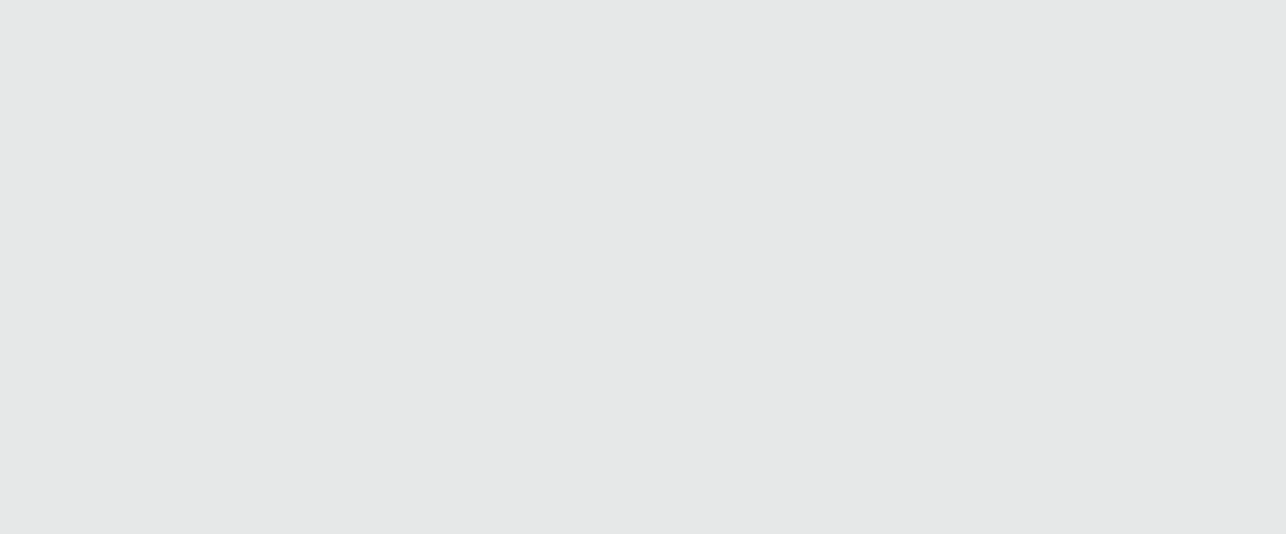
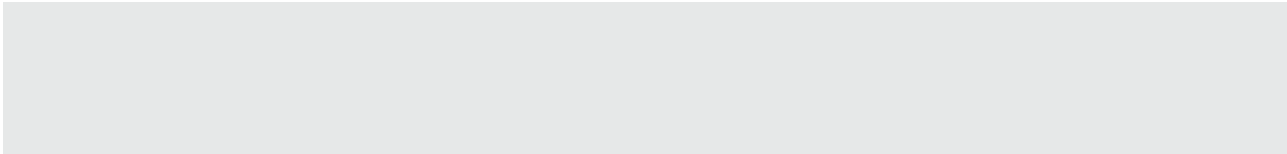




ORAL PRESENTATIONS



OP1.01

Contemporary clinical pharmacy practice and education

Alan Lau

College of Pharmacy University of Illinois at Chicago

Pharmacy practice in the United States has undergone major transformation since the 1960's. Pharmacists now have many new roles focusing on the patient pharmacotherapy in different patient care settings. The responsibilities of pharmacists have been extended from products and dispensing towards rational pharmacotherapy aimed to attain the most optimal outcomes. Clinical pharmacists are now commonly practicing in interdisciplinary teams in collaboration with physicians and other health professionals to assure that the most appropriate medications are prescribed. In addition, counselling and education are provided to patients and their family members/care givers to enhance treatment compliance. An abundance of literature is available to demonstrate the value and cost-effectiveness of many innovative clinical pharmacy services and programs in enhancing the outcomes of different patient populations. These new patient-centered roles are increasingly embraced by pharmacists in many parts of the world. There is a concurrent transformation of pharmacy education for equipping pharmacists to attain the competencies needed for these new patient-centered roles, commonly through a doctor of pharmacy (Pharm.D.) degree program (entry-level or post-baccalaureate). The focus of the curriculum is shifted from emphasis in pharmaceutical sciences towards clinical practice where pharmacotherapy and disease management constitute a substantial portion of the degree program. Experiential education becomes essential in helping the students to acquire clinical skills and judgement. Clinical pharmacist preceptors serve as role models to teach students in applying therapeutic knowledge to patient care in collaborative team-based practice environment.

OP1.02

Pharmacist-led personalisation of antiplatelet therapy

Francesca Wirth¹, Graziella Zahra², Robert G Xuereb³, Christopher Barbara², Albert Fenech³, Lilian M Azzopardi¹

¹Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, ²Molecular Diagnostics Unit, Department of Pathology, Mater Dei Hospital, ³Cardiac Catheterisation Suite, Department of Cardiology, Mater Dei Hospital

Introduction: Pharmacists should strive to take a leading role in the clinical implementation of pharmacogenetics to personalise antiplatelet therapy. The aim was to compare a novel point-of-care (POC) and two robust laboratory-based assays to identify presence of the CYP2C19 *2 allele in patients prescribed clopidogrel therapy.

Methods: After obtaining informed written consent, patients undergoing percutaneous coronary intervention were recruited. CYP2C19 *2 allele genotyping was performed with the POC Spartan™ RX system (Spartan Bioscience) and the laboratory-based TaqMan® (Life Technologies) and GenID® RDB 2070X (AID Diagnostika GmbH) assays. Patients were divided into non-carriers of the *2 allele, carriers of one *2 allele or carriers of two *2 alleles. Comparison between assays was undertaken.

Results: Out of a total of 34 patients, 25 were male and mean age was 66 years. With the POC assay, 21 patients were non-carriers, 12 were carriers of one *2 allele, and 1 was a carrier of two *2 alleles. With both laboratory-based assays, 21 patients were non-carriers and 13 were carriers of one *2 allele, however no patients were identified as carriers of two *2 alleles. Agreement in results between the POC and laboratory-

based assays was 97% ($\kappa=0.939$, $p=0.000$).

Conclusion: All three assays are reliable for pharmacist-led genotyping. The POC assay has a faster turnaround time, requires minimal training and is non-invasive, however the tests are more expensive. The mismatched result does not impact personalisation of antiplatelet therapy since an alternative to clopidogrel is recommended for carriers of one and two *2 alleles.

Disclosure: University of Malta's Faculty of Medicine and Surgery Dean's Initiative, Technoline Ltd., Scientech Ltd., E.J. Busuttil Ltd., Malta Heart Foundation, AID Diagnostika GmbH, Orme Scientific Ltd., LEVO Laboratory Services Ltd.

OP1.03

Clinical implementation of the rheumatoid arthritis medication assessment tool – RhMAT

Louise Grech¹, Victor Ferrito¹, Liberato Camilleri², Anthony Serracino Inglott¹, Lilian M Azzopardi¹

¹Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta Department of Pharmacy, Mater Dei Hospital,

²Department of Statistics and Operations Research, Faculty of Science, University of Malta

Introduction: The RhMAT is a medication assessment tool designed to analyse pharmacotherapy adherence to rheumatoid arthritis evidence based guidelines. The aim of the study was to implement the innovative RhMAT in a clinical setting.

Methods: Rheumatoid arthritis patients regularly attending Mater Dei Hospital who were older than 18 years, and able to understand Maltese or English were eligible to participate. The University of Malta Ethics Committee approval and the patients' consent was obtained. The study was run between January and December 2014. The RhMAT was completed using patients's medical notes and patient interviews. Inter rater reliability was assessed using Cohen's Kappa in 13 patients. The overall RhMAT adherence rate achieved as well as separate adherence rates for each section in the RhMAT were calculated.

Results: A total of 78 patients participated in the study. During pilot testing, interreliability results gave Kappa value as 0.916 with a p value of < 0.05 . During the study phase the average overall RhMAT adherence score was 82. A score $< 75\%$, determined as high adherence rate, was achieved in 81% cases ($n=63$). A score 51% 74% (intermediate) adherence rate was achieved in 18% of the cases ($n=14$). A high adherence rate score was achieved in 10 out of 11 subsections included in the RhMAT.

Conclusion: The overall RhMAT high adherence rate achieved indicates that rheumatoid arthritis patients are being managed in accordance to international guidelines. The RhMAT was useful in identifying gaps to established guidelines thereby enabling the clinical pharmacist and clinicians to further improve the quality of service offered.

OP1.04

Assessing the perception and awareness of clinicians on biosimilars

Kathlene Cassar¹, David Zammit Dimech², Louise Grech¹, Dustin Balzan¹, Anthony Cutajar¹, Paul John Cassar²

¹Department of Pharmacy, Mater Dei Hospital, ²Department of Medicine, Mater Dei Hospital

Introduction: The introduction of biosimilar infliximab on the Maltese National Health System (NHS) presented new challenges to clinicians. The aim of this study was to assess the perception and awareness of NHS prescribers on biosimilars.

Methods: The perception and awareness of clinicians

on biosimilars was assessed using the questionnaire developed by the Alliance for Safe Biologics Medicines. The questionnaire and three reminders were forwarded by email to prescribing clinicians.

Results: A total of 132 prescribers participated in the study giving a 14% response rate. Approximately 34% prescribed biosimilars. Out of the total respondents 6% consider themselves very familiar with the concept of biosimilars. About 47% were unaware that biosimilars may not always be licensed for all the indications as the originator products, despite both having the same international non-proprietary name. Around 27% answered that they prescribe by generic name irrespective of whether the drug is a biologic or not. Further, 36% believe that a patient can be safely started on either medicine; however 56% do not agree that these medicines could be safely started during treatment.

Conclusion: The local overall awareness (6%) on biosimilars is much less than that achieved in Europe where an average of 22% of prescribers considered themselves very familiar with biosimilars. Although prescribing of biologics is regulated by Subsidiary Legislation 458.59 "Prescribing and Dispensing requirement rules", local prescribers are unaware that biosimilars should be prescribed by brand name. This study highlights the need for increased awareness on biosimilars in order to better understand biosimilars and improve patient safety.

Acknowledgements: Michael Reilly, Executive Director, Alliance for Safe Biologics Medicines

OP1.05

Chronopharmacology in hypertension – valsartan and amlodipine administration

Sephora Falzon, Louise Grech, Anthony Serracino Inglott, Lilian Azzopardi

Department of Pharmacy, University of Malta

Introduction: Chronopharmacology in hypertension management aids clinical decision making on the best administration times of antihypertensive drugs to achieve optimum circadian blood pressure (BP) control. The study aimed to investigate the effect of morning versus evening administration of valsartan and amlodipine on BP.

Methods: Patients suffering from essential hypertension who were prescribed once daily valsartan ($n=21$) or once daily amlodipine ($n=8$) participated in the study. The patients' ambulatory blood pressure was monitored twice, 7 days apart. Each patient was initially asked to take their antihypertensive medication at 8.00am for 7 days then cross over to evening administration at 20.00 for another 7 days.

Results: The mean systolic BP (SBP) and diastolic BP (DBP) readings following both morning (123.91/77.94mmHg) and evening (121.31/76.06mmHg) valsartan administration were lower than the 140/90mmHg target. Compared to morning administration, evening valsartan dosing resulted in nonsignificantly lower BP ($p>0.05$ MannWhitney) during the early morning and day time periods but significantly lower BP ($p<0.05$ MannWhitney) during the night. Mean whole day BP following both morning (126.23/77.35mmHg) and evening (127.75/78.71mmHg) amlodipine dosing were lower than the 140/90mmHg target. Compared to evening dosing, morning amlodipine administration resulted in nonsignificantly lower BP ($p>0.05$ MannWhitney) during the day time period, almost significantly lower BP at night ($p=0.065$ Mann Whitney) and non significantly ($p>0.05$ MannWhitney) higher BP during the early morning.

Conclusion: Valsartan and amlodipine were effective for 24 hour BP control irrespective of their dosing time. Different administration times of both drugs had different

effects on circadian BP and further studies are required to sustain the results.

OP1.06

The role of biomarkers in determining clinical activity in inflammatory bowel disease

Nicholas Paul Delicata¹, Neville Azzopardi², Pierre Ellul²

¹Department of Gastroenterology, Mater Dei Hospital, ²Department of Gastroenterology, Mater Dei Hospital

Introduction: Faecal calprotectin, released by intestinal neutrophils, is elevated in intestinal inflammation. This test is useful in the diagnosis of inflammatory bowel disease (IBD). ESR and CRP are the commonest serum markers used locally, to detect inflammation and clinically active disease, even in the absence of gastrointestinal symptoms. The aim of this study was to compare the predictive value of ESR, CRP and faecal calprotectin in patients with newlydiagnosed IBD.

Methods: Patients with newlydiagnosed IBD between January 2013 and August 2014 were included. Faecal calprotectin, ESR and CRP were assayed at the time of diagnosis. An ESR of $>23\text{mm/hr}$ in adults (>16 years) and $>13\text{mm/hr}$ in children (<16 years) was considered elevated. A CRP $>10\text{mg/L}$ and a faecal calprotectin $>50\text{mg/L}$ were considered as positive in both populations.

Results: 70 patients (43 females; 27males) with a mean age of 30.6 (475 years) were recruited. 42 had Crohn's disease, 25 had ulcerative colitis and 3 had indeterminate IBD. Faecal calprotectin was elevated in all cases. The ESR was elevated in 40% of cases and CRP in 20% of cases. There was no statistical difference between the adult and paediatric population.

Conclusion: These results demonstrate that ESR and CRP are poor markers of intestinal inflammation, compared to faecal calprotectin. This data suggests that all IBD patients should have faecal calprotectin measured at outpatients rather than ESR and CRP to assess clinical activity even in the absence of gastrointestinal symptoms.

OP1.07

Upper gastrointestinal malignancy a losing battle?

Maria Petra Agius, Marc Gingell Littlejohn, Jo Etienne Abela

Mater Dei Hospital

Introduction: To prospectively audit an upper gastrointestinal cancer referral practice and to assess disease stage and post-intervention outcome.

Methods: From January 2013 to July 2015, 48 all-comers were recruited (34 males/15 females, mean 70 years, age range 32-90 years, followup range 6 to 52 months). The lesions were distributed as follows: 20 oesophageal (17 adenocarcinomas, 1 squamous cancer, 1 GIST and 1 myxoid sarcoma), 13 junctional (12 adenocarcinomas, 1 squamous cancer), 12 gastric (8 adenocarcinomas, 3 GISTs, 1 rhabdomyosarcoma), and 3 duodenal (2 adenocarcinomas, 1 GIST).

Results: Twenty-seven patients were treated with curative intent - 11 oesophagectomies, 12 gastrectomies, 2 EMR's, 2 partial duodenectomies. All had R0 resections. Five patients had an unfavourable outcome. Four of these developed early metastatic and nonrecurrent disease. One patient died 3 weeks postoperatively from failure to thrive and heart failure after emergency subtotal gastrectomy for exsanguination (30-day all cause mortality of 4%). Twenty patients were treated palliatively. Despite favourable imaging after neoadjuvant treatment, 4 patients had "openshut" laparotomy due to metastatic disease. One patient was treated with chemoradiation only after developing CT detectable

disease while on neoadjuvant chemotherapy. In total, 14 patients were treated with endoprosthesis stents, 2 patients had palliative partial gastrectomy, 1 patient had an emergency gastroenterostomy after failed duodenal stent deployment. 30-day all cause mortality after primary palliative intervention was 30%.

Conclusion: More than half of this unselected group of patients had, or developed, incurable disease within 12 months of diagnosis. Although post-elective resectional mortality is very low, early mortality after palliative procedures is surprisingly high.

OP1.08

Columnar-lined oesophagus and oesophageal cancer in Malta: results from the first national patient registry

Rebecca Dalli¹, John Schembri², Alex Attard¹, Mario Vassallo², Pierre Ellul¹, James Pocock², James Degeatano², JoEtienne Abela¹

¹Department of Surgery, Mater Dei Hospital, ²Department of Medicine, Mater Dei Hospital

Introduction: Oesophageal adenocarcinoma (OAC) is not considered to be a common pathology in Malta but accurate data are lacking. This study is a preliminary assessment of the prevalence of columnar-lined oesophagus (CLO) and associated neoplasia.

Methods: Patients with endoscopically identified CLO equal to or longer than 1cm, were enrolled into a prospective longitudinal cohort study. Endoscopic assessment of the oesophageal mucosa was carried out using advanced adjuncts. Subjects were assigned a Prague classification. Seattle protocol biopsies with additional samples from visible lesions were taken.

Results: In the period January 2012 to August 2015, a total of 119 subjects were enrolled, 77 males and 42 females, with mean age 58 years (range 1994, SD 16.4). The mean circumferential CLO segment length (C) was 2.2cm with the mean mucosal (M) length being 3.4cm. Eighty five subjects (71%) had short segments. Nine subjects were of Northern European extraction and longer segments were commoner in this subgroup ($p=0.001$). Prevalent low grade dysplasia was identified in 2 subjects, high grade dysplasia in 1, T1a OAC in 6 and invasive OAC in 19. Specialised intestinal metaplasia (SIM) was identified in 86 subjects and its presence was positively associated with segment length ($p=0.014$), benign stricture ($p=0.010$) and neoplasia ($p=0.004$).

Conclusion: This is the first study addressing CLO and OAC in this country. Short segments appear to constitute the predominant indigenous phenotype, whereas immigrant Northern Europeans are more likely to have long segments. Prevalent invasive cancer is commoner than non-invasive disease. Surveillance is being implemented in order to counter this trend.

OP1.09

Pregnancy outcomes in female patients with inflammatory bowel disease

Stefania Chetcuti Zammit¹, Mandy Caruana², Konstantinos Katsanos³, Gerassimos Mantzaris⁴, Monica Cesarini⁵, Uri Kopylov⁶, Louise Zammit⁷, Godfrey LaFerla⁸, Pierre Ellul¹

¹Department of Gastroenterology, Mater Dei Hospital,

²Department of Obstetrics and Gynaecology, Mater Dei Hospital,

³Department of Internal Medicine, University of Ioannina School of Medical Sciences, ⁴Evangelismos, Ophthalmiatreion Athinon and Polyclinic Hospitals, ⁵Medicina Interna e Specialità Mediche, Sapienza University of Rome, ⁶Gastroenterology, Sheba Medical

Center, Tel Hashomer, ⁷Department of Medicine, Mater Dei Hospital, ⁸Department of Surgery, Mater Dei Hospital

Introduction: Inflammatory Bowel Disease (IBD) affects patients during their childbearing years. With the progress and development of newer IBD treatments patients are increasingly likely to consider having children.

Methods: Female IBD patients were recruited from 5 different centres in Europe. They were interviewed through a prospective questionnaire.

Results: 233 patients were recruited (mean age 40; SD±11.9). 85.5% patients had ulcerative colitis (UC). 224 pregnancies were recorded. 63.8% patients became pregnant before the diagnosis of IBD. A younger age at IBD diagnosis was associated with a higher number of pregnancies ($p<0.006$). 1.7% of patients stopped medications on their own accord. Medications were stopped by the doctor in 13.9%. Additional medications were used in 3.9% of pregnancies. 54.0% of pregnancies were unplanned, with a higher rate in those who were pregnant after being diagnosed with IBD ($p<0.0001$). 8.6% of patients reported fertility issues. 9% of patients had an IBD exacerbation during pregnancy. Delivery was by caesarian section in 30.8% and by vaginal delivery in 69.2% and was influenced by underlying IBD in 12.0%. Delivery was uncomplicated in the majority of patients (92.0%). Mean birth weight was 3.34kg (1.90 – 4.70kg; SD±0.395). Most newborns (94.6%) were healthy. There were no correlations between the use of disease modifying drugs and neonatal adverse outcomes. 29 miscarriages were reported. Only 54.4% of IBD patients breastfed their infants.

Conclusion: Pregnancy outcomes appear to be favourable in IBD patients. There still remains a lower breast-feeding rate amongst IBD patients when compared to non IBD European data.

OP1.10

To assess the value of blue dye and radiological contrast tests after major oesophago-gastric and duodenal surgery

Maria Petra Agius, Kristian Micallef, Andre Navarro, Jo-Etienne Abela

Mater Dei Hospital

Introduction: To assess the value of blue dye and radiological contrast tests after major oesophago-gastric and duodenal surgery

Methods: Twenty-eight patients (18 males:9 females, mean age 68yrs) undergoing major oesophageal, gastric and duodenal surgery in a single surgical firm were recruited in a prospective study. Oral blue dye and contrast swallow examinations were routinely performed on the 5th to 7th post-operative day to assess for anastomotic and suture/staple line integrity, prior to allowing oral intake. The clinical progress, inflammatory marker profile and outcome of the leak tests were recorded.

Results: Twelve patients had oesophagectomy (2 3-stage, 5 2-stage, 4 trans-hiatal), 1 patient had trans-thoracic oesophageal diverticulectomy, 13 patients had gastrectomy (2 total) and 2 patients had duodenectomy. Twenty-two patients had a smooth recovery with a favourable inflammatory marker trend. Their leak tests were negative. Six patients had a stormy post-operative period. Leak tests were positive in 2 patients (1 neck anastomosis leak managed conservatively and 1 thoracic leak treated with percutaneous drainage and oesophageal stent). Three patients developed sepsis from post-operative pneumonia. One patient developed duodenal stump dehiscence after emergency subtotal gastrectomy for a bleeding lesser curve cancer. This latter patient died in hospital from intractable congestive heart failure

Conclusion: Patients undergoing major oesophago-

gastric and duodenal surgery are unlikely to have anastomotic or suture/staple line dehiscence if their 7th day postoperative clinical and marker progress on a nil-by-mouth regimen is smooth. Leak tests may be unnecessary in this group of patients. An unfavourable progress is associated with leakage in 50%.

OP1.11

Cystic lesions of the pancreas: need for local guidelines?

Julia Gauci, Kelvin Cortis, Neville Azzopardi

Mater Dei Hospital

Introduction: The increased availability of magnetic resonance imaging (MRI) has resulted in more frequent detection of pancreatic cystic neoplasms (PCN). PCN are classified into intraductal papillary mucinous neoplasms (IPMNs; subclassified into main duct (MD), branch duct (BD) and mixed type (MT)), mucinous neoplasms (MCN), serous cystadenomas and solid papillary neoplasms. IPMNs and MCNs carry the highest risk of malignant transformation; international guidelines recommend resection of all MDIPMN and MCN with further stratification of risk by endosonography in BDIPMN.

Methods: We conducted a retrospective study on all CLPs reported on MRI between July 2014 and May 2015.

Results: 53 PCNs were identified; 48 IPMNs (43 BD-IPMN, 4 MTIPMN, 1 MDIPMN) and 5 MCNs. BDIPMNs were commoner in the pancreatic head (59%); 84% <2cm and 16% 2-3cm in diameter. 53% underwent MR surveillance; the rest were not followed up. The MDIPMN was 2.5cm in diameter, arose in the body and underwent surgical resection. 3 MT-IPMNs arose from the pancreatic head, 3 were 1-3cm while 1 was >3cm. 25% were surgically resected, 25% underwent MR surveillance; the rest were not followed up. MCNs were located in the body or tail and were larger in size (80% >3cm; 20% 2-3cm). 40% were surgically resected; the rest underwent MR surveillance.

Conclusion: Local management of MDIPMN and MCN is consistent with international guidelines with fit patients undergoing surgical resection. Management of BDIPMNs is less consistent; they should undergo risk stratification to determine which patients would benefit from surgery or surveillance. Our situation differs due to the local unavailability of EUS.

OP1.12

Temporal trends in the epidemiology, management and outcomes of patients with hepatocellular carcinoma in Malta

James Gauci¹, Martina Muscat¹, Jonathan Gauci¹, Samuel Galea², Martina Wismayer², Richard Pullicino³, Kelvin Cortis³, Jurgen Gerada¹

¹Division of Gastroenterology, Mater Dei Hospital, ²Department of Surgery, Mater Dei Hospital, ³Department of Radiology, Mater Dei Hospital

Introduction: Chronic liver disease (CLD) and hepatocellular carcinoma (HCC) are increasing worldwide. We studied such temporal trends locally in particular HCC.

Methods: HCC patients diagnosed radiologically or pathologically between January 1995 – March 2015 in Malta were enrolled. Patient names were cross checked with local cancer registry. Patient demographics and management were obtained from medical notes.

Results: 116 patients (70% males) were diagnosed with HCC in the study period. Mean incidence between 2008 – 2011 and 2012 – 2015 was 7.75 and 14 new cases/year respectively.

Data collection was only possible in 40 patients. Mean age at diagnosis was 64 (range 35 – 90). Liver cirrhosis was present in 77.5% (Child A 51.5%). Alcohol (25%) and fatty liver (22.5%) were the commonest causes of CLD. Alpha-fetoprotein was elevated in 62.5%. HCC presented mainly in the right liver lobe (60%), as solitary lesion (70%) or multifocal lesions (20%), with a mean size of 5.3cm (range 0.8cm – 19cm). 35% of HCC cases were referred for liver transplant, 27.5% received TACE, 27.5% palliative care, 5% RFA and 5% liver resection. Of the ones who died, mean interval between HCC diagnosis and death was 1.6 years. All cause mortality for HCC cases diagnosed between 2008 – 2010 and 2011 – 2013 was 90% and 59% respectively.

Conclusion: The incidence of HCC in Malta is alarmingly rising; twice higher in recent years as compared to previous, owing to rising CLD and better imaging techniques. Mortality rate has however improved by 30%, owing to earlier diagnosis and better treatment options.

OP1.13

Group B Streptococcal disease in infants in Malta

Mandy Caruana¹, David Pace²

¹Department of Obstetrics and Gynaecology, Mater Dei Hospital,

²Department of Paediatrics, Mater Dei Hospital

Introduction: Group B Streptococcus (GBS), an important cause of neonatal sepsis, causes early onset GBS disease (EOGBS) within <7 days of life or late onset GBS (LOGBS) disease from 7 days to 3 months of life. The primary objective of this study was to describe the disease burden of infantile GBS disease in Malta.

Methods: All babies from 0–3 months of age who had GBS isolated from the blood and/or cerebrospinal fluid from December 2008 to July 2014 were identified. Data on demographics, laboratory investigations and outcome were collected.

Results: Over the 5½ year study period, 25 babies had confirmed GBS disease. EOGBS occurred in 72.0% (incidence: 0.79/1000 livebirths), and 28.0%, had LOGBS (incidence: 0.31/1000 livebirths). All infants with EOGBS developed symptoms within their first 24 hours of life compared to a mean age of 12.6 days for LOGBS. Vaginal rupture of membranes was documented in all births. In EOGBS 12% had neutrophilia and a first mean C-reactive protein (CRP) of 14.4. In contrast 28.57% with LOGBS had neutrophilia and a first mean CRP of 54.6. A lumbar puncture was only done in 22.2% of infants with EOGBS compared to 85.7% in LOGBS. Infants with EOGBS received intravenous antibiotics for a mean of 11.5 days compared to 13.7 days in LOGBS. Out of all cases of GBS sepsis, 12% developed neuro developmental problems and 12% died.

Conclusion: Our study shows a high burden of EOGBS disease in Malta. Local guidelines on the prevention and treatment of GBS sepsis in infants are needed

OP1.14

Body maps and proformas in safeguarding: ensuring best practice

Kevin Borg¹, Manjari Tanwar², Mariella Mangion³, Deborah Hodes⁴

¹Department of Paediatrics, Mater Dei Hospital; ²Department of Paediatrics, University College London Hospital, ³Department of Paediatrics, University College London Hospital, ⁴Department of Paediatrics, Mater Dei Hospital, ⁵Department of Paediatrics, University College London Hospital; ⁶Department of Paediatrics, Royal Free Hospital London

Introduction: Assessment of maltreated children should be conducted with the same degree of thoroughness

and attention as any potentially life threatening medical condition. Inadequate documentation has been a recurrent theme of serious case reviews. We aimed to assess the availability and quality of both safeguarding proformas and body maps in four inner city trusts in London and in the general hospital of Malta.

Methods: A prospective quality improvement audit was carried out incorporating the safeguarding proforma and body maps provided by the Royal College of Paediatrics and Child Health (RCPCH) as the reference standard. We identified the proforms and body maps in the various hospitals and asked their designated doctors and/or paediatric trainees to discuss the strengths and weaknesses of each.

Results: All hospitals had body maps available however there was variation in their quality and accessibility. The majority had unnecessary artistic lines and were either too small or did not fit into the margins. Some had vital body parts missing. Only one trust had a safeguarding proforma that was readily accessible and utilised. All responding trainees agreed that safeguarding proformas and body maps are useful.

Conclusion: Simple and readily available body maps and proformas can help the busy clinician when dealing with safeguarding cases. Unnecessary artistic lines on body maps can be confusing and misleading when interpreting the findings. A simple and basic updated set of body maps was devised along with an aide-memoire based on RCPCH safeguarding proforma. This should be uploaded onto each hospital's intranet and reaudited after six months.

OP1.15

Additional 2D ultrasound views enhance the detection of congenital heart disease in the second trimester

Maria Anna Zammit¹, Victor Grech¹, Miriam Gatt², Simon Attard Montalto²

¹University of Malta, ²Directorate for Health Information and Research

Introduction: The antenatal detection of Congenital Heart Disease (CHD), the most common type of congenital malformation, is very low. Yet antenatal detection leads to better prenatal care, and may significantly reduce neonatal morbidity and mortality. It may be improved by the introduction of additional scanning views to the anomaly 2D ultrasound scan carried out routinely in Malta.

Methods: The study included 600 randomly selected women of all ages in their second trimester (18 to 24 weeks), who attended Mater Dei Hospital for a routine antenatal anomaly ultrasound scan. These women were scanned using (1) the conventional 4-chamber view (4CV), plus additional views, including (2) the left outflow tract, (3) the right outflow tract, (4) the 5-chamber view and (5) the 3-vessel view. The composite scan including all 5 views was named the 'extended cardiac ultrasound examination' (ExCUSE). Scanning was performed by using a Siemens SONOLINE G50 Ultrasound Machine (Model number: 7474922) and C52 Curvilinear Transducer (Serial number: AJ86436).

Results: From these 600 patients, 11 had abnormal results of which 7 were picked up using ExCUSE scanning whilst the remaining 4 were also picked up on the 4CV. Most of these mothers have yet to deliver such that the antenatal diagnoses have yet to be confirmed clinically and by echocardiography.

Conclusion: Although fetal heart anomalies detected on antenatal ExCUSE scanning need to be confirmed, extra ultrasound scan views can improve the pickup rate for CHD.

OP1.16

Introduction of a blood-spot screening programme for neonatal thyroid disease: impact on safety and cost-effectiveness.

Ryan Farrugia, Jelena Martić, Tara Grima, Paul Soler

Department of Child and Adolescent Health, Mater Dei Hospital

Introduction: Disorders of thyroid gland in the newborn are relatively common. Failed or delayed treatment of thyroid disease in the neonatal period may have severe repercussions on child development. It is therefore routine to screen for thyroid disease in the neonatal period. In Malta Cord Thyroid Screening (CTS) is performed using blood samples collected at birth from the umbilical cord while most countries have adopted delayed bloodspot (DBS) testing obtained between days 5-10 of life. This study assesses the impact of a potential introduction of DBS thyroid testing on the safety and costeffectiveness of newborn thyroid screening.

Methods: Data on CTS was collected retrospectively from April 2013-April 2015. A literature review was carried out to investigate the safety of DBS programmes. The economic implications of both systems were assessed by computing the costs involved, including disposables, reagents, machinery, manpower and the added costs of recalling and resampling any false results.

Results: 7496 newborns were screened at birth. 1748 (23%) of CTS were falsely positive for hypothyroidism and 3 gave false negative results. Sensitivity and specificity of CTS were 25% and 77% while for DBS 97.5 and 99%. A DBS programme was shown to be potentially cheaper to run.

Conclusion: Comparison of the two screening methods revealed an alarmingly high rate of recall (false positives) for the CTS. The low sensitivity of CTS is reason for serious concern. DBS testing is shown to improve safety and cost-effectiveness with the added advantage of supporting future additions to the neonatal biochemical screening programme.

OP1.17

The clinical burden of phenylketonuria in a Maltese cohort

Stephen Attard¹, Simon Attard Montalto²

¹Department of Paediatrics, Mater Dei Hospital, ²Department of Paediatrics, Faculty of Medicine and Surgery, University of Malta

Introduction: Phenylketonuria (PKU) is a rare metabolic disorder comprising a number of different enzyme deficiencies. In Malta, dihydropteridine reductase (DHPR) deficiency appears to be more common than phenylalanine hydroxylase deficiency (classical PKU), and is associated with greater and long term neurodisability.

Methods: The clinical burden including any medical complications such as epilepsy, developmental delay and need for healthcare support was obtained by trawling case files of all patients with PKU over an 18 year period, 1998-2015.

Results: Six cases, 5 with DHPR deficiency and one with classical PKU were identified. This gives a prevalence of DHPR of approximately 5.5 per 10⁵, in keeping with the reported high carrier rate of 3.3%. The absence of newborn PKU screening in Malta resulted in a late diagnosis from 5-23months (apart from two siblings of an index case diagnosed at birth). Three children had a 'classical' PKU phenotype but all six patients had cognitive-developmental delay, motor abnormalities and required a 1:1 learning assistant at school. Five had behavioural issues and dystonia, whilst three had microcephaly and epilepsy. Medical issues were compounded by problems in providing and adhering to strict low-phenylalanine diets and, in those with DHPR, the regular provision of neurotransmitter and co-factor supplementation.

Conclusion: PKU patients in Malta create a disproportionate demand on health services and will not be

unable to lead an independent existence. A comprehensive overhaul of the care provided to these children is required, starting with the introduction of newborn screening, followed by effective dietary and pharmaceutical provision at all times.

OP1.18

'You have to experience it...to truly understand it'. The voices of Maltese parents raising young children born with intellectual disability risks: emotional needs

Elayne Azzopardi¹, Jois Stansfield², Julie Marshall³

¹Swansea University, ²Department of Health Professions,

³Department of Health Professions, Research Institute of Health and Social Change

Introduction: Exploring Maltese parents' experiences and needs whilst raising an 'at risk' child to develop an intellectual disability (ID) act as a foundation for the provision of family-centred early intervention services in such a way that is beneficial for the whole family. The study aimed to explore the experiences and needs of Maltese parents of young children born with biological risks for ID.

Methods: A qualitative crosssectional design was adopted using interpretative phenomenological analysis (Smith et al., 2009). Semistructured interviews were conducted with a purposive sample of thirty seven sets of parents, whose children were 0;6, 2;0, 3;6 and 5 years of age. All ethical considerations and permissions were sought and respected.

Results: Analysis identified six superordinate themes: 'experiencing is true understanding', 'family functioning', 'info-emotional cycle', 'micro-system socio cultural framework', 'service-needs-resource cycle' and 'experiential challenges'. This paper focuses on 'experiencing is true understanding' and its respective subthemes. Findings shed light on the lack of empathy that parents perceived, as well as feelings of shock that impacted and transformed their lives, throughout their child's first five years of life.

Conclusion: The parents described a fundamental change in their lifestyle as a result of their experiences. Implications suggest a need for parent-to-parent support and specialised psychological services to support parents' emotional needs, that should initiate from birth and/or the newsgiving period. Recommendations involve changes in health services policy and provision, which could reduce the reported level of parents' stresses, increase service satisfaction and longterm outcomes. Further recommendations to enhance the education of Maltese health professionals are also identified.

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OP1.19

Paediatric emergency severity index and time of first medical contact

Paul Torpiano¹, David Cini², Paul Soler¹

¹Department of Paediatrics, Mater Dei Hospital, ²Department of Psychiatry, Mount Carmel Hospital

Introduction: The Paediatric Accident and Emergency (A&E) service covers all patients under 16 years of age presenting with medical complaints. Cases are triaged by the Emergency Severity Index (ESI) in order to allow doctors to review patients depending on priority. The aim of this audit was to assess whether Paediatric A&E waiting times abide by the ESI recommendations.

Methods: All patients reviewed at the Paediatric A&E

Department over a 12day period (n=314) were included. For each patient, time registered at A&E, time triaged at A&E, time for first medical contact, time of transfer/admission, and time of senior review where applicable were recorded.

Results: The majority of patients (138) presented with ESI level 3 complaints (44%), with 69 presenting at ESI2 (22%) and 4 at ESI1 (1.3%). All ESI1 patients were seen immediately, while the average waiting times for ESI2, 3, 4 and 5 were 40.43, 49.27, 37.58 and 31.19 minutes respectively. According to ESI recommendations, average waiting times for ESI level 1, 3, 4 and 5 were appropriate, though those for ESI2 were not. Of these, 13 patients (22.4%) were seen within the recommended 15 minutes waiting time.

Conclusion: On average, patients presenting with an ESI level 2 complaint were not seen within the recommended time frame. One potential cause for this is the overtriaging of patients by inexperienced triage nurses, and the authors recommend further investigation into this and other possible causes for delays.

OP1.20

Door-to-balloon time in ST segment elevation myocardial infarction at Mater Dei Hospital

John Bonello¹, Maria Farrugia¹, Philip Dingli²

¹Department of Medicine, Mater Dei Hospital, ²Department of Cardiology, Mater Dei Hospital

Introduction: The European Society of Cardiology Guidelines (ESC2012), Guidelines for management of acute myocardial infarction in patients presenting with STsegment elevation recommend a door-to-balloon-time of <60 minutes.

Methods: Prospective collection of STEMI patients presenting at Mater Dei Hospital between October'13-January'14 was carried out. Data was collected from casualty registration forms and catheterization-suite reports. Door-to-balloon time was calculated from registration time (A&E), to time of 1st balloon inflation (catheterization-suite reports). Outcome was assessed by ST-resolution in 1 hour, 1 day and presence of new Qwaves.

Results: 54 patients were diagnosed with STEMI within the collection period. 1 patient died post-thrombolysis, had no data available. Data was collected from 53 patients (mean age:62.2, range:33-81); (M:75.47%). 51.85% of patients were brought by ambulance and only 25% had MRXECG taken. 69.81% of patients underwent PCI (percutaneous coronary intervention), 7.54% thrombolysed, 22.64% were managed conservatively. Average door-to-balloon-time was 139.19minutes (median:112). 56.8% of patients were registered during 'OfficeHours' (08:00-17:00): average door-to-balloon time was 134.29minutes (median:97). The remaining 43.2% had a door to-balloon-time of 140minutes (median:115.5). 18.9% of PCIs were done within the recommended time-window of <60 minutes, 13.5% within 60-90minutes, 37.8% were done within >120minutes. In patients who underwent PCI, >50% resolution of STElevation on day1 was recorded in 86.49%, 100% in patients who underwent thrombolysis, in 36.36% treated conservatively. New Q waves were recorded in 45.95% of patients who underwent PCI, in 25% treated with thrombolysis and in 27.27% treated conservatively.

Conclusion: The average door-to-balloon-time at MDH was greater than recommended by ESC. Further analysis of patient flow is required to address this clinical issue.

OP1.21

Percutaneous coronary intervention (PCI) related morbidity and mortality

Elton Pllaha¹, Matthew Mercieca Balbi¹, Alice May Moore¹, Kentaro Yamagata¹, Sara Xuereb², Matthew Bonello³, Karl Camilleri⁴, Richard Apap Bologna², Jeremy Fleri Soler⁵, Robert George Xuereb¹

¹Department of Cardiology, Mater Dei Hospital, ²Foundation Programme, Mater Dei Hospital, ³Department of Anaesthesia, Mater Dei Hospital, ⁴Mater Dei Hospital, ⁵Department of Medicine, Mater Dei Hospital

Background: Evaluation of safety and effectiveness of PCI and drug eluting stents is important in device approval and their clinical use. Clinical outcomes is an important parameter in the understanding of human subjects' exposure to drug device products.

Objective: To assess morbidity and mortality related to PCI in Catheterisation Suite, Mater Dei Hospital.

Method: We assessed retrospectively 745 PCI procedures between June 2012 and 2013 with a follow up period of 1 year. The primary endpoint was rate of death and CVA 1 year after the indexed PCI. Secondary endpoints included procedure related complications such as bleeding and transfusion requirements, acute or chronic kidney injury and instant restenosis and thrombosis.

Results: Seven hundred and forty five (n=745) PCI procedures were analyzed. The mean age was 63 years with a male preponderance of 78%. Most procedures were elective PCIs (n=562) followed by primary PCIs (n=165) and ad hoc PCIs (n=18). The large majority of patients had no Creatinine levels taken pre or post procedure. Access site complications included pseudoaneurysms. 30 patients had an US groin for a suspected pseudo aneurysm (4% of cohort). Management of pseudoaneurysms was mainly conservative. Only two (2) patients (0.27%) suffered a CVA post procedure. A total of 62 PCI procedures (8.9%) out of 692 PCIs performed suffered some form of in-stent restenosis. A total of 38 patients (5.1%) died within 1 year of procedure.

Conclusion: PCI is a lifesaving procedures with a high benefit-to-risk ratio.

OP1.22

Prognostic indicators and risk estimation of ten-year and twenty-year mortality following acute coronary syndrome

Caroline Jane Magri¹, Roberto Debono², Neville Calleja², Joseph Galea³, Stephen Fava⁴

¹Department of Cardiology, Mater Dei Hospital; Medical School, University of Malta, ²Directorate Health Information and Research, ³Department of Cardiac Services, Mater Dei Hospital; Medical School, University of Malta, ⁴Department of Medicine, Mater Dei Hospital; Medical School, University of Malta

Introduction: We sought to identify independent predictors of mortality at 10 years and 20 years following admission with acute coronary syndrome (ACS) and to generate risk equations using baseline characteristics.

Methods: Patients hospitalized with ACS from December 1990 till June 1994 were recruited and followed up through 31st December 2012. Univariate analysis followed by Cox regression analysis was performed to identify independent predictors of mortality at 10 and 20 years. Cox models were consequently used to develop risk equations to predict mortality at 10 and 20 years.

Results: The study followed 881 patients for 10 years and 712 patients for 20 years. Using Cox regression analysis, 20-year all-cause mortality was associated with acute myocardial infarction (AMI) in the index admission, age, and diabetes mellitus (DM). Twenty-year cardiovascular

disease (CVD) mortality was associated with AMI in the index admission, age, DM, and total cholesterol levels, while 20-year cardiac mortality was associated with AMI in the index admission, female sex, age, DM and history of coronary artery disease. 10-year all-cause mortality was associated with age and DM. Similar results were obtained for both 10 year CVD mortality and cardiac mortality whereby both age and DM were significant predictors. Risk equations were generated.

Conclusion: Using a significant cohort of ACS patients with very long follow-up period, risk equations for all-cause, cardiovascular and cardiac mortality for patients with ACS at 10 and 20 years were generated. If validated, these novel risk equations will help in improving longterm outcome following ACS.

