment. It had separately been observed that documentation of the post-angiography assessment was often incomplete, with important examination findings missing. With the input of a senior vascular consultant, a proforma was created for junior doctors to use when assessing patients post-angiography. A survey of junior doctors was then carried out to investigate whether the proforma had assisted them in safely performing and adequately documenting their post-angiography
assessment. Doctors were also asked to rate their confidence in performing a safe post-angiography check before and after using the proforma. Twenty-nine junior doctors participated in the survey, of which 100% felt more confident and 93% less worried in assessing patients post-angiography using the proforma, and felt it enabled them to document their findings quickly and clearly. Furthermore, utilising the proforma, confidence in performing a safe post-angiography check had improved, on average, from 4.5/10 to 8.2/10. The audit highlights the importance of standardised proformas in ensuring safety when assessing patients. Junior doctors were particularly aided by this proforma, which increased their confidence to carry out safer, quicker and more thorough post-angiography checks, and to document their findings clearly and comprehensively. This systematic assessment and clear documentation will also improve communication between teams, whilst ensuring junior doctors alert senior doctors more quickly where appropriate. This could prevent serious adverse affects and improve patient safety overall.

**P5.09**

**An audit on cadaveric kidney transplants in Malta**

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**Objective:** Formal assessment of progress and success rates of cadaveric kidney transplants in Malta over the past years are few and far between. Comparing results with data from similar work abroad will help identify variations in overall management as well as surgical technique, especially in the light of some differences, including the tissue cross match method. Therefore, the aims set out were: to audit the demographic data of patients undergoing renal transplants; to assess the success rates of renal transplantation; to assess post operative follow up and surgical complications; to obtain baseline data for comparison with data of future transplants.

**Methods:** A retrospective review of patients who underwent renal transplants was carried out. The time period was from May 1999 to January 2011. All patients who underwent cadaveric renal transplants during this period were included in the review – 86 patients with adequate documentation were collected. iSoft, the Electronic Case Summary, Medical notes, electronic records, blood bank data, renal unit registers and theatre registers were used for data gathering.

**Results:** Donor age ranged from 13 to 69 years, whilst recipient age varied from 25 to 70 years. A number of co-morbidities were documented, with a large amount suffering from cardiovascular-related problems. Causes of renal failure included Polycystic Kidney Disease (15%) and Glomerulonephritis (13%), whilst 50% were idiopathic or undocumented. Local mortality rate compares well with that of data from abroad, whilst failure rates (65% in Malta vs 67% in UK over 10 years) are difficult to compare due to low numbers as well as changes in technique – for example in the UK – over the years, with subsequent changes in prognosis. Notably, a higher failure rate with kidneys with a longer cold ischaemic time (CIT) was identified (failed transplants: mean of 16.3 hours CIT, successful transplants: mean of 11.1 hours CIT), whilst warm ischaemia times were uniform throughout the majority of the procedures.

**Conclusion:** Larger numbers and longer time-span are needed to delineate differences in survival rates over time; significance of CIT vs graft survival; significance of recipient age vs graft survival; significance of abnormal anatomy vs graft survival and >10 year graft survival A prospective study, taking into account the various factors that influence graft survival and post-operative complications needs to be carried out to afford better data and complete the audit cycle.

**P5.10**

**Urinary catheterisation in surgical wards: does our practice follow published guidelines?**

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**Introduction:** Urinary catheterisation is a relatively safe procedure with a variety of indications for its use. This procedure can however lead to patient discomfort and urinary tract infection with consequent increase in health care cost and sepsis.

**Aim:** The aim was to analyse whether patient file documentation on the 4 surgical wards in a hospital in central Scotland show adherence to published guidelines: the National Health Service (NHS) 2004 best practice statement on Urinary Catheterisation and Catheter Care.

**Methodology:** In this cross-sectional study, patients with an indwelling urinary catheterer (n=44) were identified on a daily basis over a 2-week period. Relevant sociodemographic data and documentation asked for by the standard guidelines were collected prospectively. The data were then analysed with descriptive statistics.

**Results:** Indication for catheterisation was annotated in 30 (66.7%) of the cases. A pre-catheterisation needs assessment was documented for 22 (50%) patients while evidence of discussion with patient and whether the patient deems catheterisation as beneficial was found in 4 (9.09%) and 7 (15.91%) files, respectively. Patient consent was only documented once. Details of the catheter package were attached to the file in 19 (43.18%) cases, whilst catheter size featured in 21 (47.73%). 3 catheter-associated complications were reported (2 catheter obstructions and 1 catheter-associated urinary tract infection). The overall adherence to all the 8 criteria analysed was 22.15%.

**Conclusion:** The study shows that documentation, especially when it comes to patient involvement and comfort, is not always available. Data collection and accurate documentation should be given more importance as a means of interdisciplinary communication and handover. Catheterisation should be used as a last resort, consented for and well documented so as to prevent complications and ensure patient comfort.

**P5.11**

**Alternate day dosing of 5 alpha reductase inhibitors for the treatment of benign prostatic hyperplasia: a retrospective review using PSA as a surrogate marker of prostate size**

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**Aim:** To analyse the effect of alternate day dosing of 5α-reductase inhibitors on serum PSA levels.

**Introduction:** Benign Prostatic Hyperplasia (BPH) is a common, chronic condition which is becoming more prevalent in view of changing population demographics. Long-term pharmacological treatment is the recommended first line therapy for BPH, with 5α-reductase inhibitors (5αRIs) playing an important role. The effect of daily dosing on prostate volume and serum PSA levels in patients with BPH has been extensively researched, but date on the effect of alternate dosing PSA levels is lacking. In the local setting, alternate dosing of 5α-reductase inhibitors is common practice, usually because of financial constraints.

**Method:** Men with clinically diagnosed BPH on alternate dose 5α-reductase inhibitors, who presented to Urology Outpatient Clinic over a period of 6 months, were recruited. A retrospective review of serum PSA levels was performed using
serial serum PSA levels as a surrogate marker of prostate volume. The patients were first treated with a daily dose of dutasteride and PSA was recorded as well as a second PSA reading near the end of the daily dosage period. A third and final PSA reading was recorded while the patients were on 5αRIs alternate day dosing.  

Results: 55 patients were included in the study, 9 patients had incomplete data in their medical notes and thus were not included in the final analysis. The mean age of the patients was 73.3 years (SD+ 7.2). Patients were treated with conventional daily dosing for a mean of 294 days (range 94 to 649). The mean pre-treatment PSA was 6.58ng/ml (range 0.73 - 44.00). The mean PSA after the daily dosage period was 3.42ng/ml (range 0.16-16.2). The mean PSA during a continuation of treatment with alternate daily dosing dutasteride was 2.44 (range 0.46-2.84). There were no patients who returned to daily dosing after they were started on an alternate day regimen.  

Conclusion: PSA has been shown to correlate with prostate size, as well as being an important marker of progression in BPH. 5αRIs has been shown to improve BPH symptoms and are standard treatment of this condition. Our study has confirmed a 50% reduction in PSA by 5αRIs as well as a sustained effect with long term treatment. Switching to alternate day dosing does not seem to alter this sustained effect but maintains the same reduction in PSA levels seen with a daily regimen.

P5.12 A review of scrotal exploration for suspected testicular torsion  
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Introduction: The definitive diagnosis of testicular torsion can only be made through urgent surgical scrotal exploration. Salvage rates are directly correlated with the number of hours after the onset of pain and testicular viability is considerably reduced after 4-6 hours of ischaemia.  
Aim: To improve our management of suspected testicular torsion.  
Methodology: 80 patients older than 5 years who underwent urgent scrotal exploration for suspected testicular torsion from 2004 till 2009 were identified from the operating theatre records and the urological departmental database. The duration of scrotal pain prior to emergency department registration was recorded from patient’s history. The intervals from admission to assessment by emergency officer and from urological assessment to operation were calculated. The time of operation was documented and taken as the time of commencement of anaesthesia. Documentation of the history (acute onset of pain, post trauma, post strenuous activity, post coital, irritative symptoms and family history) and physical examination findings (testicular lie, pain, cord thickness and pain, cremasteric reflex, scrotal erythema and epididymal pain), investigations (dipstick urine test and ultrasound testes) were analysed. The operation findings were taken from the operation sheet.  
Results: Patients’ ages ranged from 5 years to 42 years. 52% were in the 11 to 16 year group. 58% had scrotal pain for more than 24 hours before seeking medical help. Only 39% cases had both the urologist review timing and time to operation documented. Of these 41% took more 60 minutes for time of commencement of surgery. 58% lacked complete recording of the history. 40% lacked complete recording of the physical findings. Ultrasound is not requested in the majority of the cases. Dipstick urine test was missing in up to 52% of total. The risk of orchidectomy was specifically documented on the notes or consent form in 87.5% cases. From the operation sheets 33 (41%) had torsion of the testicular appendage, 17 (21%) had torsion testicle, 15 (18%) had epididymitis, 11 (13%) were normal, 2 (2%) had abnormal mass and 2 (2%) had varicoceole.  

Conclusion: Time of delay of treatment occurs mostly in the prehospital phase and time to transfer to surgery. The lack of complete documentation revealed by this retrospective analysis prompt the need to formulate a dedicated documentation sheet.

P5.13 Our experience with the Habib laparoscopic bipolar radiofrequency device  
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Introduction: During the laparoscopic partial nephrectomy (LPN) haemostasis is performed by clamping the renal hilum. Potentially prolonged ischaemia leads to irreversible damage. The Habib 4x, allows LPN without hilar clamping.  
Methodology: 13 patients (7 males, 5 females), with exophytic renal lesions, underwent Habib X4 LPN. There was 1 case which was converted to open and was excluded.  
Results: The average haemoglobin drop was 1.58g/dL. There was no significant difference between the mean pre- and postoperative serum creatinine levels. 9 of the resected masses were malignant and 3 were benign. Of the 9 malignant lesions only one had a positive margin. Documented complications are 1 patient had transfusion, 1 patient needed stenting post op and 3 patients complained of pain over the incision. Average hospital stay post operation is 8.5 days. On follow-up imaging (ultrasound or CT scans) of up to 6 to 12 months, there were no recurrences documented.  
Conclusion: The Habib 4x laparoscopic device allows the resection of exophytic renal lesions without the need for hilar clamping. The main disadvantage is the difficulty in interpreting the resected specimen.

P5.14 Urology outreach – providing excellence in urological care  
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Introduction: The demand on hospital beds and inpatient service over the last years has been ever increasing. Urology Outreach (UO) aim is to improve patient’s quality of life, release bed capacity and improve access for those patients who need specialist attention and/or hospital admission. At the moment the service is provided in the hospital as an outpatient service but the ultimate goal is to provide such service in the patient’s home. UO at this stage is only run by one nurse who had several years of training in the urology wards.  
Methodology: Between January and July 2012, there was a monthly increase in the number of patients using the UO. A total of 675 patients have utilised the service of which 304 attended for a trial without catheter (TWOC). A random sample of 165 patients (54%) of the TWOC population was chosen and a phone based questionnaire was done to evaluate patient’s general impression of the UO service. Each patient had to answer 5 questions. Each question was graded from 0 (poor) to 10 (excellent). The scaling system was explained to each participant. The first three questions reflected the waiting, the provision and the facility aspects of the UO. The remaining questions focused on the strengths and weaknesses of the service. The results were grouped into excellent (9 to 10), above average (8), average (5 to 7), below average (4) and poor (0 to 9).  
Results: Out of the 165 phone calls only 150 answered the phone and completed fully the questionnaire. 86.33% stated that the waiting time was short. 98% think that the service provision was excellent. 94.3% stated that outpatient service facility met to the full their needs. Individualised
attention was the strength of the service whilst the lack of staff and occasional out of stock items were the main weaknesses.

Conclusion: Overall it seems that UO is achieving its main goal in improving our urological care. In addition the monthly increment of attendees reflects a reduction in the number of day ward attenders, with resultant increase in the time that ward nurses can allocate to the in-patients, a shift of specialized services, the provision of evidence based patient and staff support, and individualized educational encounters with the aim of reducing the need for acute admissions. Unfortunately the domiciliary service has not taken off yet but the above results are encouraging us to attain such a goal.

P5.15
A comparison study of the effect of laparoscopic cholecystectomy in acute cholecystitis and chronic cholecystitis
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Introduction: Nowadays, laparoscopic cholecystectomy (LC) is widely considered as the most popular operative technique in case of chronic cholecystitis (CC). Despite the fact that LC was considered as contraindication method for acute cholecystitis (AC) not long ago, early LC, due to all breakthroughs in medical sciences and technology, is practicable in majority of AC cases.

Aim: The aim of this retrospective study was to review the results of early LC in AC as compared to chronic cholecystitis (CC). Methodology: within the period between April 2006 and May 2011, 264 LC were performed for cholecystitis patients in hospitals affiliated to Babol Medical University, Babol, Iran. The primary demographic and surgical information were collected. The conversion rate, length of hospitalization, early and late surgical complications were also investigated.

Results: Out of 264 patients, 38(14 males, 24 females) had AC and 228 patients had CC (46 males, 180 females). Pancreatic and cholangitis was seen in 35 (15.49%) and 18 (7.96%) patients with CC respectively. Also 5 (2.21%) cases showed gallbladder hydrops. The mean age for patients with AC was significantly lower than that of CC cases (36.3±14.8 vs. 51±11.5; p<0.05). The length of operation for the patients with AC was statistically higher than patients with CC (38.63 vs. 27.4 minutes; p<0.001). It must be stated that conversion to open surgery was considered in 15.8% and 4% of the patients with AC and CC respectively (p=0.004). Needless to say, adhesion was the major reason for conversion to open surgery (5 patients in AC and 8 in CC). Also there was no significant difference between AC and CC patients with regard to such post surgery early complications as vomiting, Nausea and shoulder pain (p>0.05).

Conclusion: Although patients with AC, as compared to those with CC had significantly longer operation time and higher conversion rate, early LC for acute cholelithiasis patients is still safer and more practicable. As it is regarded an appropriate treatment to prevent gallstone caused complications such as pancreatitis, cholangitis, or gallbladder hydrops that consequently reduce the length of hospital stay or re-admissions, early Laparoscopic cholecystectomy can be considered as an appropriate choice for patients with AC before an open surgery.

P5.16
An audit on sodium replacement, intravenous fluid prescribing and electrolyte monitoring
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Objective: To meet the daily maintenance requirements, adult patients should receive a total of 50-100 mmol/day sodium, 40-80 mmol/day potassium and 1.5-2.5 litres of water by the oral, enteral or parenteral route (or a combination of routes). Careful monitoring should be undertaken using clinical examination, fluid balance charts, and regular weighing (when possible) to decrease patient morbidity and mortality. The aim of the audit was to assess the fluid balance and sodium (Na) prescriptions in the immediate post-operative period after major abdominal surgery.

Methods: 20 patients who underwent elective or emergency major abdominal surgery were sequentially and prospectively reviewed. The time period was two weeks (2nd to 16th July 2012). Follow up was done for 3 days post operatively. Medical notes and iSoft were used for data collection. A standardised collecting form was used for data collection.

Results: There were 15 males and 5 females (mean age – 63.2 years). The weight was not recorded in neither of the patients. 14 procedures were elective whilst 6 were emergency procedures. The most common procedure was laparotomy for adhesiolysis with or without bowel resection (7 patients). The average input of intravenous (IV) fluid was 2.8L/day and the average output was 1.7L/day. Missing records were encountered during data collection. The average fluid balance was positive 1L/day. The mean serum Na ranged from 137mmol/L to 139mmol/L. The daily Na prescription ranged from 524mmol/day to 637mmol/day. The most common IV fluids used was Hartmann’s solution on the day of surgery and post operatively the most common fluid used was Ringer’s Lactate solution. Not all patients had daily serum electrolyte monitoring done post operatively.

Conclusions: The audit shows that accurate prescription of IV fluids is lacking since missing data was encountered during the data collection. Due to the positive fluid balance, increased patient morbidity can occur due to the possible risks of fluid overload. Recording of patients’ weight was lacking and this is needed for accurate fluid prescriptions and monitoring. The audit showed that the daily Na prescription was excessive when compared to international guidelines. More awareness is needed for fluid prescriptions and better monitoring is required to avoid increased patient morbidity and mortality caused by inappropriate fluid prescriptions.

P5.17
Obesity and breast cancer in Malta - any link?
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Purpose: The objectives were twofold; to establish whether a relationship exists between body mass index (BMI) and breast cancer in Maltese women and to investigate any association between BMI and tumour oestrogen receptor expression.

Method: The clinical and socio-demographic details of a sample of women with breast cancer operated in 2010 by a single firm at the Breast Clinic at Mater Dei Hospital Malta were analyzed, dividing the group into oestrogen receptor positive (ER+) and negative (ER-) subgroups. The average BMI of each subgroup was compared to the mean BMI of a sample of the general Maltese female population. Subsequently, the relation between oestrogen receptor expression and each of menopausal status, age and BMI was statistically analyzed.
P5.18
Postoperative hypokalaemia: should potassium supplements be administered routinely
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Introduction: Various post-operative factors such as third-space fluid losses may predispose to hypokalaemia. Postoperative hypokalaemia may consequently lead to cardiac arrhythmias, myalgia, paralysis and rhabdomyolysis.

Aim: To determine whether surgery is associated with hypokalaemia and whether potassium supplements should be given routinely postoperatively.

Methodology: 62 consecutive patients were recruited from four surgical wards in a Teaching Hospital in Central Scotland. Each patient was categorised according to surgical speciality: general surgery, orthopaedics, hepatobiliary, urology and ENT. Patients’ sociodemographic data as well as data regarding perioperative fluid input and any relevant drug history, in particular diuretic therapy, were collected prospectively. Preoperative and postoperative (day 1-4) serum potassium levels were recorded.

Results: Out of the 62 patients, 64.5% (n=40) suffered from a drop in serum potassium levels in the postoperative period, of whom 22.5% (n=9) were hypokalaemic (K+<3.5mmol/L). The hypokalaemic group were all aged over 60 years. Only 1 of the 62 patients had preoperative hypokalaemia. In the 40 selected patients the mean preoperative potassium was 4.26mmol/L while the mean postoperative day 1-4 potassium was 3.81mmol/L. A statistically significant difference was noted between preoperative and postoperative potassium levels (p<0.0001).

37.5% (n=15) of patients were on diuretics namely loop and thiazide diuretics. The largest group of patients 35% (n=14) with a drop in potassium followed orthopaedic procedures.

Conclusion: Hypokalaemia is an important and common electrolyte abnormality in surgical patients. The majority of postoperative patients suffered from a significant decrease in potassium levels. Thus, it is essential that serum potassium is monitored daily in the postoperative period. On the basis of these results we recommend that potassium is administered routinely after orthopaedic procedures, especially in the elderly. Following major general surgical operations in high-risk groups, such as the elderly and patients on loop diuretics, early postoperative potassium administration should be actively considered.

P5.20
Distal rectal mobilisation through a transanal single port device
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Introduction: Laparoscopic assisted rectal mucosal or intersphincteric sleeve resection is challenging and technically demanding. The shape and rigidity of the bony pelvis limits manipulation with conventional straight laparoscopic instruments. The confined space especially in the male pelvis limits visualisation, and the guiding bony landmarks used in open surgery are unavailable due to lack of tactile sensation. Exposure and mobilization of the most distal part of the rectum can also be hazardous to the sphincter complex.

Aim: To propose the use of a single port access device placed in the muscular anal canal, after distal incision of the mucosal or intersphincteric sleeve at the appropriate level, to facilitate dissection without sphincter damage.

Method: All patients treated by a laparoscopic-assisted transanal single port rectal mobilization were included in the study. Incision of the endopelvic fascia and mobilization of the distal rectum and mesorectum was performed via the single port device under direct control, using conventional straight laparoscopic instruments. The created pneumoretroperitoneum further facilitates laparoscopic dissection of the more proximal part of the rectum.

Results: Four female patients with a median age of 54 years (range: 51-89) had this procedure. Indications were intractable supralevator fistula, Crohn’s proctitis with tubulovillous adenoma, a circumferential tubulovillous adenoma, and faecal incontinence. In 3 patients a hand-sewn colo-anal anastomosis was made, while in the fourth patient a proctectomy with end colostomy was performed.
In one patient, a pure transanal rectal sleeve resection was completed without laparoscopic assistance. There were no postoperative complications and median hospital stay was 7.5 days (range: 5-9). Pathology showed tubulovillous adenoma in 2 cases. None of the patients reported any anal dysfunction at a median follow-up of 6 months.

**Conclusion:** The aforementioned procedure is a promising tool in the armamentarium of the colorectal surgeon. It can enable distal rectal mobilization under direct visualisation.

**P5.21 How useful is Carcinoembryonic Antigen in detecting colorectal malignancy?**

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**Background:** Carcinoembryonic Antigen (CEA) is one of the most widely used tumour markers. Unfortunately, a common practice in everyday clinical medicine is the use of CEA by physicians and general practitioners to look for colorectal carcinoma (CRC) in patients with non-specific gastrointestinal symptoms.

**Aim and method:** The aims were: (1) To determine the percentage of patients with a histological diagnosis of CRC who have a raised CEA (2) To assess if there are any trends between elevated CEA levels and Duke’s staging. This was a retrospective analysis where patients were diagnosed with CRC in 2009 and 2010 and were identified through the Pathology department histology database. Data was retrieved from the case notes.

**Results:** A normal CEA level was present in 58.1% of patients diagnosed histologically with CRC. A statistically significant linear trend for raised CEA was present with a higher tumour staging (p<0.00003). There was no correlation between histological differentiation and CEA levels or between colonic segment localisation and CEA level. Although there were more patients with a CRC who had a normal CEA, the presence of a raised CEA correlated positively with the presence of Duke’s C and Duke’s D disease (p<0.01).

**Conclusion:** This analysis demonstrates that CEA is a poor marker for CRC detection. Analysis of the trend in CEA demonstrated that it is more likely to have a raised CEA with further tumour progression. The large number of normal values in patients with Dukes’ A and B stage further confirms the fact that this test is of limited value as a screening procedure. Thus, colonic studies (endoscopy or radiology) are always required to rule out colonic pathology.

**P6.01 The clinical relevance of coagulase-negative staphylococcal blood culture isolates in MDH – a two year study**

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**Introduction:** Coagulase-negative *Staphylococci* are amongst the most frequently isolated microorganisms from blood cultures. The great majority of these isolates are reported as clinically irrelevant contaminants derived from the patient’s own skin flora, due to inadequate skin disinfection prior to the taking of blood. However, over the last 20 years these coagulase-negative *Staphylococci* have become recognized as an important group of nosocomial pathogens mostly associated with inserted medical devices, such as prosthetic heart valves, joints, vascular grafts and indwelling intravenous catheters.

**Aim:** The aim of this study is to evaluate the clinical significance of coagulase-negative *Staphylococci* isolates from blood cultures and the ratio of significant to non significant coagulase-negative *Staphylococci*, and to highlight the need to improve our blood culture collection techniques in the event of a very high non – significant to significant coagulase-negative *Staphylococci* ratio.

**Methods:** Data were collected over 2 year period (04/2010-04/2012) to determine the above mentioned ratio. All blood cultures where collected and initially incubated using the BacAlert system. Positive blood cultures where subsequently followed up according to the bacteriology lab Standard Operating Protocols. The selected criteria for determining clinical significance of any isolated coagulase-negative *Staphylococci* were according to the European Centre for Disease Control Healthcare Associated Infections in Intensive Care Unit protocol version 1.01 (December 2010).

**Results:** 857 blood culture specimens turned positive for coagulase-negative *Staphylococci* during this period of time. Of these 127, according to the above mentioned criteria, where judged to be clinically relevant, which make up 14.8% of the total, while 85.2% would have been contaminants. Among the clinical significant isolates some species where more prevalent and were associated with specific pathological processes. The same isolated species tend to have different antibiotic susceptibilities between isolates and ability to build biofilm also varies in turn correlates with distinct clinical scenarios.

**Conclusion:** While coagulase-negative *Staphylococci* isolated from blood may be a sign of systemic infection, there is no doubt that the vast majority of such isolates reflect sample contamination during blood collection. It is therefore imperative that a strict aseptic technique be scrupulously adhered to during the taking of a blood culture as, once contaminated, it is difficult to distinguish contaminating coagulase-negative *Staphylococci* from coagulase-negative *Staphylococci* causing a true bacteriaemia thus hindering the clinical team from forming a correct diagnosis.

**P6.02 Human Metapneumovirus: its incidence and role in acute respiratory tract infection**

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**Introduction:** Respiratory viruses are a worldwide leading cause of morbidity and mortality. The aetiology of most respiratory disease is unidentified when cell culture based methods are used as a sole means of virus detection and identification. Due to recent advances in molecular biology in the last 9 years, 7 previously unidentified viruses have been detected in patients with respiratory diseases.

**Aim:** The study was to determine the prevalence of respiratory viruses in the Maltese community with a special focus on human Metapneumovirus (hMPV) and its contribution to influenza like illness (ILI).

**Study design:** 200 nasopharyngeal swabs were collected from patients with ILI from 2008-2010. A multiplex real time polymerase chain reaction (RT-PCR) assay for the detection of 14 respiratory viruses was used.

**Results:** An infectious agent was identified in 41% of samples; 13% Influenza, 10% respiratory syncytial virus (RSV), 8.5% parainfluenza viruses (PIVs), 5.5% hMPV, 2.5% adenovirus, 0.5% coronavirus, enterovirus and rhinovirus. With a prevalence of 5.5% hMPV was the fourth most prevalent virus to be detected. Found predominantly in young children with lower respiratory tract infections, its prevalence peaked in spring and winter with no detections in the summer months.

**Conclusions:** Multiplex RT-PCR provided faster results and higher detection rates than culture. Through its association with respiratory disease hMPV plays an important role as a contributor to ILI, and represents a significant diagnostic target that should be included in the routine screening of respiratory samples.
P6.03
Current laboratory technique for detecting carbapenemase mediated resistance in Enterobacteriaceae isolated from Mater Dei Hospital patients
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Introduction: Carbapenemase producing Enterobacteriaceae are a global health concern, and found within most beta-lactamase classes. The epidemiologically relevant are: Class B MBLs, metallo-beta-lactams; Class A K.pneumoniae carbapenemase, KPC and Class D OXA type. “Carbapenemases” within the fourth group - Class A ESBLS, CTX M and Class C AmpC are still resistant to carbapenems, but exhibit a much diminished hydrolyzing activity associated with impermeability. The strains expressing such a mechanism of resistance are called Carbapenem not susceptible or Carbapenem resistant Enterobacteriaceae, CNSE or CRE, as well as Carbapenemase producing Enterobacteriaceae, CPE. Diagnosis of CNSE/CPE isolates is important both clinically and epidemiologically.

Aim: Our aim is to present and evaluate the ability of current laboratory technique and phenotypic tests used in our laboratory, to detect and determine carbapenemase producers for clinical and infection control issues.

Methods: During the period July 2011 - May 2012 a total number of 79 bacterial strains were detected as potential Carbapenemase producers in a variable clinical specimen from inpatients. Vitek 2 / Versus 5.04&EUCAST 2010 sensitivity results were used as a first step screening of the isolated bacteria and Modified Hodge test, MHT, for confirmation. A representative 46 isolates were selected out of these 79 and tested by Combined Double Disk Synergy test, CDDST, Rosco as recommended by European Study Group for Antibiotic Resistance Surveillance to define the ‘true’ carbapenemases from those with a low activity.

Results: All isolates suggested as CNSE by Vitek were confirmed by Modified Hodge as carbapenemase producers. Of the 46 isolates selected for further testing by Combined Double Disk Synergy test, only 6 were proved to be KPC, and 3 doubtful. Metallo-beta-lactamase producers and AmpCs were not detected. That left most of the strains with an undetermined enzyme characteristic.

Conclusion: The current laboratory technique and methods are highly sensitive to detect isolated strains with emerging carbapenemase resistant mechanism, and reliable for clinical outcome. The phenotypic confirmatory tests do not seem to be very reliable to distinguish the isolates with impermeability resistance, low level carbapenemase activity, and unlikely to spread, from the ‘true’ CPE strains, which are the subject of infection control measures and activities. Genotypic confirmation by PCR, polymerase chain reaction, and MLST, multic locus sequence type, is the way to determine the enzyme characteristics of the strains as KPC, OXAs, MBLs and to reveal the epidemiology of the isolates in this early stage of dissemination and spread of the Carbapenemase producing strains in Malta.

P6.04
Highly active antiretroviral therapy and multi agent chemotherapy yields good response in human immunodeficiency virus-related high grade B cell lymphoma
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Introduction: Acquired Immunodeficiency Syndrome (AIDS)-related lymphomas are an important complication of Human immunodeficiency virus (HIV) infection and often the presenting disease. In immunosuppressed patients there is a greater incidence of lymphomas; often a 100-fold increase in incidence is observed. Despite being very aggressive and high grade there is a good response rate to treatment. Treatment typically involves combination chemotherapy together with highly active antiretroviral therapy (HAART).

Aim: To look into patient characteristics and response to HAART and chemotherapy in two patients over 30 months with HIV related high grade Non Hodgkin’s lymphoma (NHL).

Results: We retrospectively analysed two local case studies to observe the presentation of the disease, as well as the type and effectiveness of treatment and any complications which occur. One of the patients was of the male gender and the other was a female and their average age was 31 years. At the time of diagnosis of HIV, both patients were concomitantly being investigated for diffuse lymphadenopathy. However, their cluster of differentiation 4 (CD4) counts at the time of diagnosis differed; one of the patients had a very low CD4 count of less than 50 whilst the second patient was found to have a CD4 count of 190. Both patients were started immediately on HAART upon diagnosis of HIV infection and a progressive increase in CD4 count was noted as the patients commenced treatment.

A concordant clinical response was noted in the lymphoma even before initiating chemotherapy. However, one of the patients was not compliant to all of the antiretroviral therapy prescribed. Both patients went into remission and have been in remission for 30 months. The outcome of the patients have been evaluated using a standard age-adjusted International prognostic index (IPI) since the two patients were aged below 60 years. The monoclonal antibody anti-CD20 Rituximab has a role in the treatment of lymphoma despite the fact that it can reactivate viral infections. Equally important during the treatment are the prophylaxis against infections namely – Co-trimoxazole or Dapsone for Pneumocystis jiroveci prevention, fluconazole as antifungal prophylaxis and acyclovir for preventing viral infections. Common sequelae of chemotherapy namely treatment-induced pancytopaenias and neutropaenic sepsis were managed with proper haematological support involving transfusions and granulocyte-colony stimulating factor (G-CSF) as well as a low-threshold for initiating broad-spectrum antibiotics especially in the nadir period.

Conclusion: HAART by itself is effective in promoting remission of NHL and it can be safely administered in conjunction with aggressive chemotherapy. The advent of HAART has improved prognostic factors and overall survival such that the outcome of patients with HIV-associated NHL is approaching those of patients with de novo lymphoma. In fact HIV-associated NHL which was previously fatal is now potentially curable. Lymphoma should be considered in HIV-infected patients presenting with unexplained masses and lymphadenopathy. Conversely, screening for HIV plays a role in patients newly-diagnosed with lymphoproliferative disorders.
**P6.05**

**Drug sensitivity patterns of Streptococcus pneumoniae in the Maltese Islands**

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**Aim:** Streptococcus pneumoniae is the most common cause of community-acquired respiratory tract infections such as otitis media, sinusitis and pneumonia. Globally, pneumococcal diseases account for 1 to 2 million deaths annually and pneumococcal septicaemia is a major cause of infant mortality in developing countries. Streptococcus pneumoniae for many years was sensitive to routine antibiotics especially to penicillins, however, since 1967, many studies from different parts of the world have reported an increasing emergence of this penicillin-resistant pneumococcus. According to EARSS statistics, in 2008, the highest levels of penicillin-non-susceptible Str. pneumoniae strains were found in Bosnia Herzegovina (55%), followed by Malta (47%) and Cyprus (43%). The highest levels of macrolide resistant Str. pneumoniae were found in Poland (50%), followed by Malta (35%) and Hungary (32%). The objective of this study was to review the susceptibility patterns of Str. pneumoniae through the testing of stored cultures for sensitivity of penicillin, erythromycin, clindamycin, ceftriaxone and vancomycin.

**Method:** Str. pneumoniae sensitivity patterns were characterized over a two year period. Antibiotic E-tests for penicillin, erythromycin, clindamycin, vancomycin and ceftriaxone were applied onto a MHB plate, according to the NCCLS guidelines. The E-tests were incubated overnight and the Mean Inhibitory Concentration (MIC) values for each antibiotic read and recorded. A total of 103 cultures of Str. pneumoniae were isolated and their sensitivity patterns were recorded and compared to the sensitivity patterns of a similar study performed in 2002.

**Results:** Totally resistant isolates to ceftriaxone were obtained. All isolates were totally sensitive to vancomycin. Multi-drug resistant (i.e. resistance to penicillin, erythromycin and clindamycin) isolates accounted for 24.37% (20/119) of all pneumococci isolates. More importantly, a general shift towards the more resistant Mean Inhibitory Concentration (MIC) values was observed

**Conclusion:** This study showed that Streptococcus pneumoniae in the Maltese Islands, has become more resistant in the past eight years. Increasing emergence of the resistant strains of Str. pneumoniae in the Maltese community set up, requires continuous monitoring and a restricted use of antibiotics to keep a check on its resistance pattern, for an effective treatment plan. In addition, vaccination schedules are required to protect those at higher risks of contacting pneumococcal infections.

**Materials and methods:** A total of 89,915 samples were submitted to the Hospital Blood Bank at Mater Dei Hospital between May 2009 and December 2011 for the type and screen procedure, anti-natal screening, blood grouping and crossmatching. All the specimen bottles were evaluated against the laboratory’s policy for acceptance and rejection of specimens and requests. This policy also covers various other criteria of non-conformance for example patient details on the request form and clinical details. A total of 1,530 non-conformances related with the pre-transfusion specimen bottle were recorded; these amount to 44.5% of all the discrepancies related to the acceptance and rejection policy.

**Results:** The most common non-conformance associated with the pre-transfusion specimen reported were: insufficient blood in the specimen bottle (25.9%); sample bottles not labelled correctly such as missing demographic data or wrong patient information totaled (24.4%); sample bottles with addresseeograph labels (19.5%); and submission of haemolsed samples (15.8%). This might be due to venepuncture using a syringe and injecting the blood into the vacuum tube through the needle.

**Conclusion:** Ongoing monitoring of the pre-transfusion sample bottles is a mandatory procedure at the laboratory. An educational campaign has been launched to address these issues in order to avoid transfusion errors and improve the safety of transfusion.

**P6.07**

**Clinically significant blood group antibodies identified in non-obstetric and non-gynaecological patients at the Hospital Blood Bank at Mater Dei Hospital**

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**Background:** Clinically significant antibodies may cause adverse events following transfusion. Thus the detection and identification of these antibodies has greatly contributed to safe supportive blood transfusion practice. Exposure to red blood cells carrying antigens which are lacking on the cells of transfused patients may trigger an immune response, ranging from mild to severe. Assessing the clinical significance of antibodies relies heavily on mode of reactivity and historical data relating to specificity.

**Materials:** A type and screen is performed on all requests for blood at the Hospital Blood Bank at Mater Dei Hospital. A positive screening result is followed up by identification using gel card technology. Between January 2008 and December 2011 a total 2,783 antibody identifications were carried out. Excluding obstetric and gynaecology cases, 1,579 antibodies (56.7%) were identified from 481 different patients. Of these, 62 had two antibodies identified while 4 patients had three or more antibodies. Requests were mostly received from medical and surgical wards: 24.9% and 29.3% respectively; while cases from orthopaedic wards add up to 13.5% and those from intensive care units total 4.6%.

**Results:** The most common clinically significant antibodies identified were: anti-Kell (28.1%), anti-E (24.5%) and anti-D (11.4%). The least encountered antibodies (0.4%) were anti-Fyb, anti-Jkb and anti-Leb. The percentages of identified antibodies are very similar when compared to other studies carried out abroad.

**Conclusion:** Antibody screening techniques are essential in identifying alloantibodies prior to transfusion. Knowledge of past identified antibodies and past transfusions is important in order to ensure safe transfusion practice, especially since red cell alloantibodies may become undetectable over time. Thus, records of past identified antibodies may prevent delayed haemolytic transfusion reactions. The results of this study show that if pre-transfusion testing is extended to include patient Rh and Kell phenotyping and the red cell units for transfusion are selected on the same basis, it may be possible to reduce the amount of sensitization by more than 60%.

**P6.06**

**Retrospective study of errors on the pre-transfusion specimen at the Hospital Blood Bank at Mater Dei Hospital**

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**Background:** The major concern in transfusion medicine is human error as this may lead to the transfusion of incorrect blood products. Factors associated with human error on the pre-transfusion sample were collected and evaluated to identify transfusion risks such as wrong blood in tube (WBIT), which is the most commonly reported incident worldwide. The consequences of WBIT errors may be fatal since the blood products transfused would have been tested for compatibility on a different patient.
Vol. 24 Supplement November 2012

P6.08
A one year audit of breast core biopsies sent to Histopathology from the Malta Breast Screening Unit for microcalcifications

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In 2007, the Health Care Services Division within the Ministry for Social Policy launched the Malta Breast Screening Programme. This is aimed to provide free breast screening for Maltese female residents aged between 50 and 60 years. The aim of the breast screening programme is to detect breast cancers as early as possible, via a mammogram, in such an age that is highly prone to this cancer. As proven by statistical data, the incidence of breast cancer in women aged between 50 and 60 years is the highest of all age groups. Breast calcifications are common abnormalities encountered in breast screening cases. These consist of small areas of calcium deposits in the breast tissue and are only detectable via a mammogram. Calcifications can be of two types: macrocalcifications and microcalcifications. Whilst the former are always considered benign and do not require follow-up, microcalcifications can be a pre-cancerous stage or even early breast cancer, especially when they are found as a cluster or in certain patterns. A radiologist will assess the microcalcifications by size, shape and pattern from the breast x-ray. In suspicious cases, breast trucut biopsies will then be taken so as to be investigated histologically. In case of significant results, these usually consist of ductal carcinoma in situ (DCIS) or very small, early breast cancer lesions. In order to assess the impact of microcalcifications on the final diagnosis, an audit of breast core biopsies sent from the Malta Breast Screening Unit over a period of one year (2011) was carried out. A total of 135 cases were submitted for histological investigations out of which 54 cases were due to the presence of microcalcifications on radiology. 50 cases were confirmed as true microcalcifications, whilst 4 cases did not have microcalcifications on histology. The diagnosis of the core biopsies will be broken down into benign and malignant, and furthermore into more specific diagnosis. The benign to malignant ratio obtained will be then compared to the recommendations in the Fourth Edition of the European guidelines for quality assurance in breast screening and diagnosis.

P6.09
Pre colorectal screening data on the incidence of colorectal polyps in the Maltese Islands

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The Malta Health Department plans to introduce a colorectal screening programme towards the end of 2012. Since no local data is currently available, a one year study was conducted to determine the incidence of the different types of non malignant colorectal polyps currently seen in symptomatic patients. Colorectal polyps were stratified according to age, site of polyp and type of polyp. Adenomas were classified into low grade and high grade dysplasia. A total of 337 polyps from 229 patients were retrieved from the histology files at Mater Dei Hospital for the year 2011. There were 131 males and 98 females. The patients’ age ranged from 5 to 89 years. Both the median and mean age of subjects was 63 years. Hyperplastic polyps comprised 38.7%, adenomatous polyps 56.7 % with 74.6 % showing low grade dysplasia and 25.4 % high grade. The Health Care Services Division within the Ministry for Social Policy launched the Malta Breast Screening Programme in 2007. This is aimed to provide free breast screening for Maltese female residents aged between 50 and 60 years. The aim of the breast screening programme is to detect breast cancers as early as possible, via a mammogram, in such an age that is highly prone to this cancer. As proven by statistical data, the incidence of breast cancer in women aged between 50 and 60 years is the highest of all age groups. Breast calcifications are common abnormalities encountered in breast screening cases. These consist of small areas of calcium deposits in the breast tissue and are only detectable via a mammogram. Calcifications can be of two types: macrocalcifications and microcalcifications. Whilst the former are always considered benign and do not require follow-up, microcalcifications can be a pre-cancerous stage or even early breast cancer, especially when they are found as a cluster or in certain patterns. A radiologist will assess the microcalcifications by size, shape and pattern from the breast x-ray. In suspicious cases, breast trucut biopsies will then be taken so as to be investigated histologically. In case of significant results, these usually consist of ductal carcinoma in situ (DCIS) or very small, early breast cancer lesions. In order to assess the impact of microcalcifications on the final diagnosis, an audit of breast core biopsies sent from the Malta Breast Screening Unit over a period of one year (2011) was carried out. A total of 135 cases were submitted for histological investigations out of which 54 cases were due to the presence of microcalcifications on radiology. 50 cases were confirmed as true microcalcifications, whilst 4 cases did not have microcalcifications on histology. The diagnosis of the core biopsies will be broken down into benign and malignant, and furthermore into more specific diagnosis. The benign to malignant ratio obtained will be then compared to the recommendations in the Fourth Edition of the European guidelines for quality assurance in breast screening and diagnosis.

P6.10
Decellularisation of fresh porcine heart

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Introduction: Various attempts at replacing organs by decellularisation and replacement with the patient’s own cells have been made in order to obtain a full immunocompatible tissue. The two main approaches are the use of enzymes and the use of detergents to break down plasma membranes and cellular constituents, the latter being favoured. Other components of a decellularising solution based on the detergent approach include a buffer, protease inhibitor, and an antimicrobial agent.

Aim: The aim of this project is to break down the cellular components of a fresh porcine heart in attempt to expose the extracellular matrix of the whole organ, for possible use as a biological scaffold for recellularisation.

Methodology: A multi-stage protocol was carried out, in which the porcine heart was subjected to the action of two different detergents, namely sodium dodecyl sulfate (SDS) and Triton X-100, and to alternating osmolarities. Agitation of the solution was maintained using a magnetic stirrer. Progression of the experiment was followed by means of periodic observation, photographs and histological analysis after each stage.

Results: A progressive change in the heart’s appearance and texture was noted after each stage. This was confirmed by the histological analysis whereby the cellular integrity was being progressively lost.

Conclusion: The method adopted for this experiment proved to be a good attempt at whole-organ decellularisation. This method can be further improved in order to obtain a better quality decellularisation, which would make the generated scaffold more viable for recellularisation.

P6.11
The impact of androgenic anabolic steroids (AAS) supraphysiological doses on the cardiovascular system and myocardial injury: cardio-depressant cytokines and myocardial receptor expression in CD1 mice. A new Italian pilot study

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Self-administration of high doses of anabolic androgenic steroids (AAS) is widespread among young athletes to optimize strength and gain muscle mass. AAS abuse has increased in last decades, particularly among non-athletes at fitness centers for aesthetic purposes and it is estimated that more than 3 million individuals in the United States and 1 million in Europe currently abuse AAS, including nandrolone decanoate, methandienone, stanozolol, androsterone, and androstane. AAS are synthetic derivatives of the male sex hormone testosterone and have androgenic (development and sustainment of secondary sex characteristics), anabolic (tissue-building) and androgenic effects. The various clinical effects are determined by the type and concentrations of androgen receptors and enzymes controlling steroid metabolism in a given organ anyway the mechanisms of AAS toxicity are not yet completely understood since the adverse effects of AAS are known to be complex and likely to arise from effects on several organ systems in humans. A review of the literature reveals a AAS – induced side effects on cardiovascular system, the liver, the kidney, the musculoskeletal and the endocrine systems. A number of clinical and experimental studies have investigated the somatic and psychological consequences associated with these drugs and have provided strong evidence of increase morbidity and mortality in humans.
attempted to clarify the mechanisms of AAS toxicity on mouse heart by administering nandrolone decanoate to strength-trained male CD1 mice, studying plasma lipid analysis, cardiac features, cardiac alpha adrenergic receptor expression, and the effects of myocardial expression of inflammatory mediators (IL-1beta, TNF alpha) on the induction of cardiomyocytes apoptosis (HSP70, TUNEL), using proteomic and immunohistochemical analysis. We will present a new pilot study involving four university centres. The major goal of our proposed research is to employ animal models to study the specific organ pathology associated with long term of AAS administration which could enhance our understanding of the mechanisms which may underlie sudden death, liver intoxication or kidneys necrosis in humans and also to improve the toxicological analysis.

P6.12 Oxidative stress and ageing S.D. Brincat, T. Hunter
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Introduction: Nowadays, life expectancy has substantially increased due to advances in public health, medicine and nutrition. Hence the world’s population is growing older and older. Ageing results from the accumulation of multiple deleterious changes predisposing the individual to diseases and eventually death.

Aim: To understand the physiological process of ageing with particular reference to the role of oxidative stress as proposed by the Free Radical Theory of Ageing.

Methodology: A literature review was conducted to unveil the insights of the mechanisms of ageing. A number of theories have been proposed to suggest the physiology underlying this phenomenon. This study focused on The Free Radical Theory of Ageing since it is considered as the most prevalent theory to elucidate the molecular mechanism of ageing.

Results: The Free Radical Theory of Ageing identifies free radicals as the cause of time-related changes attributed to ageing. Multicellular organisms necessitate high energy levels to drive the biological processes making the cell dependent on oxidative phosphorylation. This produces a wide range of radical and non-radical oxidants which are responsible for cellular damage. Superoxide, hydrogen peroxide and hydroxyl radical are common thermodynamically unstable free radicals capable of propagating chain reactions. The disturbance in homeostasis of free radicals mediates oxidative damage of macromolecules including intracellular lipids, proteins and nucleic acids. Lipid peroxidation of membrane phospholipids alters the membrane’s fluidity, inactivates intramembraneous receptors/enzymes and promotes the non-selective permeability to ions. In protein oxidation, the covalent structure of the protein is altered either by cleavage of the polypeptide chain or modification of the amino acids’ side chains. Thus, proteins are more prone to proteolytic degradation and accumulation of aggregates; influencing enzyme function and immunogenicity. Damage to both nuclear and mitochondrial DNA induced by free radicals includes nitration, deamination of bases, deletion of purines and damage to DNA repair system. In order to cope with the bombardment of reactive oxygen species, cells have developed an antioxidant system composed of enzymatic (eg. superoxide dismutase, glutathione) and non-enzymatic (eg. ascorbic acid, α-tocopherol) components as a defence mechanism to drive the biological processes making the cell dependent on free radicals as the cause of time-related changes attributed to ageing.

Conclusion: The Free Radical Theory stood the test of time as it is fundamental for the on-going research on ageing and lays fertile area for future research. This revolution in understanding the bodily response to oxidative stress leads to therapeutic and pharmacologic interventions to retard the development and progression of age-related conditions.

P6.13 The double jack phenomenon and new concepts in the mechanics of lung ventilation C. Gauci, S. Bogomazov, T. Gauci
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Introduction and rationale: In the current understanding of pulmonary ventilation mechanics not enough attention is paid to mechanism that translates the relatively large amplitude of contraction of the respiratory muscles to the tiny amplitude of expansion of the individual alveolar diameters. This decrease in amplitude is accompanied by a proportional increase in the force generated by the diaphragm and respiratory muscles and the force that is ultimately transmitted to the respiratory surface to cause the expansion of this surface.

Methods: Using a theoretical model and illustrative schematics we would like to discuss this phenomenon in detail and demonstrate how the thoracic cavity, visceral pleura and respiratory surface are arranged in an ingenious pneumatic piston configuration which makes this possible. This newly described lung configuration is termed the ‘Double Jack Phenomenon’. The double jack phenomenon will help explain how the muscles of respiration are able to only use a small percent of their functional capability and transmit and amplify their force by a factor of greater than 1000, without loss of energy or changing the work needed to achieve this amplification. This new concept will also be used to explain how the pressures generated inside the lung during inspiration and expiration is a complex end result of many mechanisms affecting lung ventilation. These ideas will demonstrate why the measurement of lung pressures is not a good surrogate of respiratory muscle strength and how methods to try and diagnose and quantify respiratory muscle weakness have yet to be developed.

Conclusion: Due to the variety of factors that influence the mechanics of ventilation it is very difficult to diagnose a primary muscle weakness and the correlation between the ability to generate maximal inspiratory and expiratory pressures is not an accurate reflection of respiratory muscle strength.

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Introduction and rationale: In the current understanding of pulmonary ventilation mechanics not enough attention is paid to mechanism that translates the relatively large amplitude of contraction of the respiratory muscles to the tiny amplitude of expansion of the individual alveolar diameters. This decrease in amplitude is accompanied by a proportional increase in the force generated by the diaphragm and respiratory muscles and the force that is ultimately transmitted to the respiratory surface to cause the expansion of this surface.

Methods: Using a theoretical model and illustrative schematics we would like to discuss this phenomenon in detail and demonstrate how the thoracic cavity, visceral pleura and respiratory surface are arranged in an ingenious pneumatic piston configuration which makes this possible. This newly described lung configuration is termed the ‘Double Jack Phenomenon’. The double jack phenomenon will help explain how the muscles of respiration are able to only use a small percent of their functional capability and transmit and amplify their force by a factor of greater than 1000, without loss of energy or changing the work needed to achieve this amplification. This new concept will also be used to explain how the pressures generated inside the lung during inspiration and expiration is a complex end result of many mechanisms affecting lung ventilation. These ideas will demonstrate why the measurement of lung pressures is not a good surrogate of respiratory muscle strength and how methods to try and diagnose and quantify respiratory muscle weakness have yet to be developed.

Conclusion: Due to the variety of factors that influence the mechanics of ventilation it is very difficult to diagnose a primary muscle weakness and the correlation between the ability to generate maximal inspiratory and expiratory pressures is not an accurate reflection of respiratory muscle strength.

Methods: The Egyptian mummy was CT scanned without disturbing any coverings. The mummy’s CT scans were imported into Materialise Mimics software and analysed. By selecting regions of interest and using colour look up editing (CLUT) techniques an exact three dimensional (3D) facial reconstruction of the mummy’s death mask and a 3D model of the mummy’s skull were obtained. Materialise 3-matic software was used to envelope the model reducing the amount of build material and decreasing the volume and
time needed to print. Materialise e-Stage software generated automatic supports in order to support the build because of the complex structures being built. ABS plastic models of the death mask and skull were manufactured using a Fused Deposition Modelling (FDM) machine at the Department of Industrial & Manufacturing Engineering, University of Malta. A chemical cleaning process then removed the supports.

Results: Two models of the Egyptian mummy were produced – a replica of the death mask and an exact 3D reconstruction of the mummy’s skull.

Conclusion: The models produced will form the basis for facial reconstruction of the mummy’s head using the Manchester method, which involves rebuilding the face based on ultrasound facial soft tissue thickness measurements at specific locations on the skull.

P6.15
The effect of Euphorbia characias and Opuntia ficus-indica extracts on HL60, Kasumi and K562 leukaemia cell lines
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Introduction: Blood cancer is caused by lack of correct differentiation of the precursor cells in the bone marrow therefore many immature cells are released into the blood in large numbers causing immunological deficiency, anaeasias, clotting disorders. Recent advances in leukaemia therapy involve differentiating agents like retinoic acid. This however only treats one particular kind of leukaemia (APL) efficiently.

Aim: To investigate the effects of the Euphorbia characias (Mediterranean spurge - MS) and a patented Opuntia ficus-indica (Prickly pear) extract with all-transretinoic acid (ATRA) on HL60, K562 and Kasumi cell lines to see if differentiation is enhanced by these extracts.

Methodology: Leaves from the MS were ground and dissolved in 70% ethanol whilst a further extraction of the same re-dried crushed plant leaves was prepared in DMSO (dimethyl sulfoxide). Test cell lines were cultured and the cells counted to obtain equal numbers of cells for each well sample. The extract was added to the cells in the wells. Nitroblue tetrazolium (NBT) testing which assays the differentiation of the cells towards a granulocyte or erythrocyte was used.

Results: Initial tests showed differentiation of the same re-dried crushed plant leaves was prepared in DMSO (dimethyl sulfoxide). Test cell lines were cultured and the cells counted to obtain equal numbers of cells for each well sample. The extract was added to the cells in the wells. Nitroblue tetrazolium testing which tests the differentiation of the cells to granulocytes or monocytes. Phenotype was assessed using 5 replicates for each concentration: 100 part per million (ppm), 500ppm, 10 ppm, 1 ppm as well as positive (known differentiating agent) and negative (medium alone) controls. Tex-OE® was used with ATRA to see if differentiation was enhanced.

Conclusion: These positive results suggest that further work needs to be done on other cell lines and on primary leukaemia cells to establish if there is an effect on them.

P6.16
Design and manufacture of an artificial rib
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Introduction: Rib replacement may be required during chest wall reconstruction performed after chest wall resection for malignancy. Present repair techniques can be very rigid and cumbersome and affect patients’ respiration.

Aim: To design a novel and alternative chest wall reconstruction technique with an artificial rib that allows ease of insertion, use in differing chest shapes and allows more normal post-op respiratory physiology.

Methodology: An artificial rib was designed using three dimensional (3D) modelling with computer-aided design (CAD) and prototyped using computer aided manufacturing (CAM) techniques at the University of Malta. Rapid prototyping machines were used to produce prototypes first in ABS plastic and then in sintered titanium with an electron beam melting (EBM) machine. A later prototype was manufactured from titanium plate using water jet technology. These prototypes were assessed for fit and ease of placement on a plastic human skeleton. A survey of cardiothoracic surgeons at Mater Dei Hospital was performed to measure satisfaction by surgeons using the device.

Results: Tensile testing of the titanium prototype showed that it could withstand over twice the maximum tensile strength that it would be exposed to in the body without any material deformation. Evaluation of user friendliness was accomplished with the use of a questionnaire. The artificial rib was rated as good (4/5) for surface finish and surgical satisfaction and excellent (5/5) for ease of use, fixation properties, flexibility and biomechanical fit. Ease of placement was also assessed by video-recording surgeons attaching the device to a skeleton.

Conclusion: The design and manufacturing of an artificial rib that mimics normal rib shape and contour should be a significant improvement in patient comfort over the methylmethacrylate sandwich prosthesis currently used in chest wall reconstruction.

P6.17
The role of cytokines in hidradenitis suppurativa
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Introduction: Hidradenitis suppurativa is a chronic, recurrent, inflammatory skin condition. It usually presents with debilitating, deep-seated nodules in areas bearing apocrine-glands. Although numerous causes have been proposed, the exact pathogenesis of hidradenitis suppurativa remains unknown.

Aim: To review the possible role of cytokines in the aetiology and pathogenesis of hidradenitis suppurativa.

Methodology: Papers retrieved from two databases (PubMed and Academic Search Complete [EBSCO]) were reviewed.

Results: Although there seems to be no abnormality with regards to the adaptive immune system, the high comorbidity of hidradenitis suppurativa with immune-deficient diseases such as Crohn’s disease (up to 39%), superimposed with the achievements acquired with anti-tumour necrosis factor-alpha (TNF-α) pharmaceuticals may indicate an alteration of the innate immune system. An alteration of the immune system results in the release of a plethora of cytokines. Although initially released as a transient defence mechanism, if persistent, chronic disease may eventually develop. When compared to normal subjects elevated cytokine levels are found not only in lesional but also in perilesional hidradenitis suppurativa, providing a possible reason for the high recurrence rate after surgery. The highly inflammatory nature of hidradenitis suppurativa is highlighted by the fact that these cytokine levels are even more elevated than those in some psoriasis patients. TNF-α, interleukin-10, interleukin-12, interleukin-17, interleukin-20 (IL-20), interleukin-22 (IL-22), interleukin-23, and interleukin-18 are all cytokines which are dysregulated in patients with hidradenitis suppurativa.

Conclusion: Cytokines play a role in the pathogenesis of hidradenitis suppurativa, and thus, modulation of these factors will help in managing this condition.
P6.18
HPV strain typing micro-arrays for predicting clinical risk
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Introduction: Papillomaviruses are highly diverse and some produce benign tumors including warts and papillomas. The causative relationship between Human Papillomavirus (HPV) infection and squamous cell carcinoma of the genital tract is established, with likely involvement of cutaneous HPV types in skin carcinogenesis including cervical cancer. However, distinguishing HPV strain types when assessing cervical tissue is problematic.

Methods: We describe development of novel L1 PCR-based DNA micro-array assay to detect HPV types. The assay combines the high sensitivity of PCR with strain specific identification of micro-arrays A HPV tree was created from the sequences related to HPV18 and HPV 16 and was used to select probes on the chip. Degenerate primers PCR amplified and fluorescein added in a segment of the L1 region, before hybridizing to the chip. Labeled PCR products hybridized to specific arrayed probes and the data analyzed.

Results: The result show the array can be used to distinguish HPV types and many HPV strains typed in one assay. Novel sub-types of HPV were identified by this new assay.

Discussion: This study highlights the combined power of PCR with micro-arrays. We can discriminate between HPV types, type more than one virus with each assay, and we can also identify variants of viruses. Patient samples were tested and contrasted with other established tests and next generation sequencing.

P6.19
The diagnostic potential of cytokines and matrix-metalloproteinases in colorectal anastomotic leakage
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Introduction: The management of patients with colorectal disease has improved remarkably, however anastomotic leakage is still a major cause of morbidity and mortality. Anastomotic leakage is currently detected by clinical and biochemical means. However this often leads to a delayed diagnosis which is made at a median of 7 days after surgery. This delay in diagnosis frequently results in generalised peritonitis, leading to a potentially life threatening situation. There is recent interest in the measurement of peritoneal fluid cytokines in the early post operative period, to help diagnose anastomotic leakage at a preclinical stage.

Aim: To review the currently available literature on the early diagnosis of colorectal anastomotic leakage by estimation of drain fluid cytokines or matrix metalloproteinases (MMPs).

Method: A literature search was performed in PubMed, Embase and the Cochrane library for all publications studying the feasibility to diagnose colorectal anastomotic leakage earlier, by estimation of peritoneal fluid cytokine or MMP levels. A meta-analysis of the most commonly measured cytokines was performed.

Results: A total of eight publications were included. In publications assessing the diagnostic value of cytokine levels in drain fluid, Tumour necrosis factor-α (TNF-α) and Interleukin-6 (IL-6) were most frequently studied. Most studies found significantly higher levels of TNF-α and IL-6 in patients with leakage during the first three post-operative days. In the meta-analysis IL-6 was significantly higher as from day 1 and TNF-α from day 2. In publications studying MMPs, MMP-9 was most often significantly elevated in patients with anastomotic leakage.

Conclusion: Measurement of drain fluid cytokines and MMPs heralds a potential to diagnose colorectal anastomotic leakage at a pre-clinical stage, but it is not yet ready for clinical use. Further research is needed, possibly using IL-6 in combination with other cytokines and MMPs as markers.

P6.20
Comparative study of joint mobility in people with haemorrhoids
Y. Uqba

Introduction: Hypermobility syndrome was defined as joint laxity producing musculoskeletal complaints. Joint hypermobility is recognized by movement of a joint beyond its normal range. This is important in rheumatological practice because it produces a wide variety of articularator complaints, such as knee effusion, ligamentous injuries, dislocation, low back pain, spondylolisthesis and osteoarthritis. Recent studies suggest that the clinical symptoms of hypermobility include not only locomotor disorders but also visceral ones. Because ligamentous laxity and various bone morphing structures may be aetiological factors for haemorrhoids, we decided to study its possible association with joint laxity.

Objective: To assess joint mobility in people with haemorrhoids.

Method: In Baghdad Medical City Hospital a comparative control study was made on 200 patients attending endoscopic unit. The joint mobility of 100 patients with haemorrhoids were assessed & compared with a control group matched for age, sex & body mass index without haemorrhoids. The degree of joint mobility were scored & evaluated blindly by another observer using a method described by Carter & Wilkinson modified by Beighton et al. Statistical data were analysed by χ2 (chi-square) for number of individuals & t-test for score of hypermobility.

Results: The number of individuals with hypermobile joints were higher in haemorrhoid patients (88%) than in controls (4.4%), though the differences did not reach the statistical significance (p<0.05) whilst the total mobility scores for all haemorrhoid patients (129) were significantly higher than controls (p<0.001).

Conclusion: There is a positive correlation between the presence of haemorrhoids and joint mobility & this hypermobility demonstrated in those patients suggests an underlying connective tissue abnormality.

P6.21
Introduction of antimicrobial susceptibility testing to Campylobacter species and sub-species
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Introduction: Campylobacter jejuni and C. coli, giving rise to concerns about how these organisms have acquired such resistance characteristics, as well as consequences for human and animal treatment. Currently, Campylobacter is the leading enteropathogenic organism worldwide. Generally, in animals this organism causes no harm, but in humans it causes campylobacteriosis with a number of side effects including the Guillain-Barré virus. It is contracted through many sources such as private reservoirs and unpasteurised milk but mainly through ingested food. Campylobacter is a zoonotic disease. Malta, having the smallest amount of broilers,
when compared to the rest of Europe sports one of the highest percentages of Campylobacter isolation from chicken carcasses. This organism and the resistance associated with the strain are both transferred to humans. Therefore, resistance acquired through the ingestion of animal feed with antibiotics (as growth promoters), is transferred to humans through the zoonotic cycle.

**Method:** In order to establish the Maltese setting when compared with Europe, a series of procedures were carried out. Through the period of June 2008–June 2010, all Campylobacter strains were collected from stool samples received in the Bacteriology Laboratory at Mater Dei Hospital which is the main Maltese General Hospital and also the only teaching hospital in Malta. Each Campylobacter strain was subjected to a series of five main antibiotics and the MICs of each was established. Through this, sensitive/resistance patterns of each antibiotic was achieved and was compared with the European status. Mean Inhibitory Concentration data was achieved using the E-strip method and identification was done through conventional methods.

**Results:** It was established that the Maltese picture is on the same baseline as that of Europe, comparatively. Therefore, it is of great importance that Malta involves itself wholeheartedly in surveys and any data collection studies that EFSA may request. The objective of this study was to establish the sensitivity pattern of the two main antibiotics used for first line treatment which are mainly erythromycin and ciprofloxacin. Due to the level of ciprofloxacin resistance noted in this study, erythromycin remains the drug of choice in the suspicion of any Campylobacter infection.

### P6.22

**Investigating the effect of insect conditioned media and its constituents on the terminal differentiation of leukaemia**

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**Introduction:** Leukaemia is the most common type of cancer that occurs in children worldwide. Despite the intense research carried out in several facilities, acute myeloid leukaemia suffers a long-term survival of approximately 10%. Following successful clinical trials using retinoic acid for differentiation of acute promyelocytic leukaemia, substantial research is being carried out to force leukaemia cells into entering the apoptotic pathway by undergoing terminal differentiation rather than use cytotoxic drugs to treat this cancer.

**Aim:** To cause leukaemia cells to terminally differentiate using extracts from the media conditioned from cells of a butterfly pupa

**Methodology:** Leukaemia cell lines have been treated with medium conditioned by cells from the pupa of a cabbage white butterfly. Treated fractions of the insect conditioned medium were also tested on leukaemia cell lines. Differentiation was assessed through reduction of nitroblue tetrazolium in comparison to the MTT assay.

**Results:** Elimination of proteins from the insect conditioned medium resulted in a significant degree of differentiation in the HL60 cell line, together with retinoic acid. It was also determined that the organic extract of this conditioned medium had a greater effect on leukaemia differentiation than the purified protein fraction. In HL60 cell line, conditioned medium resulted in a significant degree of differentiation in the HL60 cell line, together with retinoic acid.

**Conclusion:** Leukaemia cell conditioned medium from the pupal fraction of the insect conditioned medium resulted in a significant degree of differentiation in the HL60 cell line, together with retinoic acid. This is the first time that insect conditioned medium has been used to induce leukaemia differentiation.

### P7.01

**Safety and efficacy of photodynamic intense pulsed light therapy in the treatment of acne vulgaris**

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**Introduction:** The use of intense pulsed light sources is gaining academic acceptance as an effective adjunct in the management of acne vulgaris. This treatment modality consists of the use of noncoherent broadband pulsed light with or without the antecedent application of 5-aminolaevulinic acid (ALA) as a priming agent. The treatment induces suppression of sebaceous gland activity and reduced P. acnes counts in treated skin.

**Aim:** To investigate the safety and effectiveness of photodynamic intense pulsed light therapy (PDT) with and without aminolaevulinic acid priming in a cohort of acne vulgaris patients.

**Methodology:** Thirty patients with acne vulgaris of graded degrees of severity and with a history of previous medical acne treatments were enrolled and treated. ALA-PDT combination treatment was utilized in a subset of 25% of patients with acne classified as severe papulopustular. Standardised photographs were taken at baseline, at the midpoint and at the end of the treatment plan. The Global Aesthetic Improvement Scale (GAIS) was used as a measurement tool for both investigators and patients. Twenty-four patients completed the study.

**Results:** GAIS scores across the patient group showed significant improvement as assessed by both investigators and patients. There were no significant adverse effects related to the treatment. Patients commented favourably on the fact that the treatment avoided the need for further oral acne pharmacotherapy.

**Conclusion:** Broadband pulse light with and without aminolaevulinic acid application is a treatment option for acne vulgaris.

### P7.02

**Leishmaniasis in HIV: does it satisfy AIDS-defining criteria?**

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**Co-infection of HIV and leishmaniasis is a well-recognized phenomenon, with a high incidence of cases reported in the Mediterranean basin. HIV and visceral leishmaniasis (VL) have a synergistic detrimental effect resulting in increased mortality. VL promotes clinical progression of HIV and the development of AIDS-defining conditions. Likewise, HIV infection also exacerbates leishmaniasis as it enhances intracellular growth of the parasite in macrophages and inhibits macrophage killing capacity. Thus the risk of active leishmaniasis is increased as a consequence of the large parasite burden in HIV-infected patients, with co-infection decreasing the likelihood of a therapeutic response to anti-parasitic medication and increasing the probability of relapse. Most cases of HIV/VL co-infection occur at low CD4 counts (< 200 cells/μl). Presentation of VL is often atypical and more severe at lower CD4 counts and other concomitant opportunistic infections may complicate diagnosis. Furthermore, diagnosis using the indirect immunofluorescent antibody test (IPAT) and recombinant ELISA (using the rK39 protein) in the diagnosis of VL is limited. Cutaneous leishmaniasis (CL) is also associated with HIV infection, but in contrast with VL, it usually occurs at the initial stages of HIV infection. Also there may be visceralisation of dermotropic variants resulting from parasite dissemination. We report 3 cases of HIV / leishmaniasis co-infection. These were selected from various cases encountered since they represent a spectrum of the various possible scenarios: VL/HIV infection,
A novel medical assessment form for patients presenting with a fall

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A fall is defined as an event which results in a person coming to rest inadvertently on the ground or other lower level, and other than as a consequence of sustaining a violent blow, sudden onset of paralysis or epileptic seizure. Falls are one of the main causes of morbidity and mortality in the elderly population, being considered as one of the geriatric giants. They cause increased dependency, reduction in function, premature nursing home admissions and mortality. Injury in the elderly is commoner than in the younger cohort due to a higher prevalence of osteoporosis and the slowing of protective reflexes. Over 30% of people over 65 years fall each year. Between 20 and 30% of these will suffer injuries that will reduce mobility and independence, while increasing the risk of premature death. Falls are one of the commonest causes for geriatric consultation. They form a large part of in and outpatient consultations. It was felt that as other countries are trying to see patients with falls in specialist clinics, a pro-forma or tool should be created to focus more on essential factors that could be at the root of the fall. A medical assessment form for falls has been created for the first time in our country to be used mainly in an outpatient setting. This helps keep the focus on the presenting complaint while identifying possible reversible risk factors. It delves in detail into the history of the fall, the social and pharmacological aspects contributing to the fall. Focused examination, and assessment of cognitive, osteoporotic risk and gait are included in this tool. Following this assessment, a multidisciplinary intervention may be triggered with involvement of physiotherapists, occupational therapists, podologists and other medical professionals if deemed necessary. The advantage of this innovative tool is that the history, examination and management of the patient presenting with a fall or falls, will be more focused in the setting of a busy outpatient clinic.
Cancer screening in patients with venous thromboembolism
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Introduction: An association between venous thromboembolism (VTE) and cancer has long been recognised. Occult malignancy is diagnosed in approximately 10% of patients with idiopathic deep vein thrombosis (DVT) than in patients with recognised risk factors.