OP1.23

Red blood cell distribution width & myocardial scar burden in coronary artery disease

Caroline Jane Magri¹, Tan Xiao Tian², Liberato Camilleri³, Robert G. Xuereb¹, Joseph Galea¹, Stephen Fava⁴

¹Department of Cardiology, Mater Dei Hospital; Faculty of Medicine and Surgery, University of Malta, ²Department of Medicine, Mater Dei Hospital, ³Statistics and Operations Research, Faculty of Science, University of Malta, ⁴Department of Medicine, Mater Dei Hospital; Medical School, University of Malta

Introduction: Red blood cell distribution width (RDW) is a novel independent marker of cardiovascular disease, including heart failure, coronary artery disease and myocardial ischaemia. The aim of the study was to investigate a possible relationship between RDW and myocardial scar burden, as assessed by a MIBI viability scan. A secondary objective was to assess for an association between RDW and left ventricular ejection fraction (LVEF).

Methods: The study comprised 123 subjects known to suffer from ischaemic heart disease who underwent a myocardial viability scan between June 2008 and July 2014. Haemoglobin, mean corpuscular volume, RDW, platelet count, mean platelet volume (MPV), estimated glomerular filtration rate, fasting blood glucose, liver and lipid profiles were evaluated for all patients. The extent of myocardial scarring and LVEF were noted. Data were analysed using IBM SPSS Statistics 22.0. Univariate followed by multivariate analyses were performed to assess for independent predictors of myocardial scarring & LVEF respectively.

Results: The mean age of the study population was 63.5 years; the majority of the subjects were males. The median LVEF was 31% & median percentage of myocardial scarring was 8.7%. Multivariate analyses revealed that RDW, HDL-cholesterol and alanine transaminase were independent predictors of myocardial scarring while RDW, MPV, total cholesterol and gamma-glutamyl transpeptidase were independent predictors of LVEF.

Conclusion: Increased RDW is an independent predictor both of myocardial scar burden and impaired left ventricular function in subjects suffering from coronary artery disease.

OP1.24

The role of HIF1 α , VEGF and obstructive sleep apnoea in the development of coronary collateral circulation

Mark Abela, Andrew Cassar, Graziella Zahra, Philip Dingli, Elton Pllaha, Chris Deguara, Stephen Montefort
Mater Dei Hospital

Introduction: Intermittent hypoxia (IH) in obstructive sleep apnoea (OSA) confers cardioprotection by enhancing coronary collateral circulation (CCC) development, decreasing

myocardium vulnerability to hypoxia and ischaemia. The main objective was to assess whether hypoxia inducible factor1 α (HIF1 α) and vascular endothelial growth factor (VEGF) play a role in the development of CCC in patients with OSA.

Methods: A total of 44 patients with reported collaterals on angiography were selected as cases, with 21 patients not having a CCC recruited as controls. All patients underwent ambulatory polysomnography to test for the presence of OSA. Blood samples for HIF1 α and VEGF levels were taken. The development of CCC was classified according to the Rentrop Score.

Results: This study failed to confirm a relationship between the development of CCC and the presence of OSA ([absence/presence, $p=0.47$], [severity, $p=0.44$], [mild/moderate versus moderate/severe, $p=0.27$] and [AHI, $p=0.21$]), with a nonsignificant odds ratio of 2.17 ± 1.61 ($p=0.21$). HIF1 α increased with increasing Rentrop Score ($p=0.04$), but was not related to the presence or absence of OSA. However, HIF1 α levels in moderate/severe OSA were positively correlated with Rentrop Score ($p=0.02$), while no/mild OSA patients showed no correlation. VEGF levels did not differ significantly with Rentrop Score or OSA severity.

Conclusion: This is the first study to date that links OSA, CCC, and plasma HIF1 α and VEGF levels. Significantly, augmented HIF1 α in moderate/severe OSA patients might be an important mediator in the development of CCC, but not in patients with no/mild OSA.

Disclosure: ELISA kits (2000 euros) funded by the Malta Medical School.

OP1.25

Closing the audit cycle: have cardiovascular risk assessment and management in rheumatoid arthritis patients improved?

Rosalie Magro¹, Kyra Bartolo², Roberto Corso², Malcolm Buhagiar³, Nikita Taliana⁴, Andrew Borg¹

¹Department of Rheumatology, Mater Dei Hospital, ²Department of Medicine, Mater Dei Hospital, ³Department of Oncology, Sir Anthony Mamo Oncology Hospital, ⁴Department of Paediatrics, Mater Dei Hospital

Introduction: The aim of the audit was to determine whether the cardiovascular risk assessment and management of patients with rheumatoid arthritis (RA) is in concordance with the EULAR guidelines.

Methods: An audit was carried out retrospectively on 91 RA patients by collecting data on a two year period (August 2010 to July 2012). The results of this audit were then disseminated through the rheumatology department and a form for cardiovascular risk assessment in RA was implemented. The audit was repeated on 107 patients by collecting data on a two year period starting from January 2013.

Results: Documentation of cardiovascular risk factors over a two year period improved from the first to the second audit: weight from 27.5% to 52.3%, BMI from 0% to 10.3%, smoking status from 72.5% to 93.5%, blood pressure from 72.5% to 92.5%, blood glucose from 72.5% to 97.1% and lipid profile from 54.9% to 96.3%. Documentation of smoking cessation advice improved from 15.8% to 41.1% and advice on other lifestyle changes improved from 14.3% to 18.7%. Moreover calculation of DAS28 over a one year period improved from 20.9% to 51.4%. The cardiovascular risk assessment form was used in 15.0%. The documentation of lifestyle advice was significantly higher ($p<0.001$) in the group of patients in whom the form was used. The same applies for documentation of weight ($p<0.001$), height ($p<0.001$), BMI ($p<0.001$) and DAS28 ($p<0.001$).

Conclusion: Cardiovascular risk assessment and

management improved through raising awareness of its importance in the rheumatology department and the implementation of the cardiovascular risk assessment form.

OP1.26

Estimation of ejection fraction by ventriculography vs echocardiography: a comparative study

Elton Pllaha¹, Alexander Manche², Richard Pullicino²

¹Department of Cardiology, Mater Dei Hospital, ²Department of Radiology, Mater Dei Hospital

Background: Ejection Fraction (EF) is used to assess cardiac systolic function. Healthy individuals have an EF of 50%-65%. EF estimation can vary with the modality used to calculate it. It is readily measured noninvasively with echocardiography and invasively during ventriculography. EF contributes to risk assessment in the EuroSCORE and Parsonnet scoring systems.

Aim: To compare the estimation of EF with ventriculography vs. transthoracic echocardiography in patients referred for cardiac surgery.

Methods and Results: 100 consecutive patients underwent a ventriculogram before referral for cardiac surgery. 94 patients underwent some form of cardiac surgery. Radiographers calculated EF by tracing the outer border of the cardiac silhouette during ventriculography and a single cardiologist (blinded to this result) measured EF during transthoracic ECHO (TTE) using the biplane Simpson's method. The investigations were performed before surgery with no recorded acute event between the two investigations. The interval between the two investigations ranged from 0 days to 82 days with a mean of 25.4 days. In the majority of cases the ventriculogram overestimated EF when compared with TTE. The difference in overestimation was more evident in those patients with EF on ventriculogram greater than 50%. In patients with lower EF there was a closer comparable result between ventriculogram and echocardiogram. Thus altering the preoperative risk stratification score.

Conclusion: Ventriculography overestimates EF when compared with TTE, mainly due to ventricular extra systoles followed by compensatory pause during which the ventricle may overfill and the tracings of ventriculograms do not include papillary muscles and trabeculae, resulting in further possible errors.

OP1.27

Research access and involvement among Maltese doctors – a cross sectional study

Jacob Vella

Department of Medicine, Mater Dei Hospital

Introduction: Access to medical journals, research involvement and statistical knowledge are paramount in holistic clinical training and evidence-based practice.

Methods: An online survey was sent via the Medical Association of Malta newsletter and 187 doctors responded (52.41% females, mean age 31.1 years). Participants were divided in 4 groups: Foundation Programme doctors (FP) (53.55%), Basic and Higher Specialist Trainees (BST/HST) (25.14%), Resident Specialists and Consultants (RS/Cons) (13.66%) and Family Doctors (FD) (7.65%).

Results: 44.81% of respondents reported having read over 25 medical papers while NICE guidelines, PubMed and the Cochrane library where accessed over 10 times by 55.19%, 66.12%, respectively. All respondents ($n=187$) access online journals with 29.51% also referring to hard copies. The major motivator for access was availability of free articles (25.14%) while expensive subscriptions (77.05%) was the main deterrent especially for the FP group. 19.13% conducted

more than 5 clinical audits while 8.20% conducted any other form of research. 24.59% presented medical research more than 5 times and 6.56% wrote at least 1 research paper out of which 75.00% managed to publish at least once. 66.67% were currently working on a research project. The mean score out of a 10-point Likert scale regarding confidence in utilising statistical tools and presentation skills was 4.67 with the highest mean (6.23) being in the RS/Cons group.

Conclusion: The study suggests that access to medical journal databases would increase research and evidence-based involvement among doctors.

OP1.28

ePortfolio for postgraduate medical training: the Malta experience

Raymond Galea, Fabio Bajada, Emanuel Gatt

Malta Postgraduate Medical Training Centre, Mater Dei Hospital

Introduction: The ePortfolio is a dynamic, educational tool that records and facilitates the management of clinical and personal development through reflective learning. It exhibits the trainees' efforts, progress and achievements in one or more areas thus improving medical postgraduate training by enhancing the learning experience of our trainees and trainers.

Methods: Several foreign training institutions have their own training ePortfolio and in most countries this is speciality specific. The Malta Postgraduate Medical Training Centre (MPMTC) also felt such a need locally. A European Social Fund application was submitted and funding to create a local ePortfolio for all the medical specialities was awarded in October 2012. The software was developed over the last 30 months and was officially launched on the 24th April 2015.

Results: One hundred and fifty three (43.7%) trainees and 102 trainers have registered on the system in the first four months. After 3 months using the ePortfolio a 26-point satisfaction questionnaire is circulated electronically to the trainees. This shall be repeated after 6 months and after a year so as to gauge user satisfaction and so the MPMTC will be in a better situation to develop further the ePortfolio.

Conclusion: The local ePortfolio has been very well adopted by the various medical specialities, auguring well for the future. The overall satisfaction of the trainees who are already using it has been very positive (93% of respondents) expressing their satisfaction with the system. It is also helping to improve further the training programmes of the various specialities.

Disclosure: This project was co-funded by the European Union Social Fund (ESF).

OP1.29

Is foundation training in Malta and the United Kingdom truly equivalent?

Samuel Debono¹, Arlette Marie Vassallo², Edward Joseph Caruana³

¹Department of Vascular Surgery, Central Manchester University Hospitals NHS Foundation Trust, ²Department of Intensive Care

Medicine, St George's University Hospitals NHS Foundation Trust, ³Cardiothoracic Surgery, Papworth Hospital NHS Foundation

Trust, Cambridge

Introduction: The Malta Foundation Programme was launched in 2009 as an affiliate of the United Kingdom Foundation Programme. We sought to compare the experiences and achievements of University of Malta Medical School graduates having undertaken foundation training in the UK or Malta.

Methods: A structured questionnaire was circulated online to doctors having completed their foundation programme in August 2014 or 2015. Unpaired t test and

Pearson's Chi-squared tests were used for statistical analyses.

Results: 31 doctors, 71% (n=22) male, participated in the study. 55% (n=17) underwent foundation training in Malta. Respondents from Malta and UK Foundation Programmes rated their clinical (6.7±1.6 vs 6.5±1.8, p= 0.69) and academic (5.6±2.2 vs 4.8±2.2, p=0.33) experiences similarly; whilst also reporting comparable educational value of their daily roles (3.3±2.0 vs 4.3±2.1, p=0.19), and work-life balance (5.1±2.4 vs 5.8±2.2, p=0.40). Doctors trained in Malta scored less in terms of objective academic achievements (4.6±2.5 vs 7.4±3.0, p< 0.01), but reported similar degrees of clinical skill acquisition (independent in 3.4±1.7 vs 4.5±2.3 of 11 skills, p=0.14). There was no difference in entry into desired basic specialty training programme (94% vs 77%, p=0.17) immediately post foundation training.

Conclusion: Our study largely demonstrated that Maltese medical graduates derive the same experience from the foundation programme irrespective of the location in which training is undertaken.

OP1.30

Are medical graduates able to perform basic practical procedures?

Rebecca Amy Stoner¹, Edward Joseph Caruana, ²Neville Calleja³

¹Faculty of Medicine & Surgery, University of Malta, ²Department of Cardiothoracic Surgery, Papworth Hospital, Cambridge,

³Directorate for Health Information and Research

Introduction: In 'Outcomes for Graduates', the General Medical Council identifies diagnostic and therapeutic procedures in which all medical graduates should be competent. We sought to evaluate the extent to which newly-qualified doctors were familiar with these skills at the start of their employment, whilst assessing perceived influences.

Methods: Year one doctors at the Malta Foundation School submitted voluntarily to a structured questionnaire. Unpaired t test and Pearson's Chi-squared tests were used for statistical analyses comparing Maltese (MG) to international medical graduates (IMG).

Results: 71 foundation doctors 32% (n=23) male, 82% (n=58) MGs – participated in the study. Overall, doctors reported being fully independent in only 2.5±2.6 of 12 skills identified the difference between MGs and IMGs not reaching statistical significance (p=0.0735). MGs had performed fewer skills under supervision (4.9±2.8 vs 7.9±3.3, p=0.0009). Doctors rated their preparedness to perform the skills required of them as house officers poorly (MG vs IMG, 2.0±0.9/5 vs 2.9±0.9/5, p=0.0010). 97% (n= 69) of all new doctors felt that there should be more emphasis on clinical skills in medical school, with 93% (n=54) of MGs and 39% (n=5) of IMGs reporting that technical skills acquisition was largely self-directed. 94% (n=67) of respondents reported often or always struggling for opportunities to practice clinical skills.

Conclusion: Current skillstraining in medical school fails to achieve the competence required of junior doctors. There is need for further emphasis and facilitation of opportunities in this regard.

OP1.31

End-of-Life decisions by doctors: a national crosssectional survey on views and experiences.

Jurgen Abela

Department of Family Medicine, University of Malta; Department of Primary Health, Ministry of Health and Energy ; Hospice Malta

Introduction: The study aimed to describe and quantify EoL (end-of-life) care locally.

Methods: A national crosssectional survey of all doctors

registered in Malta

Results: Response rate was 39.7%. 31.2% received no training in palliative medicine and had been practicing for 19.72 years (95% CI: 18.38 – 21.07). 86% declared that their religion was important in EoL care. 48.6% (44.4% disagreed, 17.4% neutral) agreed that high quality palliative care nearly removes all requests for euthanasia. 60.4% agreed (23.9% disagreed; 15.7% neutral) that physicians should aim to preserve life. On average, in the previous 12 months, respondents cared for 10.55 EoL patients (95% CI: 8.45 – 12.64). 31.4% of doctors withdrew or withheld treatment in the care of these patients. 49.2% had intensified analgesia at EoL with the possibility of hastening death. 5.9% had sedated patients at EoL. Lastly, 88.8% doctors would never consider euthanasia. Significant correlation ($p < 0.05$) was observed between considering euthanasia, previous practice of sedation and importance of religion. A thematic analysis of comments highlighted the importance of the topic, feeling uncomfortable in EoL care, the religious aspect of care, lack of legal framework and the challenge of symptom control. There was considerable variation between specialties.

Conclusion: Most doctors are against euthanasia. There is a strong sense of guidance by their religion in EoL care. A substantial number of doctors took important EoL decisions. There is variation between specialties on the approach to EoL care. Doctors need guidance – legal and moral – on this subject.

OP1.32

An art and medicine experiential learning laboratory in the Middle East to measure interdisciplinary problem-solving

Alan Weber¹, Stephen Scott², Thomas Himsworth³, Amy Andres⁴

¹Premedical Department, Weill Cornell Medical College, Qatar; ²Medical Department, Weill Cornell Medical College, Qatar; ³Department of Painting and Printmaking, Virginia Commonwealth University, Qatar; ⁴Library, Virginia Commonwealth University in Qatar

Introduction: The research objective was to understand how art and medical students can benefit from interdisciplinary problem solving and critical thinking skills in order to improve their respective professional practices.

Methods: The PIs from Weill Cornell Medical College in Qatar and the Virginia Commonwealth University in Qatar developed a one semester workshop-based course in Qatar exploring the connections between art and medicine. Students (6 art / 6 medicine) collaboratively designed and built an art installation and wrote a final art project proposal. To measure the student experience of interdisciplinarity, the PIs used a mixed methods qualitative / quantitative study design involving psychometric tests and observational ethnography, including specifically: pre and postcourse semi-structured audio interviews, pre-test / post-test psychometric instruments (Budner Scale, Torrance Tests of Creativity, etc.), observational field notes, and videography.

Results: In pre-course interviews, no medical student was able to make a sustained conceptual link between medicine and art. All art students however recognized design as an element in medical technology and hospital design. Students had remarkably similar stereotypes of each other's field of study. Students frequently voluntarily self-segregated themselves during activities. Philosophical and artistic insights into the human body emerged as a prominent theme in both art and medical student post-course interviews and final projects.

Conclusion: The research will provide insight on how different fields in a Middle Eastern context can share critical

/analytical thinking tools to refine their own professional practices.

Disclosure: VCUQ University funded the research, approved for human subjects research by HMC/WCMCQ, JIRB #1400158.

OP1.33

The elicitation of Jung's shadow in Star Trek

Victor Grech

Department of Paediatrics, University of Malta

Introduction: This essay outlines Jung's concept of the shadow, a powerful and usually negative subconscious archetype, and will scrutinise the abundant manifestations of the shadow in Star Trek.

Methods: The influence of the shadow in Star Trek will be examined

Results: It will be shown that the shadow is diametrically opposed to the principles of the United Federation of Planets which include Aristotelean moral virtue ethics, Kantian deontological principles, existentialism, Aristotelean friendship of goodness and the encouragement of an epicurean lifestyle. The shadow's role is therefore that of the evil Manichean counterpart to the principles of the Federation, and this powerful opponent is always individuated and reintegrated into the psyche, or banished or destroyed or isolated after the protagonists understand it and come to terms with it.

Conclusion: The continual resurfacing of the shadow serves as a constant that we retain primitive and barely controllable animal vestiges of our ancient past under our civilized veneer.

OP1.34

Nacetylaspartate (NAA) induces neuronal differentiation: a possible escape from neuroblastoma tumor

Carmela Mazzocchi¹, Ruggieri Vitalba¹, Francesca Agriesti², Tiziana Tataranni², Ilaria Laurenzana², Claudia Piccoli¹

¹Laboratory of PreClinical and Translational Research, IRCCS-CROB, Referral Cancer Centre of Basilicata, Rionero in Vulture (Pz); ²Department of Clinical and Experimental Medicine, University of Foggia; Laboratory of PreClinical and Translational Research, IRCCSCROB, Referral Cancer Centre of Basilicata, Rionero in Vulture (Pz)

Introduction: Neuroblastoma, the most common extracranial solid tumor of childhood, is thought to originate from undifferentiated neural crest cells. N acetylaspartate (NAA) is the second most abundant metabolite present in the central nervous system (CNS) and its levels are changed in a wide array of CNS disorders. Decreased levels of NAA, associated with loss of neurons or mitochondrial dysfunction, are found in neuroblastoma tumor.

Methods: SHSY5Y neuroblastoma cells were treated with increasing doses of NAA (2,4,8 and 16 mM) for 72h and cell viability was assessed by MTS assay. The gene expression profile induced by 4mM NAA treatment in SHSY5Y cells was examined using the ILLUMINA array technology. Apoptotic and differentiating effects of 4mM NAA treatment for 72h were evaluated by flow cytometric analysis. The levels of proteins involved in the apoptotic pathway and differentiation were measured by Western Blotting.

Results: NAA treatment in SHSY5Y neuroblastoma cells has elicited morphological and neuronal differentiating effects evident with the neurite outgrowth and increased expression of specific differentiating markers: microtubule-associated protein 2 (MAP2) and tyrosine hydroxylase (TH). Exposure of cells to NAA has induced activation of apoptotic

pathway, associated to decreased levels of Bclxl and survivin and increased levels of p53, p21 and p27 proteins. Moreover, NAA treated SHSY5Y cells have proved to be more sensitive to the chemotherapy drugs, cisplatin and 5fluorouracil, when compared to the untreated control.

Conclusion: To our knowledge, this is the first study to demonstrate the neuronal differentiating effects of NAA.

OP1.35

Effects of tumour suppressor gene 101 perturbation on T cell synaptic ectosomes and B cell activation

David George Saliba, Michael L Dustin

The Kennedy Institute of Rheumatology, University of Oxford

Introduction: The immunological synapse (IS) is the major structure formed during the contact between a T cell and B cell during antigen presentation. The IS is composed of a central accumulation of T cell receptors (TCRs) surrounded by an adhesive ring. Our group has recently demonstrated release of TCR enriched extracellular microvesicles into the centre of the IS by plasma membrane budding in a process that is dependent on the tumour susceptibility gene 101 (TSG101). We refer to these structures as synaptic ectosomes.

Methods: We employed TSG101 knockdown and supported planar lipid bilayers (SLB) followed by total internal reflection microscopy for imaging of molecular species in the IS. Current efforts are directed at identifying RNA species in synaptic ectosomes by RNAseq.

Results: We demonstrate a concentration of CD40L and RNA species in the centre of the IS, which could serve as messages to the B cells. Using the staphylococcal enterotoxin B (SEB), we show that TCRs can be transferred from T cells to autologous B cells in a superantigen dose dependent fashion. By employing the SEB system, B cell activation will be assessed by CD69, CD83 and CD86 flow cytometry following TSG101 perturbation in T cells.

Conclusion: TCR microvesicles are transferred in an antigen dose dependent manner to B cells and we expect that this transfer will be required for full responses by B cells. B cells that receive the vesicles will have a competitive advantage. If these expectations are supported by the results we will explore the possibility of using microvesicles as adjuvants.

Disclosure: Center for HIV/AIDS Vaccine Immunology and Immunogen Discovery, Human Frontier Science Program Research Grant.

OP1.36

Camptothecin analogues and sirtuin inhibitors induce differentiation of HL60 acute myeloid leukaemia cells in vitro.

Sarah Bugeja Kissauni¹, Dale Brincat¹, Gianluca Maresca¹, Darren Micallef¹, Samuel Zahra¹, Laura Krasnova², Daniele Passarella³, Pierre Schembri Wismayer¹

¹Department of Anatomy, Faculty of Medicine and Surgery,

²Latvian Institute of Organic Synthesis, Latvia, ³Dipartimento di Chimica, Università degli Studi di Milano

Introduction: Acute myeloid leukaemia (AML) is the commonest acute leukaemia in adults which results from a block in the normal differentiation pathway of myeloid leukaemic (ML) cells in bone marrow. This ultimately leads to the proliferation of these cells which are unable to undergo the normal process of terminal differentiation and eventual apoptosis. Numerous studies have demonstrated the successful therapeutic effects of all-trans retinoic acid in treating the M3 French-American-British (FAB) subtype of AML, also referred to as acute promyelocytic leukaemia (APL), by inducing differentiation of the ML cells. This study sought to identify chemicals which induce differentiation of

HL60 ML cells, AML cells of the M2 FAB subtype, in vitro similar to the differentiation resulting from the exposure of APL cells to all-trans retinoic acid.

Methods: HL60 ML cells were incubated in the presence of a number of chemicals at varying concentrations. The response of the cells to the chemicals after three and five days was assessed using the reduction of nitroblue tetrazolium (NBT) normalised to cell number by dimethyl thiazolyl diphenyl tetrazolium (MTT) assays.

Results: It was found that various chemicals in the categories of camptothecin analogues and sirtuin inhibitors greatly increased the differentiation of HL60 ML cells in vitro when compared to controls.

Conclusion: Being effective inducers of the differentiation of HL60 ML cells, camptothecin analogues and sirtuin inhibitors may potentially be used as differentiation therapy for AML of the M2 FAB subtype.

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OP1.37

Investigation of antimicrobial activity of restorative materials in relation to material properties and methods used for antimicrobial activity assessment

Cher Farrugia¹, Julie Haider², Liberato Camilleri³, Josette Camilleri¹

¹Department of Restorative Dentistry, Faculty of Dental Surgery, University of Malta, ²Bacteriology Laboratory, Department of Pathology, Mater Dei Hospital, ³Department of Statistics and Operations Research, Faculty of Science, University of Malta

Introduction: Dental decay is caused by various factors including bacteria and sugary foods which over time results in destruction of tooth tissue. Thus investigation of antimicrobial properties of materials used to restore teeth is considered clinically relevant since materials with antimicrobial properties would theoretically reduce incidence of secondary/recurrent decay. Properties of dental materials, as well as additives to dental materials may affect the antimicrobial activity. This study aims to assess whether antimicrobial activity of currently used commercial restorative materials are related to physical and chemical properties of the material.

Methods: Seven restorative materials Chemfil Superior[®], Spectrum[®], Heliobond[®], Ionoseal[®], Dyract Extra[®], Smart Dentine Replacement (SDR)[®] and Biodentine[®] were investigated. Material characterization by scanning electron microscopy, energy dispersive spectroscopy, Xray diffraction analysis, Fourier transform infrared spectroscopy and pH analysis was carried out. Antimicrobial activity assessed using an agar diffusion test and biofilm accumulation test.

Results: The material, aging and presence of barium in the materials were the key factors affecting antimicrobial testing results. Biodentine after immediate mixing and Ionoseal aged for 6 weeks resulted in an inhibition indicating antimicrobial activity. Significantly higher McFarland readings were observed in the presence of barium when using materials Ionoseal, Dyract and SDR at the 24hour ageing.

Conclusion: Properties of materials affect results of antimicrobial testing but this may not reflect the antimicrobial potential of the material in question, as material properties may affect results of tests used. Further assessment of methodologies used for antimicrobial testing is required, since not all data can be extrapolated clinically.

OP1.38

Multiscale genomic, transcriptomic and proteomic analysis of colorectal cancer cell lines to identify novel biomarkers

Romina Briffa¹, Godfrey Grech², Inhuva Um³, Dana Faratian¹, Ying Zhou¹, Simon P Langdon¹, David J Harrison³

¹Division of Pathology, Institute of Genetics and Molecular Medicine, University of Edinburgh, ²Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ³School of Medicine, University of St Andrews

Introduction: Resistance to colorectal cancer (CRC) therapies is a significant cause of treatment failure. We used an in vitro model to identify novel therapeutic targets, explain mechanisms of carcinogenesis and resistance to therapy, and ultimately aid patient stratification for therapy.

Methods: A panel of 15 CRC cell lines was profiled by comparative genomic hybridisation, gene expression profiling, reverse phase protein array analysis, and chemosensitivity assays with respect to 5fluorouracil, oxaliplatin, and BEZ235. As proof of concept, fluorescence in situ hybridization and automated quantitative protein analysis were employed to investigate a candidate biomarker in a CRC patient cohort ($n=118$).

Results: Integration of frequently amplified regions with gene expression data resulted in 47 significantly correlated genes, suggesting that at least 7% of the genes found in the frequently gained regions might be regulated, at least in part, by copy number changes. 20/47 of these genes were associated with treatment responses; for example, PDCD6 was differentially expressed with respect to all three treatments. The FISH scores of TRIB1 (a frequently amplified gene and candidate biomarker) and MYC ($r^2=0.783$, $p=0.0001$) were highly correlated, consistent with coamplification.

Conclusion: This multiscale analytical approach generated candidate predictive biomarkers for responses to important CRC therapies. This approach is valuable for understanding the mode of action of different treatments and guiding personalised therapy. We also show, for the first time, that TRIB1 is coamplified with MYC in a proportion of CRCs and may be an attractive target for intervention in this group of patients.

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OP1.39

Mutational analysis of c-KIT and PDGFRA in GIST cases diagnosed locally

Charlene Busuttil¹, Maria Masini², Christian Saliba³, Sharon Falzon¹, Godfrey Grech³, James Degaetano¹

¹Department of Pathology, Mater Dei Hospital, ²Department of Applied Biomedical Science, Faculty of Health Sciences, University of Malta, ³Centre for Molecular Medicine and Biobanking, University of Malta

Introduction: The pathogenesis of most gastrointestinal stromal tumours (GISTs) is associated with activating mutations of the proto-oncogene tyrosine kinase KIT (c-KIT). Activating mutations are also found in the homologous tyrosine kinase platelet-derived growth factor receptor α (PDGFRA). Accurate diagnosis of GIST is essential due to the availability of targeted therapy. Immunohistochemistry (IHC) for CD117 (c-KIT receptor) is routinely performed in the diagnostic workup, however, it does not provide complete sensitivity, as there are nearly 5% of GISTs that are CD117 negative. The aim of this study was to identify cKIT and PDGFRA mutations present in GIST

cases diagnosed locally.

Methods: Fifty-two formalin-fixed, paraffin-embedded sections from 47 GIST patients diagnosed in the last 14 years were retrieved from the archives of the Histology Section, Pathology Department, Mater Dei Hospital. Haematoxylin and eosin staining and CD117 IHC were performed to guide laser microdissection of tumoural tissue. DNA was isolated following standard protocols. Polymerase chain reaction (PCR) was used to amplify exons 9, 11, 13, and 17 of the c-KIT gene and exons 12 and 18 of the PDGFRA gene followed by sequencing analysis.

Results: Positive CD117 immunostaining was present in 95.7% of the cases. All of the c-KIT mutations identified (76.0%) were found in exon 11 while the PDGFRA mutation identified (2.2%) was present in exon 12. The c-KIT missense mutation Val560Asp was atypically present at a very high frequency (54.3%).

Conclusion: Mutational analysis can confirm diagnosis of GIST especially in CD117-negative suspect cases, can provide prognostic information and has the ability to predict therapy outcomes.

OP1.40

CYP2C19 loss-of-function *2 allele and coronary in-stent restenosis

Francesca Wirth¹, Graziella Zahra², Robert G Xuereb³, Christopher Barbara², Albert Fenech³, Lilian M Azzopardi¹

¹Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, ²Molecular Diagnostics Unit, Department of Pathology, Mater Dei Hospital, ³Cardiac Catheterisation Suite, Department of Cardiology, Mater Dei Hospital

Introduction: The CYP2C19 *2 allele is associated with reduced response to clopidogrel which may increase the risk of stent thrombosis after percutaneous coronary intervention (PCI). This allele has recently been linked with peripheral and vertebral artery in-stent restenosis (ISR). The aim was to determine whether there is an association between *2 allele carrier status and coronary ISR.

Methods: Two-hundred and fifty-two patients undergoing PCI were recruited by non-probability sampling. CYP2C19 *2 genotyping was performed and patients were divided into carriers and non-carriers of the *2 allele. Eighty-two patients had a history of PCI with stent deployment and were further divided into patients who presented with angiography-confirmed ISR at time of recruitment and those who did not. The association between *2 allele carrier status and coronary ISR was assessed.

Results: Of the 82 patients, 65 were male, mean age was 65 years, and 29 presented with ISR at time of recruitment. Twenty-two patients were carriers and 60 were non-carriers of the *2 allele. Twelve of the 22 carriers and 17 of the 60 non-carriers presented with ISR. Eight of these 12 carriers and 5 of these 17 non-carriers presented with ISR within 1 year despite maintenance clopidogrel therapy. The difference between proportions was statistically significant ($p<0.05$).

Conclusion: Results indicate a positive association between *2 allele carrier status and coronary ISR. These findings need to be confirmed by larger prospective studies and may open up new possible explanations of the pathophysiology of coronary ISR and implications of genotyping with clopidogrel use.

Disclosure: University of Malta's Faculty of Medicine and Surgery Dean's Initiative, Scientech Ltd., E.J. Busuttil Ltd., Malta Heart Foundation

OP2.01

Diagnostic-therapeutic imaging through nuclear medicine: still discovering the egg of Columbus?

Giovanni Storto

I.R.C.C.S. C.R.O.B. Referral Cancer Centre of Basilicata; OEIC Clinical Cancer Centre

Over the past two decades, nuclear medicine (NM) has undergone extraordinary and exciting growth with the development of positron emission tomography (PET), coupled with CT, and new approaches in targeted radionuclide therapy. These developments have been reached by implementing new PET tracers, new therapeutic agents, new technologies but also redirecting prior methodologies such as the revision of image interpretation criteria or the amusing use of data for calculation of new quantitative parameters. In point of fact, nuclear medicine has already opened the door for personalized medicine by offering realistic solutions, especially in oncology, neurology, and cardiology. It is amazing to consider that we can detect by PET radiopharmaceuticals both the glycolytic metabolism of a tumour and its replicative rate stratifying patients who may benefit from tailored therapies. Accordingly, the daily use of new volumetric parameters or upgraded assessment criteria allow clinicians to weigh up the prognostic value of whole metabolic tumour burden rather than the "hottest" metabolic pixel. A volumetric representation of the metabolic charge seems to acquire a prognostic significance when tumour has dimensionally progressed and metastasized giving an incremental risk of event per unit increase. New neurological PET tracers hold great promise since capable to image beta amyloid plaques before Alzheimer disease arises. Recently, attempts to estimate coronary flow reserve with single photon computed tomography tracers have been made to obtain, with non-invasive methods, data for quantitative functional assessment of coronary artery disease. From a therapeutic point of view, the use of radionuclide labelled agents that specifically permit us to diagnose disease in individuals and use identical or closely related agents to treat these diseases symbolizes the new NM frontier, the so-called theranostic. To conclude, the combination of diagnosis and therapy still constitutes the quintessence of nuclear medicine which is able to offer either high technology and simple methodology.

OP2.02

CT examination of the abdomen and pelvis as a first-line investigation for iron deficiency anaemia – a study of local practice and diagnostic outcome

Lara Sammut, Kristian Micallef, Adrian Mizzi

Department of Medical Imaging, Mater Dei Hospital

Introduction: Assessing the usefulness of a CT abdomen-pelvis as a first line investigation in patients presenting with iron-deficiency anaemia (IDA).

Methods: 114 patients (mean age: 76years) who had a CT abdomen-pelvis as a first investigation for IDA between August 2014 and July 2015 were included retrospectively. Patients investigated initially with endoscopy, a different imaging modality or who were not fit to undergo endoscopy were excluded. CT findings were categorized into one of five diagnoses below.

Results: 14 patients (12.3%) were diagnosed with a colorectal malignancy, 12 of which underwent colonoscopy after the CT. All colonoscopy findings matched the CT findings. 14 patients (12.3%) were diagnosed with diverticular disease. Further investigation by endoscopy was recommended by the radiologist in 9 cases (7.9%). Two of these patients underwent endoscopy which showed findings that cannot be

appreciated with standard CT. 8 patients (7%) were diagnosed with other pathologies arising from the small bowel, renal and gynaecological system. 69 patients (60.5%) had normal CT findings. 19 of these patients proceeded to endoscopy, which demonstrated findings that couldn't be appreciated by a standard CT. Three patients had normal endoscopy. 4% of patients with a normal CT, refused endoscopy, 12% are awaiting endoscopy and/or CTC whilst 56% had no further investigations performed.

Conclusion: CT demonstrated a possible cause for IDA in 31.6% of patients. Whereas GI endoscopy remains the recommended initial investigation in patients with IDA, CT offers an alternative test which is well tolerated by patients. In these special circumstances, more advanced imaging modalities, such as CTC, should also be considered given their increased sensitivity and specificity in the detection of colonic lesions.

OP2.03

Adequacy of ultrasound-guided fine needle aspiration (FNA) of thyroid nodules

Christine Jo Camnataci, Reuben Grech

Department of Medical Imaging, Mater Dei Hospital

Introduction: Ultrasound guided FNA (US FNA) has been proven to be superior to palpation-guided FNA of thyroid nodules in terms of inadequate samples, sensitivity, specificity, positive and negative predictive values and accuracy. Literature review reveals that the reported rate of inadequate samples (Bethesda Category I) from US FNA of thyroid nodules ranges from 6% to 30%. The aim of this audit was to compare the diagnostic yield of local US FNA of thyroid nodules with that reported in the literature.

Methods: Retrospective analysis of US FNA of thyroid nodules carried out at the Medical Imaging Department (MID) of Mater Dei Hospital (MDH) over a 12 month period included over 200 FNAs. Data collection was carried out using RIS, PACS and iSOFT and included patient demographics and history of past US FNA, number of FNAs with positive cytology and non-diagnostic yield, US room, radiologist, referrer and whether the procedure was recommended by radiologist.

Results: A total of 236 FNAs were carried out. 74% of patients were female and 33.5% of procedures were carried out in patients aged 60-69 years. The majority had not had FNA before. 8.1% of FNAs were non-diagnostic. Only 36.4% of FNAs were recommended by radiologists and only 54.2% of patients were referred by ENT surgeons or Endocrinologists.

Conclusion: The diagnostic yield of FNAs at MID (MDH) is excellent when compared to that reported in literature. Increasing experience of performing radiologist improves diagnostic yield.

OP2.04

A study of the efficacy of axillary ultrasound in nodal staging in symptomatic breast cancer

Elaine Borg¹, John Agius¹, Jessica Muscat², Gordon Caruana Dingli¹, Salvina Zrinzo², Joseph Debono¹

¹Department of Surgery, Mater Dei Hospital, ²Department of Radiology

Introduction: The aim of this study is to monitor the ability to accurately predict axillary nodal metastasis by using standard breast imaging and FNA or core biopsy.

Methods: Symptomatic breast cancer patients who presented to Agatha Breast Unit since February 2015 were recruited to the ongoing prospective study. Patients who refused, were unfit for the recommended modality of treatment, were diagnosed with *in-situ* carcinoma, recurrent breast cancer, received primary hormonal therapy

or neoadjuvant therapy, were excluded from the study. All patients underwent routine physical examination, axillary ultrasonography, preoperative core biopsy/FNA of radiologically suspicious axillary lymph nodes and surgical axillary staging. Morphologic criteria of lymph node were measured by the radiologist performing the imaging. Demographics and histological reports were accessed through iSOFT.

Results: 23 female patients, average age of 65.6 years were recruited. In 47.8% (11 patients) the axilla was found to be radiologically suspicious. FNA was carried out in 30% (7 patients) whilst core biopsy was carried out in 39.1% (9 patients). 43.4% (10 patients) were diagnosed with metastatic axillary disease preoperatively and underwent axillary node clearance therefore avoiding a second operation. 2 patients (8.7%) required a second operation for axillary clearance despite no suspicious morphologic ultrasound criteria. Sensitivity of axillary ultrasound in nodal staging on its own is 81.25% whilst specificity is 57.14%. Sensitivity of axillary ultrasound in nodal staging in combination with FNA/core biopsy is 83.33% and specificity is 100%.

Conclusion: Ultrasonography in combination with FNA/core biopsy is superior to ultrasonography on its own for pre-operative treatment planning.

OP2.05

Outcomes of endovascular treatment of critical ischaemia in the Maltese population

Ian Said¹, Adrian Mizzi², Kenneth Saliba³, Kevin Cassar³

¹Department of Surgery, Mater Dei Hospital, ²Department of Medical Imaging, Mater Dei Hospital, ³Department of Surgery, Faculty of Medicine and Surgery, University of Malta

Introduction: Critical ischaemia of the lower limb is associated with high risk of limb loss and mortality. Endovascular intervention is one of the main treatment options. The aim of this study was to determine the outcomes of patients with critical ischaemia treated endovascularly.

Methods: All patients presenting with critical ischaemia to one vascular surgeon at Mater Dei Hospital between 2009 and 2014 inclusive and referred for endovascular treatment were included. Data was collated prospectively in a vascular database. The intervention type and success of intervention were recorded. The main outcomes including death, limb loss, minor amputation, open bypass surgery and complications were recorded.

Results: 849 interventions were performed. (470 ulcers, 305 gangrene and 74 rest pain). 1,089 vessel segments were treated with the vast majority being infra-inguinal vessels (439 SFA, 309 popliteal, 249 calf arteries, 6 CFA) and the rest supra-inguinal (43 CIA and 43 EIA). 739 patients (87%) underwent successful angioplasty +/- stenting. 40 (4.7%) were only partially successful. 70 (8.2%) were unsuccessful. There were 3 deaths (0.35%) all due to complications arising from retroperitoneal bleeding. Over a mean follow up period of 37 months, 141 patients underwent infra-inguinal bypass surgery (16.6%) and 95 required major amputation giving a limb salvage rate of 88.9%.

Conclusion: The success rate of endovascular treatment (87%) and the low complication rates observed compare very favourably with results reported in the literature. This is despite the fact that the cohort of patients studied included only patients with critical ischaemia and the majority of interventions were in the distal arteries.

OP2.06

Physician and pharmacist perception on risks associated with potential antibiotic prescribing by pharmacists

Maresca Attard Pizzuto, Anthony Serracino Inglott, Lilian M Azzopardi

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: Improving antibiotic use, driven by a multidisciplinary team, achieves a better clinical outcome by reducing harm to patients and decreasing potential for the emergence of antibiotic resistance. The aim was to assess physician and pharmacist perception on the risks associated with potential antibiotic prescribing by pharmacists.

Methods: Two questionnaires, one directed to physicians and the other to pharmacists, were developed as tools to quantify the potential risk of pharmacists prescribing antibiotics. The Delphi technique was adopted to validate both questionnaires.

Results: Out of 180 physicians who answered the questionnaire, 36% regarded pharmacists as being competent to treat common infections, 38% have no opinion and 26% think pharmacists are not competent at all. Fusidic acid cream or ointment is regarded as being very appropriate to be prescribed by pharmacists by 22% of physicians. Sixty-eight percent ($n=120$, $N=177$) of physicians do not favour pharmacist prescribing rights. The main reason given is that pharmacists are not qualified to clinically examine patients (78%). Out of 207 pharmacists who answered the questionnaire, 51% rated themselves as being competent to treat common infections, 33% have no opinion, whilst 16% claimed that they do not feel competent. Seventy-seven percent ($n=157$, $N=204$) of pharmacists agree that they should start prescribing a limited number of antibiotics since pharmacist prescribing would increase recognition of the role of pharmacists as members of the healthcare team (65%).

Conclusion: A collaborative approach between medical practitioners and pharmacists should be evaluated as a possible national structure towards achieving better antibiotic prescribing.

OP2.07

Pharmacist prescribing

Abigail Aquilina, Louise Grech¹, Lilian Azzopardi², Anthony Serracino Inglott²

¹Mater Dei Hospital; Department of Pharmacy, University of Malta, ²Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: This study presents a framework for local pharmacist prescribing. Locally, pharmacists are not yet authorized to prescribe.

Methods: Different pharmacist prescribing models and conditions for which local pharmacists are willing to prescribe were reviewed. Guidelines for pharmacist prescribing in the local hospitals, along with guidelines for managing oral anticoagulation, hypertension and diabetes were formulated. Validation of the guidelines was conducted by an expert panel; consisting of physicians and pharmacists. Three case studies, one on each of the three conditions identified, were designed and disseminated to the expert panel, for determining differences between pharmacist and physician prescribing.

Results: The pharmacist prescribing guidelines were developed based upon an American model: collaborative drug therapy management. The guidelines for the management of oral anticoagulation, hypertension and diabetes were developed based upon internationally recognized guidelines, followed locally. Monitoring sheets for the three conditions and a pharmacist patient profile have been included.