Aim: To investigate whether patients with VTE should be routinely screened with tumour markers and abdomino-pelvic ultrasound to exclude underlying malignancy.

Methodology: 128 patients followed up at the DVT clinic in Mater Dei Hospital over a period of 2 years were randomly selected. Patient data was obtained from iSoft, PACS and ECS.

Results: Overview: Out of a total of 128 patients, 65 were males and 63 were females. The mean age was 55.6 years. 47% (95% CI, 38.35% to 55.65%) of patients had idiopathic DVT, whereas 53% (CI, 44.35% to 61.65%) had a recognised risk factor. All patients with idiopathic DVT were aged 40 years or above. Imaging: 43% (CI, 30.47% to 55.53%) of patients with no risk factor for DVT had an ultrasound performed, 8% (CI, 1.14% to 14.86%) of which were abnormal. An ultrasound was performed in 25% (CI, 14.71% to 35.29%) of patients with secondary DVT in which 3% (2) were abnormal. Abnormalities detected in both groups were prostatomegaly (2); adnexal cysts (4); ureteric calculi (1); and PE (1). A CT abdomen pelvis was performed in 18% (11) of patients with idiopathic DVT. 8 patients with secondary DVT had a CT done due to elevated tumour markers or past history of carcinoma. 2 of these scans were abnormal. Tumour markers: 50% (CI, 37.35% to 62.65%) of patients with idiopathic DVT had tumour markers requested versus 21% (CI, 11.32% to 30.68%) of patients with secondary DVT. One patient diagnosed with idiopathic DVT had an elevated CEA level of 195 ng/ml, however a histological diagnosis of carcinoma could not be reached as the patient was not fit for investigation. Another patient had thrombocytopenia on routine blood investigations and was diagnosed with myelodysplasia. 8% (CI, 3.3% to 12.7%) of the patients included in the audit had a previous history of carcinoma however disease recurrence was not documented.

Conclusion: Despite 40 (67%) patients with idiopathic DVT being screened with either ultrasound, tumour markers, CT scan or all three investigation modalities, a diagnosis of malignancy was not reached. We therefore suggest that screening should be directed to patients who on baseline blood investigations and routine physical examination have signs and symptoms suggestive of associated underlying disease.

A descriptive overview of the use of the D-dimer tests at Mater Dei Hospital
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Introduction: Two types of D-Dimer tests (qualitative and quantitative) are available at the Mater Dei Hospital laboratory. Their main purpose is to assess patients with suspected Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE) in the Accident and Emergency (A&E) Department or to detect and quantify the presence of Disseminated Intravascular Coagulation (DIC). The aim of the study was to audit the use of the D-Dimer tests at Mater Dei Hospital.

Methods: Data were extracted from MDH database systems (iSoft and PACS) of all patients for whom a D-Dimer was requested during a period of 12 months from the 01/06/10 to the 31/05/11. Results of both quantitative and qualitative D-Dimer tests were collected, together with any relevant imaging studies (ultrasound Doppler, CT pulmonary angiography, venograms and ventilation/perfusion scans).

Results: A total of 2313 requests were made for the D-Dimer test in the 12 month period, of which 1872/2313 (81.0%) were SimpliRED tests (qualitative), and 441/2313 (19.1%) were InnovaDx tests (quantitative). 769/2313 (33.2%) were positive, while 1469/2313 (63.5%) had a negative D-Dimer result. 75 D-Dimer tests yielded no valid result. While the majority of tests were requested from the A&E department (1701/2313, 73.5%), a significant number of tests were requested from the wards (396/2313 - 21.4%), and from outpatients and health centres (100/2313, 4.3%). 273/769 (35.5%) of positive D-Dimer results were followed up by confirmatory imaging for DVT or PE, even though the majority of requests were not made in the context of suspected DIC.

Conclusion: The D-Dimer test is being used throughout hospital with an average of 6.3 requests per day. While the majority of test requests originate from the A&E department as the guidelines recommend, a significant number of tests are being made from the wards. This would have been acceptable to detect DIC. However, only 18 requests indicated suspected DIC. Furthermore, there are a significant number of positive test results that are not followed up. This could have been due to erroneous requests in low risk cases. The other possibility was that these results were simply not acknowledged indicating a degree of laxity in following up positive test results. Both these issues should be addressed by standardised use of D-Dimer through hospital guidelines and possibly a system embedded in ‘iSoft’ requests whereby insertion of the pre-test score (using the Well’s score) is mandatory for the request to be processed.
**Conclusion:** The use of a second ultrasound to diagnose DVT in patients with a negative first ultrasound is a useful strategy. However, a small proportion of patients with negative second ultrasound were subsequently diagnosed with DVT. This needs further evaluation.

**P7.09**

**Discrete event simulation of an A&E Department using SimPy**

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**Introduction:** Accident and Emergency (A&E) departments are constantly searching for ways to decrease waiting times for patients attending. This is due to the fact that there is a worldwide problem of overcrowding and prolonged waiting times in these departments. Discrete Event Simulation (DES), which is a way to imitate the operation of a real-world process or system over time, is one of the tools that is being made use of regularly in order to understand and attempt to solve these issues.

**Methods:** A simulation program, using SimPy (Simulation in the programming language Python), was written, based on an A&E department. Patients were divided into two groups. Group 1 consisted of those patients who required hospitalization after being seen in the A&E department, while group 2 consisted of those patients who were not admitted to a ward. This program had a number of factors altered so as to identify which factors could alter waiting time. Nine scenarios were run based on the simulation program. The mean and maximum waiting times were analyzed for each scenario and compared to the original one.

**Results:** Group 1 patients - The largest decrease in mean waiting time was of 7.9% when the time spent in the bay is decreased. The largest increase in mean waiting time was of 79.2% when the time of hospitalization is increased. Group 2 patients - The largest decrease is of 34.6% in mean waiting time when the time taken to be seen was decreased. The largest increase in mean waiting time was of 48.7%, when the time to be seen in the A&E department was increased.

**Conclusions:** SimPy is a useful tool to be used in simulation of an A&E department. It has shown that a reduction in patient time spent in the A&E department was important to decrease waiting times. An increase in ward beds is also necessary to decrease waiting times in the A&E department. In order to avoid prolonged waiting times, one must avoid prolonged admissions. The use of such a tool or similar locally, could also assist in identifying the issues that may cause prolonged waiting times and overcrowding.

**P7.10**

**Investigation of clinical outcomes for medical patients after readmission**

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**Introduction and aim:** Medical readmissions at Mater Dei Hospital were shown to constitute a significant burden with a readmission rate of 10.1%. The aim of our study was to investigate clinical outcomes at 90 days for all patients who were readmitted once to the medical department of Mater Dei Hospital during February 2010.

**Method:** We followed patients up for 90 days after the index readmission and data was collected retrospectively with regards to death, recurrent readmissions and transfer to nursing hospitals or other institutions. For the purpose of statistical analysis these patients were considered to have developed an unfavourable outcome and subsequently compared to patients with a favourable outcome i.e. no further episodes in the 90 day period after readmission.

**Results:** Patients in the favourable group were significantly younger with a mean age of 63 years (95%CI=+/-0.31years) compared to the mean age of the unfavourable outcome group at 71.8 years (95%CI=+/-2.00years) with a p value of 0.037. Patients with heart failure or a respiratory diagnosis (COPD and pneumonias) during their first readmission were also more likely to develop unfavourable outcomes (p=0.047). Epidemiological factors of gender and location of residence were not found to contribute significantly towards the development of either favourable or unfavourable outcomes. In all 10.3% of readmitted patients had developed an unfavourable outcome at 90 days. During this period 52 patients (33.3%) were readmitted more than once with the number or readmissions ranging from 1 to 8. Of note was the fact that 26.9% of patients who had been readmitted at least once in February 2010 had passed away during the 90-day follow-up.

**Conclusion:** The fact that a high proportion of patients had developed an unfavourable outcome during follow-up could indicate that many rehospitalisations are unavoidable. Additionally the frequency of heart failure and respiratory conditions in this group may represent progression in the natural history of the patient’s underlying chronic disease as a cause for the original readmission and subsequent rehospitalisations.

**P7.11**

**An exploratory study of medical outpatients’ use of mobiles and internet in Malta**

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**Introduction:** Medical services face inexorably rising demand, due to ageing populations, who tend to suffer from chronic diseases. Self-management is advocated to better chronic disease outcomes; mobile technology and Internet are potential channels for improving patient self-care models. It enables targeted patient information and feedback, as well the potential to improve effectiveness via better adherence. The evidence base to date looks promising, but is limited and needs further assessment. Malta has a mobile subscription rate of 117%, with 64.3% of the population being Internet users; 70% of households have Internet access, rising to 96% of households with children; older persons are least likely to have Internet access.

**Objectives:** To assess mobile phone ownership, SMS (short messaging service) and Internet access by patients attending Medical Outpatients in two Health Centres.

**Methods:** Consecutive medical outpatients attending between Oct 2011-Jan 2012 were asked about their mobile phone ownership, SMS usage and Internet access; demographic data including age decile and gender were also noted. Data was completely anonymised.

**Results:** 205 patients were included in this pilot sample, comprising 44.7% men, 55.3% women. The mean ages were 63 years for men and 65 years for women. 77% use a mobile phone, over half use SMSs and just over a third have Internet access.

**Conclusions:** Mobile phone usage is common in this group of medical outpatients, especially in the deciles most likely to suffer from chronic disease. SMS usage is common. Home Internet usage reflects the older patient population - but compares favourably with the national rate of 31.7% to 12.7% quoted for individuals ranging from 55-74 years. Use of these channels is feasible-although this will require a ‘blended’ approach so as to target patients appropriately.
P7.12 The development of the first screening test for acquired language disorder in Maltese speaking older adults
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Aim: To develop the first screening test for acquired language disorders in older adults.

Methodology: A screening test yielding a quantitative score was developed following a literature search and piloted on 20 subjects. Normative data was collected from a representative sample of 96 community dwelling older adults (60 years +) through cluster sampling, from the five regions of Malta. Inclusion criteria: no cognitive impairment, no history of neurological disorders and functional hearing abilities. Eighteen subjects were excluded. Data collection was carried out at day centres by four speech language pathologists (SLPs). Factors taken into account included: a) age (60 - 79 years and 80 years +), b) gender, c) educational background, d) literacy and e) bilingualism. The screening test was also carried out on 10 subjects with aphasia.

Results: Correlation and comparative statistical analysis of the data using SPSS version 16 revealed that 1) scores were not affected by gender, age or locality, 2) p-values reached significance for factors related to bilingualism and literacy, and 3) the mean scores differ significantly between the normative group (N) and the aphasia group (A). A cut-off point for receptive language skills and one for expressive sills were also obtained.

Conclusion: The test is valid for the purpose of screening for acquired language disorders.

P7.13 Are GP’s receiving adequate information from hospital on patient discharge?
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Background: Patient care hinges in part on adequate and timely information exchange between treating doctors in the hospital and in the community setting. Referral, reply letters and discharge summaries are common means by which doctors exchange information pertinent to patient care particularly where the community physicians are asked to continue care. Ensuring that the letters and summaries produced meet the needs and expectations of the intended recipients saves time for clinicians and patients, reduces unnecessary repetition of diagnostic investigations, and helps avoid patient dissatisfaction, loss of confidence in medical practitioners and adverse clinical outcomes. Aim: The aim of this review was to investigate whether general practitioners are receiving adequate information from hospital when patients are discharged back into the community.

Method: A search for published research was conducted from a number of search engines using the key words; “general practice”, “general practitioner”, “discharge letters”, “discharge summaries”, and “hospital discharge”. Results: The papers, in general indicated a consistent report of dissatisfaction with the quality or timeliness of the information being transferred to the community.

Conclusion: Timely and good quality communication between acute medical departments and general practitioners improves the continuity of care that patients receive. There is a reported lack of energy spent on the dissemination of correct information contained within discharge summaries to the community physicians.

P7.14 Translating the Montreal Cognitive Assessment to Maltese: problems and possible solutions
R. D. Vella, D. Mamo

Introduction: As the elderly population is rising rapidly in Malta there is an increasing need to develop screening instruments for the assessment of cognitive impairment for clinical and service planning purposes. Many individuals with mild cognitive impairment (MCI) and dementia remain undiagnosed for years despite available treatments that provide a modest reduction in the disease progression. Brief cognitive screening instruments provide an objective and cost-effective means of determining the need for further evaluation of cognitive problems for older individuals at risk of dementia. The Mini-Mental State Examination (MMSE) is usually used in Malta by psychologists, psychiatrists and geriatricians in order to screen for cognitive impairment yet research has shown that the MMSE is culturally, socially and language bound, which may contribute to score distortions including lowering of scores.

Aim: To translate the Montreal Cognitive Assessment (MoCA) to Maltese. The MoCA is 10-minute, one-page 30-point cognitive screening test to identify elderly people with MCI and dementia (Nasreddine, et al., 2005). The total possible score is 30; a score of 26 or above is considered normal and a score below 26 with no functional impairment indicates MCI. Additionally a score below 26 with functional impairment indicates early dementia, and an extra point is added if the individual has 12 years or few of formal education. The authors describe this test as measuring eight cognitive domains through several tasks: short-term memory; visuospatial abilities; executive functions; phonemic verbal fluency; verbal abstractions; attention, concentration and working memory; language; and orientation to time and space. Smith et al. (2007) found that the MoCA is highly sensitive in identifying MCI and dementia (83% and 94% respectively).

Methodology: The MoCA and the instruction manual will be adapted and translated to Maltese. It will be translated and back-translated by professionals. It will then be reviewed by 5 – 10 psychologists and psychiatrists in the field reviewing any aspects which may be language, cultural and social bound. It will then be administered to a sample of 150 people (65 – 90 years), 75 with MCI/dementia, 75 as a control with no impairment. Content validity will be assessed using the Maltese MMSE. Test-retest reliability and inter-rater reliability will also be assessed.

Disclosure: Permission has been obtained from the creators of the Montreal Cognitive Assessment to translate the screening tool into Maltese.

P7.15 Weather variables and emergency hospital visits for adult asthma exacerbations in Malta

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Background: Asthma exacerbation requiring hospital treatment has been shown to exhibit seasonality in several studies.

Aim: To analyse the relationship between weather conditions and hospital visits with asthma in Malta.

Methods: All adults treated for asthma exacerbation in our accident & emergency department (ED) in 2010 were included retrospectively. Information on demographic variables was collected. Daily weather data including: temperature, barometric pressure, maximum % relative humidity, mean wind speed and precipitation; was obtained from the Meteorological office at Malta International Airport.
Results: 328 adults received treatment for asthma exacerbation at the ED in 2010; 53% required admission. 70.4% were females. A high incidence of ED visits was observed during November, December and January, with the lowest incidence recorded in June and July. A significant association was found between age and number of ED visits (p<0.005); with the most common being the 20-40 age group. The number of ED visits for asthma was positively correlated with: precipitation of rain 1 day (p=0.002) and 2 days before (p=0.006); and mean wind speed (p=0.035). A significant negative correlation was detected between number of visits and maximum % relative humidity (p=0.004), and barometric pressure (p=0.028). However, no significant correlation was detected between number of visits and temperature.

Conclusions: ED visits for asthma in Malta exhibit seasonality. These are associated with high mean wind speeds and high precipitation 1 and 2 days before presentation. These findings have important implications for developing an effective preventive strategy with increased vigilance during periods of increased risk.

P7.16
The use of the chronic obstructive pulmonary disease assessment test (CAT) in pulmonary rehabilitation
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Introduction: The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines recommend pulmonary rehabilitation for patients at all stages of chronic obstructive pulmonary disease (COPD) due to improvements in exercise tolerance and in their symptoms. Pulmonary rehabilitation programmes have started at Mater Dei Hospital in September 2011.

Aim: The aim of the study was to assess whether there is any improvement in the quality of life of COPD patients undergoing the pulmonary rehabilitation programme, by using the COPD Assessment Test (CAT). This is a validated patient-completed questionnaire that consists of eight questions and is useful in assessing the impact of COPD on health status. The score result varies from 0 to 40; the higher the score, the greater the negative impact of COPD on the patient’s wellbeing.

Methodology: 37 patients have so far participated in the pulmonary rehabilitation programme at the physiotherapy department. The study consisted of performing the CAT score at the beginning of the programme, at 8 weeks and 12 weeks of the programme, and 4 months after its completion. Moreover demographic data and data on co-morbidities, lung function tests and treatment were collected for each patient.

Results: 31 patients with a mean smoking history of 69 pack years completed the 12 week programme. 83.5% were males and the mean age was 65.4 years. 87.1% were ex-smokers; the rest were current smokers. The CAT scores improved from a mean score of 15.6 initially to 5.5 at 8 weeks and 4.1 at 12 weeks. The patients were categorised according to their GOLD stage: 4 patients were in stage 1; with 8, 13 and 6 patients in stages 2, 3 and 4 respectively. The patients in all four GOLD stages were noted to have an improvement in their CAT score and there was no significant difference in the degree of improvement of the four stages. The results of the patients followed up up to 4 months following completion of the programme, showed that the beneficial effect of the rehabilitation programme is sustained.

Conclusion: The CAT score is a simple-to-use questionnaire that is useful to monitor response to pulmonary rehabilitation. The pulmonary rehabilitation programme carried out at the physiotherapy department at Mater Dei Hospital has a definite beneficial effect on the quality of life of COPD patients in all four GOLD stages of disease. Thus further programmes should be encouraged in the future.

P7.17
Phenotypic predictors for hospital admission in adults with asthma: a case-controlled study
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Background: Respiratory tract infections (RTIs) are a known risk factor for admission with asthma exacerbation. Few studies give further insight to other possible risk factors.

Aim: To correlate asthma phenotypes with hospitalisation, in acute exacerbations of asthma.

Methods: We included 100 asthmatics admitted with an acute exacerbation over 14 months; matched for age and sex with a 100 well-controlled asthmatics from asthma clinic.

Information on sociodemographic variables, clinical and laboratory data was collected. Acute and convalescent (at 6 weeks) titres of serum immunoglobulin E (Se IgE) and serum eosinophil count were taken. SPSS was used for statistical analysis.

Results: We detected a positive correlation between age of asthma onset and a history of atopy (p<0.0001) and a family history of atopy (p=0.023); but no correlation with Se IgE levels was found (p=0.05). There was no significant difference in the number of hospitalisations over the previous year between smokers and non-smokers (p=0.308). The difference between convalescent Se IgE levels in males (mean 324) and females (mean 159) was statistically significant (p=0.026). Acute Se IgE levels and eosinophils were found to be positively correlated (p=0.027), however, no correlation was established between acute or convalescent Se IgE and duration of asthma, personal or family history of atopy (p>0.05). There is no significant difference between Se IgE levels in different BMI classes (p>0.05) or in different age groups.

Conclusions: Asthma exacerbation is more likely in those who are atopic and have a longer duration of asthma. This was not evident for smoking asthmatics and BMI. Convalescent IgE levels are higher in males post exacerbation.

P7.18
Smoking habits amidst newly graduated doctors
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Introduction: Smoking has long been associated with a number of disorders, including but not limited to, lung carcinoma, emphysema and chronic bronchitis. Whilst this knowledge might not be common place amongst the general population, doctors are well aware of these complications. Since doctors’ view on smoking may influence the non-medical public, it is important to be aware of the attitudes of new generations of doctors towards smoking.

Aim: To evaluate the smoking habits amidst doctors who graduated in 2009. Methodology: Newly graduated doctors calling for their weekly lecture were asked to fill in a questionnaire regarding their smoking practices and their views regarding Mater Dei Hospital becoming a completely smoke free hospital.

Results: Our study thus concerned 40 doctors who graduated in 2009. Their mean age was 23.6 years (SD: +/- 1.13 years). 80% of the newly graduates were non-smokers. 77.5% of the doctors never smoked, 2.5% had stopped smoking in the previous year, and the remaining 20% of the respondents actively smoked were actively smoking at the time of answering the questionnaire. 50% of the smokers smoked <5 cigarettes a day, 25% smoked 5-10 cigarettes daily; the remaining 25% smoked 11-20 cigarettes per day. The average age at which respondents started smoking was 18.9 years (SD: +/- 2.85). 50% of the
Asthma is a chronic inflammatory disease of the airways, associated with remodelling. In a subset of patients, remodelling can result in a permanent obstructive defect refractory to standard treatment. Endobronchial ultrasound (EBUS) has been shown to be reliable in determining airway wall thickness, and also has the advantage of demarcating wall subdivisions.

P7.19
Do we need an alarm clock?
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Aim: Using the Modified Early Warning System (MEWS) score used by the Worcestershire NHS Trust, we wanted to see if current parameter charting kept up with the Patient at Risk Score (WPARS) Clinical Guideline.

Methodology: Observation charts were reviewed from 9/7/12 till 11/7/12; including heart rate (HR), blood pressure (BP), respiratory rate (RR), temperature, urinary output (UO) and level of consciousness (AVPU) on the 8/7/12 were taken into account for this audit. Standard pro-forma was used. Nursing reports and medical notes were also looked at to see what actions were taken according to the score.

Results: 171 patients’ observation charts were reviewed, 1 had missing parameter charts and 13 did not have any observation on the 8/7/12. These 157 patients had 413 of observation episodes, 18 observation episodes were excluded because their total MEWS (tMEWS) could not be measured - thus only 395 observation episodes were assessed. The mean age was 71.68 years old and mean number of observation for patients with parameters was 2.52 per day and a 9.54 hour interval was noted on average between each set of parameters. 85 patients’ parameters were recorded based on the given observation regimen, 26 patients’ parameters were under observed (less than the frequency requested), 35 patients’ were over observed while 25 patients did not have any observation regimen requested. Of 2370 potential parameter measurements, 281 HR, 383 BP, 209 temperature, 38 RR, 1 AVPU and 9 UO were recorded on the date of the audit. 228 observation episodes (57%) had a tMEWS of 0, 106 (26%) had a tMEWS of 1, 38 (9.6%) had a tMEWS of 2, 21 (5.3%) had a tMEWS of 3, 2 had a tMEWS of > 3. Only 6 observation episodes with tMEWS > 2 triggered a reaction from nursing staff of which, 4 received medical attention from the house officer, 1 needed further review by the Basic Specialist Trainee and no episode triggered an HST response. Based on the WPARS actions response, only 1 patient with tMEWS of 2, and 4 patients with tMEWS 3 and above, received a proper action.

Conclusions/recommendations: Parameter charting is not consistent amongst the various wards. A single standardised observation chart should be created and enforced followed by a recommended line of actions. The implementation of MEWS will prompt attention to any worrying trends and reduce the clinicians’ clinical uncertainty by allowing them to prioritise calls for attention.

P7.20
Audit of pulmonary function lab at Mater Dei Hospital in accordance with the ATS/ERS guidelines on standardisation of spirometry
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Background: Lung function testing is a simple, quick procedure which provides information pertaining to respiratory disease, in correlation to symptomatology and indicates the need for further therapeutic intervention.

Aim and method: The spirometries undertaken at the pulmonary function laboratory were assessed for accuracy, reproducibility and quality as defined by benchmarks and guidelines set out by the ATS/ERS taskforce listed in Standardisation of Spirometry (2005) Eur Resp Journ. Data, extracted from a total of 1,391 spirometry results, was collected retrospectively over a 4 month period to assess: 1. the presence of a minimum of 3 technically acceptable and reproducible manoeuvres, (the largest two FEV1 and FVC readings agree within 0.15L) 2. good test initiation 3. ensure no artefacts 4. exhalation of more than 6 seconds. A mid-point review of the spirometry acceptability criteria was performed with the laboratory technicians, with subsequent re-audit to assess response. Results: 55% of results lacked a request form pertaining to background and lung function test requested. There was no statistical significant difference between the audit and re-audit population on the basis of age (p=0.759 95% CI), gender (p=0.122) and smoking status (p=0.67). The minimum requirement of three manoeuvres was satisfied in 98% of cases in both groups, with acceptable repeatability of FVC and FEV1 achieved in 67.5% and 64.8% in the audit and re-audit populations respectively (p=0.928). Peak expiratory flow rate was achieved with a sharp rise in the majority of manoeuvres (86.6% and 86.9% p=0.883). Only a minority of volume-time curves were interfered by a cough in the 1st second of the manoeuvre (3.2% and 3.3% in the two populations; p=0.892), with a further significant reduction in the number of artefacts noticed between the initial 11.8% to 29.3% (p=0.000). Satisfactory exhalation of > 6 seconds duration showed a statistically significant improvement from the initial 11.8% to 29.3% (p=0.000). Although, the number of usable curves has remained statistically the same (83.4% and 83.6%, p=0.944), there has been a significant increase in the number of adequate curves meeting all six acceptability criteria from 5.4% to 15.5% (p=0.000).

Conclusions: Despite the improvement, most spiromgrams are still inadequate. This can mainly be accounted for by the high level of artefacts and unsatisfactory exhalation times. Such deficits in the quality of spirometry can be reflected in the clinical decision making and patient management, hence the need to improve on factors of a technical nature.

P7.21
Endobronchial ultrasound for assessment of airway wall thickness in asthma correlation with physical characteristics
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Rationale: Asthma is a chronic inflammatory disease of the airways, associated with remodelling. In a subset of patients, remodelling can result in a permanent obstructive defect refractory to standard treatment. Endobronchial ultrasound (EBUS) has been shown to be reliable in determining airway wall thickness, and also has the advantage of demarcating wall subdivisions.

Malta Medical Journal Volume 24 Supplement November 2012
Methods: EBUS was performed on 25 subjects. This involved introduction of an EBUS probe into the posterior basal segmental bronchus of the right lower lobe. Satisfactory images were obtained from a total of 10 healthy controls and 15 asthmatics of varying severity. The asthmatics were divided into those with a reversible airway defect (n=9) and those with a fixed airways disease (n=6) on the basis of the FEV1 to >90% of predicted following administration of 2.5mg salbutamol. The area between the lumen and the second hyperechoic region, which has been shown to correspond to the epithelial and submucosal regions of the airway wall (Kurimoto, Chest 1999; 115), was measured using computer software.

Results: A comparison was made between the three groups. The area in non-asthmatic was 31.3mm2 (21.8-44.18), in asthmatics with reversible airways disease 36.3mm2 (27.4-62.5) and in the asthmatics with fixed airways disease 49.4mm2 (32.9-72). Non-parametric statistical analysis revealed a significant difference between the non-asthmatic and fixed airway disease groups (p=0.03).

Conclusions: The data indicates an increase in the submucosal layer thickness in asthma, in those subjects with impaired bronchodilator responsiveness. This difference was not so evident when the asthmatics were divided on the basis of GINA asthma severity suggesting that proximal airway wall thickening occurs in only a subgroup of symptomatically severe asthmatics, reflecting disease heterogeneity and the need to subphenotype.

Disclosure: Funded by: Medical Research Council (UK)

P8.02
ADHD: A failure of transition? N. Zammit1, R. Muscat2, K. Camilleri3
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Is cognitive function readily reproducible by simply inducing neural firing at a certain frequency band? In this paper we have opted for a bottom-up approach to investigate how the unique computational dynamics and characteristics behind neural networks that fire at gamma (30-100Hz) and beta (14-20 Hz) frequencies might provoke the appearance of two discrete cognitive processing modalities. We utilize a physiologically realistic parietal small-scale computational network built by Kramer and colleagues (2008) to assert that the transition from gamma to beta rhythms might shift the neural system from a ‘neural monitoring mode to an ‘offline’ analytic mode. We further build on the computational dynamics of Kramer’s model to suggest for the first time the possibility of a failed transition and its consequent impact on impulsive behaviours. Next we apply this concept to elaborate on the etiology that may substantiate impulsivity in Attention-Deficit-Hyperactivity Disorder (ADHD). We tested these predictions by conducting an Electroencephalogram (EEG) experiment on 10 healthy and 10 ADHD subjects during a customized cognitive task that elicits this oscillatory transition. We tapped the transition from the gamma to the beta rhythm in the parietal cortex and predicted that the different ‘transitory thresholds’ as measured by correlating the gamma and beta oscillatory activities will indeed discriminate between patients and healthy controls as well as on the impulsivity scores reminiscent of each subject within each group. In addition, we hypothesized that a decrease in the power of beta oscillations will also precipitate the subjects’ susceptibility to impulsive behaviours. The findings of this study may provide a logical physiological explanation that may support complex behaviours in healthy individuals and the premise for understanding what mechanisms may give rise to aberrant behaviour as found in disorders such as ADHD.

P8.03
Identifying compounds that enhance the resilience of isolated neuronal mitochondria against dysfunction induced by Amyloid-beta(42) and Tau oligomers C.M. Zarb1, C. Scerri1, N. Vassallo1
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The oligomeric intraneuronal accumulation of amyloid beta 42 (Aβ42) and Tau has been directly linked to Alzheimer’s Disease (AD) pathology and progression. In particular, mounting evidence indicates that oligomer-induced mitochondrial abnormalities are early occurrences, preceding neurological pathology and clinical symptoms characteristic of AD. Perforation of mitochondrial membranes leads to the release of pro-apoptotic proteins such as cytochrome c into the cellular cytosol, triggering neuronal apoptosis. The main aims of the study were to determine any effects of Aβ42 and Tau aggregates on mitochondrial membranes and subsequently identify mitochondrial-nurturant compounds. Assessment of mitochondrial membrane permeabilisation was performed by using fluorescence-based methods on mitochondrial-like model systems and cytochrome c release (CCR) assays
on mitochondria isolated from neuronal-like cells. Aβ42 is able to directly perforate artificial and actual mitochondrial membranes. This effect was highly dependent upon the presence of low molecular weight oligomeric species. Interestingly, Tau aggregates were more potent in destabilising mitochondrial membranes than oligomeric Aβ42. Extensive liposomal studies revealed that both aggregated Aβ42 and Tau manifest a marked selective affinity towards mitochondrial membranes, primarily due to the mitochondria-specific phospholipid, cardiolipin. These results indicate a pivotal pathway of neuronal apoptosis induction and intriguingly suggest a common toxic mechanism for the two aggregation-prone peptides. The final part of the study involved the screening of 7 natural polyphenols (apigenin, baicalein, epigallocatechin-gallate, morin, nordihydroguaiaretic acid and rosmarinic acid), 2 plant extracts (black tea and Padina pavonica) and an N'-benzylidine-benzohydrazine derivative (NBB+8) for inhibitory effects on CCR induced by aggregated Aβ42. All compounds decreased CCR by >65% and were thus considered as effective inhibitors of Aβ42-induced mitochondrial membrane permeabilisation. Rosmarinic acid and epigallocatechin-gallate were also assessed for their ability to antagonise aggregated Tau-induced CCR. Inhibition was comparable to that observed with Aβ42. In conclusion, our results provide further insight into the mechanisms involved in Aβ4β/Tau induced mito-toxicity, and identify potential candidates for effective mitochondrial drugs in AD.

P8.04

Extreme sensitivity of myelinating optic nerve axons in a rodent model of perinatal ischemic injury


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Stroke is a leading causes of mortality and morbidity in developed countries. The central role of injury to white matter in the pathophysiology of stroke has been recognised over the last few years. Cerebral white matter injury is increasingly recognized as a common form of perinatal brain injury that predisposes to cerebral palsy as well as cognitive and learning disabilities. The main aim of this project was to investigate functional and morphological changes that occur following a hypoxic-ischemic insult, in axons and glial cells in neonatal white matter. To attain this aim, we used electrophysiological analysis to assess conduction block and irreversible injury to rodent optic nerve axons from different age groups following an ischemic insult. This was coupled with quantitative ultrastructural and morphometric analysis of the same axons using transgenic THY-1/GFP-M mice (that express a green fluorescent protein on certain neuronal subsets, including axons), and of glial cells using immunohistochemistry. To identify the mechanism following ischemic-injury operating in these axons, voltage-gated calcium channels blockers were used before, during, and after the ischemic insult, and their effect on axonal conduction block monitored. Our findings have identified maturation-dependent susceptibility of developing axons in cerebral white matter to hypoxia-ischemia. Peak vulnerability occurred in axons undergoing early myelination. This finding suggests that damage to developing axons is a major component of peri-natal white matter injury. The increased sensitivity to ischemia of these axons is mediated by voltage-gated calcium channel expression in the axolemma. Better understanding of the pathophysiology of white matter injury during the neonatal period may eventually lead to the development of new therapeutic strategies for the various white matter diseases.

P8.05

Kv1.1 knock-in ataxic mice exhibit spontaneous myokymic activity exacerbated by fatigue, ischemia and low temperature

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Episodic ataxia type 1 (EA1) is an autosomal dominant neurological disorder characterized by myokymia and attacks of ataxic gait often precipitated by stress. Several genetic mutations have been identified in the Shaker-like K+ channel Kv1.1 (KCNA1) of EA1 individuals, including V408A, which result in remarkable channel dysfunction. By inserting the heterozygous V408A, mutation in one Kv1.1 allele, a mouse model of EA1 has been generated (Kv1.1(V408A/+)). Here, we investigated the neuromuscular transmission of Kv1.1(V408A/+) axons and the associated sensitivity to physiologically relevant stressors. By using in vivo preparations of lateral gastrocnemius (LG) nerve-muscle from Kv1.1(+/-) and Kv1.1(V408A/+), mice, we show that the mutant animals exhibit spontaneous myokymic discharges consisting of repeated singlets, duplets or multiplets, despite motor nerve axotomy. Two-photon laser scanning microscopy from the motor nerve, ex vivo, revealed spontaneous Ca ++ signals that occurred abnormally only in preparations dissected from Kv1.1(V408A/+). Spontaneous bursting activity, as well as that evoked by sciatic nerve stimulation, was exacerbated by muscle fatigue, ischemia and low temperatures. These stressors also increased the amplitude of compound muscle action potential. Such abnormal neuromuscular transmission did not alter fiber type composition, neuromuscular junction and vascularization of LG muscle, analyzed by light and electron microscopy. Taken together these findings provide direct evidence that identifies the motor nerve as an important generator of myokymic activity, that dysfunction of Kv1.1 channels alters Ca ++ homeostasis in motor axons, and also strongly suggest that muscle fatigue contributes more than PNS fatigue to exacerbate the myokymia/neuromyotonia phenotype. More broadly, this study points out that juxtaparanodal K+ channels composed of Kv1.1 subunits exert an important role in dampening the excitability of motor nerve axons during fatigue or ischemic insult.

P8.06

Neuropeptide FF receptors as novel drug targets in epilepsy

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Regardless of the immense pharmacotherapeutical progress that has been made over the years, a substantial 30% of epilepsy patients remain resistant to epilepsy drug treatment. There is a great need for novel antiepileptic drugs that have distinct profiles of activity than those currently available, thus increasing importance is being directed towards neuropeptides. Neuropeptide Y (NPY) is a well established...
anticonvulsant neuropeptide and is regarded as a first-in-class antiepileptic peptide in animal models of epilepsy, whereas the NPFF system has never been suggested to play a role in epilepsy. In this study, the role of NPY Y1 receptors in epilepsy was reassessed by testing two highly selective Y1 receptor ligands (the agonist D-His23-NPY and the antagonist BVD10) and the mixed Y1/FF receptor antagonist BIBP3226 in the focal pilocarpine model for limbic seizures. We established that intrahippocampal administration of D-His23-NPY (20-50 µM) and BVD10 (2-40 µM) had no effect on limbic seizures when compared to the control group, whereas BIBP3226 (10 µM) significantly attenuated limbic seizures (p < 0.05). This indicated that hippocampal Y1 receptors may not be involved in the modulation of limbic seizures, but that probably the seizure attenuating effects of BIBP3226 are due to its action on NPFF receptors. Intrahippocampal (10-50 µM), systemic (0.1-0.5 mg/kg) and intracerebroventricular (icv) (0.1-0.5-10 nmol/hr) administration of the NPFF1 and NPFF2 receptor antagonist RF9 in rats resulted in significant attenuation of limbic seizure activity (p < 0.05). To confirm better the implication of NPFF receptors in these seizure-modulating effects, additional structurally different RF compounds were synthesized. Using the same seizure model we established that, whilst low affinity RFg structure analogs failed to exhibit anticonvulsant properties, two structurally unrelated high affinity NPFF1 receptor ligands significantly attenuated the seizures when administered icv (p < 0.05). Using NPFF receptor agonists we noted that continuous icv NPFF1 (0.1-0.5-1-3.5-7 nmol/hr) but not NPFF2 (0.1-1 nmol/hr) selective receptor agonist administration potently inhibited pilocarpine-induced seizures (p < 0.05). Bolus icv administration of the NPFF1 receptor agonist (1nmol/3µL) however did not result in limbic seizure attenuation implying the possibility of NPFF1 receptor desensitization taking place. In summary we show for the first time the involvement of the NPFF system in epileptic seizures.

P8.07
Role of sleep homeostasis on the development of levodopa-induced dyskinesia: a local-field cortical activity study in the 6-OHDA rat

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Increasing evidence has demonstrated that sleep disturbances are highly associated with Parkinson’s disease (PD), frequently preceding the motor onset of the disease itself and revealing the intimate role of dopamine in regulating the sleep-wake cycle. On the basis of the clear role exerted by slow wave activity (SWA) on synaptic downscaling, we hypothesize that its reduction could cause an excessive storage of irrelevant information within the cortico-basal ganglia thalamic loop leading to dyskinesia, a common feature of the advanced stage of PD. In order to prove our hypothesis we employed a 6-OHDA parkinsonian rat model chronically treated with levodopa developing abnormal involuntary movements comparable to levodopa-induced dyskinesia (LID) observed in PD patients. We analyzed the sleep pattern of five animal group (i) sham-lesioned drug-naïve rats, (ii) sham-lesioned levodopa-treated rats, (iii) 6-OHDA-lesioned drug-naïve rats, (iv) 6-OHDA-lesioned levodopa-treated rats and (v) 6-OHDA-lesioned levodopa-treated rats with dyskinesia. Our preliminary results have shown that dyskinetic animals have an impaired mechanism of down regulation in comparison with the animal without involuntary movements. Our results address a completely new aspect of the pathophysiology of LID centered on sleep EEG abnormalities. If further analysis confirm our findings we could be able to promote the development of new sleep-based pharmacological treatments for LID.

P8.08
Role of 5-HT2C receptors in temporal lobe epilepsy: experimental evidence in rodents

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The 5-HT2C receptor (R) subtype is one of the most studied members of the serotonin receptor family. The localization of 5-HT2CRs and the biological activity of their ligands have suggested that the serotonergic neurotransmission mediated by this subtype might be pivotal in suppressing neuronal network hyperexcitability and, therefore, in influencing epileptogenesis in both animals and humans. This hypothesis is corroborated by the evidence that mutant mice lacking the 5-HT2C receptor subtype are extremely susceptible to audiogenic seizures and prone to spontaneous death from seizures. Despite these compelling data, the role of 5-HT2CRs in temporal lobe epilepsy (TLE), the most frequent type of intractable epilepsy, has been surprisingly relatively unexplored. In the present study, we investigated this issue using a model of partial complex (limbic) seizures in urethane-anesthetized rat based on the phenomenon of maximal dentate activation (MDA). Intraperitoneal administration of a preferential 5-HT2C agonist RO 60-0175 significantly affected the parameters of seizure initiation and termination. Contrary to expectations, RO 60-0175 (1, 3, 10 mg/kg; n = 6 for each dose) decreased the time to onset of MDA in a dose-dependent fashion compared to the drug naïve group. This finding suggests that activation of 5-HT2CRs in the CNS exerts a pro-epileptogenic role leading to an increase of excitability at the level of dentate gyrus of the hippocampus. As a consequence, this evidence would predict an increase in seizure duration induced by RO 60-0175. However, we obtained the opposite result. Indeed, treatment with 1 and 3 mg/kg of RO 60-0175 decreased the duration of the MDA and after discharge (AD) while the higher dose of 10 mg/kg resulted ineffective. This evidence reveals that 5-HT2CRs show concurrently both pro- and anti-epileptic effects. The mechanism underlying RO 60-0175’s ability to differentially affect the seizures initiation and termination parameters in this model of epilepsy is not clear and might be indirect involving other neurotransmitter systems. Indeed, a decrease of 5-HT2CRs together with an increase of GAD67 expression were observed in the hippocampus of drug naïve rats that underwent the electrical stimulation paradigm using immunofluorescence and confocal microscopy. This is the first demonstration that adaptive changes in the GABA and 5-HT2C systems can occur at an early stage of epileptogenesis with the aim of preventing excessive firing of the hippocampal principal cells and development of spontaneous recurrent seizures. Although our preliminary findings confirmed the important role of serotonergic transmission in regulating hippocampal excitability and seizure activity, further studies currently in progress are warranted to clarify the complex role of 5-HT2CRs in TLE.
Role of thalamic 5-HT2A and 5-HT2C receptors on tonic GABA-A inhibition: implications for absence epilepsy

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Thalamocortical (TC) neurons of the ventrobasal complex (VB) exhibit both ‘phasic’ and ‘tonic’ extrasynaptic GABA receptor (eGABAAR) mediated currents produced by GABA release from reticular thalamic neurons. Moreover, enhanced tonic GABA inhibition in VB TC neurons is both necessary and sufficient for the expression of absence seizures. Thus, normalization of this eGABAAR gain of function has potential therapeutic value in this generalized epilepsy. Unfortunately, no selective antagonists for thalamic eGABAARs are available. An alternative strategy might be to decrease the aberrant tonic GABA inhibition by other neurotransmitters such as serotonin (5-HT) that is known to modulate cortico-thalamic activity and GABAARs. Among 5-HTs, 5-HT2A/2C are promising candidates, but their effect on tonic inhibition is not known. Whole-cell clamp patch recordings of P21-25 VB TC neurons from Wistar rats, Genetic Absence Epilepsy Rats from Strasbourg (GAERS) and their non-epileptic control (NEC) were made using 130mM CsCl containing pipettes in the presence of 0.25mM TTX and 2mM kynurenic acid. Under control conditions, focal application of gabazine (~10 mM) revealed a tonic current of 1.2±0.5 pA/pF (n=15), 2.0±0.5 pA/pF (n=6) and 1.4±0.3 pA/pF (n=7) in Wistar, GAERS and NEC, respectively, confirming enhanced tonic inhibition in epileptic animals (p<0.005). Bath application of TCB-2 (0.5 μM), a selective 5-HT2A agonist, increased tonic GABA current amplitude in Wistar TC neurons (1.6±0.7 pA/pF; n=20). This effect was blocked by co-application of the selective 5-HT2A antagonist MDL1,939 (0.5 μM, n=18; p<0.05) which alone was ineffective (n=13). Consistently, MDL1,939 (0.5 μM, n=7) did not modify tonic current in NEC but surprisingly decreased it in GAERS (1.3±0.6 pA/pF; n=11). Conversely, RO 60-0175 (0.2 μM), a selective 5-HT2C agonist, decreased tonic current in Wistar (0.7±0.2 pA/pF; n=15), NEC (0.5±0.1 pA/pF; n=7) and GAERS (1.2±0.4 pA/pF; n=6), respectively. The inhibitory effect of RO 60-0175 was most likely mediated by 5-HT2CRs, since it was blocked by the selective 5HT2C receptor antagonist SB242084 (1.2±0.3 pA/pF; n=21) that alone did not alter tonic inhibition in Wistar. These data indicate that 5-HT2A/2CRs exert a powerful control on eGABAAR-mediated tonic current of VB TC neurons in normal and epileptic rats. Interestingly, our findings show that 5-HT2A/2CRs have opposite effects on tonic inhibition of TC neurons. Moreover, they demonstrate a thalamic 5-HT dysfunction in absence epilepsy and identify 5-HT2A/2CRs as new potential targets for novel anti-absence drugs.

Nicotine addiction

J. Vella, G. Di Giovanni

Nicotine, the most psychoactive compound in tobacco, acts as a potent addictive drug in humans. The addictive nature of nicotine led to more than 5 million deaths due to tobacco use in 2008. Evidence indicates that nicotine and other drugs of abuse act on central dopaminergic pathways and modulate their neurophysiological mechanisms. Nicotine stimulates dopaminergic pathways and the prefrontal cortex (PFC), inducing enhanced reward perception and increased cognitive function, respectively. Those findings are consistent with the fact that nicotine binds to the different subtypes of nicotinic acetylcholine receptors (nAChRs) present on the neurons found in the PFC and ventral tegmental area (VTA) of the midbrain. The latter, being the area most involved in addictive behaviour, projects on both the limbic system, particularly on the nucleus accumbens (NAc), and receives afferents from the PFC and brainstem. Although dopaminergic pathways and nAChRs are the protagonists of nicotine addiction, several minor pathways and their constituent receptors have been indicated as being either directly or indirectly affected by nicotine. Those include serotonergic pathways and central cannabinoid receptors. Although the scarcity of approved drugs and partial efficacy of approved treatment, insight in nicotine neurophysiological modulation led to better appreciation of nicotine-seeking behaviour and consequently better design of pharmacological and behavioural approaches to smoking.
cessation. Tobacco is the single most preventable cause of death in the world today. The better understanding of the neurobiological mechanisms underlying nicotine addiction will ultimately lead to more effective treatments of both nicotine dependence and of nicotine rewarding effects.

P8.12
A4 and A7 containing nicotinic receptor subunits and serotonin 2C receptors localisation in the rat lateral habenula: Implications for understanding the neurobiology of nicotine addiction

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Recent evidence shows that the habenula (HB) regulates serotonergic and dopaminergic functions and is involved in different behaviours, such as learning, reward and drug addiction. This nucleus consists of the medial (MHb) and lateral (LHb) habenula. Each sub-region is anatomically and transcriptionally different with distinct neural connectivity. Here, we investigated the effect of nicotine chronic exposure on α4 and α7 nicotinic receptors (nAChRs) subunits expression, localization and distributions in the rat LHb using Western Blot (WB), immunohistochemistry and immunofluorescence coupled to confocal microscopy. Moreover, we investigated the expression and distribution of the serotonin receptor subtype 2C (5-HT2C) in the LHb subnuclei to reveal potential serotonergic modulation of the LHb activity through this receptor. Nicotine (1 mg/kg i.p., twice a day) or saline (1ml/kg, twice per day) were administered for 14 consecutive days to two groups of Sprague-Dawley rats. A day after the nicotine treatment, a group of rats was sacrificed and the LHbs were freshly dissected and homogenized for WB analysis of proteins content. The remaining rats were sacrificed, transcardially perfused with formaldehyde and their brains were extracted. Coronary brain sections were successively processed for immunohistochemistry/fluorescence. The WB analysis showed higher expression of α4-containing nAChRs compared to those containing α7 in the LHb in all groups of rat brain. No differences in these αnAChRs level of expression were observed either between chronically nicotine- and saline treated rats or the drug naïve group. The immunohistochemistry and immunofluorescence staining showed that both α4- and α7-containing nAChRs were uniformly distributed in the LHb of drug naïve rats. However, following the nicotine chronic treatment, a higher level of the expression of both subunits was observed in correspondence with some LHb subnuclei, such as the central part of the medial division (LHbMC), the parcellavascular part of the medial division (LHbMPc), the superior part of the medial division (LHbMS) and in the parcellavascular part of the lateral division (LHbLPc). As far as α5-HT2C receptor expression is concerned, its expression was predominantly found in the LHbMPc of drug naïve rats, presumably on both cell membranes and fibres. Interestingly, after chronic nicotine treatment, this receptor distribution changed with a similar pattern to that of α4 and α7-containing nAChRs. The abundant expression of α4- and α7-containing nAChRs in the LHb suggests that this nucleus might represent an important neurobiological substrate for nicotine mechanism of action. Since the LHb has been proved to modulate the activity of the mesolimbic dopamine system, it might play an important role in nicotine addiction and withdrawal. It is also possible that 5-HT2C receptors in the LHb may be involved in the block of nicotine-induced activation of dopaminergic function by general administration of 5-HT2C agonists.

P8.13
Cholinergic modulation of tau by nicotine: relevance in Alzheimer’s disease pathology

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Alzheimer’s disease (AD) is the most common cause of dementia accounting to approximately 70% of all cases. It is a major predictor of morbidity and mortality in the elderly adding a significant burden on care and social systems worldwide. AD pathology is characterised by the presence of extracellular plaques composed of amyloid-beta protein and intracellular neurofibrillary tangles composed of tau in hyperphosphorylated form. Neuronal degeneration with impaired cholinergic neurotransmission is also present, particularly in areas of the cerebral cortex and hippocampus. Various studies indicate that stimulation of central nicotinic acetylcholine receptors by nicotine is effective in attenuating the cognitive decline observed in AD. Results from our research work have shown that in vivo chronic nicotine (4.0 but not 0.25 mg/kg/day) administration significantly increased the expression levels of total (p<0.01) and dephosphorylated (p<0.05) form of tau in the hippocampus of young but not old rats. This data suggests that nicotine may act as a potential therapeutic agent for AD and its effects are dependent on age, dose and brain region.

P8.14
Rhythmic dendritic Ca2+ oscillations in thalamocortical neurons during slow non-REM sleep-related activity in vitro

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Sensory thalamocortical (TC) neurons are thought to play a crucial role in oscillatory brain activity typical of slow wave sleep. Intrinsic oscillations in TC neurons rely upon expression of T-type voltage gated Ca(2+) channels. We show that during sleep like firing patterns in TC neurons in brain slices, low threshold spikes mediated by T-type channels produce global and rhythmic dendritic Ca(2+) signals. In particular we show Ca(2+) elevations in dendritic spine like structures during slow oscillatory activity. We find that the duration of dendritic Ca(2+) signals and the mean level of Ca(2+) in TC neuron dendrites varies with oscillation frequency. This global repetitive Ca(2+) entry in to TC cells during oscillations could have significant implications for synaptic signalling and biochemical processes in these important sensory neurons.

P8.15
From invasive towards non invasive in vivo methodologies to monitor central (and peripheral) serotonin

F.C. Crespi

In 1962, Udenfriend showed that serotonin (5-HT) can act as a fluorophore as its light-induced fluorescence emission in aqueous solution occur in the near-UV-visible region. In 1979, Aubin showed the existence of an auto-fluorescence emission in the UV-visible interval when biological tissues are submitted to suitable light stimulating conditions. Based upon these evidences, in 1990 Crespi has proposed the use of light-induced fluorescence excitation (L.I.F.E) in the attempt to selectively monitor neurotransmitters in vivo based upon analysis of their own fluorescence. In particular, in parallel experiments performed using voltammetry and spectroscopy it
was demonstrated that I.I.F.E. detects serotonin by means of 50µm diameter optic fiber stereotaxically implanted in discrete brain areas of anaesthesised rats. However, this methodology as well as in vitro voltammetry, remains invasive. In the attempt of overcoming invasiveness Near Infrared Spectroscopy (NIRS) methodology was applied: by means of prototype instrumention for analysis in small rodents, this technique allows non invasive in vivo preclinical studies of CNS metabolic functions via direct measurement of Oxy haemoglobin and Deoxy haemoglobin. In addition it permits to assess real time brain penetration and efficacy of drug treatments. Therefore NIRS permits translational strategy from preclinical to clinical investigations. Using the same technical principle but a different source-receiver system we now attempt the in vivo non invasive monitoring of natural or induced fluorescence of endogenous chemicals acting as neurotransmitters such as serotonin. UV laser sources have been selected such as the Hamamatsu M8903-01 combined with the Hamamatsu spectrometer H8353 and a dedicated optical set-up. This source (picosecond pulsed light with wavelength of 402nm) has been tested at first in vitro solutions using fluoresceine (from 10µm to 100µm) compound known to have a spectrum of fluorescence similar to that of 5-HT. Emission spectra of various fluoresceine concentrations confirm the linearity of the receiving unit. The emission intensity peak was obtained at 520nm reaching approx. 1200 A.U. Preliminary data using 5-HT instead of fluoresceine demonstrated that 5-HT can be monitored with this set-up within the blue region. Different 5-HT concentrations were tested: 1, 10 and 100µm and data lead to meaningful differences in the intensity of the fluorescence spectra as it reached 2.6±0.8, 11.4±2.1 or 98.3±8.8 A.U., respectively. This is a very promising result on the attempt of analysing auto-fluorescent neurotransmitters such as serotonin using optic fibres in vivo and in non-invasive conditions.

P8.16
Sleep and memory processing
G. Di Giovanni, S. Vella

Sleep is a universal, strictly regulated physiological state without which humans would suffer severe repercussions. However, the functions of sleep remain largely unknown, despite the extensive study and research that has been carried out on the subject. The introduction and advances in the field of electroencephalography and new recent technologies, such as functional magnetic resonance imaging (fMRI), and their combination have enabled the neurophysiology of sleep to be studied in further detail. Recently, an increasing amount of literature has shown that a strong association exists between sleep, learning and memory processing, and brain plasticity. A great deal of behavioural and neurophysiological evidence supports the view of sleep-dependent memory encoding and consolidation of both procedural and declarative memory types at the level of the hippocampus. Sleep has been demonstrated as being essential in both supporting consolidation of new memories post-training, as well as restoring the encoding capacity of the hippocampus for the next day. A summary of these recent findings will be reviewed.

P8.17
Pilocarpine treatment of cultured mouse neural stem cells alters their response to glutamate and ability to differentiate into GABA-ergic neurons
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Seizure-induced abnormal neurogenesis in the hippocampus is one of the most crucial events in the development of temporal lobe epilepsy (TLE). However, the mechanisms underlying this phenomenon are not well understood. In previous studies we observed mature GABA-ergic neurons loss and proliferation of neuronal progenitors expressing GABA-ergic phenotype in the dentate gyrus of TLE animals after 6 months from pilocarpine (PILO) injection. The evidence of an impaired GABA-ergic neurotransmission in chronic TLE is related to the excitatory/inhibitory unbalance and might explain the pharmaco-resistance often observed in human TLE, since the majority of the conventional anti-epileptic medications act by potentiating the inhibitory GABA-ergic transmission. The main goal of this study was to investigate the mechanisms underlying abnormal differentiation of neuronal progenitors during epileptogenesis. Specifically, we assessed various functions and differentiation of embryonic mouse neural stem cell (MSC) cultures (i.e. neurospheres) in response to exposure to epileptogenic stimuli such as PILO and glutamate. PILO treatment in MSCs induced an enhanced NMDA-mediated response in terms of calcium influx after the administration of exogenous glutamate. This phenomenon was reverted by the pre-treatment of the specific IP3 receptor inhibitor, 2APB, suggesting a PILO-mediated alteration of intracellular calcium homeostasis. Glutamate treatment 2 hours before the calcium assay did not evoked changes in terms of NMDA receptor-mediated calcium influx. However, after the co-treatment PILO/glutamate we observed an aberrant response in calcium influx induced by glutamate administration and de-synchronization of the calcium signaling in coupled MSC maintained as neurospheres. Furthermore, consistent with previous in vivo evidence, PILO/glutamate treatment of MSC cultures altered their subsequent capacity to differentiate into GABA-ergic neurons. Taken together, these preliminary results suggest that neuronal progenitors are more prone to dysfunctional signaling under epileptogenic stimuli, with resulting alterations in GABA-ergic neuron progenitors in response to glutamatergic paroxysm likely mediated by disrupted inter-cellular calcium signaling.

P8.18
Targeted single blood vessel occlusion in rodent pial arteries to study astrocytic-vascular dysfunction in a mini-stroke model
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The ability to form targeted vascular occlusions in small vessels of the brain is an important technique for studying the microscopic basis of cerebral ischemia. We describe a method that enables the targeted occlusion of any single blood vessel within the upper 500 µm of mouse neocortex to generate highly localized regions of ischemia by blocking capillary or surface arteries. This method makes use of linear optical absorption by a photosensitizer, transiently circulated in the blood stream, to induce a clot in a surface or near-surface segment of a vessel after activation with a green 532 nm continuous laser. Using two-photon microscopy of green fluorescent protein-labeled astrocytes (GFEC) and 70-kDa Texas Red dextran-labeled blood flow, we determined the alteration of the spatial relationship between cortical microcirculation and astrocytic endfeet structure within a targeted rose bengal photothermotive stroke model in vitro. This two-photon imaging method allows extremely high spatial and temporal resolution for studying pathological mechanisms that underlie ischemic injury, including abnormal changes in cell signaling and structure, vascular dysfunction, and inflammation.
Cannabinoid 1 receptor as therapeutic target in chronic epilepsy
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Temporal lobe epilepsy (TLE) is the single most common form of refractory epilepsy. Cannabinoid type 1 (CB1) receptor, a major G-protein-coupled receptor in brain, regulates neuronal excitability and has been shown to mediate the anticonvulsant effects of cannabinoids in several acute animal models of seizure. However, the potential of cannabinoids for preventing chronic epileptic damage and, moreover, the role of the endogenous cannabinoid system in regulating seizure activity are not clear. We investigated the neuroprotective role of the CB1 receptor against the hippocampal damage occurring in a chronic pilocarpine (PILO) model of TLE in rats. We simulated a therapeutic approach by administering the CB1 agonist WIN55,212-2 to rats for 15 days, beginning 24 hours after the induction of acute epileptic syndrome with PILO. After 6 months, the animals treated with WIN55,212-2 for 15 days following PILO administration, showed (relative to vehicle control): decreased epileptic behavior, reduced abnormal fiber sprouting in the dentate gyrus, preservation of GABA-ergic neurons, less oxidative injury through NADPH oxidase activation, and normalization of CB1 receptor distribution and expression. Taken together, these data suggest that novel compounds targeting CB1 receptor or downstream signaling pathways may be efficacious in the prevention of chronic TLE. Given the prevalence and severity of TLE, there is great potential of such compounds.

Dysfunction of voltage-gated K+ Channels Kv1.1 in sciatic nerve causes spontaneous and stress-induced neuromuscular hyperexcitability
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Episodic ataxia type 1 (EA1) is an autosomal dominant neurological disorder characterized by myokymia and attacks of ataxic gait often precipitated by stress. Several genetic mutations have been identified in the Shaker-like K+ channel Kv1.1 (KCNA1) of EA1 individuals, including V408A which result in remarkable channel dysfunction. By inserting Kv1.1V408A/+ ataxic mice and their susceptibility to physiologically relevant stressors also increased the amplitude of compound muscle action potential. Strongly suggest that muscle fatigue contributes more than PNS fatigue to exacerbate the myokymia/neuromyotonia phenotype. More broadly, this study points out that juxtanodal K+ channels composed of Kv1.1 subunits exert an important role in dampening the excitability of motor nerve axons during fatigue or ischemic insult.

Audit of functionality of suction equipment in clinical areas
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Introduction: Suction is a basic requirement for airway management. Suction devices should be available in all clinical areas for emergency use. Effective cardiopulmonary resuscitation relies on a patient airway, and functional suction equipment is imperative in these situations. In up to 18% of cardiac arrests, failure of suction equipment was responsible for delay in the commencement of effective CPR.

Aim: To evaluate suction equipment and its readiness for use in Mater Dei Hospital’s major clinical areas.

Methodology: conducting spot checks and inspecting the suction equipment and its readiness for use when compared to the Recommended Minimum Equipment for In-Hospital Adult Resuscitation Guidelines issued by The Resuscitation Council (UK).

Introduction of novel neuromodulation techniques for the management of chronic pain
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Introduction: Chronic pain is prevalent in 10-20% of the population. Novel neuromodulation techniques for the management of chronic pain are presented.

Aim: To outline neuromodulation techniques for the management of chronic pain that have recently been introduced in Malta

Methodology: Although classically described as nociceptive or neuropathic, chronic pain is often a merger of the 2 subtypes. Pulsed conventional radiofrequency (RF) techniques have been widely employed by the Pain Clinic. Over the past 2 years neuromodulation techniques have been introduced in Malta for patients with a primarily neuropathic component for their chronic pain.

Results: Peripheral electrical nerve stimulation (PENS) was introduced in Malta in December 2010. This minimally invasive technique serves both as a diagnostic method to indicate response to neurostimulation as well as a treatment modality. In July 2012 The Department of Anaesthesia and Chronic Pain embarked on a program introducing dorsal column stimulation for intractable neuropathic pain that involves a trial followed by implantation of electrical leads through the epidural space and implantation of a programmable pulse generator.

Conclusion: The techniques and introduction of peripheral electrical nerve stimulation (PENS) and dorsal column stimulation are discussed.
P9.03 Post-operative pain management in amputation - the influence of timing analgesia
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Background: Lower limb Amputation surgery is associated with pain which can occur both pre- and post-operatively. The latter can be either acute immediate stump pain or chronic phantom limb pain. Preoperative pain increases the risk of chronic phantom limb pain. Around ninety lower limb major amputations are performed each year at Mater dei Hospital. The aim of this prospective observational study was to follow up patients who received opioids as analgesia before (Group 1) or after amputation surgery (Group 2) both in the acute and chronic period. The effect of these interventions on the mean length of stay compared to patients receiving opioids analgesia after the amputation alone was also assessed.

Method: Patients undergoing elective major lower limb amputation at Mater Dei teaching Hospital over a six month period (June 2011 to December 2011) were selected. Thirty patients were eligible for further analysis. Twelve patients were allocated to Group 1: 22.2% were on pethidine, 66.6% on morphine and 11.1% received codeine. Group 2, which did not receive opioids pre-operative, consisted of eighteen patients. Post-operative pain was assessed using the Visual Analogue Scale on day 1, 3 and 7, month 3 and 6 post-operative. Both stump pain and phantom limb pain was assessed. Analysis of variance statistical analysis was used to compare the results from two groups.

Results: No statistically significant difference was found between the outcomes of the two groups with regards to both stump pain and phantom limb pain in the acute and chronic period (p>0.05). In addition no statistically significant difference was noted in post-operative morphine consumption and the number of hospital admissions between the two groups.

Conclusion: The results obtained indicate that the use of opioids pre-emptively does not result in effective analgesia for postoperative amputation pain. No reduction in post-operative pain scores or morphine consumption after the amputation was noted.

P9.04 Improving pain management in the Emergency Department
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Objective: To improve Pain Management in the Emergency Department (ED) based on the latest Evidence Based Medicine and by implementing new sustainable strategies. This study was carried out at Armadale District Hospital, a teaching Hospital in Western Australia, as part of the ED Pain Initiative co-ordinated by the National Health And Medical Research Council’s (NHMRC) National Institute of Clinical Studies (NICS), Australia.

Method: A local continuous strategy with an aim of improving ED Pain Management was developed and implemented during the study period. To assess the efficacy of the implemented strategies, a random retrospective medical record audit of 60 patient records was conducted every 3 months throughout the study period of 2 years. ED staff was notified of the results obtained after each audit. Results: At the end of the 2-year study period there was an improvement in the number of patients who had their pain scores documented within 30 minutes of presentation to the ED (45% to 84%) and the time to analgesia (mean time to analgesia decreased from 65 minutes to 42 minutes).

P9.05 Analysis of the cost-consumption of anaesthetic drugs and consumables in Mater Dei Hospital
S. Seiberras, F. Attard Cortis

Introduction: Anaesthetists can avail of the use of a number of expensive drugs, but rarely do we really think about the financial implications. However, drug wastage can and should be reduced. AIM: We sought to investigate the expenditure for drugs and disposable equipment routinely used for anaesthetic purposes in Main Operating Theatre and Central Delivery Suite. We hope that this will make the anaesthetist more aware of the costs involved in some choices, and hopefully reduce wastage.

Method: A selected number of drugs and disposable equipment were investigated. Reusable material, like laryngeal mask airways, are notoriously difficult to price, so were not included in this exercise. The respective costs and the amounts ordered from Pharmacy during the January - June 2012 period were obtained, so that the costs of the individual items could be obtained. As a reference, we sought to get the cost consumption of a ubiquitous cheap surgical equipment, and for this we chose Prolene 3/0.

Results: The costs of drugs was nearly four times that of the consumables we had checked. By far, the most expensive item on the list was sevoflurane, at an expense of 49.1% of the drug costs, and accounted for two-thirds of the cost of all hypnotic agents. For comparison, an equipotent amount of sevoflurane and isoflurane were ordered, but the latter was responsible for only 4.1% of the drug costs, and for 5.5% of the cost of hypnotic agents. Total cost of fluids accounted for 23.7% of the drug costs. Surprisingly, intravenous paracetamol costs were twice as high as that of isoflurane. Some preparations of the same drug were markedly more expensive that others. With regards to consumables, the major expense was due to endotracheal tubes (31%) - mainly due to reinforced tubes, which accounted for 11% of the total number of tubes, but 54% of the cost. Following that, the other major expenses were peripheral cannulas (24.4%), central venous catheters (19.8%) and epidural sets (13.1%). The cost of Prolene 3/0 ranked 17th out of 130 items, slightly less than isoflurane, and even more than the use of remifentanil, well known to be particularly expensive.

Conclusions: Awareness of the costs involved might lead to proper utilisation, to a significant cost reduction. However, this is limited to reducing the variation of different preparations, and to a reduction of use of particularly expensive drugs. Furthermore, the anaesthetic costs compare favourably to the surgical costs.
P9.06
Cardiac arrest recognition and telephone-guided CPR in Malta: where do we stand?
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Background: The ERC 2010 Resuscitation Guidelines for Adult BLS stress the importance of:
• Training dispatchers to interrogate callers using strict protocols to elicit information.
• A clear focus on recognition of unresponsiveness and quality of breathing
• Use of a dispatch protocol of suspected cardiac arrest.
• Provision of chest compressions to cardiac arrest victims by all studied the implementation or otherwise of these changes at Mater Dei Hospital (MDH), Malta.

Materials and methods: All ambulance calls are received by designated A&E nurses. We performed a qualitative interview study on all A&E nurses (65) who receive emergency calls. Questions asked targeted the local implementation of the ERC recommendations. All A&E nurses involved in ambulance control were interviewed using a questionnaire which focused specifically on local implementation of recent ERC guidelines.