Such guidelines were validated by the expert panel and recommendations provided were incorporated. From the case studies, no differences were noted for the management of diabetes and oral anticoagulation. For hypertension, differences in prescribed drug therapy were mostly attributed to misdiagnosis by both pharmacists and physicians. When correct diagnosis was established, similar treatment was prescribed.

Conclusion: The validation panel have concluded that the guidelines are clear, practical and easy to implement. All experts have agreed that pharmacists should start prescribing oral anticoagulants, antihypertensives and antidiabetic medication. It can be concluded that once correct diagnosis is established by physicians, pharmacist prescribing is safe in all three conditions.

OP2.08

Drug induced effects and hospital admissions

Nicola Farrugia, Lilian Azzopardi, Anthony Serracino Inglott

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: The objectives were to investigate the occurrences of drug induced effects, to identify the drug related hospital admissions and to classify them into different categories depending on the medication error that occurred.

Methods: Data collection was carried out at Mater Dei Hospital where patient files of five selected firms were seen on the post admitting days. A Data Collection Form was used to compile patient information namely drug history, current medication and cause of admission. Patients admitted due to a Drug Induced Effects were interviewed through the use of a questionnaire. All the data collected was inputted into SPSS in order to carry out statistical analysis.

Results: From the 333 patient files that were seen, 54 were identified to be due to drug induced effects. 23 of these cases were found to be due to cardiac drugs, the majority being antihypertensive medications. Diabetic drugs were the second most common drugs associated with drug induced effects. 21 of the drug induced cases were patients between 70 and 89 years, making this the most common age group followed by the 50-69 year age group (18 patients).

Conclusion: The main types of Medication Errors have been identified to be prescribing error, improper dose error and compliance error. Patients who were taking two to four medications having similar side effect profiles were found to be at a greater risk of developing drug induced effects. This analysis shows that pharmacists could liaise with prescriber to contribute towards preventative action.

OP2.09

A crosssectional analysis of drug-drug interactions retrieved from the medications of patients on presentation at an outpatient hospital pharmacy

Denise Borg, Sara Jo Cassar, Anthony Cutajar

Department of Pharmacy, Mater Dei Hospital

Introduction: Significant drug-drug interactions (DDIs) are preventable and may give rise to serious adverse effects with associated increase in morbidity and mortality.

Methods: A crosssectional analysis was conducted on out-patient prescriptions at Mater Dei Hospital (MDH) over a month to assess the prevalence and clinical significance of DDIs. Screening for interactions was done using Stockley's and Medscape Interaction Checker. Logistic regression determined the odds ratio for the association of DDIs with the number of medication prescribed. Oneway MANOVA was

applied to determine whether mean differences between the results of the two reference checkers were significant.

Results: A total of 651 medications were prescribed in the cohort ($n=167$) with a mean number of 3.90 medications per patient. A total of 173 and 209 DDIs were identified using Stockley's and Medscape respectively. The prevalence of DDIs was significantly associated with 3 or more concurrent medications ($p<0.001$, 95%CI 1.633.89). In all, 87 patients (52%) were identified with Stockley's and 96 patients (57%) were identified through Medscape with a potential DDI prescribed. The difference in observed interactions with the two checkers was statistically significant ($p<0.001$).

Conclusion: Significant DDIs can be prevented at MDH if pharmacists are routinely involved in screening prescriptions for DDIs prior to patients' discharge. A standardized procedure for screening prescriptions should also be adopted to maximize DDI capture.

OP2.10

Pharmacist intervention in medication reconciliation during transfer of care

Tresha Emelene Formosa, Lilian M Azzopardi, Anthony Serracino Inglott

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: Medication reconciliation is the accountability of medications taken by the patient before and after a transition across care settings. The aims were to classify discrepancies found between medication histories and to determine pharmacist intervention in medication reconciliation.

Methods: Five consultant physicians were chosen from Mater Dei Hospital and from the Gozo General Hospital and 20 patients from each firm were interviewed. Ethics approval was granted from the University Research Ethics Committee. The Best Possible Medication History (BPMH) was obtained by the investigator (TF) through interviews. Comparison was carried out between the BPMH and the history obtained by the admitting healthcare professional.

Results: Ninety-two interviews were held, 52 of which were medical patients and 40 of which were surgical patients. The investigator identified 612 medications compared with the 508 medications identified by the non-pharmacist. Out of 112 discrepancies identified, 104 are omissions while 5 are due to incorrect dose and 3 are due to incorrect drug.

Conclusion: The investigator identified more medications than the non-pharmacist in each type of medication. This shows a more detailed medication history was taken by the pharmacist, prompting the patient to remember specific medication.

OP2.11

Association of medicinals to sleep apnoea

Yanica Cassar¹, Anthony Serracino Inglott¹, Stephen Montefort², Christopher Deguara³, Lilian Azzopardi¹

¹Department of Pharmacy, Faculty of Medicine and Surgery,

University of Malta, ²Department of Medicine, Mater Dei Hospital,

³Sleep Laboratory

Introduction: Obstructive sleep apnoea (OSA) is a sleep breathing disorder involving multiple episodes of upper airway collapse during sleep leading to oxygen desaturation and sleep fragmentation. The aims of this study are (i) to evaluate the relationship between the presence of OSA according to severity and the use of commonly used therapeutic agents and (ii) to determine the effects of commonly used medications on the continuous positive airway pressure therapy.

Methods: Patient medical records ($N=2,688$, $n=183$, confidence level=95%, confidence interval=7%) that underwent

the sleep study between 2009 and 2013 were collected over an eight-month period from the Sleep Laboratory Department at Mater Dei Hospital using a random sampling technique. The data collected includes body mass index, gender, age, Epworth sleepiness score, drug history and apnoea hypopnoea index. Likelihood ratio chi square test, paired samples t-test and multinomial logistic regression were the statistical tools used for the data analysis.

Results: One hundred and seventy (92.9%) patients of the 183 patients (131 males, 52 females) were diagnosed with OSA including, 45 (24.6%) with mild, 43 (23.5%) with moderate and 82 (44.8%) with severe. Angiotensin II receptor antagonists ($p=0.022$), sulphonylureas ($p=0.050$), insulin therapy ($p=0.040$) and nonbenzodiazepine sedating agents ($p=0.037$) were found to be associated with the presence of OSA.

Conclusion: It is demonstrated that the more severe OSA is, the more pharmacological therapies are being used. Screening for OSA is beneficial for treating OSA in itself but it also could provide a better outcome in the treatment for other comorbidities such as hypertension.

OP2.12

Formulary for non-British National Formulary (BNF) cited items

Timothy Scicluna, Lilian Azzopardi, Anthony Serracino Inglott
Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: A formulary is a continually updated list of medication with related information and used to solve problems which may arise with drug therapy.

Maltese healthcare professionals use the BNF as the main source of reference for medicinal products. However, a number of products which are available on the local market are not listed in the BNF. The Maltese Medicines Handbook (MMH) is designed to include these products.

Methods: The products authorised in Malta but not listed in the BNF are identified by comparing the list published yearly by the Medicines Authority to the BNF. A draft version of the formulary is published. The evaluation of the formulary is conducted through questionnaires which are distributed to healthcare professionals. Data gained from these questionnaires is used to analyse the utility of the fourth edition of the MMH. An online version of the formulary is launched

Results: The latest list published by the Medicines Authority consists of 4665 entries. When compared to the BNF it was found that 2988 preparations are found in the BNF while 1659 have their trade name, active ingredient or both not found in the BNF. From these 1659 entries, 1321 medicinal products have their active ingredient present but the trade name is not the same while 338 medicinal products have neither their active ingredient nor the trade name in the BNF

Conclusion: The number of products included in the 2015 MMH has increased from 578 to 1659 since the 2012 version of the MMH

OP2.13

Environmental risk factors for chronic respiratory diseases

Giovanni Viegi

Pulmonary Environmental Epidemiology Unit, CNR Institute of Clinical Physiology, Pisa, Italy.

Introduction: Outdoor and indoor air pollution affects respiratory health, causing an increase in the prevalence of respiratory symptoms/diseases and of mortality, both in children and in adults. Rapid industrialization and urbanization have increased air pollution and, consequently,

the amount of exposed people.

Methods: Thorough research in PubMed on epidemiological studies performed in recent decades.

Results: Exposure-response relationships for outdoor pollutants, especially particulate matter, were shown: short-term exposure, due to acute increase in air pollution, may cause premature mortality and increase hospital admissions for exacerbations of chronic obstructive pulmonary disease (COPD) or asthma; longterm cumulative health effects of chronic exposure comprise an increase in mortality and morbidity for respiratory diseases and impaired development of the lungs in children. There is consistent evidence that exposure to indoor pollutants increases the risk of several respiratory/allergic diseases. The environmental tobacco smoke is associated with increased risk of acute respiratory or irritation symptoms, chronic respiratory illnesses and lung function reduction. Biomass fuels represents an important risk factor in low-income countries for acute respiratory illness morbidity and mortality, especially in children and women. Building dampness and mould are associated with increases in respiratory and asthma-related health outcomes. Finally, exposure to VOCs are related to respiratory/allergic effects.

Conclusion: Epidemiological studies suggest that air pollution plays a remarkable role in the exacerbation and in the pathogenesis of chronic respiratory diseases. The support of healthcare providers and the general community for public health policy aimed at improving outdoor/indoor air quality through programs for abating/reducing pollutant emissions is necessary.

OP2.14

Impact of school characteristics on children's respiratory health

Peter Fsadni¹, Frank Bezzina², Noel Aquilina³, Stephen Montefort¹

¹Medical School, University of Malta, ²Faculty of Economics, Management and Accountancy, University of Malta, ³Faculty of Science, University of Malta

Introduction: School indoor air quality (SIAQ) is important since children spend most of their time outside home within the school environment. The aim of this study was to investigate school characteristics and their impact on the health of the children.

Methods: A total of 191 pupils in the 9 to 11 year old age group were assessed using health questionnaires, spirometry, nasal lavage, exhaled carbon monoxide and environmental tobacco smoke urinary biomarkers. School building characterization and traffic counts were performed.

Results: Cumulative (32.98%) and current wheezing (17.8%) were in keeping with ISAAC Malta data. Southern located schools had the highest prevalence of current wheezers (OR 3.77, $p=0.012$), rhinoconjunctivitis (OR 3.59; $p=0.003$) and nasal ECP levels ($p<0.001$). Small openable window areas increased rhinitic symptoms (OR 3.14; $p=0.016$). Classes facing roads had increased current wheezers (OR 2.27, $p=0.03$) and exhaled carbon monoxide (eCO) levels ($p<0.001$). Dust on flat surfaces in classrooms was associated with wheezing (OR 5.23, $p=0.001$). Proximity to power plants increased current wheezers (OR 5.89; $p=0.001$) who had impaired spirometry ($p=0.003$). Asthma symptoms (OR 5.25, $p=0.001$) and elevated eCO levels ($p<0.001$) were associated with fuel storage facilities near schools. Current wheezing was significantly associated with the number of light and heavy vehicles passing near the school ($p<0.001$). The presence of smokers at home was significantly associated with urinary cotinine and 3 HC ($p<0.001$).

Conclusion: School building characteristics in Malta

have a direct and significant impact on the respiratory health of children. Disclosure: This study was funded as part of the SINPHONIE Project approved by DG SANCO

OP2.15

An increase in the severity of rhinitis and a reduction in severity of wheezing and eczema in 12 to 15 year old Maltese children over two decades (ISAAC Malta)

Eleanor Gerada¹, Hugo Agius Muscat², Liberato Camilleri³, Stephen Montefort¹

¹Division of Respiratory Medicine, Mater Dei Hospital, ²Department of Public Health, Faculty of Medicine & Surgery, University of Malta, ³Department of Statistics and Operations Research, University of Malta

Introduction: The International Study of Asthma and Allergies in Childhood (ISAAC) is the largest standardised worldwide epidemiological research programme ever undertaken on allergies in children. The severity of a condition is a good measure of disease burden. The aim of our study was to investigate the current prevalence and severity of childhood allergic conditions in Malta, and analyze time trends by comparing the results with data obtained from previous phases of the ISAAC study in 1995 and 2002, in which Malta participated.

Methods: The same validated standardized ISAAC questionnaire and protocol was used.

Results: Data was obtained from 3263 '12 to 15 year olds' in 16 randomly sampled secondary schools over 2013 and 2014. 46.6% were boys while 53.4% were girls. Data from our study shows that in this age group, the prevalence of wheezing and rhinitis has significantly decreased, while that of eczema has plateaued. Our results indicate a rise in severity of rhinitis and a reduction in severity of wheezing and eczema in Maltese 12 to 15 year old children over the last two decades.

Conclusion: The substantial disease-related morbidity rhinitis produces needs to be ameliorated through better management of this condition and further research in this area.

OP2.16

RESPIRA project: binary logistic regression model for 9 respiratory questions comparing 2 urban with rural areas in Sicily and Malta

Martin Balzan¹, Gaspare Drago², Christopher Zammit², Silvia Ruggieri², David Bilocca¹, Fabio Cibella², Stephen Montefort², Giovanni Viegi²

¹Mater Dei Hospital, ²Istituto di Biomedicina e di Immunologia Molecolare, Consiglio Nazionale Delle Ricerche, Palermo

Introduction: To compare 3 areas one urban, one industrial with one rural using binary logistic model.

Methods: Responses from 11-14 year-old children from Gela ($n=545$), 3 small rural villages ($n=551$) both in south Sicily, and Malta ($n=854$) were entered into a binary logistic regression model, for 5 asthma related questions, and 4 rhinitis related questions in order to exclude known predictors, and search for geographical difference. Rural areas were the reference area.

Results: Family history of allergy, humidity or mould in the bedroom and respiratory infection in the first year of life predicted all 9 responses. Male gender and living in Malta and Gela predicted all asthma related symptoms. Living in Gela predicted nose and eye symptoms. For diagnosed asthma, Malta OR 6.08 (95%CI: 3.71-9.98, $p=0.001$), Gela 1.87 (95%CI: 1.17-3, $p=0.01$), male gender 1.58 (95%CI: 1.182.12, $p=0.002$), family history 1.49 (95%CI: 1.12-1.99, $p=0.007$), respiratory infection 1st year of life 5.9 (95%CI: 4.28-8.14, $p=0.001$),

humidity/moulds bedroom 1.45 (95%CI: 1.07-2.22, $p=0.19$). For rhino conjunctivitis Malta 1.15 (95%CI: 0.76-1.74, $p=0.5$), Gela 1.59 (95%CI: 1.11-2.28, $p=0.012$), Male 0.88 (95%CI: 0.67-1.15, $p=0.35$), FH 2.15 (95%CI: 1.63-2.82, $p=0.001$), respiratory infection 1st year of life 1.81 (95%CI: 1.34-2.44, $p=0.001$) humidity/moulds 1.7 (95%CI: 1.21-2.38, $p=0.002$). Furthermore smoking in pregnancy predicted wheeze ever 1.54 (95%CI: 1.05-2.27, $p=0.38$), wheeze 12 mth 2.07 (95%CI: 1.28-3.36, $p=0.003$). Pet ownership predicted wheeze ever 1.31 (95%CI: 1.02-1.69, $p=0.038$) and exercise wheeze 1.79 (95%CI: 1.04-3.09).

Conclusion: After excluding known covariates living in Malta and Gela is a risk factor for asthma, while Gela is a risk for nasal and eyes symptoms compared to rural Sicily. This indicates other local environmental factors.

Disclosure: RESPIRA Project: 85% EU funded Italia-Malta

OP2.17

RESPIRA project: the chemical fingerprint of outdoor PM2.5 in Malta

Martin Balzan¹, Fabio Cibella², Christopher Zammit¹, David Bilocca¹, Cinzia Perrino³, Silvia Canepari⁴, Stephen Montefort¹, Giovanni Viegi²

¹Mater Dei Hospital, ²Istituto di Biomedicina e di Immunologia Molecolare, Consiglio Nazionale Delle Ricerche, Palermo, ³Institute for Atmospheric Pollution, Consiglio Nazionale Delle Ricerche, Rome, ⁴Chemistry Department, Sapienza University

Introduction: RESPIRA study has indicated that living in Malta is a risk factor for asthma related symptoms.

Aim: To determine the chemical profile of PM2.5 in Malta, and compare with reference values.

Methods: Using FAI pumps at 10l/min for 48hr, samples were collected on Teflon and Quartz filters from 6 schools and 46 homes in Malta. Total ICPMS measurement (residual+extracted), X ray Fluorescence, and thermo-optical methods (TO) were used for analysis by CNR in Rome. All data in ng/m³, mean, (1st to 3rd quartile)

Results: Higher than reference values: (TO): Elemental Carbon Mean 1513(620-1946) ng/m³, Organic Carbon 848(319-1149). Using ICPMS, Fe 99.3(33.6-154.6), Vanadium 7.14(2.1-9.0), Ni 5.0(1.9-5.7), Cu 12.2(2.35-8.28), Zn 24.16(10.9-28.2). Lower than reference: SO₄²⁻ 1621(446-2449), Nitrate 382(178-446), NH₄⁺ 504(170-687), Ba 3.52(0.85-3.7), Arsenic 0.37(0.19-0.42), Sn (0.16-0.56), Cd 0.62(0.15-0.88), Sb 0.99(0.27-0.1.08), Rb 0.55(0.23-0.86). No difference: Pb 5.54(1.87-6.54), Mn 2.57(1.40-3.56), Sr 1.84(0.19-3.04). Using XRF and higher Ca 1241-744(466-1494), Al 127.6-112.8(93-178.6), Si 44.4-37.8(25.2-51) K 244 (109.3-249.5), Na 382-361 (183-487) Cl 252 (64.8-393). Total PM2.5 in microg/m³ 41.1(13.9-57.7).

Conclusion: The chemical fingerprint of PM2.5 probably reflects combustion of low sulphur crude oil product by cars and power plant, mixed with background soil and marine salt.

Disclosure: RESPIRA Project: 85% EU funded Italia-Malta

OP2.18

Auditing anaesthetic techniques and their complications with a special emphasis on post dural puncture headaches in central delivery suite in Mater Dei Hospital

Laura Vassallo, Josef Zahra, Federica Sant, Christabel Mizzi, Carl Tua, Jessica Sant

Department of Anaesthesia

Introduction: The aim is to quantify the frequency of regional techniques in obstetrics at Mater Dei Hospital and the rate of post dural puncture headache (PDPH) as an indicator

of good clinical practice when compared to International standards. International literature quotes incidence of PDPH to be 0.52%.

Methods: Details about the regional technique used were collected from the case notes prospectively. A telephone interview post discharge included questions about the presence of headache, back pain, lower limb paraesthesia and weakness, and overall level of satisfaction. Ethics Board approval was obtained.

Results: Data was collected from 482 patients undergoing regional anaesthesia. 41 patients were lost to follow up. There were 225 epidurals and 216 spinals. The headaches totalled 43. Six were positional and therefore by definition a PDPH, giving an overall rate of 1.3%. Four (three-18G and one with 16G needles) of the headaches were after epidural 1.77%. Two were after spinal (25G and 27G needles) 0.92%. There was a notable increase in the use of regional techniques in obstetrics. The overall rate for Caesarian section was 35% with 86.5% being performed under regional anaesthesia in 2014 compared to 43% in 2003. The average rate for epidural analgesia in labour in 2014 was 26% compared to 6% in 2003.

Conclusion: The PDPH rate is in keeping with international literature. This can also be said of the rate of occurrence of other less common complications. The higher rate of PDPH with epidurals is consistent with the more common occurrence of PDPH with epidural block.

OP2.19

Caesarian section anaesthesia - technique and failure rate

Tatyana Farrugia, Federica Sant, Christabel Mizzi, Karen Sapiano, Matthew Bonello

Introduction: Csection anaesthesia can be done under regional anaesthesia (RA) or general anaesthesia (GA). RA is considered preferable, since most women prefer to be awake during this procedure and there is unequivocal evidence that RA is safer. RA, however has a significant failure rate which may lead to pain or need for GA. The proposed standards set by the Royal College of Anaesthetists state that most Csections should be carried out under RA, with more than 50% of category 1 sections (emergency) and more than 95% of category 4 sections (elective) carried out under RA. The rate of conversion from RA to GA should be less than 15% for category 1 and less than 1% for category 4.

Methods: All the Csections carried out between June and October 2015 were according to urgency. The type of anaesthesia administered was noted, then compared to standards set by the Royal College of Anaesthetists. The failure rate of RA and the possible reasons for failure to meet standards were explored.

Results: Out of a total of 259 Csections carried out, 72% of category 1 sections and 90% category 4 sections were done under RA. The failure rate of RA was 12% for category 1 and 2% for category 4 sections.

Conclusion: Our results are comparable to the proposed standards by the Royal College of Anaesthetists. Further improvement is necessary as we fall short of the standards in the % of category 4 sections carried out under RA and the failure rate of RA for category 4 sections.

OP2.20

Day case surgeries at Mater Dei Hospital: are criteria being adhered to?

Christabel Mizzi, Matthew Bonello, Daniel Farrugia

Department of Anaesthesia

Introduction: Appropriate patient selection for day case surgery lessens public health care costs and enhances patient's surgical management. The aim of this audit was

to determine if procedures being performed as day cases satisfied the necessary prerequisite criteria as per local hospital guidelines.

Methods: A prospective analysis of all day surgeries was performed during the first two weeks of October 2014 at Mater Dei Hospital. The pro-forma used highlighted if cases belonged to primary or secondary basket, and satisfied surgical, medical and social criteria. Data collection abided by the Data Protection Act.

Results: A total of 968 elective surgical procedures were performed during the conducted study period. 352 of these procedures (36.4%) were analysed as they satisfied surgical criteria for day care admission. 20 cases were excluded in view of missing data. 223 (23%) of elective surgical procedures were included in day surgery list of interventions. This comprised 156 (70%) procedures which satisfied surgical criteria, 38 (17%) lumps and bumps whilst 29 (13%) procedures which did not satisfy surgical criteria. 149 (95.5%) of those procedures which satisfied surgical criteria were performed as day case and 7 (4.49%) were subsequently admitted to a ward. 130 (87.2%) of day cases in day care list fulfilled all criteria. 19 (12.8%) cases did not fulfil criteria.

Conclusion: Inappropriate use of day care surgery has been shown. This means that an education campaign regarding selection criteria for day care admission should be initiated. Adherence to outpatient selection of cases can be improved by introduction of a day case assessment form.

OP2.21

Post lower segmental caesarean section pain management and modified early obstetric warning system charting

Christabel Mizzi, Karen Sapiano, Glenn Abela, Daniel Farrugia

Department of Anaesthesia,

Introduction: With the dramatic rise in rate of Caesarean deliveries in the last two decades, pain management post C-section (CS) has become a major medical and nursing challenge. The aims of this audit were to observe the pain management strategy used at Mater Dei Hospital for Caesarean section patients as well as explore documentation of the modified early obstetric warning system (MEOWS) in practice.

Methods: All mothers who underwent a Caesarean section during June and July 2015 were reviewed 24 hours post procedure. Data was obtained from clinical notes together with a patient interview. Data collection abided by the Data Protection Act.

Results: 95 mothers were included in this audit. Regional anaesthesia was the preferred technique used in 82 patients (88.4%). 94.6% of patients who had spinal anaesthesia received diamorphine. High compliance rate is shown in the use of NSAIDs and paracetamol. 24 mothers (25%) did not use the PCA (patient controlled analgesia) pump with only 25% who used more than 10mg of morphine within 24 hours postop. Overall, the MEOWS charts were adequately completed with monitoring of respiratory rate and blood pressure filled in 86% and 74% of the times, respectively. MEOWS chart was triggered in 44.2% of cases. Review by doctor was done in 12% of cases.

Conclusion: From this audit we can conclude that in the majority of cases, pain management policy was implemented successfully by the obstetrics team. Also, pain management amongst obstetric patients has achieved successful results with average satisfaction scores being 9.3.

OP2.22

Introduction of a ventilator associated pneumonia (VAP) prevention bundle

Anne Marie Camilleri Podesta¹, Carmel Abela¹, Michael Borg², Peter Zarb², Patricia O'Brien³, Deborah Maria Pace²

¹Department of Anaesthesia, Mater Dei Hospital, ²Infection Control Unit, Mater Dei Hospital, ³Department of Physiotherapy

Introduction: Ventilator associated pneumonia (VAP) is a pneumonia that occurs after 48 hours following intubation. VAP is the most common type of hospital acquired infection in mechanically ventilated patients and is associated with a mortality of 33–50 %. VAP increases days spent on the ventilator, hospital length of stay and increases healthcare costs. The introduction of a VAP prevention bundle should help significantly to address these problems.

Methods: The Wolverhampton ventilator associated pneumonia audit toolkit was used to diagnose VAP. All mechanically ventilated patients were screened for VAP over a 9 month period and the information was inputted into the Wolverhampton VAP toolkit to confirm the diagnosis of VAP.

Results: Out of 190 patients who were mechanically ventilated in ITU for more than 48 hours, 42 were diagnosed with VAP. This gives a VAP rate / 1000 ventilator days of 26.2. The great majority of patients developed late onset VAP and the organisms included multidrug resistant bacteria. This audit confirmed our suspicion that VAP is a frequent occurrence in our ventilated patients. The VAP prevention bundle should improve the situation.

Conclusion: Awareness of the significant morbidity and mortality associated with VAP and the attempt to decrease the incidence using the VAP prevention bundle should help to improve the outcome of our ventilated patients in ITU.

OP2.23

A comparison of local anaesthetic procedures performed at the Plastic Surgery and Burns Unit of Mater Dei Hospital Malta between 2013 and 2014

Edward Muscat¹, Matthew Borg², Joseph Briffa², Francis Darmanin²

¹Mater Dei Hospital, ²Plastic Surgery and Burns Unit, Mater Dei Hospital

Introduction: The Plastic Surgery and Burns Unit (PSBU) hosts its own operating theatre in which local anaesthetic procedures are performed on an elective and emergency basis. In 2014, the use of the theatre was further expanded to incorporate a see-and-treat clinic. This annual audit ensures progression of the performance of the PSBU both in terms of the number of procedures performed, the types of procedures performed, and the quality of the service offered.

Methods: A list of procedures performed in February and March 2014 was obtained from the PSBU records and from the PSBU theatre logbook. Details of the procedure performed were obtained from patient files, case summaries and iSoft, including the nature of the lesions excised, their subtype and the different closure techniques used.

Results: In 2014, an additional 174 patients were operated on, a reflection of the introduction of a see-and-treat clinic. The majority of procedures were of a benign nature (85.6%). The most common skin malignancies requiring surgical excision were basal cell carcinomata (66% of all skin malignancies), followed by squamous cell carcinomas (24.6%). Importantly, 2014 saw a drop in the rate of incomplete excisions from 11% in 2013 to 7% in 2014.

Conclusion: Clinical governance and departmental performance are vital. This audit showed an increase of

174 patients operated on in 2014 compared to 2013. It also demonstrated a satisfactory drop in incomplete excision rates from 11% to 7%, reflecting an increase in the quantity and also quality of the work performed in this department.

OP2.24

Rate of critical care admission and 30-day mortality post-emergency laparotomy in Malta

Elaine Borg¹, Maureen Bezzina², Andrew Spina², Michael Buttigieg²

¹Department of Surgery, Mater Dei Hospital, ²Department of Anaesthesia, Mater Dei Hospital

Introduction: Up to 25 million patients undergo high risk surgical procedures worldwide each year, 3 million of whom do not survive until hospital discharge. Emergency laparotomy is recognised to have significant morbidity and mortality. The objectives of this audit is to record the immediate post-operative destination and to determine 30-day mortality after emergency laparotomy in Malta.

Methods: Consecutive patients above 18 years of age who underwent EL at Mater Dei Hospital in Malta between July 2013 and July 2014 were enrolled. Demographics, comorbidities, physiological parameters, operative details and 30-day mortality were noted. Literature review was carried out using Pubmed. Data was analysed using SPSS.

Results: 187 patients were recruited. 109 patients (58.3%) were sent directly to ward, 78 patients (41.7%) were admitted directly to ICU. Overall 30-day mortality was 12.3% (23 patients) of whom 9% (17 patients) had small bowel pathology. 30-day mortality in patients admitted to ICU was 9.1% (17 patients) whilst 30-day mortality in patients admitted directly to ward was 3.2% (6 patients). This was statistically significant with a $p=0.01$ using Fisher's Exact Test. Grade of surgeon or grade of anaesthetist had no significance to immediate location ($p=0.144$; $p=0.571$), or to 30-day mortality ($p=0.56$; $p=0.779$).

Conclusion: 30-day mortality post-emergency laparotomy in Malta is of 12.3% and compares well with UK mortality rate of 14.8%.

OP2.25

Using an objective morphological analysis to study differentiation induction in acute myeloid leukaemia

Nicola Darmanin, Caroline Camilleri, Jessica Axiak, Sarah Scerri, Stephanie Farrugia, Stephanie Pullicino, Annalisse Cassar, Sherif Suleiman, Sonia Patricia Stoica, Pierre Schembri Wismayer

Department of Anatomy, Faculty of Medicine and Surgery, University of Malta

Introduction: Differentiation therapy is the use of nontoxic chemicals to age immortal cancer stem cells. HL60, an M2 (French-American-British classification) Acute Myeloblastic Leukaemia cell line does not possess the 15;17 translocation and does not respond to presently used differentiation agents like all transretinoic acid. The aim of this morphological analysis is to further confirm the best hits previously obtained using nitroblue tetrazolium reduction and cytotoxicity screening assays on HL60 cell lines.

Methods: HL60 cells were exposed to different differentiation agents at 1 and 10 micromolar and fixed on slides at day 3 and 5 and stained with Leishman's stain. Using light microscopy, a MoticamPro 282A camera was used to capture three images of different high power fields from each slide. The positive controls used were Dimethyl sulfoxide (DMSO) and Palmitate myristate acetate (PMA). An excel sheet using a scoring method was designed to facilitate

screening for features of differentiation such as: nucleus to cytoplasmic ratio, irregularity of cytoplasm, number of nucleoli and state of chromatin. The total score for all these features is added to give an overall numeric indication of differentiation.

Results: Reagents will be grouped according to this final score, thus confirming the differentiation identified in the initial screening tests and allowing the choice of the best agents to be further tested with flow cytometry.

Conclusion: This research will hopefully increase the number of agents which may eventually be used to induce differentiation in acute myeloid leukaemias, thus avoiding the harmful effects of standard chemotherapy.

Disclosure: The reagents were obtained through collaborations with labs in the European Union funded by 'STEMCHEM' COST consortium CM1106.

OP2.26

To fool a factor: the use of decoy oligonucleotides to target transcription factors involved in hair growth

Elena Farrugia¹, Maria Grazia Grech¹, Rebecca Zammit¹, Francesca Rappa², Francesco Cappello², Pierre Schembri-Wismayer¹

¹Department of Anatomy, Faculty of Medicine and Surgery, University of Malta, ²Dipartimento BIONEC, Sezione di Anatomia Umana, University of Palermo,

Introduction: Hair has many biological functions and hair diseases have a great impact on patients' physical and psychosocial wellbeing. The aims of this experiment was to determine whether the decoy oligonucleotides are effective in inhibiting hair growth and to determine whether liposomes made absorption of oligonucleotides through skin more effective.

Methods: Oligonucleotide sequences of the promoter binding sequences of Hox-c 13, Foxe1, Sox9, Foxn1, VEGF, Lhx2 and Gata3 genes were mixed with liposomes or with sterile water and applied on separate shaved areas on the dorsum of a population of rats. The hair growth rate was then observed and scored between 0 and 3 every three or four days, 0 being no hair growth and 3 being the most hair growth. As a control, one area had liposome only applied to it while another had nothing.

Results: The oligonucleotide sequences showed better results when mixed with liposomes, as opposed to sterile water. In fact, after the first experiment, the oligonucleotides were only mixed with liposomes. The oligonucleotides of the promoter sequences of Sox9 and Hox-c 13 exhibited the slowest rate of hair growth. On the other hand, Foxe1, Foxn1 and Gata3 were the least effective.

Conclusion: Oligonucleotides seem to exhibit enhanced uptake through the skin with liposomes. This may potentially lead to advances in the efficiency of drug delivery, not only for cosmetic purposes but also to treat various disorders of skin and hair growth.

OP2.27

Mononucleate cells from psoriatic patients exhibit altered mitochondrial respiratory activity

Rosella Scrima¹, Claudia Piccoli², Nazzareno Capitanio¹

¹Department of Clinical and Experimental Medicine, University of Foggia, ²Department of Clinical and Experimental Medicine, University of Foggia; Laboratory of PreClinical and Translational Research, IRCCSCROB, Referral Cancer Centre of Basilicata, Rionero in Vulture (Pz)

Introduction: Psoriasis is a chronic inflammatory affliction hallmarked by hyperproliferation and altered

differentiation of dermal keratinocytes. Accumulating evidences configure it as an immune-mediated disease determined through cytokines-mediated positive loops between activated lymphocyte subsets and keratinocytes. Mitochondria are now recognized as a decisional hub in controlling cell fate and the immunological response as well as energy control. We compared mitochondria related functions of peripheral blood mononuclear cells between psoriatic patients and healthy controls.

Methods: Eleven psoriatic patients and nine healthy volunteers were enrolled in this study. Venous blood was processed for isolation of peripheral blood mononucleate cells (PBMC). O₂ consumption was measured by a Clarktype electrode. The specific enzymatic activities of complexes I and IV were assayed spectrophotometrically. Real-time PCR and Western Blotting analysis were performed on cell lysate.

Results: Respirometric analysis unveiled in patients' cells a significant increase of oligomycin-sensitive endogenous mitochondria-driven oxygen consumption. The enhanced mitochondrial respiration in patients' cells was traceable to an increased activity of the respiratory chain complex I. Analysis by quantitative RTPCR of transcription factors regulating mitochondrial biogenesis showed significant changes between patients and control cells and was confirmed by the unaffected expression of the complex I subunits. GRIM19, a structural and functional stabiliser of complex I and the mitochondrial translocation of STAT3 was significantly up-regulated in patients' cells.

Conclusion: Altogether the results obtained suggest the occurrence in psoriatic monocytes of an altered activity of complex I likely mediated by upregulation of GRIM19, which might lead to a chronic activation of Tlymphocytes thereby contributing to the development of psoriasis.

OP2.28

Is there a biomechanical cause for spontaneous pneumothorax?

Aaron R Casha¹, Alexander Manché¹, Ruben Gatt², Wiktor Wolak³, Krzysztof Dudek³, Marilyn Casha⁴, Pierre Schembri Wismayer⁵, MarieTherese Camilleri Podesta⁵, Joseph N Grima²

¹Department of Cardiac Services, Mater Dei Hospital, ²Metamaterials Unit, Faculty of Science, University of Malta, ³Department of Physics and Astronomy, Uniwersytet Zielonogórski, Zielona Góra, Poland, ⁴Department of Anaesthesia, Mater Dei Hospital, ⁵Department of Anatomy, Faculty of Medicine and Surgery, University of Malta

Introduction: Primary spontaneous pneumothorax has long been explained as being without apparent cause. This paper deals with the effect of chest wall shape and explains how this may lead to the pathogenesis of primary spontaneous pneumothorax.

Methods: Rib cage measurements were taken from chest radiographs in 12 male pneumothorax patients and 12 age-matched controls. A finite element analysis (FEA) model of a lung apex was constructed, including indentations for the first rib guided by CT scan data, to assess pleural stress. This model was tested using different anteroposterior diameter ratios, producing a range of thoracic indexes.

Results: The pneumothorax patients had a taller chest ($P=0.03$), wider transversely ($P=0.009$) and flatter ($P=0.03$) when compared with controls, resulting in a low thoracic index. Prominent rib indentations were found anteriorly and posteriorly on the lung surface, especially on the first rib on CT. FEA of the lung revealed significantly higher stress ($\times 5-10$) in the apex than in the rest of the lung. This was accentuated ($\times 4$) in low thoracic index chests, resulting in 20-fold higher stress levels in their apex.

Conclusion: The FEA model demonstrates a 20-fold increase in pleural stress in the apex of chests with low thoracic index typical of spontaneous pneumothorax patients. Mild changes in thoracic index, as occurring in females or with aging, reduce pleural stress. Spontaneous pneumothorax occurring in young male adults may have a biomechanical cause.

OP2.29

Inducing differentiation of HL60 cells via a nucleoside analog and 3-bromothiophene

Maria Grazia Grech¹, Marie Adrienne Zerafa Simler¹, Stefano Corso¹, Thomas Gatt¹, Dale Brincat¹, Rachid Benhida², Nadine Martinet², Lucienne Gatt¹, Analisse Cassar¹, Pierre Schembri Wismayer¹

¹Department of Anatomy, Faculty of Medicine and Surgery, University of Malta, ²Institute of Chemistry, Bioanalysis Department, Institut National de la Santé et de la Recherche Médicale (INSERM)

Introduction: Acute Myeloid Leukaemia is the commonest leukaemia of adulthood carrying a dismal prognosis, with the exception of acute promyelocytic leukaemia which responds to all-trans retinoic acid, ATRA. The aim was to cause HL60 acute myeloid leukaemia cells which did not respond adequately to ATRA to terminally differentiate using a nucleoside analog and 3-bromothiophene.

Methods: The cells were exposed to nucleoside analogs or to 3-bromothiophene at a concentration of either 1 μ M or 10 μ M for either 3 or 5 days. The response of the cell lines was assessed using reduction of nitro blue tetrazolium (NBT) normalised to cell number by dimethyl thiazolyl diphenyl tetrazolium (MTT) assays to show differentiation marker activity/cell number. This was done at 3 and 5 days to assess for both monocytic and granulocytic differentiation.

Results: The nucleoside analog resulted in significant differentiation on day 3 at both concentrations of 1 μ M and 10 μ M. 3-bromothiophene resulted in significant differentiation on day 3 at both concentrations of 1 μ M and 10 μ M. On day 5, 3-bromothiophene resulted in significant differentiation at 10 μ M.

Conclusion: Both the nucleoside analog and 3-bromothiophene have potential in treating acute myeloid leukaemia. Thus, they offer new hope to patients suffering from this disease.

Disclosure: This was part of, and received funding from European Cooperation in Science and Technology (COST) Action CM1106 carried out by the STEMCHEM consortium.

OP2.30

A hypothesis for reactivation of pulmonary tuberculosis: how thoracic wall shape affects the epidemiology of tuberculosis

Aaron Casha¹, Liberato Camilleri², Alexander Manché³, Ruben Gatt⁴, Daphne Attard⁴, Wiktor Wolak⁵, Krzysztof Dudek⁵, Marilyn Gauci⁶, Christopher Giordimaina³, Joseph N Grima⁴

¹Department of Cardiac Services, Mater Dei Hospital; Department of Anatomy, Faculty of Medicine, University of Malta, ²Department of Statistics and Operational Research, Faculty of Science, University of Malta, ³Department of Cardiac Services, Mater Dei Hospital, ⁴Metamaterials Unit, Faculty of Science, University of Malta, ⁵Department of Physics and Astronomy, Uniwersytet Zielonogórski, Zielona Góra, Poland, ⁶Department of Anaesthesia, Mater Dei Hospital

Introduction: This study was aimed at determining the cause for the high incidence of tuberculosis (TB) reactivation occurring in males with a low body mass index (BMI). Current thinking about pulmonary TB describes infection in the lung apex resulting in cavitation after reactivation. A different

hypothesis is put forward for TB infection, suggesting that this occurs in subclinical apical cavities caused by increased pleural stress due to a low BMI body habitus.

Methods: A finite element analysis (FEA) model of a lung was constructed including indentations for the first rib guided by paramedian sagittal CT reconstructions, and simulations were conducted with varying anteroposterior (AP) diameters to mimic chests with a different thoracic index (ratio of AP to the transverse chest diameters). A Pubmed search was conducted about gender and thoracic index, and the effects of BMI on TB.

Results: FEA modeling revealed a tenfold increase in stress levels at the lung apex in low BMI chests, and a fourfold increase with a low thoracic index, $r^2=0.9748$ $P<0.001$. Low thoracic index was related to BMI, $P=0.001$. The mean thoracic index was statistically significantly lower in males, $P=0.001$, and increased with age in both genders.

Conclusion: This article is the first to suggest a possible mechanism linking pulmonary TB reactivation to low BMI due to the flattened thoracic wall shape of young male adults. The low thoracic index in young males may promote TB reactivation due to tissue destruction in the lung apex from high pleural stress levels.

OP2.31

Ultrasound investigation of scalp thickness in a study of male pattern baldness

Ayrton Borg¹, Joanna Thompson¹, Jessica Axiak¹, Caroline Camilleri¹, Andee Agius¹, Janice Borg¹, Gillian Pace Moore¹, Raymond Galea², Jean Calleja Agius¹, Pierre Schembri Wismayer¹

¹Department of Anatomy, Faculty of Medicine and Surgery, University of Malta, ²Department of Obstetrics and Gynaecology, Faculty of Medicine and Surgery, University of Malta

Introduction: Alopecia is a condition which affects a significant number of males and females worldwide. A local study carried out on 13 cadavers found a difference in scalp thickness between bald and nonbald cadavers. In view of these results, the aim of the study is to assess scalp thickness in a larger living population using ultrasound measurements for better statistical analysis.

Methods: 200 volunteers were recruited from St. Vincent de Paul, Mater Dei Hospital and the University of Malta. Recruitment of the volunteers was based on the following criteria: balding males below 40 years of age, balding and nonbalding males above 40 years of age, and females of any age. Informed written consent was obtained and data collected included: age, gender, degree of baldness, family history of baldness, and drug history. A photograph showing the degree of baldness was also taken. Ultrasound measurements were carried out using a high frequency probe at six different locations on the scalp. The study was approved by the University of Malta Research Ethics Committee.

Results: So far, the research indicates that there is a significant difference between scalp thickness at certain locations in balding and nonbalding participants.

Conclusion: The results obtained from this study may serve as a platform for future research to investigate why certain areas of the scalp are more susceptible to thinning than others.

Disclosure: We would like to thank the Malta Postgraduate Medical Training Centre for the provision of the ultrasound machine. A special thank you goes to all the healthcare providers at St. Vincent de Paul and to Mr Stephen Falzon from the Pharmacy Department at Mater Dei Hospital who helped in the recruitment of volunteers.

OP2.32

Involuntary care and the new Mental Health Act

John M Cachia

Office of the Commissioner for Mental Health, MEHHealth

Introduction: The full effect of the new Mental Health Act is expected by end 2018. This study examines the achievements and changes implemented in the first year and identifies areas where action is needed.

Methods: The Office of the Commissioner monitors the involuntary care process through the various forms submitted by the psychiatrists responsible for care. Data of new cases was analysed to determine demographic and clinical characteristics of new admissions. The involuntary care process was tracked for each case. All forms were analysed for completeness.

Results: Of 263 applications for involuntary admission (1.2 daily), 95% involved adults, 5% were minors. The gender ratio was two males for every female. 60% of admissions involved early adulthood and middle aged persons. 15% were asylum seekers – a new vulnerable group emerging rapidly within our society. Schizophrenia, mood disorders and disorders due to alcohol and substance abuse accounted for 75% of admissions. 73% were either discharged or switched to voluntary care within 10 days. 6% required longterm involuntary care; half received such care in the community.

Conclusion: Patients are being followed up within established timeframes. Length of involuntary stay is diminishing radically. Community involuntary care is slowly becoming a follow-up option for difficult cases. Applications were more complete and the quality of information backing requests improved during the first year of implementation. Care plans are being submitted but the completeness and quality of some care plans merits revision. Evidence of involvement of patients and responsible carers in the care planning process should be better documented.

Disclosure: This study was possible due to the collaboration of all the staff at the Office of the Commissioner for Mental Health, mainly through the appropriate and timely processing of all applications for involuntary care received at the Office.

OP2.33

Congenital anomalies contributing to neonatal deaths in Malta

Miriam Gatt, Kathleen England

Directorate for Health Information and Research, Malta

Introduction: Neonatal mortality is a public health concern and congenital anomalies are a major contributor to this mortality. While perinatal causes of neonatal mortality have been documented to be decreasing, congenital anomaly causes have not. This study describes the congenital anomalies contributing to neonatal mortality in Malta from 1994-2013.

Methods: Data on neonatal deaths and cause of death 1994-2013 were obtained from the National Mortality and Congenital Anomalies Registers. Neonatal deaths with underlying cause of death coded within the 'Qchapter' of the WHO International Statistical Classification of Diseases were taken as deaths attributed to congenital anomalies. The congenital causes were grouped according to anomaly group and mortality rate/1000 livebirths for each group was calculated.

Results: Between 1994-2013 there were 441 neonatal deaths (5.2/1000 livebirths) registered. Of these 162 (36.7%) were attributed to congenital anomaly while 279 (63.3%) were attributed to other, non-congenital causes. Neonatal mortality rates for non-congenital anomaly causes decreased over the period (4.6/1000 livebirths 1994-1998 vs. 2.5/1000 livebirths

2009-2013) while neonatal mortality due to congenital anomaly causes did not (2.0/1000 livebirths 1994-1998 vs. 2.2/1000 livebirths 2009-2013). Congenital heart defects accounted for a neonatal mortality rate of 4.2/1000 livebirths, followed by anomalies of the nervous system, chromosomal anomalies and malformation syndromes all occurring at a rate of 3.1/1000 livebirths.

Conclusion: Congenital anomalies contribute significantly to neonatal mortality in Malta. Although most congenital anomalies are without known cause or prevention, a number of primary preventive measures, including periconceptional folic acid, are known to decrease their occurrence and these should be further researched and implemented.

OP2.34

Self-efficacy, self-care and outcomes in persons with diabetes

Sascha Reiff, Natasha Azzopardi Muscat

Public Health Medicine, Mater Dei Hospital

Introduction: This study explored the relationship between self-efficacy, self-care and outcomes in adults with type 2 Diabetes Mellitus in Malta.

Methods: Using a cross-sectional research design, a questionnaire was distributed to 396 persons attending the diabetes clinics of a local public hospital and three health centres. Apart from collecting demographic information and details about diabetes characteristics, the levels of self-efficacy and diabetes self-care were measured using validated tools. Outcomes were assessed by ascertaining the presence or absence of complications, and HbA1c values were used as a marker for glycaemic control. Multivariate regression models were used to identify the most significant predictors of self-care and outcomes.

Results: A response rate of 89.4% ($n=354$) was achieved. Persons with higher levels of self-efficacy were found to have higher scores in the dietary ($OR\ 1.5\ 95\% CI\ [1.3, 1.8], p<0.001$) and foot care ($OR\ 1.6\ 95\% CI\ [1.2, 1.9], p<0.001$) areas of self-care. Furthermore, they were less likely to have uncontrolled diabetes ($OR\ 0.1\ 95\% CI\ [0.1, 0.3], p<0.001$). Self-efficacy was found to vary independently of the demographic and diabetes characteristic variables collected, suggesting an absence of sub groups of persons who are at risk of having low self-efficacy.

Conclusion: This study confirmed that the concept of self-efficacy is also applicable locally, being directly proportional to levels of self-care and improved glycaemic control. Public health policies which are aimed at improving outcomes of persons with diabetes should consider the effect that self-efficacy-enhancing lifestyle interventions might have on improving outcomes.

Disclosure: The research work disclosed in this publication was 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."

OP2.35

An income divide? Monthly household income and prevalence of non-communicable disease

Dorothy Gauci, Neville Calleja

Directorate for Health Information and Research, Ministry for Energy and Health

Introduction: Research has shown that health inequalities exist across different socio-economic groups. The aim of this analysis was to assess any association between

monthly net household income and the prevalence of four non-communicable diseases (NCDs) in the working age population in Malta.

Methods: Data from the 2008 national crosssectional European Health Interview Survey (EHIS) was used. Data for the population less than 65 was analysed ($n=1848$) with self-reported lifetime disease prevalence being the outcome and self-reported monthly net household income the main predictor. The NCDs addressed in this analysis were COPD, diabetes, myocardial infarction (MI) and anxiety/depression. To adjust for competing factors; age, highest level of education, gender and all NCDs considered were included in the models. Binary logistic regression was applied

Results: Even when adjusting for other demographic characteristics and comorbidities, respondents coming from the lowest household income group ($<€929/\text{month}$) were more likely to have diabetes ($OR\ 2.11$; 95% CI 1.15 – 4.02), COPD ($OR\ 3.60$; 95% CI 1.65 – 7.87), and anxiety/depression ($OR\ 2.02$; 95% CI 1.31 – 3.13) when compared to the highest income group. The difference for MI was borderline significant ($p=0.052$) and could reflect a survivorship bias. There are no differences between the middle and high income group.

Conclusion: While cross-sectional data does not clarify a causal direction, the data seems to show that there is an association between the prevalence of major NCDs and low income households even when adjusting for the impact of other demographic characteristics and co-morbidities.

OP2.36

Terrorist attacks and the male to female ratio at birth: the troubles in Northern Ireland, the Rodney King riots and the Breivik and Sandy Hook shootings

Victor Grech

Department of Paediatrics, Medical School, University of Malta

Introduction: Males are usually born in excess of females. The ratio is often expressed as M/F (male divided by total births). A wide variety of factors have been shown to influence M/F. Terrorist attacks reduce M/F. This study was carried out in order to ascertain whether individual terrorist attacks influenced M/F in relevant populations.

Methods: The following events were studied: the Troubles in Northern Ireland, the Los Angeles Riots (the Rodney King affair), the Breivik shooting (Norway) and the Sandy Hook shooting (Connecticut).

Results: Northern Ireland M/F was significantly lower during the Troubles (1969-1998) than during the period before ($p=0.0006$). There was a very sharp dip in 1978 ($p\leq 0.004$) during this particular year of renewed violence and heavy civilian attacks. Rodney King riots late April 1992 M/F dipped significantly in August 1992, four months after the riots ($p=0.044$). Breivik Shooting 22/07/2011 M/F dipped significantly in December 2011, five months after the event ($p=0.004$). Sandy Hook Shooting 14/12/2012 M/F dipped significantly in April 2013, four months after the event ($p=0.009$).

Conclusion: M/F dips follow catastrophic or tragic events if these are felt to be momentous enough by a given population. All of the above events caused significant population stress. The M/F dips noted may have been caused by population stress which is known to lead to the culling of frail/small male fetuses. The dips noted are comparable to a substantial proportion of quoted values for perinatal mortality, potentially elevating this, to a public health issue.

OP2.37

Problematic internet use among young people aged 18 to 30 years in Malta: are we worrying too much?

Anna Maria Vella, Richard Camilleri, Marilyn Clark, Janet Mifsud, Mario Mifsud

Introduction: The Internet has become an integral part of people's lives providing a wealth of information that is instantly accessible and contains entertainment and social network facilities for all age groups. For these reasons, its use continues to increase rapidly worldwide, particularly among youth. This research is a first attempt to explore the prevalence of problematic internet use (PIU) among a representative random sample of young people in Malta aged between 18-30 years using a validated translated internet addiction tool (IAT) developed by Young (1998).

Methods: A Computer Assisted Telephone Interview survey of a net randomized sample of 1500 individuals in Malta and Gozo aged between 18-30 years were recruited by the National Statistics Office (NSO). Researchers administered a questionnaire consisting of: One open question asking participants what they mostly used the internet for, the 20-point Internet Addiction Tool (IAT) and a number of socio-demographic questions.

Results: Using the cut off points developed by Young's, 0.8% of the population scored between 70-100 and were therefore classified as PIU's. 33.3% scored between 40-69 and were classified as excessive users and 65.9% had scores under 30 meaning that they were average users who had no problems in controlling their Internet use.

Conclusion: This study indicates that around two thirds of young people aged between 18 and 30 years in Malta do not have a problem controlling their internet use. This was lower than similar studies in other countries which found that the prevalence of PIU generally ranged from 4.6% to 4.7% among adolescents.

Disclosure: This study has been funded by the President's Foundation for the Wellbeing of Society and carried out by the Centre for Freedom from Addictions within this Foundation.

OP2.38

Cigarette smoking and patients with severe mental illness

Veronica Said Pullicino¹, James Gauci², Kurt Magri Gatt¹, Rachel Taylor East², Anton Grech²

¹Mater Dei Hospital, ²Mount Carmel Hospital

Introduction: Smoking rates are higher in people with mental illness when compared to the general population, hence these individuals are at greater risk of smoking-related disease. Moreover, interactions between nicotine and some psychotropic medications make the latter less effective. NICE Guidelines reiterate the effectiveness of smoking cessation interventions delivered to people with mental illness. Our aim was to examine the relationship between mental illness and smoking, through establishing rates of smoking, and rates of treatment for nicotine dependence.

Methods: All patients residing in the long-stay wards at Mount Carmel Hospital were included in the study. Data was collected over a one-week period in 2013, through interview of nursing staff and review of clinical notes.

Results: A cohort of 204 patients was studied, of which 46.1% were smokers with a M:F ratio of 3:1. Smoking was most common in patients with chronic psychosis (50.0%) excluding those with admissions for addiction-related problems. At the time of audit, 17 participants were involved in a smoking cessation treatment plan and 68 (72.3%) were on at least one medication that interacts with nicotine via the cytochrome

P450 1A2 (CYP1A2) system.

Conclusion: There is a strong association between mental illness and smoking, as well as known interactions between nicotine and psychotropic medications. It has been shown that smokers with mental illness should be helped to quit smoking, however many do not receive the necessary advice and support. Smoking cessation strategies are currently being planned at Mount Carmel Hospital. A re-audit will be carried out in order to determine their effectiveness.

OP3.01

Transanal total mesorectal excision: the way forward in rectal cancer surgery

Albert Wolthuis

Department of Abdominal Surgery, University Hospital Leuven

Laparoscopic ultra-low total mesorectal excision remains cumbersome because it is technically difficult to mobilize the most distal part of the rectum, especially in obese male patients with a narrow pelvis. Transanal total mesorectal excision (TaTME) may resolve all issues related to pelvic exposure, cross-stapling, and specimen quality. TaTME seems an attractive new methodology in rectal cancer surgery, but this approach has not been extensively investigated. TaTME is a result of recent developments in transanal endoscopic microsurgery (TEM), transanal minimally invasive surgery (TAMIS), natural orifice specimen extraction (NOSE), natural orifice transluminal endoscopic surgery (NOTES), transanal abdominal transanal proctosigmoidectomy (TATA), and laparoscopic TME. TaTME is an exciting convergence of various existing surgical techniques and represents the future of rectal cancer surgery. A substantial number of patients, especially obese males with a narrow pelvis, will benefit from this minimally invasive approach. The procedure can be initiated transanally or transabdominally. If a simultaneous approach with 2 operating surgeons was chosen, the operative time might be significantly reduced. TaTME can also be associated with better TME specimens and a longer distal resection margin. TaTME is feasible in expert hands, but the learning curve and safety profile are not well defined. Long-term follow-up regarding anal function and oncological outcome should be studied in the future. Standardization of the technique and reporting of outcomes are required.

OP3.02

Enhanced recovery after colonic resection at Mater Dei Hospital: a prospective pilot cohort study

Charles Cini¹, Anthony Pio Dimech²

¹Mater Dei Hospital, ²Malta Foundation Programme

Introduction: Enhanced recovery after surgery (ERAS) is a new approach to surgical management. It focuses on all aspects of surgical care, and makes changes to the traditional surgical process, from pre-admission preparation to the post-operative period. The aim of enhanced recovery after surgery is to decrease the patients' stress response to surgery and hasten recovery, reducing complications and shorten post-operative in-patient stay.

Methods: We prospectively collected data about a cohort of patients who were included to follow the ERAS protocol between January and August 2015. Primary endpoints included length of post-operative hospital stay, post-operative complications and re-admissions within 30 days. Secondary endpoints were post operative pain, time to bowel function, analgesia requirements and adherence to the protocol.

Results: 10 patients were included. The mean age was 58.7 years. The median length of post-operative hospital stay was 2.43 (range 23) days. The overall incidence post-operative

complications according to the Clavien-Dindo classification was in all cases Grade I, and 30-day re-admission rate was 14.3% ($n=1$) but the clinical reason was not related to the surgery itself. The ERAS protocol in this initial pilot study was adhered to in 79.5% of cases.

Conclusion: Our results confirm that introduction of an ERAS protocol for colorectal surgery at Mater Dei Hospital allows for a safe post-operative recovery, and significantly shortens the length of stay. Apart for helping to relieve some of the bed shortage problem, an ERAS programme will also give an opportunity to our colorectal patients to have a faster recovery and a less traumatic experience.

OP3.03

Oesophagectomies in Malta over the past eight years - an analysis of our results

Stephen Micallef Eynaud¹, Julian Delicata², Franklin Abela², Benedict Axisa¹

¹Department of Surgery, Mater Dei Hospital, ²Mater Dei Hospital

Introduction: Oesophageal cancer is increasing in incidence worldwide. With new diagnostic and staging modalities, its management is developing in major ways. There has been a trend towards minimally invasive techniques since their description by Cuschieri in 1992. We audited all oesophagectomies performed over an 8 year period to identify perioperative factors that may affect survival.

Methods: Retrospective analysis was undertaken on all patients from June 2008 till 2015 inclusive. Data was collected from the departmental database and case note review. Variables examined included age, tumour position, histology, tumour stage, nodal stage, completeness of resection, use of neo-adjuvant chemotherapy and operative technique.

Results: 31 patients underwent oesophagectomy during our time frame. Male to female ratio was 3.34:1 Mean age was 64 years (range: 54 - 83). Cancer affected the middle third of the oesophagus in 6.5%, distal third in 41.9%, oesophago-gastric junction in 38.7% and cardia in 12.8%. Adenocarcinoma accounted for 90% of all cases, with squamous cell carcinoma occurring in 6% and other histological types in 4%. There were 21 laparoscopically assisted and 10 open oesophagectomies. There was a 28% recurrence rate within one year and 66% within five years. Post operative survival stands at 71% after one year and 26% after 5 years.

Conclusion: Surgery for oesophageal malignancy continues to be associated with significant morbidity and mortality. Age and organ dysfunction are associated with an increased risk of death. Multidisciplinary led management planning and a move towards less invasive surgery has significantly positive outcomes on post operative status.

OP3.04

Umbilical/paraumbilical hernia repair: a new technique using the Ultrapro[®] Plug

Joseph Anthony Attard, Christine Azzopardi, Alexander Attard

St James's Hospital, Sliema

Introduction: Routine use of a permanent nonabsorbable mesh in umbilical/paraumbilical hernia repair remains controversial because of variable reports of increased wound infection. The tension associated with traditional techniques (Mayo or Mass closure) is associated with an unacceptable recurrence rate and increased pain post-operatively. In view of this a new tension free technique was developed using the partially absorbable Ultrapro[®] Plug which has to date been licensed for inguinal hernia repair.

Methods: The repair consists of a standard infraumbilical approach with transfixion and excision of the sac. A pre-peritoneal space is developed for 2 cm underneath

the circumferential edge of the defect. The plug is then sutured with 2/0PDS suture and the wound closed in layers. A single dose of antibiotic is given per-operatively. Files of all patients operated during August 2010 - December 2011 were reviewed retrospectively with respect to analgesia use, infection rates, recurrence, chronic wound pain and scarring.

Results: During the period of study, 15 adult patients were operated using this technique (11 Males/4 Females; 9 paraumbilical/6 umbilical). The median follow up period was 4.2 years (3.7 - 4.9). Analgesia consisted of NSAID's for 24 hours and paracetamol thereafter. There were no episodes of wound infection or recurrences to date. 14 patients were happy with the final scar but none reported chronic wound pain.

Conclusion: The use of the Ultrapro® Plug is a new effective, previously undescribed, tension free repair of umbilical/paraumbilical herniae. Further large prospective randomised studies are needed to determine whether the extra cost of the plug is justified.

OP3.05

Incidence and odds ratio of appendicitis as a manifestation of colon cancer: a retrospective analysis

Matthew Bonello, Tara Grima, Jonathan Cutajar,

Josephine Psaila

Introduction: Obstruction of the lumen of the appendix is the major cause of appendicitis. It has been suggested that tumours could obstruct this lumen and cause appendicitis within the elderly. It has been suggested that patients over 40 presenting with symptoms of appendicitis should be investigated with a post-op colonoscopy for the possibility of a coexistent colon neoplasm. The aim of this study is to determine the incidence of colon cancer in those patients over 40 that presented with acute appendicitis in the Maltese population.

Methods: This is a retrospective analysis in which patients over the age of 40, who had been diagnosed with acute appendicitis, between the years 2008 and 2012 were surveyed. Patients who had been previously diagnosed with colon cancer or in whom the diagnosis of colon cancer was done at the time of presentation with appendicitis were excluded from this analysis. The remaining patients were analysed to determine which if any, developed colon cancer up until December 2014.

Results: The age adjusted incidence rate per 100,000 population was calculated. The mid year 2009 population for those 40+ (202,528) was used as the denominator. Similar calculations for the crude and incidence rate were calculated. The crude rate ratio was calculated which showed that the rate in the appendectomy population is 24 times higher than that in the general population.

Conclusion: The rate of colon cancer in patients diagnosed with appendicitis above 40 is statistically significantly higher.

OP3.06

Epigenetics and Type 1 diabetes

Alexia Giovanna Abela¹, Duncan Ayers², Stephen Fava¹

¹Department of Medicine, Faculty of Medicine and Surgery, University of Malta; Department of Medicine, Mater Dei Hospital,

²Centre for Molecular Medicine and Biobanking, University of Malta

Introduction: The prevalence of type 1 diabetes (T1DM) is increasing worldwide, with varying incidence rates between countries. Such cases could be due to environmental and/or epigenetic factors involved in T1DM pathogenesis.

Methods: Adult T1DM patients were identified from

the Diabetes and Endocrine Centre, Mater Dei Hospital and their medical notes were reviewed for possible environmental trigger factors. Data collected included: date of birth, date of diagnosis, age at diagnosis, mode of presentation, associated conditions, diabetes complications, family history of autoimmunity and major stressful life events. Month of conception was estimated from the date of birth and the average monthly maximum and minimum temperature and hours of sunshine were obtained.

Results: In this interim analysis, 175 T1DM patients were identified. The prevalent birth month for T1DM patients was September ($n=27$) followed by December ($n=22$), while patients presented with T1DM most commonly in December ($n=17$). The variability in birth month and presentation month were both found to be statistically significant ($p=0.015$ and $p=0.04$ for both). A nonsignificant trend was found between estimated month of conception and average monthly maximum temperature ($r=0.448$; $p=0.144$), minimum temperature ($r=0.459$; $p=0.133$) and hours of sunshine ($r=-0.459$; $p=0.133$).

Conclusion: Based on this data and other environmental factors that contribute to the pathogenesis of T1DM, further analysis is required. In addition, the possible epigenetic effects of putative miRNAs affecting T1DM pathogenesis will also be investigated, following defined links of miRNA dysregulations with T2DM pathogenesis.

OP3.07

An unrecognized variety of diabetes amongst the Maltese population, MODY

Ian Baldacchino¹, Lauren Abela¹, Keith Borg Xuereb²,

Gillian Pace Moore², Benjamin Thornton², Ruth Caruana³,

Josanne Vassallo³

¹Malta Foundation Programme, ²Medical School, University of Malta, ³Diabetes and Endocrine Centre, Mater Dei Hospital

Introduction: Maturity-onset diabetes of the young (MODY), is a form of monogenic diabetes that may be caused by gene mutations. The prevalence of MODY cannot be estimated correctly because most cases are missed. Improper treatment is therefore dispensed.

Methods: Data protection clearance was granted by the Data Protection Officer at Mater Dei Hospital. Patient files at Diabetes Clinic were used to retrospectively manually identify diabetics diagnosed before 35 years of age from the years 1963-1997. Information on gender; age at diagnosis; weight and height at review; treatment at initial review; treatment within the first six months; treatment after the first six months; date of birth; family history of diabetes was gathered. Review of patient files is still ongoing. The MODY probability calculator was applied to the type 2 diabetes cohort and those individuals with a positive predictive value (PPV) of more than 25% would go on for further testing.

Results: On initial review 899 subjects were identified. These were classified as gestational diabetics $n=172$, type 1 diabetics $n=245$, type 2 diabetics $n=287$ and possible MODY $n=95$ according to clinical criteria, with another 100 subjects who need further data to be classified. The MODY calculator has shown 44 type 2 diabetics who have a PPV greater than 25%. Further analysis is ongoing.

Conclusion: This study is an opportunity to diagnose and estimate the prevalence of MODY in the Maltese population. Further data is needed to apply the MODY calculator to the remaining candidates. Those identified will be called for further tests.

OP3.08

Diabetes in pregnancy: diagnosis,

management, follow up, outcome and complications

Maria Petra Agius, Mark Gruppettea, Josanne Vassallo

Mater Dei Hospital

Introduction: The perinatal complications of diabetes in pregnancy have been recognised. Maternal complications can be equally devastating and outcomes differ according to the aetiology of the condition.

Methods: A retrospective study consisting of a cohort of type 1 (type 1 DM) and type 2 (type 2 DM) pregnant diabetics and the newly diagnosed gestational diabetics (GDM). Data collected included method of diagnosis, gestational age, medical and obstetric history, HbA1c levels, management, follow up, perinatal outcome and long term follow up.

Results: From 79 pregnancies, 69.6% patients were diagnosed with GDM, 13.92% type 2 DM and 16.5% type 1 DM. Mean gestational age in GDM patients was 37.9 (+1.6) weeks, 35.5 (+3.7) weeks in type 2 and 37.1 (+0.7) weeks in type 1. Mean birth weight in GDM patients was 3.6Kg, 3.1Kg in type 2 and 3.3Kg in type 1 patients. 32.7% of GDM patients were on insulin and 50.9% on oral hypoglycaemic agents (OHA's). 72.7% of type 2 diabetes patients were on insulin while 3.6% on OHA's. All type 1 diabetes patients were on insulin. 30% of GDM patients, 25.5% of type 2 DM patients and 84.6% of type 1 DM patients, had an insulin infusion pump peri-partum and a mean HbA1c in the third trimester of 6.0, 6.3 and 7.1 respectively.

Conclusion: Diabetes in pregnancy should be managed holistically. 52% of GDM patients had an oral glucose tolerance test postpartum, 21.8% of which developed type 2 DM and 5.5% impaired glucose tolerance. Neonatal complications included macrosomia and polyhydramnios and congenital anomalies in type 2 patients.

OP3.09

Type 2 diabetes, bone and disc height

Rachel Agius¹, Raymond Galea², Stephen Fava¹

¹Diabetes and Endocrine Centre, Mater Dei Hospital, ²Department of Obstetrics and Gynaecology, Mater Dei Hospital

Introduction: Subjects with type 2 diabetes (T2D) have an increased fracture risk, however there have been conflicting reports on the relationship between T2D and bone mineral density (BMD). This could be due to failure to adjust for potential confounding factors. This study assess the relationship between T2D and BMD at the femoral neck and spine in diabetic and nondiabetic subjects, after adjusting for multiple covariates which may affect BMD. Intervertebral disc height was also investigated in view of its possible relation to fracture risk.

Methods: A hundred patients with T2D of at least 5 years duration and 86 nondiabetic subjects were recruited. A crosssectional study was carried out to compare BMD T-scores and disc heights between the twelfth thoracic (T12) and the third lumbar (L3) vertebrae between the two study groups.

Results: Diabetic subjects had a higher spine BMD T-score on monovariate analysis (mean $\pm$ standard deviation [SD] 0.08 $\pm$ 1.2 vs 0.29 $\pm$ 1.24; $p=0.049$ respectively). However, there were no significant differences in T-scores in either the spine or femoral neck after adjustment for potential confounding variables between the two study groups. Diabetic subjects had a statistically lower intervertebral disc height between the 2nd and 3rd lumbar vertebrae when compared to controls (mean adjusted difference of 0.028cm $p=0.02$).

Conclusion: Diabetes exerts no significant independent effect on BMD. However there was significantly lower disc height in patients with T2D. This may contribute to the increased vertebral fracture risk in subjects with T2D.

OP3.10

A national major amputation database for Malta

Kevin Cassar¹, Jesmond Attard², Daniel Schembri³, Shawn Meilak³, Maria Abela³, Marcette Cassar⁴, Francesca Muscat³

¹Department of Surgery, Faculty of Medicine and Surgery, University of Malta, ²Orthotics and Prosthetics Unit, Karin Grech Hospital, ³Department of Physiotherapy, Mater Dei Hospital, ⁴Department of Physiotherapy, Karin Grech Hospital

Introduction: Major lower limb amputation is a cause of morbidity and mortality particularly where diabetes prevalence is high, as is the case in Malta. A national Amputation taskforce was set up in Malta in 2010. This multidisciplinary group included representatives from various healthcare professions as well as patient representatives. The aims of the group were to set up a national database on major amputations. This study reports on the trends in major amputations.

Methods: The database was set up in 2010. Data was collated by representatives of the different health care professions. All patients undergoing major lower limb amputation in Malta and Gozo were included. Data collated included demographics, indication for amputation, comorbidities, level of amputation, functional achievements and major outcomes particularly 30-day mortality. This study reports on data on major amputations performed between June 2011 and May 2015 inclusive.

Results: 321 major amputations were performed. There was a significant reduction (41%) in major amputations performed between 2011 (96) and 2015 (56). 185 (57.6%) were transtibial, 132 (41%) were transfemoral and 4 (1.2%) hip disarticulation. 246 patients (76.6%) were diabetics. The commonest etiology was arterial disease ($n=257$; 80%). Other indications included neoplasia, trauma, decubitus ulceration, diabetic neuropathy, meningitis, substance abuse and congenital causes. The 30-day mortality was 6.8% (22/321).

Conclusion: Major amputations have been significantly reduced despite the increasing population and prevalence of diabetes. Mortality is lower than in other European centres. The allocation of resources to prevent and treat diabetic-related disease is likely to lead to improved outcomes.

OP3.11

Predictors of diabetic nephropathy

Miriam Giordano Imbrolli, Daniele Agius Lauretta², Trevor Tabone², Stephen Fava¹

¹Mater Dei Hospital; University of Malta, ²Mater Dei Hospital

Introduction: Diabetic nephropathy is associated with increased mortality and endstage renal disease. The course of diabetic nephropathy can be ameliorated if the interventions occur early in the course of the development of nephropathy. The aim of this study was to identify factors which can predict risk of progressive renal disease in type 2 diabetes over a 7 year period.

Methods: Predictors for percentage change in ACR, progression and regression of diabetic nephropathy class were identified by Pearson correlation. Multivariate analysis was performed for factors which were significant or quasi-significant ($p<0.1$) in univariate analysis.

Results: Baseline ACR ($p<0.001$), baseline HbA1c ($p=0.038$), systolic blood pressure (SBP) ($p=0.002$), BMI ($p=0.027$), peak HbA1c during followup ($p=0.015$), and duration of diabetes ($p<0.001$) were positively correlated with percentage change in ACR, whilst haemoglobin ($p=0.012$) and BMI ($p=0.027$) were negatively associated. Baseline ACR ($p<0.001$), baseline HbA1c ($p<0.02$), SBP ($p=0.034$) and haemoglobin ($p<0.001$) were significantly

associated in multivariate analysis. Baseline ACR ($p=0.009$), baseline HbA1c ($p=0.005$) and peak HbA1c ($p=0.003$) were significantly correlated with progression of nephropathy. Baseline HbA1c remained significantly associated in multivariate analysis ($p=0.011$), whilst haemoglobin showed a nonsignificant trend to a negative association ($p=0.068$). Haemoglobin ($p=0.047$), total cholesterol ($p=0.024$), LDL-cholesterol ($p=0.010$) HDLcholesterol ($p=0.020$) were significantly correlated with regression in nephropathy class in univariate analyses.

Conclusion: Identifying factors associated with the onset and progression of diabetic nephropathy would allow earlier intervention which may prevent or delay the development of diabetic nephropathy.

OP3.12

Prediction of insulin resistance in Type 2 diabetes mellitus using routinely available clinical parameters

Caroline Jane Magri¹, Joseph Galea², Stephen Fava³

¹Department of Cardiology, Mater Dei Hospital; Faculty of Medicine and Surgery, University of Malta, ²Department of Cardiac Services, Mater Dei Hospital; Faculty of Medicine and Surgery, University of Malta, ³Department of Medicine, Mater Dei Hospital; Faculty of Medicine and Surgery, University of Malta

Introduction: Insulin resistance (IR) is an important predictor of cardiovascular risk in the general population as well as in patients with type 2 diabetes mellitus. However it is difficult to assess clinically. The aim of the present study was to determine if IR can be assessed using simple parameters which are readily available in clinical practice.

Methods: This cross-sectional study included 194 patients (112 male, 82 female) with type 2 diabetes mellitus. Body mass index, waist index (WI), triglyceride levels, 1/HDL, triglyceride/HDL, uric acid and urine albumin:creatinine ratio were investigated as possible predictors of insulin resistance.

Results: In the study population, WI correlated more strongly than any other parameter with log insulin levels, log fasting glucose to insulin ratio (FGIR), log fasting glucose to insulin product (FGIP), homeostatic model assessment (HOMAIR) and quantitative insulin check index (QUICKI). WI also emerged as the strongest independent predictor of all IR indices studied in regression as well as in ROC analyses. At a cutoff of 1.115, WI had a 78% sensitivity and 65% specificity for predicting IR when HOMAIR was used as indicator of IR, and 74% sensitivity and specificity when QUICKI was used as indicator of IR. These compared favorably with the sensitivities and specificities of the metabolic syndrome in detecting IR. Combining WI with other variables did not improve performance significantly.

Conclusion: In our cohort of patients with type 2 diabetes, waist index was the parameter with the strongest association with, and the best predictor of, insulin resistance.

OP3.13

Predictive genetics: the Maltese familial breast/ovarian cancer genetic screening programme

Jeanette Scerri¹, Ritienne Debono², Christian Saliba³, Godfrey Grech³, Christian Scerri⁴

¹Department of Pathology, Mater Dei Hospital, ²Department of Medicine, Mater Dei Hospital, ³Department of Pathology, University of Malta, ⁴Department of Physiology and Biochemistry, University of Malta

Introduction: Predictive genetic testing is used to assess the future risk of an inherited disease in individuals with a family history of the disease. BRCA1 and BRCA2

autosomal dominant mutations account for 5-10% of breast cancers and for around 15% of ovarian cancers. There are also families with hereditary tumours that are wildtype for both genes.

Methods: Genetic testing was offered at the Genetics Clinic, Mater Dei Hospital, according to the National Institute for Health and Care Excellence guidelines. BRCA1 and BRCA2 gene sequencing ($n=127$) was outsourced. Family members of individuals having BRCA1 or BRCA2 mutations were then tested locally (Laboratory of Molecular Genetics) for the presence of the mutation found in the proband and provided with the required counselling. BRCA1/2 wildtype individuals were recruited in the ImaGenX project, together with a Sicilian hereditary breast cancer cohort, for next-generation DNA sequencing (NGS) to find other causative mutations.

Results: The prevalence of BRCA1 and BRCA2 mutations in index cases was of 12% collectively; only one case (0.8%) had a BRCA1 mutation. Another 12% of cases carried a variant of undetermined clinical significance, all in BRCA2. NGS data will be communicated.

Conclusion: Through this ongoing service, affected families have been offered predictive genetic testing for the past 5 years. This allows asymptomatic individuals at an increased risk of hereditary cancer to benefit from surveillance programmes and ensure early tumour detection. Further research objectives (R.D.) will be to elucidate the role of novel genes discovered through NGS and work out their pathological molecular pathways using expression techniques.

Disclosure: BRCA1 & BRCA2 testing was carried out through the Pathology Department, Mater Dei Hospital R.D.'s. The project is funded partly by the ImaGenX project and partly by the Faculty of Medicine & Surgery.

OP3.14

CIP2A expression is upregulated in triple-negative breast cancer

Shawn Baldacchino¹, Laura Wastall², Christian Saliba³, Thomas A Hughes², Valerie Speirs⁴, Godfrey Grech¹

¹Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ²Leeds Institute of Biomedical and Clinical Sciences, Faculty of Medicine and Health, University of Leeds, ³Centre for Molecular Medicine and Biobanking, University of Malta, ⁴Leeds Institute of Cancer and Pathology, Faculty of Medicine and Health, University of Leeds

Introduction: Expression of cancerous inhibitor of protein phosphatase 2A (CIP2A) has been correlated with the clinical aggression and progression of breast cancer. CIP2A inhibits protein phosphatase 2A promoting proliferation and survival. This study aims to compare the transcript and protein expression in triple negative breast cancer (TNBC) and determine the significance of CIP2A localisation using formalin fixed paraffin embedded (FFPE) breast cancer tissue. Breast cancers with increased CIP2A are potential candidates for novel PP2A activation therapy.

Methods: CIP2A transcript expression was assessed using a dataset of 477 breast cancer cases from The Cancer Genome Atlas (TCGA). 44 FFPE breast cancer tissues were laser microdissected and lysed to quantify the transcript expression using a Luminex[®] beadbased assay. Immunohistochemistry was used to quantify CIP2A protein and localisation on FFPE tissue sections.

Results: CIP2A is overexpressed (>2 -zscore) in 8% of breast cancer and 18% in TNBC when analysing TCGA RNASeq datasets. Protein expression of CIP2A was expressed above threshold (>3 Allred score) in 33% of TNBC cases ($N=15$) as compared to 21% of ER positive cases ($N=19$). CIP2A protein was generally localised in the cytoplasm 90% of positive cases, with localisation in the cell membrane in 31%

of CIP2A positive tumours.

Conclusion: Our study provides preliminary evidence of a novel therapeutic group within the TNBC potentially eligible for CIP2A targeted therapy or reactivation of PP2A. Our results merit further investigation and currently a study was initiated using a cohort of breast tumours ($N=572$).

Disclosure: This project is funded by the Faculty of Medicine and Surgery of the University of Malta and by the Breast Cancer Project 2014-2016 Scholarship.

OP3.15

Novel molecular classifiers of basal-type subset in breast cancer patients

Shawn Baldacchino¹, Christian Saliba², Jean Paul Ebejer², James DeGaetano³, Christian Scerri⁴, Godfrey Grech⁵

¹Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ²Centre for Molecular Medicine and Biobanking, University of Malta, ³Histopathology, Department of Pathology, Mater Dei Hospital, ⁴Department of Physiology and Biochemistry, Faculty of Medicine and Surgery, University of Malta

Introduction: The basal breast cancer subtype persists as a heterogeneous group that shows worse prognosis due to lack of targeted therapy. Understanding the deregulated cellular mechanisms uncovers new therapeutic targets which require biomarkers to select eligible patients. Analysis of datasets (cBioPortal) show that 59.6% of basal cancer exhibit deregulation of the PP2A cellular feedback mechanism. Our study aims to define biomarkers for PP2A deregulation in the basal subtype.

Methods: Genes commonly deregulated in basal cancer associated with PP2A regulation were selected as potential basalPP2A biomarkers. A 40-gene expression panel was compiled, consisting of basal/luminal classifiers; epithelial-mesenchymal transition markers; PP2A subunit expression; basal PP2A biomarkers and housekeeping genes. The Luminex[®] beadbased expression assay was validated and used to analyse 44 Laser microdissected Maltese formalin fixed paraffin embedded (FFPE) breast tumours. Data was converted to a z-score, analysed using the RapidMiner Studio software (version 6.3.0.0) and illustrated using Principal Component Analysis (PCA). This analysis could be applied to breast cancer RNASeq data from TCGA ($N=520$).

Results: breast cancer datasets were accurately defined into luminal, HER2enriched and basal molecular subtypes using 10 classifier genes with 98.2% concordance to the PAM50. When using the 5 basal PP2A biomarkers to drive classification, the basal subgroup is segregated into 2 groups which are predicted to have distinct PP2A activity.

Conclusion: The novel biomarkers divide the basal breast cancer patients into subtypes, one of which is potentially eligible to PP2A activating therapy. Further analysis shall correlate PP2A activity with PP2A inhibitory subunit expression using immunohistochemistry.

Disclosure: This project is funded by the Faculty of Medicine and Surgery of the University of Malta and by the Breast Cancer Project 2014-2016 Scholarship.

OP3.16

Molecular classifiers of breast cancer patients using multiplex assays

Christian Saliba¹, Shawn Baldacchino², Maria Pia Grixti², Vanessa Petroni², Robert Gauci², James DeGaetano³, Anthony G. Fenech⁴, Christian Scerri⁵, Godfrey Grech⁵

¹Centre for Molecular Medicine and Biobanking, University of Malta, ²Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ³Department of Pathology, Mater Dei Hospital, Msida, ⁴Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta, ⁵Department of Physiology and Biochemistry, Faculty of Medicine and Surgery, University of Malta

Introduction: Breast cancer patients can be classified using receptor status or based on expression of specific signature genes. Classification of patients provides the basis to select specific targeted therapy and to identify new molecular subtypes with potential therapeutic options. Data from the cBioPortal for cancer genomics demonstrate that PP2A function is likely to be reduced in up to 60% of basal breast tumours. Tumours exhibit either homozygous deletion or underexpression of PP2A, but also overexpression of PP2A inhibitors. In this study we classify molecularly breast cancer cell lines and a cohort of Maltese patients. In addition, we assessed the effect of PP2A activity restoration on the cellular models.

Methods: Twelve human breast cancer cell lines representing different breast tumour subtypes were cultured. Forty breast cancer tumours from various subtypes were collected. A Luminex[®] beadbased multiplex assay was used to quantify transcript levels of PP2A and its inhibitors, but also other signature genes. Sensitivity to different drugs that target the PP2A complex was determined by MTT assays following treatment with incremental doses. An effective dose was selected and used to assess protein expression and localisation using immunofluorescence.

Results: Our data show that PP2A inhibitors are significantly upregulated in TNBC cell lines and patients. In addition, the TNBC cell lines are more sensitive to low doses of drugs that target the PP2A complex. PP2A inhibitors are downregulated in TNBC cell lines following treatment.

Conclusion: The TNBC subset of patients with suppressed PP2A activity would be eligible for treatment using therapies which target the mTOR pathway.

OP3.17

A novel mutation in the F9 gene in Maltese haemophilia B patients

Malcolm Pace¹, Alexander Gatt², Joseph Borg²

¹Department of Applied Biomedical Science, Faculty of Health Sciences, University of Malta, ²Department of Pathology, Mater Dei Hospital, Msida

Introduction: Haemophilia B is an X linked bleeding disorder characterized by spontaneous bleeding due to Factor IX (FIX) deficiency. The FIX gene (F9) lies on the long arm of the X chromosome at Xq27.1. This contains eight exons (18) encoding six major domains that make up the FIX protein. There are currently 1095 known unique variants in the F9 gene. In Malta, the disease is relatively rare and in this study 11 Maltese haemophilia B patients underwent mutation analysis. Diagnosis in Malta has been largely dependent on the assessment of FIX levels rather than direct identification of DNA mutations.

Methods: DNA was extracted and amplified by polymerase chain reaction (PCR) using primers from each exon of the F9 gene. DNA sequencing was then performed for correct genotyping. These were compared with reference DNA from healthy individuals. For any large deletions, multiplex

ligation-dependent probe amplification (MLPA) was also performed.

Results: Four patients were classified as severe (FIX level <1%), while the rest have mild haemophilia B (FIX >5%). 1 known gross deletion, 2 known missense mutations and a novel single nucleotide deletion in the F9 gene promoter were identified. The single nucleotide deletion (FIX Malta I) was found to be a novel mutation affecting the transcription factor HNF4alpha binding sites in the promoter area.

Conclusion: The data thus far confirms a high heterogeneity of molecular defects leading to haemophilia B in Malta. These mutations may contribute for more precise identification of the structure–function relationship of the FIX molecule.

Disclosure: Funding: University of Malta.

OP3.18

Differential expression of breast cancer signature genes following rapamycin treatment

Vanessa Petroni¹, Anthony G Fenech², Christian Saliba¹, Marie Therese Camilleri Podesta³, Shawn Baldacchino¹, Godfrey Grech⁴

¹Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ²Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta, ³Department of Anatomy, Faculty of Medicine and Surgery, University of Malta

Introduction: Breast cancer is classified into intrinsic molecular subtypes, each relating to predictive prognostic and clinical outcomes. Rapamycin inhibits the mammalian target of rapamycin (mTOR) pathway, which is often deregulated in various types of cancer. mTOR inhibitors are associated with antiproliferation and apoptosis. Aim: Investigating the differential expression of breast cancer signature genes following rapamycin treatment in various breast cancer subtypes.

Methods: MDA-MB-436 (ER-PR-HER2-) and MCF7 (ER/PR+ HER2-) cells were exposed to rapamycin concentrations of 0, 10, 25, 35, 50, 65, 75, 100ng/mL. Following 24 hours the cell viability was measured using an MTT assay, or lysed to prepare RNA for transcript quantification using Luminex® beadbased multiplex assay.

Results: MCF7 was sensitive to rapamycin with 10ng/mL. MDA-MB-436 was not sensitive to all rapamycin concentrations. Following mTOR inhibition both cell lines exhibit downregulation of *AURKA*, and as expected a downregulation of *VEGFA*. Upregulation of *TFF3* occurred with rapamycin addition in MCF7. In MCF7, *TFF3* and *PTEN* expression negatively correlates with cell viability.

Conclusion: This study depicts *AURKA*, which has a role in tumour development, being downregulated upon mTOR inhibition with rapamycin. This provides a mechanism for increased sensitivity to mTOR inhibitors in breast cancer with *AURKA* chromosomal amplifications. Although *TFF3* is associated with progression of disease and metastatic breast cancer, upregulation of *TFF3* following rapamycin treatment correlates with decreased viability in MCF7. Identifying the genetic expression changes with different rapamycin concentrations for each subtype, will pave the way towards predicting therapeutic response, and understanding therapeutic effects in different breast cancer cell lines.