Results: Training: 35.358% received formal training about ambulance dispatch during an induction programme on starting work at the A&E Department; 49.231% learned by observation and 23.846% had no training.

Protocols in caller interrogation and ambulance dispatch: All respondents said that there are no protocols for caller interrogation; 12.308% use the ambulance call logbook as guide. Regarding ambulance dispatch, only 29.231% use an existing protocol for categorisation of emergency ambulance calls.

Cardiac Arrest recognition: 92.308% ask about presence of breathing, normality (10.769%), type of breathing (6.154%) and gasping (7.692%). Other questions include: patient’s colour (47.692%), identification of pulse (23.077%), preceding symptoms (38.462%) and past medical history (49.231%)

Recognition of unresponsiveness: 32.308% ask if the patient is speaking; 38.461% use the AVPU scale.

Telephone-guided CPR: 60% advocate chest compressions by all rescuers and 30.769% advise bystander CPR only if trained.

Conclusions: Our results indicate a need for a formal caller interrogation protocol for suspected cardiac arrest and more rigorous implementation of the currently available dispatch protocol. All dispatchers should receive formal training in recognition of potential cardiac arrest over the phone and should instruct all bystanders to deliver cardiac compressions in conformity with the latest ERC guidelines.

P9.07
A randomized controlled trial comparing the efficacy of low-dose amitriptyline, amitriptyline with pindolol and placebo in the treatment of chronic tension-type facial pain
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Abstract: Patients often present to the otolaryngologist with persistent facial pain, presumed to be of sinus origin despite normal nasal endoscopy and sinus CT. Mid-facial segmental tension-type pain has been increasingly recognized as a neurological clinical entity over the past few years. Pain persisting for at least three months has been defined as ‘chronic’ by the International Headache Society. Ancedotal evidence is available suggesting that low-dose amitriptyline may confer relief but this has yet to be substantiated through a clinical trial.

Aims: To determine whether low-dose amitriptyline is effective in reducing pain scores compared to placebo in patients with chronic, tension-type mid-facial segmental pain.
To determine whether the addition of pindolol, a beta blocker with serotonin receptor blocking properties further shortens the onset of action or improves the efficacy of amitriptyline.

Primary outcome measure: to determine whether low-dose amitriptyline or amitriptyline with pindolol gives a significant clinical improvement in these individuals, that is, with more than 50% reduction in pain frequency or intensity compared to placebo. Secondary outcome measure: to determine whether amitriptyline or amitriptyline with pindolol significantly reduces analgesic consumption (more than 50% reduction in analgesic dose) in patients with chronic, tension-type mid-facial segmental pain.

Setting: A busy otolaryngological practice in the community on a small Mediterranean island.

Method: 60 patients were randomised to three treatment groups (a) amitriptyline 10mg daily (b) amitriptyline 10mg daily with pindolol 5mg twice daily and (c) loratadine 10mg daily, and recorded daily pain scores using a facial pain diary over eight weeks.

Results: Pain frequency and intensity were significantly reduced in patients treated with amitriptyline compared to placebo (p=0.0007 and 0.00085 respectively, t test for unequal variances) or amitriptyline with pindolol compared to placebo (p=5.71x10^-5 and p test for unequal variances). Although both treatments were effective, patients having the combination therapy showed significantly improved clinical outcome and significantly reduced analgesic intake compared to those having amitriptyline only (p=0.01 chi squared test).

P9.08
Comparison of low molecular weight heparin and low dose heparin for thromboprophylaxis in hip fractures and complex lower limb injuries
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Introduction: Low dose heparin (LDH) and low molecular weight heparin (LMWH) are both options used for venous thromboembolic events in orthopaedic surgery. Guidelines for use in elective arthroplasty surgery are well defined. However recommendations in the setting of trauma are less clear.

Objectives: The aim of this retrospective study was to assess the incidence of clinically significant venous thromboembolic events in 2 cohorts of patients with lower limb trauma who were operated at Mater Dei Hospital: one group having been given low dose heparin as means of thromboprophylaxis and the other group having been given low molecular weight heparin.

Method: The incidence of symptomatic venous thromboembolic events (VTE’s) in trauma patients was compared in 2 patient cohorts: The first group of patients (operated between March 2008 to July 2008) were given low dose heparin for prophylaxis; and the second group of patients (operated between March 2009 to July 2009) during which period low molecular weight heparin (enoxaparin) was being administered as thromboprophylaxis. Each cohort included hospital in-patients with hip fractures, and complex lower limb fractures (femoral shaft, distal femur, proximal tibia and tibial shaft fractures) who were treated prophylactically for VTE’s. Standard regime doses for low dose heparin were 5000IU t.d.s (subcutaneous injection) or enoxaparin 40mg daily (subcutaneous injection). Outcome measures: Comparisons of clinically symptomatic VTE’s were made in both groups. A VTE’s in this study was defined as either clinically symptomatic deep vein thrombosis (proximal and/or distal to popliteal fossa) diagnosed by a positive venogram/ doppler ultrasound test, or a symptomatic pulmonary embolism (with a positive CT pulmonary angiogram/ Perfusion scan). Data was retrieved from computer records of all radiological investigations of patients within the two cohorts. The data included both positive and negative scans/ results. The patient records of these 2 groups was analysed for demographics and operation data.
Results: There were 170 patients in the 2008 group, of which 8 had a clinically significant VTE (4.7%) and 208 patients in the 2009 group, of which 4 developed a VTE (1.9%). The difference in rates was however not shown to be statistically significant ($p=0.228$). In both cohorts, the risk factor which was found to correlate statistically with an increased VTE rate was a history of malignancy ($p<0.05$).

Conclusion: In this study, prophylactic use of low molecular weight heparin in trauma setting did not show statistically significant reduction of VTE rates when compared to using low dose (unfractionated) heparin.

P9.09
Is a trial of conservative treatment effective in isolated meniscal tears when compared to early arthroscopic treatment? A matched case control trial with historical control
D. Sladden, R. Gatt

Introduction: Meniscal tears are a common problem and due to long waiting lists some patients are presenting for surgery many months after injury having received physiotherapy and may have returned to their pre-injury function levels. The question raised was: Can a trial of conservative treatment be effective in treating isolated Meniscal tears. The literature didn’t show any obvious consensus and the number of studies available was low. Also by subgrouping patients according to several variables a secondary objective was reached which identified which patients will make the ideal candidate for early arthroscopic treatment if any.

Method: The operative group were recruited prospectively. Patients seen by orthopaedic consultants and suspected to have Meniscal tears underwent an early MRI scan. Those meeting the inclusion criteria were offered early arthroscopy where Meniscal tears were debrided (partial meniscectomy). Six months after their operation these patients were assessed for knee function using the Tegner Lysholm Knee Scoring Scale. The conservative group were selected from the arthroscopy waiting list extending back for six months from recruitment to form the historical control. As each case was recruited for arthroscopy, patients were then recruited for the conservative group with an attempt made to match age, gender, level of strenuous activity and acute or degenerative tears between the two. It was ensured that these patients received physiotherapy for six months from diagnosis. After six months these patients were assessed using the Tegner Lysholm Knee Scoring Scale. All data was analysed in general terms to compare the conservative with the operative scores. However it was also subgrouped according to age, gender, level of strenuous activity and acute or degenerative tears in an attempt to identify which of these factors influence which type of treatment works best.

Results: In general there were sixteen patients in each cohort. The conservative group scored an average of 84.5% and the operative group scored 85.06%. This was analysed using the Student t-test and the $\text{p}$ value of 0.9102 confirmed no statistically significant difference. Subgrouping revealed no difference in outcome with age or gender. However patients with acute tears who undertake strenuous physical activity fared better when treated arthroscopically.

Conclusion: A conservative trial results in a significant number of patients improving to pre-injury function levels and thereby avoid arthroscopy. However patients with acute tears who undergo strenuous physical activity may be considered for early arthroscopy. These results concurred with those of other studies which suggest that degenerative tears are more amenable to conservative treatment.

P9.10
A retrospective study comparing radiographic and functional outcomes in patients who sustained an intra-articular calcaneal fracture
M. Portelli, S. Zammit, D. Xuereb, I. Esposito

Introduction: The management of calcaneal fractures remains a challenging task. Open reduction and internal fixation has been established as treatment for displaced intra-articular fractures. Chronic disability is a frequent complication of this type of injury.

Aim: The aim of this study was to correlate the radiographic parameters with functional outcome in patients who sustained an intra-articular fracture of the calcaneum that was treated operatively.

Methods: 52 patients who underwent open reduction and internal fixation for a unilateral intra-articular calcaneal fracture were recruited into our study. There were 39 males and 13 females, with a mean age of 44 years. The study period was over 4 years, from 1st January 2006 to 31st December 2009, in Malta’s main state general hospital. We measured the pre- and post-operative Böhler and Gissane angles and the pre-operative Sander’s grade. We conducted a telephone interview after a minimum of one year from surgery to measure the functional outcome using the Foot and Ankle Disability Index (FADI) score. We compared the radiographic findings with the functional score.

Results: We found a significant correction of the Böhler angle following surgery, which improved from a mean of 13° to a mean of 26°. There was no improvement of the Gissane angle. Our study showed no correlation between the FADI score and the pre- and post-operative radiological angle measurements. There was no significant correlation between the Sander’s grade and the FADI score.

Conclusion: Our study did not demonstrate a correlation between the functional and radiographic outcomes in patients who sustained an intra-articular calcaneal fracture.

P9.11
Workplace injuries of the spinal column in the Maltese Islands: a 9 year review with reference to National Health and Safety Legislation
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Background: Workplace accidents are a common cause of spinal injury. Health and safety legislation was revised by the Maltese government in 2004. This study aims to review the nature of spinal injuries sustained in the workplace and their incidence with respect to enacted legislation.

Methods: Retrospective review of 511 consecutive patients with vertebral fractures/listheses admitted to SLH/MDH between 02/1999 and 08/2009. Patient demographics, mechanism of injury, fracture pattern, and associated neurology/injuries were recorded.

Results: 511 patients were admitted with acute vertebral column fractures. 80 (15.7%) patients sustained 107 fractures at work. The majority (77) were due to fall from height (FFH) at the workplace. 79 were male. Average age was 40.9 years. 43 injuries were confirmed to have occurred at construction/home-improvement sites and 7 on ships/boats. A trend towards increasing incidence of workplace spinal fractures is evident, with 3 injuries in 2003 and 14 in 2009, despite a fall in total number of reported accidents at work nationally. 46 vertebral injuries were recorded between 2005 and 2009 whilst 34 were recorded between 2000 and 2004. The most commonly injured vertebra was

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Conclusion: A conservative trial results in a significant number of patients improving to pre-injury function levels and thereby avoid arthroscopy. However patients with acute tears who undergo strenuous physical activity may be considered for early arthroscopy. These results concurred with those of other studies which suggest that degenerative tears are more amenable to conservative treatment.
P9.12
The relationship between implant extension and complications in partial femoral replacements in paediatric oncology

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Background: Extendable partial femoral replacements (EPFR) permit limb salvage in children with bone tumours in proximity to the physis. Older designs were extended through large incisions or minimally invasive surgery. Forearm implants are not typically described as common after FFH. The incidence of multilevel fractures, other bony injuries and head injury were all close to 1/3, reflecting the high-energy nature of these injuries and emphasising the importance of following ATLS protocol fully in assessing these patients.

Results: All the cases were collected from the theatre records. Pre and post operative radiographs were collected from the patient archiving and communication system (PACS). The clinical notes were reviewed with particular attention to the surgical procedure performed and the technique of screw placement, and any complications evident at the time of surgery or during the post operative outpatient clinic. The rehabilitation programme was standardised for all patients.

Discussion: The incidence of workplace spinal injury has increased steadily over the ten year period, despite revision of Health & Safety legislation in 2004 and a downward trend in total numbers of workplace accidents. This suggests that legislation may be effective in reducing number of accidents, but has not necessarily reduced severity of injuries sustained – it would appear that this is increasing. Studies looking at other injuries/markers characterising severe injury would be useful to corroborate this observation. Review and stricter enforcement of legislation could potentially prevent many injuries and reduce morbidity. T12/L1 injuries are commonest. Many were associated with patients landing feet first, which also explains the high incidence of calcaneal and pelvic injuries. Forearm fractures are not typically described as common after FFH. The incidence of multilevel fractures, other bony injuries and head injury were all close to 1/3, reflecting the high-energy nature of these injuries and emphasising the importance of following ATLS protocol fully in assessing these patients.

P9.43
Early results of operative treatment for C2 dens fractures

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Introduction: The second cervical vertebra is an anatomically unique entity, completely different to the rest of the vertebrae in the body. It is the peg shaped axis with the special projection called the odontoid peg which the atlas pivots around. This reflects its functional roles primarily that of weight bearing and lateral movements of the head on the neck. Fractures of the peg account for around 15% of all cervical spine fractures and are classified according to the Anderson & D’Alonzo classification into type 1 to 3. Patients usually present complaining of pain, inability to move ranging to quadriplegia or feeling of instability on the spine. Fractures of the odontoid peg carry a high rate of permanent neurological deficit or death at time of injury and frequent delayed complications such as non-union and instability if inadequately treated. Depending on the type of fracture and the patient, management can be conservative or surgical.

Aim: The aim is to retrospectively review the management of specific odontoid peg fractures (type2) treated surgically in Malta over the past 2 years.

Methodology: All the cases were collected from the theatre records. Pre and post operative radiographs were collected from the patient archiving and communication system (PACS). The clinical notes were reviewed with particular attention to the surgical procedure performed and the technique of screw placement, and any complications evident at the time of surgery or during the post operative outpatient clinic. The rehabilitation programme was standardised for all patients.

Discussion: All patients in the series had a good radiological and neurological outcome, apart from one patient who suffered delayed union of the fracture. However no permanent neurological sequelae were present and he is still being followed up regularly in out patient clinic.

Conclusion: Surgery is a one possible treatment option when faced with specific type 2 or 3 C2 fractures. Careful patient selection should be performed in order to optimise the outcome. Good pre-hospital care with appropriate head and cervical spine immobilisation is essential to protect the neural structures until surgery is performed. The patients in our series showed a very positive outcome.
Referrals form to the Surgical Outpatient Department – an audit

S. Cuschieri, D. Grech Marguerat, P. Galea, M. Sammut

Objective: Patients are referred to the Surgical Outpatients (SOP) Department from different specialties. The aim of the audit was to audit the quality of the referral forms sent to the SOP Department and to compare the waiting time for patients with alarm colorectal symptoms.

Methodology: Referral forms sent to the breast unit, urology unit and referral forms vetted by surgical consultants were excluded. All referrals to the Surgical Outpatients Department were prospectively collected between 19th September 2011 and 19th October 2011. The set time limit for a patient to be given an appointment date was 26th October 2011. Patient demographics, referral department, reason for referrals, missing data and waiting time for SOP appointment were audited.

Results: 262 referrals to the SOP department were collected. 129 patients (49.24%) were females and 133 patients (50.76%) were males. General Practitioners (GP) referred the most patients to the SOP department (168 patients (64.12%). Illegible details/missing details about the referring department occurred in 19 patients (7.25%). Inguinal hernias (24 patients (9.16%)) and sebaceous cysts 24 patients (9.16%) were the most common referrals. 107 patients (40.84%) had an appointment date was 26th October 2011.  Patient demographics, referral department, reason for referrals, missing data and waiting time for SOP appointment were audited.

Conclusions: The audit showed that there is missing data on the referral forms sent to the SOP Department. There is a prolonged length of time to see patients with alarm colorectal symptoms at the SOP Department when compared to international recommendations. To improve the referral system, the referral form may need to be changed and all SOP referrals need to be vetted by medical personnel.
The incidence of pseudotumour in metal on metal hip resurfacing and the results of a screening tool for patient recall

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Aim: To assess our department’s incidence and prevalence of pseudotumours in metal on metal (MoM) hip resurfacing and explore the efficacy of a simple screening tool in recalling patients for further investigation and diagnosis.

Method: 1102 patients have undergone a MoM resurfacing at our institute over a 9-year period; all were sent a postal screening questionnaire that was designed with recall triggers.

Results: 719 of 1102 replied (65% responders)82 of 719 fitted criteria for recall to clinic (11% recall rate)70 of 82 attended clinic (85% attendance) with 11 failing to attend and 1 declining to do so. 25 of the 70 had pseudotumour confirmed radiographically (36%). A total 22 of 70 hips (31%) in the recall group have been revised. Out of the 719 patients 38 had revision surgery (5%). The ages at surgery and time to follow-up for those diagnosed with a pseudotumour were similar for both sexes, median age: 44 years (range 32 to 54) and median follow-up time post-surgery of just over 5 years (63 months) for males (range 22 to 110). Of those recalled, there was no significant difference in the hip scores between those who were then diagnosed with a pseudotumour and those who were not. Blood ion levels of chromium and cobalt were not sensitive or specific markers for pseudotumour (64% and 67% respectively). We did not observe a significant correlation between radiographically measured tumour volume and blood ion levels. Nor was there a significant correlation between radiographically measured tumour volume and blood ion level in either the positive tumour group or those with either normal radiological appearances or an effusion.

Conclusion: The issue of pseudotumour development post-MoM resurfacing and its sequelae are proving to be significant with a revision rate of 6% at present. Our basic screening test demonstrated that a third of those patients recalled had already developed a tumour and almost a quarter of the group may be at high risk of doing so based on radiographic and blood markers.

The placement of sternal wires in median sternotomy closure

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Introduction: Dehiscence of median sternotomy wounds remains a clinical problem. Sternal forces can be calculated by thin shell theory and this data may be used to guide optimal wire placement in the sternum during median sternotomy wiring.

Aim: An ellipsoid pressure vessel model of sternal forces is presented together with high resolution CT mapping of the sternum in order to allow location of optimal wire placement in the sternum.

Methodology: Sternal forces were calculated by computing the simulation using an ellipsoid chest wall model. Sternal forces were correlated with different sternal thicknesses and radio-density as measured by computerized tomography (CT) scans of the sternum. A comparison of alternative placement of sternal wires, located either at the levels of the costal cartilages or the intercostal spaces, was made.

Results: The sternum is thickened where the costal cartilages attach to the sternum. CT data showed that the thickness of the sternal body was on average 30% thicker (p<0.001) and 50% more radiodense (p<0.001) at the costal cartilage levels when compared with intercostal space levels. There is a gradual increase in calculated bone stress levels with lower rib level (p<0.001). However localized bone stress levels show a 23% decrease of average sternal stress (p=0.003) between the level of the costal cartilages and their adjacent intercostal spaces.

Conclusion: Biomechanical modelling suggests that sternal wires should be located at the thicker, more radiodense bone present at the level of the costal cartilages instead of at the level of the intercostal spaces.

Refferrals form to the Surgical Outpatient Department – an audit

S. Cuschieri, D. Greek Marguerat D, P. Galea, M. Sammut

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Methods: Referral forms sent to the breast unit, urology unit and referral forms vetted by surgical consultants were excluded. All referrals to the Surgical Outpatients Department were prospectively collected between 19th September 2011 and 19th October 2011. The set time limit for a patient to be given an appointment date was 26th October 2011. Patient demographics, referral department, reason for referrals, missing data and waiting time for SOP appointment were audited.

Results: 262 referrals to the SOP department were collected. 129 patients (49.24%) were females and 133 patients (50.76%) were males. General Practitioners (GP) referred the most patients to the SOP department (168 patients (64.12%)). Illegible details/missing details about the referring department occurred in 19 patients (7.25%). Inguinal hernias (24 patients (9.16%)) and sebaceous cysts (24 patients (9.16%)) were the most common referrals. 107 patients (40.84%) had no appointment date by the end of the set time period. 9 patients (3.44%) were seen during the 4 weeks during the audit whilst 56 patients (21.37%) were given an appointment date at 271 – 300 days after being referred and 53 patients (20.23%) at 301 – 330 days after being referred. There were 21 patients with alarm symptoms of colorectal malignancy. 1 patient (4.74%) was seen in the 4 weeks of the audit. 13 patients (61.90%) had no appointment date given. 7 patients (33%) were given an appointment between 270 and 330 days from referral. 9.54% of the referral forms were deemed to be illegible. No signatures were found in 6 referral forms (2.92%). 35 referrals (13.36%) had no doctor’s name written/printed and 33 referrals (14.54%) had an illegible doctor’s name. The doctor’s medical council number was 98 referrals (37.40%).

Conclusions: The audit showed that there is missing data on the referral forms sent to the SOP Department. There is a prolonged length of time to see patients with alarm colorectal symptoms at the SOP Department when compared to international recommendations. To improve the referral system, the referral form may need to be changed and all SOP referrals need to be vetted by medical personnel.
Successful treatment of extensive lower limb ulceration caused by an iatrogenic arteriovenous fistula and peripheral arterial disease

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We report the case of a gentleman with extensive arteriovenous ulceration of the right leg and foot secondary to a large iatrogenic arteriovenous groin fistula, identified 3 years after percutaneous coronary intervention and causing severe steal. In addition the patient had arterial occlusive disease at the level of the popliteal artery. The combination resulted in massive arteriovenous ulceration as a result of steal and occlusive disease in addition to severe venous hypertension secondary to the fistula. The ulceration had been present for several months. He underwent surgical repair of the arteriovenous fistula as well as popliteal to peroneal artery bypass grafting using ipsilateral reversed long saphenous vein. The ulcer showed steady improvement and within 4 months had practically healed. This case highlights the potentially serious long-term complications of percutaneous intervention and the importance of early recognition and treatment of iatrogenic arteriovenous fistulae.

Digital artery assessment to predict non-healing of toe amputation sites

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Introduction: In the treatment of gangrene or severe infection confined to the toes or distal foot, a successful forefoot or toe(s) amputation allows the patient to maintain bipedal gait without the need of prosthesis. Forefoot and toe(s) amputations have a healing failure rate of 30%-45%. No toe blood pressure threshold that guarantees healing or a toe blood pressure below which healing failure occurs has been identified. Aim: The aim of this study was to determine whether preoperative assessment of digital arterial flow to the toes of the foot undergoing amputation can predict non-healing.

Methodology: A prospective observational study was conducted. Preoperatively patients having forefoot or toe amputations by one vascular team in Malta underwent physiological testing including spectral waveforms analysis, absolute toe pressures and toe-brachial pressure indices as well as ankle brachial pressure indices. At one month postoperatively, the patients were examined to assess whether the amputation site was (1) healed, (2) healing or (3) developing complications/non-healing. SPSS Software package Version 20.0 was used. Student t-test was used to determine statistical significance.

Results: From January 2012 till March 2012, 24 consecutive patients were recruited to the prospective study. Out of these 24 patients, 19 patients had a complete follow up. The amputation sites of all patients with a recordable toe pressure in this cohort healed or were healing at one month after amputation. The patients who did not achieve healing had either incompressible distal arteries or no detectable flow. The toe pressures recorded in limbs which were healed/healing were significantly higher than those in limbs which did not heal (p=0.047). The toe pressures and toe-brachial pressure indices in the contralateral limb were significantly higher in patients with healed/healing amputation sites compared to those that did not heal (p=0.014) and (p=0.021) respectively.

Conclusion: Patients with recordable toe pressures are unlikely to develop complications or non-healing after toe or forefoot amputation. Unrecordable toe pressures due to incompressible digital arteries or undetectable flow in the toes is highly predictive of non-healing amputation sites. However further research is required to ascertain whether the prevalence of calcified incompressible digital arteries in the population studied is as high as suggested in this small study. Recruitment of more patients from this population undergoing toe or forefoot amputations should allow better assessment of the validity of incompressible digital arteries or absent digital flow as a predictor of non-healing of amputation sites.

De novo design of non-steroidal oestrogen receptor modulating molecules using maltanedienol as a lead molecule

M. Cassar, C. Shoeman

Introduction: Maltanedienol is derived from the marine alga Padina pavonica. It is capable of in vivo calcium fixation, through a mechanism that is not Oestrogen Receptor dependent. Despite this, maltanedienol still bears a marked resemblance to 17-β oestriadiol the endogenous ligand for the ER.

Aim: To identify whether or not maltanedienol binds to the Oestrogen Receptor Ligand binding Pocket (ER_LBP), and to generate high affinity conformations of maltanedienol for the ER, and to design, de novo maltanedienol based structures capable of ER modulation.

Method: From the Protein Data Bank (PDB), three PDB files describing the bound co-ordinates of 17-β oestradiol, raloxifene and 4-hydrox tamoxifen to the ER resolved to 2.80Å, 2.60Å and 1.9Å respectively were identified as templates. Molecular modification of the target receptor followed by ligand extraction was carried out for each ER conformation. The predicted in silico LBA (pKd) of each ligand for its cognate receptor was measured in order to establish a baseline against which successive steps could be compared. The maltanedienol molecule as sketched and optimised in Sybyl<sup>X</sup> v1.1 was modelled utilising two different approaches. In the first scenario, the non-steroidal scaffold of maltanedienol consisting of a symmetrical two 6 carbon rings creating a plane of attachment terminating in a pentacyclic ring at each end, was manually superimposed onto the steroidal backbone of 17-β oestradiol. In silico predicted LBA (pKd) and LBE (kcal mol<sup>-1</sup>) were measured. In the second approach, maltanedienol was guided into the ER_LBP of each conformation and allowed single bond rotations. This resulted in the identification of the 21 highest affinity conformers for each of the 17-β oestradiol, raloxifene and 4-hydrox tamoxifen bound conformations of the ER_LBP. In silico predicted LBA (pKd) and LBE (kcal mol<sup>-1</sup>) were measured. The highest affinity maltanedienol conformation was selected as a template from which two seed structures were created for the de novo design phase of the study.

Results: In silico predicted LBAs (pKd) of 17-β oestradiol, raloxifene and 4-hydrox tamoxifen for their cognate ER_LBP conformation were 7.22, 8.41 and 7.76 respectively. The 21 highest affinity maltanedienol conformations generated for each ER_LBP conformation had a predicted in silico LBA (pKd) that ranged between 7.03-7.71, 6.63-7.44 and 6.83-7.72 for the 17-β oestradiol, raloxifene and 4-hydrox tamoxifen bound conformations of the ER_LBP.

Conclusion: This study is valuable in having identified the maltanedienol scaffold as a suitable lead for the development of novel structures capable of modulating the ER, and in having proposed a number of novel structures with high in silico predicted LBA for the ER which structures have inbuilt SERM conformations.
**P10.02**
**Creation of a 2D/3D molecular database: drugs used to target the respiratory system**

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**Introduction:** The need for accessible and detailed computerised molecular models within a searchable framework is required in the teaching of subjects such as chemistry, biochemistry and pharmacology and in research fields related to medicinal chemistry. (1)

**Aim:** To construct structures of drugs used in the management of respiratory diseases in two and three dimension and to generate their physiochemical properties, to create representations of key interactions of the drugs with their cognitive receptor, and to compile the results in a searchable and interactive database.

**Methods:** The British National Formulary (BNF) was used to identify drugs affecting the respiratory system that were to be included in the compiled database. The two dimensional structure of these drug molecules and relevant crystallographic depositions from the protein data (PDB) bank were identified. The two dimensional structures were constructed in Symx®, the drugs' physicochemical properties were generated and compiled in a Microsoft Excel sheet together with their clinical information regarding the dose, cautions, interactions and side effects. The three dimensional structures were constructed in Sybyl® and drug receptor interactions were highlighted using VMD®. The structures were viewed in Jmol® and interactive three dimensional structures and relevant drug receptor interactions were highlighted. The data was collated by means of Zoho®, an electronic database builder.

**Results:** Of the fifty three pertinent drugs identified from the BNF, forty six drugs could be constructed in two and three dimension and seven had relevant PDB entries. Fifty one drugs were listed in the dataset, forty six two dimensional constructions were created in Symx and forty six three dimensional constructions were made in Sybyl®. Jmol® was used to create forty six interactive three dimensional constructions and twenty one interactive PDB entry representations. VMD® was used to create twenty one three dimensional PDB entry representations.

**Conclusions:** The electronic database contained clinical information and physiochemical properties of each of fifty three drugs, forty six two dimensional and interactive three dimensional structures and twenty one three dimensional representations.

**P10.03**
**Optimisation of tyrosine-based lead molecules capable of modulation of the peroxisome proliferator-activated receptor gamma**

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**Introduction:** Type 2 diabetes mellitus is associated with high incidence of co-morbidities and deaths, making it an attractive niche in the context of drug design. The thiazolidinediones (TZDs) are a class of drugs which are designed to manage this disease through their activation of the peroxisome-proliferator-activated receptor gamma (PPARy). Rosiglitazone, a principal member of the TZDs, has been associated with a number of undesirable effects which raised concern about the drug's safety. Recently the drug has been restricted in the US market and withdrawn in the European market.

**Aims:** The study aims to design de novo molecules with antidiabetic properties and a more acceptable side-effect profile.

**Method:** Binding affinity studies carried out using rosiglitazone and farglitazar have shown that the PPARγ ligand binding pocket LBP can adopt diverse ligand driven conformations, indicating that farglitazar accesses the LBP more completely than does rosiglitazone. Tyrosine-based PPARγ agonists, such as farglitazar, are newer TZDs which have shown potent glucose-lowering activity in vivo and have therefore been chosen as the starting point for development of novel high affinity molecules in this study. A crystallographic description depicting the bound co-ordinates of farglitazar with the PPARγ was selected from the Protein Data Bank (PDB) as a template (PDB ID: 1FM9). Molecular modelling was carried out in order to create the seed molecule which was essentially the tyrosine backbone of farglitazar. Once the growing sites were assigned to the seed molecule, it was planted into the apo PPARy LBP at a locus analogous to that of farglitazar within the same LBP. Two seed molecules were used, both having two potential growing sites. The seeds were allowed to grow within the assigned ligand binding pocket resulting in a number of analog families which were ranked according to predicted binding affinity (pKd) and bioavailability.

**Results:** Multiple families of compounds were generated for each of the seeds all containing potential lead compounds for the PPARγ receptor. Twenty-seven highest rankers for seed A and 55 for seed B were identified and selected. None of the generated molecules fell within the Rule of 3 criteria. Out of the selected molecules, 18 ligands were chosen based on binding affinity (pKd): 2 resulting from seed A, and 16 from seed B.

**Conclusion:** The resulting molecules demonstrate good potential for further research and may be considered as a point of departure in the search for novel antidiabetic drugs.

**P10.04**
**Formulary for non-British national formulary items**

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**Introduction:** Most Maltese healthcare professionals rely on the British National Formulary (BNF) as their main reference source. However, a number of preparations including, cough and cold preparations, and not listed in the BNF. The Maltese Medicines Handbook (MMH) is a formulary designed to include medicinal products available in Malta which are not listed in the BNF to be used by healthcare professionals as an addendum to the British National Formulary.

**Aim:** To update the MMH to its third edition.

**Methodology:** A list of products with a Marketing Authorisation in Malta, issued by the Medicines Authority was used to identify products not listed in the BNF. A total of 1334 preparations were identified and recorded in a database. Visits to community pharmacies were conducted between September 2011 and February 2012 to identify non-BNF cited products marketed in Maltese community pharmacies. Permission was requested from the BNF co-publishers to utilise the BNF format and classification. Data concerning preparations to be included in the formulary was compiled from the Summary of Product Characteristic and the 'Martindale: the complete drug reference'. Information of medical devices available locally was compiled from local distributors.

**Results:** The updated version of the formulary includes 474 medicinal preparations and their different dosage forms. Sixty eight preparations have active ingredients not listed in the BNF. Details included for all medicinal products were trade name, marketing authorisation holder, prescription
requirement, dosage form, active ingredient and amount, consumer price, distributor in Malta and dose. For drugs not listed in the BNF the following was also included: indications, cautions, contra-indications, side-effects and advice on the use of drug in renal and hepatic impairment, pregnancy and breast-feeding. Preparations are classified in 15 chapters. The highest number of entries (n=75) was recorded for the chapter relating to the central nervous system, while the lowest number of entries (n=3) was recorded for anaesthesia.

Conclusion: As highlighted by this study, a significant number of medicinal products marketed locally are not listed in the BNF. This stresses the need of using additional formularies in conjunction with the BNF. The MMH suite best this purpose since it is designed to facilitate combined use with the BNF. The MMH was significantly updated from its previous second edition highlighting the need for regular update.

P10.05
Availability of quality of life tools in English and Maltese
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Background: When measuring health related quality of life in research studies, one of the limitations is the availability both in English and Maltese of tools specific for the area of research. This will ensure that inclusion of patients in the study is not biased due to language preference. Standardized translation of Quality of Life tools is required to eliminate researchers each time undertaking separate translation activities.

Aim: To identify and propose a Maltese version of quality of life (QoL) tools that could be adopted in diabetes research.

Methodology: A disease specific, the Short Form Health Survey (SF-36) and a non-disease specific, Diabetes 39 (D-39) QoL instruments were identified. Forward and back translation were carried out and re-translation was done in order to assure that translation is adequate.

Results: The SF-36 Health Survey Maltese translation had been undertaken by Quality Metric Corporation. Minor changes were undertaken for the Maltese SF-36 version to be applicable for the local scenario. These revisions included changing “block” to “hundred meters” (Items 3b/33); adding “how much of the time” to the stem of Items 4 and 5; making minor changes to the sentence structure of Item 5c (“did work or other activities less carefully than usual”); and changing “pep” to “life” (Item 9a) and “blue” to “depressed” (Item 9f). D-39 consists of the following domains namely: anxiety and worry, social and peer burden, sexual functioning, energy and mobility and diabetes control. Changes that were undertaken in the Maltese version of the D-39 after the translation process were few namely: changing “dwar kemm” to “sakemm tista’”; “bin-nervi” to “t’buddata hażina”; “tara mżelleg” to “ticiż fl-ghajnejn ”.

Conclusion: Practicality testing will be carried out for the Maltese SF-36v2 whilst reliability testing is being carried out for the Maltese D-39 version.

Disclosure: This project involves the availability of quality of life tool questionnaires in local Scenario. Practicality testing will be carried out for the Maltese SF-36v2 whilst reliability testing is being carried out for the Maltese D-39 version.

P10.06
Patents in pharmacy
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Introduction: The World Intellectual Property Organisation states that: “intellectual property refers to creations of the mind: inventions, literary and artistic works, any symbols, names, images and designs used in commerce.” Thus, intellectual property refers to legal rights which result from other products of the human intellect. Patents, together with other intellectual property rights, enable their owners to prohibit others from making use of a particular tangible or intangible asset.

Aim: To examine legislation related to patents and the way in which this regulatory environment affects the pharmaceutical industry.

Methodology: A series of interviews were set up with local governmental agencies involved in patentability as well as with lawyers specialised in intellectual property so as to investigate patents and their history in Malta. A profile on patent applications which have been registered in Malta was generated. A total of 1,979 patent registrations were included in this profile. A comparison regarding patent applications in several European countries was implemented so as to examine efficiency. Aspects which were evaluated include procedures, costs and the timeframe required for a patent to be granted. An examination on how the regulatory environment, mainly that related to intellectual property, affected the local pharmaceutical industry was carried out by setting up a board of experts so as to gain insight on the establishment of the local industry. This was followed by a series of interviews with members of the industry.

Results: The first patent was registered in Malta in 1899. Patents related to pharmaceuticals constituted 84% of the patent filings between 2000 and 2010. Statistical data regarding patents registered in Malta was created and trends were compared to those of other European countries. Malta was found to have one of the shortest timeframes required for a patent to be granted, with an average period of 18 months. A timeline which outlines the 10 year lifespan in which the local industry thrived, was generated. It was found that Malta’s legislative environment with regards to the lack of patents, the Roche Bolar provision and the 6 year data exclusivity period which Malta had prior to the accession to the European Union had a significant impact on the growth of the industry.

Conclusion: It is evident that the expansion of the local pharmaceutical industry was affected by the regulatory environment which is constantly revolutionized.

P10.07
Pharmacist recommended non-prescription medicines
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Introduction: Non-prescription medicines are defined as medications which do not require a prescription for the medicine to be dispensed. The pharmacist supports the patient in selecting the appropriate product and in ensuring safe and rational use of the medicinal product.

Aims: To carry out an investigation of the actions of the pharmacist before recommending a non-prescription medicine, to explore factors that influence product recommendation by pharmacists.

Method: The study was approved by the University Research Ethics Committee. A questionnaire by Kotecki (2002) was adapted. The updated questionnaire was validated by a panel of experts. Questionnaires along with self-addressed envelopes were posted to 216 managing community pharmacists in Malta and Gozo. The collected data was analysed using IBM SPSS Statistics 20®. The
statistical program was used to acquire means (M) and percentages (%) which were then developed into crosstabulations to explore the relationship between one variable and the other.

**Results:** A response rate of 61.1% (132 pharmacists) was achieved. Demographics of community pharmacists participating: mean age 37 years (range 22-64), 72.2% female, 72.7% practiced in an independently-owned pharmacy, 53.6% practiced as community pharmacists for more than 10 years, 28.8% for less than 5 years, and 18.2% from 5 to 10 years. The volume of dispensing of prescription and non prescription items per day was mostly 10-20 prescription items (51.5%) and more than 21 non-prescription items (72.7%). Pharmacists were most likely to make non-prescription recommendations for vitamins and nutritional supplements (98.5%), dieting and weight reducing aids (95.5%), smoking cessation aids (91.7%) and home diagnostic kits (87.9%). Pharmacists were influenced by five major factors: the positive feedback from patients (M=4.45), scientific evidence (M=4.38), availability only through a pharmacy outlet (M=4.19), self-use of the product (M=4.16) and information from general pharmacy references (M=4.09).

Methodology: Fifty four community pharmacists using a bar coding system responded to a questionnaire about the use of barcoding in the community setting. Results obtained were analysed using SPSS Version 19. Interviews were carried out with sixteen pharmacists working at Mater Dei Hospital. The interviews were based on several open-ended questions. The respondents were asked their opinions about the possible use of a bar coding system at Mater Dei Hospital and they were also encouraged to extend their discussion beyond the questions asked, if they found it necessary to do so. The chief executive officer of the ‘Pharmacy of Your Choice’ scheme was also interviewed in order to find the possible use of a bar coding system in this scheme. The interview was made up of several open-ended questions.

Results: Although they have encountered some problems, 52 community pharmacists found the use of barcodes to be advantageous, and would recommend a computerised system as an effective means of monitoring stock. 15 of the hospital pharmacists interviewed agreed that a bar coding system at Mater Dei Hospital would be useful, with 4 citing problems that must be overcome if such a system were to be feasible. A bar coding system for the ‘Pharmacy of Your Choice’ scheme has been planned from a system were to be feasible. A bar coding system for the possible use of a bar coding system in this scheme. The computerised system as an effective means of monitoring problems, 52 community pharmacists found the use of barcoding in the community setting. Results obtained were statistically significant in several aspects of pharmacy, including community pharmacy and hospital pharmacy.

Aims: To identify the usefulness of barcodes in a pharmaceutical setting, to find out what is already being done locally and to suggest any possible improvements on the systems being used.

Methodology: Fifty four community pharmacists using a bar coding system responded to a questionnaire about the use of barcoding in the community setting. Results obtained were analysed using SPSS Version 19. Interviews were carried out with sixteen pharmacists working at Mater Dei Hospital. The interviews were based on several open-ended questions. The respondents were asked their opinions about the possible use of a bar coding system at Mater Dei Hospital and they were also encouraged to extend their discussion beyond the questions asked, if they found it necessary to do so. The chief executive officer of the ‘Pharmacy of Your Choice’ scheme was also interviewed in order to find the possible use of a bar coding system in this scheme. The interview was made up of several open-ended questions.

Results: Although they have encountered some problems, 52 community pharmacists found the use of barcodes to be advantageous, and would recommend a computerised system as an effective means of monitoring stock. 15 of the hospital pharmacists interviewed agreed that a bar coding system at Mater Dei Hospital would be useful, with 4 citing problems that must be overcome if such a system were to be feasible. A bar coding system for the ‘Pharmacy of Your Choice’ scheme has been planned from a very early stage and is targeted for the near future.

**Conclusion:** Most pharmacists agree that a bar coding system is useful in different aspects of pharmacy. Some difficulties must be overcome in order to ensure that the system would be feasible, especially when dealing with its introduction into the public sector.

**P10.09**

**Infliximab-related adverse reactions in patients with inflammatory bowel disease: how long should such patients be observed post-infusion?**

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**Background:** The reported incidence of adverse reactions following an infliximab infusion is 9% - 23%. Although the recommendations suggest an observation period of 1–2 hours following each infusion, the optimum observation time is yet unknown. We previously reported a higher number of reactions occurring at one hour post-infusion rather than in the first half hour in patients with Crohn’s disease. Any reactions occurring after the first hour were not studied.

**Objective:** To assess the incidence of adverse reactions occurring during and in the first 2 hours following infliximab infusion in patients with inflammatory bowel disease in Malta.

**Methods:** 25 patients who were receiving infliximab infusions at the Medical Investigations and Treatment Unit, Mater Dei Hospital during the period September 2011 and December 2011 were recruited. Each patient received 1 infusion during the study period and all were naive to any pre-medication treatment. Temperature, pulse and blood pressure were recorded before, during and after (every 30 minutes for 2 hours) each infusion. A list of potential side-effects was given to each subject to report if any, and the time it occurred.

**Results:** The mean age of the cohort was 36 (range 19 – 56). Male to female ratio 13:12. Crohn’s disease to ulcerative colitis ratio 20:5. The overall incidence of infliximab-induced adverse reactions was 52% (15 out of 25), affecting 44% (11 out of 25) of patients. Two patients sustained two reactions each. Mild, moderate and severe reactions were reported in 31% (4 out of 13), 62% (8 out of 13) and 8% (1 out of 13) respectively. No delayed reactions were reported. 5 reactions (38.5%) occurred during the infusion, 6 (46.1%) during the first half hour post-infusion, none (0%) between 30 minutes and 1 hour, 1 (7.7%) between 1 hour and 1 hour 30 minutes and 1 (7.7%) between 1 hour 30 minutes and 2 hours. None of the patients required admission to hospital. The type of reactions occurred include: hypotension of ≥20mmHg but ≤40mmHg (n=6, 46.1%), hypertension of ≥200mmHg but ≤40mmHg (n=2, 15.4%), headaches =2, 15.4%), dizziness (n=1, 7.7%), flushing (n=1, 7.7%) and lastly, hypertension of ≥40mmHg (7.7%) being the only severe reaction reported.

**Conclusion:** Infliximab-induced adverse reactions occurred in half of the infusions, half of which were attributed to moderate hypotension. Almost 85% of the reactions had occurred by the first 30 minutes post-infusion. Monitoring of patients post-infusion is therefore advised.

**P10.10**

**Azathioprine induced side-effects in the management of inflammatory bowel disease**

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**Introduction:** The efficacy of azathioprine has been well established in the treatment of Inflammatory bowel disease (IBD). The main concerns relating to its use are serious drug adverse events and long term complications. Currently, at MDH we are not able to measure TPMT enzyme activity prior its initiation.
Aim: To assess the occurrence of azathioprine related side-effects (SE).

Method: Patients(pts) with IBD who were either having or had been prescribed azathioprine and attended our clinic from April 2009 to April 2010 were recruited. Their clinical case notes were consulted. Pts were interviewed regarding azathioprine administration, any possible SE and complications.

Results: 68 patients (38 males) had been prescribed azathioprine. Mean age was 37.9 years (18-66). 41 patients had Crohn’s disease (CD). 7 patients were current smokers. 2 were ex-smokers. 27 patients had Ulcerative colitis (UC). There were no smokers or ex-smokers in this group. With regard to intestinal involvement in CD: Small bowel disease (SBD) 24 patients; SBD + colonic – 9 patients; colonic -5 pts; colonic + upper gastrointestinal tract (UGT)+perianal -1 patient; colonic + UGT -1 patient; colonic + SBD + UGT-1 patient. 13 patients had strictureing disease, 3 patients had fistulating disease, the rest had an inflammatory phenotype. 15 patients with CD had required surgery. In the UC group, 18 pts had pancolitis. 9 patients had left sided colitis. 57 patients were currently having azathioprine and were clinically and endoscopically in remission. 9 patients (13.2%) had been prescribed azathioprine and developed adverse events. These occurred within the first 10 weeks of administration, leading to treatment discontinuation. The pts who developed side effects that required hospital admission were: 1 patient – acute pancreatitis and hepatitis; 1 patient – acute pancreatitis; 1 patient – Steven Johnson syndrome. The other patients who experienced SE but did not require hospital admission were: 2 patients – myelosuppression; 3 patients – nausea and vomiting; 1 patient – acute hepatitis. All patients recovered fully and no long term complications were observed. Another 2 patients had been prescribed azathioprine with UC for severe active disease. This had been stopped as they required colectomy for severe refractory disease. Their mean duration of azathioprine prescription was 15 months. The duration of follow-up for pts in whom azathioprine was continued was 3.64 years per patient (6 months – 78 months). The mean prescribed was 2.15mg/kg.

Conclusions: This analysis demonstrates that azathioprine can be a very useful drug in achieving and maintaining clinical remission. However, the fact that 13.2% of patients required treatment cessation demonstrates that adverse events are not uncommon and that patients should be adequately informed about this drug prior to its initiation.

P10.12

Adverse drug reactions of methotrexate therapy in the management of rheumatoid arthritis

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Background: Methotrexate is a first line disease modifying anti-rheumatic drug used in a number of rheumatology conditions. It is used as single therapy or in combination with other disease modifying agents and biological agents to help achieve remission. Methotrexate offers efficacy, low cost and an acceptable side effect profile.

Aim: The aim of the study was to assess patients’ knowledge, experience and perception of methotrexate adverse drug reactions in a population of rheumatoid arthritis patients.

Method: Patients were eligible for inclusion in the study if they were over 18 years of age, diagnosed with rheumatoid arthritis, receiving methotrexate, able to communicate with the investigator and attending the Rheumatology Out-Patients Clinic at Mater Dei Hospital on a regular basis. A psychometrically evaluated questionnaire which was divided into 4 main sections (A to D) was compiled in English and Maltese. The questionnaire was validated by an expert panel. Section A dealt with patients’ knowledge about possible side effects that may be encountered during treatment with methotrexate and examined their awareness on other aspects of treatment such as family planning and concurrent use of alcohol and medications. In Section B patients identified side effects which have affected them since they started taking methotrexate treatment. Section C focused on how patients reacted to the development of side-effects. Section D assessed patients’ compliance with their medication.

Results: All members of the expert panel agreed that the questionnaire was to the point, user friendly and tackled various necessary aspects on patients’ knowledge, experience and awareness of methotrexate adverse effects. A total of 40 patients out of whom 27 were females, participated in the study. Thirty one patients (77.5%) reported a total of 78 side effects. The most commonly reported side effects were nausea and vomiting (n=15) and abdominal pain (12). The majority (21) of patients reporting side effects reported their side effects to the consultant at the next Rheumatology Clinic visit. Twenty-five patients who had originally said ‘no’ to experiencing side effects changed their answer to ‘yes’ after being read a list of methotrexate side effects. With respect to compliance, 17 out of 40 patients (43%) had failed to take their medication at some point in their treatment. A total of 6 out of 17 patients (35.3%) reported that this rarely happened.
Conclusion: Patients' knowledge on occurrence of side effects could be improved through the pharmacist providing continuous patient support on drug-related problems.

P10.13 Development of local hydroxychloroquine densitisation protocols
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Background: Hydroxychloroquine is a mild disease modifying antirheumatic drug which is used in specific rheumatology conditions and its use remains essential in treating systemic lupus erythematosus. Desensitisation essentially is rechallenging the body to the drug, at a lower dose than the therapeutic dose and slowly escalating the dose to the intended licensed dose. In patients who have developed a mild to moderate allergic reaction, hydroxychloroquine desensitisation schedules offers the clinician an opportunity to prescribe an important drug in systemic lupus erythematosus without compromising patients safety.

Objectives: To develop local protocols for hydroxychloroquine desensitisation.

Methods: A literature review was carried out in order to identify already existing hydroxychloroquine desensitisation protocols. Two local protocols were compiled bearing in mind local constraints and logistics. Protocol A offers the clinician a rapid desensitisation schedule and is intended for use in mild reactions whereas protocol B offers a slower desensitisation schedule intended for patients who had initially developed a moderate reaction to hydroxychloroquine. The drafted local protocols were discussed with the chemotherapy and extemporaneous reconstitution pharmacists who gave their input as to which doses are feasible to reconstitute.

Results: According to both local protocols drafted, patients undergoing desensitization would be asked to come to hospital whereby the dose would be administered. Patients would be under hospital supervision for at least 30 minutes each time. No dose escalations are to be carried out over the weekends in order to decrease patient risks associated with allergies. The rapid schedule found in the literature review offered an increase in dose every 30 minutes with the patient being administered the full 200mg dose over 2-3hrs. The local rapid schedule (Protocol A) was drafted so as to achieve the full daily dose over 6 days starting at a dose of 7mg on Day 1 which increased patient safety. The slow schedule found in the literature review offered a schedule whereby there is a dose increase over 36 days. The local proposed schedule (Protocol B) was compiled based on dose escalation every week for a total of 5 weeks.

Conclusions: The development of desensitization protocol allows the use of hydroxychloroquine in patients in whom a mild or moderate allergic reaction was reported. This offers the clinician an option to reconsider the use of hydroxychloroquine.

P10.14 Development of a rheumatology reference handbook for undergraduate pharmacy students placements
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Background: Rheumatology is a specialty providing a multidisciplinary team approach to patients and includes specialised clinics such as the paediatric clinic, the facet joint injection clinic and the scleroderma clinic. Undergraduate pharmacy students undertake an experiential placement within this scenario.

Objectives: To develop a manual for students following an experiential placement within rheumatology.

Method: Feedback regarding what material the students would like to have in the rheumatology manual was taken from an expert panel consisting of 4 students namely, 2 Spanish, and 2 Maltese undergraduate students who were undergoing experiential placement within rheumatology. The rheumatology students' manual was then compiled and reviewed by two consultant rheumatologists, and an academic pharmacist. A questionnaire was developed to evaluate the rheumatology reaction manual. The final version of the rheumatology handbook was launched this summer.

Results: The student ‘expert panel’ agreed that a local background of the healthcare professionals involved within the unit, the drugs available locally and the guidelines followed are of great importance to help them familiarise themselves with the practice. The compiled rheumatology manual contains 4 main sections. Section A gives an overview of the rheumatology department, the multidisciplinary team approach and the various specialised clinics run within the department. Section B focuses on the rheumatology clinical pharmacist, pharmaceutical care issues within rheumatology and drug shared care protocols available. Section C gives an overview of the patient's stay on the ward, and explains clinical case notes outline. Section D focuses on the availability and entitlement criteria for management of rheumatology conditions in Malta within the NHS. Useful reference websites, a list of live and inactivated vaccines available and a summary guide of the status of rheumatology drugs in pregnancy and breastfeeding are included in the appendices. The rheumatology manual was evaluated by students (n=5 students, of which 4 were French and 1 American) undergoing the rheumatology placement who all agreed that the handbook was a good reference point for pharmacy students undergoing their attachment with the rheumatology consultants. The students felt that the manual helped them integrate faster into the rheumatology practice.

Conclusion: The Rheumatology manual was developed with the aim of helping students familiarise themselves with the logistics of rheumatology practice in Malta and the top international guidelines.

P10.15 Community pharmacists’ approach to pharmacological management of Alzheimer’s disease in Malta and Gozo
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Introduction: In view of the projected rise in the Maltese elderly population in the next 20 years and the inevitable associated increase in the prevalence and incidence of neurological illnesses, healthcare professionals need to have a better understanding of Alzheimer’s disease (AD), the most common form of dementia. Community pharmacists are nowadays being integrated in the optimization of service provision to AD patients and their families, however, little is known about how knowledgeable pharmacists are about AD.

Aim: To measure Maltese and Gozitan community pharmacists’ knowledge and perception attitudes about AD, pharmacotherapy and services available.

Methodology: Maltese and Gozitan community pharmacists were invited to participate in a mail survey. Dementia knowledge was assessed by the administration of the Alzheimer’s Disease Knowledge Scale (ADKS), whilst AD pharmacotherapy was measured by the development of a 20 true/false item measure.

Results: The overall response rate was 56.8% (n=121) with the highest response rate in Gozo (100%). The average mean performance score on the ADKS was 21.45 (SD=3.4, range 10-30) and 19.08 (SD=2.6, range 1-19) on the pharmacotherapy measure. Whereas overall knowledge was fair, there was significant variability across demographics.
Increased age, increased number of years of community pharmacy practice and an increase in the number of years since graduation were negatively correlated with knowledge about AD. Respondents knew the most about symptoms, treatment and management of AD and knew the least about risk factors and care giving. Community pharmacists showed important deficits in fundamental knowledge about AD pharmacotherapy including the dangerous use of antipsychotics in managing the behavioural symptoms in AD. While 60% believed in being ideally suited to advice patients and relatives on dementia, only 5% reported having the necessary training and skills in AD management. A sizable majority of community pharmacists throughout Malta and Gozo agree that: 1) awareness on AD and availability of community services is poor, 2) they have inadequate communication with other healthcare professionals in the management of the disease and 3) more effective training is needed.

**Conclusion:** With reservations based on study limitations, the results of this study reveal noteworthy gaps in dementia knowledge amongst Maltese and Gozitan pharmacists. An obvious challenge is how to strengthen this knowledge in pharmacists to bring a valuable change in their pharmacy practice towards effective AD management.

**P10.16**

**Off-label and unlicensed paediatric prescribing in a community setting: a prospective longitudinal cohort study**

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**Introduction:** Pharmaceutical companies have generally been reluctant to conduct research in children, causing children to be labelled therapeutic orphans. In the paediatric population the incidence of off-label prescriptions in primary care varies between 10.5-22.7%, whilst the incidence of unlicensed prescriptions in primary care varies between 0.3-16.6%. No similar studies have been carried in Malta.

**Aim:** To categorize the various therapeutic areas according to the proportion and nature of off-label and unlicensed medicinal use and thus identify those areas which warrant research in the paediatric subpopulations within the community setting in Malta. Methodology: Interim analysis involving the assessment of prescriptions for children in a prospective pharmaco-epidemiological study. Medicines prescribed in 37 private clinics and pharmacies attended by paediatricians and family doctors have been collected, with a cohort of 209 patients aged 0-14 years. The medicines were categorised as being off-label, unlicensed. These were also classified in various categories ie patient characteristics, data collection period, prescriber type and Anatomical Therapeutic Chemical (ATC) classification system.

**Results:** 54.1% (n=209; 113) of medicinal products were used in an off-label and unlicensed manner, with the highest number being in the 2-11 years age range (n=209; 76). The proportion off-label drug prescribing because of age decreased progressively with increasing age whilst the proportion off-label prescribing because of dose increased with increasing age. The anatomical class which warrants the most research locally concerns the respiratory system.

**Conclusion:** The main cause of off-label prescribing appears to be a failure to adhere to licensed dose recommendations. With increasing age, prescribers seem to have more medicines available which are specifically licensed for children, however many do not find it practical to prescribe in line with the licensed doses. Reason being that the same licensed posology often covers children with diverse ages, at times even ranging from five to eighteen years. In fact another reason for off-label drug treatment is lack of harmonization between published literature and drug licences. The aim of this interim analysis is not to assess whether the most appropriate drug treatment was used in each case but to assess the off-label and unlicensed medication use. One must distinguish between poor prescribing practice from inadequacies of the product licence information. Indeed numerous studies have highlighted the validity of using medicines in an off-label manner, when considering the inadequacy of drug labelling and the clinical experience of paediatricians and family doctors.

**P10.17**

**Training in pharmacovigilance at a local industry**

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**Introduction:** Pharmacovigilance (PV) is a post-marketing surveillance strategy designed to capture any safety concerns regarding medicinal products. The Marketing Authorisation Holder must have a PV system in place in order to receive Adverse Drug Reaction (ADR) reports.

**Aim:** To develop a training framework on pharmacovigilance.

**Method:** The study was conducted at a local medicinal gas producing company where a PV system was being set up. The methodology was carried out in five phases. During the first phase a literature review was carried out. Discussions were also conducted with the top personnel of the company which brought up important issues to be included in the training. An SOP was also drawn to deal with the company's literature research activities. Throughout the second phase two work-aids and the training material were drawn up. All the material prepared was validated in the third phase, and any amendments aided to compile the final version of the training material. In the fourth phase the training sessions were conducted, where the participants were presented with the training material. In the fifth phase the participants were examined on their understanding of the training received via an assessment. The assessment was divided into two sections; the first part adopted the format of Multiple Choice Questions (MCQs) and consisted of 14 MCQs. The second part of the assessment was conducted as a simulation of an incoming report, giving a more practical approach.

**Results:** The final training material consisted of 4 sections presented in a total of 44 slides. The 4 sections included: an introduction, how to proceed with a report and the significance of each report, how to proceed in case of a product recall, and a concluding part. All participants (n=7) who were trained completed both sections of the assessment and scored 100% in the theoretical assessment and performed well during the practical simulation. To verify that the trained personnel did in fact follow the proper procedures discussed in training, the system was tested with an ADR report without the personnel’s knowledge.

**Results:** show that the personnel in fact did follow the procedures according to training and that the reporting system worked well.

**Conclusion:** The training material prepared was effective in introducing personnel to PV, as all the participants excelled in both sections of the assessment and when tested again with the ADR report.

**P10.18**

**Development of a two dimensional and three dimensional molecular database for drugs used to target the endocrine system**

**D. Borg, C. Shoemake, L.M. Azzopardi, A. Serracino Inglott**

**Introduction:** The use of molecular models within an educational scenario can foster conceptual learning and increase student performance by improving visual and verbal understanding.
Skills in chemistry.

**Aim:** To develop a repository of drugs used to treat endocrine disorders by constructing molecules in a two and three-dimensional (2D/3D) structure, identifying suitable protein data bank (PDB) entries to generate complex drug-receptor images and collating the images into a database for use as an educational tool.

**Methodology:** The drugs included in the database were selected from the Endocrine Section of the British National Formulary (BNF) 69. The 2D representations of all the drugs were constructed using the software Sygyx Draw 3.2. The validity of the structures was checked with reputable sources in terms of connectivity and orientation. A research for protein data bank (PDB) entries was performed using OCA Browser®. PDB entries were selected depending on the nature of the receptor, resolution and expression organism. VMD® 1.9 was used for drugs having a PDB entry to generate images of the receptor in its apo, holo form and active site. Sybyl-X® 1.1 was used to create the binding mode of the drug when no PDB entry for the molecule existed. Jmol 12.2 was used to embed interactive 3D models and to improve the interactivity of the graphical interface of the database. ZOHO® Creator was used to collate all the drug structures together as an online database.

**Results:** A total of 82 drugs used in the management of endocrine disorders were included in the project. The 2D structures of all the drugs were drawn with Symyx® Draw 3.2 and physico-chemical properties and IUPAC names were generated. For 65 drugs that had no pdb entry, the bioactive conformation was drawn from scratch using Sybyl-X® 1.1. The images were converted into suitable structures using JMol 12.2. For 17 pdb entries, images of the unbound endogenous receptor were generated and subsequently complexed with the selected drug to show the bioactive conformation as a ligand-bound receptor, and it was focused to show the ligand-protein contacts at the active site.

**Conclusion:** The compiled database consists of a searchable collection of small, non-protein, organic drug molecules used both for the diagnosis and the treatment of specific endocrine conditions. This database is being made to all students at the Pharmacy Department, University of Malta for use as an adjunct to their studies.

**P10.19 Investigating the anti-oestrogenic effects of ephedrine**

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**Background:** This study derives from the assertion by Arbo et al. (2008) that ephedrine exhibited anti-oestrogenic properties in vivo following its evaluation together with sinephrine and their natural sources Ephedra sinica and Citrus aurantium in the reproductive system of immature female rats.

**Aims:** To evaluate this hypothesis through in silico studies, by comparing the ligand binding affinities (LBA) of 17β-oestradiol for the oestrogen receptor (ER). The binding affinity results were evaluated for the possibility of the creation of high affinity novel ligands for the ER which lack side-effects commonly associated with the steroidal scaffold.

**Methodology:** A holo-crystallographic structure of the ER bound to 17β-oestradiol was identified from the Protein Data Bank archive and edited such that the apo ER and the bound co-ordinates of 17β-oestradiol were obtained. Subsequently the four optical isomers of ephedrine specifically (1R,2S)-eephedrine, (1S,2R)-eephedrine, (1R,2R)-pseudoeephedrine and (1S,2S)-pseudoeephedrine were constructed de novo using Sybyl-X® V.1.1. Conformers were generated for each isomer using 17β-oestradiol as template. The best twenty-one conformers for each isomer were selected using Sybyl-X® V.1.1. The ligand binding activity (LBA) of each conformer was calculated using X-Score® V.1.3, while the associated binding energy (BE) was computed in Sybyl-X® V.1.1. Graphs representing the LBA and the BE of each conformer were set up for the selection of the most promising conformer, that is the one having the highest LBA and the lowest BE, for further development. The same procedure was carried out for ephedrine conformers with an added hydroxyl group to position three of the benzene ring within the ephedrine nucleus in order to simulate the 3-hydroxyl group on the A-ring within the 17β-oestradiol structure.

**Results:** Results showed that the average LBA of the ephedrine conformers was 5.108 while the average BE was 250.299 kcal mol-1. Similarly, the average LBA for the modified isomers was 5.23 while the average BE was 254.303 kcal mol-1.

**Conclusion:** The predicted in silico LBA of ephedrine for the ER is not high, thus it may be inferred that the hypothesis by Arbo et al. requires further evaluation.

**P11.01 Inpatient management and follow up care of patients with diabetes mellitus: are we applying NICE guidelines to clinical practice?**

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**Introduction:** Diabetes Mellitus (DM) is a common illness in Malta causing considerable morbidity and mortality. The National Institute of Health and Clinical Excellence (NICE) guidelines, are a helpful tool in improving healthcare for these patients. Despite increased awareness of long term benefits of good diabetic control, concerns arise whether DM is given due importance when treating patients admitted due to other medical conditions.

**Aim:** The aim was to assess whether good management of DM is being overlooked in these set of inpatients. Also, we compared the NICE guidelines to our current clinical practice when providing immediate in patient care and long term follow-up.

**Methodology:** The study included a cohort of 76 medical patients of different age groups, admitted to MDH during the 1st week of August 2011. Ethical approval and consultant consent were obtained. Details including patient demographics, reason for admission, comorbidities, duration of hospital stay together with documentation of the main parameters (Blood pressure, lipid profile, BGM, HbA1c) indicative of good diabetic control, in line with the NICE guidelines were recorded. In cases of deranged results, alterations in management were noted.

**Results:** All patients had multiple comorbidities with 88% already on diabetic treatment. Topmost reasons for admission were congestive heart failure exacerbation and chest pain. Total number of HbA1c taken during admission amounted to 26.3%, with 80% of these having HbA1c >7% of whom only 56.25% had an alteration to their treatment. 23.6% of patients with an HbA1c >7% were reviewed by a diabetologist. 84.9% of the total had hypertension (HT), with 73.33% of these being well controlled. Only 40% of the remaining patients with uncontrolled blood pressure (BP) had their treatment reviewed as per NICE guidelines. A lipid profile was taken in 24% of patients, of which 39% were found to be deranged. Patients on lipid treatment according to the NICE guidelines amounted to 22.67%, whereas patients who had their BP medication reviewed according to the NICE guidelines amounted to 84%. Patients suffering from HT, DM +/- IHD, already on aspirin prior to admission amounted to 56%.

**Conclusions:** This study is a good indication of our current clinical practice in managing patients with DM and provides an insight to the degree of adherence to the NICE guidelines. Acknowledging the need to intervene in patient care when warranted is highlighted, to ensure an improved...
holistic patient-centered approach in diabetic patients.

P11.02
Primary hyperparathyroidism: association of imaging and pathology
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Background: We studied a cohort of hyperparathyroid patients in order to elucidate their clinical, laboratory, radiological and histological findings; the role of diagnostic imaging and concomitant thyroid pathologies.

Method: 48 patients met our inclusion criteria for hyperparathyroidism (pHPT). We documented patients' demographic data, symptomatology, associated conditions and treatment and analysed the work-up, management and outcomes for each of these patients.

Results: pHPT patients had a median age of 62 years (range 20-79), median PTH of 145.5 pg/ml (range 27-4660) and mean serum calcium of 2.94 mmol/L (SD ± 0.39), while those operated (30/48, 62.5%) had a median age of 60 years (range 20-79), mean calcium of 3.02 mmol/L (SD ± 0.39) and a median PTH of 176 pg/ml (range 37-4660). Preoperative PTH levels correlated with serum calcium levels (r=0.505), Thyroid US showed a multinodular goitre in 12/41 (29.3%), solitary nodule in 5/41 (12.2%) thyroiditis in 4/41 (9.8%) and normal thyroid morphology in 20/41 (48.8%).

Conclusion: Parathyroid adenoma is the commonest pathology in patients with positive parathyroid imaging while hyperplasia is commoner in scan negative patients. This study highlights the need to proceed with surgery even when imaging is negative if clinically indicated. It is important to investigate associated thyroid pathology prior to surgery though our data suggests similar incidence of thyroid pathology as documented in the general population.

P11.03
Improving standards of care in the perioperative setting – preliminary data on the introduction of evidence-based recommendations targeting glycaemic control
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Background: Optimising glycaemic control is a key component of any successful perioperative surgical care pathway, particularly in diabetic patients characterised by a high prevalence of co-morbidities. Inadequate perioperative glycaemic control has been shown to impact on clinical outcomes.

Method and results: We sought to develop a series of evidence and consensus-based recommendations guiding adult perioperative glycaemic control in elective, day, afternoon and urgent surgery settings at Mater Dei Hospital, Malta, excluding patients recovering at the Intensive Care and Coronary Intensive Care Units. These guidelines were implemented following extensive discussion with all stakeholders, and are endorsed by all local consultant diabetologists. Their introduction was preceded by an extensive education campaign, and was carried out in a staggered fashion, enabling audit of adherence to guideline recommendations. Detailed, albeit relatively straight-forward, flow-charts guide prescribers and nursing staff managing patients on oral glucose lowering agents and subcutaneous insulin in these four surgical settings. These guidelines make a special case for separate intravenous infusion of glucose and insulin via the same peripheral intravenous cannula, employing a special Y tubing with an integrated back check valve. We recommend reviewing the most recent (<3 months) glycosylated haemoglobin (HbA1c) level, as a guide to establishing glycaemic control. Patients whose HbA1c exceeds 8.9% would require hospitalisation one day before a scheduled day surgical procedure to ameliorate glycaemic control. The guidelines make additional recommendations for metformin treated patients, particularly in the setting of renal impairment and surgery requiring intravenous contrast administration. Since their launch in July 2011, we have audited the glycaemic management of 111 diabetic patients undergoing 45 major, 40 intermediate and 26 minor surgical procedures, of which two, four and 105 cases were carried out at an in-patient, afternoon and day setting respectively. 12 patients (10.8%) had at least one capillary glucose reading exceeding 12 mmol/l (maximum 23 mmol/l). 4 patients (3.6%) on intravenous insulin as per guideline had a glucose <4 mmol/l (minimum 2.7 mmol/l). Another 10 patients with BG <4 mmol/l (minimum 3.1 mmol/l) were coincidentally detected on routine blood glucose monitoring and were not receiving insulin at the time. None of these hypoglycaemic events were symptomatic or had sequelae.