OP3.19

The distribution and prevalence of HPV genotype in Maltese women diagnosed with CIN 3 and cervical cancer

Edward Falzon¹, Graziella Zahra², Charlene Busuttill¹, Christian Saliba³, Godfrey Grech³, James Degaetano⁴

¹Histopathology, Department of Pathology, Mater Dei Hospital, ²Molecular Diagnostics, Department of Pathology, Mater Dei Hospital, ³Centre for Molecular Medicine and Biobanking, University of Malta, ⁴Cellular Pathology, Department of Pathology, Mater Dei Hospital

Introduction: The Human papilloma virus (HPV) is the causative agent of cervical carcinoma in women. There is a global variation of HPV genotypes that are highly carcinogenic. The aim of this study was to estimate the prevalence and type-specific distribution of HPV genotype in Maltese patients who were previously diagnosed with cervical intraepithelial neoplasia 3 (CIN 3) or cervical carcinoma.

Methods: 96 formalin fixed paraffin-embedded sections from archival cervical tissue were retrieved from the Pathology Department, Mater Dei Hospital, Malta. HPV genotypes were identified using the Multiplex HPV genotyping kit, which employs the identification of 24 HPV subtypes via PCRbased assay amplification, followed by a hybridisation step and identified via a Luminex analyser. Negative cases were re-analysed with the RTPCR. 92 cases were suitable for data analysis of which 73 cases were positive for HPV (79%). A total of 14 different HPV types were identified; 12 were high-risk HPV and 2 were lowrisk HPV genotypes.

Results: The most prevalent HPV genotype in all diagnosis categories was HPV16, followed by HPV 31, 45, 18, 33, 35, 52, 53, 58, 59, 70, 73 82 and 6. However, in invasive carcinoma cases, the most prevalent was HPV16 followed by 45, 18, 58, 31, 59, 73, 82, and 6.

Conclusion: The present study provided important information about the distribution of individual HPV genotypes in CIN 3 and cervical carcinoma cases in Malta. Although the frequency of HPV16 in the present study is similar to other European studies, the distribution of the other HPV genotypes was different.

OP3.20

The local reponse to the 2014 Ebola epidemic in West Africa

Charles Mallia Azzopardi, Tonio Piscopo, Claudia Fsadni
Infectious Disease Unit, Mater Dei Hospital; Faculty of Medicine and Surgery, University of Malta

Introduction: In 2014, West Africa, experienced the largest outbreak of Ebola virus disease (EVD) in history. Malta embarked on an intense programme to ensure adequate levels of preparedness and vigilant surveillance.

Methods: Here we discuss what measures were taken by the Maltese Health Department focusing primarily on the Infectious Diseases Unit and Ebola Response Team at Mater Dei Hospital. We wish to review the beneficial outcomes of these measures as well as outline any areas which need strengthening.

Results: This exercise was an extensive one involving the training of a large group of health professionals from different departments including Infectious Diseases Unit (IDU) doctors and nurses, infection control nurses, paediatricians, radiographers, anaesthetists, renal nurses and mortuary attendants. Public Health and Accident and Emergency had their own training programmes and drills. Two hour training sessions were rigorously held on a daily basis on the IDU with a full Ebola drill every Friday. Each trainee underwent certification at the end of training. We describe two reallife Ebola threats happening during normal hours and out of

hours.

Conclusion: The benefits from this exercise were numerous, especially the establishment of a dedicated team who voluntarily trained and worked round the clock. The improvements made to two of the isolation rooms in IDU were crucial to the final operating procedures. Two real life threats helped test and consolidate these systems. The game is not over yet. This exercise kickstarted an ongoing process so that these and future challenges are addressed with the best possible infrastructure and systems.

OP3.21

Novel tricalcium silicate cements: not just common cements

Maria Xuereb¹, Francois Paul Sorrentino², Denis Damidot³, Josette Camilleri¹

¹Department of Restorative Dentistry, Faculty of Dental Surgery, University of Malta, ²Mineral Research Processing, Meyzieu,

³University of Lille Nord de France, Lille, EM Douai, LGCgEGCE, Douai

Introduction: Portland cement, a construction material, is used in dentistry as it is hydraulic thus develops its properties in the presence of moisture, which is an essential property for a dental material. The main constituent phase of Portland cement is tricalcium silicate. Thus second generation materials which improve on the original formulation are tricalcium silicate-based. Interaction of these cements with tissue fluids results in biomineralization. The aim of this research was to develop novel tricalcium silicate-based cements with sintered radiopacifiers. Sintering of the radiopacifier phase to the cement reduces the leaching thus less risk of spreading of radiopacifier in the surrounding tissues. Furthermore the properties of these novel cements were investigated for their prospective use as implant coating materials.

Methods: Six tricalcium silicate cements, either mixed or sintered to different radiopacifiers with 20% of either barium, calcium or strontium were used as radiopacifiers so that these materials could be distinguished radiographically. The control used was hydroxyapatite. These materials were characterized and a coating method described.

Results: All materials exhibited the typical formation of a calcium phosphate phase on hydration and contact with physiologic solution thus biomineralization occurred. The sintered materials gave markedly improved chemical properties over the control, but leached the radiopacifier components when compared to the mixed variants.

Conclusion: Tricalcium silicate cements can be promising implant coating materials due to their interaction with tissue fluids thus optimising the bonding between the prosthesis and the bone at the site of implant insertion. Further studies can be carried out on the materials to improve their properties.

OP3.22

A comparison of the microbiological flora in the oral cavity of type II diabetes mellitus vs non-diabetic adult dental patients

Gabrielle de Gray¹, Neville Calleja², Christopher Henry Barbara³

¹Faculty of Health Sciences, University of Malta, ²Department of Public Health, Faculty of Medicine and Surgery, University of Malta, ³Department of Pathology, Mater Dei Hospital

Introduction: Diabetes mellitus predisposes to oral disease through alterations of oral microflora accompanied by drop in host's immunity. A comparison of oral microflora isolated from saliva and plaque specimens of 30 diabetic and 30 non-diabetic dental patients was made.

Methods: A case was defined as a male or female dental patient, aged 18 years or older and having type II diabetes mellitus (T2DM). Any association between demographics and oral health status of recruited patients, and the occurrence of T2DM, was tested for using Chi-Squared or Independent Samples T-Test. Culture-based methodology was used to count and identify cultivable oral bacteria and *Candida* species from specimens. Normality of data was tested by means of QQ plots. Mann Whitney U-Test was used for significance testing and multivariate regression analysis then carried out. Power analysis to enable future studies was also done.

Results: Counts of suspected *Lactobacillus* species (pathogenic) were significantly higher in diabetics – $p=0.013$, whilst counts of non-pathogenic *Neisseria* species were significantly higher in non-diabetic counterparts – $p=0.046$. With regards to mycological flora, the predominantly isolated microorganism was *Candida albicans* but its counts did not vary significantly between diabetics and non-diabetics. The majority of organisms identified in saliva were also identified in plaque. Occurrence of T2DM in recruited dental patients was not influenced by demographics or oral health practices. No statistically significant difference in oral health status of diabetics and non-diabetics recruited for this study was observed.

Conclusion: This study was successful in detecting significant quantitative differences in the oral microflora of diabetics versus nondiabetics.

OP3.23

Effects of steam, ethylene oxide, UV and alcohol sterilization and disinfection techniques on chemical and physical properties of selected dental filling materials

Cher Farrugia¹, Glenn Cassar², Vasilis Valdramidis³, Josette Camilleri¹

¹Department of Restorative Dentistry, Faculty of Dental Surgery, University of Malta, ²Department of Metallurgy and Materials Engineering, Faculty of Engineering, University of Malta, ³Department of Food Studies and Environmental Health, Faculty of Health Sciences, University of Malta

Introduction: Tooth tissue loss through trauma/caries leads to infection of the dental pulp and eventual tooth loss. Teeth are restored with glassbased materials, resin composites and their hybrids. Materials' antimicrobial activity is important since biofilms on the material may reduce their longevity. The aim of this study was to assess the changes sustained by the materials after sterilization treatment required prior to antimicrobial testing

Methods: The materials investigated included a glass-ionomer cement (Chemfil Superior), a composite resin (SDR) and two hybrids (Ionoseal and Dyract Extra). The test materials were sterilized using alcohol, steam, ultraviolet light (UV) and ethylene oxide and any changes to these materials were then assessed by SEM, Fourier transform infrared (FT-IR) spectroscopy and microhardness testing.

Results: Steam sterilization caused changes to the surface of Dyract with a number of bubbles present on the material surface. Ethylene oxide affected the microstructure of the glass ionomer and the hybrids with deposition of chlorine and calcium in Chemfil and Dyract respectively and flattening of the Si–O stretching vibrations. UV sterilization resulted in changes in surface microhardness ($P < 0.05$).

Conclusion: The different sterilization techniques particularly ethylene oxide affected the microstructure of the materials under investigation. These results highlight the need for standardization of methodologies used for assessment of antimicrobial activity of materials, as well as further assessment of effects of sterilization methods on materials

used for medical devices. Changes in the material also lead to results of antimicrobial testing being nonrepresentative of what will occur when the material is being used clinically.

OP3.24

Use of levofloxacin and piperacillin-tazobactam for empiric treatment of lower respiratory tract infections in Mater Dei Hospital: are we too trigger-happy?

Andrea Falzon Parascandolo, Michael Angelo Borg
Infection Control Unit, Mater Dei Hospital

Introduction: In an era where the rapidly increasing variety of multidrug resistant organisms is a major patient safety issue, the use of broad spectrum antibiotics needs to be judicious and curtailed. An audit was carried out to evaluate the use of piperacillin-tazobactam and levofloxacin for the treatment of lower respiratory tract infections (LRTI) in newly admitted patients.

Methods: The study retrospectively reviewed 55 patients, admitted to Mater Dei Hospital (MDH) between July and September 2014, who were treated with piperacillin-tazobactam or levofloxacin for a LRTI. Presence of 'CURB65' score documentation was noted as well as compliance with hospital antibiotic treatment algorithms.

Results: The 'CURB65' score was documented in only 4% of notes of patients diagnosed as community-acquired pneumonia. Compliance with local guidelines was significantly suboptimal. Only 29% of prescriptions for these two antibiotics were according to MDH guidelines and/or explained by severe manifestations, penicillin allergy or suspicion of Legionella infection. Piperacillin-tazobactam was the most noncompliant antibiotic (94% of prescriptions were not in line with guidelines) whereas compliance for levofloxacin was just 61%.

Conclusion: The results suggest that second line formulations, especially piperacillin-tazobactam, are being used unnecessarily for LRTI, possibly because calculation and documentation of 'CURB65' scores is being overlooked and treatment algorithms are not being followed adequately. In an age of increased resistance, it is essential to avoid unnecessary use of these two potentially resistogenic formulations, when options are available and equally effective. This is particularly important for initial treatment regimens of newly admitted patients, since de-escalation is locally uncommon.

OP3.25

Outcome of Mantoux screening in children in Malta: does BCG vaccination matter?

Ruth Farrugia, David Pace

Department of Child and Adolescent Health, Mater Dei Hospital

Introduction: The Mantoux test is a screening tool used in children to detect possible sensitisation to tuberculosis (TB) on entering Malta from a high risk country or prior BCG vaccination. We aimed to determine if the size of the Mantoux reaction in children with TB infection was affected by BCG vaccination.

Methods: All children with a Mantoux test of ≥ 10 mm were assessed by clinical examination, a Chest Xray and an interferon gamma release assay for evidence of TB. Evidence of BCG vaccination was sought. Children were divided into 2 groups according to the Mantoux size of $10 < 15$ mm or ≥ 15 mm. Significant differences were inferred from non-overlapping 95% Confidence Intervals (CI).

Results: A total of 121 children aged < 16 years of age (mean 10.2 years) were recruited between May 2009 - June 2015. Of these, 60% were male and 66% were foreign. Of the 74 patients with a Mantoux reaction between $10 < 15$ mm, 30% ($n=22$) had latent tuberculosis, with 17/22 (77%; 95%CI:

59-95%) having evidence of BCG vaccination. A Mantoux reading of ≥ 15 mm was documented in 47 children of who 45% ($n=21$) had latent tuberculosis, with 16/21 (76%; 95%CI: 58-94%) having evidence of BCG immunisation. There was no significant difference in the proportion of TB infection between BCG vaccinated children in the two groups.

Conclusion: Despite the UK NICE guidelines recommending to only investigate children with evidence of BCG vaccination if the Mantoux reading is ≥ 15 mm, our results show that vaccinated children with a Mantoux reaction between $10 < 15$ mm should still be investigated for TB.

OP3.26

Evaluating fosfomycin as an alternative treatment for infections caused by highly resistant OXA48 enterobacterial isolates in Mater Dei hospitalized patients

Nina Nestorova, Paul Caruana, Robert Cassar, Rosann Zammit Cassar, Elizabeth Ann Scicluna

Department of Pathology, Mater Dei Hospital

Introduction: Increased carbapenemase mediated resistance (KPC,NDM,VIM,IMP,OXA48) have left the patients infected with Carbapenemase Producing *Enterobacteriaceae* (CPE) with few treating options. That encourage re-evaluating older generation antibiotics as fosfomycin. It shows promising alternative treatment in patients with high resistant isolates. Local CPE isolates exhibit resistance to all penicillins, β lactamase inhibitors, cephalosporins, quinolones and aminoglycosides, with restricted options for amikacin, tigecycline, fosfomycin and carbapenems (when Minimal Inhibitory Concentration MICs ≤ 8 mg/L). We evaluate fosfomycin susceptibility among OXA48 CPE isolates from MDH inpatients, prior establishing fosfomycin in Malta.

Methods: We have analysed data of total 741 OXA48 isolates tested to fosfomycin in the Bacteriology lab, November 2012 - May 2014. Sensitivity carried out by ASTN204 Vitek 2 Biomerieux (*versus* 7.01 & EUCAST2012). ESBL verified by ESBL+AmPC Screen kit from Rosco Diagnostica, OXA48 gene was confirmed by RT PCR (RotorGene Q).

Results: Out of total, 74% CPE were susceptible to fosfomycin (MIC ≤ 16 mg/mL). Pus isolates were less susceptible compared with those from urine (75% vs 90%). Co ESBL/OXA48 enterobacterial isolates from urine were less susceptible 66%, than ESBL negative OXA48 – 83%. *K.pneumoniae* was the majority, comprising 87 % of urinal isolates. Susceptibility to fosfomycin as follows: *K.pneumoniae* 72%; *Enterobacter* – 33%; all 15 *E.coli* were sensitive.

Conclusion: Although compared to uncomplicated UTI or ESBL, our OXA48 *K.pneumoniae* expressed higher resistance against fosfomycin, the laboratory data supports the use of this drug against OXA48 multidrug resistant enterobacterial isolates. Together with amikacin, tigecycline and colistin should be established as a treatment option for CPEs.

OP3.27

House visits in general practice: a cross sectional survey

Lorna Attard¹, Jurgen Abela²

¹*Department of Primary Care, Ministry of Health and Energy,*

²*Department of Family Medicine, University of Malta; Department of Primary Care, Ministry of Health and Energy; Hospice Malta, Balzan*

Introduction: House visits (HV) in Maltese general practice (GP) has never been documented and studied. This study was aimed to shed more light on HV.

Methods: All the patients who got a HV from Floriana Health Centre (FHC) during the month of March 2014 were

contacted via telephone.

Results: The total number of contactable HV was 201 (out of a total of 230). 110 had one or more pre morbid conditions. The most common complaint was fever (10.2%). 62% of the patients considered their need of a house visits as urgent. 64.2% of patients state that they have a private GP. 63% claimed that they choose the service of the FHC as their own GP was not available and because the service was faster. Valletta (21.4%) followed by Hamrun (20.9%) were the two localities requesting most HV. We noticed a peak of visits requests for the age group 20-49, which is not found in other studies. Most HV (58%) were for female patients and for patients over 60 years (49.2%). 94% of respondents claim that the arrival time was appropriate and 82% reported being satisfied with the HV. The main reason why a HV was requested was transport issues (27.5%).

Conclusion: This study described uncharted territory in Maltese GPs. The fact that the 20-49 age group requested most HV might be a reflection of an outdated system for certification for absence from work. More studies are needed to better describe this aspect of GP to inform further service development.

OP3.28

Health record documentation by doctors in a primary health care setting; a local audit

Adrian Mifsud, Andrea Luca Fenech, Anthony Livori

Introduction: The aim of this audit is to assess medical documentation and record keeping in the Primary Health Care setting at Government Health Centres. The Health Informatics Unit (HIU) guidelines, part of Royal College of Physicians (RCP) of London, were adapted and the minimal documentation needed for adequate record keeping was assessed in the local medical health records.

Methods: Files of patients who attended Mosta Health Centre in a specified period were selected randomly and used in this audit. Records were analysed for patient name & ID, presence of loose notes in the file, Chronological order of notes within the file, date, time, legibility, doctor's name, signature and registration number.

Results: 228 patient visits were analysed. 200 files were successfully retrieved and in 48% notes were not in chronological order, 39% had loose papers within the file. 37 out of the 200 files were found to have no note documenting the patient encounter. From 163 files the date (96.9%), time (4.9%), legibility (90.2%), doctor's name (31.9%), signature (95.7%) and registration number (73.6%) were properly documented. 28 files were not found.

Conclusion: Adequate record keeping is important for both patient safety and quality of care, and also for medicolegal purposes. Inadequate record keeping can lead to difficulty for medical staff to protect themselves from legal repercussions in cases of litigation. Medical records can be used as legal documents in court as proof of what management the patient underwent when under the care of a doctor or team. Medical records should be complete, concise, wellorganised and legible.

OP3.29

Use of lumbosacral spine radiographs in primary health care centre

Sean Francalanza¹, Glorianne Pullicino², Paul Sciortino³, Philip Sciortino⁴

¹Department of Medicine, Mater Dei Hospital, ²Department of Primary Healthcare; Department of Family Medicine, University of Malta, ³Department of Family Medicine, University of Malta

Introduction: Lumbosacral spine radiography is one of the most commonly requested studies in primary healthcare. The aim of this study was to examine the indications for such radiographs in a primary healthcare centre setting.

Methods: We conducted a retrospective, descriptive, crosssectional study. A list of all patients who underwent lumbosacral spine radiography in a local health centre between January and June 2014 was obtained. Episode data, patients' sociodemographic data and the clinicians' requests were collected using the Radiology Information System and the Picture Archiving and Communication System. Data was analysed using the Statistical Package for Social Sciences and was stored in a non identifiable manner.

Results: The majority of the subjects were female (54%, n=1021). The sample population had an age distribution of 896 years with a mean of 55 years. Lower back pain or neurological symptoms (78%) and degenerative disorders (17%) were the most frequent requests for lumbosacral spine radiography. Examination findings were documented in 4% of GP requests. Patient expectation accounted for only 0.2% of cases. 3% of the clinician's requests were missing or inappropriate. Older patients were more likely to undergo lumbosacral spine radiography for lower back pain and neurological symptoms. Trauma tended to be a common indication in the age groups below 40 years and in the above 90 year olds.

Conclusion: Appropriate documentation of the indications is important to enhance patientoriented clinical outcomes of the performance and interpretation of radiographs by family physicians onsite and also for offsite imaging and interpretation by radiologists.

OP3.30

Mental health in youth

John M Cachia

Office of the Commissioner for Mental Health, MEHHealth

Introduction: Mental disorder is the major public health challenge in adolescence and young adulthood. Literature shows that 1 in 5 teens and young adults live with a mental health condition. Half of all lifetime cases of diagnosable mental illness begin by age 14. Threequarters of lifetime mental illness arises by mid twenties. This study describes the demographic and clinical characteristics of youngsters admitted involuntarily for observation for acute psychiatric disorders.

Methods: The Office of the Commissioner is notified of all involuntary admissions for observation in acute mental health facilities. Data from 70 notifications pertaining to persons aged 30 years or less, was inserted in an excel spreadsheet.

Results: 28% of all acute involuntary psychiatric admissions involved youngsters. 60% were males, 40% were females. Schizophrenia, mood disorders and personality disorders were the main disease categories. There are detectable regional differences. Young asylum seekers are of concern. 35% required at least one additional period of involuntary care. The readmission risk within 3 months of first admission was 20% and readmission was the best predictor of longer involuntary acute care needs.

Conclusion: Acute psychiatric hospital admission of youngsters needs to be reformed. Mental disorder should not

be allowed to reach the chronic stages of the disease process. There are many youngsters at risk within our communities. They need true empowerment and effective and timely support. Mental health services for youngsters require holistic horizontal approaches involving mainly health, education, and welfare. Substantial investment in infrastructure, human resources and training is required.

OP3.31

University of Malta SAHTEK survey: results from the pilot study

Sarah Cuschieri¹, Fatemah Abdullah¹, Bader A Ali¹, Gary Bonnici¹, Yimeng Zhang¹, Anthony Cini¹, Christopher Barbara², Neville Calleja¹, Josanne Vassallo¹, Julian Mamo¹

¹University of Malta, ²Mater Dei Hospital

Introduction: Malta is no exception to the global increase in the number of cases of Diabetes mellitus type 2 (T2DM) and obesity. A lack of recent studies in Malta and concern for better control of these noncommunicable diseases has led to plans for a large cross-sectional study by the University of Malta. The aim is to identify the prevalence of T2DM, obesity, hypertension, physical activity, smoking, alcohol consumption and their correlations, including genetic information.

Methods: A randomized sample of 50 participants was selected for a pilot study in November 2014 prior to the fieldwork. Participants were called for a health check, including blood pressure, height, weight, hip and waist measurements, together with an interview using a validated questionnaire and blood testing for fasting glucose and lipid profile.

Results: 46% ($n=23$) accepted to participate (male=9; female=14). Among these, 13% were known diabetics on treatment (one was uncontrolled) and none were newly diagnosed. 26% had impaired fasting glucose. 30% were known hypertensives on medication among whom 57.1% were uncontrolled. 64.3% of females were overweight (42.9%) or obese (21.4%) while 55.6% among men were overweight (33.3%) or obese (22.2%). Gender weight differences were not statistically significant ($p=0.21$).

Conclusion: It is evident that diabetes, obesity, impaired glucose regulation & hypertension are highly prevalent and often uncontrolled among adults in Malta and therefore of great public health concern. The main study should reveal the full extent of these problems and their interrelations in sharper detail.

Disclosure: University of Malta, Alf Mizzi Foundation, Atlas Insurance, RIDT as the main funding sources.

OP3.32

Maternal age at delivery in Malta over the past 15 years

Miriam Gatt, Neville Calleja

Directorate for Health Information and Research

Introduction: Developed countries describe an increase in the number of older mothers at delivery. Older maternal age is associated with a greater risk of adverse outcomes including preterm birth, intrauterine growth restriction and perinatal mortality. This analysis examines trends in maternal ages in Malta over the 15-year period 2000-2014.

Methods: The National Obstetrics Information System (NOIS) collects comprehensive data on all births and deliveries from 22 weeks gestation occurring in Malta. Anonymous data on deliveries from 2000-2014 was obtained from NOIS and analysed using MS Excel and chisquare tests for trend.

Results: Between 2000-2014 a total of 60,380 deliveries and 61,365 births were registered with NOIS.

Analysis of 5 year maternal age groups shows that the rate of deliveries to mothers in the 30-34 and 35+ year agegroups have experienced a steady significant increase over the period: 24.6% ($n=1060$) of deliveries in 2000 vs 33.3% ($n=1423$) in 2014 for 30-34 year olds ($p<0.001$) and 12.7% ($n=547$) in 2000 vs 19.3% ($n=826$) in 2014 in 35+ year olds ($p<0.001$). Deliveries in the younger maternal age groups, <20yrs, 20-24 and 25-29, all show an overall decreasing trend between 2000-2014: 5.6% ($n=240$) vs 3.6% ($n=152$) for <20 year olds ($p<0.001$); 20.4% ($n=881$) vs 13.5% ($n=576$) for 20-24 year olds ($p<0.001$) and 36.0% ($n=1553$) vs 30.4% ($n=1298$) for 25-29 year olds ($p<0.001$) respectively. The most frequent age group at delivery is currently 30-34 years.

Conclusion: Similar to other developed countries, Malta has experienced a steady and significant increase in older mothers.

OP3.33

It's not all about time: factors implicated in food choices among Maltese mothers

Elaine Dutton¹, Lynn B Myers²

¹University of Malta; Brunel University, London, ²Brunel University, London

Introduction: Literature suggests that time availability may be at the heart of the increase in weight trajectories among mothers due to its impact on food choices and exercise behaviour. This research investigated the experience of weight management for Maltese mothers juggling multiple responsibilities and the factors that inhibit or facilitate weight management following motherhood. Determinants of snacking and take away consumption were also explored.

Methods: The research employed a mixed-methods approach with two qualitative studies ($n=9$, $n=20$) and one quantitative survey-based research ($n=348$). Participants were Maltese mothers between 18 – 60 years of age, living with a partner/ husband and having at least one child living at home. Themes and statistical differences were analyzed by BMI group and occupation.

Results: Whilst time scarcity is a common experience for mothers regardless of BMI or occupation, it is not significantly related to high-calorie snacking or take away consumption. Eating that is triggered by emotions or stimuli available in the environment may be more likely to lead to over consumption of high calorie foods while a more restrained eating style and the tendency to plan food may be more likely to lead to consume fruit & vegetable snacks and maintain weight-related goals.

Conclusion: These findings may have implications for practice as it may help professionals working with mothers to look beyond time availability as a factor for food choices and address factors than may bring about successful long-term weight management.

Disclosure: The research presented is in fulfillment of a PhD for the first author. She is supported by a grant from the Malta Government Scholarship Scheme (MGSS).

OP3.34

Fluid prescription in acute medical admissions

Jonathan Gauci, Stephanie Attard, Kyra Bartolo, Anthea Brincat, Justine Camilleri, Nicholas Paul Delicata, Darlene Muscat, Karen Anne Cassa

Mater Dei Hospital, Malta

Introduction: Assessing hydration status is essential to the management of the acutely unwell patient presenting to the emergency department. This guides the prescription of replacement and/or maintenance intravenous fluids. The level of patient hydration should then be reassessed

continuously on the medical ward. Our audit aimed to study the documentation of hydration status, as well as the input/output charting on the ward.

Methods: Our study population was composed of all patients admitted to Mater Dei Hospital during the period August to November 2013 under the care of seven medical consultants. A group of medical basic specialist trainees was responsible for data collection by means of a standard proforma.

Results: From a study population of 655 patients, 34.8% ($n=228$) were found on intravenous fluids on the post-admitting ward round. 51.8% ($n=118$) of these patients were male and 48.2% ($n=110$) were female, with an average age of 63.1 years. Hydration status was documented in the admission notes in 45.6% ($n=104$) of patients admitted on intravenous fluids. Input/output charting was requested in 18.9% ($n=43$) of patients on intravenous fluids, and was charted in 46.5% ($n=87$) of these patients. When fluid was given at the Accident and Emergency Department, this was documented on the Accident and Emergency red sheet in 74.6% ($n=156$).

Conclusion: The documentation of patient hydration status by the admitting doctor is suboptimal. The importance of requesting and carrying out input/output charting in patients receiving intravenous fluids should be highlighted to admitting doctors and nursing staff.

OP3.35

Treatment of psoriasis with biologic agents in Malta

Liam Mercieca, Michael J Boffa, Eileen Clark, Lawrence Scerri, Susan Aquilina

¹Department of Dermatology and Venereology, Sir Paul Boffa Hospital

Introduction: Biologic therapy has revolutionised the treatment of moderate to severe psoriasis leading to improved clinical outcomes and quality of life scores. This study aims to determine current biologic use in psoriatic patients at our department.

Methods: All patients who were administered biologic therapy for psoriasis in Malta were included. Data included demographic details, disease duration and severity, biologic use and duration, previously attempted treatments, side effects, early and late response to biologic using Psoriasis Area Severity Index (PASI) scores and Dermatology Life Quality Index (DLQI) scores.

Results: A total of 36 patients were started on a biologic between 2009 and 2014 for psoriasis (M:25, F:11) with a mean age of 46.9 years. These included etanercept ($n=22$), infliximab ($n=8$), adalimumab ($n=4$) and ustekinumab ($n=2$). Secondary failure was the main reason why biologics were stopped and switched. Most patients had an improvement in their PASI scores after 2 to 4 weeks of starting the biologic and had a PASI 90 score improvement. All patients had more than a 5 point improvement in DLQI score.

Conclusion: Biologic use in our department is on the increase. Our patients had considerable improvements in their PASI and DLQI scores. Secondary failures have occurred usually after 2 to 4 years and switching has yielded positive results. Biologics are expensive drugs and recently we have switched to cheaper biosimilars. Doctors should be aware of the treatment options available for psoriasis patients, their possible side effects and when to refer to our department. In most cases a satisfactory response can be achieved.

OP3.36

Monitoring of patients with systemic lupus erythematosus in local practice

Erika Cefai, Bernard Coleiro, William Camilleri, Edith Sciberras, Andrew Borg

Introduction: Systemic Lupus Erythematosus (SLE) is a disorder characterised by multisystem involvement. The use of evidence-based guidelines can help in optimising management. The aim of this audit was to assess local management of patients with a diagnosis of SLE and compare it with the European League against Rheumatism (EULAR) recommendations published in 2010.

Methods: Patients with a diagnosis of SLE that attended rheumatology clinics at Mater Dei Hospital during the year 2014 were identified. Data was collected from isoft clinical manager and case files after obtaining approval from Data Protection. The data collected looked at various aspects mentioned in the EULAR recommendations: patient assessment, cardiovascular risk, laboratory assessment, comorbidities, infection risk, frequency of assessments and renal involvement.

Results: 50 patients were identified in total. Assessment of cardiovascular risk varied: 90% had FBG/HbA1c monitoring but only 38% of patients had their smoking status checked. Neutrophil and lymphocyte counts as part of infection risk monitoring were done in all patients but vaccinations were not being recommended. The commonest comorbidity documented was hypertension in 28% of patients. Availability of baseline or follow-up investigations varied e.g. antinuclear antibodies were done in 90% but urinalysis and urine for microalbuminuria were taken in 88% and 20% of patients respectively.

Conclusion: This audit has highlighted the fact that there are areas in lupus monitoring that can be improved. This can be achieved by means of dedicated lupus clinics and use of proformas at every visit.

OP3.37

Vaccination rates in adults with autoimmune inflammatory rheumatic diseases and the patients' perspective on their infection risk

Rosalie Magro¹, Marilyn Rogers², Franco Camilleri¹

¹Department of Rheumatology, Mater Dei Hospital, ²York Teaching Hospital, NHS Foundation Trust

Introduction: The aim of the study is to determine whether vaccination in adult patients with autoimmune inflammatory rheumatic diseases (AIIRD) is being carried out according to the EULAR guidelines. These recommend that the vaccination status should be assessed and that influenza and pneumococcal vaccination should be strongly considered for patients with AIIRD.

Methods: 50 patients with AIIRD attending the Rheumatology Clinic were recruited for the audit. Demographic data and vaccination status were determined using the medical notes. Further information on their vaccination history and their perceived risk of infection was obtained by interviewing the patients.

Results: 58% were females and the mean age was 62.7 years. 36 patients were taking a synthetic DMARD and 9 were on a biologic. Information on vaccination history was found in the medical notes in only 2 cases. The influenza vaccine was taken in 36 patients (72%), out of which it was taken yearly in 24 patients. The proportion of patients who took the influenza vaccine was significantly higher in those above 65 years ($p=0.019$). 5 patients (10%) claimed they had taken the pneumococcal vaccine after having been advised to do so by a hospital doctor. 34% claimed that they knew that they were

at increased risk of infections because of their condition or treatment. Only 8% stated that they had been advised to take vaccination because of this.

Conclusion: Improved patient education on their infection risk and need for vaccination is required. This can be encouraged by having structured documentation of patients' vaccination status in the medical notes.

OP3.38

The outcome of kidney transplantation in antineutrophil cytoplasmic antibody associated vasculitis

Jesmar Buttigieg¹, Dana Kidder², Lorna Henderson²

¹Renal Unit, Aberdeen Royal Infirmary, ²Renal Transplant Unit, Edinburgh Royal Infirmary

Introduction: The outcome of renal transplantation in ANCA associated vasculitis (AAV) is considered comparable with patients transplanted for other aetiologies. In this study, we report our experience of renal transplantation in patients with AAV, followed by a pooled analysis of previous studies

Methods: This retrospective study included all patients with ESKD secondary AAV who received a kidney transplant between 1987 and 2013 in the East of Scotland. Patient and graft survival were examined together with disease recurrence following transplantation. Subsequently we undertook a pooled analysis of the published data together with our single centre experience.

Results: We identified 24 patients receiving a total of 31 renal allografts. Median age at first transplant was 45.5 years (range:18-68) and median follow up post transplant was 60 months (range:0.5-226.0 months). All patients were ANCA positive (71% PR3 and 29% MPO) before transplant. Patient and death censored allograft survival at 1 and 5 years were 92%, 88% and 93%, 71% respectively. The overall patient and allograft relapse rate were 0.022 and 0.016 relapse/patient-years respectively. Twenty studies were included in the pooled analysis with a total of 1169 patients. The overall 5 year patient and death censored graft survival were 88% and 71%, respectively. Relapse rate was significantly higher in patients with positive ANCA at transplantation (14% vs. 5%, $p=0.042$).

Conclusion: Our single center experience shows that renal transplantation remains a safe option with comparable one year outcomes. Furthermore, disease relapse post-transplantation is relatively rare. Finally, multicenter registry data are needed to define predictors of renal outcomes in AAV.

OP3.39

Incidence of endstage renal disease requiring renal replacement therapy in the Maltese islands

Ian Baldacchino¹, Sarah Bezzina¹, Garbiella Balzan¹, Daniel Debattista¹, Emanuel Farrugia²

¹Malta Foundation Programm, ²Department of Medicine, Mater Dei Hospital

Introduction: Chronic kidney disease (CKD) Stage 5 leading to endstage renal disease is a leading cause of morbidity and mortality. Worldwide, and in Malta, use of renal replacement therapy (RRT) has steadily risen in the past decade. However, robust data on the precise incidence of new patients commencing RRT in Malta were lacking.

Methods: In this retrospective observational study covering the entire Maltese population, all patients with a diagnosis of CKD who required dialysis between 2009 and 2013 were identified. A complete database of CKD patients from day 1 of dialysis (including age, gender, aetiology, modality of dialysis, survival and mortality data) was compiled from manual records at the Renal Unit Mater Dei Hospital. Per million population (pmp) statistics were calculated using

the Malta demographic review.

Results: A remarkably similar number 96 (232 pmp), 88 (212 pmp), 83 (199 pmp) and 89 (211 pmp) of new CKD patients commenced chronic dialysis in the years 2009, 2010, 2011 and 2012 respectively. This rate translates to one new patient initiating dialysis every four days. The incident rate was higher in males (average 64.8%). The 2012 incident rate of patients receiving RRT in Malta was similar to that of Portugal (211 pmp vs 219 pmp) but was nearly double the UK incident rate (211 vs 108 pmp) and the overall 2012 incidence rate of patients receiving RRT in 30 countries in Europe (211 vs 109.6 pmp).

Conclusion: Malta has a stable but a comparatively high incidence of new patients initiating dialysis.

OP3.40

Management, referral and outcomes of acute kidney injury

Lara Delicata¹, Maria Angela Grima¹, Roberta Callus¹

Department of Medicine, Mater Dei Hospital

Introduction: Acute kidney injury (AKI) is common in hospitalised patients and is associated with increased morbidity, mortality and hospital stay. Risk assessment for AKI, preventative measures and timely referral to a nephrology team have been shown to improve outcomes. The aim of this audit is to assess the clinical management of AKI prior to nephrology referral and to determine mortality associated with AKI.

Methods: A random patient cohort, referred to the nephrology team with AKI, was analysed. AKI was defined using the Acute Kidney Injury Network classification.

Results: A total of 50 patient consultations were analysed. The median age was 72.0 (range 39-92) with 52.0% being males. Six percent ($n=3$) were classified as Stage-1 AKI; 14% ($n=7$) Stage-2 AKI; 80% ($n=40$) Stage-3 AKI. Fifty-four percent ($n=27$) had hospital-acquired AKI. The median number of days from onset of AKI to nephrology referral was 2 (range 0-7). Renal replacement therapy was required in 18% ($n=9$). Patients with a background of CKD were more likely to develop AKI (68%; $n=34$). Urinalysis was performed in 64% ($n=32$) and renal imaging in 60% ($n=30$) prior to the consultation. Documentation of urine output was available in 82% ($n=41$). Nephrotoxic drugs were not stopped in 51.2% ($n=21$). Inpatient mortality was 14% ($n=7$) and 30-day mortality 18% ($n=9$).

Conclusion: Investigations including urinalysis and renal imaging are lacking prior to nephrology referral. A guideline including a riskassessment, prevention and recognition tool; guidance for appropriate investigations, management and nephrology referral, is crucial to improve AKI outcomes in our hospital.

OP4.01

Diagnosis and treatment of food allergy: pearls and pitfalls

Diego G Peroni¹, Pasquale Comberiati²

¹University of Ferrara, ²University of Verona

Introduction: The prevalence of pediatric food allergy (FA) and anaphylaxis has increased in the last decades, especially in westernized countries where this emerging phenomenon was marked as a "second wave" of the allergic epidemic. Pediatric allergists are also experiencing remarkably changes in the pattern of allergic sensitization and disease manifestations, with a wider range of allergenic foods and increase in non-IgE-mediated gastrointestinal disorders. The cornerstone in the diagnostic workup of FA is the oral food challenge (OFC) which is time and cost-consuming and involves the risk of adverse allergic reactions. Over recent

years great advances have been achieved in the field of in vitro allergy testing and component-resolved diagnosis has increasingly entered clinical practice. Testing for allergen components can contribute to a more precise diagnosis by discriminating primary from cross-reactive sensitizations and assessing the risk of severe allergic reactions. Avoidance of the offending food and emergency treatment of adverse reactions are currently the mainstays for the management of IgE-mediated and non-IgE-mediated FA. Prompt administration of intramuscular epinephrine is the firstline therapy for food-induced anaphylaxis. A dietary programme for FA should always include education on how to avoid specific allergens as well as comprehensive nutrition assessment on how to appropriately substitute foods in order to obtain adequate energy intake and nutrients for age.

Conclusion: It must be considered that FA tends to resolve in most cases during the first years of life. Therefore the required period of strict elimination diet is not a priori established and periodical re-evaluations by the allergist are fundamental to assess the changing nutritional needs and eventually resolution of the disease. Furthermore there is a growing body of evidence to show that specific oral tolerance induction can represent a promising treatment option for food allergic patients. In parallel, education of food allergic patients and their caregivers as well as physicians about anaphylaxis and its treatment is becoming recognized a fundamental need. International guidelines have recently integrated these new evidences and their broad application all over Europe represents the new challenge for food allergy specialists.

OP4.02

Intravenous cannulae in hospitalised children: a prospective observational study

Isaac Balzan, Fabrizia Cassar, Jessica Coppini, Paula Gauci, Abigail Magro, David Pace

Introduction: Hospitalised children often need peripheral intravenous cannulation. This study investigated factors affecting cannula insertion and maintenance.

Methods: Children, 0-16 years old hospitalised on the paediatric medical and surgical wards were enrolled. The cannula size, insertion site, method of fixation, cannula access after insertion and the visual infusion phlebitis (VIP) score were documented. Differences were analysed by computing the 95% confidence intervals (CI) and a logistical regression analysis model was used to assess any correlations.

Results: Out of 348 children, 54% of whom were male, there were 378 cannulation instances. Children <5 years old were significantly more likely to have a 24G cannula on the dorsum of the hand, an obscured exit site and a bandage than children >9 years old in whom a 22G cannula in the antecubital fossa with a visible exit site was placed ($p < 0.05$). The mean duration was 48 hours with most cannulae being removed electively on discharge. Blood soiling of the dressing, which occurred in 60.1% (95%CI: 52.6-67.2%) within 24 hours of insertion, was correlated with access for continuous or intermittent intravenous infusions (OR 1.8; 95%CI 1.1-2.9 and 1.2; 95% CI 1.1-1.4 respectively) whilst blood-letting after 24-48 hours was the cause of subsequent soiling (OR 2.1; 95%CI 1.0-4.5). Only 48.7% had a VIP score documented in the first 24 hours.

Conclusion: A change in practice is needed to maintain a visible exit site, a clean cannula dressing and to VIP scoring, all of which are important in preventing hospital acquired infections in children.

OP4.03

Invasive bloodstream infections in hospitalised children in Malta

Jessica Pace, David Pace

Introduction: Invasive bloodstream infections (BSIs) are an important cause of morbidity and mortality in children. Identification of the causative pathogen from blood cultures is crucial in determining antibiotic susceptibility and rationalising treatment. We aimed to determine the burden of BSIs in hospitalised children.

Methods: Results of all blood cultures taken from children aged 0-16 years hospitalised at Mater Dei Hospital from 2010-2014 were obtained. All isolates were analysed to differentiate pathogens from contaminants. Antibiograms were used to determine the most suitable antibiotic regimes for children admitted with suspected sepsis.

Results: Over the 5 year study period, 57 pathogens were isolated from a total of 3,376 blood cultures (1.7%). The annual incidence of septicaemia in children (mean age: 3.25 years) was 17.4/100,000 children. Infants aged <3 months sustained 26.3% (15/57) of the burden of BSIs. The most common pathogens in children >3 months old were *Staphylococcus aureus* ($n=12$, 21.4%), *Streptococcus pneumoniae* ($n=8$, 14.0%) and *Neisseria meningitidis* ($n=5$, 8.8%). In infants <3 months old *Escherichia coli* ($n=6$, 10.5%), *Streptococcus agalactiae* ($n=3$, 5.3%) and *Staphylococcus aureus* ($n=3$, 5.3%) were the most common invasive bacteria. Cefotaxime/ceftriaxone covered 80% (12/15) and 50% (21/42) of invasive pathogens in infants <3 months old and in older children, respectively.

Conclusion: *Staphylococcus aureus* is the most prevalent invasive pathogen in children >3 months old. Empiric treatment of sepsis with cefotaxime/ceftriaxone would cover the majority of the pathogens, although the antibiotic choice should also be based on the clinical presentation and risk factors of the child.

OP4.04

Paediatric micturating cystourethrograms in Malta

Daniela Grima¹, Christian Axiak², Andre Stefan Gatt², Valerie Said Conti¹

¹Department of Child and Adolescent Health, Mater Dei Hospital,

²Department of Medical Imaging, Mater Dei Hospital

Introduction: Low-grade vesico-ureteric reflux (VUR) is unlikely to be of clinical significance whereas high-grade VUR may be associated with renal dysplasia/scarring, hypertension and chronic kidney disease. Micturating cystourethrograms (MCUGs) are performed to identify VUR in high risk children presenting with febrile urinary tract infections (UTIs) and to exclude posterior urethral valves.

Methods: Paediatric MCUGs performed during 2013 and 2014 were included in this retrospective study. The indication for each MCUG, result and any complication related to the procedure were noted. When the indication was a urinary tract infection, the data collected included any other imaging performed. Local practices of requesting imaging following a first urinary tract infection were compared to international guidelines.

Results: 117 MCUGs were performed. 40 (34%) were requested post-surgical intervention and 77 (66%) were requested following a UTI, 71 (61%) after a first UTI and 6 (5%) following recurrent UTIs. First UTIs were atypical (using NICE guidelines) in 40/57 infants aged < 6 months, 12/13 children between 6 months - 3 years and in the one child > 3 years of age. 2 MCUGs were not completed due to malpositioned catheters. The MCUG was abnormal in 26 of 77 (34%) where the indication was a UTI. High-grade VUR

(grade IV-V) was identified in 11 of 26 (42%). 12/26 had low-grade VUR and 3/26 had an abnormal bladder.

Conclusion: We concluded that more investigations are performed locally than those currently recommended by international guidelines following a first UTI. A national guideline for investigating children following first and recurrent UTIs may help reduce these numbers.

OP4.05

Reversible intestinal failure from a milder phenotype of tufting enteropathy caused by a novel large deletion in the EPCAM gene

Jurgen Gerada¹, Christian Saliba², Ruth Gladies³, Wilhelmina Cassar³, James DeGaetano⁴, Eleanor Gerada⁵, Mario Vassallo¹, Christian A. Scerri⁶, Godfrey Grech², Thomas M. Attard⁷

¹Division of Gastroenterology, Mater Dei Hospital, ²Department of Pathology, University of Malta, ³Laboratory of Molecular Genetics, Department of Pathology, Mater Dei Hospital, ⁴Division of Histopathology, Department of Pathology, Mater Dei Hospital, ⁵Department of Medicine, Mater Dei Hospital, ⁶Department of Physiology and Biochemistry, University of Malta, ⁷Division of Paediatric Gastroenterology, Mater Dei Hospital

Introduction: Tufting enteropathy (TE) is a rare neonatal inherited condition causing intestinal failure, requiring long-term parenteral nutrition (PN) or small bowel transplantation. Mutations in the EPCAM gene have been implicated in TE. Anecdotal observations suggested a milder TE phenotype in the Maltese islands. We aimed to characterize this milder form of TE and identify responsible mutations within the EPCAM gene.

Methods: The clinical phenotype, nutritional status and histological appearances of TE patients were retrospectively reviewed for the period 1985 – 2012. Immunohistochemical EpCAM staining of small and large bowel mucosal tissue was performed on all patients and matched controls. Following primer design, EPCAM DNA sequencing was performed.

Results: 8 TE patients were diagnosed in the study period and followed up for a median of 18 years. This cohort showed excellent survival rates without small bowel transplantation, paucity of phenotypic malformations and fewer nutritional requirements. 4 patients demonstrated histological spontaneous reversibility and complete mucosal healing. Another 3 showed histological improvement but not complete healing. EpCAM staining was negative in all TE patients and positive in controls. EPCAM sequencing identified a novel large (1773bp) deletion, resulting in complete deletion of exon 5 and loss of EpCAM protein in all patients.

Conclusion: This cohort demonstrates a milder phenotype compared to other TE cohorts, representing a new subgroup of TE patients. Spontaneous reversal of intestinal failure is possible (avoiding unnecessary transplantation) and is independent of EpCAM expression. The novel deletion present in all patients suggests a founder effect and the first genotype-phenotype correlation in isolated intestinal TE patients.

OP4.06

Local survival outcomes in metastatic renal cell carcinoma

David Farrugia¹, Joseph Attard², Gerald Busuttil¹, John Sciberras¹, Stephen Mattocks¹, Karl German¹, Patrick Zammit¹

¹Urology Unit, Department of Surgery, Mater Dei Hospital, ²Department of Surgery, Mater Dei Hospital

Introduction: A third of patients who develop renal cell carcinoma will have metastatic disease at presentation.

The role of cytoreductive surgery in these patients is a topic of debate. The aim of this study was to analyse survival outcomes of these patients with current local treatment, comparing these outcomes in patients who did and did not receive a nephrectomy.

Methods: Data was gathered retrospectively from the Malta Cancer Registry and Mortality Data at the Department of Health Information, records of multidisciplinary team meetings held within the Urology Department at Mater Dei Hospital, hospital imaging and patient records. Data gathered included: patient demographics, date of diagnosis, TNM staging, tumour histology, Fuhrman grade, time to treatment and modality of treatment. Exclusions included: localized disease relapsing after, surgery presence of metastasis at diagnosis not certain concomitant primary tumours.

Results: 77 patients diagnosed between 13.2.2009 and 04.03.2005 were included. The age at presentation ranged from 30 to 88 years, median age of 67 years. 11 were incidental findings and 47 symptomatic. The most prevalent symptoms were abdominal pain and gross haematuria. No data on clinical presentation was available for the remainder. The predominant staging at presentation were T4 (28%) and T3a (23%). Survival outcomes are still being determined at time of writing. Overall survival and cancer specific survival will be determined by a validated prognostic score.

Conclusion: Overall and cancer specific survival in the local population of metastatic renal cell carcinoma will be compared to larger similar series presented in the literature.

OP4.07

Prevalence of pseudoexfoliation at St Vincent de Paule Residence (SVPR)

Anthony Victor Spiteri, Franco Mercieca

Department of Ophthalmology

Introduction: Pseudoexfoliation syndrome (PEX) is regarded as relatively common in the Maltese population but the prevalence of this condition is not known. This epidemiological study was conducted to assess the prevalence of PEX in Malta's largest geriatric residence and to report the clinical features present.

Methods: Prospective study conducted in the Day Clinic of SVPR having a population of averaging around one thousand. 320 patients were randomly selected covering 4 age groups of 40 patients each (<75, 75-80, 81-85 and >86) both males and females. A detailed examination including Visual Acuity, slit lamp biomicroscopy with and without pupil dilatation, intraocular pressure and fundal examination was performed. All definite PEX positive patients underwent gonioscopy.

Results: 247 patients were able to be examined. Ages ranged from 51 to 101 years old, with a male to female ratio of 1:1. 16 definite positive cases (6.48%) of PEX were identified of which 11 (4.45%) were bilateral and 5 (2.03%) were unilateral. 8 patients (3.24%) had suspicious signs of PEX. All definite cases but 1 had pseudoexfoliative glaucoma.

Conclusion: A prevalence rate of PEX of 6.48% (or 9.72% including suspicious cases) ranks highly compared to other European populations. To the best of our knowledge this was the first study conducted in a Maltese population to examine the prevalence in any Ophthalmological condition. Furthermore, the high prevalence as well as the proximity of multiple generations of affected families in the Maltese islands allowed us to participate in a multicentre genetic study in which the LOXL1 gene for PEX was localised.

OP4.08

The follow up of benign thyroid nodules: an audit of local practice

Charlene Plumpton¹, Nathania Bonanno², Lara Sammut¹, Kenneth Muscat¹

¹Department of ENT, Mater Dei Hospital, ²Department of Radiology, Mater Dei Hospital

Introduction: Thyroid nodules are common and their follow up is an issue of international discussion. The American Thyroid Association recommends benign nodules to be followed with serial ultrasound examinations every 6 to 18 months. The British Thyroid Association guidelines recommend that nodules with benign cytology and benign ultrasound characteristics do not need repeat imaging or ultrasound guided fine needle aspiration cytology (USFNAC), unless there is strong clinical suspicion of malignancy. The aim of this study is to audit the local practice of follow up of benign thyroid nodules with regard to ultrasound requisition and repeat FNAC.

Methods: A retrospective analysis of patients diagnosed with cytologically benign thyroid nodules in 2010 and 2011 was done. A follow up period of up to 4 years was assessed. Clinical, sonographic and cytological findings were compared.

Results: The total number of USFNAC between 2010 and 2011 was 111. In 2010, a total of 45 thyroid USFNAC performed, 27 of which had benign results. In 2011, a total of 66 thyroid USFNAC were performed, 42 of which had benign cytology. In the 2010 group, a total of 7 benign nodules showed no follow up, 19 underwent repeat ultrasound and 1 had a repeat FNAC that was benign. In the 2011 group, 17 showed no follow up, 22 underwent repeat ultrasound and 2 had a repeat FNAC, 1 of which showed malignant cytology.

Conclusion: Results shows that local follow up of benign nodules is not standardised and differs between clinicians. Further analysis will be done to enable local guidelines suggestion.

OP4.09

Epidemiology of cleft lip and cleft palate in Malta

Matthew Borg¹, Simon De Gabriele¹, Duncan Aquilina¹, Elaine Pace Spadaro², Joseph Briffa¹

¹Plastic Surgery and Burns Unit, Mater Dei Hospital, ²Department of Paediatrics, Mater Dei Hospital

Introduction: The aetiology of cleft lip and palate is unknown. Clinically in the Plastic Surgery unit in Malta, operations to correct cleft palate appeared to be more common than cleft lip, contrary to literature. A descriptive epidemiological study was carried out to determine the proportion of patients with cleft lip and/or cleft palate in Malta.

Methods: All cleft patients born between July 1993 and December 2012 were included in the study. Data was collected retrospectively from the Department of Health, medical files and by phone questionnaires. Apart from demographic data, other aspects analyzed included type of cleft deformity, associated congenital anomalies, family history as well as maternal age, smoking, drinking habits and drug history.

Results: 197 patients were listed. 4 patients were excluded from the study as their medical information was inaccessible. Isolated cleft palate (61.65%) was more frequent than cleft lip alone (15.03%) or lip and palate together (23.32%). Male clefts were slightly more common than female clefts (53.37% vs 46.63%). Cleft palate alone was seen more commonly in females (34.20% vs 27.46%) whilst males predominated in cleft lip (8.29% vs 6.74%) and also in combined cleft lip and palate (17.62% vs 5.18%). Left sided

clefts were more common than right sided clefts (14.53% vs 6.15%).

Conclusion: This is the first study of its kind on cleft deformities in Malta. The rate of isolated cleft palate was found to be much higher than expected when compared to results from other countries where cleft lip, with or without cleft palate, usually predominates.

OP4.10

Is the urinary bladder the perfect pressure vessel?

Aaron R Casha¹, Liberato Camilleri², Marilyn Gauci³, Patrick Zammit⁴

¹Department of Cardiothoracic Surgery, Mater Dei Hospital, ²Department of Anatomy, Faculty of Medicine, University of Malta,

³Department of Statistics and Operations Research, Faculty of Science, University of Malta, ⁴Department of Anaesthesia, Mater Dei Hospital, ⁵Department of Urology, Mater Dei Hospital

Introduction: The bladder is a hollow organ that generates an internal pressure; its volume and flow-rate should therefore be determined by the physics of pressure vessels. The aim of this study was to assess whether the bladder closely follows the rules of pressure vessels.

Methods: Allometry was used to assess how urinary flow-rate, and bladder pressure and volume scale with body size. A literature survey was performed to gather urinary bladder characteristics across several mammalian species. The physics of pressure vessels was investigated.

Results: Theoretically, volume and pressurization energy of pressure vessels sizes with an allometry of 1.0 with mass, whilst pressure is not related to mass. With efficient transfer of stored pressurization energy into output energy, the flow rate should also size with an allometry of 1.0 against mass. Measured allometry for volume versus mass was 0.981, $R^2=0.958$, $p<0.001$; flow rate allometry 1.028, $R^2=0.933$, $p<0.001$; pressure allometry 0.057, $R^2=0.174$, $p=0.304$. Ttest showed that there was no statistical difference between theoretical and measured allometry for bladder mass and volume, and urinary flow-rate.

Conclusion: Since both bladder volume and urinary flow-rate sizeup with an allometry of 1.0, this implies that micturition time must be a constant, indicating that this may be an accurate test of prostatic hypertrophy. That the bladder pressurization energy is proportional to urinary flowrate across mammalian species indicates that the bladder is able to empty with constant efficiency. This suggests that the normal bladder behaves as a perfect physiological pressure vessel, as indicated by its rounded shape and three 'filament-wound' muscle layers.

OP4.11

The Emergency General Surgical Unit: the clinical and economic benefits of the centralization of emergency general surgery

Khalid Shahzad, Matthew Joe Grima, Nikil Misra
University Hospital Aintree

Introduction: General surgical emergency admissions account for a mortality of 40% and a cost of £88 million to NHS. Creation of a centralised specialist emergency general surgery unit at a University Hospital between 2008 and 2009 was designed to improve outcomes.

Methods: A retrospective observational study was conducted of patients who attended EGSU between 2007 and 2012. Primary outcomes measures were overall mortality while secondary analysis was conducted on all emergency laparotomies, with 30 day mortality and long term survival as primary outcome measures. Statistical analysis compared

categorical data by the Chi squared test, and compared long term survival using the Kaplan-Meier method.

Results: Admissions in EGSU ranged between 4500 and 5088 patients per year (2007-2012). Overall mortality of patients fell from 2.3% in 2006 to 1.3% in 2012 ($p=0.002$). Median length of stay per patient reduced from 4.3 days in 2006 to 3.3 days in 2012, leading to a total of 5088 bed days saved in 2012, with cost saving of £1.1 million in one year. 226 patients underwent an emergency laparotomy in 2007 and 222 in 2008, with a 30 day mortality of 19.5% and 22.5% respectively, and this reduced to 9.6% in 2012 ($p=0.04$). The overall 2 year survival of patients who had a laparotomy in 2007 was 63%, and this increased to 70% for patients who had a laparotomy in 2012 ($p=0.07$).

Conclusion: The centralisation of emergency general surgery improved overall mortality, operative mortality and reduced hospital length of stay, with a considerable cost saving to the hospital.

OP4.12

Characteristics of patients being admitted for debridement or amputation procedures

Maria Vella¹, Janis Vella¹, Kevin Cassar², Lilian M Azzopardi¹, Anthony Serracino Inglott¹, Godfrey LaFerla¹

¹University of Malta, ²Mater Dei Hospital

Introduction: Individuals suffering from diabetes can suffer from abnormal inflammatory pathways, neuropathy and peripheral arterial disease (PAD). Neuropathy leads to foot deformity, loss of sensation in the peripheries and loss of skin integrity. PAD leads to tissue hypoxia which limits capillary capacity. This can lead to foot ulceration, infection and gangrene which often necessitate amputation of part of the lower limbs. The aim of this study was to observe characteristics of patients being admitted for surgery in a local hospital.

Methods: Patient characteristics and medical history were compiled over a 6 month period for a group of patients admitted at Mater Dei Hospital for debridement or amputation procedures. The presence and severity of PAD was assessed from spectral waveform results and Ankle Brachial Pressure Indices.

Results: Fifty patients (33 male, 17 female; age 28-92 years) participated in the study. Six patients were admitted for a debridement procedure and 34 patients had an amputation procedure. Characteristics of this group of patients included: 49 patients suffering from diabetes (35 Type 2, 14 Type 1), 44 patients suffering from neuropathy, 47 patients suffering from PAD (35 severe, 12 mild to moderate). Almost all patients who were suffering from PAD ($n=49$) were also suffering from diabetes. A positive correlation was observed between the severity of PAD and diabetes ($p=0.02$).

Conclusion: The presence of diabetes which consequently leads to the development of PAD and increases risk for the requirement of debridement and amputation procedures.

OP4.13

An outbreak of sexually transmitted infections (STIs) in the MSM (men who have sex with men) population in Malta

Valeska Padovese¹, Donia Gamoudi², Alexandra Gauci Farrugia¹, Laurence Scerri³

¹Genitourinary clinic, Mater Dei Hospital, ²Department of Medicine, Mater Dei Hospital, ³Department of Dermatology and Venerology, Sir Paul Boffa Hospital

Introduction: In Europe, men who have sex with men (MSM) continue to be disproportionately affected by STIs,

including HIV. Several reports on STI outbreaks have been reported in many European cities in the MSM population. The objective of our study is to review the current status of STIs and HIV among MSM in Malta.

Methods: A retrospective analysis of the medical records of all patients attending the local Genitourinary clinic in the first 8 months of 2015 was carried out.

Results: In the study period a total of 2428 visits were performed for 1942 patients, 59.5% ($n=1155$) of which were male. 27% ($n=524$) of patients were in the age bracket between 15 and 24 years and 40.7% ($n=790$) between 25 and 34 years. 18.1% ($n=352$) of our population is MSM of Maltese origin (71%). Concerning infections in MSM, 24 patients were found to be positive for Chlamydia, 28 for Gonorrhoea, 24 for Syphilis and 29 for HIV.

Conclusion: In the European Centre for Disease prevention and Control surveillance report on STIs issued in 2014, Malta was the only discordant country in reporting the heterosexual population as the predominant population affected by syphilis and gonorrhoea. This year Malta has experienced a reverse in the trend with the MSM population being the most affected. This calls for urgent preventive strategies in MSM population.

OP4.14

Analysis of changes in antiretroviral therapy regimens in the cohort of HIV seropositive patients followed up at the infectious diseases clinic

Lisa Micallef Grimaud¹, Daniela Mallia², Tonio Piscopo¹, Charles Mallia Azzopardi¹

¹Department of Medicine, ²Department of Clinical Pharmacy

Introduction: The aim of this project was to analyze the reasons behind switches in antiretroviral therapy (ART) of HIV seropositive patients attending the Infectious Diseases Clinic.

Methods: Data regarding patients' ART and reasons for changes in treatment between 2000 and June 2015 were obtained from patients' medical notes and pharmaceutical records.

Results: There were 267 patients started on ART. Of these, 8/267 (3%) received short-term ART during pregnancy and were not included in the study. Changes in ART regimen occurred in 53% ($n=138$) of patients (258 switches). Minor treatment changes occurred due to switching antiretrovirals to co-formulated preparations and boosting of protease inhibitors. Reasons for major switches included updating of regimens, ART-related toxicity, ART resistance, drug interactions, co-infection, pregnancy and antiretrovirals started abroad which were not available locally. The mean number of major treatment switches per patient was 1.56. There were 23% of zidovudine-containing regimens which required switching due to zidovudine as opposed to 2.8% of tenofovir-containing regimens where tenofovir was not tolerated. There was no treatment changes related to abacavir. With regard to the NNRTI-based regimens, 23.8% of the efavirenz-based regimens required switching due to efavirenz intolerance versus 26% of nevirapine-based regimens where nevirapine had to be replaced. Lopinavir/ritonavir was responsible for 13.6% of changes of all lopinavir/ritonavir based regimens.

Conclusion: In view of low adverse events related to tenofovir and abacavir, the availability of these drugs locally as first line treatment is desirable. Similarly, availability of an alternative PI with a more favourable side effect profile would benefit patients intolerant to lopinavir/ritonavir.

OP4.15

Assessment of antiretroviral drug resistance mutations in HIV seropositive patients in Malta

Lisa Micallef Grimaud¹, Ramon Casha², Daniela Mallia², Tonio Piscopo¹, Charles Mallia Azzopardi¹

¹Department of Medicine, ²Department of Clinical Pharmacy

Introduction: The aim of this study was to assess antiretroviral drug resistance mutations in HIV seropositive patients in Malta.

Methods: Resistance tests between 2010 and 2015 were analysed. Data regarding the antiretroviral treatment (ART) regimens and adherence of patients with resistance mutations was extracted from clinical notes and pharmaceutical records.

Results: There were 89 resistance tests requested. A total of 9 patients (10%) had resistance mutations. Of these, 3 were treatment naïve whilst 6 patients were on ART but had virological failure. Of the patients receiving ART, 4 patients had adherence rates of 100% whilst the other two patients had adherence rates of 87% and 42% respectively. Reverse transcriptase (RT) mutations were identified in 8 patients. These included M184V, K65R, K103N, and K219E/Q/R. There were 9 patients who had mutations in the protease (PR) gene. These included M36I, A71T, L90M, M46L and D60E. However, only 2 patient profiles had confirmed resistance to protease inhibitors. Changes in treatment based on resistance results were carried out in 4 patients who were on ART, with all patients going on to achieve virological suppression. Those patients with M184V still had lamivudine incorporated into their regimen due to its favourable effects of decreasing viral fitness. One other patient refused treatment whilst another patient had a repeat resistance test showing no mutations.

Conclusion: ART resistance in the cohort of HIV seropositive patients in Malta compares well with other cohorts. Genotypic resistance testing is useful to guide HIV therapy especially in patients with virological failure.

OP4.16

Adherence to the European association for the study of the liver (EASL) and American association for the study of liver diseases (AASLD) guidelines in the management of hepatitis B

Anette Portelli, Ramon Casha, Tonio Piscopo, Charles Mallia Azzopardi

Department of Medicine

Introduction: AASLD and EASL have developed guidelines to assist physicians in the management of patients with hepatitis B. The aim of this audit is to establish adherence to these guidelines within the Infectious Diseases Department at Mater Dei hospital.

Methods: Patients testing positive for hepatitis B virus (HBV) between January 2007 and December 2014 were randomly selected. Demographic data and details on the management of HBV were obtained through patients' clinical notes and online laboratory results. Local management was then compared to AASLD and EASL guidelines.

Results: Our cohort consisted of 109 patients. HBV treatment was started in 23.9% of patients, of whom 73.1% received Tenofovir, 7.7% received Lamivudine and 19.2% received Lamivudine/Tenofovir combination as part of antiretroviral treatment in human immunodeficiency virus (HIV)/HBV coinfection. Both EASL and AASLD guidelines were followed in 38.5% of patients. In 7.3% of patients, neither guideline was followed. 10.1% of patients who satisfied criteria for one of the guidelines were not managed accordingly. In the latter two groups, reasons for non-adherence included lack of liver biopsy prior to treatment (68.4%) and failed follow up

appearances (10.5%). 26.6% of patients did not fit criteria in any guideline because of different hepatitis B viral load and alanine aminotransferase cutoff levels. Co-infection with HIV/hepatitis C was present in 0.9% of patients for which no information is available in the guidelines.

Conclusion: There is low adherence to EASL or AASLD guidelines in the management of hepatitis B, mainly because liver biopsies were not done when recommended prior to starting treatment. Also, there were a significant proportion of patients who did not fit the criteria of either EASL or AASLD guidelines.

OP4.17

Prioritizing the need for treatment of chronic hepatitis C patients in a methadone dispensing clinic in Malta.

Moses Camilleri

Agenzija Sedqa

Introduction: The advent of direct acting antiviral drugs has rendered the treatment of chronic hepatitis C more effective. This has led to hopes that hepatitis C infection could eventually be eradicated. Patient stigmatization and high treatment costs are some of the challenges that need to be overcome if most patients are to benefit from the new treatment. The aim of this study is to suggest a simple, inexpensive and noninvasive tool which could help prioritize chronic hepatitis C patients when deciding who should be administered treatment for this condition.

Methods: Out of 187 patients testing positive for hepatitis C antibodies, the three parameters required to calculate the Fibrosis4 score were available for 127. A higher Fibrosis4 score has been associated with an increased level of liver fibrosis.

Results: 15 patients out of 127 (11.8 %) scored 3.25 or more on the Fibrosis4 tool. Various studies show this score to be associated with the presence of significant liver fibrosis.

Conclusion: In view of the high cost of the recently introduced treatment for chronic hepatitis C, it is being proposed that the Fibrosis4 score could be used to prioritize patients who are in more urgent need of commencing treatment for this condition or who require additional histological evaluation. Though liver biopsy and histology remain the gold standard when evaluating the state of liver fibrosis, Fibrosis4 is a noninvasive, simple to use and widely available tool that has been shown to correlate well especially with higher histological liver fibrosis stages.

OP4.18

Does continuous positive airway pressure influence respiratory infections in patients suffering from obstructive sleep apnoea?

Kyra Bartolo, Liam Mercieca, Richard Pullicino,

Rodianne Abela, Sean Apap Mangion, Julian Cassar,

Matthew Zammit, Christine Gatt, Peter Fsadni, Stephen Montefort

Mater Dei Hospital

Introduction: Continuous positive airway pressure (CPAP) is the standard treatment for obstructive sleep apnoea (OSA), with limited data about the prevalence of respiratory infections and microbial colonization in these patients. The aim of this study is to determine if CPAP use is associated with respiratory infections and to identify the organisms that colonize or infect these patients.

Methods: A prospective, case-controlled study in patients diagnosed with OSA was carried out. 137 patients were recruited, interviewed using a questionnaire and a nasal swab was taken from each patient. Patients using CPAP machines had swabs taken from masks and humidifiers.

Results: 66 (48.2%) patients received CPAP treatment with 60.6% of them having a heated humidifier. 78.8% were male, with the majority using a full face mask (63.6%). No significant difference was seen in the prevalence of rhinosinusitis, lower respiratory tract infections and hospital admissions between CPAP and non-CPAP treated patients. The presence of a humidifier did not influence the prevalence of infections. Commensal flora was predominantly cultured from nasal swabs from both patient groups. Coagulase Negative *Staphylococci* and Diphtheroids were the main organisms cultured from masks (23.4%) and humidifiers respectively.

Conclusion: This study shows that the use of CPAP, choice of mask and humidifier have no significant impact on the prevalence of infections and microorganisms isolated. These results contrast with previous data suggesting that more research is needed to identify potential associations between respiratory infections, microbial colonization and CPAP use.

OP4.19

Trends in meticillin-resistant *Staphylococcus aureus* (MRSA) bacteraemia, at Mater Dei Hospital, Malta; the importance of root cause analysis to drive improvement strategies

Andrea Falzon Parascandolo, Elizabeth Anne Scicluna, Rodianne Abela, Karl Galea, Claire Farrugia, Ermira Tartari Bonnici, Deborah Xuereb, Noel Abela', Simeone Zerafa, Michael Angelo Borg

Infection Control Unit, Mater Dei Hospital

Introduction: Root cause analysis (RCA) of serious infections, aims to establish the clinical relevance, probable source and especially identify any system issues that could have been responsible for the event and attempt to improve them to avoid recurrences. Since 2011, the Infection Control Dept of Mater Dei Hospital (MDH) has organised an RCA for every case of hospital-acquired meticillin-resistant *Staphylococcus aureus* (MRSA) bacteraemia.

Methods: We analysed trends in hospital-acquired MRSA bacteraemia at MDH between 2011-2014, as well as the conclusions of RCA meetings held to investigate these incidents.

Results: The overall number of MRSA bacteraemias in 2011 was 36; more than 80% were identified as originating from suboptimal peripheral or central intravenous line care. This finding led to the implementation of numerous initiatives aimed at improving line management, especially care bundles. A steady reduction in cases followed, with no line-related MRSA bacteraemias identified in 2014. As a result, the predominant predisposing factors in later years became mainly surgical site infections (34%) and urinary tract infections (22%). To further reduce these events, MRSA admission screening and decolonisation was introduced in early 2014. By the end of that year, MRSA bacteraemia cases had fallen to 9 cases – a 75% reduction in 4 years.

Conclusion: RCAs offer an invaluable tool for improvement strategies related to patient safety and are a cornerstone of modern infection prevention and control efforts in hospitals. Through a multidisciplinary approach, they provide an insight into the factors causing serious infections and allow corrective action to be taken to achieve effective system change.

OP4.20

Acute ischemic injury of astrocytes

Robert Fern', Mario Valentino', Sarah Elwood'

'University of Plymouth, 'Laboratory for the Study of Neurological Disorders

Introduction: Controversy rears as to whether astrocytes are damaged during the acute phase of brain ischaemia, or whether they are highly resistant to such injury. There is also a complete absence of data describing regional differences in astrocyte ischaemia-sensitivity, which is likely to influence the progress of focal ischemic injuries such as stroke.

Methods: Using multiphoton confocal microscopy in conjunction with expression of genetically controlled fluorescent cell markers, we have examined the changes in cell morphology and viability during relatively short (80100 min) periods of either global or focal ischaemia in vivo. A similar approach using rapid cell imaging was applied to brain slices, allowing the investigation of cellular factors controlling cell injury.

Results: For the first time we describe how astrocytes on the outer border of cortical layer 1 experience a very rapid form of vacuolization and cell swelling, coupled to loss of processes and cell death. Astrocytes deeper in layer 1 have a more typical protoplasmic or perivascular morphology and show a slower loss of processes and less marked cell death. In vivo acute cell death was detected via imaging of nuclear condensation; while in brain slices loss of cell fluorescence was apparent (since intracellular fluorophore can escape rapidly into the bath). Astrocytes in white matter structures such as the corpus callosum showed a lower sensitivity to injury.

Conclusion: Astrocyte injury is highly regional and dependent upon cell type; this previously unexplored fact will have large consequences for our understanding of how a stroke injury progresses.

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OP4.21

Pathogenesis of psychiatric disorders: role of redox dysregulation

Luigia Trabace, Stefania Schiavone

Department of Clinical and Experimental Medicine, University of Foggia

Introduction: Redox dysregulation has been shown to play a key role in the pathogenesis of psychiatric disorders. The NADPH oxidase NOX enzymes are emerging as new sources of reactive oxygen species production. In a well established rodent model of psychosis, the rat social isolation rearing, we previously demonstrated an early increase of NOX2-derived oxidative stress in specific brain regions. However, the leading cause of this NOX2 increase remained still unclear.

Methods: To identify early neuropathological alterations occurring in the brain before NOX2 elevations, we exposed rats to a short period of social isolation (one week); then, we performed immunohistochemical and biomolecular analysis. A translational approach towards human psychiatric pathology was also used, investigating if NOX2 expression was increased in postmortem brain samples of suicidal patients, with a clinical psychiatric anamnesis.

Results: One week of social isolation led to an altered expression of specific genes involved in blood brain barrier (BBB) integrity and permeability, suggesting that early BBB disruption preceded NOX2 elevations in the brain and might be its leading cause. Importantly, NOX2 expression, together with indirect markers of oxidative stress, were significantly

increased in the cortical GABAergic and glutamatergic neurons of suicidal subjects as well as in glial cells, more likely via interleukin6 mediated neuroinflammation.

Conclusion: These results will improve our understanding of the redox pathophysiology of the psychiatric disorders, entailing important medical impacts. Thus, identification of biomarkers of redox dysregulation might provide innovative diagnostic tools and will open new insights in the treatment concepts for mental diseases.

OP4.22

Detection and analysis of real-time behavioural sequences of social interaction in rats

Maurizio Casarrubea¹, Fabiana Faulisi², Aurora Cudia³, Dario Cancemi³, Maurizio Cardaci⁴, Magnus S Magnusson⁵, Filippo Caternicchia², Arcangelo Benigno⁶, Giuseppe Di Giovanni⁷, Giuseppe Crescimanno⁸

¹Department of Experimental Biomedicine and Clinical Neurosciences, Human Physiology Section, Laboratory of Behavioral Physiology, University of Palermo; Technologies of Knowledge Interdepartmental Center (C.I.T.C.), University of Palermo, ²Department of Experimental Biomedicine and Clinical Neurosciences, Human Physiology Section, Laboratory of Behavioral Physiology, University of Palermo, ³Department of Psychological Sciences, Pedagogy and Formation, University of Palermo, ⁴Department of Psychological Sciences, Pedagogy and Formation, University of Palermo; Technologies of Knowledge Interdepartmental Center (C.I.T.C.), University of Palermo, ⁵Human Behavior Laboratory, University of Iceland Reykjavik, ⁶Department of Experimental Biomedicine and Clinical Neurosciences, Human Physiology Section, Laboratory of Behavioral Physiology, University of Palermo; Technologies of Knowledge Interdepartmental Center (C.I.T.C.), University of Palermo, ⁷Department of Physiology and Biochemistry, Faculty of Medicine and Surgery, University of Malta; School of Biosciences, Cardiff University, ⁸Department of Experimental Biomedicine and Clinical Neurosciences, Human Physiology Section, Laboratory of Behavioral Physiology, University of Palermo; Technologies of Knowledge Interdepartmental Center (C.I.T.C.), University of Palermo

Introduction: The social interaction test is a well known tool to study anxiety in rodents. Notwithstanding, despite the high number of studies, scanty data are available on the temporal structure of the behaviour of two interacting rodents.

Methods: T pattern analysis (TPA) was applied to study the behaviour of adult male Wistar rats, divided into pairs and observed in openfield for 15 min. TPA is a multivariate technique able to determine whether behavioral events do occur sequentially and with significant constraints on the interval lengths separating them. Behavioural activities, recorded by means of a videocamera, have been described in an ethogram and classified into intra- and inter-subjects.

Results: Percent distribution showed that intra-subject behavioural elements represented the 62.37% and the inter-subject ones the 37.63%; mean durations revealed a longer time spent in intra-subject activities. TPA revealed 221 different patterns divided in four categories: (a) containing only inter-subject elements; (b) containing both inter and intra-subject elements; (c) containing rat 1 and rat 2 intra-subject elements and, finally, (d) containing intra-subject elements carried out by one of the two rats.

Conclusion: Results demonstrate that rat social behaviour is structured on the basis of complex recurring sequences of behavioural elements. Notably, taking into consideration the third category, that is, patterns containing elements performed by the two animals not in physical

proximity, it is suggested that some kind of interaction does exist also when the two subjects are involved in activities not seemingly belonging to interactive behavior.

OP4.23

In vivo imaging and monitoring astrocytes in health and disease

Mario Valentino¹, Robert Zammit¹, Christian Zammit², Jasmine Vella¹, Richard Muscat¹

¹Department of Physiology and Biochemistry, Faculty of Medicine and Surgery, University of Malta, ²Department of Anatomy, Faculty of Medicine and Surgery, University of Malta.

Introduction: Proper brain function is maintained by an integrated system called the neurovascular unit. Astrocytes are the predominant glial-cell type of this unit but little is known about their functional impact during ischaemia. During the last decades, the development of genetic tools and imaging techniques achieving high spatial and temporal resolution have opened up new avenues for the study of astrocytes in vivo.

Methods: We describe the use of a novel technique employing a tightly focused laser illumination to optically excite a circulating photosensitizer molecule, allowing precise formation of clot formation at the level of individual arteries and capillary beds in real time. Two photon laser scanning fluorescence microscopy permitted the observation of changes in blood flow, blood redistribution after clot formation, platelet aggregation and the loss of integrity of neighboring astrocytes through a cranial window in GFP-GFAP-expressing mice.

Results: This longitudinal imaging approach provides semiquantitative information on the kinetics of erythrocytes and leukocytes to better understand microcirculation alteration and to follow sequential astrocyte injury in vivo.

Conclusion: Contrary to what has been published so far regarding the resilience of astrocytes to ischaemic injury, we demonstrate here that the time-dependent damage of astrocytes differs between different brain regions, and that different subclasses of astrocytes also exist within the same brain region exhibiting differential vulnerabilities to injury. Since neuronal death is seen as a consequence of the failure of astrocytes to support the metabolic demand of neurons, efforts designed to protect the integrity of astrocytes may constitute an alternative strategy for neuroprotection.

OP4.24

Modelling spinal muscular atrophy in Drosophila: a fruitful approach?

Ruben J. Cauchi

Department of Physiology and Biochemistry, Faculty of Medicine and Surgery, University of Malta

Introduction: Spinal Muscular Atrophy (SMA) is an untreatable neuromuscular disorder resulting from limiting levels of the Survival Motor Neuron (SMN) protein. SMN interacts with Gemins 28 and Unrip to form a macromolecular complex whose best-characterised function concerns the assembly of spliceosomal Smclass small nuclear ribonucleoproteins (snRNPs). Each SMNGemins complex member is thought to have a key role during this process. It is however unclear how defects in snRNP assembly lead to the selective neuromuscular degeneration that is typical in SMA.

Conclusion: We propose that a disruption in the normal stoichiometry of the SMNGemins complex depresses its function, with consequences that lead to SMA. We are present elucidating which function of the SMNGemins complex is crucial for guarding against neuromuscular defects.

Disclosure: University of Malta Faculty of Medicine and Surgery Dean's Initiative Malta Council for Science and

OP4.25

Implication of inwardly-rectifying K channels in the pathogenesis of autism

Maria Cristina D'Adamo¹, Elena Ambrosini², Federico Sicca³, Filippo Maria Santorelli³, Mauro Pessia⁴

¹School of Medicine, Section of Physiology and Biochemistry, Department of Experimental Medicine, University of Perugia, ²Department of Cell Biology and Neuroscience, Istituto Superiore di Sanità, Rome, ³Clinical Neurophysiology Laboratory, Department of Developmental Neuroscience, IRCCS Stella Maris Foundation, Pisa, ⁴School of Medicine, Section of Physiology & Biochemistry, Department of Experimental Medicine, University of Perugia; Faculty of Medicine, Department of Physiology and Biochemistry, University of Malta

Introduction: Autism spectrum disorder (ASD) is a group of heterogeneous neurodevelopmental disorders that severely impairs the CNS and affects >70 million people. ASD is characterized by dysfunctions in multiple CNS areas resulting in deficits in social, language and behavior core domains. Several co-morbidities are frequently reported, including epilepsy, cognitive impairment and motor delay, as well as GI dysfunctions. Although no specific epigenetic factors have been linked conclusively to ASD, genetic mutations to more than 100 loci are recognized as possible causes. A mounting body of evidence associating a "channelopathy" pathogenesis to autism has been provided by our team in the recent past.

Methods: A multidisciplinary approach involving clinical investigations, genetic screenings, biochemistry, immunofluorescence imaging, crystal structure analysis and electrophysiology was used to perform the study.

Results: Here we report on monozygotic twins displaying an autism/epilepsy phenotype. Genetic screening identified a novel KCNJ2 variant in Kir2.1 that enhanced the channel's surface expression and stability at the plasma-membrane and reduced protein ubiquitylation and degradation, altered protein compartmentalization in lipid rafts, by targeting more channels to cholesterol-poor domains and reduced interactions with caveolin 2.

Conclusion: Our study reveals novel mechanisms concerning wildtype Kir2.1 channel processing by the cell, binding to both caveolin 1 and 2, protein degradation through the ubiquitin-proteasome pathway, and a potential multifunctional site that controls Kir2.1 surface expression, protein half-life and partitioning to lipid rafts. Genetically-induced Kir2.1 channel impairments emerge as crucial for proper astrocyte function, and may contribute to the pathogenesis of seizures and neurodevelopmental disorders.

OP4.26

Specific or synergistic effects of deep brain stimulation of subthalamic nucleus and L-dopa on TMS-evoked cortical reactivity in Parkinson's disease patients

Alessandro Stefani¹, Giacomo Koch²

¹Department of System Medicine, University Tor Vergata, ²Non-Invasive Brain Stimulation Unit, Neurologia Clinica e Comportamentale, Fondazione Santa Lucia IRCCS

Introduction: Deep brain stimulation (DBS) of the subthalamic nucleus (STN) represents an effective therapy in Parkinson's disease. The recent anticipation of the clinical indication to neurosurgery and evidence on the DBS-mediated impact on cortical plasticity raised once more the need to clarify its underlying mechanisms of action.

Methods: Here we have analyzed the cortical reactivity by combining transcranial magnetic stimulation (TMS) and

EEG, and examined the effects of STNDBS on discharge evoked by TMS of the primary motor cortex (M1). Six advanced PD patients treated with routine bilateral STNDBS were investigated in three settings: i) double OFF; ii) OFF-therapy/ONDBS; iii) double ON (ONtherapy/ONDBS). In each condition, 80 single TMS pulses are delivered over left M1 while simultaneously acquiring EEG.

Results: When turning STNDBS ON (OFFtherapy/ONDBS and ONtherapy/ONDBS) a significant increase of the global mean field power (GMFP) peaking at 60-70 ms (P2) occurred (significant versus OFFtherapy/OFFDBS condition). Further, only ONtherapy/ONDBS condition promoted a synergistic increase of GMFP peaking at 100ms (P3). Time/frequency analysis showed a synchronization of activity in the 1017 Hz range over central-posterior region within the P2 time window; in the P3 time window a synchronization of activity in the 1116 Hz frequency range over central regions emerged when comparing OFFtherapy/ONS to ONtherapy/ON DBS.

Conclusion: Our data reveal that bilateral STNDBS induces a significant modulation of cortical global reactivity at early components. The association of LD therapy produces distinct modulation of later components. These findings could be related to cortical-induced modulation of GABAergic intracortical activity or more complex modulation of premotor plasticity.

OP4.27

Pre-operative intravenous fluid hydration in elective total knee and total hip replacement patients and the effects on peri-operative complications

Alexia Farrugia, Maximilian Mifsud, Massimo Abela
Mater Dei Hospital

Introduction: Total knee and hip replacements are common procedures which may have certain complications such as acute kidney injury, haemoglobin drop requiring transfusion, myocardial infarction and thromboembolic events.

Methods: Patients undergoing elective joint replacement surgery were divided into two cohorts in which one cohort received pre-operative intravenous fluids from midnight on the day of surgery and one cohort did not. The post-operative course of the two cohorts was monitored using patient files, discharge letters and blood test results. Comparisons were made between pre- and post-operative haemoglobin and creatinine levels in both cohorts. Other complications arising were also monitored.

Results: Results showed that 27.3% of all patients in cohort one had a significant creatinine rise which eventually resolved post-operatively, as opposed to 7.5% in the second cohort ($p=0.038$). Also a total of 12.2% of patients required transfusion post-operatively in cohort one, as opposed to 2.5% in cohort 2 ($p=0.118$). Other parameters monitored included thromboembolic complications, postoperative urinary retention, length of stay and mortality. The results obtained were compared and statistical testing ensued.

Conclusion: Conclusions were that preoperative intravenous fluid replacement has no significant effect on postoperative morbidity and mortality

OP4.28

Hip fracture mortality among osteoporotic patients

Sarah Cuschieri¹, Stephan Grech², Ray Gatt³

¹University of Malta, ²Royal Free NHS trust, ³Mater Dei Hospital

Introduction: Osteoporotic hip fractures are common occurrence among the elderly population, with an associated increase in mortality risk. The aim is assess the hip fracture mortality rate among the 60+ year osteoporotic Maltese

population and identify any related determinant factors.

Methods: An observational retrospective study was performed analyzing all emergency osteoporotic hip fractures requiring surgery, presenting to Mater Dei Hospital in 2011. Osteoporotic fracture was defined as hip fracture occurring following a low energy trauma accident in patients over 60 years of age. 'Electronic case summary' software was used to analyse the length of hospital stay while survival rates were obtained from the Malta National Mortality Registry, Directorate for Health Information and Research.

Results: In 2011 there was a total of 281 osteoporotic hip fractures. The mortality rate within 90 days of surgery was 12.81% ($n=36$), the majority of whom were post inter-trochanteric fracture. The mortality rate increased to 25.3% ($n=71$) 1 year following the surgery. The rate further increased to 46.62% ($n=131$) after 3 years with female preponderance. The inter-trochanteric hip fracture was the commonest type of fracture encountered in our study population ($n=83$). There was no significant difference between genders regarding length of hospital stay ($p=0.149$) and mortality. The opposite was true when different fracture types and gender were considered ($p=0.0001$).

Conclusion: The highest mortality rate is within 90 days post-operation especially in females sustaining an inter-trochanteric hip fracture. Special care should be given to this sub population to try to reduce compounding factors that may increase the mortality rate.