Conclusion: We trust that these consensus guidelines minimise the risk of iatrogenic errors, improve surgical outcomes and enhance the efficiency and safety of patient care. Further audit of patient outcomes is ongoing.

P11.04
Latent autoimmune diabetes in adults (LADA) – a review in a Maltese cohort
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Introduction: Latent autoimmune diabetes in adults (LADA) is a slowly-progressing form of autoimmune diabetes developing in adults, that masquerades as clinical Type 2 diabetes (T2DM).

Aim: We analysed data from patients attending our Diabetes Clinic by the end of July 2012 who fitted established inclusion criteria for LADA, and investigated whether simple clinical observations predict time to initiation of insulin therapy in these patients.

Method: We retrospectively extracted the following data for all patients: age, gender, body mass index (BMI), waist circumference (WC), months elapsed between presentation and diagnosis of LADA as well as between diagnosis and initiation of insulin treatment, criteria influencing insulin treatment (ketosis, weight loss or rising postprandial glucose/glycated haemoglobin (HbA1c), current glucose lowering treatment, family history of diabetes, presence of comorbidities (dyslipidaemia, hypertension, ischaemic heart disease, thyroid disease), as well as personal history of autoimmune disease. Laboratory investigations extracted included HbA1c, lipid profile and presence of pancreatic auto-antibodies. Spearman’s correlation was used to correlate age, WC and BMI at presentation, time elapsed since presentation, time elapsed since diagnosis of LADA and HbA1c (at presentation, diagnosis of LADA as well as six months later) with time to insulin treatment. Statistical significance was defined by a two-tailed p value < 0.05.

Results: 22 patients. (13 males, 9 females) fitted diagnostic criteria for LADA. Mean (±SD) age at presentation was 34.95 (±11.15) years. Mean (±SD) BMI was 25.28 (±5.04) kg/m² while mean WC was 80.33 (±8.41) cm. The mean time (in months) to diagnosis of LADA and to initiation of insulin treatment were 25.62 (±29.75) and 26.16 (±29.85) months respectively. 86.4% of patients were being treated with insulin regime at the time of audit. The commonest cause for insulin initiation was a rise in either post-prandial glucose or HbA1c (66.7% of patients). None of the patients were hypertensive but 4.5% had a history of IHD and 18% had dyslipidaemia.
P11.05 Thyrotoxicosis management audit

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Introduction: Thyrotoxicosis is a common endocrine problem. Diversity in the management of thyroid disorders led the endocrine committee of the Royal College of Physicians to lay down consensus guidelines for the management of thyroid disorders, to ensure uniform good practice.

Aim: To audit the management of patients with thyrotoxicosis attending outpatient clinics at the Diabetes and Endocrine Centre at Mater Dei Hospital and compare it with the consensus guidelines proposed by the Royal College of Physicians.

Methodology: Data was collected retrospectively from the case notes, investigations and referral letters of 43 patients. Data was analysed using 'Microsoft Excel' and compared with the standards recommended by the Royal College of Physicians.

Results: A total of 43 patients were included in the audit, of which 26 (60.5%) were women and 17 (39.5%) were men. Graves’ disease was the documented cause for hyperthyroidism in 23 (53.5%) patients (16 females and 7 males). The mean age at diagnosis was 50.8 years. The average length of treatment with anti-thyroid medication was 16 months. 8 (18.6%) patients were on treatment for longer than 18 months. 13 patients with Graves’ disease were diagnosed above the age of 40 years and all had treatment for more than three months (average 17 months). All three patients diagnosed above the age of 40 years and all had treatment for more than three months (average 17 months). All three patients with toxic nodular hyperthyroidism were treated for more than three months (average 24.3 months). Only 5 (11.6%) patients had clear documentation about possible thionamide side-effects and instructions in case of symptoms of agranulocytosis or hepatic injury. 15 (46.9%) patients had recurrence of hyperthyroidism on stopping treatment.

Conclusion: Although there was a rather poor response rate, almost all doctors who responded agreed that obesity is a big health issue in Malta. Only half of the doctors who responded feel confident and knowledgeable enough in giving weight loss advice and many feel that consultation time is inadequate. This probably explains the sporadic documentation of BMI, why some doctors fail to emphasize the importance of healthy balanced diet and encourage physical activity on a regular basis, and why pharmacotherapy is largely underutilized.

P11.07 Untimed random blood glucose as a screening test for gestational diabetes

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Introduction: Based on the new IADPSG diagnostic criteria, fasting blood glucose is considered as a suitable diagnostic tool for gestational diabetes. However, during the first antenatal visit, an untimed blood glucose assay is a more convenient one-stop investigation to perform. The aim of this study is to try to identify useful cut-off criteria that relate untimed blood glucose to an eventual abnormal oral glucose tolerance test reflecting gestational diabetes mellitus (GDM).

Method: A total of 312 pregnant patients who booked at hospital and who had a 75-gram oral glucose tolerance test (OGTT) because of the presence of biological or clinical risk factors were reviewed to assess their random blood glucose taken during their screening visit. The study population was divided into two groups on the basis of their OGTT results interpreted according to the IADPSG criteria: Group A [n=217] having a normal OGTT test, while Group B [n=95] were deemed to have GDM according to IADPSG criteria.

The mean and standard deviation value of the random blood glucose result of both population groups was calculated to enable a statistical determination of risk cut-off values. The specificity and sensitivity of the various random blood glucose cut-off values will be determined.

Results: The means ± s.d. values of the two groups showed highly statistically significant values [GDM 5.60 ± 1.66; NGT 4.68 ± 0.89 mmol/l; p<0.00001]. Assuming cut-off points of 6.5 mmol/l [mean+2.s.d. NGT population] and 3.9 mmol/l [mean–s.d. GDM population] allows the population to be divided into three groups:
• Women with RBG >6.5 mmol/l: These women can be considered as suffering from GDM and managed accordingly without resorting to further testing. This would correctly diagnose 22 cases (22.2%) of GDM cases and wrongly diagnose 8 cases (8.3%) of NGT women – sensitivity = 96.2%, specificity = 91.2%.

• Women with a RBG 4.0-6.4 mmol/l: These women should be recalled for a FBG. This would account for 78.9% of the total population [71.6% of GDM and 82.0% of NGT women]; and

• Women with a RBG <3.9 mmol/l: These women can be considered as normal without further testing. This would correctly diagnose 31 cases [14.3%] of NGT cases and wrongly diagnose 5 cases [5.3%] of GDM women – sensitivity = 96.3%, specificity = 85.7%.

The 246 women [78.9%] with an RBG of 4.0-6.4 mmol/l, underwent a fasting blood glucose assay. By definition, none of the women with normal glucose tolerance had a FBG >5.0 mmol/l; while 42 women [61.8%] with GDM had elevated values – sensitivity = 61.8%, specificity = 100%. Combining the two tests with recall for FBG after an RBG result of 4.0-6.4 mmol/l would correctly identify 64 women [67.4%] suffering from GDM and wrongly identify 8 women [3.7%] as suffering from NGT – sensitivity = 96.3%, specificity = 67.4%.

Conclusions: A RBG at booking followed by a FBG if the RBG values equal 4.0-6.4 mmol/l has been shown to be a useful screening method identifying about two-thirds of the GDM cases without resorting to a formal OGTT.

P11.08 Obstetric obesity in the Mediterranean region
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Background and aims: The Mediterranean population appears to be particularly susceptible to being overweight or obese. The study aims to identify the obstetric consequences of an increased body mass.

Methodology: Participating centres in the Mediterranean region recruited 75-200 women per centre in the 24th-32nd week of pregnancy. The study protocol was approved by the relevant Research Ethics Committee in each participating country and informed consent was obtained from all study subjects. The subjects subsequently underwent a physical examination including height, weight and blood pressure estimation, a 75 gram OGTT with a baseline fasting insulin level and HbA1c estimation. Insulin resistance was assessed using Homeostatic Model Assessment (HOMA-IR).

The women were managed according to locally set protocols. The study population was divided into two subsets: A. those women [n=572] identified as overweight-obese including women with a pre-pregnancy BMI of 25 or more kg/m2 or a third trimester BMI of 30 or more kg/m2; and B. normal BMI women [n=793]. Results are presented as mean ± standard deviation. Comparisons of continuous variables between groups were made using independent-samples t-test.

Results: The overweight-obese women were statistically more likely to be of advanced age [30.8±5.3 (n=572) vs 29.7±5.6 (793), p<0.0003], had earlier school-leaving age [16.02±6.04 (570) vs 17.67±5.24 (793), p<0.00001], of short stature [161.07±6.59 (572) vs 162.94±6.24 (792), p<0.00001] and had higher blood pressure readings [systolic – 114.91±12.92 (571) vs 108.46±11.34 (794), p<0.00001; diastolic – 69.12±9.75 (571) vs 65.31±9.06 (793), p<0.00001]. Their biochemical parameters showed higher glycaemic values as reflected by the fasting blood glucose [4.65±0.89 (%72) vs 4.37±0.66 (793), p<0.00001]; 1-hour [8.08±2.19 (569) vs 7.33±1.91 (792), p<0.00001]; and 2-hour post glucose load [6.74±2.00 (571) vs 6.25±1.72 (794), p<0.00001], area under the curve [826.20±195.70 (598) vs 738.18±162.78 (790), p<0.00001], HbA1c [5.15±0.63 (549) vs 4.94±0.58 (796), p<0.00001], absolute HbA1c [0.60±0.10 (538) vs 0.57±0.08 (742), p<0.00001], fasting serum insulin 8.31±11.27 (542) vs 4.61±6.35 (749), p<0.00001, and HOMA-IR values [1.76±2.31 (542) vs 0.92±1.28 (748), p<0.00001]. The infants born to overweight-obese mothers had also a statistically elevated birth weight [3290.09±532.49 (516) vs 3229.48±511.31 (722), p<0.004].

Conclusions: Obesity in the pregnant woman is attendant by definite risks of relative hyperglycaemia resulting from a greater predisposition to insulin resistance in the woman with corresponding risks of hypernutrition in utero resulting in higher birth weights.

Disclosure: The study was supported by a financial grant from the Mediterranean Group for the Study of Diabetes who is supported by an unrestricted educational grant from Servier.

P11.09 Changes in the GDM diagnosis in the Maltese population as analysed by the IADPSG criteria
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Gestational diabetes mellitus (GDM) is diagnosed using varying criteria. The aim of this study was to evaluate the influence these different criteria have on the number of women diagnosed with GDM when compared to other diagnostic standards for the 75-gm glucose load in: the clinical setting using clinical high risk assessment, and on the diagnosed prevalence of GDM in the Maltese community, one that has been shown to have a high prevalence of T2DM A total of 1278 Maltese women with a clinical high risk assessment for developing GDM underwent a 75-gm load OGTTs in the third trimester between 1992-1999. The results were interpreted using the different criteria and were related to the mean BMI and infant body weight values. The IADPSG diagnostic criteria were used and compared to the previously used WHO criteria [Fasting >7.0 mmol/l or 2-hour >7.8 mmol/l] and the ADA-modified WHO diagnostic criteria [2-hour >8.6 mmol/l]. A further 309 women were in 2010 randomly selected from the total pregnant population irrespective of their clinical risk assessment to undergo OGTT testing at 24-32 weeks of gestation. In high risk individuals screened with a 75-gm OGTT, both the ADA-modified WHO and IADPSG criteria increase significantly the GDM diagnosis rate from 44.5% using the WHO diagnostic criteria to 57.0% using the ADA-modified WHO criteria and 57.5% using the IADPSG criteria.

There was very little increase in GDM diagnosis rate when using the new IADPSG criteria compared to the ADA-modified WHO criteria in high risk individuals identified by clinical factors. The prevalence rate in the Maltese population in 2010 using the IADPSG criteria was 16.8%, markedly different from the 7.2% figure noted by the ADA-modified WHO criteria as compared to the IADPSG criteria. Adoption of the recently proposed IADPSG criteria will result in a statistically significant increase in the number of women diagnosed with GDM if universal screening with a 75-g OGTT is adopted. This increase will require an augmentation or a restructuring of the available clinical resources especially if whole population rather than high risk assessment screening is used. The prevalence rate in the Maltese population in 2010 using the IADPSG criteria was 16.8%, markedly different from the 7.2% figure noted by the ADA-modified WHO criteria as compared to the IADPSG criteria.
P11.10
Pharmacist intervention in informing diabetic patients on dietary habits
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Introduction: According to the Malta Diabetes Association, there are over 30,000 people who suffer from diabetes. Nutrition plays a key role in the management of diabetes.

Aims: To evaluate patients’ knowledge on the condition, diet and treatment and to evaluate patient’s perception on pharmacist intervention. Method: Seventy-five type II diabetic patients were interviewed by means of a questionnaire, which was adapted from a study carried out by Degiorgio in 2007. The patients were approached from 25 community pharmacies which were randomly chosen around Malta and Gozo. From each pharmacy, 3 patients were asked to participate by convenience sampling. Approval from the University Research Ethics Committee was obtained. Data was analysed using SPSS version 20.

Results: Out of the 75 patients interviewed, 29 were male and 46 were female. The age ranged from 32 to 83 years, with a mean age of 63 years. Only 1 patient was diet controlled and 53 patients were taking metformin as single or combination therapy. One patient did not have knowledge about diabetes and the majority of patients (48) stated that they learnt about their condition from healthcare professionals. Sixty-three patients stated that the pharmacist is important in the management of diabetes. Sixty-seven patients stated that they learnt about their condition from healthcare professionals. Sixty-three patients stated that they learnt about their condition from healthcare professionals. Sixty-three patients stated that they learnt about their condition from healthcare professionals.

Conclusion: When compared to the studies carried out by Fenech in 2004 and Degiorgio in 2008, there is a 62% and a 55% increase in pharmacists who are giving advice to diabetic patients. Along the years, there is an increase in patients who are knowledgeable about diabetes and there is also a rise in patients who are compliant to a diabetic diet.

P11.11
Clinical and analytical validation of blood glucose meters and blood pressure monitors
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Introduction: Self-monitoring is an integral component in various disease management programs, with device accuracy and reliability being critical in achieving successful control.

Aim: To determine the accuracy of blood glucose meters and blood pressure monitors for point-of-care testing (POCT) by comparing them to reference tests, and to assess their quality and reliability as self-assessment tools.

Methodology: Hundred volunteers were recruited for the blood glucose (BG) meters study and another hundred for the blood pressure (BP) monitors study. The BP study was a single-site (community pharmacy), single-visit comparison of three monitors; Artsana mercury sphygmomanometer, Picndolor aneroid sphygmomanometer, and the automated Visomat Comfort20/40. For the BG study, volunteers scheduled for venous sampling at the Diabetes and Endocrine Centre (Mater Dei Hospital), were tested with the Bionime Rightest GM550 and the AccuChek Go. Results were compared to reference values.

Results: Average BP readings recorded by the automatic model gave significantly higher results from the mercury (p<0.0001) and aneroid (p<0.0001) sphygmomanometers, whilst there was no statistical difference between values recorded by the mercury and aneroid sphygmomanometers (p=0.316). The OneWay ANOVA shows that there is no significant difference between left and right BP readings for both systolic and diastolic readings recorded by all monitors (p>0.05). Paired samples t-test for BG meters shows that values differ statistically between both POCT meters and laboratory values (p<0.05). The Bionime has 100% of values in the clinically accurate zone of the Clarke Error Grid. However, the AccuChek Go has one outlier, which would result in failure to treat the patient. ISO standards (>95% of values within 20% of reference) were met by the Bionime (99%) but not by the AccuChek Go (90%).

Conclusion: The aneroid sphygmomanometer is the better clinical alternative and has no mercury risks. The automated Visomat represents a good alternative for patient self-monitoring but presents less accurate results in comparison to the other sphygmomanometers. The Bionime Rightest GM550 was found to be the better glucose meter since it has higher technical and clinical accuracy than the AccuChek Go. The pharmacist is at the frontline to provide personalized advice to patients regarding choice of meter, correct use and maintenance required.

P11.12
Metabolic syndrome and patient management
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Introduction: Patients suffering from metabolic syndrome have an increased risk for cardiovascular disease and developing type 2 diabetes. With about 40,000 Maltese suffering from diabetes, early identification of patients at risk of developing metabolic syndrome is essential to minimize morbidity and mortality associated with the syndrome.

Aim: To assess the local prevalence of metabolic syndrome.

Method: University research ethics committee approval was granted. Maltese type 2 diabetes were recruited by convenience sampling from the Diabetes and Endocrine Clinic at Mater Dei Hospital (MDH) between July and September 2011. Eligible patients had a body mass index (BMI) >25. They were medically fit with no severe cardiovascular or respiratory disease and had no amputations. Good communication was a key inclusion criterion. Semi-formal interviews were carried out to obtain patients’ details. Lifestyle information including smoking status, attendance to a nutritionist and level of physical activity was compiled. Biological markers required to identify whether or not patients were suffering from the metabolic syndrome were recorded. These included weight, waist circumference, blood pressure, fasting blood glucose level, high-density lipoprotein cholesterol (HDL-c) and triglycerides.

Results: An average of 3 from 18 patients approached daily accepted to participate in the study. Hundred patients were recruited from MDH, 54 of whom were male and 46 were female. Their mean age was 60. Nine patients were smokers. Only 4 exercised more than four times weekly whereas 9 followed a nutritionist’s diet plan. According to the International Diabetes Federation (IDF) definition of metabolic syndrome (central obesity together with any two from raised triglycerides, reduced HDL-c, raised...
Anti-Müllerian hormone (AMH) is a glycoprotein which belongs to the TGFβ family. It is expressed mainly by the granulose cells of the preantral and small antral follicles in females. AMH is raised when there is a greater number of follicles and altered folliculogenesis. AMH levels are raised in the treatment of a variety of cardiac dysrhythmias. Amiodarone is an anti-arrhythmic used in the treatment of congestive heart failure, atrial fibrillation, premature ventricular tachycardia (VT) in patients with intra-cardiac defibrillator, 4% for supraventricular tachycardia (SVT), 8% for atrial flutter, 3% for atrial fibrillation, 9% for ventricular tachycardia (VT) and 2% as prevention of ventricular tachycardia (VT) in patients with intra-cardiac defibrillator, 4% for supraventricular tachycardia (VT) in patients with atrial fibrillation, 3% for atrial flutter, 2% as prevention of ventricular tachycardia (VT) and 9% for VT. 90% of patients had baseline thyroid function tests (TFT). 77% had TFT repeated at least once. 76% of patients had baseline chest X-Ray, 8% had baseline liver function tests and 8% had a renal profile. Median number of months for the first repeat was 5 months (IQ Range: 2-9mnths). We are collecting data on the outcomes and response to treatment of ATTT and AIIHT.

Conclusions: Amiodarone associated thyroid dysfunction is relatively common and the type of dysfunction seen does not appear to vary in relation to age or sex. Vigilance is thus required. A definite pattern of monitoring was evident from our study. A structured monitoring protocol for patients on amiodarone might be beneficial in order to detect complications early.

**AMH**

**AMH**

**Blood pressure and raised fasting plasma glucose** have to be present in an individual, 86 patients suffered from metabolic syndrome. Out of these, 18 satisfied three criteria, 22 satisfied four criteria while 45 satisfied all the criteria. From the 14 patients who did not suffer from metabolic syndrome, 9 already satisfied 2 criteria.

**Conclusion:** Metabolic syndrome is becoming a worldwide epidemic. Using the IDF definition, results obtained in this study reflect that even locally, the percentage of patients suffering from metabolic syndrome is substantial. Notwithstanding this, most individuals do not exercise frequently or follow a suitable diet plan. Co-morbidities, especially cardiovascular and respiratory complications and amputations may hinder the possibility of exercising. It is crucial to identify patients at risk of developing metabolic syndrome so as to adopt lifestyle modifications as early as possible.

**P11.13 Amiodarone and thyroid dysfunction – a retrospective study**

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**Introduction:** Amiodarone is an anti-arrhythmic used in the treatment of cardiac dysrhythmias. A significant adverse effect is amiodarone associated thyroid dysfunction. The variability in the criteria of diagnosing hyper- and hypothyroidism, as well as, the difference of the iodine intake of the population are the main reasons why numerous studies investigating the incidence of thyroid induced dysfunction have produced dissimilar results.

**Aim:** To evaluate the incidence of amiodarone-induced thyroid dysfunction in the Maltese population, indications for use and monitoring practices.

**Methodology:** After relevant permissions and approval from data protection officer were obtained, patients on amiodarone were randomly selected from the pharmacy dispensary database. The patients selected had to have a definite date of commencement of therapy. The indication for amiodarone use was established from patient records. Patients’ demographic data, treatment and outcomes were documented for each of these patients.

**Results:** Our analysis thus concerned 100 patients (44 females, 56 males) their ages averaging 68yrs (SD +/- 13.3yrs). The median months of follow up was 19 months (IQ Range: 10-24mnths). 75% of patients were on amiodarone for atrial fibrillation, 3% for atrial flutter, 2% as prevention of ventricular tachycardia (VT) in patients with intra-cardiac defibrillator, 4% for supraventricular tachycardia and 9% for VT. 90% of patients had baseline thyroid function tests (TFT). 77% had TFT repeated at least once. 8% developed amiodarone induced thyrotoxicosis (AITT) (4 males and 4 females), 24% developed amiodarone induced hypothyroidism (AIHIT) (13 males and 11 females). 75% had a baseline chest X-Ray, 83% had baseline liver function tests and 89% had a renal profile. Median number of months for the first repeat was 5 months (IQ Range: 2-9mnths). We are currently expanding our patient cohort and further in depth analysis will be performed on the outcomes and response to treatment of AITT and AIHIT.

**Conclusions:** Amiodarone associated thyroid dysfunction is relatively common and the type of dysfunction seen does not appear to vary in relation to age or sex. Vigilance is thus required. A definite pattern of monitoring was evident from our study. A structured monitoring protocol for patients on amiodarone might be beneficial in order to detect complications early.

**P11.14 Gestational diabetes mellitus in the Mediterranean region**

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**Introduction:** Diabetes Mellitus (GDM) as diagnosed by a 75 g Oral Glucose Tolerance Test (OGTT). Apart from a marker for GDM, AMH can also help predict ovarian response to gonadotrophins in assisted reproduction technology. PCOS affects 10% of women with infertility problems. In PCOS women, high AMH levels taken on day3 of IVF stimulation cycles was associated with increased number of retrieved oocytes but lower clinical pregnancy rates.

**Conclusion:** AMH is valuable both as an independent prognostic marker for PCOS as well as a prognostic marker for ovulation induction and fertility treatment in patients with PCOS.
GDM were managed according to locally set protocols. Results are presented as mean ± standard deviation. Comparisons of continuous variables between groups were made using independent-samples t-test and regression coefficients calculated. Categorical variables were compared using the Chi-squared test.

**Results:** Identified statistically significant risk factors included an age >30 years, prepregnancy BMI >25 kg/m², elevated blood pressure, past delivery of a macrosomic infant, and a family history of diabetes. These factors alone have a high specificity but low sensitivity; used in combination sensitivity is increased but specificity reduced. Biochemical screening with FG has a high sensitivity (73.9%) and specificity (90.2%). The sensitivity can be further increased by combining FBG assessment with maternal age >30 years. The pregnancy and infant outcomes were not particularly different between the two groups.

**Conclusions:** In situations of economic restraints, it appears possible to screen Mediterranean women for GDM risk using a composite model considering the adoption of biochemical screening and diagnosis using FBG >5.0 mmol/l alone or combined with the performance of an OGTT in women with low FBG but elevated diastolic blood pressure particularly if aged >30 years.

**Disclosure:** The study was supported by a financial grant from the Mediterranean Group for the Study of Diabetes who is supported by an unrestricted educational grant from Servier.

**P11.16 Standardization of the methodology in foetal thermography**

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A pilot study assessing thermographic images of the pregnant uterus and comparing them to 4D ultrasound images was undertaken. This study was carried out with a view of potentially developing an innovative form of assessing intrauterine temperatures as a reflection of gestational metabolic processes. The basis of the study involved accurate measurement (+/- 0.05 degrees centigrade) of superficial temperatures of the abdominal wall which were influenced by the intrauterine contents. A thermographic infra-red camera (FLIR Model SC7000) was employed to measure abdominal wall temperatures. Ethical approval and informed/written consent have been obtained to carry out this study. The challenge of the study was to identify a standardized and efficient method of thermographic imaging whereby reliable data could be obtained. It was noted that the position of the patient was determinant in obtaining the best thermographic view. The most efficient patient position was found to be lying down supine tilted at 45 degree. The 4D ultrasound was also subsequently carried out at this angle in order to standardize the procedure. Another hurdle was focusing variables which were constantly and distinctly available. Initially, various thermographic features were noted to correlate with the underlying abdominal wall and intrauterine structures. These features were noted to be influenced by the position and lie of the foetus, the liquor volume and placental site. Significant differentiation between the foetus and liquor pools was noted presumably due variance in metabolic processes. The deepest liquor pool correlated with the coldest point on thermography. As more patients were scanned, it was decided to focus on liquor pool site, depth and correlate it with the amniotic fluid index. Abdominal wall thickness was also found to be a potential confounding factor in affecting the superficial temperature. The abdominal wall thickness at the umbilicus and at the four quadrants of the abdomen was measured by the 4D ultrasound. The process of searching for the right methodology to carry out this study involved dedication to detail, brainstorming sessions and repeated image/data analysis. Out of 25 patients the appropriate methodology was only established after various trials with the first 7 patients. The procedure is currently less time consuming and more patient/user-friendly. Data is presently collected more efficiently and analysis is yielding positive results allowing a standardized protocol to be undertaken. The process was also a fruitful exercise in interdisciplin ary collaboration between medical and engineering professionals.

**P11.17 Exploring the relationship between bone mineral density and Charcot foot – exploratory results from a Maltese cohort**

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**Background:** Charcot Neuroarthropathy is a rare degenerative neuropathic arthropathy complicating type 1 diabetes (T1DM) and type 2 diabetes (T2DM). Peripheral osteopenia has been suggested as a possible contributory factor in Charcot foot. We sought to investigate the relationship between bone mineral density (BMD) and Charcot foot in a cohort of Maltese patients.

**Method:** T1DM and T2DM patients known to suffer from chronic Charcot foot, were recruited into this study. BMD (measured in grams per unit area) was measured at the lumbar spine, both hips and both calcanei using Norland XR 800 bone densitometer. Patients currently treated with bisphosphonates for osteoporosis of the spine and/or hip were excluded from statistical analysis. The Mann Whitney test was used to explore differences in continuous variables across categorical groups. Spearman’s correlation was used for bivariate correlation analysis. Statistical significance was defined by a two-sided p value <0.05.

**Results:** We analyzed data pertaining to the first 13 T2DM patients (ten males, three females) with suboptimal glycaemic control (mean [SD] HbA1c = 9.23 [2.59]%). Mean (SD) age and duration of diabetes were 60.92 (10.89) and 16.31 (8.54) years respectively. Although BMD in the affected calcaneum tended to be lower than in the unaffected leg (0.78 [0.17] g/cm² [affected] vs 0.81 [0.15] g/cm² [unaffected] the difference did not reach statistical significance (p=0.590).

Likewise, we did not report differences in hip BMD between unaffected and unaffected legs (0.88 [0.19] g/cm² [affected] vs 0.89 [0.17] g/cm² [unaffected]; p=0.939). AFFECTED calcaneal BMD correlated with BMD of the ipsilateral hip (r̄ho=0.630, p=0.021) but not with BMD of the lumbar spine (r̄ho=0.553, p=0.050). Unaffected calcaneal BMD correlated with BMD of the ipsilateral hip (r̄ho=0.615, p=0.025) but not with BMD of the lumbar spine (r̄ho=0.511, p=0.074). Prevalent HbA1c correlated with BMD of the lumbar spine (r̄ho=0.678, p=0.015) and either hip (r̄ho=0.615, p=0.033 [unaffected]; r̄ho=0.755, p=0.005 [affected]), but not with calcaneal BMD (r̄ho = 0.434, p = 0.159 [unaffected], r̄ho=0.510, p=0.090 [affected]).

**Conclusion:** Preliminary data suggests that prevalent HbA1c does not influence BMD at the calcaneum, and possibly risk for Charcot foot. BMD of the hip may predict risk for developing this neuropathic complication. Further analysis of this dataset is ongoing.

**P11.18 Patient satisfaction with analgesia post-...**
Caesarean section

Introduction: More than one third of births at Mater Dei Hospital were by Caesarean section during 2011. Patient-controlled analgesia is used almost universally post-Caesarean section.

Objectives: Our aim was to assess patient satisfaction with preoperative and postoperative analgesia and to correlate satisfaction as measured with objective and subjective parameters with urgency of procedure (emergency versus elective) and type of anaesthesia used.

Method: All patients undergoing Caesarean section at Mater Dei hospital during a three-month period from April to July 2012 were included. Data was obtained from medical records and from direct patient questioning regarding methods of analgesia used, indication for Caesarean section, amount and type of postoperative analgesia required, maternal and foetal co-morbidities, and overall patient satisfaction.

Results: Of the 173 patients with an average age of 30.2 years and 38.5 weeks gestation, 54% had an emergency Caesarean section and 48% planned elective operations. The commonest method of anaesthesia was spinal (64%), followed by epidural (27%) and general anaesthesia (9%). Infiltration of the wound with bupivacaine was carried out in 2% on abdominal wound closure. The commonest modalities of post-op pain relief were morphine patient-controlled analgesia (PCA) pump (93%), paracetamol (92%), and non-steroidal anti-inflammatory drugs (88%). Average pain scores from 1 to 10 were 1.63, 1.35, and 1.03 on days 0, 1, and 2 respectively. The average amount of PCA tries in the first 6 hours post-operatively and in total were 4.25 and 7.94 respectively. Patients spent an average of 16.97 hours on PCA. 86% of new mothers stated that they would undergo another Caesarean section with the same kind of pain relief. There was no significant difference in subjective and objective pain measures between emergency and elective Caesarean sections. Patients who underwent the procedure under general anaesthesia (GA) had significantly higher pain scores on day 0 as compared to those with neuraxial block (p<0.0001 spinal and p<0.001 epidural). This did not translate to a significant increase in PCA tries in the GA group.

Conclusion: Patients are generally satisfied with the amount of pain relief they are receiving post-Caesarean section, as measured subjectively by pain scores and objective pain measures between emergency and elective Caesarean sections. The use of local anesthetic during intraoperative closure can improve the management of post-op pain in patients with general anaesthesia.

P12.01
Retrospective analysis of teenage pregnancies in Malta
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Introduction: Teenage motherhood has often been reported to be associated with adverse pregnancy outcomes, specifically with low birth weight, small for gestational age infants and prematurity. The objective of the present study was to analyse the sociodemographic data, gestational characteristics and perinatal outcomes of teenage mothers delivering in a country with easily accessible, free of charge maternity care and a population with strong family ties offering family provided psychosocial support.

Materials and methods: All teenage pregnancies delivered in Malta between January 2005 and December 2006 were identified and compared to data from pregnancies occurring in mothers aged 20 to 29 years. For the purpose of our study, a teenage pregnancy was defined as a pregnancy occurring in mothers aged 13-19 completed years at delivery. We derived mean ± SD values for continuous variables, and compared continuous and categorical variables using Mann-Whitney U and chi square tests respectively. A two-tailed p value < 0.05 was considered statistically significant.

Results: A total number of 466 pregnancies occurred in teenage girls (mean ± SD age = 17.55 ± 1.30 years), accounting for 6% of all pregnancies. 418 pregnancies occurred in women aged 20-29 years (mean ± SD age = 25.65 ± 2.60 years). Teenage mothers were more likely to smoke (6% [teenage] vs 5.6% [non-teenage]; p<0.001) and were characterised by a lower mean maternal weight (59.02 ± 11.49 [teenage] vs 63.91 ± 14.01 [non-teenage] kg; p<0.001). Although teenage pregnancies tended to result in lower mean birth weights (3177.75 ± 486.82 vs 3203.05 ± 504.39 g), the difference did not reach statistical significance. Teenage pregnancies were characterised by lower mean Appar scores at five minutes post-delivery (9.03 ± 0.62 vs 9.06 ± 0.75; p=0.017). Appar scores at five minutes were lowest among infants born to mothers aged 13-14 years (8.75 ± 0.46 vs 8.98 ± 0.77) for infants born to mothers aged 15-17 years, p=0.028; 8.75 ± 0.46 vs 9.07 ± 0.48 for infants whose mothers were 18-19 years old, p=0.02). There was no correlation between birth weight and Appar score at five minutes for teenage compared to an antenatal visit (4.0 ±/-. 2.2) p<0.0001. A similar pattern is noted for patient initiated questions (gynaecological 2.4 ±/-. 3.5 vs obstetric 1.2 ±/-.1.8 p<0.03). Interruptions during consultations averaged 0.85/ antenatal visit and 1.2/ gynaecological consultation. During one particular gynaecological consultation 14 interruptions were recorded. Seventy-three (70%) patients were accompanied by relatives or friends. The great majority of antenatal patients (91.5%) were accompanied by a relative or friend, while 56% of patients with gynaecological complaints were accompanied. On average the companions of a patient with a gynaecological complaint asked more questions (0.6/ consultation) patient compared to antenatal patient (0.3/consultation p=NS). The mean duration of an antenatal visit was 6.9 +/- 3.8 minutes while that of a gynaecological consultation was 7.8 +/- 4.2 minutes. The differences in consultation duration were not statistically significant.

Conclusion: There is variance in the nature of Obstetric and Gynaecological consultations in an outpatients’ setting. This varies for both doctor and patient initiated discussion. The nature and duration of the consultation may be influenced by the presence of a relative/friend accompanying the patient. Interruptions during outpatient sessions occur on a regular basis and should be reduced to a minimum.

P11.19
Doctor/patient discourse study in an obstetric/gynaecological outpatient setting
C. Caruana, C. Ng, M. Muscat, Y. Muscat Barson

Method: All 173 patients with an average age of 30.2 years and 38.5 weeks gestation, 54% had an emergency Caesarean section and 48% planned elective operations. The commonest method of anaesthesia was spinal (64%), followed by epidural (27%) and general anaesthesia (9%). Infiltration of the wound with bupivacaine was carried out in 2% on abdominal wound closure. The commonest modalities of post-op pain relief were morphine patient-controlled analgesia (PCA) pump (93%), paracetamol (92%), and non-steroidal anti-inflammatory drugs (88%). Average pain scores from 1 to 10 were 1.63, 1.35, and 1.03 on days 0, 1, and 2 respectively. The average amount of PCA tries in the first 6 hours post-operatively and in total were 4.25 and 7.94 respectively. Patients spent an average of 16.97 hours on PCA. 86% of new mothers stated that they would undergo another Caesarean section with the same kind of pain relief. There was no significant difference in subjective and objective pain measures between emergency and elective Caesarean sections. Patients who underwent the procedure under general anaesthesia (GA) had significantly higher pain scores on day 0 as compared to those with neuraxial block (p<0.0001 spinal and p<0.001 epidural). This did not translate to a significant increase in PCA tries in the GA group.

Conclusion: Patients are generally satisfied with the amount of pain relief they are receiving post-Caesarean section, as measured subjectively by pain scores and direct patient questioning, and objectively with measurement of PCA tries. The use of local anesthetic during intraoperative closure can improve the management of post-op pain in patients with general anaesthesia.
pregnancies, while a statistically significant association was reported for non-teenage pregnancies (Spearman’s rho = 0.050, p = 0.001).

Conclusions: These findings are consistent with published data in this regard, suggesting that closer surveillance of teenage pregnancies is warranted to avert perinatal and postnatal complications.

P12.02
Advanced maternal age and pregnancy loss
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Introduction: Arrest of the embryonic or foetal development before 24 weeks of gestation marks the definition of missed miscarriage accounting for 10-20% of all clinically recognize. Advanced maternal age is associated with an increase pregnancy loss due to an increase in adverse factors affecting pregnancy.

Methodology: Data regarding ERPC procedures and Misoprostol administration was obtained over a 6 month period from January 2012 till July 2012. Old case notes were reviewed for the maternal age, gestation, parity and gravidity. Gestations of >20 weeks were excluded due to lack of data. There was lack of data in mothers who did not require intervention for missed miscarriage.

Results: A total of 186 patients were recruited. Age ranged from 14 to 45 years with a mean age of 30 years. 138 patients were <35 years of age, 34 where 35-40 years and 14 were >40 years of age. Of missed miscarriages, 113 patients were <10 weeks (mean age: 31), 53 were between 10-14 weeks (mean age: 31) and 9 >14 weeks of gestation (mean age: 33). 88 patients were primiparous, whilst 98 were multiparous, of which 29 had a single previous miscarriage and 8 had 2 or more previous miscarriages. 72 had a previous normal gestation prior to current miscarriage of which 12 were at the time of previous missed miscarriage 35 years or over. There is an increased risk of missed miscarriage with greater gestational age. Factors attributed are an increased relative risk of chromosomal abnormalities (the incidence of chromosomal aberrations in miscarried foetuses is about 50%, of which 95% of genetic abnormal gestations are miscarried), BMI, smoking, medical conditions especially coagulation or inflammatory conditions as well as progesterone deficiency in the late luteal phase and an increased male partner age. For women under 35 the clinical miscarriage rate is 6.4%, at 35-40 it is 14.7%, and over 40 it is 23.1%. Increased paternal and maternal ages are associated with an increased risk of chromosomal abnormalities although most of abnormalities occur by chance. There was no difference in odds of miscarriage below the age of 35 years but the odds rose to a 75% increase for mothers aged 35-39 years and a five-fold increase for mothers aged 40 and above. The effect was independent of pregnancy history.

Conclusion: Counselling a patient after a missed miscarriage may be challenging. Maternal age must be taken into consideration when advice is given to the patient for subsequent pregnancies.

P12.03
Medical and surgical management for missed miscarriage
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Introduction: A missed miscarriage is defined as arrest of embryonic or foetal development before 24 weeks of gestation. Repeat ultrasonographic examination shows an empty uterine sac or no cardiac activity. Misoprostol and Evacuation of Products of Conception (ERPC) are two methods used to expedite a missed miscarriage mostly in the presence of excess blood loss per vaginam and infection.

Methodology: Data regarding ERPC procedures and Misoprostol administration was obtained over a 6 month period from January 2012 till July 2012. Review of case notes showed differences in maternal age, gestation, parity and gravidity, dose of misoprostol used and whether the patient underwent ERPC. Results were compared to established recommendations and guidelines.

Results: A total of 186 patients were recruited. Age ranged from 14 to 45 years with a mean age of 30 years. 95 patients required Misoprostol administration due to a closed cervix and 13 patients required a repeat dose. 800 mcg was the standard dose used in 87 patients. 32 patient did not require ERPC after misoprostol while 154 patients required ERPC. Of missed miscarriages, 113 patients were <10 weeks, 53 were between 10-14 weeks and 9 >14 weeks of gestation. 88 patients were primiparous, whilst 98 were multiparous, of which 29 had a single previous miscarriage and 8 had 2 or more previous miscarriages. 72 had a previous normal gestation prior to miscarriage.

Conclusion: Of 10-25% of all clinically recognized pregnancies will end in miscarriage. Historically, the majority of women who miscarried (88%) underwent ‘routine’ surgical evacuation of products of conception. In the past years, management has changed, with more usage of the synthetic PGEs analogues such as misoprostol. Prostaglandin administration prior to ERPC offers significant reduction in uterine/cervical trauma and haemorrhage prevention. It also stimulates cervical ripening giving reduction in cervical dilatation force required. Efficacy depends on the type of miscarriage, sac size and whether the follow-up is clinical or based on ultrasonographic findings. Efficacy varies between 87.5-92.5%. In for incomplete miscarriage and for early foetal demise. No statistical difference in efficacy between surgical and medical evacuation at gestations less than 10 weeks or sac diameter less than 24 mm. Medical evacuation is an alternative technique that complements but does not replace surgical evacuation. Clinical indications for offering surgical evacuation include persistent excessive bleeding, haemodynamic instability, evidence of infected retained tissue and suspected gestational trophoblastic disease. Medical management is offered when 24 hour emergency room service is present.

P12.04
Uterine malformations associated with Breech presentation
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Introduction: Breech presentation always presented a challenge for the modern obstetrician. There are less than 3% of babies at term present as breech. Most of these are now delivered by Caesarian section as there is a twofold increase in perinatal mortality if allowed to deliver vaginally. It is unclear whether the baby presents as breech due to foetal abnormality or uterine anomaly or low lying placenta.

Aim: To assess the rates of uterine abnormalities which make the baby present as a breech. Assessment of Caesarian section findings indicating uterine abnormality at
time of breech delivery. To review breech births and uterine abnormalities, hormone variations, BMI of patient, weeks at delivery, placentation and weight of baby on delivery in a 6 month timeframe.

Method: Retrospective review of breech operative deliveries over the past two years. Assessment of elective and emergency Caesarean section rates which were performed for breech presentation. Assessment regarding the whole gestation, Caesarean section operative notes and previous uterine surgeries. Blood tests and biophysical measurements were noted. Some results were compared to previous studies relating to the individual factors which might affect for breech presentation.

Results: A total of 52 patients were identified who had a breech delivery between January 2012 and July 2012. Age ranged between 18 and 41 years with a mean maternal age of 30 years. Gestation on delivery varied from 34.5 weeks to 41+1 weeks with a mean Caesarean week age of 38.5 weeks. 28 mothers had male births whilst 24 mothers had female births. Comparing to an audit by Rietberg et al., a male prevalence is noted. 1 gestation had a fundal placenta, 29 a posterior placenta and 17 an anterior placenta on ultrasound, correlating with a study by Haruyama Y. et al. Only one birth had a lower site of placenta, 5 mothers presented with spontaneous rupture of membranes, 30 mothers were primigravidae, 15 were secondigravidae and 6 had more than 2 gestations. 10 had a normal vaginal delivery, 2 mothers had 2 and 3 normal vaginal deliveries respectively whilst 3 mothers had a breech delivery prior to current gestation. 14 mothers had uterine abnormalities on Caesarean section, of which 10 had a fibroid uterus, 2 bicornuate uterus and 1 unicornuate uterus. 7 mothers had a previous Caesarean section (Vendittelli et al. showed have a risk of breech presentation at term twice that of women with previous vaginal deliveries) whilst 6 had uterine surgery. 9 mothers had a previous miscarriage with one mother having 3 recurrent miscarriages. Four mothers had a positive high vaginal swab, 2 had a positive OGTT, 2 were hyperthyroid and a mother had associated cocaine and heroin abuse.

Conclusion: Over the past twelve years 2000-2011 inclusive there have only been 0.1% breech vaginal deliveries. In our retrospective review of breech presenting babies delivered by Caesarian section, 90% were elective. Uterine abnormality was noted in 0.298. In this study there does not seem to be a predominant single factor to account for breech presentation. Uterine abnormalities and previous uterine surgeries might account for such presentation.

P12.05
Reducing the incidence of brachial plexus injuries in obstetric practice - 1980-2012 - a 33 year review
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Over a ten year period 1980-1990, the incidence of brachial plexus injuries following obstetric trauma was 2.9/1000 live births in the Maltese Islands. A review of traumatic shoulder dystocia over this period of time highlighted a number of risk factors with a background macroscopic population (11.8% > 4.0kg, 1.5% > 4.5kg). The body mass index of the mothers of these babies was high (short and obese) and a high incidence of abnormal glucose metabolism of 12% was noted in this group of women. Abnormal labour patterns with prolongation of all the phases of labour were noted. Thirty one percent of traumatic shoulder dystocia followed instrumental deliveries. During the latter seventeen years the incidence of traumatic shoulder dystocia has dropped significantly to 1.0/1000 live births. This may be due increased attention towards the above mentioned antenatal and intrapartum factors. During the antepartum period increased awareness and care towards dietary control was undertaken in overweight women. Widespread screening was implemented in pregnancy combined with meticulous glucose control of pregnant diabetic women. A joint antenatal clinic involving the care of a diabetologist and an obstetrician was initiated in 1996. It was also noted that whereas in the 1980-1990 the cohort of babies weighing 4 kg and over comprised 11.8% since 1990 this percentage has dropped to 5.6%. More attention to abnormal labour patterns especially in the presence of macrosomic infants may have avoided difficult vaginal deliveries leading to traumatic shoulder dystocia. A shoulder dystocia drill has been included in the labour ward protocol. Increasingly breech presentation are being delivered by Caesarean Section. Caesarean Section is not without foetal complications as regards brachial plexus injuries. During the whole 33 year period there were four cases of brachial plexus palsy following abdominal delivery of macrosomic babies.

P12.06
Initiation of aspirin in patients at risk of pre-eclampsia: a retrospective audit
B. Galea, J. Ramsay

Introduction: In August 2010, NICE (National Institute for Health and Clinical Excellence) published an updated guideline on hypertension in pregnancy. One of the key priorities for implementation is the use of aspirin in pregnancy in patients at risk of pre-eclampsia.

Aim: To assess the prevalence of risk factors for pre-eclampsia and the prescribing of aspirin according to the NICE guideline ‘Hypertension in Pregnancy’ (August 2010).

Methodology: The audit was performed over 5 days during September 2011 in a district general hospital setting (Crosshouse Hospital, Kilmarnock, Scotland). 100 postnatal patients participated. Data was collected from case notes and direct questioning of the patient to complete a checklist proforma. The criteria assessed were parity, age, pregnancy interval, BMI at booking visit, family history of pre-eclampsia, multiple gestation, history of pre-eclampsia, chronic kidney disease, autoimmune diseases, diabetes and chronic hypertension, in accordance with the risk factors for pre-eclampsia stipulated in the aforementioned guideline. Patients were then stratified to assess eligibility for aspirin use, and if they were actually prescribed it. Aspirin contraindications were also accounted for.

Results: Out of 100 patients, 58 had one or more moderate risk factors and 9 had one or more high risk factors.1st pregnancy and BMI ≥35 were the most common moderate risk factors (58% and 21% respectively), whilst previous history of pre-eclampsia, hypertension and diabetes were the commonest high risk factors (45%, 22% and 22% respectively). The audit demonstrated 0% compliance with the guideline. 25 patients (25%) met the criteria for being on aspirin. Out of these, 1 patient had a contra-indication to aspirin, as she was asthmatic.

Conclusion: To implement this guideline, I designed a pilot trial in a select area of Ayrshire. I created a risk scoring proforma to ease identification of patients eligible for aspirin, which is embedded in the notes and completed at booking visit. On completing the re-audit, I plan to carry out another audit to be discussed at the forthcoming obstetrics management forum, with the intention of implementing this proforma across all Ayrshire and Arran.
P12.07
A comparison of obstetric outcome in beta-thalassaemia minor patients compared to the general obstetric population
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Introduction: The beta thalassaemias are the result of impaired and reduced production of beta globin chains. Untreated homozygous thalassaemia major is associated with marked symptomatology of anaemia, whilst there is delayed sexual development and fertility. The heterozygous state of thalassaemia minor results in a variable degree of clinical phenotype. The usual presentation is of asymptomatic anaemia of mild degree. Fertility is usually not impaired. During pregnancy there is no specific treatment for thalassaemia minor, except blood transfusion for the occasional severe anaemia cases. The few studies available show perinatal outcome including prematurity and birthweight comparable to the general population. However there is reported adverse outcome secondary to the increased hypercoaguability state of these patients.

Aim: To investigate pregnancy outcome of the local Maltese beta thalassaemia minor population.

Methodology: Obtaining results from the University of Malta, Thalassaemia & genetic screening database around 300 definite beta thalassaemia minor patients were diagnosed from antenatal booking tests from the Malta and Gozo general hospitals from 2007 to 2011. Serum ferritin results were routinely tested for this latter population. Using a random 220 patients (from same previously mentioned source) not diagnosed with any haemoglobinopathy, it was calculated using an unpaired t-test if there is any statistical significance in first trimester maternal haemoglobin between both beta thalassaemia minor and general population. At this point, data collection from the files of this total of ~520 patients is ongoing to assess rates of obstetric outcomes regarding parity including miscarriages, gestational age of birth, birthweight, intratruterine growth restriction, gestational hypertensive disorders, placental abruptions and others. Exclusion criteria for this study are multiple gestations and diabetics.

Results: At this stage it has been shown that during 1st trimester (the period when the majority of antenatal booking investigations are first taken) the mean haemoglobin for the general population is 12.20g/dl (n = 219, SD 0.906, SEM 0.06122) and for the beta thalassaemia minor population the mean haemoglobin is 10.83g/dl (n = 301, SD 1.377, SEM 0.067). The p value is <0.0001, implying statistical significance between both latter groups.

Conclusion: This is an ongoing project were we will be able to see if the local beta thalassaemia minor population is at a higher risk of obstetric complications which would imply close monitoring and precautions during pregnancy. Data obtained in due time will be compared to local Mediterranean studies already done.

P12.08
A comparison between hysterosalpingography and 4D ultrasonography in the assessment of Müllerian anomalies within a population of patients suffering from recurrent miscarriage
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Recurrent miscarriage affects up to 1% of couples and a proportion of these are caused by abnormalities of the uterine cavity. There is debate whether 4D Ultrasound (U/S) of the uterus is equal to hysterosalpingograms (HSG) in its sensitivity to detect the presence of a Müllerian anomaly. To reduce unnecessary interventions, a screening tool with high accuracy is required, ideally one which would also cause the least discomfort and invasion.

Materials and methods: A retrospective comparative study was carried out comparing women in a recurrent miscarriage clinic population diagnosed with Müllerian anomalies using a 4D U/S with those diagnosed by a HSG. The rates of detection of Müllerian anomalies in the two populations were consequently compared and analysed using statistical tests. Similar populations were used. Patients were recruited from the Recurrent Miscarriage Clinic where each present patient had had at least two recurrent miscarriages. Age ranged between 20 and 45. 420 women were recruited to date. Of these, 270 had undergone an HSG with 13 of them being identified as having an abnormality of the uterine cavity. This would translate to 4.81% of the women in the chosen population. 120 cases of women who had undergone a 4D U/S of the uterus have been collected and out of these 5 had Müllerian anomalies. This would give a preliminary result of 4.17% of the women in the population. More data is currently being collected and statistical analysis was used to determine the significance of these results.

Conclusions: This work is currently still in progress but preliminary results indicate that 4D U/S of the uterus can be recommended as the standard routine investigation for uterine malformations. More patients are being recruited to date.

P12.09
Audit on the frequency of smear tests undertaken prior to pregnancy
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Introduction: Routine cervical screening detecting pre-invasive disease or early stage cervical cancer has shown to reduce mortality from cervical cancer. It is therefore relevant that sexually active women undertake a smear test routinely. The national cancer registry determines the incidence rate of cervical cancer in Malta is 5.5/100,000.

Aim: To investigate whether the frequency of smear tests in women who are sexually active correlates with the Royal College of Obstetrics and Gynaecologists guidelines.

Methodology: One hundred and twenty four inpatients were recruited sequentially from the Obstetric Wards at Mater Dei Hospital during the period of July 2012. Data was collected using the clerking sheets filled in by foundation doctors while histories were obtained from pregnant women. Data collection involved reviewing the clerking sheets so as to ascertain whether cervical smears were performed prior to pregnancy and if so the last one to date. Also assessed was the frequency and the length of intervals between smear tests. The patients’ social history including occupation, cigarette smoking or alcohol ingestion was also noted.

Results: One hundred and seven patients had sufficient data for the audit while seventeen had insufficient data. Sixty-seven percent (67%) of the women recruited adhered to the guidelines with screening carried out every three years, their last smear performed during the period 2010-2012. One in five (20%) patients did not abide by the guidelines. A smear test was never performed in 14% of these pregnant patients and the recommended three year time interval was exceeded in 6% of patients. Current recommendations indicate that cervical screening should initiate after five years from first sexual encounter. According to Health Information services the mean age for first sexual intercourse in Malta is 21.3 years. The age range for women in this study who had never been screened prior to the ongoing pregnancy ranged from 18 to 30 years.

Conclusion: The majority of women appear well informed on the frequency of smear testing. However a
Hysterosalpingography (HSG) is a Perimenopausal/postmenopausal bleeding To determine whether there is any correlation We reviewed all the Radiology 2 Hysteroscopy and endometrial biopsy

P12.10
Gynaecological laparoscopic surgery in the Department of Obstetrics and Gynaecology– RSM - the Russo-Serb-Maltese Alliance
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Hysterectomy is a common gynaecological procedure and the vaginal route is considered preferable for hysterectomy. This route has become more accessible with the application of gynaecological laparoscopic surgery. Adnexal and ovarian pathology can also be treated laparoscopically. Since the recruitment of a highly specialised member (K.I.) in laparoscopic surgery, open surgery by this firm for gynaecological conditions has decreased significantly. Hysterecomies and adnexal procedures that were usually dealt with by open surgery requiring relatively large horizontal and vertical incisions are being treated in part laparoscopically (laparoscopically assisted vaginal hysterecomies) or by total laparoscopic surgery. The laparoscopic procedures performed were myomectomies, oophorectomies, ovarian cystectomies, salpingo-ooophorectomies, adhesiolysis, laparoscopically assisted vaginal hysterecomies, and total laparoscopic hysterecomies. Besides the advantage of utilizing small incisions, minimal surgical intervention to the abdominal wall is incurred by the patient. In the short−term this results in less pain, less blood loss, earlier mobilisation and shorter hospital stays. In the long term there is less risk of incision-related complications and adhesion formation. The only drawback of these laparoscopic procedures is that operating time has lengthened significantly. However with decreasing frequency of gynaecological procedures due to the increased application of the levronestrol intra-uterine system, operating time has become more available allowing space for laparoscopic surgical procedures to be performed. Moreover the collaboration between the different members of the Firm was a highly educative experience for both Senior and Junior members of the Firm.

P12.11
Assessing the hysterosalpingography service
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Introduction: Hysterosalpingography (HSG) is a radiologic procedure to investigate the shape of the uterine cavity and the shape and patency of the fallopian tubes. It is recommended by the National Institute for Health and Clinical Excellence (NICE) guidelines as the first-line investigation of cervical canulation for each patient were recorded. These results were compared to the national diagnostic reference doses set by the National Radiological Protection Board (NRPB) of the UK and the NICE guidelines. The standards used were: a mean radiation dose of 400 cGy.cm², a mean screening time of 60 seconds and a cervical cannulation success rate of ≥95%.

Results: 79 patients underwent a HSG between January 2011 and April 2012. The mean radiation dose was calculated at 400 cGy.cm². The mean screening timing was 74 seconds. Cervical canulation was successful in 97% of patients.

Conclusion: The mean radiation dose and success rate of cervical cannulation are within the reference standard limits. The mean screening time for HSGs is 23% longer than the mean duration recommended by the NRCP. Recommendations to reduce the screening time include evaluation of the techniques employed during this procedure with the aim of optimizing the technique whilst reducing unnecessary screening.

P12.12
Hysteroscopy and endometrial biopsy for peri/post-menopausal bleeding M. Refalo, A. Micaleff Fava, S. Grixti, M.C. Vassallo, M. Camilleri, J. Mamo
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Introduction: Hysteroscopy and endometrial biopsy is the commonest gynaecological investigation performed in peri-menopausal and post-menopausal women

Aim: Assessment of patients attending for hysteroscopy as an investigation of perimenopausal/postmenopausal bleeding and the histological findings.

Method: Patients above the age of 45 years presenting with menorrhagia or intermenstrual bleeding and postmenopausal women presenting with bleeding who were admitted for day case hysteroscopy and endometrial biopsy were recruited. The histological findings were reviewed.

Results: None of the premenopausal women presenting with menorrhagia or irregular bleeding had endometrial atypical hyperplasia or endometrial carcinoma. 7.81% of women presenting with postmenopausal bleeding were found to have endometrial carcinoma. Most patients with endometrial carcinoma present post-menopausally with an average age of 70.6 years.

Conclusion: Perimenopausal/postmenopausal bleeding should be investigated by hysteroscopy and endometrial biopsy. More than 80% of women with endometrial carcinoma present with early stage disease; therefore there have a better prognosis.

P12.13
Influence of type of surgery for salpingectomy on length of in-patient’s stay post-operative
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Aim: To determine whether there is any correlation between the type of surgery for ectopic pregnancy – laparoscopic salpingectomy versus salpingectomy through laparotomy, on the number of days spent in hospital post-operation.

Method: Patients who undergone surgical management for ectopic pregnancy between 1st July 2009 and 31st June 2012 at Mater Dei Hospital in Malta were included. The type...
of surgery carried out was recorded and this was correlated with the post-operative length of patient’s stay in hospital.

Results: 41 patients had surgical management for ectopic pregnancy between 1st July 2009 and 31st June 2012. Age ranged from 21 to 42. 19 patients had laparoscopic salpingectomy while 21 had a salpingectomy done through laparotomy. The average length of stay post-operative for patients who had laparoscopic surgery is 2.5 days compared with 4.29 days for patients who had a laparotomy. Length of post operative hospital stay (2 days or less) in patients undergoing laparoscopic surgery vs open surgery was statistically significant (p<0.001).

Conclusion: The days spent postoperative in patients undergoing salpingectomy for ectopic pregnancy was almost half for patients undergoing laparoscopic surgery as compared to patients who had laparotomy.

P12.14 Assessing and comparing pain experienced by women after insertion of the levonorgestrel-releasing intrauterine system (Mirena®)
K. Camilleri Agius, R. C. Ellul, J. Mamo

Aim: The use of the levonorgestrel-releasing intrauterine system (LNG-IUS) (Mirena®) has been on the increase due to its high contraceptive efficacy and the additional non-contraceptive benefits. However, concerns arise with regard to the pain experienced directly after insertion of the LNG-IUS. The objective of this study was to evaluate, by means of a validated pain scoring system, the pain experienced after the insertion of the device. The study includes a group of women of different ages and with different gynaecological indications as for the requirement of the LNG-IUS. Furthermore, the study analyses and compares the pain scores obtained with respect to different modes of peri-operative analgesia / anaesthesia used with/without effect by the patients.

Methods: The study includes all the women who had the LNG–IUS inserted at Mater Dei Hospital, Malta, during the year 2011, a number which added up to 259. A validated pain scoring system was employed to assess the discomfort / pain experienced by these patients directly (Day 0) post-insertion, on Day 3, Day 7 and one month post-insertion. Other interventions performed peri-operatively, apart from the insertion of the LNG-IUS, were also taken into account. Of the 259 women, 196 patients had the procedure done under GA, 26 under LA, 2 patients were sedated whereas 62 patients were not given any form of anaesthesia / anaesthesia. Consequently, the relationship between modes of analgesia / anaesthesia used peri-operatively and the possible effect on post-operative pain scores, was elicited and analyzed.

Results: A total 259 women had the introduction of LNG-IUS during the year 2011. 196 patients had the procedure done under GA, 26 under LA, 2 patients were sedated whereas 62 patients were not given any form of analgesia / anaesthesia. The relationship between modes of analgesia / anaesthesia used peri-operatively and the possible effect on post-operative pain scores, was assessed. The relationship between different age groups, together with multiple interventions apart from the named procedure was included in the study.

Conclusions: This study is a good indication of overall patient satisfaction, post LNG-IUS procedure. In light of the pain scores obtained, the study highlights the suitable analgesia / anaesthesia that is deemed to be the most appropriate for peri-operative use during the introduction of the LNG-IUS. Furthermore, it also provides an insight of pain experienced post procedure, and the further need for close follow-up and pain control optimization after the introduction of the LNG-IUS.

P12.15 Synergistic effect of endometrial curettage followed by insertion of levonorgestrel system in treating menorrhagia
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Objective: To evaluate the efficacy of an intrauterine system releasing levonorgestrel in the treatment of women with menorrhagia.

Method: This was a retrospective, non-comparative study. Ninety-two patients who had menorrhagia due to non-malignant causes were sequentially recruited into the study (age range 26 - 54 years). Patients with a uterine size more than 12 weeks were not included. A LNG-releasing-intrauterine system was inserted during the mid-cycle after an endometrial biopsy was taken.

Results: The most common bleeding pattern at 3-6 months after insertion was spotting however by 12 months the majority of women presented with oligomenorrhea. Following the introduction of the LNG-IUS six women required a hysterectomy for various reasons. Two of the patients who complained of persistent menorrhagia had uterine fibroids. Another three woman requested removal of the LNG-IUS because of continuous spotting and heavy menstruation even after 6 months of insertion. Another patient had an enlarging fibroid associated with abdominal pain while a hysterectomy performed on another patient revealed adenomyosis. In three women the LNG-IUS was spontaneously expelled and persisted with menorrhagia. The remaining women (87.5%) continued the use of LNG-IUS beyond one year up to a four year follow-up.

Conclusions: LNG-IUS is an effective treatment for menorrhagia due to benign causes and could be considered as an alternative to hysterectomy. The application of the LNG-IUS following the endometrial biopsy has the advantage of: a. “one stop shop management” - endometrial biopsy and LNG-IUS simultaneously; b. The success rate in treating menorrhagia is one of the highest quoted in the literature possibly due to: i. removal of excess endometrium barring adequate levonorgestrel transfer and 2: the resulting inflammatory reaction may increase levonorgestrel transfer.

P12.16 Unilateral versus bilateral ovarian drilling
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Introduction: Laparoscopic ovarian drilling using bipolar electrocautery is a method of reducing ovarian insulin resistance in patients with polycystic ovarian disease. Electrocautery even bipolar may reduce ovarian reserve.

Aim: Comparing the effect unilateral versus bilateral ovarian drilling on response to ovulation induction agents.

Method: Review of 163 patients diagnosed by endovaginal ultrasound and hormonal assessment as having polycystic ovarian disease were admitted for laparoscopic ovarian drilling as day case surgery. They were randomly assigned to either unilateral or bilateral cauter to ovarian stroma. Post operative ovarian tracking was compared to preoperative follicular response to clomiphene citrate.

Results: Patients who had unilateral (n=81) as well as bilateral (n=82) ovarian drilling responded to clomiphene citrate. There was a tendency but not a significant number of patients from the unilateral drilling group needing higher dosage of clomiphene to induce follicular growth.

Conclusion: The use of unilateral bipolar drilling for polycystic ovarian disease is as effective as bilateral electrocautery. Therefore the use of unilateral ovarian drilling reduces damage to ovarian reserve.
Day case laparoscopic ovarian cystectomy

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Introduction: Patients diagnosed with persistent ovarian cysts especially in cases where the cysts exhibits solid areas, are scheduled for surgery.

Aim: To compare operating time, use of antibiotics, length of hospital stay and duration of recovery of bowel function post laparoscopic ovarian cystectomy. Method: Review of 424 patients presenting with ovarian cysts operated via laparoscopy at Municipal Hospital, Krasnodar was carried out. Under general anaesthetic using three ports, the ovarian cyst was encapsulated and removed either through an endo-bag or through an incision in the posterior fornix. The remaining ovarian tissue is reconstructed. Careful investigation before surgery was performed as necessary: including serum tumours markers, transvaginal ultrasound, gastroscopy, and colonoscopy to assess risk of primary or secondary ovarian tumour.

Results: Of the ovarian cystectectomies performed laparoscopically, 92 were dermoid cysts and 187 were endometriotic cysts. 32 patients had an oophorectomy. 58 were removed via endo-bag and 34 were removed via the posterior fornix. None of the laparoscopic operations had to be converted to a laparotomy. 35 of the 92 patients with dermoid cysts were given antibiotic. Patients were allowed to eat and drink 4 hours after surgery; there were no reported bowel complications. Length of stay was less than 24 hours in 85% percent of the patients.

Conclusion: Traditionally ovarian cysts were operated via laparotomy which may be followed by adhesions which could be the cause of pain and decreased fertility. Laparoscopy reduces this risk. Excision of ovarian cysts via laparoscopy has the advantage of less post operative pain, earlier recovery of bowel function, less risk of adhesions, more acceptable cosmetic outcome and an early discharge from hospital.

Borderline ovarian tumours

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Introduction: Borderline ovarian tumour (BOT) is a benign neoplasm of low malignant potential with no stromal invasion.

Aim: Review of borderline ovarian tumours diagnosed on histological examination of ovarian masses found at laparotomy performed over one year.

Method: The histological findings of all gynaecological laparotomies over a 12 month period starting June 2011 to the end of June 2012 were reviewed. Patients with a diagnosis of ovarian tumour were further subdivided into the various subtypes of ovarian carcinoma and borderline malignancy. The mean age, incidence, mode of presentation and treatment modalities and management were noted.

Results: There were 502 gynaecological laparotomies performed of which 34 had a diagnosis of ovarian epithelial carcinoma. Of these, five were borderline ovarian tumours of which three were serous, one was mucinous and one of the endometrioid type. The incidence is therefore 1.5 per 100, 000; accounting for 14.7% of epithelial ovarian tumours. The mean age for BOT patients is 45 years compared with the mean age of 63 years for epithelial ovarian cystadenocarcinomas. There was no causal association with any of the ovolution induction agents. Although 25% were asymptomatic, abdominal distension was the commonest presenting symptom, followed by abdominal pain and vaginal bleeding. Diagnosis was by transvaginal ultrasound followed by CT scan. Tumour markers used were CA-125, CEA, CA19-9 which were not specific and only elevated in half the patients. Frozen section was used in two of the BOT patients, but diagnostic accuracy was difficult.

Conclusion: Borderline ovarian tumours account for 14.7% of ovarian epithelial carcinoma. Fertility preservation should be considered in borderline ovarian tumours.

Medical conditions and their treatment influencing post-pelvic surgical urinary symptoms

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Objectives: To perform a retrospective evaluation of the short to medium-term effects of pelvic surgery on urinary symptoms.

Methods: 32 patients who underwent pelvic surgery over the past 4 years were contacted by telephone. Besides demographic data, past medical and drug history, the enquiry emphasized on an array of urological symptoms.

Results: Of the 32 patients, 28 were contacted of whom 4 had undergone pelvic floor repair and 24 vaginal hysterectomy. Patient ages ranged from 42 to 76 at the time of operation. Eight patients experienced significant urinary symptoms, including nocturia, stress incontinence or urinary frequency postoperatively in the short term. Out of a total of 168 urinary possible urinary events, 15 (9.4%) significant postoperative urological symptoms were recorded. No patient experienced urinary retention. Twenty of the 28 patients (71.43%) had a significant obstetric history, 9 (32%) women having delivered more than twice through the vaginal route; 2 women had Caesarean sections carried out. Ten (36%) women were hypertensive on medical treatment including diuretics. Four patients (14.28%) had inguinal / umbilical herniae, whilst 6 (21.43%) were habitually constipated. Of the 8 patients, 5 already had urinary symptoms before their operation, all of them experiencing improvement of their symptoms post-operatively. A past history of pelvic surgery (Pelvic floor repair n=2, hysterectomy n=1, colposuspension (n=1), insulin dependant diabetes (n=1), and diuretic use (n=3) was elicited from the 8 patients complaining of urinary symptoms.