OP4.29

Comparison of the total care pathway for neck of femur fractures between Mater Dei Hospital, Malta and Barnet Hospital, London UK

Stephan Grech¹, Sarah Cuschieri²

¹Royal Free NHS Trust, ²University of Malta

Introduction: Neck of femur (NOF) fractures in the elderly is a worldwide phenomenon which is increasing as is the ageing population. They occur frequently in elderly patients. The aim was to compare the care package offered to patients suffering osteoporotic NOF fractures at Mater Dei Hospital in Malta against Barnet Hospital in London, UK. Mater Dei Hospital has a catchment area of 400,000 people whereas Barnet Hospital is a district general hospital serving around 800,000 people.

Methods: Mater Dei Hospital data was collected from clinical notes. Data from Barnet Hospital was collected from the NOF register. Inclusion criteria were patients over 60 years of age suffering an osteoporotic NOF. Exclusion criteria were high energy trauma or medical co-morbidities exacerbating weak bone architecture. Data was collected starting on 4th April 2011 to the 31st December 2011.

Results: In Malta, 196 patients (80% females) with mean age of 81 years and mean length of stay (LOS) 11.4 days were, examined. Out of which 4 were already on osteoporotic treatment, none were prescribed upon discharge. 8 patients died within the first 2 weeks post-op. Barnet cohort was of 205 (77% females), mean age of 83.4 years and mean LOS of 18.3 days. 42 were already on osteoporotic treatment, while 162 patients were started upon discharge. 18 patients died within the first 2 weeks post-op.

Conclusion: The overall care pathway for both hospitals provides a similar outcome for a similar population sample. There was no statistical significant difference regarding mortality rate or LOS in hospital following a NOF fracture.

OP4.30

Delirium and its management in hip fracture patients

Joanna Grech¹, Caroline Galdes¹, John Cordina²

¹Department of Orthopaedics, Mater Dei Hospital, ²Orthogeriatric Services, Mater Dei Hospital

Introduction: Delirium is described as an acute deterioration in mental function. It is prevalent in elderly patients with defined risk factors especially after surgery and is often underinvestigated and misdiagnosed. The Scottish delirium guidelines developed by the Scottish Delirium Association were used as a standard in this audit.

Methods: A hip fracture integrated care plan has been developed and is now in use in orthopaedic wards in order to facilitate better assessment and management of such patients. A 10 point abbreviated mental state examination (AMT10) section has been included in the booklet to assess the cognitive state of patients on admission. Patients sustaining a hip fracture from July 2015 were enrolled into the study and their medical notes reviewed. Data collected included: age, gender, AMT 10 record, history of changes in cognition, risk factors, documentation of causes, management, improvement, geriatric reviews and documentation in discharge letters.

Results: This is an ongoing audit and full results will be available in due course. Yet preliminary results indicate that the AMT 10 is often not done, and risk factors, premorbid state and cause of the delirium are not clearly documented. Review by geriatricians and reassessment are generally carried out, acute medical issues dealt with and improvement documented. However, episodes of delirium are often not documented in discharge letters.

Conclusion: Delirium may be distressing for both patients and relatives. Increased awareness by the orthopaedic surgeons and nursing staff is required so that it may be promptly diagnosed when it happens, as timely recognition may lead to rapid resolution.

OP4.31

Mortality following hip fracture in Malta

Yimeng Zhang¹, Sandra Distefano², Neville Calleja², Kathleen England²

¹Faculty of Medicine and Surgery, University of Malta, ²Directorate for Health Information and Research

Introduction: Hip fractures are an important cause of mortality especially in the elderly. The aim of the study was to analyse trends in mortality in patients admitted with hip fracture over 10 years in Malta, in view of changes in demography and improving healthcare.

Methods: Patients 60 years and over, admitted to St. Lukes Hospital/Mater Dei Hospital with their first fracture from 2004 to 2013 ($n=3445$) were followed up for 1 year following admission through linkage between the Hospital Activity Analysis Database and the National Mortality Register. Trends in number of admissions as well as 30 day, 6 months and 1 year mortality were analysed using Poisson regression.

Results: Mean age at presentation was 80 years in males and 81 years in females, with 2.5 female admissions for every male admission. There was an overall increase in admissions over 10 years. 30 day, 6 month and 1 year average mortality over the whole period in males and females respectively was 10.0%, 5.3%; 27.4%, 15.3%; 36.5%, 20.6%. There was no significant change in mortality in males over 10 years, while in females there was a significant downward trend in 30 day, 6 months and 1 year mortality over the time period under study (p values: 0.001; 0.007; 0.002).

Conclusion: Though fewer males sustain hip fractures compared to females, mortality is higher in males and this has

also been observed in other international studies. Temporal trends show a fall in mortality in females but not in males and this needs further evaluation.

OP4.32

Biochemical predictors of low bone mineral density and fracture susceptibility in Maltese postmenopausal women

Melissa Marie Formosa, Angela Xuereb Anastasi

Department of Applied Biomedical Science, Faculty of Health Sciences, University of Malta

Introduction: Osteoporosis and fractures are complex skeletal conditions resulting from an interplay of genetic and environmental factors. The aim of the study was to investigate the association of biochemical levels of total serum calcium, total serum alkaline phosphatase (sALP) and serum albumin with bone mineral density (BMD) levels at the lumbar spine (LS) and femoral neck (FN), and with fracture risk in Maltese postmenopausal women. Levels were also correlated with age, years since menopause (YSM) and physical activity.

Methods: A case-control study of 1045 women was performed. Women who suffered a fracture were classified as cases whereas women without a fracture history were included as controls subdivided into normal, osteopenic or osteoporotic according to their BMD measurements. Blood specimens were collected following good standard practice and testing was performed by spectrophotometry.

Results: Calcium, and to a lower extent sALP, were correlated with FN BMD levels. Fracture cases, especially those who sustained a hip fracture, had the lowest levels of calcium, sALP and albumin relative to all other control groups. Biochemical levels decreased with increasing age, possibly increasing fracture risk. YSM was correlated with lower calcium levels in fracture cases ($\rho: 0.229, p < 0.01$). Biochemical levels significantly decreased with reduced physical activity in fracture cases. Moreover, reduced physical activity was associated with decreased BMD levels at the hip and spine.

Conclusion: Results suggest that levels of calcium, sALP and albumin could be indicative of fracture risk, whereas calcium levels and to lower extent sALP are indicators of hip BMD.

OP4.33

Aspirin impairs the carnitine shuttle pathway in redox-compromised yeast cells: implications for cancer chemoprevention and Reye's syndrome

Gianluca Farrugia¹, Christian Saliba², Jelena Pistolic³, Vladimir Benes³, Neville Vassallo⁴, Godfrey Grech⁵, Joseph J. Borg⁶, William H. Bannister⁴, Rena Balzan⁴

¹Department of Physiology and Biochemistry, University of Malta; Centre for Molecular Medicine and Biobanking, University of Malta, ²Centre for Molecular Medicine and Biobanking, University of Malta, ³Genomics Core Facility EMBL, Heidelberg, ⁴Department of Physiology and Biochemistry, Faculty of Medicine and Surgery, University of Malta, ⁵Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ⁶Department of Applied Biomedical Science, Faculty of Health Sciences, University of Malta

Introduction: Acetylcoenzyme A (acetyl-CoA) plays an important role in cellular metabolism. It is an essential substrate for energy production in the tricarboxylic acid (TCA) cycle. In yeast cells grown on ethanol as the carbon source, acetyl-CoA is generated in the peroxisomes and cytosol, and then transported into mitochondria by the carnitine shuttle pathway. We use yeast as a eukaryotic model since it offers large experimental advantages in conditions controlled by multiple genes.

Methods: The yeast strains used in this study are the wildtype *Saccharomyces cerevisiae* EG103 and the manganese superoxide dismutase (MnSOD)-deficient yeast strain EG110. Yeast cells were grown in rich ethanol medium (YPE) in the presence and absence of aspirin. Microarray analysis of gene expression profiles was validated by qPCR, in conjunction with preliminary enzyme activity studies.

Results: We observed that in MnSOD-deficient EG110 cells, aspirin exerts a significant inhibitory effect on acetylCoA synthetase. Moreover, aspirin downregulates components of the carnitine shuttle involved in the transport of acetylCoA to the mitochondria.

Conclusion: We conclude that this inhibitory effect of aspirin on the redox-compromised MnSOD-deficient yeast cells leads to energy failure and contributes to aspirin-induced apoptosis. Because several core cellular processes, such as apoptosis, are conserved among yeast and mammalian cells, these observations may contribute to our understanding of the mechanistic behaviour of aspirin in mammalian cancer cells which experience constantly higher levels of oxidative stress with respect to normal cells. These studies may also contribute towards understanding the involvement of aspirin in the molecular pathology of Reye's syndrome.

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OP4.34

Probing the structure and tumour-suppressor properties of manganese superoxide dismutase

Rosalin Bonetta¹, Gary James Hunter², Anthony Fenech³, Chi Trinh⁴, Therese Hunter²

¹Centre of Molecular Medicine and Biobanking, University of Malta, ²Department of Physiology and Biochemistry, Faculty of Medicine and Surgery, University of Malta, ³Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta, ⁴Astbury Centre for Structural Molecular Biology, Institute of Molecular and Cellular Biology, University of Leeds

Introduction: Manganese superoxide dismutase (MnSOD) is an antioxidant and tumour suppressor protein located in the mitochondrial matrix, where it protects against oxidative stress generated during cellular respiration. The dismutation reaction converts superoxide into hydrogen peroxide and molecular oxygen. Since both superoxide and hydrogen peroxide function as signalling molecules, superoxide removal and hydrogen peroxide generation by MnSOD may result in being as crucial as the antioxidant protection provided by MnSOD. *Caenorhabditis elegans* MnSOD3 is of particular interest, as it has been identified as a component of the insulin regulated longevity pathway. Its catalytic mechanism is therefore, significant to the study of carcinogenesis and ageing.

Methods: The structures of *C. elegans* MnSOD as well as the MnSODazide complex have been determined by X-ray crystallography, and the effect of the hydrogen peroxide reaction product on proliferation of chronic myelogenous leukaemia K562 cells was studied in the form of a biological assay.

Results: Azide acts as a superoxide substrate analogue and MnSOD inhibitor. The structure of MnSOD complexed with azide is the first that shows how the substrate is positioned in a tetrameric eukaryotic MnSOD. Azide binds endon to the manganese centre as a sixth ligand, demonstrating the arrangement of an extended hydrogen-bonded network necessary for the formation of a proton relay including His30, Tyr34, Gln142 and the manganese-bound solvent ligand.

MnSOD3 also reduced proliferation of K562 cells in a dose dependent manner by inducing apoptosis.

Conclusion: This study indicates how the well-ordered solvent molecule arrangement forming part of the hydrogen-bonded network in MnSOD, allows fast protonation during catalysis.

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OP4.35

The interferon regulatory factor 5RelA interaction targets inflammatory genes in macrophages

David George Saliba, Irina A Udalova, Hayley L Eames

The Kennedy Institute of Rheumatology, University of Oxford

Introduction: Spatially and temporally controlled expression of inflammatory cytokines is critical in eliciting an appropriate immune response. In this context, the role of Interferon Regulatory Factor 5 (IRF5) is essential in establishing inflammatory phenotypes. IRF5 is also a genetic risk factor for many autoimmune diseases. The molecular basis of its transcriptional activity will be outlined in this presentation.

Methods: The transcriptional complex between Nuclear Factor kappa B (NFkB) and IRF5 was investigated by co-immunoprecipitations and chromatin immunoprecipitation (ChIP) procedure followed by qPCR. This model was further investigated on a genome-wide level using ChIP-seq, protein: DNA microarrays and RNAseq in macrophages stimulated with bacterial lipopolysaccharide. OneStrep truncation mutants of IRF5 and NFkB member RelA were used to map the interacting domains.

Results: We discovered that IRF5 binds to regulatory elements of the *tnf* gene locus and other highly transcribed proinflammatory genes. Analysis of protein: DNA microarrays demonstrates that IRF5 recognizes the canonical IRF-binding motif (ISRE) in vitro. However, IRF5 binding in vivo appears to rely on its interactions with other proteins. IRF5 binds to a noncanonical composite PU.1:ISRE motif, and its recruitment is aided by NFkB subunit RelA. Global gene expression analysis in macrophages deficient in IRF5 and RelA highlights the direct role of the RelA:IRF5 cistrome in regulation of a subset of key inflammatory genes.

Conclusion: The ultimate goal in inflammatory diseases would be to target transcription of a specific subset of proinflammatory genes. Inhibiting IRF5 activity may pave the way for the development of more selective drugs targeting the basic mechanisms underlying the inflammatory response.

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OP4.36

Amiloride induces alternative splicing of the PP2A α mRNA in haematopoietic cell lines

Stephanie Gauci¹, Christian Saliba², Shawn Baldacchino¹, Anthony Fenech³, Godfrey Grech¹

¹Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ²Centre for Molecular Medicine and Biobanking, University of Malta, ³Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta

Introduction: Targeting BCRABL1 by imatinib has proven successful for the treatment of Chronic Myeloid Leukemia (CML) patients. Nonetheless, a cumulative 5-year failure rate of 17% still exists due to therapeutic resistance. Increased expression of BCRABL1 inhibits PP2A activity, promoting survival and proliferation. Previous studies established that an isoform of the catalytic subunit α of PP2A (PP2A α) is predominant in 15% of CML. This study investigates alternate splicing of PP2A α as a novel potential mechanism of therapeutic resistance in CML.

Methods: Several leukaemic cell lines were treated with amiloride, imatinib, rapamycin or FTY720. The differential expression of selected splicing factors was analysed by qRT-PCR. The expression profile of the resulting cellular model was correlated with the splicing factor profile of 14 CML patient samples using the unpaired t-test.

Results: A cellular model was established using TOM-1 cells (BCRABL1+ B-cell precursor leukaemia cell line) treated with amiloride to predominantly express PP2A α 2. Conversely, untreated cell lines, cell lines treated with imatinib, rapamycin and FTY720, and BCRABL1 negative CML samples did not express the PP2A α 2 isoform. 8 out of 15 (53%) splicing factors were differentially expressed in the BCRABL1+ cells, with a p-value lower than 0.05. All 15 splicing factors analysed were upregulated in the PP2A α 2 mutant isoform CML patient samples.

Conclusion: A cellular model with predominant expression of PP2A α 2 was established. This isoform switch was solely induced by amiloride and correlated with differential splicing factor expression. These results suggest a novel mechanism for BCRABL1 targeted therapy resistance mediated by differential expression of splicing factors.

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OP4.37

The effect of endoluminal treatment with cfos oligonucleotide antisense on the expression of cfos mRNA in human saphenous vein

Joseph Galea

Department of Cardiac Services, Mater Dei Hospital

Introduction: Saphenous vein graft (SVG) disease and its consequent early and late occlusion are well-described problems in CABG patients. Early SVG occlusion results mainly from graft thrombosis while the commoner late occlusion is caused by intimal hyperplasia and atherosclerosis. The changes that occur in the SVG when subjected to the increased blood flow, pulsatile in nature and at a higher pressure include intimal processes, medial vascular smooth muscle cell (VSMC) alterations and adventitial modifications. The early response genes cfos, cjun and cmc are crucial for these vascular alterations.

Methods: Cultured human saphenous vein (HSV) was studied for the presence of cfos, cjun and cmc mRNA using Northern Blot analysis. Antisense oligonucleotide to cfos was administered and its effect on cfos mRNA in HSV was

studied. Cell proliferation was determined using 3Hthymidine incorporation and the presence of proliferating cell nuclear antigen (PCNA). Tissue viability was established by measuring adenosine nucleotides using HPLC.

Results: Increased expression of cfos, cjun and cmc was shown in surgically prepared saphenous vein. Intraluminal treatment with cfos antisense at different concentrations reduced the expression of this gene. Increased cell proliferation was noted in surgically prepared vein. The ATP/ADP ratios remained high during the culture period indicating tissue viability throughout the experiment.

Conclusion: The presence of increased expression of cfos, cjun and cmc in the surgically prepared vein may be involved in increased cell proliferation and the treatment with cfos antisense reduces cfos expression and may have an impact in SVG disease

OP4.38

Serum amyloid A in chronic obstructive pulmonary disease

Anne Marie Bonello¹, Anabel Scirha², Stephen Lungaro-Mifsud³, Stephen Montefort⁴, Bridget Ellul¹, Godfrey Grech¹, Anthony G Fenech⁵

¹Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ²Department of Physiotherapy, Faculty of Health Sciences, University of Malta, ³Department of Physiotherapy, Faculty of Health Sciences, University of Malta, ⁴Department of Medicine, Faculty of Medicine and Surgery, University of Malta, ⁵Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta

Introduction: Serum Amyloid A types 1 and 2 (SAA1, SAA2) are acute phase proteins elevated in inflammatory conditions. They are biomarkers of disease activity and participants in pathogenesis. Production is primarily hepatic, while pulmonary expression has also been reported in COPD. This project aimed to (i) study the cytokine-induced SAA transcriptional regulation in human airway related cells (ii) investigate temporal changes in serum SAA levels in stable COPD patients undergoing a 12-week pulmonary rehabilitation (PR) programme.

Methods: A pGL4.10SAA2 luciferase reporter construct, was transfected into HepG2 hepatocytes, A549 pulmonary epithelial cells and U937 monocytic cells. Following 24h the cells were stimulated with different concentrations of IL-1 β , IL6, LIF and IL8. Six and 24h postincubation, promoter activity was quantified using dual luciferase reporter assays. Stable COPD patients were recruited from Mater Dei Hospital outpatients clinic, as part of a separate project, and serum SAA concentrations were analysed using ELISA.

Results: IL1 β showed the highest SAA2 transcriptional regulatory activity in U937 (27.8 fold) and HepG2 (10.1 fold) cells. IL8 induced 5.7 fold activity in U937 cells, and 2.8 fold in A549. LIF was only active in A549 cells (3.0 fold). The mean SAA was 52.4 $\pm$ 7.4 μ g/ml (SEM) at baseline, 76.6 $\pm$ 11.3 μ g/ml after 8 weeks (difference from baseline; p<0.05), and 56.0 $\pm$ 9.5 μ g/ml at week 12.

Conclusion: Inflammatory microenvironments can induce SAA2 transcription in airway-related cells, with the promoter being most active in IL1 β -stimulated monocytes. PRP-related changes in serum SAA were observed in COPD patients, and further studies are required to better understand the mechanisms underlying this observation.

OP4.39

Dichloroacetate induces morphofunctional alterations and selective degradation of mitochondria in cells from oral squamous cell carcinomas

Vitalba Ruggieri, Francesca Agriesti, Tiziana Tataranni, Carmela Mazzocchi, Claudia Piccoli

Laboratory of PreClinical and Translational Research, IRC! CS-CROB, Referral Cancer Centre of Basilicata, Rionero in Vulture (Pz)

Introduction: As known, oral squamous cell carcinomas (OSCC) are aggressive and drugs-resistant human tumours displaying a high rate of aerobic glycolysis, known as "Warburg effect". By fostering mitochondrial oxidation of pyruvate, dichloroacetate (DCA) is able to restore a normal bioenergetic profile and to induce cytotoxicity in OSCC-derived cells characterized by a glycolysis-reliant metabolism, as demonstrated in our previous study. This effect was paralleled by remodeling of the mitochondrial network, never documented before, resulting into organelle fragmentation. The aim of our study was to assess the ability of DCA to interfere with processes that regulate the number and the shape of mitochondria.

Methods: The expression patterns of "mitochondria-shaping" proteins and proteins involved in autophagy were evaluated, by Western blotting, in cells treated with 4 and 10 mM DCA.

Results: DCA treatment of cell lines characterized by a glycolytic phenotype was associated to the overexpression of the pro-fission protein Drp1, most probably connected to mitochondrial fragmentation. Interestingly, DCA treatment also induced a dose-response increase in LC3II protein levels associated with reduced levels of mitochondria-related proteins as TOM 20, indicative of mitophagy. Most probably, this process becomes so massive and persistent to trigger cell death.

Conclusion: By the induction of remodeling of the mitochondrial network, DCA is able to trigger organelle fragmentation and degradation most probably involved in its cytotoxic effects. The analysis of mitochondrial morphofunctional alterations could contribute to the identification of the downstream targets of metabolic drugs like DCA and to their potential manipulation for therapeutic purposes.

OP5.01

Assessing clinical quality in Maternity care

Alan D. Cameron

Ian Donald Fetal Medicine Unit, The Queen Elizabeth University Hospital

Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change. Audits are central to preventing failings in healthcare, such as those recently identified by the Francis Report and the Keogh Review into mortality rates. They promote compliance with national guidelines and therefore best outcomes for patients. They also help identify system failures and improvement areas, which lead to better use of resources and financial savings for NHS services. The publication of audit data improves patients' access to information on NHS services and better choice. The data also aids accountability, hospital inspections and other accreditation visits.

The Each Baby Counts Project is a project run by the RCOG, part-funded by the Department of Health. The aim of the project is to reduce the number of stillbirths, neonatal deaths and severe HIEs occurring as a result of incidents occurring during term labour by 50% by 2020.

The project will undertake ongoing national surveillance of these adverse events and all UK units will be expected to

participate. The conclusions of local governance and risk management reviews will be pooled and evaluated in order to develop an audit-informed rolling action plan suitable for local implementation.

This presentation will focus on Quality improvement projects currently being undertaken by the Clinical Quality team at the RCOG.

OP5.02

A retrospective observational study of the causes and treatment of recurrent early pregnancy loss

Heidi Gauci Grech, Mark Formosa

Recurrent Miscarriage Clinic, Mater Dei Hospital

Introduction: This is a retrospective observational analysis of 232 patients who attended the clinic over the past 5 years. The conditions associated with recurrent pregnancy loss and the effect the treatment protocols employed were studied.

Methods: A standard detailed obstetric, gynaecological and medical history was taken in every case. A standard investigation protocol was then applied to all patients. Depending on the results each couple was advised a treatment protocol. Data of the outcome of the pregnancies immediately following the miscarriage has been collected.

Results: Idiopathic No: 91 Live births: 54 Miscarriages: 13 Polycystic Ovarian Syndrome No: 7 Live births: 5 Miscarriages: 1 Luteal phase deficiency No: 4 Live births: 3 Miscarriages: 1 Endocrine No: 4 Live births: 4 Miscarriages: 0 Anatomical abnormalities No: 5 Live births: 3 Miscarriages: 0 Genetic defects No: 4 Live births: 3 Miscarriages: 0 Thrombophilia Acquired No: 13 Live births: 8 Miscarriages: 2 Inherited Protein S deficiency No: 2 Live births: 2 Miscarriages: 0 Protein C deficiency No: 1 Live births: 0 Miscarriages: 0 Factor V mutation No: 1 Live births: 0 Miscarriages: 1 Factor II mutation No: 3 Live births: 3 Miscarriages: 0 MTHFR double heterozygote No: 26 Live births: 14 Miscarriages: 5 MTHFR homozygote No: 26 Live births: 15 Miscarriages: 3 Combined thrombophilia: No: 24 Live births: 18 Miscarriages: 13 Combined Pathology Not: 18 Live births: 10 Miscarriages: 3

Conclusion: This study of 232 patients indicates that the process of investigating and offering treatment to patients with a history of recurrent miscarriages leads to positive results.

OP5.03

Awareness of the human papillomavirus (HPV) and HPV vaccines

Bettina von Brockdorff, Lilian M Azzopardi,

Anthony Serracino Inglott

University of Malta

Introduction: The aim of this study were to investigate the impact of the use of HPV vaccines in the health care system through the perception and awareness of HPV and the HPV vaccine amongst female patients, gynaecologists and pharmacists.

Methods: Two, self-administered questionnaires for doctors and pharmacists and for patients who visit gynaecology outpatients' clinic at Mater Dei Hospital (MDH) and fifteen community pharmacies. Fifteen community pharmacies were chosen by stratified random sampling and questionnaires were distributed to ten patients per pharmacy and managing pharmacists. Questionnaires were also distributed to gynaecology specialists at MDH.

Results: From the 115 patients recruited, the majority of patients had heard of the HPV virus (53.6%) and HPV vaccines (52.3%). 88.5% who were aware of the HPV virus and HPV vaccines were also aware of the association between the HPV

virus and cervical cancer and 73.7% of participants stated that they carry out regular cervical smear tests every two years. Thirteen gynaecologists completed the questionnaires and five stated that over one month they vaccinated between three to five patients. Eight provide information to patients regarding HPV vaccines. All participating gynaecologists and managing pharmacists agreed on the presence of HPV vaccines in the local healthcare system.

Conclusion: The awareness regarding HPV and HPV vaccines has improved compared to data reported in an earlier local study undertaken in 2012 by Brincat et al. A reason for this, could include the fact that since 2012, HPV vaccines have been implemented in the health care system.

OP5.04

The role of cytokines in cutaneous aging during menopause

Marika Borg¹, Jean Calleja-Aguis²

¹Mater Dei Hospital, ²Department of Anatomy, Faculty of Medicine and Surgery, University of Malta; Department of Obstetrics and Gynaecology, Mater Dei Hospital

Introduction: Skin aging is one of the complications of menopause that affects most women. Several cytokines are involved in the aging process. Cytokines in the skin are produced by epithelial cells and keratinocytes, besides Langerhans cells as part of the immune system. Aim: To understand the physiological process of cutaneous aging and the role of cytokines in skin aging during menopause with the decline of oestrogen.

Methods: A systematic review was conducted to identify the imbalance of pro- and anti-inflammatory cytokines which bring about the aging process resulting in dry wrinkled skin which bruises easily, delayed wound healing and body hair loss.

Results: A significant rise in the level of pro-inflammatory cytokines Tumour Necrosis Factor- α (TNF- α), Interleukin (IL)1 and IL6 occurs in menopause which drives the aging process. With the decrease in oestrogen in menopause the level of B and CD4 T lymphocytes decreases, natural killer cells' cytotoxic activity declines, and the response of cells to cytokines increases. TNF α increases collagen degradation through increased production of MMP9 while inhibiting collagen synthesis, and lowers skin immunity thus the risk of skin infections in older age increases. Other cytokines involved include Transforming Growth Factor-beta (TGF β), cysteine-rich protein 61 (CCN1), IL8, IL10, IL18 and interferons.

Conclusion: The use of oestrogen in menopause increases the thickness of skin dermis, collagen content and skin elasticity. Further research is necessary to establish the role of cytokines in the prevention and treatment of skin aging.

OP5.05

Serum cytokines in Maltese women with miscarriage

Christina Xerri¹, Edith Said², Jean Calleja-aguis³

¹University of Malta, ²Department of Anatomy, Faculty of Medicine and Surgery, University of Malta; ³Cytogenetics Laboratory, Department of Pathology, Mater Dei Hospital, ³Department of Anatomy, Faculty of Medicine and Surgery, University of Malta

Introduction: Spontaneous miscarriages include pregnancy loss from the time of conception up to 24 weeks of gestation. More than 50% of first trimester miscarriages and 30% of second trimester miscarriages are caused by fetal chromosomal aberrations. It is assumed that chromosomally abnormal miscarriages are affected through different mechanisms than chromosomally normal miscarriages.

Karyotypically abnormal miscarriages may be due to local functional disturbances while normal karyotype miscarriages may be the result of fetal rejection due to a maternal systemic inflammation. Cytokines play a crucial role in the maintenance of pregnancy by regulating and modulating the immune system. Recent studies reveal that in normal karyotype miscarriages there is cytokine production in the maternal circulation linked to a Thelper (TH)-1 cell type immunity. Pro-inflammatory cytokines tumor necrosis factor α (TNF- α) and interferon γ (IFN- γ) are amongst the cytokines that are considered detrimental to pregnancy, while anti-inflammatory cytokines interleukin (IL)-4, 6 and 10 enhance embryonic development.

Methods: In total, 25 miscarriages have been karyotyped using conventional cytogenetic techniques. Maternal sera collected at the time of miscarriage (n=60) will be assayed with Quantikine® ELISA kits to detect, quantify and compare serum cytokine levels: TNF α , IFN γ , IL10 and transforming growth factor β 1 (TGF β 1). Comparison will be made between serum cytokine levels in women undergoing miscarriage (n=40), women experiencing recurrent miscarriage (RM) (n=20) and women with a history of RM (n=20).

Conclusion: The karyotype and cytokine results will be presented to establish a possible correlation between cytokine levels in women experiencing miscarriage or RM, and fetal karyotype.

OP5.06

COPD as a multisystem condition

George Cremona

COPD is characterized by a poorly reversible airflow limitation resulting from chronic inflammation, mainly due to tobacco exposure. Patients with COPD are increasingly recognized to be at risk for several co-morbid conditions, including cachexia, muscle weakness, lung cancer, coronary artery disease, heart failure, and bone mineral density loss. The extrapulmonary co-morbidities significantly complicate the management and influence the prognosis of patients with COPD. Although certain co-morbidities like cardiovascular diseases share some risk factors with COPD, such as cigarette smoking, other frequently observed co-morbidities, including musculoskeletal wasting, metabolic syndrome, and depression, cannot be easily attributed to smoking. There is increasing evidence that chronic inflammation is a key factor in COPD and that inflammation might be the common pathway linking these co-morbidities. The treatment of COPD must also include these co-morbidities and likewise patients with co-morbid conditions should be screened and treated for COPD with the aim of improving both symptoms and prognosis.

OP5.07

Predictors of inhaler technique in asthma and COPD

Kyra Bartolo¹, Michael Pace Bardon², Emma Louise Schembri¹, Simon Mifsud¹, Darlene Muscat², Rachelle Asciak², Michael Sullivan¹, Stephen Montefort², Martin Balzan²

¹Department of Medicine, ²Department of Respiratory Medicine

Introduction: Correct inhaler technique (pMDI, with/without spacer) is essential for effective management of asthma and COPD. AIM-to assess inhaler technique using two different scores, one expecting 10 correct steps out of twelve and another none of 4 critical errors.

Methods: 164 patients (Male 45.7%, Mean-age 57.9, 78% asthma, 22% COPD) were recruited. Regular follow up by respiratory physician 61%, GP 46.3%, none 12.8%. A structured questionnaire was administered and technique formally assessed by one of 5 medical practitioners.

Results: 108 (65.9%) got 10 out 12 steps correct, 56 (34.1%) had no critical errors. No critical errors seemed to be associated with a decrease in oral steroid use in the previous year with an odds ratio OR of 0.52(0.231.17, p=0.1), while 10 correct steps OR 1.45(0.663.2, p=0.36) failed to predict any difference, after correcting for age, gender and vaccination history. In a multivariate model using 30 predictors of no critical errors, Asthma diagnosis OR 3.91(1.1612.07, p<0.06), Diabetes OR 4.2(1.45 12.2, p<0.06), Education on scale of 14, OR 1.35(0.951.94, p=0.09), married status OR 2.06(0.964.45, p=0.05) were positive predictors, while Hypercholesterolemia OR 0.35(0.140.88, p=0.18). Critical errors, 31.7% failed to shake the inhaler, 45.1% failed to exhale before inhalation, 18.9% failed to coordinate activation with inspiration, while 40.2% failed to hold their breath for 10 seconds.

Conclusion: The presence of no critical error predicted less use of oral steroids in the previous year. Education and married status, and asthma were positive predictors. Co-morbidities, surprisingly, seem to have an independent effect on absence of critical errors.

OP5.08

An audit on the effect of a hospital oxygen therapy guideline on prescription and administration of oxygen therapy

Rachelle Asciak¹, Maria Ciantar², Julia Tuda¹, Caroline Gouder¹, Valerie Anne Fenech¹, Stephen Montefort¹

¹Department of Medicine, Mater Dei Hospital, ²University of Malta

Introduction: Aim: to assess the effect of a hospital oxygen therapy guideline on oxygen prescription and administration at the Emergency Department (ED) and medical wards of Mater Dei Hospital.

Methods: Data was collected on oxygen prescription and administration in patients attending the ED with conditions most likely to require oxygen therapy. Z test was used to compare results of a similar audit in 2011 to results after the hospital guideline implementation in 2015.

Results: In patients in whom oxygen was indicated: Oxygen administration at the ED improved from 23.5% to 97.5% (p<0.05); flow rate and delivery device were documented in 47.9% before, and 72.5% after guideline (p<0.05). Oxygen therapy prescription in management plans improved from 34.1% to 95% (p<0.05). Oxygen was prescribed in treatment charts in 51.8% before and 25% after guideline. Oxygen was administered in wards in 98.4% before and 85% after guideline, ie 15% of patients requiring supplemental oxygen did not receive it. After guideline implementation: 19.7% of patients in whom supplemental oxygen was not indicated were prescribed oxygen therapy, 96.6% of these received oxygen therapy in wards. For patients in whom oxygen was prescribed including flow rate and delivery device (whether oxygen was indicated or not), oxygen was received correctly in ward in 7.1% before and 63.5% after guideline (p<0.05); received incorrectly or not at all in 92.9% before and 36.5% after guideline (p<0.05).

Conclusion: Oxygen therapy prescription and documentation at the ED improved significantly. Oxygen therapy administration in wards has improved, although prescription of oxygen in treatment charts needs improvement.

OP5.09

Watching over the lung nodule

Jonathan Gauci, Elizabeth Cassar, Christabel Mizzi, Dillon Minto, Richard Pullicino, Mauro Sacco, Kay Vanhear, Andrea Vella Baldacchino, Adrian Mizzi, Stephen Montefort

Mater Dei Hospital

Introduction: While most pulmonary nodules (smaller than 3cm) are not malignant, follow-up is imperative since suspicious lesions may be biopsied early and potentially cured. The Fleischner Society issued guidelines for follow-up intervals in high-risk (smokers) and low-risk patients. The aim of our project was to study solitary and multiple pulmonary nodules detected on computed tomography (CT) and to audit followup of solitary pulmonary nodules (SPNs) measuring less than, or equal to, 8mm in accordance with Fleischner recommendations.

Methods: The study population included all patients at Mater Dei Hospital with one or more pulmonary nodules on CT during 2012, excluding those with a history of malignancy, new CT diagnosis of extrapulmonary malignancy, concurrent pulmonary lesions larger than 3cm, and foreign bodies.

Results: The study population consisted of 135 SPNs, and 56 patients with multiple nodules. All SPNs ≤ 8 mm were benign, while those measuring $>8-20$ mm had a 21.8% ($n=12$) risk for malignancy, and those measuring $>20-30$ mm had a 28.6% ($n=8$) risk. SPNs ≤ 8 mm were followed up in agreement with Fleischner recommendations in 49.0% ($n=24$). Smoking history was specified on 28.2% ($n=11$) and 36.7% ($n=11$) of initial and follow-up CT requests respectively. The appropriate time-frame was specified on the followup request in 72.0% ($n=18$).

Conclusion: Follow-up of SPNs is suboptimal. Clinicians often do not record the smoking history in the CT request, and the radiologist is therefore unable to recommend the optimal followup interval. Clinicians do not always specify the timeframe for follow-up CT, possibly leading to inappropriate scheduling by the radiology department.

OP5.10

Association between obstructive sleep apnoea and atopy in Malta

Caroline Gouder¹, Peter Fsadni¹, Jonathan Gauci¹, Claire Vella¹, Simon Gouder², Claudia Fsadni¹, Christopher Deguara³, Stephen Montefort¹

¹Department of Medicine, Mater Dei Hospital, ²Department of Physiotherapy, Mater Dei Hospital, ³Sleep Laboratory, Mater Dei Hospital

Introduction: The aim of this retrospective observational study was to identify whether there is a relationship between obstructive sleep apnoea, asthma, allergic rhinitis and atopic dermatitis among local patients.

Methods: Adult patients over the age of 18, who underwent a polysomnogram in 2013 at the sleep clinic at Mater Dei Hospital were contacted and asked to complete a telephone questionnaire. The questionnaire included demographic data, details about the sleep study, drug history as well as the validated ISAAC questionnaire including questions about asthma, allergic rhinitis and eczema.

Results: Our cohort included a total of 100 patients (mean age 58 ± 9.6 years, 78% males, mean BMI 38.5 ± 7.7 , mean AHI 38.4 ± 26.9 , mean ODI 33 ± 27.5), 99 of whom had a positive domiciliary sleep study. CPAP was started by 57 patients (58%) but only 44 patients (77%) were compliant to treatment for more than 3 hours on most nights. Of the patients diagnosed with OSA, 16 patients (16%) complained of wheezing, 35 patients (35.3%) complained of sneezing/runny nose/blocked nose when not having a cold or flu and

17 patients (17.1%) complained of itchy rash, in the past 12 months. 26.3%, 33.3% and 20.2% complained of the respective symptoms ever with 34.6% and 30.3% claiming that wheezing and allergic rhinitis symptoms improved respectively after starting CPAP.

Conclusion: Symptoms related to atopic conditions are common in patients suffering from obstructive sleep apnoea. Awareness of this association may help respiratory physicians and sleep specialists to optimise treatment of such patients.

OP5.11

Bacterial flora and peritoneal dialysis related infections in Malta

Angela Borg Cauchi¹, Jesmar Buttigieg², Marilyn Rogers³, Mario Pio Vella², Joseph Farrugia Agius², Louis Buhagiar², Emanuel Farrugia²

¹Department of Medicine, Mater Dei Hospital, ²Department of Nephrology, Mater Dei Hospital, ³Department of Rheumatology, Mater Dei Hospital

Introduction: Peritoneal dialysis (PD) related infections are the most important complication of this renal replacement modality. However, national data on the spectrum of bacterial flora associated with PD infections is lacking.

Methods: In this retrospective study covering five years (2008 – 2012), all Maltese PD patients (both manual and automated) attending the Renal Unit Mater Dei Hospital were studied. PD related infections included both exit site infections and peritonitis. All the respective microbiological data was analysed and the spectrum of flora assessed.

Results: Study population included 137 patients, 37.96% female, 42.34% diabetic. Mean age was 62.77 ± 14.42 years. 18.98% never had a PD related infection. Overall culture negative infection rate was 14.60%, with the rate for 2012 decreasing to 11.94%. 58.06% of positive cultures were Gram positive bacteria (*Staphylococcus* at 41.88% (42.42% peritonitis), with 20.93% being *Staph. aureus*, 7.60% being *Methicillinresistant Staph. aureus* (25% peritonitis), 19.36% coagulase negative *Staphylococci* (60.61% peritonitis), *Streptococcus* at 8.59%, *Diphtheroids* 3.81%, *Enterococcus* 2.54%, *Peptostreptococcus* 0.63%. Gram negative cultures included *Pseudomonas aeruginosa* at 17.14% (24.07% peritonitis), *Escherichia coli* 6.35%, *Serratia* 4.13%, *Klebsiella* 2.86%, *Enterobacter* 1.27%, *Acinetobacter* 1.27%, *Moraxella* 0.95%, and *Morganella/Prevotella* 0.63%. Rarer Gram negatives included *Raoultella planticola* and *Brevundimonas diminuta*. Polymicrobial cultures were 4.17% (2009), 23.80% (2011), and 20.90% (2012). Overall fungal infection rate was 4.76%.

Conclusion: This was a first study on the frequency and spectrum of bacterial flora in PD related infections in Malta, with *Staphylococcal* infections being the most common. There was a trend towards polymicrobial cultures during the last two years.

OP5.12

Incidence of dialysis-requiring acute kidney injury in the Maltese islands

Ian Baldacchino¹, Sarah Bezzina¹, Garbiella Balzan¹, Daniel Debattista², Emanuel Farrugia²

¹Malta Foundation Programme, ²Department of Medicine, Mater Dei Hospital

Introduction: Acute kidney injury (AKI) is an increasingly common condition associated with high morbidity, mortality, and resource use. AKI is also associated with poor long-term outcomes, such as accelerated progression of chronic kidney disease, need for chronic dialysis, and higher mortality after hospital discharge. In a subset of patients,

AKI is severe enough to require renal replacement therapy ('dialysis-requiring AKI'). Robust information about temporal epidemiology of AKI requiring dialysis in Malta is lacking.

Methods: In this retrospective observational study covering the entire Maltese population, we identified all patients with a diagnosis of AKI requiring dialysis between 2009 and 2013. Manual records at the Renal Unit Mater Dei Hospital were carefully abstracted to construct a complete database of AKI patients, including their age, gender, cause of AKI, and survival and mortality data.

Results: The incidence increased from 61 cases (147 per million) in 2009 to 76 cases (180 per million) in 2012. Cases amounted to 70 (169 per million) and 42 (101 per million) in 2010 and 2011 respectively. A male gender preponderance over the study period (62%) was also evident. By comparison, the incidence in the UK for 2012-3 was recently reported to be 208.7 per million people, whereas in the US, 533 cases per million person-years was reported in 2009.

Conclusion: The incidence of dialysis-requiring AKI in Malta is steadily increasing, to the extent that it will shortly surpass the incidence of end stage renal disease requiring dialysis or transplant.

OP5.13

Haemodialysis adequacy at the renal unit

Maria Bugeja, Jesmar Buttigieg, Paul Glynn, Joseph Farrugia Agius, Mario Pio Vella, Louis Buhagiar, Emanuel Farrugia

Nephrology Division, Mater Dei Hospital

Introduction: Haemodialysis (HD) is associated with better outcomes in patients receiving maintenance HD. The HD dose should therefore be measured on a regular basis. The aim of this analysis is to measure the delivered dose of HD during January, March and June 2015 and assess adequacy. Comparison is made between patients with arteriovenous fistula (AVF) or graft (AVG) and those with central venous catheters (CVCs).

Methods: All patients undergoing HD during the above time-frame were included and their age, gender, filter type and vascular access were noted. Pre- and post-dialysis urea samples were collected using standardised methods. The urea reduction ratio (URR) and single pool Kt/V (spKt/V) were calculated for every dialysis session. According to international recommendations, adequate HD dose is defined as a URR of $\geq 65\%$ and/or spKt/V of ≥ 1.2 .

Results: A total of 142, 146 and 155 patients were undergoing HD in January, March and June respectively, out of which 21.8%, 10.2% and 8.3% were excluded because of incomplete data. The mean URR was 66.3 ± 9.3 in January, 68.6 ± 9.5 in March and 68.9 ± 10.8 in June, with a mean spKt/V of 1.31 ± 0.38 , 1.39 ± 0.38 and 1.44 ± 0.53 . HD adequacy was achieved in 55.3% (n=62) of patients in January, 65.6% (n=86) in March and 66.9% (n=95) in June. HD adequacy was significantly higher in patients with AVF/AVG when compared to CVCs (66.8% vs 44.6%) ($p < 0.0001$).

Conclusion: The majority of patients achieved the minimal adequate dose of HD in all three months. Regular auditing is suggested, targeting for higher HD dose (spKt/V ≥ 1.4) for every session.

OP5.14

Is surveillance of native arteriovenous fistulae required in the Maltese haemodialysis population?

Chris Gauci¹, Paul Bezzina², Kevin Cassar³

¹Department of Medical Imaging, Mater Dei Hospital, ²Faculty of Health Sciences, University of Malta, ³Department of Surgery, Faculty of Medicine and Surgery, University of Malta

Introduction: A native arteriovenous fistulae (AVF) is the optimal access for haemodialysis. Native fistulae are prone to stenosis and thrombosis and this is an important cause of access loss. Identification of asymptomatic stenoses and appropriate treatment may lead to a reduction in access failure. The aim of this study was to assess the feasibility of introducing a screening programme for patients undergoing haemodialysis through an autogenous arteriovenous (AV) fistula at the Renal Unit at Mater Dei Hospital.