Conclusions: Scientific literature is ambivalent towards the association of urological symptoms and vaginal surgery. There also lies the effect of recall bias as regards pre/ postoperative urinary symptoms. This study suggests that in a minority of patients post-operative urinary symptoms do follow pelvic floor repair. However it must be appreciated that various confounding factors exist, in particular in the medical and drug history which may affect post-operative urinary symptom. A more rigorous and powerful study on the subject is required to deliver appropriate weighting to confounding variables which may effect post-operative urological symptomatology.

Upper endoscopic findings in patients with gastro-oesophageal reflux disease

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Background: Reflux symptoms, in the absence of alarm symptoms, are very common in the general population. An oesophago-gastroduodenoscopy is frequently performed in such patients to distinguish between erosive oesophagitis (EO) and non-erosive reflux disease (NERD). The frequency of these two conditions in the Maltese population is not yet known.
Objective: To study the frequency of erosive and non-erosive reflux disease during upper endoscopy in Maltese patients of various age groups with reflux symptoms and whether proton pump inhibitor (PPI) use at the time of endoscopy correlates with either of these conditions.

Methods: A total of 73 patients, referred from the community with reflux symptoms, underwent an upper endoscopy at the Endoscopic Unit, Mater Dei Hospital, during January 2010 and December 2010. 69 of these were retrospectively studied, as the remaining 4 had incomplete data and were excluded. Their demographic data, endoscopic findings and any treatment they were taking at the time of endoscopy were recorded. Severity of erosive oesophagitis was graded according to the Los Angeles Classification.

Results: 69 patients (mean age 52 ±16.8 years) were enrolled in the study. 40 patients (58%) had NERD and 29 patients (42%) had EO (Grade A 48.2%, Grade B 20.7%, Grade C 6.9%, Grade D 20.7%. Not specified 7.5%). 14 patients were being treated with a PPI at the time of endoscopy. Of these, 78.5% (11 patients) had NERD, while 21.5% (3 patients) had EO. Subgroup analysis showed 65% of patients above the age of 50 had NERD, while 35% had EO. On the other hand, patients less than 50 years had equal NERD and EO (48% and 52% respectively).

Conclusion: In a cohort of Maltese patients with reflux symptoms, there was a slightly higher prevalence of NERD than EO, with Grade A oesophagitis being the most prevalent in the EO group. Patients taking PPI at the time of endoscopy and patients above 50 years of age were more likely to have NERD than EO.

P13.02 Upper endoscopic findings in patients with simple dyspepsia
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Background: Simple dyspepsia is a very common gastrointestinal symptom and a common cause of referral to the gastroenterology department. An oesophago-gastroduodenoscopy (OGD) is commonly performed in such patients during the course of their symptoms to detect any underlying pathology. Various studies have reported different prevalences of different endoscopic findings in such patients. No such study has ever been carried out in the Maltese population.

Objective: To study the prevalence of significant and insignificant endoscopic findings detected during upper endoscopy in Maltese patients of various age groups with simple dyspepsia.

Methods: A total of 237 patients, referred from the community with simple dyspepsia, who underwent an upper endoscopy at the Endoscopic Unit, Mater Dei Hospital, during January 2010 and December 2010, were retrospectively studied. Their demographic data, endoscopic findings and any treatment they were taking at the time of endoscopy were recorded. Significant findings were defined as erosive reflux oesophagitis (ERO), peptic ulceration, Barrett’s oesophagus, pyloric stricture and upper gastrointestinal malignancy. Insignificant findings were defined as hiatus hernia, Helicobacter pylori, oedema/erythema, superficial erosion, benign polyps, haemorrhoider deposits, and gastric atrophy.

Results: A total of 237 patients (mean age 49 ±17.8 years) underwent an OGD for simple dyspepsia. Significant endoscopic findings were noted in 77 patients (32.5%) [ERO (18.6%), peptic ulceration (8.9%), Barrett’s oesophagus (1.2%), gastric cancer (0.4%), pyloric stricture (0.4%) and dual significant pathology, mainly peptic ulceration with oesophagitis (3.0%)]. Insignificant endoscopic findings were noted in 160 patients (67.5%), of which hiatus hernia (50.2%) and H. pylori (17.7%) were the most prevalent.

Subgroup analysis revealed a higher disease frequency of peptic ulceration with increasing age. 82% of patients with peptic ulceration were ≥50 years of age, half of whom were on aspirin. Moreover, two-thirds of patients with Barrett’s oesophagus and the patient with gastric cancer were also ≥50 years. On the other hand, frequency of ERO showed equal distribution with age (45% were <50 years, 55% were ≥50 years).

Conclusion: One third of Maltese patients with simple dyspepsia had significant upper gastrointestinal pathology, mainly erosive reflux oesophagitis or peptic ulceration. Increasing age increased the likelihood of peptic ulceration but not of erosive reflux oesophagitis.

P13.03 Hereditary haemochromatosis in Malta: the search for the missing genes continues
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Introduction: Hereditary haemochromatosis is an autosomal recessive disorder, which has been shown to have a strong association with mutations in the HFE genes (C282Y and H63D). The prevalence of C282Y Homozygosity in the UK is >90% with the prevalence decreasing in Southern European countries. Liver biopsy should be performed in patients with suspected haemochromatosis to rule out other pathologies, to assess the degree of cirrhosis and to rule out significant iron overload when iron markers are equivocal.

Aim and method: All genetic tests for haemochromatosis in Malta were performed at the Genetics Laboratory of the University of Malta were analysed. In addition, patients undergoing regular venesection for diagnosis of haemochromatosis at Mater Dei Hospital were also analysed.

Results: 80 patients underwent testing for mutations in the HFE genes (C282Y, H63D and S65C). 49 of these patients had no detectable mutations. 13.75% of these patients underwent testing because of a family history of Haemochromatosis while 86.25% underwent testing because of high ferritin (mean serum ferritin: 618, range: 76 – 2529). There was only 1 patient who was C282Y homozygote (Maltese national but born of British parents) and 2 patients who were C282Y heterozygotes (one of whom was a British person residing in Malta). 1 person had compound heterozygosity (C282Y / H63D) while 27 were H63D heterozygotes. Only 2 of these patients underwent liver biopsy, which confirmed the absence of histological haemochromatosis. 15 patients were undergoing regular venesection in the period under study but only 10 of them had abnormal genetic tests (2 patients: H63D homozygotes, 7 patients: H63D heterozygotes, 1 patient: compound heterozygote). 8 patients underwent liver biopsy, which revealed different degrees of iron deposition in hepatocytes (consistent with haemochromatosis), including 2 patients who had no abnormal genes on genetic testing.

Conclusion: Haemochromatosis in Malta appears to exhibit a different genetic profile from the rest of Europe. It is likely that there are other (non-HFE) genes which are responsible for the increased iron deposition in Maltese haemochromatosis patients. Thus the role of other mutations such as HAMP (hepcidin), HJV (hemojulin), transferrin receptor 2 gene and SLC40A1 (ferroportin) should be studied in patients with full clinical disease expression.
**P13.04**

**A review of wireless video capsule endoscopy use in Mater Dei Hospital**

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**Aim and introduction:** Capsule endoscopy (CE) is a minimally invasive imaging technique that was primarily devised for imaging of the small bowel. The aim of our retrospective analysis was to identify patient characteristics, indications and outcomes and any possible complications resulting from CE since the introduction of the service in Mater Dei Hospital in 2010.

**Method:** We carried out a retrospective audit of all patients referred for CE in our hospital between 2010 and 2012 and data was collected from the endoscopy reports with regards to patient demographics, physical characteristics, clinical indications, details regarding completion of study and identification of positive findings, clinical recommendations based on findings and presence of any complications.

**Results:** A total of 55 capsule endoscopies were carried out during the study period. Of these, 28 were female and 27 were male thus showing no major gender difference. Mean age for referral was found to be 55.56 years (95% CI = +/- 4.80 years). Mean BMI was 28.7 kg/m² (95% CI = +/- 1.72 kg/m²) with no significant difference between male and female genders (p=0.22). Caelac views were obtained in 45 out of these 55 studies thus giving an 81.82% completion rate. No complications were reported with a capsule retention rate of 0%. Mean small bowel passage time was of 253.87 minutes (95% CI = +/- 27.41 minutes) with the maximal time taken to attain caecal views being 451 minutes. The main indication for referral was investigation of iron deficiency anaemia (25 patients i.e. 45.45%). Investigation of abdominal pain (n=6; 10.91%), follow up of Coeliac (n=5; 9.09%), diagnosis of Crohn’s disease (n=6; 10.91%) and follow up of Crohn’s (n=3; 5.46%) were the other common reasons for referral. In all CE was able to identify positive findings in 44 out of the 55 procedures performed (80%) and clinical recommendations were made in 30 of these (54.55%). It was noted that a high proportion of procedures (15 out of 55 i.e. 27.27%) reported positive findings in the upper gastrointestinal tract.

**Conclusion:** The small bowel completion rate of 82% is in line with international data. However, the fact that the positive findings were found in 80% of capsule endoscopies may indicate that not enough studies are being done. International data demonstrates a positive rate of 50-60%. Furthermore, the fact that 27% of patients who underwent CE had positive upper GI findings indicates that patients should have a second OGD prior to CE.

**P13.05**

**Non-invasive monitoring of inflammatory bowel disease: need for better tools?**

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**Background:** In inflammatory bowel disease (IBD), biomarkers are used for the non-invasive monitoring of disease activity. Commonly used biomarkers are the acute-phase proteins C Reactive Protein (CRP) and Erythrocyte Sedimentation Rate (ESR). Ulcerative colitis (UC) is believed to have only a modest to absent CRP response despite active inflammation though the reason for this is unknown. Iron deficiency anaemia (IDA) is often a marker of longstanding active disease in IBD. We have analysed the sensitivity and specificity of CRP, ESR and IDA in Crohn’s disease (CD) and UC.

**Methods:** CRP, ESR, Haemoglobin level and Mean Corpuscular Volume taken before a colonoscopic examination were analysed. The values were compared with the histopathological findings for colonic and terminal ileal biopsies.

**Results:** Colon biopsy findings from 95 colonoscopies in 71 different patients with known UC were analysed (PPV: Positive Predictive Value, NPV: Negative Predictive Value). In UC, CRP had a sensitivity of 44.6%, specificity of 94.1%, PPV of 92.6% and NPV of 50.7%. ESR has a sensitivity of 64.7%, specificity of 89.3%, PPV of 91.7% and NPV of 58.1% while IDA has a sensitivity of 24.6%, specificity of 100%, PPV of 100% and NPV of 39.5%. Crohn and terminal ileal biopsies from 98 colonoscopies in 62 different patients with known CD were analysed. In CD, CRP had a sensitivity of 54.5%, specificity of 75%, PPV of 80% and NPV of 42.3%. ESR has a sensitivity of 55.4%, specificity of 89.7%, PPV of 91.2% and NPV of 50.9% while IDA has a sensitivity of 44.1%, specificity of 87.5%, PPV of 93.8% and NPV of 42.4%. When ESR and CRP were analysed together, there was a sensitivity of 70.9%, specificity of 70%, PPV of 83% and NPV of 53.8%.

**Conclusions:** UC has a similar CRP response to CD in active inflammation. The commonly used biomarkers have poor sensitivities in demonstrating active mucosal disease. IDA has little value when used as a marker of disease activity on its own but may be used as an adjunct to ESR and CRP or other biomarkers. Fecal biomarkers like calprotectin and lactoferrin and novel antibodies may help to increase sensitivity and specificity in the non-invasive monitoring of IBD.

**P13.06**

**Percutaneous endoscopic gastrostomy (PEG) tubes: effect of patient selection on mortality**

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**Introduction:** PEG feeding is an effective means of providing long-term enteral nutrition to patients with neurological dysphagia. 30-day mortality rates ranging between 4-26% have been described in different studies. Adequate patient selection may influence mortality.

**Aims and methods:** In a retrospective study on PEG tubes inserted in our centre between January 2008 and June 2010 we analysed the indications, poor prognostic factors (PPF) and mortality figures for PEG insertion.

**Results:** 97 patients underwent PEG insertion in the study period. The commonest reason for referral for PEG insertion was neurologically unsafe swallowing secondary to cerebrovascular accident (22.7%), and progressive neurological diseases (Huntington’s, Parkinson’s, Motor Neurone Disease, Guillain Barré syndrome – 56.7%). PEG tubes were also inserted because of advanced dementia (6.2%), oropharyngeal / oesophageal malignancies (8.2%), persistent vegetative states (2.1%) and in 2.1% of cases the cause was not determined. 47 patients were dead at the time of data collection with an 8% 30-day mortality and 39% 1-year mortality. The commonest cause of death in these patients was pneumonia (62%). The commonest PPF were male gender (45%), history of aspiration pneumonia (42%), age >65 (44%), dementia (35%), low albumin (8%), advanced malignancy (9%), history of abdominal surgery (1%), bedsores (9%) and heart failure (9%). All patients who died in the first 30 days post-PEG insertion had at least 1 PPF. The commonest PPF were male gender (62.5%), history of aspiration pneumonias (50%), age >65 (57.5%), dementia (57.5%) and advanced malignancy (25%). Each PPF was statistically analysed for an association to 30-day mortality (p<0.05) and no association was found (male sex p=0.078, aspiration pneumonias p=0.8308, age >65 years p=0.5574, dementia p=0.5574, low albumin p=0.7430, advanced malignancy p=0.2034).

**Conclusions:** Mortality figures in this study stress the importance of careful patient selection before this procedure. Patients with advanced dementia should undergo PEG insertion only in exceptional circumstances.2-3 PPFs may also influence patient selection. High mortality rates in hospitalized patients.
P13.07
Patient retention of information from information leaflets for oesophago-gastroduodenoscopy and colonoscopy
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Introduction: Informed consent, in a health care setting, is the process whereby patients consent to, or refuse an intervention, based on information provided by a healthcare professional regarding the nature and potential risks of the proposed intervention. For consent to be valid, it must be voluntary, informed and the patient must have capacity. Prior to the oesophago-gastroduodenoscopy (OGD) and colonoscopy, patients are informed about the procedure, alternative means of investigation, the risks and benefits of carrying out or not carrying out the procedures at the gastroenterology outpatient clinic. Patients are also sent an information leaflet at home containing information about what they should expect before, during, and after the procedure, as well as the associated risks and complications.

Aim: To assess how much information patients retained from the explanation at the outpatient gastroenterology clinic and through the patient information leaflets.

Method: On the day of the procedure, prior to the procedure, patients were given a questionnaire. Apart from demographic data, patients were asked about their level of education, previous endoscopic procedures, risks and complications related to the procedure.

Results: 31 patients underwent 35 endoscopic procedures which were assessed: OGD - 11 patients; colonoscopy - 16 patients; OGD + colonoscopy - 4 patients. The patients’ age range was 25 - 87 years (median age - 56 years; gender -51.6% females)60% of patients who underwent an OGD were not aware of any complications (sore throat; bleeding; oesophageal perforation; complications related to sedation).20% were aware of 1 complication, 13.3% were aware of 2 complications, no patients were aware of 3 complications and 6.7% patients (1 patient) were aware of all 4 complications.65% of patients undergoing a colonoscopy were not aware of any complications mentioned (bleeding; perforation and complications related to sedation).10% were aware of 1 complication, 10% were aware of 2 complications, and 15% were aware of all complications.

Conclusion: This data demonstrates that although patients were explained the risk of procedure at out-patients and through the patient information leaflet, the majority of patients were still unaware of the complications. Could this be as they were too anxious prior to procedure? This is preliminary data from our current study. We will be analysing more than 100 patients as to assess whether level of education, previous endoscopic procedures and personality could be related to retention of the information.

P13.08
Coeliac and Crohn’s Disease as risk factors for secondary osteoporosis
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Introduction: Both coeliac and Crohn’s disease are associated with an increased risk of osteoporosis. Methods: Coeliac and Crohn’s disease patients attending gastroenterology out-patients were referred for a DEXA scan and their bone density and Frax score results were analysed.

Results: 73 coeliac (17 male) and 83 Crohn’s disease (41 male) patients were analysed. Mean age at diagnosis among coeliac patients: 41.4 years; mean disease duration: 7.95 years. Mean T score (hip): -1.34, mean T score (spine): -1.58, mean Z score (hip): -0.49, mean Z score (spine): -0.81. Frax Score: mean 10-year risk of major fracture: 6.78% (range: 2-25%); mean 10-year risk of hip fracture: 1.98% (range: 0-11%). 15 patients were on bisphosphonates while 28 individuals were on calcium supplements. 12 patients had thyroid pathologies. There was no difference between the T scores (hip) of patients having normal tissue transglutaminase IgA levels and those having high levels (student t test p=0.70). There was also no difference in the T scores (hip) according to gender (student t test p=0.75) or disease duration (ANOVA p=0.68). However, there was a statistically significant difference in the T scores (hip) according to body mass index, with increasing T scores being associated with increasing BMIs (ANOVA p=0.013). There was no decrease in the T scores of coeliac patients with thyroid pathologies when compared with those without (student t test p=0.41). Mean age at diagnosis among Crohn’s patients: 30 years; mean disease duration: 9 years. Mean T score (hip): -1.3, mean T score (spine): -0.7, mean Z score (hip): -0.7 and mean Z score (spine): -0.4. Mean 10-year risk of major fracture: 7.09% (range: 2.5 – 53%); mean 10-year risk of hip fracture: 2.89% (range: 0.1-9.9%). There was no statistical difference between the T scores (hip) of coeliac and Crohn’s disease patients (student t test p=0.75) and between the Frax scores for major (p=0.70) and hip fractures (p=0.35) of coeliac and Crohn’s disease patients. However there was a significant difference between the T scores (spine) of coeliac and Crohn’s disease patients (student t test p).

Conclusion: While both coeliac and Crohn’s disease give an increased risk of osteoporosis, there is a significant difference in the T score (spine) between the two groups though such difference is not present in the hip.

P13.09
Osteoporosis/osteopenia in Crohn’s disease patients expressing the ATG16L1 variants
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Introduction: Osteopenia / osteoporosis are common in Crohn’s patients. Ileal disease in Crohn’s, especially fistulating / strictureing disease, or disease requiring small bowel surgery, can cause malabsorption which can cause osteoporosis. Since ATG16L1 polymorphisms have been shown to give a higher risk of ileal disease, one would expect a higher incidence of osteoporosis in patients with this genotype.

Methods: We have analysed the risk for osteoporosis / osteopenia among Crohn’s patients expressing the ATG16L1 polymorphism. Patients diagnosed with Crohn’s disease through histological, radiological and endoscopic findings were recruited. Informed consent was obtained to take blood samples for genotyping for the rs2241880 variant of the ATG16L1 gene and to perform a DEXA scan. Genotyping for the rs2241880 variant involved: - DNA extraction - Gradient Polymerase Chain Reaction (PCR) - PCR - Quantitative PCR and High Resolution Melt - Restriction Fragment Length Polymorphism of PCR product

Results: Patients with the wild type allele (n=33) had a mean T score (hip) of -1.48, T score (spine) of -0.96, Z score (hip) of -0.75, and Z score (spine) of -0.45. Patients heterozygous for the rs2241880 polymorphism (n=44) had a mean T score (hip) of -1.68, T score (spine) of -0.94, Z score (hip) of -0.92, and Z score (spine) of -0.34. Patients homozygous for the rs2241880 polymorphism (n=6) had a mean T score (hip) of -1.84, T score (spine) of -0.14, Z score (hip) of -0.99, and Z score (spine) of -0.34. Using t-test, there was no statistical difference between the homozygous, heterozygous and wild type patients’ hip T scores (p=0.314), Z scores (p=0.441), and spine T scores (p=0.514) and Z scores (p=0.502). Using y2 test, the relationship between the 3 different variants (homozygous, heterozygous and wild type) and the risk of osteoporosis (T score <-2.5), osteopenia (T score: -1.0 to -2.5) and normal (Tscore >-1.0) was not statistically significant (p=0.978).
Conclusion: We found no significant difference between the T and Z scores of patients with ATG16L1 homozygous, heterozygous and wild type alleles. However, there is a trend in the mean T and Z scores at the hip with lower T and Z scores in patients with heterozygous/homozygous alleles. Such a trend is not present in the spine. While the authors can offer no explanation for this difference, studies on larger populations are needed to better investigate the relationship between ATG16L1 mutations and the risk of osteoporosis.

P13.10
A full cycle audit on the prophylaxis and management of glucocorticoid-induced osteoporosis
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Aim: This full cycle audit assessed concordance of prophylaxis and management of glucocorticoid-induced osteoporosis with the UK Guidelines (2002) and the ESCEO Guidance document (2009). First Loop (2009): Review of the case notes of 47 patients who had taken at least 5mg oral prednisolone for at least 3 months showed that a bone density scan had not been requested in 17% of cases and was pending in 11%. Inadequate fracture risk assessment was noted. Lifestyle advice was not documented. Less than 40% of patients were taking adequate calcium/vitamin D supplementation and similarly less than 40% were taking a bisphosphonate.

Action plan: It was agreed to heighten awareness on the need for bone protection and bone density assessment in patients on glucocorticoids, and furthermore instruct trainees in this management. All trainees were given a handout with the salient points of ESCEO document. Online FRAX Score calculation was explained. Results of Second Loop (2010): Review of case notes of 35 patients showed an increase in bone density requests (97%). Fragility fractures documentation improved from 60% to 80%, and similarly parental fragility fractures documentation improved from 39% to 55%. Adequate calcium/vitamin D supplementation had been prescribed in 74% of patients; and more than two-thirds had been prescribed a bisphosphonate.

Conclusion: Self-appraisal and training of junior staff can help improve the prophylaxis/management of osteoporosis in patients on chronic glucocorticoid therapy. Future audits are needed to maintain and improve standards.

P13.11
A full cycle audit on the assessment of patients referred with primary or postmenopausal osteoporosis
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Aim: This full cycle audit assessed concordance of osteoporosis management with the ESCEO Guidance document. First Loop (2009): Review of the case notes of 45 patients referred with osteoporosis showed inadequate fracture risk assessment, including BMI precluding FRAX Score calculation. Lifestyle advice was not documented. Less than a quarter of the patients were taking adequate calcium supplementation and less than half were taking adequate vitamin D supplements respectively. The majority were being treated with anti-resorptive treatment (73% took a bisphosphonate whilst 9% were on strontium ranelate).

Action plan: Specialist self-appraisal and trainee instruction was agreed to. A handout with salient points of ESCEO document was prepared for trainees who were educated on available calcium/vitamin D preparations. Online FRAX Score calculation was explained. Results of Second Loop (2011): Review of case notes of 44 patients showed an increase in fragility fractures documentation from 85% to 98%. Parental fragility fractures remained unchanged (58%). Smoking (38%) and alcohol histories (11%) improved to 97% each. BMI was recorded in 77% of patients. In both loops, full examination, densitometry and baseline investigations were recorded in 100%, and specialised blood tests elucidated an underlying cause in 15-16%. Lateral spinal radiographs were available in 34%. Lifestyle advice remained poorly documented. Calcium/vitamin D supplementation improved to 68% and 70% respectively. 87% of patients took a bisphosphonate; 9% were on Denosumab.

Conclusion: Training of rotating staff and specialist self-appraisal can impact osteoporosis management. More emphasis on evaluating patients for silent vertebral fractures, and parental history of fragility fractures is needed. Patient information leaflets with life style advice may be of benefit. Future audits are needed to maintain and improve standards.

P13.12
Trochanteric cortical thickness and fat pad thickness at the hip in various groups of women-new markers for postmenopausal osteoporotic hip fracture
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Objective: The assessment of the greater trochanter cortical thickness and soft tissue thickness on the lateral aspect of the left hip in various groups of women.

Methods: One hundred and sixty-two women were recruited sequentially to have the outer cortical thickness of the left lower limb’s greater trochanter measured ultrasonically. Sixty-two women were young menstrual (under the age of 35 years) while there were 25 women in the older menstrual group (35+ years). The other groups were perimenopausal women (17) and treated (30) and untreated postmenopausal women (28). The woman would be placed on the right flank with both lower limbs extended. The greater trochanter would then be palpated and a 3.5 MHz ultrasound sector probe Aloka (SD 500) would be placed at right angles to the point where the trochanter could be felt. Under the sonolucent subcutaneous tissue, a ‘‘\”‘ shaped hyperechoic signal could be seen representing the greater trochanter and is consistently noted to be thinnest point of outer cortical bone in this region. The inner and outer hyperechoic edges at the obtuse angle of the trochanteric ‘‘\”‘ could be consistently delineated allowing the accurate measurement of the cortical thickness.

Results: The lowest cortical thicknesses were registered for the untreated menopausal group (0.776 +/-0.2cm) and the perimenopausal group (0.878 +/-0.15cm). The oestrogen replete group were consistently higher – young and old menstrual group (0.943 +/-0.19cm and 0.928 +/-0.16cm) respectively and 0.936 +/-0.18cm in the hormone treated group. The trochanteric thickness of menopausal group was significantly lower than all the other groups of women. The lowest fat pad thicknesses were registered for the untreated menopausal group (2.04 +/-0.69cm), the perimenopausal group (2.06 +/-0.86cm) and young menstrual group (2.09 +/-0.64cm). The oestrogen replete group were consistently higher – old menstrual group and 2.33 +/-0.72cm in the hormone treated group. These differences did not reach statistical significance except between the hormone treated group and the untreated postmenopausal group. However significant correlations were noted between the fat pad thickness and trochanteric cortical thickness all groups of women.

Conclusion: The low cortical thicknesses of the greater trochanter may represent a weak point where postmenopausal fracture of the hip may initiate. This area may be most vulnerable as it experiences significant shearing...
forces from all directions. Moreover possibly with less mobility related to the ageing process, osteoporosis may set in at a faster rate in this region due to the diminished strain applied through the ligamental insertions. Measurement of this region is easily performed and reproducible. This may be another marker for women at risk of the classical postmenopausal osteoporotic fracture of the hip.

P13.13 Intervertebral disc height in premenopausal women, treated and untreated postmenopausal women and postmenopausal women with osteoporotic vertebral fractures

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Objective: To assess Intervertebral Disc Height in premenopausal women, hormione treated and untreated postmenopausal and postmenopausal women with radiographically confirmed vertebral fractures.

Methods: Seven hundred and fourteen women were divided in five groups according to the menopausal/ menstrual status. One hundred and eighteen (118) menopausal women were on HRT, 220 women were untreated menopausal women, 98 menopausal women were on bisphosphonates, 161 women were on calcium supplements, 79 women were premenopausal and 98 women had confirmed vertebral fractures. Age and weight differences were noted across groups and statistical. The vertebral fracture group was noted to have the lowest disc height (1.38 ± SD 0.1cm) of the three groups D1 - D3. The D1 - D3 disc height in the HRT and premenopausal groups were similar (1.92 ± 0.35cm) and (1.92 ± 0.3cm ) respectively. The disc height in the other three groups (calcium 1.49 ± 0.48, untreated menopausal group 1.49 ± 0.48cm, bisphosphonates 1.41 ± 0.47cm) were significantly lower than the oestrogen replete groups but were significantly higher than the osteoporotic vertebral fractures group (p<0.001).

Conclusion: Postmenopausal women with vertebral fractures have significantly low disc heights. The disc heights are significantly lower than HRT treated and premenopausal women. The disc heights of the calcium and bisphosphonate groups were also significantly lower than the HRT treated and premenopausal women. These results suggests that the discoid shape and viscoelastic properties of the intervertebral discs may be relevant to the genesis of osteoporotic vertebral fractures and nonhormonally treated menopausal women also have significantly low disc heights.

P13.14 An audit on adherence to the British Society of Rheumatology (BSR) guidelines on the management of polymyalgia rheumatica (PMR)

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Introduction: In 2009 the BSR published a set of guidelines on the management of PMR covering the basis of diagnosis, the dose of prednisolone prescribed, the assessment of fracture risk and use of bisphosphonates when indicated, the frequency of follow up visits and the laboratory tests required during follow up.

Aim: To establish the adherence to the above guidelines by a rheumatology firm practising at an outpatient department at Mater Dei Hospital.

Methodology: Twenty eight consecutive patients with a diagnosis of PMR who attended the rheumatology outpatient department between September 2011 and March 2012 were identified. The case notes of these patients were retrieved and analysed for adherence to the published guidelines on the management of PMR.

Results: As regards the core inclusion criteria for diagnosis, all the patients were over 50 years of age, 96% had bilateral shoulder / pelvic girdle aching for a duration of over 2 weeks, 86% had early morning stiffness lasting over 45 minutes and 89% had an acute phase response. An improvement in the clinical condition within one week of starting steroids was noted in 80% of patients. Normalisation of the ESR within 4 weeks occurred in 60%. An ESR/CRP was requested in 100% of patients and a blood count in 93% prior to starting steroids. Renal and liver function tests were requested in 85% of cases, an RF test in 67%, a CK in 41% and an SPE in only 22%. Supplemental calcium and Vitamin D was prescribed in 89% of patients on steroids whilst bisphosphonates were prescribed to only 45% of those patients on steroids at high risk of sustaining a fracture.

Conclusion: This audit has indicated a high adherence to certain aspects of the BSR guidelines on the management of PMR such as those relating to the diagnostic process including clinical features, elevated inflammatory markers and the response to steroids. As regards investigations recommended prior to start of steroid therapy, there was a high adherence to carrying out an ESR/CRP and blood count but not to the other investigations. Adherence was poor as regards to commencing therapy with bone protecting agents in patients at high risk of fracture indicating an area of practice that needs to be improved upon.

P13.15 A cross-sectional study to determine the suitability of using the FRAX® hip assessment thresholds currently used in the UK, for the FRAX® model developed for Malta

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Introduction: The clinical significance of osteoporosis lies in the fractures it may give rise to. Bone mineral density (BMD) is considered to be the standard measure for the diagnosis of osteoporosis and assessment of fracture risk. However, the majority of fragility fractures occur in patients with a BMD measurement in the osteopenic range. The occurrence of several risk factors is linked to a higher fracture risk than can be accounted for by BMD alone. FRAX® is a computer based algorithm that estimates the 10-year probability of major osteoporotic and hip fracture using easily obtained clinical risk factors. The inclusion of femoral neck BMD is optional. In the UK, age-related assessment and intervention thresholds are provided to guide the clinician to decide whether to: 1. Further assess the patient in 5 years time, 2. Recommend BMD testing or 3. Recommend treatment without the recourse to BMD testing.

Aim: To determine the suitability of using the FRAX® hip assessment thresholds currently used in the UK, for the FRAX® model developed for Malta.

Methodology: Ninety-two hip fracture patients over the age of 65 were recruited from Mater Dei Hospital and The Rehabilitation Hospital Karin Grech. Exclusion criteria included patients being treated with medications for...
osteoporosis at the time they sustained their hip fracture. Ethical approval was sought. The medical notes of these patients were reviewed in order to complete the FRAX® tool®, calibrated for Malta http://www.shel.ac.uk/FRAX/toolk.jsp, for each patient. Because some of this information was not available in the medical notes, a data collection interview was carried out with each of the patients. The ten-year probability of hip fracture was calculated for each study participant. These probabilities were compared to the UK assessment thresholds given in 2008.

Results: Before the 92 patients recruited sustained their hip fracture, 22 patients (25.9%) would have met criteria for osteoporosis treatment, 35 patients (38%) would have needed referral for BMD measurement to guide treatment choice, and the remaining 35 patients (38%) would have been falsely reassured by their assessment.

Conclusion: The use of the FRAX® hip assessment thresholds currently used in the UK had limited success in identifying the need for preventive treatment in these Maltese patients with hip fracture and therefore it may be necessary to guard against an over reliance on FRAX®. Future work may involve determining thresholds for the FRAX® model developed for Malta in order for this tool to reliably identify those Maltese patients who will sustain a fracture.

P13.16
The effect of hydrotherapy on women with fibromyalgia syndrome
J. Vella

The effects of an exercise programme including hydrotherapy were evaluated in relation to a programme consisting of land exercises alone in the treatment of patients with fibromyalgia syndrome (FMS). The Fibromyalgia Impact Questionnaire (FIQ) was used to measure the functional state of the patients at the beginning and at the end of the six week test period. The total score of the FIQ and that of each of its components was evaluated. Descriptive and inferential statistics were used to analyse the data which was collected. Microsoft Office® Excel® software was used to compute statistical calculations. Means and standard deviations were used to compare the two groups. The t-test was used to evaluate significance in between-group differences at an alpha-level of 5% (0.05). Improvement was registered in both groups, with a higher prevalence in the hydrotherapy group. Despite those findings, no improvement in the hydrotherapy group was found to be significantly better than improvement in the land group; between-group difference in total FIQ score and the score of all of its components proved to be statistically insignificant (p>0.05). The results therefore support the null hypothesis which states that there is no variance between the functional outcome of a water-land exercise programme and that of a land exercise programme in women with FMS. Due to the study limitations, further study is needed to confirm the effects of hydrotherapy on symptoms of patients with FMS.

P13.17
Enoxaparin prescription and dose adjustment in Chronic Kidney Disease
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Background: There is reduced clearance of Enoxaparin Sodium (ES) in patients with impaired renal function. Dose reduction is recommended in patients with an estimated Glomerular Filtration Rate (eGFR) of less than 30 mls/min/m².

Aim: To assess dose adjustment of ES in patients with renal impairment.

Methods: A total of 174 patients (96 females; 80 males) on ES were randomly selected from in-patient wards at Mater Dei Hospital (medical, surgical, orthopaedic and gynaecology). Demographic data, weight, dose administered, indication, eGFR when ES was started and any deterioration in eGFR during hospital stay were recorded. Patients on renal replacement therapy (RRT) were noted.

Results: The mean age of the study population was 66.0 years (SD± 14.2). Prophylactic ES was prescribed in 143 patients. Thirty-one patients were treated with ES for deep vein thrombosis, pulmonary embolism and acute coronary syndromes. The mean eGFR was 85.7 (SD± 48.6). An eGFR of less than 30 mls/min/m² was documented in 143 patients, of whom 9 patients were receiving the incorrect dose of ES. A decline in the eGFR to less than 30mls/min/m² during hospital stay was noted in 4 patients Out of these there was no dose adjustment in 3 of the above named patients despite deterioration in eGFR. Whereas one patient had the dose of ES adjusted incorrectly. The weight of the patient was documented in 22 cases. Six patients were on RRT and the dose of ES was adjusted in half of them.

Conclusion: There is still lack of awareness on dose adjustment of ES according to the eGFR. The patient’s weight is still often estimated by medical staff and this can lead to further incorrect ES dose administration. Inappropriate dose adjustment of ES can lead to potentially fatal complications such as haemorrhage. There is still insufficient evidence in the literature to support the use of ES in patients with end-stage kidney disease, where unfractionated heparin may be the best treatment option.

P13.18
Documentation and awareness of kidney disease in hospital admissions and discharges
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Background: Kidney disease is a common yet frequently under diagnosed condition. It is associated with high morbidity and mortality especially in hospitalized patients. Our current accident and emergency document does not include chronic kidney disease (CKD) as an important past medical diagnosis. There is lack of documentation of CKD and acute kidney injury (AKI) in hospital admissions as well as discharge summaries.

Method: All hospital admissions over seven consecutive days to the departments of internal medicine, surgery and orthopaedics were included and data analysed. Patients with CKD (estimated glomerular filtration rates eGFR <60 for more than 3 months), end-stage renal disease and acute kidney injury during the admission were included. The MDRD equation was used to calculate eGFR. The following variables were analysed: age, sex and documentation of kidney disease in the case notes and discharge summaries.

Results: A total of 445 patients (50 males 63 females, mean age 76 (range 43-99)), were admitted in the study period. Sixty patients (13.5%) had CKD and 21 (4.7%) had no recent creatinine result despite having an eGFR of less than 60. Fifty-two (11.7%) patients had AKI during the admission. Only 46.7% (n=28) of patients with criteria for CKD on admission had this diagnosis included in the case notes. The diagnosis of CKD was recorded in the discharge summary in 31.4% (n=16) of cases. The diagnosis of AKI was documented in 37.3% (n=19) patients in the case notes and in 24.3% (n=9) of the discharge summaries.

Conclusion: There is still lack of clear documentation on admission and discharge of patients with acute or chronic kidney disease. This would alert medical staff during their hospital admission and general practitioners on discharge about the possibility of further deterioration in renal function. Documentation will help identify co-morbidities, help in safe prescribing of potentially nephrotoxic drugs and provides a guide to the prognosis of the patient with diagnosed kidney disease.
P13.19
A survey of induction therapy for ANCA vasculitis in the UK
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Introduction: The CYCLOPS trial concluded that pulsed cyclophosphamide therapy was as effective as daily oral therapy for inducing remission in anti-neutrophil cytoplasmic antibody (ANCA) vasculitis, but that there may be an increased risk of relapse.

Aim: Given a lack of standardised guidelines for the management of this condition, we investigated the preferred treatment amongst UK renal centres.

Methodology: Between December 2011 and June 2012 a survey on preferred induction therapy for a first presentation of ANCA vasculitis was sent to all 74 main UK renal units. A follow up second survey was sent to determine what therapy was used for male and female patients of child bearing potential.

Results: First survey responses were received from 57 units (77%). 25 units used daily oral cyclophosphamide, 8 used pulsed cyclophosphamide for 3 months, 6 used pulsed cyclophosphamide for 6 months (closed according to CYCLOPS trial). 11 units used cyclophosphamide but the dosing schedule varied depending on individual patient features, and a further 6 depended on individual consultant preference. 1 unit uses a combination of Rituximab and cyclophosphamide. In response to the second survey replies were received from 35 units, and results are given for male; female patients in each case. 14:11 would use 3 months of daily oral cyclophosphamide, 7:6 would use 3 months of pulsed cyclophosphamide therapy, 2:1 would use 6 months of pulsed therapy, 5:5 would use a cyclophosphamide schedule but this varied according to patient features or consultant choice. 1:2 would use Rituximab, and 4:7 would use cyclophosphamide or Rituximab depending on patient characteristics. One unit used a combination of cyclophosphamide and Rituximab for males and females, one used cyclophosphamide or mycophenolate for males and females, whilst one preferred mycophenolate for females.

Conclusion: This data reveal a wide variation in UK practice. The initial survey showed that when cyclophosphamide is used, the most common dosing schedule remains 3 months of daily oral cyclophosphamide. 31 (54%) of units use either this or 6 months of pulsed therapy, which entail a similar cyclophosphamide exposure. The follow up survey showed that in patients of childbearing potential, 46% of males and 43.3% of females, in responding units, will receive either 3 months of daily oral or 6 months of pulsed cyclophosphamide. This demonstrates a tendency to limit cyclophosphamide use in patients of childbearing age, particularly females. The results also highlight the need for further clinical trials to aid the development of evidence-based guidelines.

P14.01
Climatic effects on the seasonality of respiratory syncytial virus in children hospitalised with lower respiratory tract infections in Malta
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Introduction: Respiratory syncytial virus (RSV) is a major cause of hospitalisation of children younger than 24 months during winter and spring.

Aim: To study the influence of meteorological factors on the prevalence of RSV infections in children hospitalised with bronchiolitis or viral-induced wheeze in the first 2 years of life.

A prospective observational study was performed in children <24 months admitted with a lower respiratory tract infection (LRTI) from October 2009 to September 2011. Nasopharyngeal swabs were collected and RSV were cultured using a shell vial assay. Daily readings of temperature, relative humidity, wind speed and direction and rainfall were recorded. The wind chill index was derived from temperature and wind speed values. Spearman correlation was used to analyse any correlation between RSV swabs and meteorological factors. Climatic differences between the two RSV seasons were analysed using Student t-test.

Results: Out of 134 children hospitalised with a LRTI, from October 2009 till September 2010, RSV was detected in 39 children (29%), with the onset of RSV infection occurring in February 2010 (weeks 6 to 9). In the subsequent RSV season, 49 (34%) of the 144 children hospitalised with LRTI, from October 2010 to September 2011, had positive RSV cultures. The onset of RSV infection was recorded in December 2010 (weeks 48 to 52). A negative correlation between the minimum and maximum wind chill index and RSV hospitalisations was found (p=0.007 and p=0.009, respectively). There was no relationship between RSV hospitalisations and rain precipitation, relative humidity or wind direction. Comparison of the climatic factors between the two years only revealed significant differences in relative humidity. January 2010 (weeks 1-5) was significantly less humid during the day (72.87% vs 82.48%; p=0.0001) and night (76.16% vs 88.07%; p=0.0001) when compared to January 2011 (weeks 1-5). Similarly, the last two weeks in November 2010 (weeks 46-47) were significantly less humid during the day (70.67% vs 79.87%; p=0.0009) and night (74.33% vs 87.87%; p=0.0001) than the corresponding two weeks in November 2009. These periods of lower relative humidity preceded exactly the onset of the RSV seasons. No differences in relative humidity were observed between the other months.

Conclusion: The RSV season in Malta varied significantly over 2 consecutive years. Relatively lower humidity, on a background of a cold temperature, was conducive to the onset of the RSV season very likely from its effect on the stability and transmissibility of RSV.

P14.02
The role of the A>C 395 IFNGR1 mutation in determining susceptibility to intracellular infection in Malta
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Background: The first human mycobacterial susceptibility gene was identified amongst four children on the island of Malta in 1995. All affected children were homozygous for a nonsense mutation at position 395 of the interferon gamma receptor 1 (IFNGR1) gene, and all but one died of overwhelming mycobacterial infection. The population of Malta has high rates of infection with intracellular pathogens; leishmaniasis, brucellosis and tuberculosis are all endemic, while leprosy, which was previously endemic, has only recently been eradicated. We hypothesised that heterozygous carriers of the IFNGR1 gene mutation, while resistant to infection with poorly pathogenic organisms, may have increased susceptibility to infection with more virulent pathogens.

Methodology and result: DNA was obtained from a total of 167 patients with a past history of intracellular infection (mycobacteria, leprosy, brucella and leishmaniasis), and from 450 anonymised neonatal samples obtained from cord blood samples taken for the purposes of routine newborn screening. Screening of DNA from all cases and controls using sequence
Specific primers (PCR-SSP) capable of distinguishing between the wild type and mutant sequence revealed no carriers for the IFNGR1 A>C 399y mutation in both cases and controls.

Conclusion: These results suggest that the IFNGR1 mutation is unlikely to be of public health significance on Malta.

P14.03 Insights into possible biomedical treatment approaches for autism in Malta
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Aim: To establish the medical basis of biomedical approaches to treating autism, by establishing which of these approaches are of reported proven efficacy, effectiveness and safety and hence offer recommendations for their use in Malta.

Methods: An electronic literature search was carried out for supporting evidence-based biomedical approaches in autism. Mainstream authoritative national guidelines were focused upon together with current important and specific papers. Meetings with the Autism Parents Association, Malta and local biomedical DAN conferences were attended. Webcasts of the Autism Research Institute were accessed. The issues regarding local hyperbaric therapy were discussed with local professionals.

Results: No strong recommendation was found to support any of the biomedical approaches to autism addressed in 10 authoritative national guidelines from 1999 to 2011. The evidence and recommendations were against using chelation, immunoglobulin therapy, secretin, amantadine, antifungal/yeast therapies, naltrexone, dimethylglycine, vancomycin, digestive enzyme supplements and donepezil. Melatonin for sleep disturbances and to a lesser degree, omega-3 for hyperactivity had enough support to consider their use in autism. The recommendations for gluten/casein diets, and vitamin B6/magnesium were mostly either indeterminate or negative. Iron, vitamin C, piracetam, pentoxifyllin, ketogenic diets, L-carnosine and hyperbaric oxygen therapy could not be safely recommended.

Conclusion: The evidence-based literature does not support most biomedical approaches. There is limited support for melatonin and omega-3 use.

P14.04 Low risk of cerebral palsy in twin deliveries
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Introduction: Multiple gestations may be associated with cerebral palsy due to increased risk of prematurity and low birth weight.

Method: Of 55200 children born over ten years in the Mediterranean islands of Malta and Gozo, 134 fitted the case definition of cerebral palsy (CP). The control group comprised 134 children who were matched for sex and born immediately before or after the index subjects in the same hospital. Data related to risk factors were extracted from medical records and collected by interview with parents or carers. Unadjusted odds ratios (OR) with 95% confidence intervals were calculated for risk factors including multiple pregnancy.

Results: Multiple pregnancies being a low-prevalence risk factor, with 1.2% of all births, were shown to have ORs of 6.17 (2.92–12.57) calculated against the whole population data for the 10-year birth cohort. The study also shows a social pattern with a higher risk of CP in lower socioeconomic groups due to increased infections, low birth weight and preterm birth.

Conclusion: The increased stress and financial cost on the care giving family with twins is further complicated by the medical needs of the cerebral palsy child.

P14.05 Rett syndrome in Malta—clinical and genetic characteristics
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Aim: Rett syndrome is a postnatal neurodegenerative disorder with an incidence of around 1:10,000 females. The clinical features and genetic defects of Maltese patients having Rett syndrome are described.

Method: Patients with clinical Rett syndrome attending the paediatric neurology clinics were identified. The result of the mutation analysis of the MECP2 gene in these patients was compared to the mutational analysis of patients Europe-wide.

Result: Four patients with mutations in the MECP2 gene were identified, with R168X being the most common.

Conclusion: In classical Rett syndrome, 50% of patients have a causative mutation in MECP2. Genetic testing in the clinical scenario of Rett syndrome is beneficial irrespective of whether the result is positive or negative, since it assists in the clinical management of patients including genetic counselling.

P14.06 Cystinuria in children in Malta
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Aim: Cystinuria is an autosomal recessive disorder caused by the inability of the renal tubules to reabsorb filtered cystine and accounts for 10% of childhood stones. The mainstay of therapy remains prevention of stone formation using dietary measures and pharmacological therapy. The latter can cause significant side effects and can limit therapy. Most patients will require surgical intervention for stone removal, although compliance with preventive strategies reduces the need for intervention.

Method: Of 55200 children born over ten years in the Mediterranean islands of Malta and Gozo, 134 fitted the case definition of cerebral palsy (CP). The control group comprised 134 children who were matched for sex and born immediately before or after the index subjects in the same hospital. Data related to risk factors were extracted from medical records and collected by interview with parents or carers. Unadjusted odds ratios (OR) with 95% confidence intervals were calculated for risk factors including multiple pregnancy.

Results: Multiple pregnancies being a low-prevalence risk factor, with 1.2% of all births, were shown to have ORs of 6.17 (2.92–12.57) calculated against the whole population data for the 10-year birth cohort. The study also shows a social pattern with a higher risk of CP in lower socioeconomic groups due to increased infections, low birth weight and preterm birth.

Conclusion: The increased stress and financial cost on the care giving family with twins is further complicated by the medical needs of the cerebral palsy child.

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Results: Multiple pregnancies being a low-prevalence risk factor, with 1.2% of all births, were shown to have ORs of 6.17 (2.92–12.57) calculated against the whole population data for the 10-year birth cohort. The study also shows a social pattern with a higher risk of CP in lower socioeconomic groups due to increased infections, low birth weight and preterm birth.

Conclusion: The increased stress and financial cost on the care giving family with twins is further complicated by the medical needs of the cerebral palsy child.
improvement in the overall health of these patients. Moreover carrier screening and genetic counselling of relatives at risk can now be offered.

P14.07
The importance of educating mothers on how to safely prepare a bottle feed prior to leaving the post natal wards
K. Borg, A. Schmidt, H. Borg

Introduction: Mothers who choose to supplement or exclusively bottle feed their babies should be taught how to safely prepare a bottle feed prior to leaving hospital.

Aim: To determine whether mothers on the post natal wards who decide to bottle feed are confident in safely preparing a feed prior to leaving hospital.

Methods: An audit using a verbal questionnaire was carried out over a 2 month period by the same interviewer. Mothers were asked whether they felt confident on safely preparing a bottle feed prior to being discharged. Those who said yes were asked to describe the process from beginning to end. 9 essential steps, based on the gold standard World Health Organisation guideline, were expected to be mentioned. The same mothers were asked by whom they were taught to do so.

Results: 93% of the mothers interviewed claimed they were confident in safely preparing a bottle feed. 90.5% of these mothers asked to comment on how they would wash their hands. 72.4% did not mention that they would wash bottles with soap whilst 51.4% failed to mention using a teat brush to clean bottles. Letting boiled water cool down to 70°C before mixing formula was omitted by 57.1%. 45.7% of mothers failed to mention that they would check the temperature of the prepared feed. 35.2% of mothers did not mention that formula had to be mixed with water pre-filled in bottles (not vice versa) and 29.5% did not mention that they would use one leveled spoon of formula with 30mls of water. 25.7% did not mention that they would boil water prior to preparing the feed. 19% failed to mention sterilizing bottles. 70.5% of mothers claimed that they were never shown or taught how to prepare a bottle feed. 22.9% were taught by staff on the post natal wards and 3.8% were taught at parent craft.

Conclusion: Mothers leaving hospital with their newborn babies are clearly not being well educated on how to safely prepare a bottle feed. Failing to prepare a feed up to standard may be detrimental to the health of the neonate.

P14.08
Does a simple educational exercise influence practice in acute tonsillitis in children?
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Aim: To assess concordance of treatment of children with tonsillitis presenting to Paediatric Casualty with NICE guidelines and Centor criteria, and subsequent review of any changes in management of this condition following a simple educational exercise.

Methods: An audit relating to tonsillitis in children was carried out amongst doctors working in the Paediatric Casualty during a three month period in 2009. Eleven doctors were asked to complete an anonymous questionnaire providing details on presentation, symptomatology, investigations and treatment of patients presenting with acute tonsillitis. The results obtained from this questionnaire were compared to NICE guidelines and Centor criteria, and fed back to the participating doctors together with copies of the current guidelines via a simple, structured educational exercise. Three months later, a second identical questionnaire was again completed by the same cohort of doctors.

Results: The first questionnaire showed that there was a tendency towards unnecessary prescription of antibiotics and investigations in children with acute tonsillitis, when compared to NICE and Centor guidelines. Following educational feedback, a second questionnaire showed a reduction in antibiotic prescriptions by 9% (p=0.5) and unnecessary investigations reduced by 37% (p=0.1). Compliance with guidelines had improved significantly with regard to non-prescribing of antibiotics with a fever of <38°C (Phi -0.76, p=0.0005), and with tonsillar pus but no fever (Phi -0.68, p=0.002). Increased compliance was observed when prescribing antibiotics in the presence of pus plus a fever, lymphadenopathy >1cm and presence of underlying disease although these changes were not statistically significant.

Conclusion: Although doctors were initially only partly compliant with NICE and Centor guidelines for children with acute tonsillitis, compliance improved significantly after a simple educational exercise.

P14.09
Childhood nutrition and parental food choice
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Background and aims: Obesity is a growing problem in Malta. Despite recent public health efforts, Malta still leads many international obesity statistics. Studies have recurrently highlighted the major role parents play in what children eat and how much they weigh. This study aimed to ask a number of parents about what affects their choice when buying and preparing food for the family. The nutritional status and habits of the children of these parents were also determined.

Method: Families attending paediatric casualty were randomly approached and were offered to fill in a printed questionnaire preceded by an introductory letter and a consent form. For this study, the validated food choice questionnaire was used. Then, through a face-to-face interview with the researcher, they were asked a number of questions about the child’s nutritional habits. The body mass index of the child was also calculated. Children with chronic medical conditions requiring specific diets or feeding patterns were excluded from the study. Results were analysed with Microsoft Excel 2007 and an online statistical tool. Ethics approval was obtained.

Results: A total of 99 children satisfied the inclusion criteria and answered the questionnaire. 57.6% were male and 42.4% were female. Most were between the ages of two and five (44.4%) while 30.3% were aged between 6 and 9 and 25.3% were ten years old or more. Regarding BMI, 63.6% of children measured were normal, 32.3% were classified as overweight or obese, and 4% were underweight under WHO criteria. Only 18.6% of children interviewed reported exercising for at least thirty minutes daily while around two thirds (63.6%) had a reported screen time of 1 to 3 hours. As regards nutrition, 39.4% of families stated that their children took less than five servings of fruit per week, while 73.7% took less than five servings of vegetables per week. With reference to food choice, respondents gave top priority to the following factors: natural content (39.4%), sensory appeal (29.3%) and health (27.3%).

Conclusions: Natural content, sensory appeal, and healthfulness of food were the most important factors affecting food choice in our study population. This study calls for a multidimensional approach to promoting healthy food choice for children. The Paediatric Emergency doctors may provide a beneficial role in identifying overweight and obese children and teaching parents about healthy food, proper exercise and screen time during the current childhood obesity epidemic.
Screening assessment of palpitations in childhood
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Background and aims: Children are commonly referred for assessment to paediatric cardiology outpatient clinics with ‘palpitations’. These are almost invariably benign and routinely need a history and examination and a baseline ECG in order to exclude any potential significant pathology. Recurrent palpitations are disconcerting and may require further investigation in order to rule out pathology. True pathology is rare and over-investigation is a potential risk. This study aimed to assess the usefulness of a screening tool in distinguishing children with intermittent normal fast heart rates and true arrhythmias.

Method: Families referred to the Cardiology clinic at children’s outpatients specifically with a complaint of palpitations were included in the study. Parents (and children where applicable) were taught to count the heart rate using various sites on the body, and to document it daily on a provided sheet at different times and activities for a one month period. A baseline ECG was also taken. Children were then reassessed.

Results: 12 patients were referred with palpitations between January and July 2012. No pre-excitation was noted in any of the ECG’s taken. The average maximum and minimum heart rates were 114 and 70 respectively. Average follow up time was 37 days. Palpitations had resolved at follow up in 83.3% of children. Palpitations persisted in 2 children (16.7%) but average max heart rate was 125. Other children are currently still being followed up.

Conclusion: This screening method is a unique modus operandi in paediatric cardiology and appears to be a practical and cost-effective way to screen childhood palpitations. Further research is needed to refine this method and therefore avoid over-investigation and wasting resources.

Early developmental intervention for toddlers attending child care centres in Malta
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Aims: An early assessment of children in child care centres who have been observed to have noticeable developmental problems is carried out and an intervention program is planned accordingly.

Methods: All children attending the FES Smart Kids childcare centres in Malta are observed. These include children between 3 months and 3 years of age. There are 10 child care centres in Malta. During visits, a developmental assessment of the children identified by the co-ordinators as having a developmental problem, is organised. A full medical history of the child concerned is taken, with special emphasis on language and communication skills, development through play with toys and other children, relationship with peers, siblings and other family members and social interaction skills. The child is then observed in the care centre itself where an opinion on the probable diagnosis plus a management plan for the child, is offered.

Results: The 10 child care centres referred to above, have been visited around 55 times as from 2011 to date. A total of 451 toddlers are attending these centres with ages ranging from 3 months to 3 years. The referrals were mainly addressed to the CDAU, Child Guidance Unit, Children’s Out Patients Department and Speech Therapy Division. In total 21 referrals were made to the CDAU, Speech Therapy Unit and for early intervention teaching services. Children with refugee status, were also assessed with special emphasis on appropriate nutritional aspects and adaptation to the Maltese culture and systems. Communication with APPOGG (Dr. Mariella Mangion, Consultant Social Paediatrician), the JRS (Jesus Refugee Services) and Ms. Marika Poddia Conor (Co-ordinator, Migrant Health Unit, Primary Care Division) was essential in the follow up of such cases. Seminar and workshops for parents, Child Care Co-ordinators and carers, were also organised to highlight the importance of nutrition, child development and immunisations and infections in the care of children in the community.

Conclusion: The earlier the problems are identified, the sooner and the more appropriate support and services can be provided to ensure a child’s optimal development. This assessment system is the first of its kind in Malta where community paediatric specialisation has been outsourced into the community as a means of helping to make an earlier diagnosis of these children’s developmental problems.

An overview of the blood transfusion policy in preterm babies in Malta’s neonatal intensive care unit
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Introduction: Preterm neonates on the neonatal intensive care unit (NICU) receive a greater number of red cell transfusions (RCTs) than any other hospitalized group. Limiting donor exposure in preterms who are likely to receive multiple transfusions will reduce infection risk, reduce costs and lead to better preservation of limited blood resources. Using restrictive guidelines for RCTs will result in fewer transfusions without any risks to babies.

Aim: To quantify the number of RCTs that was administered to preterms <35 weeks gestation and identify the cohort, by birth weight and gestation, that is most likely to require repeated transfusions and benefit from a single-donor transfusion programme. To determine the volume of blood in each neonatal transfusion bag that would make best use of resources. To compare the number of transfusions given according to the local guidelines, with the numbers that would be needed if more restrictive guidelines are implemented.

Method: All preterm babies <35 weeks gestation admitted to the NICU between 1st January and 31st December 2009 were included prospectively. Each baby’s clinical course was documented. For each transfusion administered the gestation and weight, amount in millilitres transfused/discarded, haemoglobin pre- and post-transfusion, symptoms of poor feeding / tachycardia / bradycardia / presence of apnoeas / desaturations, inotropic support, mode of ventilation and any improvement post-transfusion were recorded. Local transfusion guidelines were compared with those in other units.

Results: 181 RCT were administered to 106 preterms in the study. 12/13 (92%) Extremely Low Birth Weight (LBW) babies were transfused; 12/22 (55%) Very LBW babies received a transfusion; 15/59 (25%) LBW preterms were transfused and 1/12 (8%) preterm >2.5kg was transfused. 37.7% of all preterms received a transfusion; 12/13 (92%) Extremely Low Birth Weight (LBW) babies were transfused; 12/22 (55%) Very LBW babies received a transfusion; 15/59 (25%) LBW preterms were transfused and 1/12 (8%) preterm >2.5kg was transfused. 37.7% of all preterms received a transfusion; 12/13 (92%) Extremely Low Birth Weight (LBW) babies were transfused; 12/22 (55%) Very LBW babies received a transfusion; 15/59 (25%) LBW preterms were transfused and 1/12 (8%) preterm >2.5kg was transfused. The all in volume for a single-donor transfusion programme ensuring best use of resources was 50mls. When comparing local guidelines to more restrictive guidelines on other units, the same number of transfusions would have...
been required for neonates receiving intensive care; however, 34 less transfusions would have been required in our stable, chronic cohort.

**Conclusion:** ELBW and VLBW babies are most likely to require repeated transfusions and benefit from a single-donor transfusion programme. Comparison between transfusion guidelines shows that it is safe to adopt more restrictive transfusion guidelines in our stable, chronic cohort.

**P14.13**
**A review of a paediatric dermatology clinic in Malta**  
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Department of Dermatology and Venereology, Sir Paul Boffa Hospital, Floriana*

**Introduction:** A review of the paediatric dermatology clinic set up in 2009 at the department of dermatology and venereology, Sir Paul Boffa Hospital, was carried out in 2011.  
**Aim:** The aim of the exercise was to identify the main conditions being seen in this clinic and to analyse management and referral patterns.

**Methods:** The study was carried out from January to December 2011. For each patient attending the paediatric dermatology clinic the following information was collected: age, gender, source of referral, reason for referral, whether it was a new case or follow-up visit, diagnosis and disposal. For new cases, when a diagnosis was offered in the referral letter, this was compared to the diagnosis made by the dermatologist. After the consultation parents or carers were asked whether they were satisfied with the service provided in the clinic and whether they preferred a Saturday appointment to one on Monday to Friday. They were also asked for suggestions to improve the service. A simple proforma was used to document the required information and was filled in during the consultation.

**Results:** Of the patients attending, 86 (66%) were males and 44 (34%) were females. Overall, the commonest conditions seen were acne, eczema, naevi, fungal infections and psoriasis. General practitioners accounted for 66% of referrals whereas paediatricians and other specialists accounted for the other 31%. Of the 80 new patients seen, 55% were given a follow-up appointment in the Paediatric Dermatology clinic, 30% were discharged and 15% were given an appointment for further therapy e.g. skin surgery, laser treatment or cryotherapy. Parents or carers accompanying children to the clinic all stated that Saturday was the best day of the week for them to attend.

**Conclusion:** The importance of adequate dermatology services for the paediatric population is increasingly recognized. It is hoped that the results of this exercise will be found useful to improve the provision of dermatological care to the paediatric population in Malta.

**P14.14**
**Evaluation of the first three years of a revised biomedical sciences curriculum**  
**A. Schembri, I. Stabile**

In 2009, the University of Malta Medical School embarked on a process of curricular reform starting with Years 1 and 2 of the basic biomedical sciences curriculum. Each semester since then, we have collected anonymous feedback from each cohort of Year 1 and year 2 students regarding whether 1. The study unit materials matched the learning outcomes; 2. The amount of independent work was compatible with the credit value; 3. There was close agreement between the stated objectives and what was actually taught; 4. There was repetition of content across study units; 5. The clinical relevance of the subject matter was emphasized; and 6. The time devoted to each study unit was adequate to meet the learning outcomes.

from that, data was collected to evaluate the effectiveness of the teaching methodology within the new curriculum - be it practical session, lecture or small group session. All Year 1 and 2 study units were evaluated for each academic year. Between 2009 and 2011, 1281 students completed the questionnaires (35% of the study body). Analysis of this data shows that in general the revised curriculum has been well received. Students have commented favourably on the new integration of academic disciplines of anatomy, physiology, biochemistry, pathology into system-based modules. Concerns have been raised about some of the learning outcomes and the time allocated to certain topics. These data have been utilised by curriculum planners to amend several of the study units, which changes will take effect in October 2012.

**P14.15**
**The role of SCI-59 in career choice for Foundation Years (FY) doctors**  
**P. Ellul, A. Micallef, A. Abela**  
*Mater Dei Hospital, Msida*

**Introduction:** The specialty choice inventory (SCI) covers 59 of the training options that are listed by the GMC (UK). The web based on-line programme is a psychometric instrument designed especially for the selection of medical careers. “It matches an individual’s personal and professional characteristics and aspirations to appropriate specialty choices by providing the user with suggestions for further research and information gathering.” It is meant to help individuals at any level of training to reflect on, or make, their own career choices. It does not make the choice.

**Aim:** To analyse if the FY doctors most preferred and least preferred career choices are matched by SCI-59.

**Method:** All doctors who requested a SCI-59 password to access the site where asked to list their top 3 choices and their 3 least preferred personal career choices prior to accessing the site. They were then asked to record the SCI-59 results in terms of top 3 and bottom 3 career choices. The data that they submitted to the FP was analysed.

**Results:** 26 FY doctors submitted their top 3 and SCI-59 top 3 career choices. In 57.7% of cases there was no match between their personal choice and their choice according to SCI-59. In 30.8% of cases their was 1 match between their choice and SCI-59 choice. In 11.5% of cases the top 2 choices of the FY doctors matched those of SCI-59. 23 FY doctors submitted their bottom 3 and SCI-59 bottom 3 career choices. In 17.4% there choices did not match. In 30.4% of cases there was one match between the doctors bottom 3 choices and SCI-59. In 52.2% of cases there were 2 matches between the doctors personal preference and the preference according to SCI-59. In the free text comments, most doctors said that you can manipulate the answers in the way you answer the questions. Most doctors commented that it gave them an insight into specialities that they never considered before and/ or did not know about them.

**Conclusion:** SCI-59 seems to better in correlating the doctors least preferred choices than their preferred choices. Caution needs to be advocated to the Foundation trainees when using this site with regard to career selection.

**P14.16**
**Are taster weeks within the Foundation Programme meeting the trainee’s needs?**  
**P. Ellul, A. Abela, A. Micallef**  
*Mater Dei Hospital, Msida*

**Introduction:** One of the aims of the Foundation Programme (FP) is to ensure that trainees have access to a wide range of specialties in a variety of care settings prior to selecting a career path. A taster week is spent by a trainee in a specialty in which the trainee has not previously worked...
as to enable the development of insight into the work of the specialty and promote careers reflection.

Aim: To determine if the taster week has been beneficial to the trainees.

Method: A standard questionnaire was distributed to all trainees who had a Taster week during the FP year 2011-2012.

Results: 34 FP trainees completed a taster week.

- Reason for completing a taster week - All doctors chose to do it as they had an interest and wanted to gain further insight into the specialty and they had either not done or will not be having a rotation in the specialty. 7 trainees (out of 14) who had a taster week in radiology and public health were concerned (prior to the taster week) at the lack of the patient contact. 1 of the doctors who choose paediatrics wanted to experience how to deal with sick children.

- Overall experience within the specialty - 33 doctors (97%) said that it was very good experience and 1 doctor said it was a good experience

- Overall Clinical Exposure - 31 doctors (91.2%) said that the exposure was good and 3 doctors said that it was not enough. Within the free text comments they all mentioned that they would have wanted to stay for more than 1 week as to gain further exposure.

- Remaining questions after the taster week – 6 doctors (17.6%) said that they had remaining questions which were later on answered by their supervisor either through email or a meeting.

- Expectations and Career Direction – 20 FP trainees (58.8%) said that the experience within the specialty did not differ from what they had expected. 11 doctors said that now they are more convinced of pursuing a career in this specialty; 1 doctor said that he needs to reflect more, but will probably not choose this specialty and 2 doctors said that having experienced the specialty they will definitely not choose it.

- Future plans - 23 doctors (67.6%) said that they will work as to tailor their CV (e.g. audits, clinical meetings, courses, conferences) as to enable them to obtain a post within the specialty; 9 doctors said they will consider other options and 2 doctors said that they will definitely not choose this particular specialty.

Conclusion: Our analysis and results have demonstrated that taster weeks do help FY doctors in deciding their future career. Thus, it is important that: the Foundation school adequately promotes them and ensures to develop high quality taster weeks so as to maximise the trainee’s exposure and experience.

P14.18
Creating a novel mock clinical examination for the membership of the royal college of paediatrics and child health (MRCPCH) in Malta

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Introduction: Clinical medical examinations are difficult. Courses that attempt to instil such clinical examination skills are expensive, and this is even more so for Maltese graduates who must perforce travel by air from the island of Malta to such venues. This year (2012) was a landmark year with a record of seven Maltese candidates planning to take the MRCPCH examination, and it was therefore decided to set up a mock clinical exam under true examination conditions in Malta.

Aim: To devise a novel practical mock clinical examination for the MRCPCH in Malta.

Methodology: Local pediatric trainees eligible for the MRCPCH clinical examination were identified and invited to participate in this exercise. The Pediatric Day Care unit at Mater Dei Hospital was selected as a suitable venue for the exam. Recruitment of patients, examiners and role players was conducted. The MRCPCH clinical exam cycle was studied and modified to suit our exam venue and the number of available staff and patients. Information sessions were held for role players, examiners, and timekeepers a few days prior to the exam.

Results: Examination conducted successfully with results issued within 48 hours. From seven candidates there were 3 passes and 4 failures. Feedback regarding exam was accepted through email.

Conclusion: This exercise was a good experience for candidates with meticulous attention to planning, timing and detail and confirmed this could be conducted at low costs. We are aware of the opportunity to open up this mock MRCPCH exam to foreign candidates interested in coming to Malta for exam preparation.
Clinical characteristics of children and adolescents with spina bifida in Malta

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Introduction: During the period 1993 to 2007, 41 infants were born with spina bifida (SB) with a prevalence rate of 6.3/10,000 population (CI 4.9 - 9). Despite accounting for only 1.9% of all congenital anomalies, SB is responsible for a significant proportion of childhood morbidity and demand for hospital and community services. Moreover, there is a paucity of evidence-based guidelines about the management of SB. There is no literature about the clinical characteristics of the Maltese cohort of children with SB.

Aim: This study looked at the morbidity and therapeutic requirements of children and adolescents between 5 and 18 years of age with SB resident in Malta.

Methodology: Details about all patients with SB under 18 years of age were obtained from the Malta Congenital Anomalies Registry. Children and adolescents aged between 5 and 18 years of age were enrolled. Case notes were reviewed. Further information about parental folate awareness, mode of diagnosis, family history of neural tube defects, mobility, spinal level, neurological, orthopaedic, urological and bowel care were than obtained from interviews. Standard functional scores were used.

Results: There were 28 children with symptomatic spina bifida – 17 between 5 and 12 years of age; 11 between 13 and 18 years of age. Only 21% of mothers reported taking folic acid antenatally according to international recommendations. The diagnosis of SB was made postnatally in 85%. They required 81 neurosurgical operations. Neural tube closure was performed on day 1 in ⅔ of cases, and 60% required ventricular shunting. Regarding spinal level, 7 were at L3 or above, 64% between L3 and S1, and 3 at S1 or below. 60% had spinal deformity and 48% had unilateral or bilateral hip subluxation. 28 orthopaedic operations were required. 15 children were actively performing continuous intermittent catheterization. 4 children had renal scars of which 2 had renal failure. 16 urological operations were required. No renal transplants were performed until the time of this study. 60% had urinary and the same proportion had faecal incontinence.

Conclusion: The clinical problems discussed above are in conformity with data from other groups in the literature. The strength of this study is that it represents all patients in this age group with SB in Malta. The weaknesses are the retrospective nature, small number of patients and the unavailability of information about psychological and behavioural problems. Further studies are recommended particularly about the quality of life of this group of children.

Historical introduction and bioethical aspects

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Drug development is a very complex and expensive procedure in which many different chemical, biochemical, biological, pharmaceutical, pharmacological and biotechnological competences are required. Many important drugs were discovered apparently by serendipity but good scientists know that “chance favors the prepared mind” as Pasteur observed. The development of the receptor theory by John Newport Langley (1852–1925) and Paul Ehrlich (1854–1915) suggested to use the method of the screening which for many years (and still now in some cases) allowed the development of effective drugs without having any clue on their mechanism of action. Indeed, it is possible to activate an unknown “lock” (receptor) by trying an extremely high number of keys (molecules), available thanks to the hard and ingenious work of brilliant organic and medicinal chemists. The method of the screening allowed the discovery of the sulpha drugs (1935), other anti-infective and antineoplastic agents and many active compounds which showed interesting pharmacological activities during their in vitro testing (diuretics, hypoglycemizing agents, etc.). Thanks to increasingly complex in vitro and in vivo models, new pharmacological treatments were identified even for those pathological conditions which were considered outside the “human scientific domain” such as epilepsy (the sacred disease for the ancient Greeks), anxiety, psychosis, etc. Due to these outstanding results, the period ‘30s-‘60s is often referred to as the golden age of the pharmaceutical development. However, in the late ‘50s the enthusiasm for this experimental approach suddenly dropped off the reports of the teratogenic effects of thalidomide. Pregnant women taking this apparently safe molecule delivered phocomelic babies, showing that synthetic drugs can sometimes have terrible effects. The thalidomide disaster caused the revision of the all pharmaceutical legislation (Kefauver Harris Amendment, 1962), leading to the definition of the modern procedures. Iatrogenic tragedies such as thalidomide and earlier the “elixir sulfanilamide” (1937) indicated that not only the efficacy but also the safety of the drugs should be tested very carefully on different animal species by different routes of administration before testing them on human beings. And even then, the human experimentation should involve initially only a very limited number of normal subjects (clinical phase I). In the latter, very important bioethical issues need to be addressed because the subjects have no therapeutic advantages and must freely provide their consent. Following the terrible medical experiments performed in the Nazi camps, the Nuremberg code (1949) stated that the informed consent of the human subjects is always absolutely essential. However, it was soon observed that in several conditions (incompetent minors or patients, etc.) it is not possible to obtain it even in cases in which the experimentation is considered beneficial for the subjects (vaccines, etc.). The Declaration of Helsinki (1964) solved this problem introducing the ethic committees as a guarantee for the patients, a really revolutionary change because for the first time the relationship patient-physician was under the control of third party. The clinical phase II is mainly aiming at determining the efficacious dose of a drug in a relatively simplified condition studying very well selected populations of patients. The clinical phase III is mainly aiming at evaluating the efficacy of the drug in a more complex situation more similar to the real population of patients in which all possible disease variables and drug interactions are less strictly controlled. The advantages and disadvantages of different experimental designs (single, double and triple blind, parallel groups or crossover, including placebo or reference drugs, etc.) will be presented. Discussing the clinical phases II and III, special attention will be given to the statistical tests used to guarantee the significance of the results, minimizing the false positive and negative ones. Such statistical notions can be presented without using complex mathematical formulas because the modern software packages can perform all the tests automatically provided that the operator knows very well the meaning and the limits of each test suggested by the software wizard. Following phase III, successful molecules are approved by the regulatory authorities (EMEA in Europe, FDA in the US, etc.) and become available on the market. At this point the pharmacosurveillance is extremely important because despite the complexity and the accuracy of the aforementioned procedures, very rare toxic effects or dangerous drug interactions can still occur.
P15.02
Some pharmaceutical aspects of drug development: technical and regulatory requirements in Quality field
H. Dufat

From the active substance to the drug product, there are numerous steps including the research and development. The research phase aims to discover substance(s) of pharmacological interest. During this phase, the Analytical Research focuses its activity to perform an in-depth chemical study (proof of the structure, purity, physico-chemical characteristics...). The pharmaceutical development aims to develop a formulation the best adapted to the patient. During this phase, the Analytical Development develops, in particular, specifications for Quality Control of Production according to the regulation, after marketing authorization. In the course of preclinical and the clinical phases I, II, III, chemical and analytical studies are developed in order to establish the impurity profiles and the stability of the active substance(s) and the drug product, as at each phase, the scale of the batches is increased (development, pilot and industrial batches). Before starting clinical trials, the applicant needs an authorization from the competent Authorities after evaluation of the Investigational Medicinal Product Dossier that includes the Quality data.

To place the drug product on the market, the applicant has to fill the Common Technical Document that will have to be evaluated and approved by the competent Authorities. The CTD presents the proof of the drug Safety, Quality and Efficacy. The Quality of the active substance(s), excipient(s) and container closure system, and the corresponding final drug product will be defined in the module “Quality”, including scientific data collected during analytical research and analytical development phases.

P15.03
Hot topics in clinical drug development
J.R. Thomas

The yearly costs of drug development (and especially the clinical part of it) at least tripled over the last decade, but the number of new chemical or biopharmaceutical entities that yearly reached the market didn’t increase at all. Therefore it seems obvious that the classic processes of drug development and market access needed rethinking and re-engineering. In the field of clinical drug development a number of initiatives were taken and 3 of them will be highlighted here:

• The use of phase 0 studies and adaptive clinical trial designs in the exploratory phase of clinical development, allowing to move faster from early to late clinical development.
• Better identification of patient responders, with the use of predictive biomarkers and the co-development of companion diagnostics, allowing the switch from ‘one-size-fits-all’ drugs (blockbusters) to ‘targeted’ or ‘tailor-made’ or ‘stratified’ or ‘personalized’ medicines (nichebusters).
• In the late confirmatory phase of clinical development, there is the growing importance of comparative effectiveness research (supporting the added value assessment of new drugs) and of post-approval safety studies (PASS).

All the topics will be shortly introduced and illustrated with some examples.

P15.04
GA101 (obinutuzumab): the novel type II glycoengineered CD20 antibody: from preclinical research to clinical trials
M. Bacac, C. Klein

CD20 is an important target for the treatment of B-cell malignancies, including non-Hodgkin lymphoma as well as autoimmune disorders. The anti-CD20 mAb rituximab has substantially improved the clinical outcome of patients with a wide range of B-cell malignancies. Here we provide an overview of the preclinical development of GA101 (obinutuzumab), the first glycoengineered type II humanized IgG1 antibody against CD20. Relative to rituximab, GA101 has increased direct and immune effector cell-mediated cytotoxicity and exhibits superior activity in cellular assays and whole blood B-cell depletion assays. In human lymphoma xenograft models, GA101 exhibits superior antitumor activity, resulting in the induction of complete tumor remission and increased overall survival. Taken together, these results provide compelling evidence for the development of GA101 as a promising new therapy for the treatment of B-cell disorders.
CASE REPORTS
AND
REVIEWS
CR01

Essential thrombocythemia and coronary artery occlusion in a young female
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Background: Essential thrombocythemia (ET) is a chronic myeloproliferative disorder characterised by clonal proliferation of megakaryocytes, which in turn leads to thrombocythemia. Thrombosis and haemorrhage are typical complications in patients with the disease. We describe a case of an occluded left anterior descending coronary artery (LAD) in a young female with ET.

Case report: A 31 year old lady known to suffer from ET, presented with back pain radiating to the chest on walking. An exercise stress test (EST) was equivocal. Myocardial perfusion scintigraphy scan was performed which showed anteroseptal ischaemia. A coronary angiogram showed a non-dominant right coronary artery (RCA) which fills the LAD through a conus branch. The origin of the LAD was blocked. The LAD also fills retrogradely from a dominant left circumflex artery which has a separate origin. An echocardiogram was normal. The patient also had a computed tomography coronary angiogram which confirmed the above findings. She was initially referred for coronary artery bypass grafting, however since she was symptom free on treatment with aspirin, statins, ACE inhibitors and hydroxyurea, the patient opted to remain on medical treatment. She is being followed up regularly with EST and holter monitoring.

Conclusion: The association of ET and thrombosis is well known. The occlusion of the LAD in this patient is suspected to be a consequence of a thrombotic event affecting this vessel. The mainstay of treatment is control of ET with hydroxyurea and anti-platelet therapy to reduce the risk of further thrombotic events.

CR02

Dual coronary artery thrombosis causing acute ST elevation myocardial infarction in a cocaine abuser
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Background: The use of cocaine is well known to predispose to coronary events. We report a case of a young male, drug abuser who presented with acute ST elevation myocardial infarction (STEMI) and was found to have dual coronary artery thrombosis.

Case presentation: A 36 year old gentleman, smoker, drug abuser and with a very strong family history of coronary artery disease, presented to the accident and emergency department with severe central compressive chest pain associated with nausea and sweating. He was haemodynamically stable at the time. The initial electrocardiogram (ECG) showed a right bundle branch block pattern, and a second ECG a few minutes later showed ST segment elevation in the anterior chest leads. A diagnosis of acute anterior STEMI was made. On questioning, the patient admitted that he had abused regularly of cocaine during the two weeks preceding the event. The patient was treated with dexamethasone for pain relief, and he was loaded with aspirin 300mg and clopidogrel 600mg orally. The revascularisation strategy opted for was primary percutaneous coronary intervention (PCI). Initial diagnostic coronary angiography identified thrombosis of both the proximal left anterior descending (LAD) coronary artery and the right coronary artery (RCA). The left circumflex artery and its branches were patent. Thrombus aspiration from the LAD and RCA was carried out with restoration of flow, followed by deployment of drug-eluting stents. The patient remained well and did not have any immediate complications.

Discussion: The association between the use of cocaine and myocardial ischaemia or infarction has been documented since 1982. The sympathomimetic effect of cocaine brings about an increase in heart rate and blood pressure, thereby increasing myocardial oxygen demand. Cocaine also causes coronary artery vasoconstriction due to increased endothelin release and reduced production of nitric oxide, together with enhanced platelet aggregation and susceptibility to thrombus formation. Coronary artery dissection has also been associated with use of cocaine. These patients will have an increased morbidity and mortality especially because their lifestyle may predispose them to reduced compliance to dual antiplatelet therapy and subsequent stent thrombosis.

Conclusion: The presentation and angiographic findings of dual coronary artery thrombosis have rarely been described in medical literature. The management strategy opted for in this clinical scenario was revascularisation with PCI with successful restoration of flow in the coronary arteries and positive outcome for the patient.

CR03

Percutaneous coronary intervention for coronary chronic total occlusion via the transradial approach - a case report
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Introduction: Coronary chronic total occlusions (CTOs) are characterised by heavy atherosclerotic plaque burden within the artery, resulting in (almost) complete vessel occlusion. They have been estimated to occur in approximately one-third of patients with suspected/known coronary artery disease undergoing coronary angiography in a community-hospital setting. However, they constitute only about 10-15% of all percutaneous coronary intervention (PCI) activity. This is because CTO-PCI is highly challenging and entails considerable resource use. Operators require significant expertise and dedicated equipment to achieve adequate success rate. With regards access site, there is increasing interest in performing PCI via the radial approach in view of a decreased risk of bleeding and increased patient comfort as compared to femoral access.

Case report: A 50-year old gentleman who was an ex-smoker presented to casualty with a two week history of exertional chest pain. Serial cardiac markers were negative and serial electrocardiograms did not reveal any ischaemic changes. An exercise stress test showed horizontal 2mm ST segment depressions in the inferolateral leads at 71% target heart rate. The patient was thus referred for coronary angiography. The proximal segment of the left anterior descending (LAD) coronary artery was occluded. The distal LAD filled retrogradely from a dominant right coronary artery (RCA). There were moderate lesions on the 1st diagonal and 1st obtuse marginal arteries. After discussion with the patient of the available therapeutic options, PCI of the LAD CTO was opted for. This was performed via the right radial artery access using a 6Fr sheath while the RCA was accessed via the right femoral artery approach using a 4Fr sheath. A BMW wire was passed down a side-branch for support and the LAD CTO was crossed with a Cross-It 300 wire. Contra lateral injection of the RCA confirmed the Cross-It wire was in the LAD lumen. Gradual pre-dilation using 1.5mm, 2.0mm, and 2.5mm balloons were performed enabling the deployment of an everolimus-eluting stent. The end-result was excellent with antegrade TIMI 3 flow. Local haemostasis was achieved with a TR band. The patient has since remained completely asymptomatic.

Conclusion: We here present the first case of radial CTO PCI done in the Maltese Islands. It delineates the fact that the procedure is feasible and safe in the hands of experienced operators.
Constrictive pericarditis - an underdiagnosed condition

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Introduction: Constrictive pericarditis is a syndrome characterised by a rigid thickened pericardium leading to compression of the heart with consequent restriction in cardiac filling in the late stages of diastole. Patients usually present with symptoms that are either related to fluid overload (eg, peripheral oedema, pleural effusion, ascites, and anasarca) or decreased cardiac output (eg, dyspnoea on exertion, fatigue, and palpitations). It is usually an underdiagnosed condition; its diagnosis depends mainly on good clinical acumen and imaging techniques, as outlined in the following case-report.

Case report: A 62 year old lady with no known medical problems presented to her general practitioner with a 6 week history of intermittent retrosternal compressive discomfort. An echocardiogram was performed at the time that showed a small pericardial effusion without any echocardiographic evidence of tamponade. She was treated with analgesics and antibiotics. However, she remained unwell with increasing lethargy, dyspnoea on minimal exertion and dry persistent cough. The patient was hence referred for a cardiology opinion about 2 months after initial presentation. On examination, she was haemodynamically stable with a blood pressure of 140/80. However, she was in sinus tachycardia, had a raised JVP which increased paradoxically with inspiration, and lower limb oedema. No lymphadenopathy was present. Blood investigations revealed elevated ESR (72mm 1st hour) with normal CRP; virology, microbiology and rheumatology screen were negative. CT thorax showed small (L) pleural effusion and a small pericardial effusion; no mediastinal and axillary lymph node enlargement was present. Ultrasound abdomen was unremarkable. A repeat echocardiogram showed thickened pericardium and small pericardial effusion. Importantly, it revealed the presence of septal bounce together with Doppler evidence of constriction. Right and left catheterization studies were consequently performed and showed equalization of right and left ventricular diastolic pressures (square root sign). A diagnosis of idiopathic constrictive pericarditis was made, based on symptomatology, echocardiographic findings and haemodynamic findings. The patient was given a trial of steroids with improvement in her symptoms. She is currently being followed up regularly with a view for elective pericardiectomy.

Discussion: The main differential diagnosis of constrictive pericarditis is restrictive cardiomyopathy. The characteristic features of these conditions will be discussed. The controversial issue regarding management of constrictive pericarditis will also be tackled.

Conclusion: Constrictive pericarditis remains an underdiagnosed condition. History taking, physical examination, echocardiography accompanied by Doppler studies, and catheterization studies remain crucial in making the right diagnosis.

A case report of a fatal immersion pulmonary oedema is discussed

M. Saliba

Introduction: Acute pulmonary oedema associated with swimmers and divers using a self-contained underwater breathing apparatus (scuba) has been described in the medical literature before. Cases have been reported in the literature both in swimmers and divers using SCUBA. There are no established diagnostic criteria for acute pulmonary oedema associated with swimming and scuba diving.

Case presentation: A 61 year old experienced diver non-smoker, with no history of hypertension and a body mass index of 27. He had just started a planned shallow dive with two other divers. As they were about 5 metres under the water it was noted that this diver was not behaving well. His buddies immediately took him up to the surface and tried to take him on the shore but half way they noted that he had whitish froth coming from his mouth and nose. As soon as they reached shore they started resuscitation but to no avail. Post-mortem examination revealed that he had a massive pulmonary oedema with no myocardial infarction but he had pathological signs of coronary artery disease.

Discussion: The mechanisms for development of acute pulmonary oedema in otherwise healthy individuals are not clear. During immersion in water, blood is redistributed from the legs to the heart and blood vessels in the lungs. Usually the heart and lungs compensate for this, but sometimes the resulting increased pressure within the blood vessels in the lungs causes fluid to traverse the small vessels (capillaries) and enter the gas containing spaces of the lungs. An increased transalveolar pressure gradient due to a combination of factors has been implicated. The final common pathway appears to be stress failure of pulmonary capillaries manifested by leaks in capillary endothelial layer and alveolar epithelial layer leading to the leakage of fluid from the bloodstream into the alveoli. The actual nature of the stress is not clear but may be due to raised pulmonary capillary pressure from systemic sympathetic discharge, or as-yet undefined biochemical or adrenergic responses to conditions encountered in water immersion. This was a proven case of immersion pulmonary oedema, which was fatal. Possibly he was not aware of the coronary artery disease, as he was asymptomatic. It seemed that it was the combination of coronary disease and raised filling pressures from immersion which caused the acute pulmonary oedema and it could have been triggered by an arrhythmia. Another predisposing factor possibly was his anxious personality.

Conclusion: Immersion pulmonary oedema associated with swimming and scuba diving is not such a rare condition but rather under-reported because most or all cases are reported as drowning. It can be fatal especially during diving, but can occur in non-divers as well during swimming. Prospective divers should be screened carefully for other comorbidities such as hypertension, heart or lung disease. It can occur in otherwise healthy people. There is no accurate way to predict whether or not a diver is at risk of developing acute pulmonary oedema but better screening of divers to identify potential triggers is recommended.

A newborn with complex congenital cyanotic heart disease and sepsis - a case of asplenia syndrome

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Introduction: Absent or defective splenic function is associated with a high risk of fulminant bacterial infections, especially with encapsulated bacteria. Congenital splenic anomalies are usually accompanied by abnormalities in other organ systems, especially cardiac abnormalities, but they may occur in isolation.

Case presentation: We report a newborn baby girl who presented at 13 days of age with signs of congenital heart disease and sepsis. An echocardiogram showed signs of complex congenital cyanotic heart disease in association with right atrial isomerism (asplenia syndrome) and rapid deterioration in general condition. Seizures developed and a lumber puncture cultured Group B Streptococcus. The neonate unfortunately passed away after 5 days of treatment.

Conclusion: Right atrial isomerism is associated with complex congenital heart disease and fulminant bacterial infections.
CR07

Ventricular septal defect with ventricular tachycardia – when an electrophysiology catheter was key to the diagnosis

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Introduction: Double-chambered right ventricle (DCRV) is an uncommon form of right ventricular outflow tract obstruction caused by anomalous muscle bundles in the subinfundibular region that divide the right ventricle (RV) into a higher pressure proximal and lower pressure distal chamber. DCRV is often associated with a ventricular septal defect (VSD) and the degree of obstruction can be progressive.

Methodology: A 28 year old female, a known case of a small restrictive perimembranous VSD, was reviewed urgently in her local Accident and Emergency Department after developing sudden intense palpitations shortly after having a heavy suitcase. A 12-lead ECG demonstrated RVOT VT and she was promptly cardioverted electrically with a single DC shock. During a subsequent electrophysiological study, there was difficulty progressing an EnSite Array3 catheter, a noncontact multi-electrode diagnostic catheter, into the RVOT. Further assessment by right heart catheter with angiography suggested the presence of prominent subinfundibular muscle bundles. The patient underwent successful division and resection of the obstructive septal and parietal muscle bands and bovine pericardial patch closure of the VSD.

Conclusion: DCRV is an uncommon anomaly that is often associated with restrictive VSDs. It is amenable to surgical resection of the muscle bundles combined with closure of any septal defects. The degree of mid-RV cavity obstruction is often progressive and hence this condition tends to present later on in life. Due to the limited imaging of the RV chamber and RVOT on transthoracic echocardiography in adults and the often confusing turbulence caused by the close proximity of the VSD, this lesion can easily be missed on echocardiography. CMR is a more sensitive imaging modality in such cases.

CR08

Unusual cause of myocardial infarction

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We present a 25 year young man who presented 2 hours after arrival from a trip to the far east with severe ischemic chest pain, ECG changes and raised cardiac enzymes suggestive of acute antero-lateral myocardial infarction, for which, he was thrombolysed. Two days later, he was transferred to the medical ward where detailed history showed that he was feeling sick 2 weeks before presentation with hectic fever, body ache, and arthritis. Investigation of PT and INR was commenced, 3 days later he developed bilateral pleural effusion and pericardial effusion associated with asites and hepatosplenomegaly. These findings were confirmed by CT scan of chest, abdomen and pelvis which also revealed paracolic lymphadenopathy. All investigations did not reveal any infective agent and also autoimmune screening was negative. In spite of the fact that, the patient did not develop a Salmon rash, he fulfilled Yamaguchi Criteria for diagnosing Adult-Still’s disease. The patient was started of steroid with favorable response of fever, effusion, and hepatosplenomegaly.

CR09

Thrombotic thrombocytopenic purpura as a rare presentation of systemic lupus erythematosus - a case report

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Thrombotic thrombocytopenic purpura (TTP) is a severe multi-system disorder classically characterised by the pentad of thrombocytopenia, haemolytic anaemia, pyrexia, renal disease and neurological abnormalities. This microvascular occlusive “thrombotic microangiopathy” causes systemic platelet aggregation, organ ischaemia, profound thrombocytopenia and erythrocyte fragmentation. Most cases are idiopathic due to an acquired autoantibody to von Willebrand Factor (vWF) cleaving metalloproteinase, causing ADAMTS-13 deficiency. However, known secondary causes include drug therapy (such as immunosuppressive agents and quinine), marrow or organ transplantation, systemic infections, malignancy and autoimmune diseases - with systemic lupus erythematosus (SLE) being the most common. Sporadic cases have been reported in the literature, though this association remains rare with TTP occurring in approximately 2% of SLE patients. Also, distinguishing the two disorders may be problematic due to their similar clinical features. Diagnosis may be further complicated by the presence of other thrombotic microangiopathies such as the malignant hypertension and antiphospholipid syndrome. Idiopathic TTP is uniformly fatal without effective treatment. The introduction of plasma exchange has improved patient survival by up 80%-90%. However, in the setting of SLE, TTP has a much worse prognosis with a mortality of 30%-60% even when treated. The use of long-term hydroxychloroquine in SLE-induced TTP helps reduce incidence of relapse. Yet, a favourable outcome still depends on recognising the condition early for prompt management with plasma exchange. Herein, we present a case of a 51 year-old lady with a longstanding history of severe Raynaud’s phenomenon, who gave a few days history of fever, bruising and prolonged bleeding on minimal trauma. Symptoms were accompanied by a three month history of headaches and joint pains for which she was being worked-up at outpatient. Initial investigations showed anaemia, marked thrombocytopenia and renal impairment, with schistocytes, occasional spherocytes and irregularly contracted cells on blood picture. ANA and anti-dsDNA titres were high at 1/640 and >200 units respectively. ADAMTS-13 activity was 5.8% with an inhibitor level of 60.7u/mol. A diagnosis of SLE induced TTP was made and the patient responded well to 11 sessions of plasma exchange (TPE) - ADAMTS-13 activity improved to 79.9% and has remained in normal range to date. This case illustrates the importance of early recognition of secondary thrombotic microangiopathy. Whereas the efficacy of plasma exchange is not yet supported by non-controlled and retrospective studies in cases of severe SLE, it is life-saving in SLE-related TTP and must be instituted early to avoid a poor outcome.

CR10

Atypical fractures in a patient of long term bisphosphonates - a case report

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Introduction: Osteoporosis is a common condition which is associated with increased morbidity and mortality. Consequently a number of treatments have been developed over the years to control this disease. These include the bisphosphonates which have been shown in controlled studies to decrease the incidence of hip, vertebral and other fractures. However they are associated with a number of side effects one of which is atypical fractures.
Case: We present a case of a 64 year old lady diagnosed with systemic lupus erythematosus and anti-phospholipid antibody syndrome 20 years previously on the basis of a characteristic malar facial rash, photosensitive rash over the arms, arthritis, pleurisy, recurrent DVTs, positive antinuclear antibodies with positive anti-dsDNA, anti-SM antibodies and positive anti-cardiolipin antibodies. During the course of her illness the patient received glucocorticoids and other immunosuppressants including cyclophosphamide, azathioprine, methotrexate and antimalarials (hydroxychloroquine and mepacrine). She also received calcium and vitamin D supplements as well as intravenous pamidronate, teriparatide followed by 2 doses of zoledronic acid. She subsequently presented with severe groin and hip pain earlier this year. An X-ray of both hips demonstrated thickening of the cortices of both both proximal femoral shafts together with a perpendicular linear lucency to the long axis of the right femoral shaft. The option of elective fixation was discussed with the patient, who opted for conservative management. Unfortunately she presented 10 days after initial presentation with a complete subtrochanteric cortical fracture, requiring intramedullary nail fixation.

Discussion: Reports linking atypical fractures to long term bisphosphonate use have led to the need for a definition of these fractures. In 2010 major and minor characteristics defining atypical fractures were formulated and will be discussed. The occurrence of such fractures fuels the debate as to whether drug holidays or a finite period of treatment should be recommended.

Conclusions:
- Increased awareness of atypical fractures among patients on long term bisphosphonates.
- Patients on long term bisphosphonates should have a hip X-ray performed when they present complaining of thigh or groin pain.
- Continuous surveillance of patients on long term bisphosphonates.
- Patients on bisphosphonate therapy should be counseled about the potential for these rare but serious adverse events.

CR11
Cardiac device-related infective endocarditis: report of 2 cases
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Background: Cardiac device-related infective endocarditis (CDRIE) is one of the most difficult forms of infective endocarditis (IE) to diagnose and treat. It has a poor prognosis and a high mortality rate. The incidence has been reported as 1.9 per 1000 device-years.

Case 1: 74 year old gentleman known to suffer from hypertension, prostate malignancy and a bladder tumour, and who performed intermittent self-catheterisation, presented with chest discomfort and presyncope. Cardiac monitoring showed intermittent supraventricular tachycardia and sinus bradycardia, associated with the described symptoms. The coronary angiogram was normal. A dual chamber permanent dual PM for intermittent second degree heart block, paroxysmal atrial fibrillation and stroke. Six months after having undergone a generator change, the patient presented with low grade fever and lethargy. Transthoracic echocardiogram (TTE) and TOE showed no vegetations. Inflammatory markers were high and Staphylococcus epidermidis was cultured in the blood. In spite of prolonged treatment with antibiotics, he remained symptomatic and repeat blood cultures were positive for Klebsiella pneumoniae ESBL positive and Enterobacter gergoviae. Repeat TOE now showed a vegetation on one of the PM leads. In view of the complex history of operated valvular heart disease, he was transferred to a British institution for removal of the infected device. The pacemaker was not re-implanted. The patient made an uneventful recovery.

Conclusion: Suspicion of CDRIE should be high in patients who had recent PM implantation associated with persistent symptoms suggestive of infection. Investigations include blood cultures, TTE and TOE. Even though these tests may be negative in the early stages of the disease, this does not rule out CDRIE. Repeat tests may be required. The mainstay of treatment is prolonged antibiotic therapy and removal of the infected device.

Case 2: 43 year old gentleman with a history of IE, mitral valve repair, tricuspid annular ring implantation, permanent dual chamber PM for intermittent second degree heart block, paroxysmal atrial fibrillation and stroke. Six months after having undergone a generator change, the patient presented with low grade fever and lethargy. Transthoracic echocardiogram (TTE) and TOE showed no vegetations. Inflammatory markers were high and Staphylococcus epidermidis was cultured in the blood. In spite of prolonged treatment with antibiotics, he remained symptomatic and repeat blood cultures were positive for Klebsiella pneumoniae ESBL positive and Enterobacter gergoviae. Repeat TOE now showed a vegetation on one of the PM leads. In view of the complex history of operated valvular heart disease, he was transferred to a British institution for removal of the infected device. The pacemaker was not re-implanted. The patient made an uneventful recovery.

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CR12
Preliminary evidence for presence of sandfly fever virus in the Maltese population
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Background: A case report in an international medical journal recently reported evidence for sandfly fever virus in two Swiss patients who had spent two weeks in Gozo. This virus had long been suspected to be present on our islands, but no case had been reported yet. This prompted the authors to look for evidence of this virus in the local population.

Case report: A 45 year old lady reported a recent history of fever up to 39.2°C, headaches, dizziness and generalised malaise. This had started four days after a stint of gardening on her terrace after sunset, during which she had suffered several mosquito bites. The bites were very irritating and strongly pruritic. The bites developed large patches of erythema, even up to 12cm in diameter, and the puncture sites enlarged further, with one of these sites also developing a purplish hue. The bites took about 12 days to heal. The fever was controlled with paracetamol and diclofenac, and started to settle slowly after four days, and by day five, the patient felt better and the temperature normalised. The history did not reveal any other significant cause for the illness and clinical examination did not reveal any further findings from the above. A panel of blood investigations was taken. Among the results, serology for sandfly fever virus IgG was positive.

Conclusion: Although this does not prove acute infection, it may indicate that recent or past infection with this virus in this case. Further testing is warranted, as well as keeping a high index of suspicion in cases with typical syndromic presentations, to shed more light on the epidemiology of this virus on the Maltese islands.
CR13
A case of recurrent Bickerstaff brainstem encephalitis
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Introduction: Miller Fischer syndrome (MFS) and Bickerstaff brainstem encephalitis (BBE) are variants of Guillain-Barré syndrome. BBE is usually a monophasic post-infective inflammatory illness characterized by ophthalmpoplegia, ataxia and disturbance of consciousness. Cross-reactivity between antigens from Campylobacter jejuni (C. jejuni) and the P2 protein of the myelin sheath explain the pathogenetic connection between C. jejuni infection and brainstem encephalitis. Very few cases of recurrent BBE are described in the literature.

Case report: A 35 year old male presented with a 2 day history of diplopia and unsteady gait following a diarrhoeal illness the week before. Neurological examination showed a complex ophthalmpoplegia. Power of all 4 limbs was normal, but reflexes were absent. Sensory examination was normal. Both plantar responses were extensor, and his gait was ataxic. CT and MRI brain were normal. Blood investigations and CSF were normal. In view of a working diagnosis of MFS, the patient was started on intravenous Immunoglobulins (ivIg). However the patient developed rapid deterioration in consciousness and adapted a decorticate posture. He was subsequently transferred to intensive therapy unit (ITU), intubated and ventilated. Methyprednisolone was added to the treatment. He showed no neurological improvement despite treatment. A repeat MRI of the brain was normal and EEG was consistent with non specific encephalopathy. A decision to start plasmaphoresis was done. Eventually the patient started obeying commands and moving his lower limbs, after which there was gradual, consistent improvement. He was subsequently discharged home from ITU, but reflexes were absent. Sensory examination was normal. GQ1b antibodies taken prior to commencing treatment with ivIg (224; normal range ≤30) and C. jejuni antibodies were positive (1:80; normal range)

Conclusions: BBE is a rare but potentially life-threatening complication of C. jejuni gastroenteritis. Occurrence of BBE once does not render a patient immune to subsequent episodes. So far no cause for the recurrence has been identified.

CR14
Staphylococcus lugdunensis bacteraemia secondary to an infected intracardiac fragment of a totally implantable vascular access device
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Catheter related bloodstream infections are a common cause of morbidity and mortality particularly in the immunosuppressed. Whilst totally implantable vascular access devices (TIVADs) are generally associated with low rates of infection, complications may arise in the case of catheter fragmentation. This is a rare event but one which may lead to potentially fatal situations. We report a case of bacteraemia caused by the coagulase negative Staphylococcus lugdunensis following infection of a fragmented TIVAD in a lady who was taking methotrexate for control of rheumatoid arthritis. This resulted in the formation of a large vegetation at the tip of the fragmented catheter, the latter straying from the right atrium to the pulmonary artery. This was further complicated by the fact that the patient had a patent foramen ovale thus rendering removal of the catheter tip by percutaneous suture technique too risky. Despite several reports of Staphylococcus lugdunensis endocarditis in the literature, to our knowledge Staphylococcus lugdunensis infecting a fragmented TIVAD has not been described. Moreover, whilst there are several reports of percutaneous removal of fragmented catheters in the literature there are only isolated reports of surgical removal via cardiotomy.

CR15
A case of recurrent leishmaniasis in a patient with dual-class resistant HIV infection
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Objectives: We would like to present a case of recurrent visceral and cutaneous leishmaniasis in an HIV patient with persistently low CD4 count due to resistance to two major classes of antiretrovirals.

Method: A 50 year old man was diagnosed with HIV infection in 2006, when he presented with symptoms of Pneumocystis jiroveci pneumonia. He was initially started on a nevirapine-based regimen (non-nucleoside reverse transcriptase inhibitors (NNRTIs)-based), but did not achieve complete viral suppression despite adequate compliance. Eventual resistance testing confirmed the presence of 7 mutations, conferring resistance to all nucleoside reverse transcriptase inhibitors (NRTIs and NNRTIs). Consequently, he was started on salvage therapy with a dual protease inhibitor (PI) regimen in line with international guidelines on the treatment of HIV infection at the time.

Results: Despite achieving a low viral load of <200 copies/ml with this salvage therapy, his CD4 count never exceeded 200 cells/mm². He eventually experienced recurrent episodes of cutaneous and visceral leishmaniasis even though he was receiving monthly secondary prophylaxis with sodium stibogluconate.

Conclusion: Newer antiretroviral agents now allow us to improve his salvage therapy, hoping to achieve a higher CD4 count which would also protect him against other opportunistic infections. Monthly secondary prophylactic therapy against leishmaniasis will be continued until CD4 count improves to above 200 cells/mm².

CR16
Pyrexia of unknown origin in pregnancy – think of Listeriosis
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Listeriosis, an infection caused by Listeria monocytogenes, is rare in Malta. In fact no record of any reported cases of Listeriosis has been documented since 1997 till present date. Pregnant women are at increased risk of infection. Although in most cases, it is benign, correct diagnosis is important because it can lead to both maternal complications and neonatal listeriosis (early-onset or late-onset). We report a case of a 31 year old secundigravida who presented at 34 weeks gestation with pyrexia of unknown origin and flu-like illness. Baseline investigations showed a high C reactive protein (CRP). Listeria monocytogenes was isolated from blood sample. The patient was treated with high dose antibiotics: intravenous amoxicillin 2g four times a day was started then decreased to three times daily. After 17 days of intravenous amoxicillin, treatment was changes to the oral formulation to complete a 4 week course in total. Follow-up with serial CRPs and repeat blood cultures was carried out. A multidisciplinary team was involved in her care, including the consultant obstetrician, infectious disease physician and infectious disease paediatrician. She was induced at term and a male infant was delivered by normal vaginal delivery. There were no neonatal or maternal complications/morbidities. The case illustrates the importance of blood cultures in a pregnant patient with pyrexia of unknown origin. Blood cultures
are essential in making a diagnosis of Listeria thus aiding
the correct management and preventing potentially fatal
maternal/foetal complications.

CR17
Digital thermographic imaging – a
novel monitoring approach in Charcot
neuroarthropathy with potential clinical
usefulness
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Charcot neuroarthropathy is a chronic disabling
arthropathy complicating peripheral neuropathy, often in
the setting of diabetes. Establishing a definitive diagnosis is
challenging and largely clinical. Recovery is often protracted,
and difficult to monitor clinically, given paucity of clinical signs
and symptoms, and non-specific data borne out of established
investigative tools. Strict off-loading of the affected joint(s)
(commonly the ankle and/or foot) constitutes the cornerstone
of clinical management, although there is currently mounting
clinical evidence supporting a role for adjunct bisphosphonate
and calcitonin therapy. Asymmetric temperature differences
secondary to inflammation within the affected joint(s) is a
hallmark of this disease entity, classically presenting with a
temperature difference of over 2°C compared with the
unaffected contralateral joint. Temperature differences
correlate highly with radiographic changes and with markers
of bone turnover, and may antedate clinical presentation and
foot ulceration. Infrared thermography potentially offers
a relatively simple, non-contact, non-ionizing, relatively
inexpensive and rapid, method of monitoring healing
effectiveness. Thermographic images from a 58 year old lady known to
suffer from type 1 diabetes, who presented to our diabetes foot
services clinic with acute Charcot foot, illustrating response
to treatment with off-loading and intravenous pamidronate.

CR18
The use of PET CT scan in the diagnosis of
Cogan’s syndrome
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We present the case of a 44 year old female who gave a
6 months history of arthralgias of the hips, knees, ankles and
feet. This was associated with anorexia and weight loss of 6kg.
The patient had undergone a coelomic implant for hearing impairment
10 years before and was also experiencing a deterioration in her vision which was attributed to keratitis.
Physical examination did not reveal any joint inflammation and it was generally unremarkable. Blood tests revealed
markedly elevated indices of inflammation: ESR: 102mm/
hr and CRP: 108mg/L. The possibility of Cogan’s syndrome was considered as this comprises hearing loss and visual
impairment together with a vasculitis. The high markers of inflammation and the constitutional upset may be attributed
to an underlying vasculitis but there was no clear evidence of this on physical examination. A PET CT scan was performed
using the tracer 18F fluorodeoxyglucose and this revealed
inflammation of the arch of the aorta, the thoracic aorta, a number of its major branches as well as the femoral arteries.
This case demonstrates the usefulness of a PET CT scan both in
confirming the presence of a large vessel vasculitis as well as indicating its precise anatomical distribution. This would
not have been possible with standard diagnostic modalities such as biopsy, angiography, ultrasound and MRI. The PET
CT scan can achieve this by providing intrinsically fused morphologies and functional data in a single examination.

CR19
Diabetic myonecrosis – a rare
 complication with potentially serious
consequences
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Background: First described in 1965, diabetic muscle
infarction is a rare complication of long-standing poorly
controlled diabetes mellitus with associated microvascular
complications. Such patients are characterised by an excellent
short-term prognosis, since symptoms resolve in weeks to
months with appropriate management. However recurrence
rates are as high as 50%, in the same or opposite leg. Given
the severity of the diabetic complications that accompany
myonecrosis, it is not surprising that the majority of these
patients die within five years of diagnosis, mostly of a
cardiovascular event.

Case report: We present the case of a 51 year old
gentleman with type 2 diabetes complicated by nephropathy
and retinopathy, hypertension, dyslipidaemia and coronary
artery disease, who presented to our care in 2006 with a few
days’ history of worsening right lower limb pain and pyrexia.
Physical examination revealed a warm oedematous tender calf
and thigh with associated erythema clinical investigations,
including magnetic resonance imaging, were suggestive of
myonecrosis, despite normal creatinine phosphokinase levels
at presentation. A wound swab confirmed infection with
Methicillin Resistant Staphylococcus aureus (MRSA). His
symptoms resolved in response to tight glycaemic control,
broad spectrum antibiotics as well as a fasciotomy. Sixteen
days later, he had presented with similar symptoms in the
contralateral lower limb, developing extensive skin and
muscular necrosis of the calf following commencement of
warfarin therapy for a venous thrombosis of the deep veins
of the leg. Wound swabs had confirmed microbial infection
(including MRSA). Repeated fasciotomies, extensive
necrectomy and broad spectrum antibiotics failed to salvage
this limb, such that the patient required an above limb
amputation within a few weeks. Histological examination of
the necrotic tissue confirmed the presence of haemorrhagic
and dense neutrophilic exudate with bacterial colonies.

Conclusion: We postulate that this gentleman’s initial
presentation with a deep vein thrombosis may have been
complicated by muscular infarction, rendering this patient a
case of recurrent diabetic myonecrosis.

CR20
Osteopenia in a type 1 diabetic patient - a
case of multiple pathologies
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Introduction: Adult males with type 1 diabetes have
been associated with reduced bone mineral density (BMD),
(diabetic osteopenia) at the hip, femoral neck and spine, and
a higher risk for fractures. Several mechanisms including both
the complications and comorbidities associated with diabetes as well as impaired bone formation have been implicated in the pathogenesis of the disease process. Here, we report a case of osteopenia in a type 1 diabetic patient with several putative causes as to the aetiology of the bone disorder.  

**Case history:** A 35 year old male patient with type 1 diabetes of 33 years duration was found to have 2 consecutive low testosterone levels of 6.8nmol/L and 8.08nmol/L (9.1-55) after complaining of erectile dysfunction and lethargy. At the time he was on human insulins and timmol eye drops. The rest of the hormone profile was normal. As part of the work-up a BMD was done which showed a T-score of -2.1 at the spine and -1.1 at the hip.  

**Investigations:** He was started on a trial of testosterone enathate and libido and sexual function improved. He had no family history of osteoporosis and was a lifelong non-smoker and only drank alcohol occasionally. However, he had gained weight over the past year with deterioration of glucose control, HBAlC 8.4%. He was normotensive and examination was unremarkable. Given his clinical presentation we investigated for other possible causes for osteopenia.  

**Results:** The work-up showed abnormal urinary cortisol levels and a rather low Vitamin D level of 17.4ng/ml (20-70).  

- Urinary Free Cortisol levels were as follows:
  - Dec ’10 359
  - Jan ’11 347
  - Feb ’11 473
  - Oct ’11 798
  - Nov ’11 223
  - Jan ’12 471
  - May ’12 560
  - June ’12 256
  - normal value 55-276nmol/24hr

Furthermore, he had one raised pm cortisol level at 510nmol/L (normal value 55-276nmol/L). ACTH was recurrently suppressed to 5pg/ml (10-48). An overnight dexamethasone suppression test (ODST) showed adequate cortisol suppression to 45.8nmol/L. He had a normal adren al CT; however a cholesterol scan was suggestive of bilateral adrenal hyperplasia. An MRI pituitary showed a small 7mm nodule which was considered an incidentaloma. The rest of the investigations were normal. He was started on calcium and Vitamin D replacement.  

**Conclusion:** This gentleman has multiple possible causes for osteopenia notably the presence of Type 1 diabetes, Vitamin D deficiency and low testosterone levels. The fluctuant urinary cortisol levels with several peaks and two troughs in combination with a suppressed ACTH level and adequate suppression of cortisol following an ODST suggest periodic hypercortisolism. We believe this may be a case of Cyclical Cushing’s Syndrome secondary to bilateral adrenal hyperplasia. Cyclical Cushing’s in itself is a rare disorder and is classically characterized by recurrent episodes of hypercortisolism interspersed with periods of eucortisolemia or even transient hypocortisolism. We shall be following up our patient with repeated urinary cortisols and assessing him at regular intervals for any clinical signs of excess cortisol secretion.  

**CR22**  
A case of severe uncontrolled hypertension secondary to dual pathology  
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**Introduction:** Young patients presenting with severe hypertension refractory to treatment with more than three antihypertensive medications should be assessed for secondary causes of hypertension. Endocrine hypertension accounts for approximately 3% of the secondary forms of hypertension and is associated with clinical states where deranged hormonal secretion results in clinically significant hypertension. Primary aldosteronism (PA) was previously thought to account for <1% of hypertensives, but recent accumulating evidence has challenged this assumption with cross-sectional and prospective studies reporting PA in more than 10% of hypertensive patients. This case highlights the importance of a thorough search for secondary causes of hypertension.  

**Case history:** A 42 year old lady presented in 2002 to the general physicians with a long standing history of hirsutism, obesity and oligomenorrhea. She was last on oral contraceptive pills earlier in her menses at 18 years of age. Examination revealed marked centripetal obesity, slight acne, generalized hirsutism, normal secondary sexual characteristics and a BP of 150/115mmHg. Initial investigations showed a raised free testosterone due to hypogonadotropic hypogonadism (HH) consequent to transfusional haemosiderosis. We present the case of one such Maltese patient presenting at our Endocrine Clinic.  

**Case history:** A 29 year old gentleman known to suffer from HbTh presented with decreased libido, hot flushes and secondary infertility. He allegedly fathered a child five years earlier. The gentleman reported anejaculation for the previous three years, despite maintained erections. He had never shaved. A testicular biopsy carried out one month earlier showed evidence of atrophy and hyalinization. He was commenced on subcutaneous hCG 1000 IU twice weekly. We are currently monitoring this gentleman’s serum testosterone, oestradiol and semen analysis, opting to introduce treatment with HMG 75 units three times weekly if the patient remains azoospermic. He is likely to require lifelong testosterone therapy once his secondary infertility has been managed.
level 18.7pmol/L (1.56-11.0) and a normal am cortisol and prolactin levels. An ultra sound (US) showed increased ovarian volume bilaterally suggestive of polycystic ovariies (PCO). Spironolactone and amiodipine were started for BP control.

**Investigations:** An endocrine review at the time showed uncontrolled BP and worsening hirsutism. Her BMI was 35.2 kg/m2. A follicular phase profile showed a free testosterone level of 10.9 pmol/l (1.56 – 11.0), DHEAS 3.5 (0.2-9.4) gmol/L, am 17- OHP 4mg/l (0.4-1.62), am cortisol of 325nmol/L (158-690), LH 6U/l (1.1-11.6), FSH 7U/l (2.8-11.3). Urea and electrolytes were constantly normal. A Synacthen test was carried out and showed a basal 17-OHP with a rise to twice basal level, and an adequate cortisol response. Baseline morning ACTH was 5.9nmol/l (2.0-11.2) and 11-deoxycortisol of 2.5µg/l (<4.09µg/l). A diagnosis of late onset CAH was done and she was started on prednisolone 5mg nocte. At this point she was lost to follow-up. She presented again in 2010 with headaches, vague lower abdominal pains and diffuse muscle aches and pains and uncontrolled hypertension despite being on 5 different antihypertensives. She was re-investigated and was found to have a raised deoxycorticosterone (DOC) to 25.5ng/100ml (2-15), Aldosterone Renin Ratio (ARR) was 100 (<30) supine and >117 erect. She was persistently normokalaemic. The patient subsequently underwent a CT scan of the adrenal glands as well as a cholesterol scan for functional assessment for source of the excessive aldosterone secretion.

**Treatment:** In view of the raised DOC and ARR she is being treated for both 11β-hydroxylase deficiency and Conn’s syndrome. Her medications include spironolactone, prednisolone, methyldopa, verapamil, hydralazine and vasuvastatin. ARR subsequently improved to 17.9.

**Conclusion:** This is a case of low rennin hypertension.

The raised DOC and aldosterone levels imply possible dual pathology especially since her BP remains poorly controlled. She is being referred for evaluation by the surgical team for adrenalectomy.

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**CR23**

An unusual endocrine cause of voluminous diarrhoea – a case report

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**Background:** With a reported clinical incidence of 4-12 / million, pancreatic neuroendocrine tumours (PET) constitute a heterogenous group of neoplasms that vary in incidence and malignant potential.

**Case report:** We report the case of a 51 year old previously healthy lady who presented to the Accident and Emergency Department in June 2011 with profound dehydration complicating a week’s history of profuse voluminous watery diarrhoea and recurrent vomiting. Initial clinical investigations confirmed prerenal ureademia, profound hypokalaemia (2.63 mmol/L [NR 3.50-5.1]), hypernatraemia (corrected serum calcium 3.67 mmol/L [NR 2.05 – 2.60]) in the setting of normophosphataemia and a hyperchloremic metabolic acidosis (chloride = 80.6mol/L [NR 98-106], pH =7.31, bicarbonate = 15.mmol/L, PCO2 =23 mmHg). Prednisolone 12mg and amiodipine were started. The clinical progress was rather protracted, despite aggressive intravenous fluid resuscitation, potassium and magnesium replacement. Neuroendocrine markers revealed markedly elevated vasoactive intestinal peptide (VIP) levels (> 475pg/mL [NR< 63] in the setting of increased levels of calcitonin (9600 pg/Ml [NR < 5] and chromogranin A (179µg/L [NR < 100])). Serum parathyroid hormone levels were decreased at 109pg/ml (NR 15-65). A computed tomography scan of the abdomen and pelvis showed a non-calcified, unevenly enhancing mass, 71mm in diameter, generally hyperattenuating, but with small scattered nonenhancing foci. A doppler ultrasound of the thyroid revealed a solitary solid well-defined nodule measuring 30mm by 14mm by 15mm in the left thyroid lobe, characterised by a hypoechogenic centre, isoechoic periphery, peripheral blood flow and some central blood flow. This lady’s diarrhoea remained protracted, culminating in a total daily gastrointestinal output exceeding ten litres daily. Her clinical symptoms dramatically abated in response to subcutaneous octreotide therapy. Once clinically stable, she successfully underwent a distal pancreaticectomy, splenectomy and total thyroidectomy. Pancreatic histology confirmed a low grade neuroendocrine tumour measuring 90 mm with vascular invasion, compatible with a VIPoma, and staining for calcitonin and neurophysin specific enolase. Thyroid histology confirmed a follicular adenoma. She is currently asymptomatic, and is being followed up for a solitary, non-enhancing ill-defined lesion measuring around 13 mm in diameter, located in segment V of the liver.

**Conclusion:** Constituting only 2% of clinically apparent PET, malignant VPomas may present as mixed syndromes (as exemplified by calcitonin co-secretion), or the tumours may change clinically over time. Neuroendocrine tumours should be considered in the differential diagnosis of protracted secretory diarrhoea.

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**CR24**

Multifactorial severe hyponatraemia

C. Rizzo, S. Fava

**Case report:** A previously healthy 73-year-old gentleman was referred to Emergency Department with a three day history of malaise, lethargy and an episode of syncope at home. On arrival he was febrile, hypotensive and had ventricular tachycardia which was electrically cardioverted to sinus rhythm. Past history was unremarkable and he was on no regular medication. He was admitted on a monitored bed and treated with broad spectrum antibiotics, intravenous hydration with normal saline and a magnesium infusion. CXR revealed consolidation in the left lower lobe. CT brain scan was normal. Initial investigations revealed serum sodium 115mmol/l, potassium 3.5mmol/l, magnesin 0.59mmol/l, urea 2.9mmol/l, random blood glucose 6.3mmol/l, creatinine 8.4mmol/l. Serum osmolality 255mosm/L (282-300). His blood count was normal. INR 1.4, APTT ratio 1.65. Urine osmolality 407mosm/L, urine sodium 22mmol/l (54-190), urine potassium 57mmol/l (20-80), urine chloride 89mmol/l (168-218). Urine electrolytes (Day 5) : sodium 106mmol/l, potassium 11.07mmol/l, chloride 102mmol/l. FSH 1.4U/L (0.7-3.11), LH 1.0U/L (0.8-7.6), Prolactin 78mU/L (53-560). Total Testosterone <0.69nmol/L (0.3-26.5). Short Synacthen test showed a suboptimal adrenal response (baseline cortisol 86.9nmol/l, peak cortisol 203nmol/l). The patient was started on intravenous hydrocortisone and then changed to oral hydrocortisone. He was also started on oral thyroxine. He made a good recovery and his serum biochemistry normalized. Magnetic resonance imaging of the brain showed a partial empty sella.

**Conclusion:** This case illustrates a case of severe hyponatraemia, with a number of potential causal factors, including secondary adrenal insufficiency, thyrotoxic deficiency and inappropriate anti-diuretic hormone secretion. The combination of these three potential factors could account for the severity of the patient’s hyponatraemia and acute life-threatening presentation.
A third of patients with prostatic carcinoma and bone metastases have low serum calcium concentrations, and some have severe hypocalcaemia. Accounting for considerable morbidity and mortality, such metastatic deposits are predominantly blastic (bone-forming) and commonly cause increased serum levels of parathyroid hormone on account of calcium ions being transferred from serum into blastic bone. We report the case of a Maltese patient whose presentation with severe hypocalcaemia, albeit multifactorial, led to a diagnosis of metastatic prostatic carcinoma.

**Case report:** A cachectic 72-year-old Caucasian gentleman known to suffer from chronic obstructive pulmonary disease was referred to the Accident and Emergency Department with a one week history of worsening dyspnoea and lethargy. Clinical and radiological findings were consistent with a diagnosis of a right lower lobe pneumonia. A prolonged corrected QT interval (513 ms) was noted at presentation. Initial laboratory investigations confirmed severe hypocalcaemia (corrected calcium = 1.32 mmol/L [2.05-2.60]), in the setting of hyperphosphaetaemia (1.57mmol/L [0.87-1.45]), hypomagnesaemia (0.43 mmol/L [0.65-1.05]), renal impairment, (serum urea 8.0mmol/l [1.7-8.3], serum creatinine 134umol/l [62-106]) and elevated serum alkaline phosphatase concentrations (448 IU/L [0.65-1.05]), renal impairment, (serum urea 8.0mmol/l [1.7-8.3], serum creatinine 134umol/l [62-106]) and elevated serum alkaline phosphatase concentrations (448 IU/L [0.65-1.05]). Subsequent investigations revealed relative hyperparathyroidism (parathyroid hormone 76pg/ml [14-72]), and severe vitamin D deficiency (serum 25-hydroxyvitamin D 7.9ng/ml [20-70]). There was no evidence of iron, vitamin B12 or folate deficiency. A CT scan of the thorax and abdomen showed two nodular lung lesions, extensive bone metastases, hydrenephrosis of the right kidney and a dilated right ureter. Bone scintigraphy confirmed widespread osteoblastic bone metastases A digital rectal examination confirmed an irregular firm prostate, rendering a clinical diagnosis of metastatic prostatic carcinoma highly plausible. He was commenced on anti-androgen therapy by his consulting urologists.

**Discussion:** This gentleman’s hypocalcaemia persisted despite achieving normomagnesaemia using intravenous and oral replacement therapy, repeated intravenous calcium infusions and high dose oral alpha-calcidol and calcium supplementation. He sadly succumbed after 60 days of hospitalization. We postulate that this gentleman’s hypocalcaemia was likely to be multifactorial, stemming from osteoblastic metastases complicating his prostatic carcinoma, in the setting of pre-existing vitamin D deficiency and relative hypoparathyroidism. Persistence of severe hypocalcaemia in the face of normal magnesium concentrations renders functional hypoparathyroidism unlikely.

**Screening for thyroid disease in pregnancy: a review**

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Screening for thyroid disease in pregnancy remains a contentious issue. This review presents these diverging views and discusses their reasons as well as the relevant facts. The final aim is to establish the information gaps and limitations – technological or otherwise – which still need to be eliminated in order to settle the debate conclusively. The prevalence of the more common thyroid dysfunctions that occur in and after pregnancy is discussed. The subsequent impact of these disorders on mother and offspring is also described. Special focus is placed on the benefits and setbacks of currently available and newly proposed investigations, which assay serum hormone levels, serum autoantibody levels, and/or use clinical data. It is pointed out that the relevance of screening varies from one region of the world to the other, based on the content of iodine and selenium in food and water. The review then discusses the current major arguments for and against screening, as well as recommendations and proposed alternatives.

**Anterior low-lying placenta in the second trimester - a risk factor for uterine dehiscence/rupture in a VBAC (vaginal birth after caesarean section)?**

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A significant proportion (approx: 40%) of caesarean sections are elective repeat caesarean sections. Uterine rupture is an important cause for concern frequently inducing obstetricians to opt for an elective repeat caesarean section. Uterine rupture is associated with maternal and neonatal morbidity and mortality. The risk of uterine rupture is 35/10,000 in women attempting a vaginal birth after Caesarean Section, however 12/10,000 of uterine ruptures occur in women planned for elective caesarean section. This suggests that antenatal precedents may have a role in uterine rupture. Uterine rupture is a cause of significant maternal/ neonatal morbidity and mortality. A case report reviews a pregnancy of a 34 year of woman in her second pregnancy, whereby the first pregnancy was delivered by elective caesarean section for an oblique lie at term. Throughout the second pregnancy, the placental site was observed ultrasonically to be anterior and low in both the late first and second trimester. The placenta did not reach the cervix. In the third trimester the placenta was noted to have remained anterior but to have entered the upper segment, leaving the lower segment completely clear. At 37 weeks gestation the patient developed acute cholestasis of pregnancy. Bile acid levels rose to 40 μmol/l necessitating delivery. Since the foetal history of perinatal distress, cranial or peripheral nerve injury, electroconvulsive therapy, having no relevant family history of dystonia or other movement disorders made it more likely for a possible link between olanzapine and cervical dystonia. Moreover, Mr. J. was referred to an orthopaedic surgeon for investigation of his condition but no physical cause for his cervical dystonia was found. This case report also highlights the fact that cervical dystonia is very difficult to treat as despite various treatments being prescribed, our patient, sadly, is still troubled by this condition.

**Cervical dystonia following olanzapine treatment**

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This is a case report of a 58-year-old gentleman who suffered from Othello syndrome which developed secondary to alcohol dependence problem. He was being treated with olanzapine and subsequently developed cervical dystonia. Being on no other medication at the time, and there being no

**Refractory hypocalcaemia complicating metastatic prostatic carcinoma – a case report**

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**Background:** A third of patients with prostatic carcinoma and bone metastases have low serum calcium concentrations, and some have severe hypocalcaemia. Accounting for considerable morbidity and mortality, such metastatic deposits are predominantly blastic (bone-forming) and commonly cause increased serum levels of parathyroid hormone on account of calcium ions being transferred from serum into blastic bone. We report the case of a Maltese patient whose presentation with severe hypocalcaemia, albeit multifactorial, led to a diagnosis of metastatic prostatic carcinoma.

**Case report:** A cachectic 72-year-old Caucasian gentleman known to suffer from chronic obstructive pulmonary disease was referred to the Accident and Emergency Department with a one week history of worsening dyspnoea and lethargy. Clinical and radiological findings were consistent with a diagnosis of a right lower lobe pneumonia. A prolonged corrected QT interval (513 ms) was noted at presentation. Initial laboratory investigations confirmed severe hypocalcaemia (corrected calcium = 1.32 mmol/L [2.05-2.60]), in the setting of hyperphosphaetaemia (1.57mmol/L [0.87-1.45]), hypomagnesaemia (0.43 mmol/L [0.65-1.05]), renal impairment, (serum urea 8.0mmol/l [1.7-8.3], serum creatinine 134umol/l [62-106]) and elevated serum alkaline phosphatase concentrations (448 IU/L [0.65-1.05]), renal impairment, (serum urea 8.0mmol/l [1.7-8.3], serum creatinine 134umol/l [62-106]) and elevated serum alkaline phosphatase concentrations (448 IU/L [0.65-1.05]). Subsequent investigations revealed relative hyperparathyroidism (parathyroid hormone 76pg/ml [14-72]), and severe vitamin D deficiency (serum 25-hydroxyvitamin D 7.9ng/ml [20-70]). There was no evidence of iron, vitamin B12 or folate deficiency. A CT scan of the thorax and abdomen showed two nodular lung lesions, extensive bone metastases, hydrenephrosis of the right kidney and a dilated right ureter. Serum prostate specific-antigen was markedly elevated at 14,889ng/mL (0-4), suggesting significant tumour load. Serum prostate specific-antigen was markedly elevated at 14,889ng/mL (0-4), suggesting significant tumour load. Bone scintigraphy confirmed widespread osteoblastic bone metastases A digital rectal examination confirmed an irregular firm prostate, rendering a clinical diagnosis of metastatic prostatic carcinoma highly plausible. He was commenced on anti-androgen therapy by his consulting urologists.

**Discussion:** This gentleman’s hypocalcaemia persisted despite achieving normomagnesaemia using intravenous and oral replacement therapy, repeated intravenous calcium infusions and high dose oral alpha-calcidol and calcium supplementation. He sadly succumbed after 60 days of hospitalization. We postulate that this gentleman’s hypocalcaemia was likely to be multifactorial, stemming from osteoblastic metastases complicating his prostatic carcinoma, in the setting of pre-existing vitamin D deficiency and relative hypoparathyroidism. Persistence of severe hypocalcaemia in the face of normal magnesium concentrations renders functional hypoparathyroidism unlikely.
In the ectodermin organism, the liquor distribution correlated between the thermographic imaging of both patients. In cases where anteriorly sited placentae do not succeed in migrating superiorly in women with previous caesarean section, morbid adherence to the uterine scar and significant weakening of the lower uterine segment is noted. In this case although the placenta did migrate superiorly, the resultant dehiscence may suggest that its previous low location may have weakened the uterine lower segment significantly leading to uterine dehiscence. Anteriorly sited placentae which migrate from the lower segment in the third trimester in women with previous caesarean sections may be at greater risk of uterine dehiscence and rupture.

**CR29**

**Comparison of thermographic imaging of the pregnant uterus with and without spontaneous rupture of membranes.**

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**Introduction:** In the ectodermin organism, the external skin temperature reflects the metabolic processes of underlying structures. In the pregnant uterus, the foetus is one of the internal factors which will affect the temperature landscape of the pregnant abdomen. Conversely the relatively inactive liquor around the foetus will practically be neutral towards the abdominal wall temperature.

**Aim:** The temperature of the abdominal wall of pregnant patients with similar gestations in the third trimester, with and without spontaneous rupture of membranes, were assessed using thermographic imaging.

**Methodology:** Two patients were reviewed for this comparative assessment. Ethical approval and informed/written consent have been obtained to carry out this study. A primigravida at 36 weeks gestation with spontaneous rupture of membranes was compared with a pregnancy at 39 weeks gestation with intact membranes. Using a thermographic infra-red camera (FLIR Model SC7000), an image of the abdomen was taken with the patient lying down at 45 degree angle. Following the thermographic imaging, a 4D ultrasound of the foetus was carried out. By measuring point temperatures on the thermographic images, correlation of the liquor distribution between ultrasound scanning and thermographic imaging was attained.

**Results:** Liquor distribution correlated between the thermographic imaging and the subsequent ultrasound findings in both cases. In the patient with spontaneous rupture of membranes, the “cold” liquor pools were thermographically segregated to the upper poles of the uterus. The addition of these liquor pool depths as measured by ultrasound amounted to 9.69cm. Conversely in the patient with intact membranes, the amniotic fluid index was 13.21cm. In the latter patient there was more widespread distribution of liquor within the uterine cavity. The lack of liquor in the patient with spontaneous rupture of membranes created a distinct difference between the thermographic imaging of both patients.

**Conclusion:** Thermographic imaging aids in differentiating abdominal regions between the underlying foetus and liquor pool. This differentiation may assist in cases of oligohydramnios due to insidious spontaneous rupture of membranes and intra-uterine growth retardation.

**CR30**

**Atypical presentation of pre-eclampsia**

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**Aim:** To increase awareness of this protein disorder.

**Case:** 30 year old, primagravida, normotensive woman, presents at 34 weeks of gestation with brown discharge per vagina. Postral monitoring showed a persistent bradycardia and the baby was delivered by an emergency lower segment caesarean section. Peri-operatively a placental abruption was diagnosed. 24 hours post-operatively, the patient became jaundiced, hypertensive, and her renal and liver profile were abnormal. The patient needed intensive supportive management.

**Conclusion:** Pre-eclampsia with its complications can present without obvious increase in blood pressure and without proteinuria. Therefore clinicians should include pre-eclampsia in their differential diagnosis when dealing with similar cases.

**CR31**

**Bleeding cervical fibroid necessitating internal iliac artery ligation – a case report**

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**Introduction:** The prevalence of clinically evident cervical fibroids in pregnancy is less than 1%. Complications include bleeding and delivery by caesarean section. Uterine artery ligation during caesarean section is reportedly successful in reducing postpartum blood loss and eventually reducing fibroid size, thus minimizing the need for future surgery. We report a case of one such complicated cervical fibroid presenting at our obstetric unit.

**Case report:** A 31 year old Caucasian gravid female presented with vaginal bleeding at 19 weeks of gestation. A speculum examination revealed a large fibroid occupying the upper vagina and obstructing views of the cervix, while an ultrasound confirmed the presence of a viable pregnancy with a 9.5cm by 8.8cm cervical fibroid. Vaginal bleeding settled with conservative management. However at 26 weeks of gestation, she was re-admitted with heavy vaginal bleeding. Ultrasound showed a viable 27 week pregnancy and two cervical fibroids measuring 11.21cm by 12.32cm and 5.14cm by 4.71cm respectively. The patient was initially managed conservatively, but at the 28th week of gestation she suffered heavy vaginal bleeding. On examination, the fibroid was noted to be occupying virtually the entire pelvic cavity. In view of persistent heavy blood loss and severe prematurity, a classical Caesarean section was carried out and a healthy male infant was delivered. In spite of aggressive medical therapy, heavy peripartum vaginal bleeding persisted and bilateral internal iliac artery ligation was performed. Bleeding was successfully reduced to a trickle which further responded to misoprostol and a vaginal pack. Our patient had an uneventful recovery and was discharged home on the ninth post operative day. A magnetic resonance imaging (MRI) scan of the pelvis carried out five days after surgery revealed a 12cm by 11cm by 11cm...
A 30 year old healthy gravid woman was
The case represents a rare case of non-
Ligation of uterine blood supply is relatively
Herpes and rhesus antibody were all negative. As the
for Parvovirus, Toxoplasma, Rubella, Cytomegalovirus,
noted to have foetal cardiomegaly at 24 weeks of gestation.
Vein of Galen aneurysm.
A rare, non immune aetiology. We present the case of a rare,
whilst had it occurred even later - a case of the conjoined twins
of a single cord that has branched distally to its insertion,
judging by the presence of the single cord that has branched distally to its insertion,
whilst it had occurred even later - a case of the conjoined twins
would have arisen.

CR32
A rare case of single cord insertion with
two branches in uniovular twins
O. Tsar1, M.C. Vassallo2, K. Vella1, D. Chetcuti1, K. Cutajar1, A. Micallef-Fava3, J. Aquilina1, M.P. Brincat1
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The incidence of monochorionic monoamniotic twins (MCMA) is one in 10,000 pregnancies. MCMA twins belong to a high risk group for perinatal mortality and morbidity. The most common complications occur due to the vascular placental anastomoses that connect the circulations of the two twins: twin-twin transfusion syndrome (TTTS), as well as congenital malformations and prematurity. MCMA twins (1% of twin pregnancies) are also at a high risk of cord entanglement, responsible for a poor obstetric outcome. Their survival rate is approximately 50%. Mrs. AB was diagnosed as having uniovular twins early on in pregnancy. The twins were in the same sac and it was evident that they were physically very close together. A detailed scan was carried out at 14 weeks indicated that the twins shared the same cord which then branched very close to the twins’ umbilical insertion. The branches only had one artery and one vein each. The twins were followed up to 17 weeks and were growing normally with no significant growth discrepancy between them, when on a routine visit it was noted that both twins had an absent foetal heart. Attempts at vaginal delivery failed and a hysterotomy was carried out after two days. Post mortem on the twins confirmed the ultrasound findings. A differentiation of this rare form of uniovular twins will indicate the different types of monochorionic twins. The time when the original embryo splits determines the form of twinning. In this case the splitting of the embryo occurred late, judging by the presence of a single cord that has branched distally to its insertion, whilst it had occurred even later - a case of the conjoined twins would have arisen.

CR33
A case of non immune hydrops due to an arteriovenous fistula malformation in the vein of Galen
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Background: Hydrops is a condition characterised by the abnormal accumulation of oedema involving two or more foetal compartments. Hydrops can have an immune or non immune aetiology. We present the case of a rare, non immune type of hydrops caused by high output cardiac failure secondary to a vein of Galen aneurysm.
Case report: A 30 year old healthy gravida woman was noted to have foetal cardiomagnely at 24 weeks of gestation. At the time, there was no skin oedema, pleural effusions or ascites. Routine blood investigations were normal. Screening for Parvovirus, Toxoplasma, Rubella, Cytomegalovirus, Herpes and rhesus antibody were all negative. As the pregnancy progressed, foetal cardiomagnely worsened and at 27 weeks of gestation, following a detailed anomaly scan, the patient was referred to the Fetal Medicine Foundation (FMF) at King’s College Hospital with a diagnosis of a congenital cardiac malformation. At FMF, the foetus was diagnosed as having an aneurysm in the vein of Galen, thereby subjecting cardiac function to a vastly increased circulating volume. The patient was subsequently referred to the Neurosurgery Unit at Great Ormond Street Hospital, where it was recommended that the pregnancy should be allowed to proceed as far as possible and a glue type plug inserted into the fistula postnatally if the foetus’s gestational age and weight permitted. Back in Malta, at 30 weeks of gestation, the fetus developed hydrops and high output cardiac failure. Attempts to digitalise the mother and baby did not prevent the situation deteriorating and the cardiotocograph became pathological. Following the administration of desamethasone so as to attempt to lessen the impact of respiratory distress, an emergency caesarean section was carried out. A hydropic baby that cried at birth, but only survived a few hours was delivered.
Discussion: The case represents a rare case of non-immune hydrops due to an anatomical abnormality that deteriorated very rapidly. Vein of Galen aneurysm is a rare congenital anomaly of the intracranial circulation constituting 1% of all intracranial vascular malformations, in which blood shunts from cerebral arteries to a dilated vein of Galen (an internal cerebral vein). This develops between the 6th to 11th week of gestation. Only a few cases are diagnosed in utero. Approximately 40% of cases are diagnosed in neonates while the rest are diagnosed later in life. Antenatal diagnosis is usually made after the 30th week of gestation because the malformation grows as pregnancy advances.

CR34
Two cases of diaphragmatic hernia corrected by intra uterine surgery - the FETO procedure
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The birth prevalence of congenital diaphragmatic hernia (CDH) is approximately 1:4,000. It is associated with high rates of neonatal mortality as a result of pulmonary hypoplasia, pulmonary hypertension. The outcome of foetuses with severe diaphragmatic hernia may be improved by reversible foetal endoscopic tracheal occlusion (FETO) with a balloon. The literature reports a cumulative survival rate of FETO in the first ten years of around 60%. During pregnancy, foetal lung secretions are drained into the amniotic cavity during foetal breathing movements. FETO is an intra uterine procedure whereby an endotracheal balloon is inserted and inflated in the trachea endoscopically and under local anaesthesia, thereby subjecting cardiac function to a vastly increased circulation volume. Studies have shown that such tracheal obstruction results in expansion of the foetal lungs by retaining pulmonary secretions and is therefore associated with improved lung growth and development. Foetuses undergoing FETO are followed with regular ultrasound examinations to confirm the endotracheal presence of the inflated balloon and to monitor lung growth. The balloon is electively deflated and removed at approximately 34 weeks of gestation by foetoscopy or ultrasound-guided puncture. We present two cases of congenital diaphragmatic hernia treated with foetoscopic tracheal occlusion. The first case was picked up at the 21st week and was transferred to the Fetal Medicine Foundation at the Harris Birthright Unit , King's College Hospital, London. The second case (Case B) was diagnosed at the 22nd week of gestation and similarly sent to King’s College Hospital but was noted to have a very large
diaphragmatic hernia. Incidentally both cases had left sided diaphragmatic hernia which is the commonest site. In the first case the baby survived and definitive corrective surgery was carried out shortly after delivery. The pregnancy of the second case is still ongoing but the results post surgery at 31 weeks look satisfactory. Foetal endoscopic tracheal occlusion in severe congenital diaphragmatic hernia is minimally invasive and associated with a substantial improvement in postnatal survival.

CR35
Placental hormones: steroid production and excretion
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Introduction: The placenta in pregnancy is an organ capable to produce hormones and growth promoting substances independently from maternal organs. The case below describes a terminated molar pregnancy placental analysis of hormones produced by such organ.
Case report: A mother in her twenties presented to the obstetric department with vaginal bleeding in the second trimester of pregnancy in the early 1980s. On examination she was found to be larger than dates. Foetal heart sounds were absent. An ultrasound scan showed the typical snow-storm appearance without the presence of a foetus confirming a complete hydatidiform mole. Urinary BHCg was markedly elevated. The pregnancy was medically terminated and followed up with suction and curette evacuation of the uterine cavity. The delivered placenta had the gross appearance of multiple grape-like vesicles. Histology confirmed a hydatidiform mole with throphoblastic hyperplasia. The patient was eventually followed up. Her BHCg levels settled down within three weeks. Follow-up with no BHCg presence was uneventful for a period of one year. Biochemical hormone assays were taken from the placental vesical fluid and maternal serum samples.
Results showed:
Vesical fluid vs Maternal Serum (Normal Levels)
- T4 <1.93 pmol/L vs 14.6 pmol/L (8 – 25 pmol/L)
- TSH 2.9 mU/L vs 5.0 mU/L (0 – 6 mU/L)
- Cortisol <28 nmol/L vs 832 nmol/L (10g-60g nmol/L [morning])
- Prolactin 1212 mU/L vs 867 mU/L (<480 mU/L)
- FSH 8.4 U/L vs 8.2 U/L (<20 U/L [Follicular])
- LH 126.7 U/L vs 125.3 U/L (<46 U/L [Follicular])
- Progesterone >172.7 nmol/L vs 43.8 nmol/L (>30 nmol/L [Pregnancy])
- Testosterone <1.0 nmol/L vs 1.5 nmol/L (0.28-1.84 nmol/L)
- Oestradiol 778.474 nmol/L vs 2.11 nmol/L (0.1 – 0.4 nmol/L [Follicular])
Discussion: As an endocrine organ, the placenta produces a wide range of hormones that affect both mother and foetus as well as the development of the placenta itself. Complete molar pregnancy placentas provide an opportunity to study the placentral hormone contribution without the possible contribution by foetal endocrine glands. However, placental endocrine function can be disrupted by abnormal gene expression and androgenic chromosomal aetiology for the development of moles has been suggested. The villous swelling has been shown to be the result of continued secretion by the trophoblast in the presence of an inability to transport the fluid away due to deficient vasculature. The present study suggests a marked rise in progesterone (>33) and oestradiol [x4] production that exceeds serum levels. It has been shown that progesterone, together with 17a-hydroxyprogesterone and androstenedione and their metabolites, is the main steroid hormones found in vesical molar fluid. In humans, the placenta does not express 17a-hydroxylase. Placental oestrogen synthesis depends upon a source of androgen precursor from the foetal adrenal glands, thus explaining the low testosterone levels in the case report. While thyrotoxicosis is sometimes observed as a complication of throphoblastic disease, the simulator for this appears to be a hormone other than TSH [e.g. HCG], since the levels observed are actually lower [x-1.7] in vesical fluid than in serum. The other pituitary gonadotrophins showed equivalent values in vesicle fluid and serum. Prolactin was only slightly elevated in vesical fluid [x1.4].
Conclusion: The placenta in an underappreciated organ essential for pregnancy maintenance, foetal development and maturation. More studies into placental hormone production are required so as to understand the endocrine pathways regulating a viable and a non-viable gestation.

CR36
Latent syphilis in pregnancy
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Introduction: Syphilis, a disease caused by Treponema pallidum is very rare in Malta. Only 4 cases have been diagnosed in the antenatal population since 2009.
Case report: A 26 year old irregular migrant in her second pregnancy presented for her booking visit at 13 weeks gestation. She had no past medical history of note and was asymptomatic. Initial syphilis testing resulted in negative Treponema pallidum Particle Agglutination test (TPPA) and negative Veneral Disease Research Laboratory Test (VDRL) but positive Treponema pallidum IgG/IgM antibodies. Syphilis IgM immuno blot testing was negative (IgM TP47, TMPA, TP17, TP 15, TP 257/M, TP 453). Repeat testing showed a TPPA positive titre 1:1280+; VDRL was however negative <1:1. A confirmatory sample was sent to a tertiary centre. Results were as follows: TPPA positive titre of 1:1280+, Treponema pallidum antibodies (IgG, IgM) positive, Treponema pallidum antibodies (IgM/EIA) <20, VDRL <1:1. The patient was diagnosed with a latent syphilis infection. Testing for other infections - HIV and Hepatitis were negative. A multidisciplinary team was involved including the obstetrics consultant, genitourinary consultant and infectious disease paediatrician. The patient was thoroughly counselled on the effects of syphilis, including foetal complications. The patient was treated with two doses of 2.4 MU of benzathine penicillin G intramuscular injection given at weekly interval. Prednisolone 10mg three times daily was given for three days, including the day of treatment, and the days before and after treatment, in order to prevent the Jarisch-Herxheimer reaction. Anomaly and serial growth scans were performed and these were all within normal limits. Screening was also offered testing to her one year old daughter. Results: The patient was admitted at 40+1 gestation for induction of labour. A healthy female baby weighing 3.50kg was born by normal vaginal delivery. The neonate’s titres showed the presence of maternal antibodies but no evidence of congenital syphilis syndrome (VDRL: negative; TPHA 1:1280+; IgM negative). No further treatment was necessary. The neonate will continue to be followed up by the pediatricians until all the maternal antibodies have cleared.
Conclusion: The importance of antenatal screening for syphilis is highlighted by this case. Timely treatment prevents congenital syphilis with its potentially serious complications.
**CR37**

**The Appendix in gynaecology**

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**Introduction:** Appendicular non-inflammatory tumours are rare and often clinically misdiagnosed with ovarian tumours. Appendiceal mucocoeles account for only about 0.3% of appendiceal specimens of which 63% may be simple mucinous cystadenoma, 25% mucosal hyperplasia and 12% mucinous cystadenocarcinoma.

**Case report:** A 63 year old woman with a previous history of surgical resection and oncology management for grade II ductal invasive adenoacarcinoma of the breast, presented to the urology outpatient with right loin pain and heavy microhematuria. Computer tomography (CT) evidenced moderate ascites and an irregularly shaped multiloculated cyst approximately 7.5cm on the right of the pelvic inlet, reported as probably arising from the right ovary. The patient was subsequently referred for gynaecological assessment and in view of the past history and CT findings, a decision for an abdominal hysterectomy and bilateral salpingo-oophorectomy (TAH +/-BSO) was taken. On entering the abdominal cavity a yellow-green jelly and a perforated mass arising from the appendix were noted. A right hemicolectomy and a TAH&BSO were performed. The post-operative period was uneventful and the patient was discharged home seven days after surgery. Histology evidenced an atrophic uterus and adnexa whilst sections from the right hemicolectomy evidenced a well differentiated (grade 1) mucinous adenocarcinoma of the appendix with perforation (pT4a,N0,Mx). She will be referred to the oncological department for possible adjuvant therapy.

**Discussion:** Appendicular mucinous malignant tumours are a rare occurrence and often misdiagnosed as ovarian lesions. As in the case reported here, these may actually present after rupture of the mucocyst predisposing these patients to developing pseudomyxoma peritonei (PMP). PMP may arise in association with the benign mucinous adenoma, the malignant mucinous adenocarcinoma, or a hybrid variety. PMP means false mucinous tumour of the peritoneum, commonly called the “jelly belly” syndrome. It is a disease of MUC2-expressing goblet cells which accounts for the voluminous intraperitoneal mucin which has no place to drain since it resides in a closed cavity resulting in compression and loss of function of visceral organs. Commonly it arises from mucinous tumour of the appendix and occasionally from the ovary, gastrointestinal tract, gall bladder, urinary bladder, lung, breast, pancreas, fallopian tube. Histopathological type usually determines the prognosis in terms of recurrence and survival with a 6.7% 5year survival for mucinous adenocarcinoma. Current evidence shows that cytoreductive surgical debulking and post-operative intraperitoneal chemotherapy play a vital role in the management of the tumour. Adjunctive radiotherapy and intraperitoneal isotopes might also play a role in long term survival.

**Conclusion:** PMP is a rare clinical condition, and an incidental finding at laparotomy for suspected ovarian masses. Undeniably, care must be taken so as not to fail to identify it due to inexperience at surgery.

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**CR38**

**A successful pregnancy in a case of foetal thrombophilia.**

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**Introduction:** Thrombophilias can either be acquired (e.g. Antiphospholipid Syndrome) or inherited (e.g. Protein S deficiency and Methylenehydrofolate reductase mutations (MTHFR) mutation). All thrombophilias lead to a hypercoagulable state which can compromise the circulation at the utero-placental interface and lead to utero-placental insufficiency. This would in turn lead to miscarriages, intra-uterine growth restriction or pre-eclampsia. MTHFR mutations can occur at two gene loci, C677T or A1298C. Homozygous mutations at position C677T occur in 5-10% of the population and homozygous mutations at position A1298C occur in 9%. Compound heterozygous mutations involving the 2 loci are also relevant. The enzyme 5,10-methylenehydrofolate reductase catalyzes the conversion of 5,10-methylenehydrofolate in 5-methyltetrahydrofolate in many biochemical pathways including methylation of homocysteine and synthesis of nucleotides. Patients who are homozygous for the defect can develop hyperhomocysteinemia which is associated with increased risk of thrombotic diseases and spontaneous miscarriages. Another possible implication is that in cases where both parents are MTHFR homozygote, the foetus will also be homozygote resulting in a thrombotic tendency in the foetus itself. However, the role of MTHFR in recurrent miscarriages is still a matter for discussion.

**Case summary:** 33 year old lady was investigated at the recurrent miscarriage clinic after she had 2 recurrent miscarriages. The patient gave a history of hyperthyroidism and was on carbimazole and propylthiouracil. She had her menarche at 13 years and her cycles were regular. She had a miscarriage at 5 weeks in February 2007 and another one at 8 weeks in June 2007. She smoked 5 cigarettes daily. She had an office job and lived with her husband. The patient was found to suffer from both Protein S deficiency and a homozygote MTHFR mutation at the C677T locus. She also had a positive Anti Nuclear Factor (ANF) titre at 1/640. Her husband was also found to carry the same MTHFR mutation. Thus the foetus had to have the same homozygote mutation for the MTHFR C677T locus. The patient was started on the following treatment as per protocol:

- Folic acid 5mg daily
- Aspirin 75mg daily
- Duphastone 10mg tds
- Cleane 20mg daily

**Outcome:** She conceived again and had a baby girl in 2008 and a baby boy in 2011. She had an ectopic pregnancy in 2010. She is being followed-up for the positive ANF with regular ds-DNA and ANF assays, complement levels and lymphocyte counts.

**Conclusion:** This case where both parents exhibited a congenital thrombophilia highlights the relevance of thrombophilia as a cause of recurrent miscarriage and the important role of aspirin and heparin in the treatment protocol for such cases.

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**CR39**

**Conservative management of ovarian torsion - a case report**

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**Introduction:** Studies suggest that adnexal torsion is the fifth most common gynaecological surgical emergency representing two to three percent of acute surgical emergencies. It occurs most often in women of reproductive age, although about one quarter of cases have involved children. Adolescents are also at risk. Adnexal torsion results in steadily increasing congestion and eventual ischaemia of the ovary. Traditionally ovarian torsion has been treated by salpingo-oophorectomy, especially where the ovary appeared engorged or ischaemic, for fear of emboli being released from thrombosed ovarian veins. Current recommendations of ovarian torsion management, however, strongly support ovarian conservation.

**Case report:** We present a case report of a 14 year old girl, one year post menarche, who was initially referred to the Accident and Emergency department with a three day history of severe, colicky, left sided abdominal pain requiring opiates. An ultrasound examination revealed left sided hydronephrosis and an enlarged left ovary with multiple follicular cysts. She
was initially admitted to urology with the provisional diagnosis of renal colic. However, the following day, she was referred to the gynaecology department where a repeat ultrasound pelvis confirmed the presence of an enlarged left ovary. This was now measuring approximately 7cm by 5cm with a 1.7cm central cystic structure and absent Doppler flow. Appearance was suggestive of ovarian torsion. The patient underwent an emergency laparotomy. Operative findings included a torted, enlarged and oedematous left ovary containing viable looking ovarian tissue. There were no ovarian cysts or tumours. Detorsion of the affected ovary was carried out and cautery applied to cystic structures on the ovarian capsule.

**Results:** The patient had an uneventful postoperative recovery. A repeat ultrasound scan carried out seven days after surgery revealed a healthy looking 3.5cm by 2.7cm left ovary. She has remained well ever since.

**Conclusion:** Although uncommon, ovarian torsion may still occur in the absence of lesions such as tumours or cysts. Surgical management of ovarian torsion should attempt to salvage the affected ovary. Detorsion of an ischaemic ovary is a safe procedure with minimal post-op morbidity and a potential for ovarian salvage. To maximize the potential success of conservative therapy, torsion must always be included in the differential diagnosis of abdominal pain.

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**CR40**

**A newborn infant with acrocephalosyndactyly - Apert syndrome: a case report**

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**Introduction:** Apert Syndrome is a rare syndrome occurring in 1:200,000 births. It is a congenital disorder characterised by malformations of the skull, face, hands and feet.

**Case presentation:** We are presenting the case of a newborn infant born in Malta with craniosynostosis, claw shaped hands with fused fingers and toes. Genetic studies demonstrated mutation of the FGFR2 gene confirming Apert Syndrome. Due to the complications of the craniosynostosis and consequent midfacial crowding, this patient has severe sleep apnoea and has had an emergency tracheostomy. In September she underwent the first in series of orthopaedic, plastic and neurosurgical operations in an attempt to correct the head shape and hands.

**Conclusion:** The prognosis of patients with the condition varies depending on early surgical management and associated or consequent brain involvement. In addition to this there are major psycikigical implications of this condition which needs early treatment of the patients and their families.

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**CR41**

**A rare cause of spontaneous cardiac death: extramedullary acute myeloid leukemia of the heart diagnosed at postmortem.**

I. Said, R. Borg, M. Taylor

We present the case of a 64-year-old gentleman, who after an acute onset of dyspnoea, died suddenly at home. Postmortem revealed approximately 200ml of haemorrhagic pericardial fluid, accompanied by an abnormal appearance of the heart surface. Histology performed revealed a neoplastic population of cells, some with lymphoid characteristics, infiltrating the pericardium and outer myocardium. Immunohistochemistry highlighted these cells to be LCA, myeloperoxidase, CD68, CD43 and BCL-2 positive; thus consistent with a diagnosis of acute myeloid leukaemia (AML). Such presentation of AML, also described as cardiac myeloid sarcoma (WHO Classification 2008), is exceedingly rare, with only a handful of cases reported in the literature. This case highlights an atypical presentation of extramedullary AML and attempts to provide a concise literature review of immunohistochemical techniques utilised in diagnosing such neoplasms. Furthermore, a review of current treatment regimes is presented.

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**CR42**

**Retroperitoneal mucinous cystadenocarcinoma arising in secondary mullerian rests.**

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**Introduction:** A rare case of mucinous adenocarcinoma arising in a secondary mullerian rest is presented. The intimate admixture of the three major types of epithelia of the female gynaecological tract physically located outside the uterus and ovaries defines ‘Mullerianosis.’ This is mostly known to occur around the adnexal areas e.g. broad ligament, pelvic region and also retroperitoneally. The occurrence of this is uncommon and malignancy in this setting is quite rare.

**Case report:** A 56 year-old woman presented with abdominal pain and postmenopausal bleeding. A CT scan of the abdomen and pelvis showed a large mass arising from the pelvis, probably arising from the left adnexal region, with left ureteral-pelvic dilatation. A subsequent total abdominal hysterectomy and bilateral salpingo-oophorectomy with extirpation of the retroperitoneal (operative findings) mass was performed. Pathological examination showed a large mass weighing 660g and measuring 18cm in diameter. It had a predominantly cystic cut surface with some solid areas. The exterior lining was partly smooth and partly granular. The separately sent hysterectomy specimen was macroscopically unremarkable. Microscopic examination of the uterus and both ovaries showed normal histology for age. On the other hand the mass showed the cystic component to be lined by a mixture of endocervical, tubal and endometrioid type epithelium, separated by ovarian-type fibrous stroma. The solid component previously described showed a mucinous carcinoma with markedly pleomorphic nuclei. There were no teratomous or heterologous elements. The external part of the specimen was partly lined by a single layer of calretinin positive cuboidal epithelium. This indicates that the tumour most likely originated from the retroperitoneal compartment. The histological differential diagnosis would be a teratoma metastasising to a lymph node or teratomatous transformation of Mullerian rests.

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**CR43**

**Case report: collision benign tumour of the adrenal gland**

J. Attard, J. DeGaetano, A. Attard, W. Scicluna, D. Babic

**Aims and background:** This is a case report of a benign collision tumour of the adrenal gland.

**Materials and methods:** A 62 year old woman was found to have an incidental right adrenal mass on computed tomography (CT) whilst being investigated for restrictive lung disease. The mass measured 71 x 61 x 65mm, contained macroscopic fat and macroscopic calcifications, which did not grow in size after a repeat CT one year later.

**Results:** Macroscopic examination of the adrenal gland revealed a multinodular mass measuring 60mm in its greatest dimension. It had a variegated solid yellow-white cut surface with haemorrhagic-cystic areas. Histological examination revealed a wide area of organizing haemorrhage involving
When metastasized, well-differentiated thyroid carcinoma is a relatively rare cause of cancer-related death. Nonetheless, these tumours exhibit a high prevalence among asymptomatic individuals. They make up 90% of all cases of thyroid malignancy, with papillary carcinoma being the most common cancer (80% of all thyroid carcinomas). Prognosis is usually excellent (90% long-term survival), however this worsens once distant metastases are present (50% long-term survival).

**Case report:** We report the case of a healthy 56-year-old man who presented to us with an unrelated complaint. Multiple small nodules were incidentally noted on his chest x-ray. These had been present for several years and had in fact been extensively investigated three years prior to this admission, however, no conclusive diagnosis had been reached. A CT scan of the thorax showed slight enlargement of the pulmonary nodules and an increase in their number. A diagnosis of papillary thyroid carcinoma with metastases to the lung was made following a lung wedge resection. An overview of the clinical history, work-up and treatment of well-differentiated thyroid carcinoma is given.

**Conclusion:** Even when metastasized, well-differentiated tumours of the thyroid gland often do not cause clinical symptoms for many years. Our case report underlines how metastatic thyroid carcinoma should always be considered in the differential diagnosis of pulmonary lesions that appear to be stable over the usual follow-up intervals.

**CR46**

**The complications of treatment of type 3 Von Willebrand disease**

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**Background:** Von Willebrand disease (VWD) is an inherited bleeding disorder resulting from quantitative (types 1 and 3) and qualitative abnormalities in von Willebrand factor (VWF). Type 3 Von Willebrand disease (VWD3) is the most severe form of this disorder characterised by almost complete deficiency of VWF. Because VWF deficiency results in the rapid degradation of FVIII, in VWD3 both primary and secondary haemostasis is affected. The main manifestations are spontaneous and post-operative mucocutaneous bleeding and also haemophilia-like symptoms. The first-line treatment for VWD3 is replacement therapy with plasma-derived VWF/FVIII containing concentrate. In rare cases, treatment of patients with VWD3 may be complicated by the development of anti-VWF alloantibodies. Molecular biology techniques have identified several VWF gene defects that can cause VWD3. Most VWF defects are caused by single nucleotide substitutions or small deletions/insertions. The majority of these mutations cause a frame-shift resulting in a premature stop codon.

**Objective:** To follow the course of anti-VWF and anti-FVIII inhibitors in a patient with VWD3.

**Method:** A 30-year-old Caucasian male with VWD3 and transfusion-transmitted hepatitis C virus (HCV) had been using on-demand treatment with VWF/FVIII concentrate (Haemate-P) for several years. Following successful eradication of HCV with ribavirin and pegylated α-interferon he started to have epistaxes which responded poorly to treatment with Haemate-P. He was found to have an inhibitor with anti-VWF and anti-FVIII activity and during this time he also started developing anaphylactoid-type reactions to Haemate-P infusions. In view of this, his bleeding episodes were treated with recombinant activated Factor VIIa (NovoSeven) instead, and the course of the inhibitors was followed.

**Results:** The anti-VWF activity spontaneously disappeared while the anti-FVIII activity responded to immunosuppression with corticosteroids. Following this, Haemate-P was successfully re-introduced as standard therapy. Our patient also underwent genetic analysis which showed a homozygous single nucleotide substitution. This substitution results in a truncated protein product.

**Conclusion:** This demonstrates many of the potential complications for VWD3 including the development of anti-VWF and anti-FVIII antibodies. This was probably as a result of the immune dysregulation induced by α-interferon therapy used to treat HCV, another complication of treatment of this condition. The presence of antibodies not only renders VWF/FVIII replacement therapy ineffective but also increases the risk of life-threatening anaphylactic reactions developing.

**CR44**

**Thyroxine therapy in secondary amenorrhoea with low normal thyroid function - a case report and review**

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An association between secondary amenorrhoea and thyroid disorders especially hypothyroidism is established. Thyroid axis dysregulation may occur especially when associated with a nutritional deficit. Few studies link low normal or borderline thyroid function with amenorrhoea and report resolution with thyroid hormone replacement. In this case we report such a case of immediate symptomatic relief and menstrual cycle restoration upon initiation of thyroxine, although other avenues were looked into for long term management.

**CR45**

**A case report of papillary carcinoma of the thyroid with pulmonary metastases diagnosed after three years of stability**

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**Introduction:** Well-differentiated thyroid carcinoma is a relatively rare cause of cancer-related death. Nonetheless, these tumours exhibit a high prevalence among asymptomatic individuals. They make up 90% of all cases of thyroid malignancy, with papillary carcinoma being the most common cancer (80% of all thyroid carcinomas). Prognosis is usually excellent (90% long-term survival), however this worsens once distant metastases are present (50% long-term survival).

**Case report:** We report the case of a healthy 56-year-old man who presented to us with an unrelated complaint. Multiple small nodules were incidentally noted on his chest x-ray. These had been present for several years and had in fact been extensively investigated three years prior to...
X-linked adrenal hypoplasia congenita in a Maltese boy: a rare cause of primary adrenocortical insufficiency
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Introduction: X-linked adrenal hypoplasia congenita (AHC) is a rare condition that may occur by itself, or in combination with a number of other disorders as part of a contiguous gene syndrome.

Aim: We describe a young, Maltese boy with X-linked AHC. To the best of our knowledge, this is the first documented patient with this condition in Malta.

Results: The patient was a Maltese boy who had already been diagnosed as having Duchenne muscular dystrophy (DMD) at 13 months of age. At the age of 25 months, he presented urgently to hospital with a generalized seizure that occurred during a mild, non-febreile, upper respiratory tract infection. Biochemical investigations at presentation revealed that he had profound hypoglycaemia (serum glucose 0.23mmol/l) and hyponatraemia (serum sodium 122mmol/l). Further testing confirmed that he had primary adrenocortical insufficiency as well as biochemical evidence of glycerol kinase deficiency. Subsequent genetic analysis confirmed the presence of a contiguous gene deletion on the short arm of the X-chromosome affecting the NR0B1 (previously called DAX1) and GK genes, that cause adrenal hypoplasia congenita and glycerol kinase deficiency respectively.

Conclusion: X-linked AHC is one of a number of possible causes of primary adrenocortical insufficiency in childhood. Clinicians should have a high index of suspicion about this condition in patients with DMD, and be aware of the other possible associated disorders.

Can fluctuating hearing loss be associated with Chiari malformation type I? A paediatric case report with literature review
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Introduction: The Chiari I malformation consists of caudal displacement of the cerebellar tonsils, more than 3mm below the foramen magnum. It is generally thought to be congenital in nature, but has also been reported to result from low spinal fluid pressure. Symptoms suggestive of Chiari malformations include posterior headaches, dizziness, cerebellar signs and fainting associated with coughing. Occasionally, otologic symptoms are manifested including aural fullness, tinnitus, vertigo, fluctuating and permanent hearing loss.

Aim: A case report of a 12 year old girl with intermittent sensorineural hearing loss episodes is being presented. The case was compared with a literature review.

Methodology: The child first complained with severe right sided deafness and partial left sided deafness accompanied by right tinnitus. Medical history showed the child had been noticing intermittent, short lived, altered hearing for 1 year. There was a family history of otosclerosis. She reported occasional dizzy spells. Neurological examination was normal. No nystagmus was reported. A battery of audiological tests were carried out 2 days after the onset of symptoms. Normal pure tone audiometry and otocoustic emissions were reported. Tympanometry and stapedial reflexes were normal. Equivalv contralateral auditory brainstem reflexes were present. Magnetic Resonance Imaging reported normal brain and cord structures but also diagnosed an accidental Chiari type I malformation with herniation of the tonsils down to the level of C1/C2. No endolymphatic hydrops was noted. Electroencephalography was normal. Her symptoms improved gradually. She tested negative to central auditory processing disorder via speech and language therapy assessment. She was again admitted with the same presentation a few months later. In this case, audiology tests showed a left sided sensorineural hearing loss.

Results: The patient was treated conservatively during each admission with bed rest. No medications were given and no invasive procedures were performed. Each time her level of perceptual hearing returned to normal.

Conclusion: In a consultation with Great Ormond Street Hospital, it was deemed unclear if a Chiari type I malformation is associated with fluctuating hearing loss. This is due to the fact that Chiari type I malformations are being increasingly reported as accidental findings in radiological images of asymptomatic patients. However, reports of associations between these two findings are present in literature. Neurosurgical decompression has been performed, but this should be reserved only for patient with progressive severe physical signs. Conservative management, as also seen with our patient, should be generally advocated.

A literature review of the oculodentodigital syndrome
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Introduction: The oculodentodigital syndrome, also referred to as oculodentodigital dysplasia (ODDD), is a rare autosomal dominant disorder that is caused by a mutation in the gap junction alpha-1 (GJA1) gene for connexin 43. ODDD has a high penetrance and it is variably expressed. Characteristic phenotypic abnormalities are seen in the, eyes, teeth, and digits, as suggested by the syndrome name.

Aim: To review reported cases of the ODDD in literature in order to summarise the respective genotypes and clinical phenotypes.

Method: The University of Malta library catalogue was used in order to carry out an extensive literature search on ODDD. These searches were available through EBSCOhost, Elsevier, PubMed Central, Highwire Press Free and ProQuest. All cases and their features were described.

Results: Several cases are reported. Each of the patients described presented with a different GJA1 mutation, affecting a different domain of the connexin 43 protein. The main ocular features are microphthalmia, glaucoma, and epicanthic folds. Dental features include hypoplastic teeth and dental malposition. The more frequent digital features included type III syndactyly and clinodactyly. Other craniofacial dysmorphologies include long thin nose, hypoplastic alas nasi and hair growth abnormalities. ODDD due to homozygous recessive mutations is reported to include decelerated cranial growth and neurological deficit. These may include dysarthria, ataxia and mental retardation. Compound heterozygotes are reported with severe phenotypes.

Conclusions: It is noted that there is variability in the clinical presentation of each reported case. Intrat familial variability in the expressed phenotype is also noted. Furthermore, to date there has not been any suggestion on the correlation between the different genotypes and the clinical phenotype of the ODDD syndrome.
Brown-Vialletto-Van Leare syndrome: a variable and potentially treatable motor neuron disorder of childhood
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Introduction: Brown-Vialletto-Van Leare syndrome (BVVL) is a rare neurological disorder of unknown etiology, with a variable age of onset and clinical course. It is characterized by key features of progressive pontobulbar palsy associated with sensorineural deafness. Its complex neurological phenotype with a mixed upper and lower motor neuron presentation can extend through infancy with early onset of generalized hypotonia, neurodegeneration, respiratory insufficiency and early death to a later onset with deafness and progressive ponto-bulbar palsy reminiscent of amyotrophic lateral sclerosis.

Case report: Here we present the first reported case of a Maltese boy with this condition presenting at 6 years of age with acute respiratory failure complicating an upper respiratory tract infection associated with lower limb weakness and early onset sensorineural deafness. Neuropathological studies and muscle biopsy confirmed an anterior horn cell disorder while muscle enzyme studies showed abnormal FAD and FMN levels. Family history showed that two maternal uncles died at a young age, one at 6 years following bronchitis and a history of dysphagia and an elder brother at 26 year of age following a short, sudden illness and a history of sensorineural deafness.

Discussion: The underlying pathophysiology/genetic aetiology of this condition remains unknown but case reports of defects in riboflavin transportor offers a potential therapeutic option for this rare progressive motor neuron disorder of childhood. Further genetic studies and long term follow up studies are ongoing.

Acyclovir-induced non-oliguric acute kidney injury in a child presenting with seizures
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Crystal-induced acute kidney injury (AKI) is caused by the intratubular precipitation of crystals which results in obstruction and foci of interstitial inflammation. Risk factors include intravascular volume depletion. Therapy is supportive and includes volume repletion and the use of a loop diuretic. We report an 11 year old boy presenting with suspected acute encephalitis who was treated with intravenous acyclovir, ceftriaxone and clarithromycin and was fluid restricted and includes volume repletion and the use of a loop diuretic. We report an 11 year old boy presenting with suspected acute encephalitis who was treated with intravenous acyclovir, ceftriaxone and clarithromycin and was fluid restricted and who developed AKI within 40h of starting acyclovir. His renal function normalised within 6 days with fluids and a loop diuretic. An 11 year old boy presented with sudden-onset of headache and generalised tonic-clonic movements. He had a URTI 3 days previously and was prescribed miocamycin, ceftriaxone and clarithromycin and was fluid restricted and who developed AKI within 40h of starting acyclovir. His renal function normalised within 6 days with fluids and a loop diuretic. An 11 year old boy presented with sudden-onset of headache and generalised tonic-clonic movements. He had a URTI 3 days previously and was prescribed miocamycin orally. His Glasgow Coma Score was 6 but he was afebrile with a normal cardiovascular examination, systolic blood pressure (SBP) of 120mmHg, 4mm pupils which reacted sluggishly to light and uncoordinated movements of all 4 limbs. Tendon reflexes were normal. Capillary blood glucose was 7.4mmol/l, biochemistry including uric acid was normal, creatinine was 55umol/l. Blood ethanol, paracetamol and salicylate levels were normal. An urgent CT scan of the brain was normal. He was admitted to the intensive care unit with a diagnosis of acute encephalitis. He was ventilated on minimal pressure support for the next 12 hours and discharged to the ward. Intravenous acyclovir 10mg/kg 8h, ceftriaxone 2g daily and clarithromycin 500mg 12h were started on admission and fluids were restricted to 50% maintenance. Within 40h creatinine was 36umol/l with a urine output of 1.1ml/kg/d. A renal ultrasound, liver function, C3, C4 and urine myoglobin were normal, ASOT was marginally raised. Mycoplasma IgM was negative. A lumbar puncture was not performed. Urinalysis revealed 5-10 red blood cells/HFP and mild proteinuria but no crystals. His fluid intake was increased to maintenance plus 5% of body weight. He became hypertensive with a SBP of 140mmHg and was managed with intravenous frusemide and oral nifedipine. His creatinine peaked at 522umol/l at 67h before creeping down slowly over the next 6 days. His BP settled and he was discharged on day 7 with a creatinine of 60umol/l and off all treatment. He remains well with normal BP and creatinine. Although acyclovir crystal deposition in the tubules is generally reversible, dialysis may rarely be required and children may develop chronic kidney disease. We highlight the importance of adequate hydration with the use of acyclovir and close monitoring of kidney function.

A neonate with an activating mutation in the calcium-sensing receptor
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Introduction: Autosomal Dominant Hypocalcaemia (ADH) accounts for one third of patients with congenital idiopathic hypoparathyroidism. It is caused by an activating mutation of the calcium-sensing receptor (CaSR) gene (3q21.1) which encodes the calcium-sensing receptor. Such gain-of-function mutations result in increased sensitivity of parathyroid and renal cells to calcium levels, hence hypocalcaemia is mistakenly perceived as normal. Parathyroid Hormone (PTH) secretion is reduced resulting in calciresis despite hypocalcaemia. Renal tubular cells, excessively inhibited from absorbing calcium by the overactive CaSR, sustain hypercalciuria independently of PTH. The hypercalciuria worsens hypocalcaemia and increases the risk of nephrocalcinosis, renal stones and renal impairment.

Aim: To our knowledge, this is the first reported patient with ADH in Malta.

Methodology: 22-day-old female presenting with seizures.

Results: The patient had profound hypocalcaemia of 1.41mmol/l, hyperphosphataemia of 4.0mmol/l and low serum PTH. Serial urine calcium-creatinine ratios were always elevated. Molecular genetic analysis confirmed the diagnosis of ADH because a missense variant, c.662G>A (p.Glu221Lys) on exon 4 of the CaSR gene was found. This mutation was not detected in her parents and neither had any calcium / phosphate abnormalities on formal biochemical testing.

Conclusion: The missense variant identified in our patient has previously been reported in the literature in a male infant who presented with seizures at 10 weeks of age. It is one of the 95 activating mutations of the CaSR gene identified to date. In most patients with ADH, a family history is clear, but de novo mutations are also known to happen. In our patient and the other patient reported in the literature with the same missense mutation, the variant is likely to have arisen de novo. Since diagnosis, our patient was admitted three times in the first year of life with hypocalcaemic seizures. We discuss the management of this rare condition.

An unusual case of Parinaud Syndrome
M. Mallia, C. Chicrop, J. Aquilina

We would like to report a case of Parinaud Syndrome as a presenting feature of Miller Fisher syndrome. To our knowledge, this is the first documented such report in literature. A 25 year old male presented with blurred vision, headache and dizziness. On questioning, there was also a history of a preceding diarrhoeal illness. Initial investigations...
were normal. However, after a week, he represented with a Parinaud Syndrome. In view of the preceding diarrhoea, the transient unsteadiness and the areflexia on examination, anti-GQ1b antibodies were requested. The resulting titre was positive confirming the suspected diagnosis of Miller Fisher Syndrome. He responded to intravenous immunoglobulins with full resolution of his symptoms and signs. Although various unusual neuro-ophtalmological signs have been reported localising to the brainstem, to our knowledge this is the first case report of Parinaud Syndrome being the presenting symptom of Miller Fisher Syndrome. We propose that after exclusion of structural lesions in the dorsal midbrain, Miller Fisher syndrome should be considered in the differential diagnosis of the causes of Parinaud Syndrome. We further hypothesise that ganglioside GQ1b , or a similar molecule is present in the tectal region of the midbrain, and can be a target of the antibodies in Miller Fisher syndrome.

CR54
Does atorvastatin cause vasculitis?
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We are presenting a 69 year old male admitted with a 4 days history of non-palpable purpura centrifugally distributed in a linear and circular fashion. Two days later, the rash became palpable and although the patient had a normal hemoglobin and thrombocyte count, he developed a low-grade fever of 37.6°C with mild neutrophilic leucocytosis and elevated inflammatory markers. Since the patient had a prothetic aortic valve and was on warfarin, infective endocarditis was suspected but failed to be proven because of negative trans-thoracic and trans-esophageal echocardiography; and a negative 3 sets of blood cultures. Warfarin was stopped and replaced by enoxaparin; however, new skin lesions were still developing. Thus, the patient was screened for autoimmunity and a possibility of viral atiolog, and was started on corticosteroid as a symptomatic treatment and a therapeutic trial. Also, two skin biopsies were taken. The patient was found to have a normal C3 and C4 complement levels and negative serology for hepatitis B and C, cyroglobulins, rheumatoid factor and anti-ccp. However, interestingly, the skin biopsies showed changes consistent with leucocytoclastic vasculitis; and the patient was found to be positive for ANCA with p-ANCA pattern and was also positive for ANA. Based on the clinical and the laboratory evidence, the diagnosis of drug-induced vasculitis was entertained, and a review of the patient treatment showed that the patient was using atorvastatin for 5 years. Therefore, the diagnosis of atorvastatin-induced ANCA-associated small vessel vasculitis was suspected, and so, atorvastatin was stopped with tapering off steroid. Three months follow up with the patient being off steroid and atorvastatin showed no evidence of new skin lesion and the patient was symptom free.

CR55
A unique case of drug induced psoriasis
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Psoriasis is known to be exacerbated or induced by medication. We present a unique case of drug induced-psoriasis in an 85 year old lady referred for rehabilitation, whose diabetes was poorly controlled by metformin. In view of her poorly controlled diabetes and elevated glycosylated haemoglobin, she was started on gliclazide. The appearance of a psoriasiform rash and the absence of a personal and family history of psoriasis prompted the suspicion of a drug-induced rash. The nature of the rash was confirmed by a skin biopsy. To our knowledge, this is the first reported case in the literature of a psoriasiform rash induced by gliclazide.

CR56
Donepezil and reduced libido? A case report
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This is a case report of Ms GS, a 78-year old lady who was referred to old-age psychiatry services by her GP following concerns regarding the gradual deterioration of her memory over a 3 year period. This, was noted to have deteriorated significantly over the previous 6 months, and triggered this referral. Her medical history includes osteoporosis, hypercholesterolaemia and irritable bowel syndrome, for which she is treated with alendronic acid, colecalciferol and calcium supplements, and simvastatin. Ms GS was seen at memory clinic and underwent a full mental and physical examination, as well as dementia screening tests, and a full psychological assessment. A diagnosis of Alzheimer’s dementia was made and the patient was started on 5mg donepezil hydrochloride. Ms GS was reviewed in our outpatient clinic a month later and since no adverse effects were reported, the dosage was increased to 10mg daily. At her next visit, Ms GS and her husband stated that they had noted that Ms GS had decreased libido. They noted this problem about 3 weeks after the dosage of donepezil hydrochloride was increased to 10 mg daily. After excluding any other possible causes for the decreased libido, that is any ‘new’ physical problems (a thorough examination and full blood tests were repeated), and any deterioration in her mental state (including mood), it was concluded that the only change was the increase in her medication. Hence, it was the most probable factor precipitating the change in libido. We discussed with the couple the possibility of switching to another anticholinesterase inhibitor that could possibly have less side effect on sexual function, and also of stopping or decreasing the donepezil hydrochloride altogether. However, on balance, and after a thorough discussion, the patient and her husband opted to remain on donepezil hydrochloride 10 mg daily as they felt that the benefits that Ms GS was experiencing with donepezil hydrochloride outweighed this side effect. This case report provides an interesting discussion on this adverse effect, which has been infrequently reported.

CR57
Urinoma associated with a ureter herniating into an inguinal hernia
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Introduction: A urinoma is an encapsulated extravasation of urine, which is commonly associated with trauma and ureteral calculi. In children it can be associated with posterior urethral valves.
Case report: We present the unusual case of a ureter herniating into an inguinal hernia subsequently resulting in a urinoma.
Results: An 87 year old Caucasian male was admitted to hospital with clinical features of sepsis. He was in acute renal failure and on clinical examination was noted to have a large scrotal swelling, which appeared cellulitic in nature. In the previous week he had been diagnosed with a E.coli urinary tract infection (UTI), which was treated with penicillin. The working diagnosis on admission was that of an acute kidney injury caused by a combination of a partially treated UTI, cellulitis and post renal obstruction. His renal failure completely resolved following urinary catheterisation, forty-eight hours of intravenous fluids and broad-spectrum antibiotics. A scrotal ultrasound, confirmed gross scrotal oedema and an unobstructed left inguinal hernia. Despite a complete resolution of the scrotal cellulitis and renal
impairment, the patients clinical picture deteriorated with increasing confusion associated with an acute abdomen. A CT of the abdomen and pelvis showed a large left retroperitoneal fluid collection that was displacing the left kidney anteriorly. There was no associated hydronephrosis, however there was dilatation of the left ureter tracking down into the left inguinal hernia along with the fluid collection. The fluid attenuation was slightly greater than that in the bladder suggesting the collection was proteinaceous. Under US guidance, locking pigtail drain was uneventfully inserted into the left retroperitoneal space with good drainage. Frank pus flowed from the drain, however specimens sent for microbiology were negative. An intravenous urogram confirmed a leak from the left ureter with no signs of obstruction. A further CT scan, five days after drain insertion, showed minimal residual urinoma in the left distal retroperitoneum and scrotum. No hydronephrosis was evident but there was continued leaking of contrasted urine in the posterior retroperitoneum. The findings confirmed a left retroperitoneal urinoma. 

**Conclusion:** Urinomas most often associated with ureteric obstruction from calculi causing transmitted back pressure. Urinomas in children are also uncommon, though usually secondary to obstructive uropathy, particularly posterior urethral valves. Our case report is unique in that the urinoma is the result of entrapment of a ureter within a sliding inguinal hernia, which is itself a rare occurrence.

**CR58**

**An unusual cause of foot drop**

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**Introduction:** We present the case of a meniscal cyst presenting with foot drop.

**Aims:** An unusual cause of peroneal nerve palsy

**Results:** A 55 year old Caucasian female, with no past medical history, presented to her local emergency department complaining of severe sharp pains along the lateral aspect of her left leg associated with weakness and numbness of the leg and foot. There was no history of trauma. The pain failed to respond to high dose non-steroidal anti-inflammatory drugs. Clinical examination revealed neurological signs in keeping with common peroneal nerve involvement and a slight swelling overlying the head of the fibula. Plain X-ray of the knee and leg excluded any bone pathology and all blood tests were normal. Ultrasound of the knee suggested the presence of a cystic lesion of unclear origin. Magnetic resonance imaging with gadolinium enhancement confirmed a ganglion cyst arising from the lateral meniscus and extending into the peroneal musculature with surrounding oedema, resulting in compression of the common peroneal nerve.

**Conclusion:** Literature search confirmed that this is a rare condition, with most reported cases being associated with meniscal tears. This was not the case in our patient, where the lateral meniscus was intact. Furthermore, the acute nature of this presentation is highly unusual and not reported in the medical literature.

**CR59**

**Delayed tracheostomy for iatrogenic post-intubation tracheal rupture: a case report**

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**Introduction:** Discussion regarding anaesthetic complications is an important part of the informed consent process for surgery. With regards to intubation, the possible hazards should be highlighted specifically, especially if intubation is expected to be difficult. The patient must be made aware that maintenance of an airway is crucial and extreme measures may be necessary if ventilation fails. Tracheal perforation may manifest intra-operatively, during recovery, or post-operatively.

**Aim:** This report outlines a case of tracheal perforation secondary to elective intubation and successfully managed with tracheostomy tube placement.

**Methodology:** Information pertaining to this case was obtained by reviewing the patient’s clinical records and by interviewing the patient after removal of the tracheostomy tube.

**Results:** In this case tracheal perforation manifested primarily with major subcutaneous emphysema and was initially managed conservatively. With failure of conservative management, delayed cuffed tracheostomy tube placement led to the successful resolution of symptoms and evidence of tracheal healing on computerised tomography imaging within 2 weeks of tube insertion.

**Conclusion:** Tracheal rupture secondary to endotracheal intubation is a rare anaesthetic complication which carries a significant mortality. Management should be individualised, with conservative measures being preferred over surgical intervention. Healing may be enhanced by decreasing airway pressure at the level of the injury. This can be achieved by intubating the trachea across the rupture and inflating the cuff distal to it. This provides a suitable conservative management strategy. Conventional endotracheal intubation may be employed, however a tracheostomy tube offers a valid alternative and may avoid the need for formal surgical repair.
CR61
Perforated peptic ulceration in a young girl - a case report and review of the literature
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Case: A 15 year old girl presented as an emergency with a 4 day history of increasing abdominal pain, which was initially generalised and then localised to the right iliac fossa, with radiation to the tip of the right shoulder. Her pain was associated with nausea and vomiting. She was sexually active, had been fitted with a Levonorgestrel implant for the preceding 1 year, and was amenorrhoeic at presentation. She denied having any bleeding or discharge per vaginam. Apart from inhaled bronchodilators, the patient had not been on any regular medications. Prior to her hospital admission she was initially treated by her GP, who prescribed Trimethoprim for a presumed urinary tract infection. Examination confirmed the presence of tenderness in the right iliac fossa, with localised rebound and guarding. Bowel sounds were normal. The blood picture showed a neutrophilia. She was diagnosed as presumed acute appendicitis, a pregnancy having been ruled out. She was taken to theatre for a laparoscopic appendicectomy. At laparoscopy, the appendix and gynaecological organs appeared normal, but bile was seen in the right paracolic gutter and pelvis. The source was noted to be a perforated duodenal ulcer. An open duodenal ulcer repair and peritoneal lavage was carried out. The patient was commenced on a proton-pump inhibitor and made an uneventful recovery from surgery. This patient tested positive for Helicobacter pylori, and was treated with eradication therapy. Serum gastrin levels were normal.

Discussion: A perforated peptic ulcer in a child is a rare entity, with only a few cases being reported in the medical literature. Clinical diagnosis may be difficult in this age group.

CR62
A rare cause of intractable gastrointestinal haemorrhage
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Introduction: Acute upper gastrointestinal bleeding is common following heart valve surgery, particularly in patients on oral anticoagulants. The commonest causes include gastric erosions, peptic ulcer disease and oesophageal varices, all of which can be readily identified at upper gastrointestinal (GI) endoscopy. The cause remains obscure in 5%; in these patients, the pathology is commonly vascular in origin, such as Dieulafoy’s lesion.

Case report: We present the case of a 74-year-old gentleman on warfarin after mechanical aortic valve replacement in 2004, who presented with melaena in 2007. Upper GI endoscopy showed gastritis with H. pylori and this was treated with triple therapy. He re-bled two months later and triple therapy was repeated as repeat biopsies showed persistence of H. pylori. Follow-up with H. pylori PCR assay was then negative. The patient had several other episodes of bleeding, which had multiple GI endoscopies. He was also investigated with wireless capsule jejunoscopy, selective angiography and colonoscopy. In 2010, he was found to have a Dieulafoy’s lesion in the duodenum. Several attempts at sclerotherapy proved futile, as was percutaneous embolization of the gastroduodenal artery and laparotomy, duodenotomy and oversuturing of the lesion. He has had several admissions with melaena and anaemia, and transfused 77 units of packed red blood cells over this five-year period. The last upper GI endoscopy with sclerotherapy was performed in June 2012 and he has not rebled since.

Discussion: 1% of cases of upper GI bleeding are attributed to Dieulafoy’s lesion which is a historically normal vessel with an abnormally large diameter that maintains a constant width. It is most commonly found in the stomach but has been identified in other parts of the gastrointestinal tract, even outside it. Erosion or ischaemia of the gastrointestinal mucosa overlying a previously asymptomatic lesion causes it to undergo rupture with subsequent haemorrhage. Presentation is usually with melaena and/or haematemesis. While gastrointestinal endoscopy is the standard initial investigation, the first attempt will reveal the lesion in only 70% of patients and multiple endoscopies may thus be required. Alternative investigations that may aid with the diagnosis include wireless capsule endoscopy, red cell scanning techniques and angiography. Treatment modalities include endoscopic sclerotherapy and open abdominal surgery. The use of minimally invasive surgery also looks promising. Despite being an uncommon cause of bleeding, Dieulafoy’s lesion is potentially life-threatening. It therefore must be included in the differential diagnosis in any patient who presents with acute gastrointestinal haemorrhage.

CR63
The laparoscopic technique should be the first line approach in patients on continuous ambulatory peritoneal dialysis (CAPD) requiring abdominal surgery
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Abdominal surgery is a significant cause of CAPD failure due to formation of adhesions. A 61 year-old male on CAPD for 4 years was referred with iron deficiency anaemia. Coloscopy showed a caecal cancer and he underwent laparoscopic right hemicolectomy to remove the Duke’s A tumour. The CAPD catheter was left in situ. Temporary haemodialysis was started in the postoperative period. The CAPD catheter was flushed daily and the effluent was sent for culture which was negative. Oral intake was commenced on the 3rd postoperative day and the patient was discharged on the 5th postoperative day. CAPD was recommenced 2 weeks postoperatively and remains successful 2 years post surgery. The advantages of laparoscopic surgery in general are well known: less invasiveness, less postoperative pain and less postoperative adhesions. Laparoscopy also allows early resumption of CAPD after surgery hence minimizing the need for haemodialysis. Early resumption of CAPD has been associated with poor wound healing, leakage of dialysate through the wound and wound infection. CAPD failure due to adhesions has been reported to be as high as 33%. In order to minimise these risks, the laparoscopic route is often used for cholecystectomy and appendicectomy in CAPD patients. However, a medline search revealed no report of laparoscopic colectomy in such patients. In the case presented, the laparoscopic approach allowed for early successful resumption of CAPD which remains the preferred choice in this patient. This case also illustrates the fact that it is safe to leave the CAPD catheter in situ even though the surgery undertaken was potentially a contaminated procedure. This is due to the fact that with the laparoscopic technique there is virtually no contamination of the peritoneal cavity and the negative culture of the dialysate in the postoperative period confirms this. In conclusion, this case provides further evidence to support a policy of using laparoscopic techniques as first line treatment in all CAPD patients undergoing abdominal surgery thus reducing the risk of CAPD failure and at the same time benefiting from the well documented advantages of laparoscopic surgery.
CR64
Laparoscopic sutured repair of giant hialtal hernia in the elderly - a tailored approach
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Aim: Paraoesophageal hernia surgery was revolutionised with the advent of laparoscopy. Laparoscopic surgery has reduced the surgical insult and as a result this operation is now being offered to elderly and co-morbid patients who were traditionally deemed unfit for major surgery. Our aim is to describe a laparoscopic approach making use of techniques tailored to the patient’s anatomy.

Methodology: This is an audiovisual presentation of our approach to the repair of large hialtal defects in 4 elderly patients with a mean age of 76 years (70-82), 3 males:1 female. Their symptomatology was significantly affecting their lifestyle. The diagnostic work-up includes endoscopy, oesophageal physiology and computerised tomography. The approach is supine, split-leg with reverse Trendelenburg employing the conventional 5 ports technique for anti-reflux surgery, including a port for left lobe liver retraction. The stomach is reduced prior to dissection of the sac itself. Our technique is meticulous with complete sac excision requiring extensive mediastinal dissection. The sac is excised and the oesophagus mobilised ensuring that the gastro-oesophageal junction is lying comfortably within the abdomen. Anterior and posterior crural repair is performed with non-absorbable sutures using PTFE pledgets to avoid muscle tearing. Prosthetic mesh is not employed in our practice. An anterior fundoplication is fashioned as this helps to anchor the proximal stomach intra-abdominally. A modified Tanner gastropexy may be fashioned for added anchorage. One patient had synchronous cholecystectomy. Oral fluids are started immediately post-operatively and a soft diet is started after 24 hours and encouraged for 6 weeks.

Results: In this small group of patients the post-operative recovery was uneventful with all patients being discharged on the 4th post-operative day. At follow-up (4-16 months) symptom resolution persists.

Conclusion: Laparoscopic repair for para-oesophageal hernia employing. A re-inforced sutured repair and partial fundoplication is safe and effective in elderly symptomatic patients.

CR65
Laparoscopic splenectomy for lymphoma - the supine antero-posterior artery-first approach in splenomegaly
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Aim: Laparoscopic splenectomy is the standard of care for normal sized spleens where removal is indicated. This is usually performed though a lateral “nephrectomy” approach. In splenomegaly the laparoscopic approach is controversial especially in malignant disease where organ rupture has obvious deleterious effects. We describe a safe and oncologically sound minimally invasive technique.

Materials: This is an audio-visual presentation of an artery-first laparoscopic technique for splenomegaly caused by splenic marginal zone B-cell lymphoma (MZL) in a frail 68-years old female patient. MZL is usually indolent, often associated with bone marrow involvement and extra-medullary haemopoiesis. Our patient developed progressive disease and pancystopenia refractory to Rituximab. She required long-term prophylactic anti-microbials and regular and frequent top-up transfusions. In addition, she was found to be mildly hypofibrinogenaemic. She also had coincidental severe symptomatic cholelithiasis. The patient was consented for combined splenectomy and cholecystectomy in the knowledge that the latter procedure would not be straightforward in view of hepatomegaly.

Methods: The patient was placed in a supine, split-leg position with reverse Trendelenburg. Infra-umbilical access was used to avoid injury to the palpable spleen (long axis) spleen and facilitate both splenic and gall bladder operations. After an uneventful cholecystectomy slight left side up tilt was employed and the colo-splenic ligament was divided. The lesser sac was entered by division of the gastro-splenic omentum allowing gravity to keep the spleen in position and gaining good exposure of the anterior aspect of the pancreas and splenic hilum. Dissection was started in the hilum and the splenic artery was skeletonised and divided with a vascular stapler. The stomach was completely freed by division of all short gastric vessels allowing the spleen to “drain” through the splenic vein. The vein was then skeletonised and divided with the vascular stapler. The phrenology-splenic was then divided and the remaining lienorenal attachments were “slooped” and divided sequentially taking care to avoid injury to the pancreatic tail. The spleen was gently manoeuvred through a hand-port in the left iliac fossa and delivered in toto.

Results: The patient was discharged on the 5th post-operative day. At 4 months’ follow-up, her haematological parameters remain normal.

Conclusion: This supine antero-posterior laparoscopic technique is safe and effective for splenectomy in splenomegaly.

CR66
Coronary artery fistulae: 4 cases repaired surgically and a literature review comparing treatment modalities
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Coronary artery fistulae, although rare, form the commonest congenital cardiac anomaly. They involve a communication between a coronary artery and a heart chamber or part of the pulmonary circulation. Most are asymptomatic and discovered incidentally. Larger ones may cause coronary steel syndrome. This occurs as blood is shunted from the coronary artery to the ventricle or pulmonary circulation, bypassing the myocardium. This may cause symptoms of angina, arrhythmias or high-output heart failure. They produce continuous murmurs and are diagnosed at echocardiography or angiography. Treatment is transarterial coil embolisation or open surgery. We review four cases operated locally. All were diagnosed incidentally at angiography.

Case 1: (49 year old male) had a fistula from the right coronary to the pulmonary artery and a fistula from the left main artery dividing into two entry points into the pulmonary artery.

Case 2: (61 year old female) had a large fistula between right coronary artery and the right ventricle. Also had mitral valve stenosis.

Case 3: (70 year old male) had two fistulae from the right coronary artery one into the right ventricle and another into the pulmonary artery. Also needed CABG.

Case 4: (54 year old male) had left main stem to pulmonary artery fistula. Also needed coronary artery bypass grafting. All four cases underwent oversuturing of the fistulae. The literature review aimed to answer two questions: 1. Is there a preferred treatment option between open surgery or percutaneous transarterial embolisation? 2. What different open surgical techniques are described in relation to the type of fistulae? In cases where the fistulae have multiple connections, circulatory patterns, acute angulations or aeurismal dilatation of the feeding artery the best treatment is open surgery. Those requiring surgery for other pathology should have their fistula repaired at that procedure. Percutaneous coil embolisation may leave a blind ending proximal portion of fistula patent causing consequent dilatation, the consequences of which are unknown. Both modalities are successful, although no randomised control
trials exist. Surgery yields lower recurrence rates. The different surgical techniques include oversuturing the fistula throughout its length, closing the fistula at its distal end, or closing the fistula via its receiving chamber. The latter two techniques require cardiopulmonary bypass. There is no difference in outcome according to type of surgical repair.

**CR67**

**Endovascular treatment of splenic artery pseudo aneurysm post pancreatitis**

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**Introduction:** Splenic artery pseudo aneurysm is a recognised complication of acute pancreatitis and may lead to peripancreatic bleeding which is one of the most life threatening complications of acute pancreatitis. Historically splenic artery pseudo aneurysms have been repaired surgically with considerable co-morbidity and mortality associated with such treatment.

**Case report:** We report a case of a large (5.3 cm) splenic artery pseudo aneurysm that developed in a 68 year old gentleman who had been hospitalised with severe gall stone pancreatitis. The pseudo aneurysm was identified on a CT scan performed as part of his investigations for acute pancreatitis. The patient complained of upper abdominal discomfort after having undergone laparoscopic cholecystectomy. The pseudo aneurysm was treated with coil embolisation of the aneurysm sac after percutaneous access was gained through the right common femoral artery. A check CT angiogram was performed 6 weeks after coil embolisation. This showed that the bulk of the pseudoaneurysm had thrombosed off but that there was still flow in a small section of the pseudoaneurysm. Further coils were inserted into the aneurysm sac and into the splenic artery until flow in the sac ceased. A further check CT angiogram 1 year later showed that the pseudoaneurysm had not recurred. Furthermore the bulk of the spleen was preserved. The patient is completely asymptomatic and suffered no complications as a result of the endovascular interventions.

**Conclusion:** Endovascular treatment of post pancreatitis splenic artery pseudo aneurysm is a safe and effective way of treating this serious complication. Post intervention confirmation of complete thrombosis of the pseudoaneurysm is required to avoid the potentially fatal complications of rupture and bleeding.

**CR68**

**Successful treatment of extensive lower limb ulceration caused by an iatrogenic arteriovenous fistula and peripheral arterial disease**

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We report the case of a gentleman with extensive arteriovenous ulceration of the right leg and foot secondary to a large iatrogenic arteriovenous groin fistula, identified 3 years after percutaneous coronary intervention and causing severe steal. In addition the patient had arterial occlusive disease at the level of the popliteal artery. The combination resulted in massive arteriovenous ulceration as a result of steal and occlusive disease in addition to severe venous hypertension secondary to the fistula. The ulceration had been present for several months. He underwent surgical repair of the arteriovenous fistula as well as popliteal to peroneal artery bypass grafting using ipsilateral reversed long saphenous vein. The ulcer showed steady improvement and within 4 months had practically healed. This case highlights the potentially serious long-term complications of percutaneous intervention and the importance of early recognition and treatment of iatrogenic arteriovenous fistula.

**CR69**

**Case report: angioplasty induced infrainguinal vein bypass graft pseudoaneurysm**

*J. Parnis, K. Cassar*

Pseudoaneurysm formation in infrainguinal vein bypass grafts is rare. We describe the case of a 62 year old who developed a large pseudoaneurysm in a femoro-to-below knee political bypass graft after angioplasty of a mid-graft stenosis. The pseudoaneurysm developed rapidly and was only identified on duplex scanning with no symptoms or changes on physiological testing. This was treated with excision of the pseudoaneurysm and interposition grafting using reversed contralateral long saphenous vein. This case indicates that although pseudoaneurysm formation is rare, duplex scanning of vein bypass grafts particularly after angioplasty may be the only way of identifying this complication.

**CR70**

**Pulmonary mucinous cystadenocarcinoma: two local case reports and a literature review**

*D. Sladden, J. Galea*

**Introduction:** Primary pulmonary mucinous cystic carcinomas are rare but highly malignant tumours. They form part of a wide spectrum of mucin secreting glandular mixed type tumours including mucinous cysts, mucopoeidermoid carcinoma’s, multilocular cystic carcinoma, pseudomyxomatous pulmonary adenocarcinoma and colloid carcinoma. Using strict diagnostic criteria pulmonary mucinous cystic neoplasia is recognised as a distinct entity. They are salivary gland type carcinomas located within the lung tissue accounting for 0.1 – 0.2% of all lung tumours. They present in young patients with cough or distal infections and therefore may be easily underinvestigated. Since treatment depends fully on complete surgical resection early diagnosis is essential. Even with treatment the 10 year survival is quoted at 53%.

**Case 1:** 34 year old male presented with recurrent left lower lobe pneumonias. CT Thorax showed narrowed left lower lobe bronchus probably due to carcinoma. Bronchoscopy showed the lesion obstructing the lumen but biopsies were negative. Left pneumonecotomy performed and the tumour was shown to be a mucinous cystic adenocarcinoma. Resection margins were involved by malignant cells. This patient received chemotherapy and radiotherapy post-operatively. Five and a half years later he is continuing this treatment due to multiple bone metastasis.

**Case 2:** 24 year old male presented with recurrent right lower lobe pneumonias. CT Thorax showed a soft tissue tumour at the origin of the Right lower lobe bronchus obstructing the Right lower lobe bronchus. This was confirmed at bronchoscopy. Biopsies showed squamous metaplasia but no malignancy. Right lower lobectomy was performed. Histology showed low grade mucoeidermoid carcinoma of the lung. Complete resection was achieved yet post-operative adjuvant treatment was still given. Bronchoscopy was carried out at 7 years after diagnosis in 2012 and was normal. The patient is still recurrence and metastasis free.

**Literature review:** Besides the two cases described above 193 cases were found documented in the literature with a wide variety of patient demographics. These variations were analysed closely and any trends highlighted. Clinical
presentation seems consistent in all case reports as patients often present with recurrent chest infections, the other significant proportion are discovered on routine chest x-ray. Radiological variations existed and in most cases biopsies from bronchoscopy were negative. This shows the need for a high index of suspicion for the malignant condition and one should proceed to thoracotomy even without prior tissue diagnosis. Complete surgical excision was the consistent factor among all the cases with favourable outcomes including our local cases.

CR71
Tracheal rupture after adult endotracheal intubation: a case report with analysis of aetiological and management issues
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Introduction: Tracheal rupture is a rare but potentially life threatening complication of endotracheal intubation. The usual site in adults is the membranous portion of the trachea. The mechanism of injury is still unclear. Patient risk factors include age, short stature, obesity, chronic steroid use and chronic illness. Anaesthetic risk factors include tube size, stylet use and balloon inflation volume. There is also no clear consensus on the management of such a complication. The past literature favoured direct surgical repair which carries a relatively high morbidity and mortality. Recently, conservative management is gaining support.

Aim: A case report of a 68 year old woman with a tracheal rupture after ophthalmic surgery under general anaesthesia is being presented. Conservative management was used together with a tracheostomy. Our experience with this patient was compared to a literature review.

Methodology: A preformed endotracheal tube, size 7.5mm, was used to secure the airway for cataract surgery. On extubation, subcutaneous emphysema of the face and neck was noted. No pneumothorax was identified on chest radiographs. High resolution computed tomography of the neck and thorax confirmed extensive pneumomediastinum and a 5cm tracheal rupture starting 1cm above the carina. Patient risk factors identified included short stature, obesity, asthma and chronic steroid inhaler use. Conservative management included intravenous piperacillin and tazobactam but the emphysema was noted to be deteriorating due to chronic cough. The patient was deemed not ideal for open thoracic surgery repair and an open tracheostomy was done to decompress the airway pressures produced by coughing and vocalisation. Flexible tracheoscopy confirmed the location and size of the perforation.

Results: Subcutaneous emphysema resolved rapidly after the tracheostomy was performed. The patient was discharged home without need for major surgery.

Conclusion: Prevention of such injuries should be advocated by identifying high risk patients and using smaller size endotracheal tubes and lower cuff pressures, or even avoiding unnecessary intubation. High resolution computed tomography of the neck and thorax is as effective as flexible tracheoscopy to detect gross tracheobronchial perforations. Conservative management should be taken into consideration as first line treatment of such iatrogenic tracheal perforations irrespective of the size of the perforation provided that the patient is haemodynamically stable and the complication is recognized early. A tracheostomy is a useful, much less invasive adjunct to conservative measures that can be used irrespective of the site of the perforation in relation to the carina.

CR72
An unusual cause of headaches and hearing loss - rhabdomyosarcoma
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Rhabdomyosarcoma affects about five in every one million children per year. It can arise from any site of the body, and presentation will depend on site involved. A 14 year old girl presented with a few month history of headaches, unilateral conductive hearing loss and recent onset diplopia. She was found to have a parameningeal rhabdomyosarcoma. The child also had a family history of breast cancer and Ewing’s sarcoma, suggestive of Li-Fraumeni syndrome. A discussion of the pathophysiology, presentation, diagnosis, staging and treatment of this tumour will be presented.

CR73
A chronic red eye: conjunctival mucosa associated lymphoid tissue lymphoma and systemic lymphoma
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Introduction: We describe a case of a 68 year old lady who presented with salmon coloured follicular conjunctival folds involving bilateral nasal bulbar conjunctiva, caruncles and superior and inferior fornices. A conjunctival biopsy was carried out and the histology confirmed low grade extranodal marginal zone B cell lymphoma of mucosa associated lymphoid tissue (MALT). A bone marrow aspirate also showed nodular and interstitial infiltrates of CD5, CD20 and bcl-2 positive small to medium sized lymphocytes. The diagnosis was consistent with low grade lymphoma involving the bone marrow.

Management: A computed tomography (CT) scan showed enlarged lymph nodes in pre-tracheal and para-tracheal region, along upper para-aortic region and lesser gastric curvature. It also showed moderate splenomegaly. The patient received six cycles of chemotherapy consisting of rituximab, cyclophosphamide, vincristine and prednisolone. Post-treatment CT scan showed that there had been a good response to treatment since the lymph nodes had decreased in size.

Discussion: MALT lymphomas are solid tumors that originate from cancerous growth of immune cells that are recruited to secretory tissue such as the gastrointestinal tract, salivary glands, lungs, and the thyroid gland. Conjunctival lymphoma may be localised (stage I) or may be accompanied by systemic disease (stage II-IV) in 31% of patients. The initial CT scan in this case was consistent with stage IV disease (Cotswold’s modification of the Ann Arbor lymphoma staging system). These lymphomas are characterised by CD20+, CD10-, CD23-, bcl-6- and this helps to differentiate them from benign lymphoproliferative disorders. The underlying aetiology often remains unknown, however associations with hepatitis and Chlamydia psitacci have been suggested.

Conclusion: The diagnosis of these lymphomas may be delayed as they may masquerade as chronic conjunctivitis and may initially respond to steroids. The prognosis is very good even with systemic involvement since complete response to treatment is observed in 67 to 100% of patients.
Bilateral granulomatous anterior uveitis secondary to topical 0.2% brimonidine tartrate use: a case report

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The use of topical α2-receptor agonist Alphagan™ (brimonidine tartrate) as an adjunctive drug in treating many types of glaucoma has been increasing over the past years. Albeit being effective in mitigating ocular hypertension, multiple cases of granulomatous anterior uveitis have been reported worldwide describing the delayed presentation of the aforementioned condition and its rapid resolution following the discontinuation of topical brimonidine. Here we report a case of a 55 year old lady who presented with bilateral granulomatous uveitis associated with bilateral papillary conjunctivitis 5-months after starting topical brimonidine as an adjunct to her topical beta-adrenergic therapy. Both conditions resolved when the patient stopped applying brimonidine eye drops on her own accord and recurred immediately after topical brimonidine was inadvertently restarted. Rapid resolution again occurred on stopping the topical brimonidine. Previous to topical brimonidine the patient was also using a topical carbonic anhydride inhibitor, Brinzolamide 1% (Azopt) which had to be stopped as it induced a severe blepharo-conjunctivitis. This report is of interest as it not only adds to the mounting evidence linking brimonidine eye drops with a reversible granulomatous uveitis, but it also describes for the first time that the side effect with topical brimonidine was preceded by severe blepharo-conjunctivitis induced by topical Brinzolamide. This raises the possibility that patients with a tendency to topical carbonic anhydride inhibitor such as Brinzolamide induced blepharo-conjunctivitis, may be at increased risk of developing granulomatous uveitis with brimonidine eye drops. Hence we suggest that patients on topical brimonidine should be monitored for granulomatous uveitis especially those patients who had previous documented blepharo-conjunctivitis with topical carbonic anhydride inhibitors.

Anomalous behaviour of the anterior capsule during continuous curvilinear capsulorhexis in a silicone-filled eye in a patient suffering from Stickler’s syndrome with Pierre Robin sequence

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Here we describe a per-operative anomalous behaviour of the anterior capsule during cataract surgery in a patient suffering from Stickler’s syndrome and Pierre Robin sequence. The 20 year old female patient had already underwent pars plana vitrectomy for a rhegmatogenous retinal detachment with insertion of silicone oil. Subsequently she developed a cataract for which she underwent the above-mentioned surgery. It was noted that during CCC, the tangential force implied on the anterior capsule to promote circular extension of the latter caused the capsule to stretch making it more difficult to enlarge. Stickler’s syndrome is a collagenopathy affecting mainly Type II and XI collagen. However, the anterior capsule is made up of collagen Type IV (and glycosaminoglycans). One could have thought that this anomalous behaviour could have been caused because of the defective collagen. We are not aware that this anomalous behaviour was ever documented before in the literature. In this abstract we explore in detail the collagenopathy Stickler syndrome, its systemic associations and Pierre Robin sequence and related conditions focussing mainly on the ophthalmic component.

Cogan’s Syndrome: A rare case of bilateral hearing loss and recurrent red eyes

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Cogan’s Syndrome is defined as non-syphilitic interstitial keratitis associated with audio-vestibular involvement with progressive hearing loss to complete deafness. We report a case of a 42 year old lady who presented to the ophthalmic casualty clinic complaining of recurrent red eyes for more than two years. She gives a history of bilateral sensorineural hearing loss following an upper respiratory tract infection ten years before. Blood investigations revealed markedly high ESR and CRP but negative syphilis serology. She responded well to topical steroids but her ophthalmic problem remains a chronic relapsing one.

Aortic dissection - an unusual presentation

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Introduction: Aortic dissection classically presents acutely with severe chest pain. Rarely, chronic dissection can exhibit atypical features, including persistent fever and malaise. We here describe one such case whereby the patient presented with fever associated with chronic dissection of the aorta that was also misdiagnosed on computed tomography of the aorta.

Case Report: A 39 year old hypertensive gentleman, presented to A&E with generalised malaise and non-productive cough. He denied associated dyspnoea or chest pain. A week before, he had presented to A&E with sudden onset jaw & pharyngeal pain. Following CXR, cardiac markers and ENT review, a diagnosis of tonsillitis was made. During this second presentation, he was tachycardic (100bpm), and was febrile (99.4°F). ABGs revealed hypoxia (pO2 57.1mmHg). Chest CT revealed dullness and decreased air entry in the right base while praecordial examination revealed ejection systolic and early diastolic murmurs. CXR showed inflammation in the right lower lung lobe with possible nodules in the right and left upper zones. The patient was treated with intravenous antibiotics. A transthoracic echocardiogram (TTE) was performed to assess for valvular lesions and possible endocarditis. This showed the possibility of a supravalvular membrane with severe aortic regurgitation (AR) and a dilated left ventricle (LV), but no vegetations. CT angiogram of the aorta excluded aortic dissection and reconfirmed the inflammatory changes of the lungs and extensive bilateral pleural effusions. Consequently, a transoesophageal echocardiogram was organized; this showed a thin mobile membrane above the left main orifice with a central opening. The differential diagnoses were supravalvular membrane and aortic dissection. The patient recovered with conservative treatment and was discharged home. Repeat echocardiogram 3 months after showed severe AR and dilated aortic root and ventricles. Repeat CT angiogram 4 months after the initial presentation showed type A aortic dissection confined to the ascending aorta, bilateral pleural effusions, lung congestion and a pericardial effusion. Surgery was performed two days after. A circumferential tear in the intima producing two flaps was noted. Resection and re-suturing of the ascending aorta together with aortic valve replacement was performed. The patient made a good recovery. Repeat TTE 2 months after surgery showed improvement in LV dimensions and function.

Conclusions: Fever and pleural effusions are indicators to pathology of the thoracic aorta. However, with circumferential tear of the intima, imaging modalities can indicate perforated supravalvular aortic membrane rather than aortic dissection. In this case, a definitive diagnosis can only be made intraoperatively.
REV01
The development of statutory long-term care in Malta: a narrative of history
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Despite long-standing strong family ties and traditional Maltese values, the care of frail disabled elderly, who require institutionalisation, has been on the agenda of the State, from the coming to Malta of the Order of the Knights of St. John, to present day. This presentation is a historical record of the development of long-term care over the ages. Arguments mentioned will include: charitable initiatives; what war-related drastic decisions were taken to safeguard the frail in times of extreme peril; the cultural and clinical movers that favoured development in care; the multiple role in care of long-stay institutions over time; the roots behind the lingering stigma related to institutionalisation as expressed by our forefathers; and how the peacetime plan of development of long-term care institutions in Malta were second to none in the British Dominions.

REV02
Beam me out Scotty! – an alternative to Caesarean section
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In the majority of cases, the natural tendency in foetal development is to produce a child that can pass through the mother’s birth canal without problems – a child that is proportionate in size to the maternal pelvic dimensions. However, instances do occur where the foetus in utero has bigger dimensions that the optimum either because the child is too big or because of a congenital anomaly or because the mother’s pelvis is exceedingly small. This leads to cephalopelvic disproportion (CPD) which if unmanaged would result in foetal and maternal death. The complication of obstructed labour has become a problem faced by parturient mother and their caregivers throughout the ages. In antiquity, destructive instruments were designed to help reduce the size of the foetal head to allow for delivery. Soranus of Ephesus (AD 98-138) described seven different types of embryotomy instruments. The use and availability of such instruments continued well into the early 20th century. Borderline CPD was managed by rotational and traction instruments that were introduced in obstetric practice in the 17th century - these gave rise to modern forceps and ventouse forming part of modern-day obstetric armamentarium. The only modern safe for foetus and mother resort to absolute CPD is however Caesarean section.

REV03
Obesity fuels breast cancer
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Obesity is a growing problem in the Western world and has been linked to numerous forms of cancer, including post-menopausal breast cancer. After menopause, adipose tissue assumes a primary role in oestrogen production, which is possible because adipose tissue expresses aromatase. Obese women have higher circulating levels of oestrogen and lower levels of sex hormone-binding globulin. Oestrogen can promote adipose deposition in the breast, which subsequently increases local breast oestrogen concentration. Oestrogen can bind to intracellular receptors, inducing expression of cyclin D1 in breast epithelial cells, hence promoting division. The dependence on oestrogen can become so great that cancer cells may express preprooipiomelanocortin. This increased growth rate, coupled with the production of genotoxic oestrogen metabolites, may compromise DNA integrity, which may affect numerous genes, including those coding for the oestrogen receptor. In addition, hyperoestrogenemia inhibits ubiquitin-mediated receptor degradation, hence promoting oestrogen receptor expression in tumour cell lines. Other adipocytokines, like leptin, interleukin-6, adiponectin and insulin, have also been linked to breast cancer, with several molecular cross-interactions with oestrogen receptor signaling pathways.

REV04
The role of polymorphisms of the mannose binding lectin gene in infection and disease
E.G. Gialanze

MBL (mannose binding lectin) is a protein of acute phase reaction whose deficiency has been found to be linked with increased susceptibility to infection and disease. With a role in both inflammation and apoptosis, MBL acts by binding to mannose sugars on microbial surfaces, and its interaction with MASP (MBL-associated serine protease) proteins allows it to activate the complement pathway thus allowing man to combat infection and survive. The role of MBL has also been implicated in the pathogenesis of cancer, where it binds to cells which have undergone abnormal transformations on their surface, promoting a cytotoxic effect. The gene responsible for the production of MBL is susceptible to polymorphisms, leading to the production of variant alleles existing alongside the wild type alleles. A hit will thus result in the existence of two or more phenotypes within the general population of the same species. These polymorphisms have been found to be responsible for the variation in the function and final amount of serum MBL, and are accounted for by base substitutions in the promoter region and in exon 1 of the MBL-2 gene. The promoter region is responsible for a number of regulatory elements which exert an effect on the transcription of the final protein. A hit on the promoter site of one allele is enough to classify a patient as having a deficient production of MBL, whilst a hit on exon 1 of both alleles is required to place a patient in this subdivision. A heterozygous form of exon 1 leads to the classification of the patient as having a low production of MBL. Moreover, homozygotes possessing two copies of the wild type allele in both positions are classified as having a high production of MBL. Genotyping of the MBL-2 gene, measurement of serum MBL and localisation by immunohistochemistry techniques have confirmed an association between the polymorphisms and the amount of MBL present in human tissue. There is a consistency in the correlation between the genotype and phenotype, and hence MBL plays an important role in the prevention of disease, especially that which is apoptos-
based and autoimmune. Even though MBL-replacement therapy is suggested for patients suffering from MBL deficiency, these polymorphisms are being implicated as the basis of a range of pathologies, and further screening techniques should allow the development of new alternative therapies.

**REV05**

**An active ageing agenda for Malta**

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**Introduction:** Active older persons play a crucial role in our community: they engage in paid or voluntary work, they transmit experience and knowledge and they help families with caring responsibilities.

**Aim:** To propose public health and health policy initiatives that should constitute an active ageing agenda for Malta beyond 2012 which has been declared by the European Union as the European Year for Active Ageing and Solidarity between Generations.

**Methodology:** Demographic characteristics and patterns of current service utilisation by older persons reflect past policies and strategies. Their relevance is analysed against the background of continuously increasing numbers of older persons with multiple impairments living longer in their homes in the community. The new agenda for active ageing must take a more energetic approach if sustainable community living is to be achieved. The policies and strategies being recommended at European level were analysed in the context of the local scenario.

**Results:** Five challenges were identified as being relevant to older persons living in the community in Malta: polypharmacy, risk of undernourishment, falls, chronic disease management, and age-unfriendly environment. The response to these challenges must be in line with an overall vision that promotes inclusion and active contribution in all areas of community life. Responses to needs and preferences must be flexible. More work is required to provide a more friendly physical and social environment.

**Conclusion:** The overall thrust is the improvement of the quality of life in old age.

**REV06**

**Care home research: problems and limitations**

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**Aim:** To analyse the experiences of researchers who had conducted research in care homes over the past five years (2005-2010). There is very limited research carried out in care home populations because of the challenges this particular population presents.

**Method:** The experiences were analysed through qualitative analysis to highlight the experienced problems and limitations.

**Results:** The challenges experienced by the researchers included appropriate sampling of participants, obtaining informed consent, involvement of staff and relatives, obtaining funding, and hurdles when publishing results. The majority of problems experienced by the Maltese researchers are similar to those described in the literature. Issues included the problem of including residents without capacity, staff involvement and interview techniques. Some issues experienced in the literature such as consent rates and resident involvement were less evident in the Maltese research with very high participations rates of between 97% and 100%.

**Discussion:** Lessons learnt from the Maltese experience include involving staff members in the research project wherever possible, having pre-interview sessions and ensuring an in-depth knowledge of internal care home politics prior to commencing research. Seemingly overwhelming issues such as care home politics, the "small island syndrome" and knowledge of care home research culture are important for future researchers to consider when preparing research methodology for a project in care homes. It is hoped that the experiences of this analysis will assist in future endeavours of care home research.

**REV07**

**Bone health - starting early! A “Healthy Bones” campaign in schools**

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**Introduction:** Osteoporosis is a common bone condition which leads to loss in bone mass. This loss causes bones to become fragile with a greater risk of fracturing. Bone mass builds up during childhood and adolescence and is at its peak in the twenties. After around the age of forty, bone mass starts to decrease as part of the natural process of ageing. Therefore the greater the bone mass “saved up” during childhood and adolescence, the lesser the risk for Osteoporosis. Besides the physical and psychological consequences of Osteoporosis, the financial implications of this condition are also considerable. These include direct costs, such as hospital care, and indirect costs such as rehabilitation costs and work days lost.

**Aim:** The aim of this campaign is the prevention and control of Osteoporosis in adulthood, by increasing awareness and knowledge on bone health in children and empowering them to adopt healthy lifestyles which help develop and maintain strong bones.

**Methodology:** A “Healthy Bones” pilot campaign was carried out in Primary and Secondary schools in three State School Colleges in Malta and Gozo. The information on healthy bones, prepared by the non-communicable Disease Prevention and Control Unit and the Malta Osteoporosis Society, was discussed with the Personal and Social Development (PSD) teachers. The teachers then presented this information to their students during their PSD lessons. A pre-evaluation and post-evaluation questionnaire was carried out to assess the students’ baseline knowledge and behaviour and to measure the change after the campaign.

**Results:** Overall the campaign had a positive outcome in the increase in knowledge about bone development and in positive dietary and physical exercise behaviour change. However, both television and computer screen time are of concern particularly in secondary school students.

**Conclusion:** Campaigns in schools on healthy lifestyle choices are effective in increasing relevant knowledge and encouraging healthy lifestyle behaviours. The sustainability of this knowledge and these lifestyles presents a challenging issue.

**REV08**

**The use of smart technology in healthcare settings**

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**Background:** Healthcare systems in Europe are realising that there are not enough healthcare facilities to accommodate all patients. There is a directed push towards decreasing the length of stay within hospital and technology
has been indicated as a possible influence with regards to assisting this.

**Aim:** To investigate the availability of smart technology and to evaluate and investigate possible applications in healthcare settings.

**Method:** A review of available publications online were searched to investigate what is available on a simple search on the world wide web.

**Results:** The use of smart technology is an attractive and efficient proposition which, when used in the community, are user-friendly and have relatively low running costs. The challenges faced with transferring these technologies to the healthcare setting are the initial high cost of implementation/installation and security maintenance.

**Discussion:** Some of the most common smart technologies available on the market at the moment are cheap to buy and easy to operate. These devices have been used for numerous applications in various healthcare systems.

**Conclusion:** The endless opportunities that smart technologies provide to the healthcare professionals are worthy of attention and consideration of every healthcare professional. This in turn will encourage an environment where the patient is empowered to take care of his/her own health and will even give the opportunity to the healthcare professional to make his/her work not only more efficient, but effective. With proper management and research, implementation of such smart technologies together with the backing of cloud computing and healthcare IT professionals could improve healthcare settings in all parts of the world.

### REV09

**Responding to literacy, culture and language needs of migrants to improve health care quality in Malta**

S. Forman, T. Mecillo Fenech, M. Podda Connor

**Background:** Low health literacy, cultural barriers and limited language proficiency have been coined the ‘triple threat’ to effective health communication. The aim of the study was to find out to what extent the Maltese health care system responds to the language, culture and health literacy needs of migrants and how it can be optimised to improve the quality of care.

**Methodology:** Participants recruited included 60 migrants which were recruited on snowballing and 20 health care workers and 6 cultural mediators which were recruited based on purposive sampling. Information was obtained via informal interviews in addition to 25 hours observation of medical consultations and analysed using coding and interpreted according to theme.

**Results:** Study revealed that quality of care is challenged by migrant’s language proficiency, extent of cultural assimilation and health literacy level which is further influenced by the sensitivity of services to such differing needs including health professionals’ ability to effective communication within consultations.

**Recommendations:** The response entails a clear policy, operational plan and management structures to ensure the scale up as well as efficient and effective use of cultural mediators, the continuous training of personnel along the continuum of care and a system of recording and responding to language, culture, religious and health literacy needs including the information exchange within and between health services. Efforts in the public sphere should complement those in the health care setting and include the scaling up of health education sessions to improve health literacy and self management in health for efficient and effective use of services as well as improved health outcome.

### REV10

**Adverse drug reactions and medication errors: increasing vigilance in Malta**

A. Tanti, J.J. Borg P. Vella-Bananno

**Medicines Authority, Government of Malta**

**Adverse Drug Reactions (ADRs) are a clinical problem and cause significant morbidity and mortality. An ADR has been defined as a noxious response to a medicinal product which is unintended, and may arise from the use of the medicinal product within the terms of the marketing authorization or outside the terms of authorization (ex. from medication errors). Pharmacovigilance is the science of monitoring the safety of medicines and ensuring that the risks of a medicine do not outweigh the benefits, in the interests of public health, in part through the detection of ADRs which were previously unknown, or ADRs which were inadequately quantified in terms of risk to the patient. The role of the healthcare professional in the provision of spontaneous reports of ADRs plays a major role in pharmacovigilance to add to our knowledge on the risks associated with medicines. Since, 1975 specific EU legislation on pharmacovigilance has not been put in place and to strengthen the existing regulatory framework, a legislative update was required. The new EU Pharmacovigilance Directive 2010/84/EU, soon to be transposed nationally into subsidiary legislation SL 458.35 focuses on faster action in response to safety signals, increased transparency and more robust scientific decision making. With the aim of improving vigilance, surveillance systems are moving towards a more prospective, comprehensive and systematic approach to monitoring, collecting, analysing and reporting data on ADRs. This will involve the widening of the reporting scope to include patient ADR reports, enabling access of healthcare professionals to the EU database of ADRs, and increasing the requirement on pharmaceutical companies to conduct post-marketing safety and efficacy studies. While maintaining focus on ADR detection, the new Pharmacovigilance legislation aims to extend knowledge of safety, such that emerging changes in risk-benefit during the entire life span of a medicinal products marketed life are effectively communicated to healthcare professionals and patients. With these changes in vigilance practices, it is envisaged that medication safety, public health and trust in medicines will improve as a result.

### REV11

**New Health Systems in Transition (HiT) report for Malta**

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**Health Systems in Transition (HiT) reviews are country-based reports that provide a detailed description of a country’s health system and of reform and policy initiatives in progress or under development, published by the European Observatory on Health Systems and Policies within WHO, Organisation (WHO) Europe.**

Health Systems in Transition (HiT) reviews are country-based reports that provide a detailed description of a country’s health system and of reform and policy initiatives in progress or under development, published by the European Observatory on Health Systems and Policies within WHO, Organisation (WHO) Europe. The series covers the countries of the WHO European Region as well as some additional Organisation for Economic Co-operations and Development (OECD) countries. They are updated on a regular basis. This is the 2nd edition for Malta, the first edition being launched in 1999. HiTs are produced by country experts in collaboration with Observatory staff. They are building blocks that can be used to examine different approaches to the organisation, financing and delivery of health services, and the role of key health system actors; describe the institutional framework for and the process, content and implementation of health policy; highlight challenges and areas requiring more detailed analysis; provide a tool for disseminating information on
REV12
Medicines regulation: to protect and enhance public health
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Medicines Authority, Government of Malta

Medicinal products go through a lifecycle, starting from clinical trials preauthorisation, followed by evaluation for quality, safety and efficacy for the granting of an authorisation and subsequent placing on the market, and then use in patients and monitoring, particularly for safety and efficacy. The regulatory decisions for authorisation and post-authorisation are based on benefit/risk. Clinical trials are authorised on the basis of scientific evaluation and an approval by the Health Ethics Committee. Clinical trials need to be conducted in line with standards of Good Clinical Practice (GCP). Medicinal products which are being evaluated for approval through the centralised procedure can be used on ‘compassionate use’ at the clinical responsibility of the prescriber. Once a product is authorised, the information about authorised medicinal products is available to health care professionals on the Summary of Product Characteristics (SPC). The list of medicinal products authorised in Malta together with their SPC and patient information leaflet is accessible through the website of the Medicines Authority www.maltamedicineslist.com. When prescribing a medicinal product the prescriber performs a benefit/risk evaluation for the patient and considers factors including authorised indications, side-effects, contraindications, drug interactions, available dosage forms and alternative products. If a medicinal product is prescribed outside the scope of the information authorised on the SPC, the prescriber assumes clinical responsibility for the use of the medicinal product. If a patient requires a medicine which is not authorised, this can be requested on a named-patient basis https://ehealth.gov.mt/HealthPortal/public_health/pharm_unit/introduction.aspx. While a medicine is being taken by the patient, monitoring of the patient and of the outcome of the treatment is required. Adverse drug reactions and also medication errors (including potential medication errors) with the use of medicinal products should be reported to the Medicines Authority. Patients should be supported with unbiased information about medicines which they are taking and about the proper use of medicines so that they can participate in decisions about their medicines and to support them in the proper use of their medicines. Interviews to evaluate the public’s knowledge on medicines and their use carried out in 2010/2011 by the Medicines Authority showed that 66% of respondents sought advice and information before taking a non-prescription medicine for the first time, mainly from their doctor (58%), from their pharmacist (29%) and from the Internet (6%). In Malta the official supply chain for medicines is regulated to secure the quality of the supplied medicinal products.

REV13
Community paediatric services in Malta
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Aims: The community paediatric services involve an innovative system where the paediatric specialty in Malta is outsourced from the main hospital into the community. The main aims include:
- Safeguarding and protecting children providing services for children with disabilities,
- Organisation of seminars/talks for the parents and carers involved in the care of these children,
- Early identification of children with special developmental needs.

Objectives: One aspect of these services involves regular visits to Special Schools (Resource Centres). These Centres include San Miguel School in Pembroke, Guardian Angel School in Hamrun, Dun Manwel Attard School in Wardija and the Helen Keller School in Qrendi, where children with disabilities are assessed regularly and managed according to their particular needs. Seminars are organized for the nurses, carers and parents on a regular basis. Socially disadvantaged children are also reached through regular visits to Appogg and the several Church Homes for children in Malta. Behavioural problems associated with Emotional disturbsation and hyperactivity and attention deficit disorders are seen at the Child Guidance Unit under the Psychiatric Department. The multidisciplinary team at the Child Development Assessment Unit (CDAU) involves the Community and Developmental Paediatricians, child psychologists, physiotherapists, occupational therapists and speech and language pathologists together with the early intervention teachers and nurses that assess the various childhood developmental anomalies. Also there are several peripheral paediatric community services that are provided in the community including speech therapists, occupational therapists and early intervention teachers. Regular visits to the Child Care Centres “Smart Kids” spread all over Malta, are carried out as part of the services provided in the community. These assessments are important in the early identification of developmental problems where appropriate management and support is given.

Conclusion: There are several sectors in the Community Paediatric Services and as several of these services are relatively new, there are various plans for the future to improve the work for children with special developmental needs across the country. Such an innovative service in the care of children with developmental disability will provide a quick and efficient service for children who previously endured a relatively long waiting time for the necessary assessment and management plan within the main hospitals. The aim in the Community Paediatric Services will always be to assist children with specific individual needs in achieving their full potential.

REV14
The methodology for a three dimensional kinematic study of gait in Charcot neuroarthropathy
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Charcot neuroarthropathy is a chronic disabling arthropathy complicating peripheral neuropathy, often in the setting of diabetes. Establishing a definitive diagnosis is challenging and largely clinical. Patients with chronic Charcot develop foot abnormalities which increases the risk for foot ulceration. We
plan to investigate a group of patients with diabetes suffering from Charcot neuroarthropathy and compare these to a control group. Gait analysis is performed on the subjects by using an optical motion detection system. Subjects are marked up using a set of retro-reflective markers, placed on standard anatomical locations in order to divide the body into rigid segments. The lower body is divided into seven rigid segments, comprising pelvis, two thighs, two shanks and two feet. The feet are further divided into three segments comprising of hind foot, forefoot and hallux segments. Subjects are asked to walk in a straight line along a walkway, surrounded by a set of six optical cameras. The cameras emit infra-red light and this is reflected off the markers placed on the subjects. The reflected infra-red light is captured by the cameras through a filter which blocks all visible light, and through a process of triangulation, the 3D trajectory of each subject marker is generated. A software biomechanical model of the subject is fit to the 3D marker trajectories, thus allowing standard kinematic joint angles and kinematics for ankle, knee and hip to be examined in sagittal, coronal and transverse planes of motion. Walking speed and horizontal base width between medial malleoli are also measured with the system. A set of wireless electromyography transmitters are placed on the medial and lateral gastrocnemius heads, as well as on the rectus femoris and biceps femoris muscles. The duration and frequency of muscle recruitment is measured as the subject walks. A force plate made up of an array of strain gauges is further placed in line with the walkway to measure the ground reaction force in three directions as the subject walks over it. It is hoped that this study will provide further insight into the causes of foot deformity and ulceration in this group of patients.

**REV15**

**Current opinion on cardiovascular screening in athletes and persons engaged in leisure-time physical activities - time to revise**

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It is generally considered that trained athletes and persons engaged in sports constitute the healthiest segment of society with a unique lifestyle and are seemingly invulnerable and often capable of extraordinary physical achievement. An unexpected fatal complication during training or competition is a tragic event that assumes a high public profile and continues to have a considerable impact on the lay and medical communities from the first historically recorded sports-related death of currier-runner Pheidippides (490 BC) up to the last publicized death of Claire Squires while competing in the London Marathon on 22 April 2012. This paper prepared in international collaboration provides an up-to-date critical review exploration in the problem of the cardiovascular complications (CVC) in athletes and persons engaged in leisure-time sports activities from the medical and social points of view. Medical screening programme for the athletes and persons engaged in sports still remains a challenge in sports medicine. Some medical institutions and international sports organisations advocate combining non-invasive testing (i.e., a 12-lead ECG) with the standard history taking and physical examination. Sensitivity analyses show that in nearly all cases, screening with ECG plus history and physical exam is the preferred strategy. Although ECG increases the power of the screening to detect underlying causes of CVC some organisations and experts panels recommend against implementation of it in routine sports medicine practice because of a lack of current infrastructure, providers, and expertise. Several population-based studies and observations have helped to clarify the cardiovascular pathology responsible for sudden death, but effective methods for preventing complications and identifying athletes at risk still remain elusive. We conclude that it’s time to start professional discussion around the implementing of inexpensive conventional echocardiography modalities and standard screening protocols. Comprehensive, adequately-designed studies for this purpose are required. Increasing participation of older athletes, with all the health benefits for the vast majority, will result in an increase in the total numbers of sports-related CVC in forthcoming future. Sports clubs and organisations, their authorities, as well as medical institutions and physicians alone should share more legal and ethical responsibility to ensure that individuals are properly and comprehensively examined being not subjected to an unacceptable health or life risk. It is still quite a long way to go for the “ideal” screening to prevent CVC, which represent as a significant medical and ethical problem of sports in the second decade of the 21 century.

**Disclosure:** Travelling and participation fees will be sponsored from 009PU/4/2011 KEQA project (sports medicine).

**REV16**

**Can hospital acquired MRSA bacteraemia be eliminated from Mater Dei Hospital?**

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Malta has one of the highest prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections in Europe. This contrasts with Scandinavian countries where such cases are extremely rare. Furthermore, local rates have remained reasonably static unlike countries such as Ireland and the United Kingdom who have achieved more than 80% incidence reduction over the past years. Root cause analyses of MRSA bacteraemia cases, reported at Mater Dei Hospital during 2011, suggest that three aetiologies are responsible for the majority of cases. Central venous catheters (CVC), in the form of non-tunnelled temporary haemodialysis catheters as well as short duration CVCs, were identified to be the predisposing factor of 58% MRSA bloodstream infections whereas 25% followed inflammation at peripheral venous catheter (PVC) insertion sites. It is therefore apparent that intravenous devices, both peripheral and central, are the key predisposing factors for MRSA bloodstream infections. This can be addressed by specific initiatives aimed at better care of PVCs through improved aseptic techniques as well as an emphasis on a maximal 72 hour duration. Non-tunnelled haemodialysis catheters in renal patients should be replaced with tunnelled equivalents or preferably permanent access whereas evidence based insertion and maintenance care bundles have been validated to be extremely effective to reduce catheter associated blood stream infections. However these efforts are unlikely to succeed without a background improvement in hand hygiene, infection control and antibiotic prescribing. Despite some progress, hand hygiene compliance remains less than optimal and prescribing of wide spectrum antibiotics predominate; agents such as quinolones and cephalosporins are recognised as important drivers for hospital-acquired MRSA. A major complication to these efforts is the high level of MRSA carriage in the local community with studies suggesting prevalence rates exceeding 8%. When admitted, these patients constantly replenish the pool of carriers within the hospital and serve as sources of eventual infection, both endogenously as well as to other patients. Effective MRSA admission screening appearing crucial to break this vicious cycle of transmission. There is no doubt that significant reduction of MRSA bacteraemia in Mater Dei Hospital is a major challenge but, as has been shown in the UK, this can be achieved by genuine ownership and improved quality of care.
Adverse outcomes for the fetus are known to occur for breech human fetuses present cephalically at the end of pregnancy. More than 97% of brain initiates at birth whereby the neonatal brain weighs through to gravity's effect on the blood supply to the brain, and a high encephalisation quotient may have been conferred on the character of the moral agent, rather than the action. Professional Oaths have changed in the context of parallel changes in society, but the basic principles of good practice remain. Today, the classical Hippocratic Oath is seldom used and has been replaced by covenants, prayers or modified versions. Such Oaths include the Declaration of Geneva, the Oath drawn up and approved by the Supreme Soviet of the USSR in 1971 (with an addition on nuclear war in 1983), Louis Lasagna’s ‘Modern Hippocratic oath’, Louis Weinstein’s ‘Oath of the Healer’, an Oath that “Bears the Name of Hippocrates”, the American Medical Association’s Code of Ethics, Well Cornell College’s Hippocratic Oath. The Islamic Medical Association of North America has written a code of ethics based on the principles of the Holy Qur’an, the ‘oath of a Muslim Physician’. Another key text from Medieval Islam is Ishal Ibn Ali al-Ruhawi’s text, ‘Adab al Tabib’, concerning Correct Conduct. The Hebrew Scriptures speak of the need for patients to consult a physician when ill. A Hindu physician takes, “Vadaya’s Oath” from the 15th century CE, which encourages physicians to be ready to risk their own lives for patients. The ‘Oath of Asaph’ (6th Century BCE) is a code of conduct for Hebrew physicians, as is Maimonides’ Prayer. The ‘17 Rules of Enijn are a code of conduct for Japanese physicians from the Ri-Shu school of medicine, prescribed in the 16th century CE. Sun Simiao wrote ‘On the Absolute Sincerity of Great Physicians’. In 1991, the Christian Medical and Dental Association wrote an oath for Christian Physicians. Oaths are not legally binding and cannot guarantee ethical practice. Courses of ethics provide a theoretical basis for development of ethical principles, but morally correct behaviour is more readily learned when students become practising doctors developing professional identity and mirroring experienced senior staff. Hospital environments can be detrimental to the development of moral sensitivity as stressors result in the development of cynicism. Research efforts have also attempted to objectively evaluate moral reasoning and sensitivity among medical students. Even ethical concerns can lead to physician burnout. In this paper we also discuss the role of virtue ethics which focuses on development of ethical principles, the moral agent, and the action. Appropriately adjusted gestational age in the homo genus, possibly under evolutionary pressures, encouraged cephalic presentation. Gravity would have assisted blood supply, nutrition and cerebral metabolism of the growing brain. Another obstetric surrogate is that both body weight and brain volume in multiple pregnancies are significantly larger in the lower, first born twin, compared to the higher second born twin. The gravitational effect of brain blood supply persists beyond birth. Human babies only become fully bipedal at the age of 1-1.5 years. During the first year the greatest growth in brain weight is registered when it increases to 900-1000g. The combination of obstetric and paediatric surrogates suggest that gravity’s influence, through the evolution of human bipedalis, on blood supply may be responsible for the high encephalisation quotient in the Homo sapiens species.
physiology, as well as cerebral perfusion. The benefits of music to health have led to the development of the concept of music as therapy. Music has effects on emotion and vice-versa. It can also suggest the possibility of future substance misuse. Music also puts specific physical demands on performers, including demands on cranio-cervical posture and difficulties in vocal technique can arise after surgery to the cervical spine. Dystonias can occur when playing music and certain dystonias are specific to the type of music being played and exhibit different prevalences depending on type of instrument played. In this work we explore how music performance and understanding can be affected by illness and vice-versa.

**REV21**

**Pompe disease - a general overview**

S. de Bono

Pompe disease, also known by the name of acid maltase deficiency or acid alpha-glucosidase deficiency is an inheritable autosomal recessive disease which is characterised by reduced or absent activity of the lysosomal hydrolase enzyme, alpha acid-glucosidase. Normally, the missing enzyme in this metabolic disorder, would degrade glycogen. In cases of Pompe patients glycogen granules accumulate inside the cells leading to cellular pathology which in turn gives rise to organ pathology due to inhibition of normal cell metabolism. Many variations are seen, and Pompe was often described as a disease for which there is a continuum of phenotypes. One can be diagnosed with Pompe disease at any age - essentially it is a genetic disorder may manifest at different periods of life. For the sake of simplicity however it is classified in two types, early-onset and adult-onset, each of which are accompanied by signs and symptoms rather particular to the class. It has also been observed that Pompe varies around the world according to ethnicity, with a higher frequency being observed in infants of African ancestry. Research has led to the development of enzyme replacement therapy for Pompe patients which is currently the only approved treatment for the disease. The earlier the disease is diagnosed and the therapy is initiated, the better the prognosis is. Even though enzyme replacement therapy does not cure this genetic disease it allows the affected individuals to lead as much of a normal life as it is possible.

**REV22**

**Enhancement patterns in neuroradiology**

R. Grech, S. Looby

*Department of Neuroradiology, Beaumont Hospital, Dublin*

**Introduction:** Contrast enhancement is often regarded as a problem solver in neuroradiology. The degree of enhancement and the pattern demonstrated by a pathological process may aid in narrowing the differential diagnosis. Certain enhancement patterns are considered pathognomonic if they occur in the correct clinical setting.

**Aim:** In this review we will try to demonstrate the various patterns of enhancement in neuroradiology and discuss how these can help in reaching a final diagnosis.

**Methodology:** Contrast uptake is classified as either vascular or interstitial. The interstitial type of enhancement occurs as a result of blood-brain-barrier breakdown, and is the one discussed in this review.

**Results:** The underlying mechanisms and pathological processes leading to contrast uptake are complex, however the reporting radiologist needs to be familiar with the basic concepts of enhancement and the patterns commonly demonstrated. Parts of the central nervous system which are anatomically outside the blood brain barrier will routinely enhance and contrast uptake in these areas should not cause alarm. The anatomical location of the enhancement is also discussed and categorised to show how this can help in solving the diagnostic dilemma. Certain rules of contrast uptake become handy, in situations where the differential diagnosis remains broad. Enhancement is also an essential radiological feature when evaluating neurological tumours, both prior and after surgery, and it has a very important role in determining postoperative tumour residual and recurrence.

**Conclusion:** There are various patterns and anatomical locations of contrast enhancement encountered in neuroradiology. Anatomical knowledge and a basic understanding of the mechanisms involved are essential. Recognising characteristic enhancement patterns is essential in neuroradiology where histopathological confirmation is often left as a last resort.

**REV23**

**A new era of stroke imaging**

R. Grech, S. Looby

*Department of Neuroradiology, Beaumont Hospital, Dublin*

**Introduction:** Stroke is a leading cause of morbidity and mortality in the developed world. Emergent imaging evaluation of acute stroke is necessary to establish the diagnosis and obtain additional information about the cerebral vasculature and perfusion which aid the selection of the appropriate therapy.

**Aim:** To outline the state-of-the-art acute stroke imaging protocol, with particular focus on the use of newer techniques including perfusion and permeability imaging and magnetic resonance spectroscopy.

**Methodology:** Non-enhanced computed tomography is inexpensive, quick and readily available and remains the initial examination in stroke. It not only excludes haemorrhage (a contraindication to thrombolytic therapy), but can also demonstrate early stage acute ischaemia. Recognising computed tomography hyper-acute stroke signs is vital if thrombolysis or thrombectomy are being considered. On the other hand, the newer techniques are able to unequivocally diagnose ischaemia at an earlier stage, and hence offer quicker and safer imaging techniques.

**Results:** Advanced CT and MR techniques are not widely available, as they require specialised equipment and operators. The radiologist also needs to be familiar with these investigations. It has however been shown that acute stroke intervention in patients imaged with state-of-the-art techniques is associated with a significantly lower complication rate.

**Conclusion:** The literature regarding stroke imaging is extensive, and there has been a move towards specialised imaging techniques in recent years. Such techniques rely heavily on the availability of local equipment and expertise. The morbidity associated with stroke and stroke intervention, are however pushing towards a tendency to evaluate patients presenting with acute stroke more extensively.

**REV24**

**Functional endoscopic sinus surgery (FESS): What radiologists need to know**

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1*Department of Neuroradiology, Beaumont Hospital, Dublin, 2Medical Imaging Department, Mater Dei Hospital, Msida*

**Introduction:** Since its introduction in the United States in 1985, functional endoscopic sinus surgery (FESS) has increasingly gained popularity. It aims to improve the mucociliary clearance along the sino-nasal physiological pathways. Dedicated sinus imaging is nowadays considered a prerequisite for FESS, and evaluation of the paranasal sinuses, in order to answer the most pertinent pre-operative questions.
Methodology: A systematic approach for multiplanar evaluation of the paranasal sinuses with computed tomography will be demonstrated. The radiological appearance of the complex anatomy and anatomic variations and post-FESS appearances will be discussed.

Results: Imaging provides an essential roadmap for surgical planning and the morphologic detail provided is essential in recurrent disease. The radiologist should describe the pattern and location of sinus opacification, the status of the drainage pathways, and the presence of anatomical variants. He should not overlook the brain and soft tissues included in the scans, as incidental findings are common. All the ostia and recesses should be carefully evaluated to check for patency as they are the main targets during FESS. The complex anatomy of the paranasal sinuses makes evaluation using multiplanar reconstructions necessary. Anatomical variants are very common, and these should not cause confusion. Overlooking such variants, especially those described as ‘critical’ may have serious consequences. Such complications include CSF leak, meningitis, carotid vascular injury, and optic nerve transection.

Conclusion: Radiologists should be familiar with the technicalities of FESS, and should adopt a systematic approach when evaluating the paranasal sinuses in relation to FESS.

REV25
Characterisation of hepatic masses by MRI: a radiological pictorial review
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Aim: To demonstrate the use of MRI in the characterisation of various hepatic masses.

Methodology: Hepatic MRI has become an essential tool in the characterisation of liver masses. We describe the technique used in our department. We reviewed hepatic MRIs performed at our centre between 1st July 2008 and 30th June 2012 and identified a selection of cases that demonstrate the application of this modality in everyday practice.

Results: A wide spectrum of hepatic masses were characterised using MRI. These included benign conditions such as haemangioma, abscess and focal nodular hyperplasia; and malignant conditions such as hepatocellular carcinoma and metastasis. The radiological features of different benign and malignant conditions are described and illustrated.

Conclusion: MRI of the liver is a powerful non-invasive tool that can help the radiologist and referring clinician characterize liver masses; avoid unnecessary invasive procedures for benign conditions; stage malignant tumours and aid in planning invasive procedures including surgery and radiofrequency ablation.

REV26
Imaging of metachronous pancreatic metastases from renal cell carcinoma
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Renal cell carcinoma (RCC) is one of the few tumours known to metastasise to the pancreas 0.25 - 3% of cases. The pancreas remains an uncommon site of metastasis from RCC, typically occurring years after treatment of the primary tumour. RCC constitutes 3% of all adult malignancies and often presents insidiously. Consequently 25–30% of patients havemetastases at the time of diagnosis. With the advent of mulitidetector computed tomography (MDCT), pancreatic metastasis from RCC is being encountered more often by the radiologist. These lesions are usually asymptomatic and are often an incidental finding detected on radiological follow-up. A solitary RCC metastasis to the head of pancreas may be potentially amenable to surgical resection. Metastases to the pancreas do not have a predilection for any one part of the gland, and can have a variety of appearances found most commonly as a localised mass as in our cases. However, diffuse involvement can be seen in 15 – 45% and multiple nodules throughout the pancreas are encountered in 5 – 15% of cases. In general they tend to be small lesions (up to 2cm in diameter). On ultrasound, metastases appear as solid ill-defined hypoechoic masses located within the pancreatic parenchyma. CT typically demonstrates a well circumscribed mass which is iso- to hypodense relative to normal pancreas on non-contrast scans. Arterial phase enhancement is seen following the administration of contrast. The natural history of pancreatic metastases is largely unknown. Most cases are detected at an advanced stage of the disease and are thus unsuitable for resection. However, when the metastatic focus is isolated and the tumour can be resected in its entirety, patients can experience excellent 5-year survival rates. We review the MDCT features of two cases of pancreatic metastasis from primary RCC and one case of contralateral metachronous RCC and pancreatic metastasis.

REV27
A review of the MRI diagnostic criteria for diagnosing classic Creutzfeldt-Jacob disease
K. Chircop, C. Chircop, N. Vella, J. Aquilina

Creutzfeldt-Jacob disease (CJD) is a rare, rapidly progressing, ultimately fatal neurodegenerative disorder which is characterized by the accumulation of abnormal human prion proteins. An absolute, definitive diagnosis of any form of CJD requires histological examination of brain tissue. Over the last years conventional Magnetic Resonance Imaging (MRI) has gained an increasing role in the diagnosis of CJD, both in refuting other possible differentials and in actually suggesting this diagnosis. The main aim of this poster presentation is to increase the local awareness of the MRI changes that are included in the MRI diagnostic criteria for classic CJD. In the appropriate clinical context and with the supportive MRI changes, it is possible to clinch a diagnosis of probable classic CJD, with no further tests required. These diagnostic MRI criteria involve three specific grey matter patterns of abnormalities, seen on DWI, ADC and FLAIR MRI sequences. In this review we will describe these three most common abnormal patterns with their relative incidence and specificity. The MR examinations of three local patients with confirmed classic CJD will be discussed in the context of the given MRI diagnostic guidelines.

REV28
Computed tomography road map of the paranasal sinuses for treatment planning
N. Schembri, A.S. Gatt, D. Ellul, J. Brunton
‘Clinical Imaging Department, Ninewells Hospital and Medical School, Dundee, Clinical Imaging Department, Ninewells Hospital and Medical School, Dundee; Department of Otolaryngology, Ninewells Hospital and Medical School, Dundee

Background: Modern technical advances in cross-sectional imaging have drastically influenced the approach and understanding of the anatomy and pathology of the head and neck in particular the paranasal sinuses. Computed tomography (CT) has superseded plain radiography in delineating bony anatomy, with magnetic resonance imaging (MRI) complementing CT in demonstrating soft tissue structures together with any ongoing pathology of the paranasal sinuses. The role of CT in preoperative planning, such as prior to functional endoscopic sinus surgery (FESS), has been well established. The complex anatomy and myriad of congenital anatomical variants of the paranasal sinuses impose an interpretation challenge to radiologists as well as intraoperative technical challenges to the surgeon.
Methods: The authors present a systematic approach utilising reformatted CT reconstructions to discuss the anatomy, relevant clinically significant anatomical variants and the terminology used in FESS with a view to encourage more accurate preoperative interpretation of normal and aberrant anatomy that plays a key role in the diagnosis and safe surgical management of these patients.

Results: The radiologist’s goal is to report on five key points: the extent of sinus opacification, opacification of sinus drainage pathways, anatomical variants, critical variants, and condition of surrounding soft tissues of the neck, brain and orbits.

Conclusion: Improvement in FESS and CT technique has expanded the indications for sinus surgery. Although rare, major complications of FESS can be catastrophic. Detailed knowledge of normal and anomalous anatomy is therefore essential for safe, successful sinus surgery. CT has become the gold standard imaging modality in the preoperative diagnosis, allowing accurate patient selection for FESS. This poster emphasises the importance of radiologists’ familiarity with FESS technique and adopting a systematic approach to reviewing CT imaging for normal and variant anatomy of the paranasal sinuses.

REV29 “Mediastinal lines and stripes” - are they a concept of the past? N. Schembri, R. Cameron, T. Taylor

Learning objectives: The aims of this educational poster are:
• To enhance awareness of the invaluable role that the “lines and stripes” concept plays in establishing a diagnosis and that failing to recognise this potential may lead to failure in requesting valuable further evaluation with CT examination.
• To act as a refresher to radiology trainees and consultants alike by reinforcing their anatomical knowledge on mediastinal lines and stripes, in being able to recognize their normal and abnormal appearances.
• To understand this concept in the setting of chest radiography as transposed to chest CT now that this is being utilised more frequently as an adjunct to chest radiography in the evaluation of lung parenchymal and mediastinal disease.

Description: The chest radiograph is a rich two-dimensional depiction of contrasting interfaces seen that are important in the evaluation of mediastinal disease. This educational poster will outline the junctional lines most relevant to clinical practice, emphasising their impact on clinical management planning. This will be illustrated by various examples encountered in a busy clinical radiology department as depicted on chest radiograph correlated to subsequent CT imaging.

Conclusion: Although CT has revolutionised clinical radiology practice the chest radiograph still remains an invaluable tool. Radiologists must be confident in the appearances of the interfaces made between mediastinal, pleural and lung parenchymal structures in order to formulate a suitable differential diagnosis and to act as an indication for further evaluation with chest CT.

REV30 Type 2 diabetes mellitus and multifactorial inheritance M. Caruana1, R. Balzan2

1Medical School, University of Malta, Mater Dei Hospital, Msida, 2Department of Physiology and Biochemistry, Faculty of Medicine and Surgery, University of Malta, Msida

Type 2 diabetes mellitus is a chronic syndrome characterised by peripheral resistance to insulin and inadequately compensatory response of insulin secretion by the pancreatic β-cells. The main symptoms of this disorder are polydipsia, polyuria and polyphagia and several long-term consequences are associated with this condition. Type 2 diabetes is a multifactorial disorder that results from a combination of external risk factors together with 18 single nucleotide polymorphisms. These 18 confirmed susceptible loci are KCNJ11, PPARG, TCF7L2, SLC30A8, HHEX, CDKN2A-CDKN2B, WFS1, JAZF1, CDC123, IGF2BP2, CDKAL1, TSPO, THADA, ADAMTS9, NOTCH2, KCNQ1, MTNR1B and LOC387761. These know to affect insulin sensitivity, insulin secretion and conversion of proinsulin to insulin. The concordance rate in monozygotic twins is close to 90%, and 43% in dizygotic twins. The principle treatments for diabetes include effective control of blood glucose, blood pressure, and lipids. This can be obtained by certain changes in lifestyle together with the intake of appropriate medication.

It is expected that in the year 2010, 6.4% of the population in the world, aged 20–79 years, will be affected with diabetes. This percentage will increase to 7.7% by the year 2030.

REV31 Mitochondrial inheritance L. Caruana1, R. Balzan2

1University of Malta, Medical School, Mater Dei Hospital, Msida, 2Department of Physiology and Biochemistry, Faculty of Medicine and Surgery, Mater Dei Hospital, Msida

Since the discovery of the mitochondria in 1840 much of the studies were focused on the structure and function of this organelle. Mitochondria are the only organelles which contain their own DNA, mitochondrial DNA (mtDNA), which was sequenced in 1981. mtDNA has a high spontaneous mutation rate, mainly because of its location in a hostile environment where a number of reactive oxygen species (ROS) are generated. Another contribution is made by the lack of repair mechanisms which when present help to overcome the damage. The high mutation rate leads to the generation of a large number of syndromes known as mitochondrial diseases. Moreover mtDNA is maternally inherited, thus all mtDNA is derived from the mother. Mitochondrial diseases affect all the energy rich organs; cardiac muscle, skeletal muscle and the central nervous system (CNS). But it is in the last decade that various mtDNA mutations have been discovered and analysed, due to biotechnological advancements and knowledge gained about the heteroplasmic nature of the mtDNA. Although there have been considerable advancements, there still is not an appropriate therapeutic approach towards these diseases. Till this day and age, prevention is the only way one can keep at bay these diseases. It is coming to be more accepted that accumulation of mtDNA mutations with increasing age brings about ageing and a number of diseases such as Parkinson’s disease (PD).

REV32 The Malta BioBank A. Fiott, A.E. Felice, A. Vella

University of Malta, Msida

The Malta BioBank is the first formal national archive of DNA, blood and urine samples together with quantitative biomarkers. It was initiated in conjunction with the Thalassaemia Project and evolved in the context of the National Genetics Program, which is funded by the University of Malta and the Malta Department of Health. It forms part of the Laboratory of Molecular Genetics and is housed in a secure location. The Malta BioBank is a founding member of EuroBioBank and the Biobanking and Biomolecular Resources Research Infrastructure of the EU and was designated the BBMRI-Malta node by the Government of Malta. The Malta BioBank is also a partner in ITHANET, the network of Haemoglobin/Thalassaemia laboratories and clinics. The
Malta BioBank is an indispensible tool for population-based gene discovery research. It may also be an economic resource of potentially high value added giving access to Academic Interests - or biotech/pharma industries and high-quality collections. The genetic origins, epidemiology, mobility and structure of the Maltese population are well understood, therefore adding further value to the biobank. Two recent examples of the potential of the Malta BioBank include the discovery of the KLF1 mutations by Dr Joseph Borg in 2010 and the whole exome sequencing carried out on a pool of random newborn Maltese so as to determine novel mutations in the Maltese population. The Malta BioBank currently consists of a clinical bank and a population bank. Some collections include the GlobinBank (around 300 samples), the Geoparkinson’s collection (with around 200 cases and 400 matched controls), the Random Neonate Collection (over 6,000 samples) and the Rare Disease Collection. A new collection consisting of around 1% of the Maltese population is under construction.

REV33
Serpins: structure, function and dysfunction
N.J. Cassar, G.J. Hunter
Department of Physiology and Biochemistry, Faculty of Medicine & Surgery, University of Malta, Msida

The serpin superfamily of serine protease inhibitors is one of the most ubiquitous and successful classes of inhibitors in the living world. Their unique mechanism of suicide inhibition has led to much research and several important discoveries. Inhibition is achieved via rapid incorporation of a reactive centre loop (RCL) within a β-sheet following the former’s proteolysis by the target protease: the serpin thus attains a conformation which is more stable than the native form. Through this conformational change, the target protease structure is distorted and its function disrupted. Alpha-1-antitrypsin (AAT) has often been studied as an archetype for the serpin superfamily and is discussed in more detail in this review. Of particular interest are the mutant variants of AAT which have a tendency to polymerise and thus offer insights into some mechanisms of serpin polymerisation.

REV34
The genetics of diabetes mellitus
S. Buttigieg

Diabetes mellitus is a disorder that affects 366 million individuals worldwide. It is a disorder characterised by defective metabolism of carbohydrates, fats and proteins as a result of defective insulin secretion and/or insulin resistance. There are many forms of the disorder, amongst which type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM) are the commonest. Both of these disorders have a genetic background that involves the interaction of multiple mutant genes which also interact with environmental factors, thus classifying these two forms of diabetes as polygenic and multifactorial. T1DM usually occurs in younger individuals and is generally caused by autoimmune destruction of pancreatic β-islet cells and individuals require insulin therapy. T2DM usually presents in adults and is not insulin-dependent although insulin may have to be administered in advanced stages of the disorder. So far over 40 different susceptibility loci have been identified and associated with T1DM and T2DM. Another form of diabetes mellitus is the monogenic form that is brought about by single gene mutations. The most frequent of these is maturity-onset diabetes of the young (MODY) that generally presents in young children. Neonatal diabetes mellitus (NDM) and maternally inherited diabetes with deafness are two other less frequent forms. Gestational diabetes mellitus (GDM) is another type of diabetes mellitus for which the mutant genes involved are generally those that predispose to T1DM, T2DM or MODY. Genetic screening has proven very useful in identifying individuals at risk of developing diabetes mellitus and encouraging them to make necessary lifestyle changes. Furthermore the identification of particular mutations could provide tremendous utility in choosing the best therapy for patients suffering from the disorder.

REV35
The pathophysiology of Retinitis Pigmentosa (including molecular genetics and future therapeutic approaches)
M.A. Zammit
University of Malta, Medical School, Mater Dei Hospital, Msida

Retinitis pigmentosa (prevalence 1/4,000) is an inherited retinal dystrophy caused by the loss of photoreceptors and characterised by retinal pigment deposits visible on fundus examination. The most common form of retinitis pigmentosa (RP) is a cone-rod dystrophy, in which the first symptom is night blindness, followed by the progressive loss in the peripheral visual field in day light and eventually leading to blindness after several decades. In some cases, the clinical presentation is a cone-rod dystrophy (CRD), in which the decrease in visual acuity predominates over the visual field loss. RP is usually non syndromic but there are also many syndromic forms, the most frequent being Usher syndrome (RP & deafness). The tremendous genetic heterogeneity, with 39 currently known genes (31 of which are cloned and 8 are mapped) accounting for only 50% of non-syndromic RPs has hampered the molecular diagnosis. In the absence of efficient treatment, the therapeutic approach is currently restricted to sunlight protection and management of complications (cataract and macular oedema). However, therapeutic strategies are emerging from intensive research, which include gene therapy, neuroprotection and retinal prosthesis.

REV36
23G and 25G pars plana vitrectomy in Malta: one year experience
M.J. Gouder, T. Fenech, J.G. Diamond
1Department of Ophthalmology, Mater Dei Hospital, Msida; 2Department of Ophthalmology, Tulane University School of Medicine, New Orleans

Pars plana vitrectomy (PPV) in Malta has been carried out for 20 years with exceptional success after being introduced locally by Mr. Thomas Fenech in the early 1990s. Traditionally, 3 port PPV is carried out via 20G ports requiring suturing with 6/0 or 7/0 absorbable sutures. The 20G approach increases surgical time, post-operative astigmatism and inflammation. Patient discomfort was also an issue however until recently hampered the molecular diagnosis. In the absence of efficient treatment, the therapeutic approach is currently restricted to sunlight protection and management of complications (cataract and macular oedema). However, therapeutic strategies are emerging from intensive research, which include gene therapy, neuroprotection and retinal prosthesis.

REVs21
The rare disease collection
M.J. Gouder, T. Fenech

The Rare Disease Collection consists of over 6,000 samples and 400 matched controls. The collection includes gene therapy, neuroprotection and retinal prosthesis.

REVs22
Retina

Retina is a thin, transparent membrane that lines the inner surface of the eye. It is responsible for capturing light and converting it into electrical signals that are transmitted to the brain. Retina is divided into three layers: the pigment epithelium, the neurosensory retina, and the retinal pigment epithelium. The pigment epithelium is responsible for maintaining the health of the photoreceptors and recycling waste materials. The neurosensory retina contains the photoreceptors, including the cones and rods, which are responsible for color vision and light sensitivity. The retinal pigment epithelium is composed of pigmented cells that absorb excess light and protect the retina from damage.

REVs23
The genetics of diabetes mellitus
S. Buttigieg

Diabetes mellitus is a disorder that affects 366 million individuals worldwide. It is a disorder characterised by defective metabolism of carbohydrates, fats and proteins as a result of defective insulin secretion and/or insulin resistance. There are many forms of the disorder, amongst which type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM) are the commonest. Both of these disorders have a genetic background that involves the interaction of multiple mutant genes which also interact with environmental factors, thus classifying these two forms of diabetes as polygenic and multifactorial. T1DM usually occurs in younger individuals and is generally caused by autoimmune destruction of pancreatic β-islet cells and individuals require insulin therapy. T2DM usually presents in adults and is not insulin-dependent although insulin may have to be administered in advanced stages of the disorder. So far over 40 different susceptibility loci have been identified and associated with T1DM and T2DM. Another form of diabetes mellitus is the monogenic form that is brought about by single gene mutations. The most frequent of these is maturity-onset diabetes of the young (MODY) that generally presents in young children. Neonatal diabetes mellitus (NDM) and maternally inherited diabetes with deafness are two other less frequent forms. Gestational diabetes mellitus (GDM) is another type of diabetes mellitus for which the mutant genes involved are generally those that predispose to T1DM, T2DM or MODY. Genetic screening has proven very useful in identifying individuals at risk of developing diabetes mellitus and encouraging them to make necessary lifestyle changes. Furthermore the identification of particular mutations could provide tremendous utility in choosing the best therapy for patients suffering from the disorder.

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Auxetic biomedical designs
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Introduction: Auxetics are materials that exhibit a negative Poisson’s ratio i.e. they expand when pulled apart. This makes auxetic materials are more resistant to fracture. Also auxetic materials do not dent easily – when compressed, the material compresses towards the point of impact and becomes much denser.
Aim: To assess the use of auxetic materials in biomedical applications in order to assess any benefits that could be accrued by the use of auxetic materials in biomedical research.
Methodology: A literature review in the medical and bio-industry fields was performed by using the terms ‘auxetic’, ‘negative Poisson ratio’ and ‘zero Poisson ratio’ using Medline, patent databases, Google and Google Scholar databases.
Results: A review of the literature identified several biomedical applications that are listed and discussed. There has been a yearly rise in patent number for biomedical inventions since Roderick Lakes first synthesised auxetics in 1987. They include applications like heart valves, annuloplasty rings, stents, arterial dilators, PTFE vascular grafts and other biomedical devices.
Conclusion: Auxetic biomedical designs are already used daily in biomedical applications. Their use imparts important behaviour like non-deformability, impact resistance, resistance to shear strain and curling with double curvature. Auxetic materials hold enormous promise and could soon, quite literally, be spreading everywhere.

Femoro-Acetabular Impingement (FAI) syndrome: a fairly recent awareness and development. The medical imaging point of view
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Sports persons, physicians, orthopods and radiologists are becoming increasingly aware of the extra stress that is imposed on the hip joints with excessive activity particularly when superadded weight bearing and asymmetrical variations from the normal hip joint anatomy are present. Presentation of the abnormalities with the ball and socket areas of the hip joint and the various types of impingements: the predominant cam or the predominant pincer types and risk factors will be discussed in detail. The different kind of sportsperson types that are prone to FAI and the risk factors involved are presented. The two main methods of investigation: radiography and computerised tomography scanning techniques are elaborated and graphically projected. The radiological techniques and radiological signs of the disease entity will be slide depicted. Within the ball part of the hip joint: measurements of femoral head asphericity, a angle and offset distance between the femoral head and neck will be discussed. With regard to the socket part of the hip joint: the acetabular version angle and the depth or shallowness of the acetabulum with their methods of quantification detailed. In conclusion, Femoro-Acetabular Impingement is a syndrome which is currently more appreciated within the sports medicine, orthopaedic and radiological fields and today various approaches to assessment have been divided with regard to how to diagnose and quantify abnormalities within both the ball and the socket regions of the hip joint.

The role of serum markers in predicting outcome of threatened miscarriage
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Miscarriage is the commonest pathology affecting human pregnancy. Clinically, miscarriage can be divided into a number of different types, but for the scope of this review, threatened miscarriage (TM) has been mainly considered. TM is a major complication of 1st trimester pregnancy characterised with the appearance of vaginal bleeding. In the UK alone, it is estimated that 100,000 –135,000 women annually will present with bleeding in the first trimester. This is associated with a number of adverse complications which include pre-eclampsia, and preterm labour with eventual foetal loss. Serum markers could serve as invaluable tools for the health professional to provide a diagnosis, prognosis and ultimately provide treatment pertinent to the outcome of pregnancy. A literature review was carried out to analyse the spectrum of possible biomarkers predicting the pregnancy outcome. Predictive biomarkers can be classified into three main groups: hormone-based markers, immune-based markers and miscellaneous.
Other guidelines have been issued by the American Medical Association, the British Medical Association, the Australian and New Zealand Associations of Medical Students and Professionals, and the Canadian Medical Association. It has been suggested that Medical Schools should also issue policies regarding students posting content on the Web.

REV 41

Malta’s contribution in the Libyan conflict
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Introduction: The world and more so, the Mediterranean basin has been shocked lately by the outbreak of the Libyan conflict. The atrocities performed by the soldiers and militants were devastating. Malta historically was always an essential base for Mediterranean conflicts and this time round history repeated itself.

Aim: To radiographically outline some of the worse injuries that our department was faced with during the Libyan conflict.

Methodology: All patients admitted to our department are discussed during the daily trauma meeting. The radiographs are stored in our picture archiving and communication system (PACS). These were retrieved for the purpose of this exercise. The clinical notes reviewed and the relevant information extracted. Results: The overall results proved that the overall care provided by the department during the period of the international crisis was of very high standard.

Conclusion: Our department coped well with the sudden increase in war injuries presenting to our country.

REV 42

A low cost endoscopic surgery simulator prototype; presentation and literature review
J. Dalli, P. Andrejevic

Following the success of simulation in other industries such as the airline industry, surgical simulators have now come of age. Minimally invasive surgery has greatly gained from this technological advancement. Various studies suggest that these have a role in training and ‘surgical warm-up.’ Evidence shows that when used during a surgical warm-up, errors are reduced by up to 33%, also resulting in a decrease in fatigue related errors. The evolution of these devices has resulted in virtual reality superseding classical table-top endoscopic simulators. Haptic stimulation has merged virtual reality with tactile feedback. This is a major breakthrough; however this greatly increases the cost of the device. Due to the significant expenditure associated with this equipment and their increased demand, studies have assessed the cost-benefit of this equipment. Data has shown equivalent efficacy between tabletop laparoscopic devices and more expensive simulators. This is especially true when comparing performance of more junior trainees. This presentation displays the design and prototype of a table top box simulator. Live, low lag, digital feed and direct tactile feedback simulates endoscopic surgery. Full camera movement replicates the use of a surgical assistant. We have designed a large simulator so as to allow use as a bariatric trainer. Further instrument availability will also provide the option of single port laparoscopic surgery. We hope that the scalability, low cost and portability of this device will increase availability to surgical trainees.
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