Methods: Patients undergoing haemodialysis through a native AVF were recruited. Data was collected on patient demographics, type of AVF and previous interventions. All AVFs were scanned. The AVF was assessed for patency, stenosis and flow rates.

Results: 103 patients were eligible of whom 89 were recruited. 53 (59.5%) were male and 37 (41.6%) were diabetic. 61 (68.5%) had a brachiocephalic fistula, 25 (28.1%) a radiocephalic and 3 (3.4%) a transposed brachiocephalic fistula. The mean age of the AVF was 27 months (range 3-116 months). The mean flow rate was 1.59L/min. 13 (14.6%) of the AVFs assessed had a significant stenosis while another 19 (21.4%) had an insignificant stenosis. 57 (64%) showed no stenosis. 23.6% of stenoses were at the anastomotic site while the rest (12.4%) were in the venous segment.

Conclusion: A significant proportion of AVF have clinically undetected stenoses which may lead to failure. Despite the high proportion of diabetic patients the stenoses rates in the Maltese dialysis population is similar to that reported in other countries. A surveillance programme is justified.

OP5.15

Endovascular abdominal aortic aneurysm repair in Malta

Ian Said¹, Francesca Theuma, Adrian Mizzi², Kevin Cassar¹, Louise Reichmuth², Nathania Bonanno²

¹Department of Surgery, Mater Dei Hospital, ²Department of Medical Imaging, Mater Dei Hospital

Introduction: Endovascular repair of infrarenal abdominal aortic aneurysm (EVAR) has become the standard of care over the last decade. An EVAR programme was set up at Mater Dei Hospital in 2009. The aim of this study was to report on the main outcomes of EVAR in Malta.

Methods: All patients undergoing EVAR between 01/01/2009 and 31/12/2014 were included. Data on the size of abdominal aortic aneurysm, type of repair and outcomes including mortality, aneurysm related mortality, and other complications were recorded. Follow up included CT angiography and duplex ultrasonography.

Results: 50 patients underwent EVAR. 46 (92%) were male. Mean age was 78.4 years (range 57-92). All procedures were completed endovascularly, with no conversion to open. There was one death (2%) within 30 days, secondary to myocardial infarction. In 6 cases (12%) there was a type I endoleak that was successfully treated on table in 5, using either a moulding balloon or a neck/limb extension. One required a separate intervention to repair the type I endoleak. There were no reported aneurysm ruptures in this cohort over a mean follow up period of 45 months (range 6-78). 3 (6%) type II endoleaks were detected during follow up. There were

4 (8%) graft limb occlusions treated endovascularly(2) or open (2).

Conclusion: The successful deployment rate and the low mortality rate (2%) compares favourably with data reported in major trials. The EVAR programme in Malta has to date been successful in preventing ruptures in this cohort of patients.

OP5.16

Recurrent varicose veins following surgical treatment in the Maltese population

Daniela Cassar¹, Pierre Demicoli², Frances Zarb³, Kevin Cassar⁴

¹Vascular Laboratory, Mater Dei Hospital, ²Faculty of Health Sciences, University of Malta; ³Department of Medical Imaging, Mater Dei Hospital, ⁴Faculty of Health Sciences, University of Malta, ⁵Department of Surgery, Faculty of Medicine and Surgery, University of Malta

Introduction: Varicose veins are associated with the development of significant comorbidity such as venous ulceration. Treatment consumes a significant proportion of health budgets. Recurrences increase the financial burden on the health service and leads to additional interventions. Identifying the cause of recurrences is an important step in reducing the burden on patients and the health service. The aim of this study was to identify the types of recurrent varicose veins presenting to the vascular unit at Mater Dei Hospital.

Methods: Patients with a history of recurrent varicose veins presenting for the first time to the Vascular Unit between June and October 2014 were recruited. Data regarding the patients' past medical history, clinical severity of venous disease, and source and route of venous incompetence was collected through clinical and ultrasonographic examination.

Results: 53 limbs from 46 patients with recurrent varicose veins were included. Half the limbs (52.3%) had skin changes. In 92.3% surgery had been performed to the groin. The saphenofemoral junction was the most common source (69.8%), while the great saphenous vein was the most common route of incompetence (60.4%). A completely intact great saphenous vein was present in 30.2% of limbs while a residual great saphenous vein stump was present in 32.1% of limbs. Nonsaphenous incompetence was identified in 26.4% of limbs.

Conclusion: Technical errors, mainly inadequate ligation of the saphenofemoral junction and incomplete stripping of the great saphenous vein, were the dominant cause of recurrence. This highlights the importance of meticulous preoperative duplex ultrasound assessment coupled with correct technical execution of the intervention.

OP5.17

Preliminary results of radiofrequency vein ablation programme at Mater Dei Hospital

Ian Said, Kevin Cassar

Introduction: During the past decade, international practice guidelines for the management of varicose veins of the lower limb have recommended endovenous thermal ablation (radiofrequency or endovenous laser ablation) over open surgery as the first line treatment for varicose veins associated with truncal reflux. The aim of this review is to audit the introductory results of venous radiofrequency ablation (RFA) at Mater Dei Hospital.

Methods: Patients referred with symptomatic primary/recurrent varicose veins under the care of the vascular surgery team were evaluated with Duplex ultrasonography. Patients were deemed suitable for treatment with RFA if: evidence of truncal reflux; deep veins were patent and competent,

target vessel was not tortuous, less than 2mm in diameter and over 5mm below the skin. All patients underwent clinical examination and ultrasonography 6-10 weeks postoperatively to assess for: occurrence of DVT, success of target vein occlusion.

Results: In the period between February and July 2015, 71 patients underwent lower limb venous RFA with a total of 74 veins being treated. Male to female ratio was 1:3 (24% male vs 76% females). A total of 69 long saphenous veins, 4 short saphenous veins and 1 anterior accessory vein were treated. 95% of patients were treated with simultaneous phlebectomies. 21 of the above patients have till date undergone post-operative duplex ultrasound examination. 100% of treated veins were successfully occluded with resolution of truncal reflux. No cases of post-operative DVT (symptomatic/asymptomatic) occurred.

Conclusion: Early results of venous RFA at Mater Dei hospital are encouraging although more cases are needed to compare to international practices.

OP5.18

Survival after lung cancer surgery in Malta

Aaron Casha¹, Malcolm Buhagiar², Rachel Vella Critien³, Katia Muscat⁴, Liberato Camilleri⁵

¹Department of Cardiothoracic Surgery, Mater Dei Hospital; ²Department of Anatomy, University of Malta, ³Department of Oncology, Boffa Hospital, ⁴Department of Psychiatry, Mater Dei Hospital, ⁵Department of Medicine, Mater Dei Hospital, ⁶Department of Statistics and Operational Research, University of Malta

Introduction: The aim was to determine the operative rate for lung cancer in Malta and to measure survival after lung cancer surgery in Malta and to calculate the factors affecting survival.

Methods: Theatre registers were used to identify patients undergoing resection for lung cancer in Malta. These were collated with pathology reports and survival data from the hospital's patient archiving system. Kaplan-Meier plots and log rank testing were used to assess survival according to age, cancer subtype, gender, lymph node status and disease staging. A Cox regression analysis was also performed using these variables.

Results: Based on the annual lung cancer incidence of 149 patients in 2012, the resection rate was 8.95%. Kaplan-Meier plots showed survival post lung cancer surgery of 78% at 1 year, 69% at 3 years and 65% at 5 years, with survival maintained for a further 2 years. Log rank test showed that lymph node status, $p=0.001$, and disease staging were statistically significant predictors of survival, $p=0.001$. Cox regression analysis confirmed that staging was the most important predictor of outcome.

Conclusion: Post-op survival after lung cancer surgery in Malta is good, with a 65% 5-year survival. The resection rate of 8.95% is similar to that in UK. Further improvement will require investment and an effort to decrease the waiting time to surgery – in 2006 only 33% of operated patients received surgery within 2 months of initial referral, whilst the targets for lung cancer treatment in the UK are to decrease from 2 months to 4 weeks by 2020.

OP5.19

Personalized medicine: EGFR and ALK genotyping of lung adenocarcinomas in Malta

Jeanette Scerri¹, Maria Mifsud², Malcolm Buhagiar³, Dorianne Buttigieg⁴, Allison Cordina⁴, Catherine Grima⁴, Claude Magri³, Nick Refalo³, James DeGaetano⁴, Christian Scerri⁵

¹Department of Pathology, Mater Dei Hospital, ²Department of Oncology, Sir Anthony Mamo Hospital; Royal College of Physicians, UK, ³Department of Oncology, Sir Anthony Mamo Hospital, ⁴Department of Pathology, University of Malta, ⁵Department of Physiology and Biochemistry, University of Malta

Introduction: Testing for the generally mutually exclusive EGFR (epidermal growth factor receptor) gene mutations and ALK (anaplastic lymphoma kinase) gene rearrangements, which are related to the responsiveness of pulmonary adenocarcinomas to tyrosine kinase inhibitors (TKIs), has become important for therapeutic decisionmaking. The EGFR mutation screening service has been offered locally for the past three years. The aim of this study was to review the findings and correlate them to treatment outcomes.

Methods: Samples (n=60) consisted of histological and cytological specimens from both primary tumours and metastatic lesions consistent with pulmonary adenocarcinoma. DNA extraction from histological shavings or cytology slides was followed by the detection of somatic mutations in exons 18-21 of the *EGFR* gene using a highly sensitive realtime PCR kit. *ALK* gene rearrangement testing by fluorescence in situ hybridisation (FISH) was outsourced on request.

Results: *EGFR* mutations were found in 33.3% of specimens tested. Fifty percent (50%) of the mutant samples harboured deletions in exon 19 (16.7% of total samples). *ALK* fusions were found in 10% of specimens tested (n=20). Tumour genotyping informed oncologists on what targeted treatment to administer. Correlation of mutations with treatment outcomes will be discussed in detail.

Conclusion: *EGFR* mutations appear to be more prevalent in local specimens than reported elsewhere, possibly due to clinical selection of advanced stage adenocarcinomas. *EGFR* mutations in exons 18, 19 and 21 confer sensitivity to *EGFR* TKIs. Tumours harbouring *ALK* gene fusions respond to *ALK* TKIs. The use of such predictive tests for targeted cancer therapy is an important step forward in personalized medicine.

Disclosure: *EGFR* testing was provided through the Pathology Department, Mater Dei Hospital

OP5.20

Use of targeted therapies in advanced and metastatic non-small cell lung cancer - our local experience.

Donika Metaraku, Maria Mifsud, Stephen Brincat, James Mark Debono

Introduction: A significant proportion of lung cancer patients have targetable molecular characteristics, such as mutations (*EGFR*) and fusion genes (*ALK*). These molecular abnormalities, currently identified in adenocarcinoma subtype of NSCLC, are predictive of response to targeted therapy. Thus, laboratory testing for histological subtypes and molecular characteristics of the tumour are essential to identify the group of patients who will benefit most from these expensive targeted therapies.

Methods: A retrospective review of patients' data who received erlotinib treatment from 2010 up to date was performed. 102 eligible patients were identified from pharmacy dispensing list. Data on demographics, gender characteristics, histological subtypes, *EGFR*/*ALK* testing,

date of start of erlotinib and radiological response with CT scan assessments were collected.

Results: Adenocarcinoma subtype was identified by histopathology in 66 patients (65%), by cytology in 30 patients (29%). Two patients (2%) had squamous histology. Information on *EGFR*/*ALK* status was available only on 31 patients (30%) and mostly during the year 2013 and 2014. The majority of patients (nearly 98%) had received 1st line cisplatin based chemotherapy and erlotinib was given at time of progression or after completion of chemotherapy at availability of *EGFR* status. Radiological partial response was seen in 48 patients (47%), (29 females and 19 males), complete response in 5 female patients (5%). 31 (32%) patients had stable disease.

Conclusion: Targeted therapies in *EGFR*/*ALK* positive NSCLC are well established with high RRs and PFS. Therefore routine testing for appropriate cases, particularly in adenocarcinoma subtype is recommended to determine the best approach for these patients.

OP5.21

Modulating regulatory T cells for treatment of cancer

Oriana Mazzitelli¹, Mark Farrugia¹, Pierre Schembri Wismayer¹, Byron Baron², Analisse Cassar¹, Lucienne Gatt¹, Christian Saliba²

¹Department of Anatomy, Faculty of Medicine and Surgery, University of Malta, ²Centre for Molecular Medicine and Biobanking, Faculty of Medicine and Surgery, University of Malta

Introduction: A sub-population of cells called Regulatory T cells (Tregs) present a major obstacle to successful immunotherapeutic treatments to cancer. In fact, modern immune checkpoint modulator agents have been hailed as breakthroughs in cancer therapy. The tumour microenvironment can promote the expansion of Tregs, thus blocking effector cells. Tregs may however be plastic in nature and this study is looking into ways to modulate their phenotype.

Methods: Interferon (γ), lipopolysaccharides (LPS), tumour cell free DNA (cfDNA) and TexO[®] (a local patented extract from the prickly pear, *Opuntia ficus indica*) were tested on isolated Tregs, monitoring changes in FOXP3 mRNA (the master regulator gene of Tregs) using RTPCR. Although such results were suggestive, flow cytometry using cell surface markers is being used to replicate and extend this data. We can thus assess whether the reagents studies are reducing Tregs through cytotoxicity or by converting them into effector cell types. The effector T cells can then be assessed by lymphocyte cytotoxicity assays.

Results: RTPCR indicated that IFN γ and TexO[®] did not alter the FOXP3 expression in an isolated Treg population, however LPS caused an increase in FOXP3 expression, while tumour cell free DNA reduced it.

Conclusion: Preliminary studies have shown that Treg phenotypes may be modified. Therefore, the next step in this project will be attempting to convert Tregs into effector T cells inside the tumour microenvironment acting as "Trojan horses" and eradicating the tumour.

OP5.22

Androgens are involved in regulation of growth and differentiation in hepatocellular carcinoma cells in vitro

Francesca Agriesti¹, Tiziana Tataranni¹, Carmela Mazzoccoli¹, Vitalba Ruggieri¹, Rosella Scrima², Olga Cela², Giuliana Villani², Cristoforo Pomara², Nazzareno Capitanio², Claudia Piccoli³

¹Laboratory of PreClinical and Translational Research, IRCCS-

CROB, Referral Cancer Centre of Basilicata, Rionero in Vulture (Pz); ²Department of Clinical and Experimental Medicine, University of Foggia, Foggia; ³Laboratory of PreClinical and Translational Research, IRCCSCROB, Referral Cancer Centre of Basilicata, Rionero in Vulture (Pz); Department of Clinical and Experimental Medicine, University of Foggia

Introduction: Sexual hormones, estrogens and androgens, determine biological response in a tissue and gender-specific manner and have a pivotal role in endocrine-mediated tumorigenesis. Androgen signalling, mediated by the androgen receptor, is critical factor influencing growth of normal and malignant cancer cells. Hepatocellular carcinoma (HCC) may be modulated by both estrogens and androgens hormones during its initiation, progression and metastasis. The purpose of this study was to investigate the role of androgens in regulating proliferation and differentiation of HCC.

Methods: To achieve this aim, the human hepatocellular carcinoma cell line HepG2 was treated with Nandrolone Vetrinal, a synthetic androgen ligand, for 72 hs and its viability and proliferation was assessed by MTS and cell cycle analysis, respectively. The expression of protein involved in cell cycle regulation and differentiation markers were analysed by Western blot. Endogenous respiration was measured by high performance oxymetry.

Results: Nandrolone treatment determined cell growth inhibition which is associated with a reduction in the cell number in the S phase and concomitant increase in the G2 cell number. Androgens inhibited human liver cancer cell proliferation by repressing expression of cyclin D1 and increasing the expression of the cyclin dependent kinase inhibitors p21Waf1/Cip1, leading to cell cycle arrest in the G2 phase. This effect involved stimulation of AKT signalling (which increases p21Waf1/Cip1) via inhibitory phosphorylation of GSK3 β , suggesting the potential involvement of GSK3 β inactivation in senescence and p21 up-regulation in cellular differentiation. Moreover Nandrolone affected metabolism of hepatoma cancer cell through a significant reduction of mitochondrial respiratory activity.

Conclusion: The antiproliferative effects exerted by androgens in HCC cell line can promote cellular differentiation resulting in senescence-associated growth suppression. Hence Nandrolone could be used as differentiation agent in treatment of hepatocellular carcinoma.

OP5.23

Survival data on acute myeloid leukemia in Mater Dei Hospital

Asterios Giotas, Mark Grech, David James Camilleri, Alex Gatt

Department of Pathology (Haematology), Mater Dei Hospital

Introduction: Acute myeloid leukemia (AML) is the commonest acute leukemia in Malta, however there is limited data regarding the demographics and outcomes of treatment. We aimed to assess the overall survival (OS) of patients with AML and evaluate the impact of several variables such as white blood cell count (WBC), age, bone marrow blast count and cytogenetics.

Methods: A retrospective study was performed on all adults diagnosed with de novo AML from January 2008 to December 2014. Descriptive statistics and survival functions were performed on the study population.

Results: 72 patients were identified and included in this study. 54.2% were male and 62.5% were older than 60 years of age at diagnosis. The median age at diagnosis was 62 years. One third of patients presented with a WBC of more than $30 \times 10^9/L$. 54% of patients had failed (12.5%) or unavailable cytogenetics (41.7%). Favourable cytogenetics were present

in 9.7%, intermediate in 26% and adverse in 9.7% of the study population. Cumulative overall survival at 5 years was calculated as 41% and 5 year disease free survival was 37%. Age had a statistically significant impact on OS ($p=0.001$ Log Rank) with a 5 year OS of 67% in patients <60 years and 25% in patients aged >60. There was no statistically significant difference in OS associated with different cytogenetic risk groups, WBC and bone marrow blast count.

Conclusion: The overall survival of patients with AML in Malta is similar to OS reported in studies performed in most European countries with age having a significant impact.

OP5.24

Does dose intensity of chemotherapeutic agents have any effect on survival or relapse in patients with high grade Bcell lymphoma?

Melanie Cutajar¹, Thomas Borg Barthet², David James Camilleri¹, Alexander Gatt¹

¹Department of Haemato-Oncology, Mater Dei Hospital; Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ²Faculty of Medicine and Surgery, University of Malta

Introduction: Chemotherapeutic regimens should be given at their optimal dose and schedule, which may sometimes be disrupted due to a multitude of factors and ultimately lead to lower drug dose intensity. We analyzed whether the latter has any effect on survival or relapse.

Methods: 66 patients who presented with a diagnosis of diffuse large B-cell lymphoma (DLBCL) and Grade3 Follicular Lymphoma diagnosed between January 2010 and April 2015 and who received at least 2 cycles of RCHOP chemotherapy were analyzed. The actual total dose (ATD) for each chemotherapeutic agent, namely doxorubicin, cyclophosphamide and vincristine was calculated individually by summing the total dose given (in milligrams) and dividing it by time in weeks. This was then compared with the planned total dose (PTD) as specified by protocols/guidelines infused to get a ratio (RTD). Lead-time between diagnosis and treatment was also recorded to establish a baseline and whether a delay in treatment would result in a worst overall survival or outcome.

Results: There was no statistical significance between average days from histology-report issue to treatment for patients under 70years (average 26.34 days) compared to patients over 70 (average 23.74days) ($P=0.56$). No correlation between the individual RTD for each of the three drugs and survival was found. 5 year disease free survival for patients under 70 years was 67.8% and 48.8% for over 70.

Conclusion: Overall there was no correlation between survival and delay in starting therapy ($P>0.05$). Neither time from diagnosis to start of therapy nor treatment adjustments seem to affect disease free survival in our cohort.

OP5.25

Gentamicin prescription at Mater Dei Hospital: are guidelines followed?

Anthony Pio Dimech¹, Francesca Spiteri¹, Peter Zarb², Michael Angelo Borg²

¹Malta Foundation Programme, ²Infection Control Unit

Introduction: Gentamicin has a narrow therapeutic index with potential ototoxicity and nephrotoxicity. Serum levels are often unpredictable and monitoring of treatment is necessary to ensure effective therapeutic levels with minimal toxicity.

Methods: Data was collected over three months from most wards at Mater Dei Hospital (MDH), Excluding the Intensive Care Unit, neonatal and paediatric wards.

Recording of the following criteria prior to gentamicin dosing was assessed: patient actual body weight, use of actual body weight or ideal body weight, patient height, ENT review and creatinine levels prior to administration. The time at which post-serum gentamicin levels were taken and whether or not the nomogram was correctly used for dose adjustment were noted.

Results: Sixty-four patients were included, 52% males ($n=33$) and 48% ($n=31$) females. Pre-treatment ENT review was missing in 100% of patients. Height was recorded in 15.6% ($\pm 8.9\%$ at 95% confidence level) of patients. 29.6% were over 76 years of age and 4.7% were over 85 years. 6.25% ($n=4$) were prescribed gentamicin in spite of exclusion criteria. Body weight (BW) was missing in 46.8% ($n=30$). In the rest, actual body weight was used in 91.28% ($n=31$) and ideal body weight in 8.82% ($n=3$). Serum levels were appropriately taken in 31.25% of patients and 18.75% were dosed according to the Greater Glasgow and Clyde nomogram. Renal profile was correctly repeated in 78% ($n=50$).

Conclusion: Gentamicin treatment at MDH is inadequately managed and monitoring is haphazard. A recent guideline was issued and this would require re-audit to identify any improvements in the practice.

OP5.26

Safety and tolerability of omalizumab in Malta

Caroline Gouder, Rachelle Asciak, Stephen Montefort

Department of Medicine, Mater Dei Hospital

Introduction: Omalizumab is a recombinant monoclonal anti-IgE antibody used in severe IgE-mediated asthma. It is considered to be welltolerated with an acceptable sideeffect profile. the aim of this study was to analyse the safety and tolerability of Omalizumab in severe IgEmediated asthma in Malta in patients using Omalizumab over the past 4 years.

Methods: All adult patients who were started on omalizumab for severe persistent allergic asthma since 2012 in addition to their asthmarelated medication and consented for participation were included in this ongoing study. The patients were reviewed regularly and side effects documented. Treatment effectiveness was assessed at 16 weeks, and then at yearly intervals.

Results: Our cohort included 37 patients (mean age 51 ± 11 , 59% males, mean IgE level 391 ± 378 IU/mL). Sixteen patients (43.2%) developed at least one side effect. Seven patients (18.9%) developed 2 or more side effects. The vast majority of side effects developed and subsided within the first 16 weeks. Side effects reported included: headache-27%, injection site reactions-8%, nausea-8%, lethargy-5%, myalgias-5%, arthralgias-5%, fever-3%, vomiting-3%, weight gain-3%, nasopharyngitis-3%. Omalizumab was stopped in 3 patients due to treatment ineffectiveness and in 2 patients due to intolerable side effects, namely arthralgias and myalgias. Side effects were not related to the dosing frequency but were related to the higher doses received.

Conclusion: Omalizumab has an acceptable safety profile and has been well tolerated, having a response rate of 86%. Further evaluation of our cohort will provide us with safety and tolerability in the longer term.

OP5.27

Investigation into the genetic and functional relevance of the association of rs12477314 with pulmonary function

Godwin M Grech¹, Godfrey Grech², Roger Ellul Micallef¹, Ian Hall³, Anthony G Fenech¹

¹Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta, ²Department of Pathology, Faculty of Medicine and Surgery, University of Malta, ³Division of Therapeutics and Molecular Medicine, Queen's Medical Centre, University of Nottingham

Introduction: Recent Genome-Wide Association Study (GWAS) metaanalyses have identified a number of significant association signals for pulmonary function, one of which maps to a locus (rs12477314) in an intergenic region on 2q37.3 flanked by two oppositely transcribed genes – HDAC4 and Twist2, and a lincRNA (FLJ43879). Aim: The aim of this study is to investigate the genetic and functional relevance of the association of single nucleotide polymorphism (SNP) rs12477314 with pulmonary function.

Methods: 3'Rapid amplification of cDNA ends (RACE) was performed on HDAC4 and Twist2 expressed from a number of cell types. The potential involvement of mentioned genes in reduced pulmonary function was assessed by investigating the effect of inflammatory mediators on gene expression in A549 cells, using quantitative polymerase chain reaction (qPCR). To gain further insights into the mechanisms underlying the GWAS signal, linkage disequilibrium, expression and methylation quantitative trait loci, and histone methylation signatures were investigated using publicly available sources.

Results: 3'RACE did not reveal any variants for which the 3'UTR extended to rs12477314 proximity. Treatment of A549 cells with lipopolysaccharide resulted in upregulation of HDAC4 expression. Bioinformatic searches revealed that the intergenic region is enriched for DNA/histone methylation markers suggesting active enhancer regions. We will follow up this work with deletion of selected regions showing enhancer potential using CRISPR/Cas9 system followed by RNAseq, in order to investigate genome regulation in mentioned intergenic region.

Conclusion: This study provides preliminary evidence suggesting that epigenetic regulation at region tagged by rs12477314 may underlie the observed association seen with pulmonary function.

OP5.28

Pharmacogenetic aspects of thiopurine methyltransferase in Maltese individuals

Sarah Tarhuni¹, Pierre Ellul², John Schembri², Godfrey Grech³, Anthony G Fenech¹

¹Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta, ²Mater Dei Hospital, ³Department of Pathology, Faculty of Medicine and Surgery, University of Malta

Introduction: Thiopurine methyltransferase (TPMT) is an important enzyme for the metabolism of thiopurine drugs, and pharmacogenetic variability has been associated with serious adverse effects in treated patients. There is currently no information on TPMT gene variants in the Maltese population. The aims of this project were to (i) identify the frequencies of the clinically relevant alleles *2, *3B and *3C and (ii) screen the TPMT gene promoter for novel variants.

Methods: DNA was obtained from patients suffering from Crohn's disease, and from anonymous random samples maintained at the Malta Biobank. Genotyping and promoter screening were carried out using PCRRFLP, tetraprimer ARMSPCR and Sanger sequencing. Assays were designed and optimized accordingly. Where necessary, bioinformatic tools

were used for assay design and analysis of results.

Results: We identified the following allelic frequencies: TPMT*2: 0% (n=390), TPMT*3B: 1.3% (n=390), TPMT*3C: 1.1% (n=380). Promoter sequencing (n=126 chromosomes) revealed 3 SNPs (4567T>A, 4621T>A, 4793A>T) and homozygous or heterozygous deletions of 17 or 34bp occurring between positions 49895023 (38.0%, n=126)(NCBI Accession NG_012137.2). We also identified a hypervariable region terminating approximately 40bp upstream of the transcriptional start site (TSS) having multiple heterozygous SNPs that could not be electronically deconvoluted to indel variants.

Conclusion: TPMT pharmacogene allelic frequencies are comparable to international reported values. The identified promoter variability could potentially confer important transcriptional regulatory influences, especially due to its TSS proximity. Further molecular and clinical studies are required to investigate this.

OP5.29

The validation of a guideline algorithm for the antibiotic treatment of infected lower limb wounds or ulcers

Claudine Farrugia¹, Michael A Borg², Janet Mifsud¹

¹Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta,

²Infection Control Unit, Mater Dei Hospital

Introduction: Lower limb and foot ulcers are a common complication. Presence of infection requires pharmacological management. In such cases, antibiotic guidelines are used. In fact the Antibiotic Team at Mater Dei Hospital (MDH), have created an algorithm for lower limb wound infections and ulcers. The aim of this study was to assess and validate this algorithm.

Methods: Eighty patients selected from MDH Surgical Out Patients, MDH Tissue Viability Clinic, and St Vincent De Paul Residence for the elderly (SVPR). Primarily, demographic data of the patient was collected. Moreover, a wound swab for culture and sensitivity was taken from the wound pre-cleaning and post-cleaning twice with saline as advised by the antibiotic team using the Levine technique. The Bates Jensen Wound Assessment Tool (BJWAT) was then filled up by the researcher, and antibiotics were administered according to the algorithm. Patients were then assessed during two more visits.

Results: Analysis of the results indicate that the algorithm created by the MDH antibiotic team was validated, as results indicate that all parameters of the BJWAT obtained a $p < 0.001$. Furthermore, $p = 0.01$ was obtained when compliance was assessed. Severity was found to be significant with a $p = 0.05$, whilst risk was not significant with $p = 0.446$.

Conclusion: Hence it can be concluded that the algorithm is validated. This study will benefit patients, and also to stakeholders, in reducing the unnecessary use antibiotics, which increase antibiotic resistance and also reduces medical costs and hospital stays.

OP5.30

Pharmacoepidemiology of epilepsy in a paediatric neurology clinic

AnneMarie Scerri¹, Doriette Soler², Neville Calleja³, Patricia Vella Bonanno⁴, Janet Mifsud¹

¹Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta, ²Department of Paediatrics, Faculty of Medicine and Surgery, University of Malta, ³Department of Public Health, Faculty of Medicine and Surgery, University of Malta, ⁴Office of the Superintendent of Public Health

Introduction: The WHO's report on 'Priority Medicines for Europe and the World' includes children among 'special groups' whose needs must be prioritised. This study investigated whether local practice in the management of paediatric epilepsy followed principles of rational prescribing and whether Maltese children with epilepsy had access to the best available care.

Methods: The clinical records of 76 children with a diagnosis of epilepsy were reviewed. Schedule V records were reviewed to determine how many children in Malta were receiving free antiepileptic drug therapy. Data was input into a spreadsheet and analysed.

Results: The lowest prevalence of children with epilepsy in this group was in Gozo while the highest was in the South Harbour district. Older AEDs were the most commonly used – especially valproate (40.8%). Lamotrigine was the most commonly prescribed newer AED (19.7%). The most commonly prescribed AED combination was of valproate with lamotrigine. 48.7% of children were receiving AEDs as monotherapy. 35.5% were in remission and off AED therapy on the 31st December 2013.

Conclusion: Maltese children with epilepsy are treated using similar treatment protocols as in other countries. The geographic distribution of the condition and results of this study present opportunities for improving treatment, engagement and targeting interventions. There is a high need to educate the public about the importance of treatment, facilitate access to care and minimise the stigma associated with epilepsy. Clinical guidelines applicable to primary and secondary care scenarios can also be designed using this data.

Disclosure: This study was carried out in partial fulfilment of the requirements for a Masters Degree in Pharmacology/Clinical Pharmacology and supported by the Malta Enterprise, through the 'Get Qualified' Scheme.

OP5.31

The Belief about Medicines Questionnaire (BMQ) in the Maltese language

Ingrid Gatt¹, Neville Calleja², Charles Briffa³, Robert Horne⁴, Maria Cordina¹

¹Department of Clinical Pharmacology and Therapeutics, Faculty of Medicine and Surgery, University of Malta, ²Department of Health Information and Research, Ministry of Health, the Elderly and Community Care; University of Malta, ³Department of Terminology and Interpreting Studies, University of Malta, ⁴School of Pharmacy, University College London

Introduction: Having a better understanding of people's beliefs about medicines is important to identify the determinants which guide a person's careseeking behaviour and selfcare measures. The Belief about Medicines Questionnaire (BMQ), is a validated instrument assessing medication beliefs in general (BMQ General: harm and overuse subscales) and in specific conditions (BMQ Specific: concerns and necessity subscales) The principle aim of this study was to produce a culturally and contextually appropriate version of the BMQ in the Maltese language and to assess its psychometric properties.

Methods: The BMQ was translated and back translated

using standard methodology with the translation being based on the principles of the Skopos Theory. A total of four hundred chronically ill patients (100 each having a confirmed diagnosis of asthma, diabetes, depression and cardiovascular disease) were recruited through the outpatient clinics at Mater Dei Hospital. The Maltese version of the BMQ was administered to those patients who agreed to participate. The psychometric properties of the Maltese version of the BMQ were evaluated in terms of internal consistency, reliability and validity of scale structure.

Results: Psychometric evaluation of the BMQ revealed satisfactory results for internal consistency (Cronbach's α 0.48-0.73) and reliability ($p < 0.01$ and $p < 0.05$), with principal component analysis confirming its original four factor structure. The psychometric properties of the BMQ in Maltese are in line with those of similar studies.

Conclusion: The Maltese version of the BMQ displayed acceptable psychometric properties making it a suitable instrument to measure patients' beliefs about medicines in the Maltese language.

OP5.32

Red cell transfusion: is one better than two?

Denise Borg Aquilina, Dorianne Attard, Alicia Dimech, Nathan Mark Edwards, Gabriel Galea, Daphne Gatt, Rosanne Scerri, Stefan Laspina

Introduction: Patient Blood Management (PBM) is "a multidisciplinary, evidence based approach to optimising the care of patients who might need blood transfusion" (www.transfusionguidelines.org.uk, 2014). One recommendation is to transfuse one red cell unit (RCU) to non bleeding patients and reassess requirement for further transfusion.

Aim: To determine number of RCU transfused per episode in nonbleeding patients in Mater Dei Hospital (MDH).

Methods: 1051 RC transfusion episodes were requested between June and August 2013 of which 878 episodes were traced. 664 episodes could be analysed (omitting episodes not resulting in transfusion, paediatric patients, patients with documented bleeding and episodes with inadequate documentation).

Results: 61.3% of episodes were transfused two RCU (range: 46.15% cardiothoracic surgery to 90% renal). One RCU was transfused in 8.43% of episodes (range: 0% renal, oncology, obstetrics and gynaecology to 27.59% Cardiothoracic surgery). This figure was supported by another recent survey by the PaBloE (Patient Blood Management in Europe) group, which found that 62% of MDH clinicians opt to transfuse two RCU prior to reassessment for further transfusion (highest rate between 6 hospitals taking part in this survey followed by 33% Karolinska Institute, Sweden and Radboud University, Netherlands). Conversely, MDH reported the lowest rate of physicians opting for one RCU to be transfused prior to reassessment (MDH 29%; highest 90% Frankfurt University Hospital) (personal communication, PaBloE group, 2015).

Conclusion: Transfusion of two RCU before patient re-assessment is widespread within MDH. Transfusion of one RCU to non-bleeding patients with re-assessment after each unit reduces patient exposure to components and decreases need for donor availability and financial issues.

OP5.33

A closed cycle audit of coagulation screen requests of patients admitted to the Emergency Department at Mater Dei Hospital

Alicia Dimech, Nathan Mark Edwards

Mater Dei Hospital

Introduction: Routine coagulation testing is widely practiced in the assessment of bleeding risk despite numerous studies identifying a poor predictive value of performing this test in emergency settings. This audit evaluated the appropriateness of coagulation screens requested from the A&E Department at Mater Dei Hospital Malta.

Methods: Retrospective analysis of 300 coagulation screen requests from the A&E Department over a one-month period was performed. Indications for a coagulation screen as proposed by the Royal College of Pathologists 2007 were used as a standard, and included: personal history of bleeding disorder, acute bleed/underlying coagulopathy, patient on anticoagulant therapy, history of liver disease presenting with bleeding/requiring surgery, obstructive jaundice, severe sepsis, paracetamol OD. A reaudit was then carried out following the introduction of poster guidelines of the indications for taking a coagulation screen, which were presented to all A&E staff and displayed in the department. Data collected included: appropriateness of coagulation screen requests based on the above indications, the number of coagulation screen tests requested 3 months pre and post the introduction of the poster guidelines.

Results: The number of appropriate coagulation screen requests increased from 36% to 85% from pre to post intervention, respectively. The number of coagulation screen requests over a 3-month period was reduced by 2124 post intervention when compared to the 3 months prior to the intervention. This corresponds to a saving of 14379 euros.

Conclusion: This audit highlights how simple interventions can improve clinical practice from both a patient and economical perspective.

OP5.34

Launching and running "SA Learn" - a safety alerting system for learning at Mater dei Hospital

Miriam Dalmas, Lilian Azzopardi, Emma Manduca,

Dustin Balzan, Corinne Ward, Carmel Abela

PaSQIT Patient Safety and Quality Improvement Team, Mater Dei Hospital

Introduction: It is estimated that 8 to 12% of patients admitted to hospitals suffer from healthcare related adverse events. WHO and EC recommendations promote the use of "Reporting for Learning systems" to capture such adverse events. The Patient Safety and Quality Improvement Team (PaSQIT) was tasked by hospital management to develop such a system, in order to improve patient safety at Mater Dei Hospital.

Methods: A PaSQIT working group was set up. After a literature review, the system was drafted and presented in four standard operating procedure documents covering the various aspects of the system, namely, "Generating Safety Alerts", "Collection, Archiving and Classification", "Investigation" and "Implementation and Dissemination of Learning". After a consultation period, the system was launched in April 2015.

Results: From April 2015 to August 2015, 70 safety alerts were received, 20 safety alerts graded as SAM1 (high risk), 22 were classified as SAM 2 (intermediate risk) and 28 were classified as SAM 3 (low risk). Root cause analysis and clinical reviews were used to investigate the serious alerts,

while the others were grouped for aggregate analysis. The results of the first few months of SA Learn will be presented including lessons learnt and improvement projects initiated.

Conclusion: In the first few months since its inception, SA Learn has been shown to be a useful and well accepted tool for the improvement of patient safety at Mater Dei Hospital. It is hoped that more doctors and healthcare professionals participate in this process of organizational learning from individual adverse events and near misses.

OP5.35

Prophylactic use of antibiotics in inguinal hernia repair

Samuel Anthony Galea, Charles Cini

Introduction: Inguinal hernia repair is considered a clean operation. The routine use of prosthetic material was previously an indication for regular antibiotic usage, in an attempt to minimise surgical site/mesh infection. Data advocating antibiotic use remains controversial.

Methods: A prospective audit was performed, collecting data about patients who underwent laparoscopic or open inguinal hernia repair during the period January-March 2014. Risk factors for infections and the use of prosthetic material were noted. The type antibiotics and the duration of use were recorded. Practices in antibiotics use were compared to the 'Guidelines for the proper use of antimicrobials for surgical prophylaxis', Mater Dei Hospital Infection control policy, Revised June 2013.

Results: A 100 patients were recruited, all of which had a synthetic mesh repair. Data regarding body mass index showed that 11% of patients were obese and 37% were overweight. 9% of the patients were diabetics. 91% of the patients had antibiotics given at induction of which co-amoxiclav was the most popular (75.3%), followed by flucloxacillin (28.5%) and ciprofloxacin (9%) for those with penicillin allergies. 3% of the patient who had antibiotics at induction had a course of antibiotics on discharge.

Conclusion: If guidelines are strictly adhered to and antibiotics are given to the obese and/or diabetic population only, then a total of 21% had optimal use of antibiotics. There is much space for improvement in the way antibiotics are administered. Better knowledge of guidelines should be sought as this decreases the costs and the possibility of development of antimicrobial resistance.

OP5.36

Appendicitis in the paediatric population: outcomes at Mater Dei Hospital

Ramona Camilleri, Colin Mizzi, John Cauchi

Department of Paediatric Surgery, Mater Dei Hospital

Introduction: The diagnosis of appendicitis in children can be challenging. A negative appendectomy rate (NAR) of 8.3% in paediatric surgical units contrasts with that of 13.4% in general surgical units. The objective of this study was to determine the outcome of appendicectomies performed in the paediatric population at MDH.

Methods: Patients aged 0-16 who had an appendicectomy performed between January 2011-July 2015 were enrolled in this study. Patients were stratified into four groups as follows; A:0-6 years, B:7-10 years and C:11-13 years, D:14-16 years. Patient demographics, pre-operative investigations and histology result post-operatively were collected.

Results: 392 patients (median age 12 years, mean age 11.5 years), were enrolled in this study. Group A had 43 patients (11%), Group B 98 patients (25%), Group C 103 patients (26%) and Group D 149 patients (38%). 179 were females (45.7%). On admission, 39.6% had a raised white

cell count and 68.7% had an ultrasound performed. Of these, 47% of patients who had an ultrasound performed, had signs of appendicitis on imaging. Positive histology was obtained in 75.8% of specimens submitted, 17.45% of which, were complicated appendicitis. Overall NAR was 24.2%. Patients subjected to a period of active observation had a NAR of 9.2%.

Conclusion: Diagnosis of appendicitis remains a clinical decision which in some cases can be challenging. This study reveals an overall high NAR which may be related to a short period of active observation.

OP5.37

Bariatric surgery in Malta a taste of our results

Stephen Micallef Eynaud¹, Franklin Abela², Julian Delicata², Benedict Axisa¹

¹Department of Surgery, Mater Dei Hospital, ²Mater Dei Hospital

Introduction: Bariatric Surgery was introduced to Malta in March 2014. We audited our initial cohort of patients who underwent either a laparoscopic gastric sleeve or gastric bypass operation, using an SF 36 patient satisfaction form and bariatric measurements.

Methods: Data was collected prospectively during the first 14 months of our bariatric service. Patients' initial weight, body mass index, excess weight and target weight loss was calculated. Operation type and peri-operative complications were recorded. Patient satisfaction was gauged using an SF 36 form and post-operative weight loss was recorded.

Results: 13 patients were included in this audit. 12 were female. All were Caucasian and Maltese. Age ranged from 22 to 62 years and the BMI ranged from 41 to 58 years. Weight ranged from 103 to 164 kg at the time of operation. 8 patients underwent a gastric bypass and 5 had a gastric sleeve. All were done laparoscopically. Three type 2 diabetic patients showed remission of their disease while a quarter of hypertensive patients showed improvement, reflecting the metabolic nature of these operations. There was 100% satisfaction upon SF 36 assessment.

Conclusion: On the basis of our initial data, bariatric surgery appears to have had a beneficial effect on our pilot population. There seems to be a role in expanding this service in our department.

OP6.01

Psychotic experiences in adolescents: Causes and consequences

Stanley Zammit

Psychiatric Epidemiology at Cardiff University and the University

Schizophrenia is a severe psychiatric disorder that imposes a substantial burden on sufferers, their families and society, and is one of the leading causes of disability worldwide. Despite increasing evidence of biological abnormalities associated with this disorder, the efficacy of current treatments remains limited, as do interventions for prevention of transition to disorder in high-risk samples.

Studies that capture individuals earlier within trajectories towards disorder allow the greatest opportunity to understand the mechanisms underlying the development of psychotic disorders such as schizophrenia. I will describe some of the work that we and others have conducted that has focused on the development of psychotic experiences within population-based samples in an attempt to understand more about the aetiology of psychotic phenomena and transition to clinical disorder over time, and discuss their potential to help identify modifiable targets for intervention.

OP6.02

Trends and patient characteristics of suicides in Malta

Elena Marie Felice¹, Ethel Felice², Marie Therese Camilleri Podesta³, Dolores Gauci⁴, Kathleen England⁴, Neville Calleja⁴, Lydia Grixti⁵, Charlene Bondin⁵, Sephora Santucci⁵

¹Richmond Foundation, ²Department of Psychiatry, Mount Carmel Hospital, ³Department of Anatomy, Faculty of Medicine and Surgery, University of Malta, ⁴Directorate for Health Information and Research, ⁵Medical School, University of Malta

Introduction: Though suicide is a very complex multi-causal event, a history of major psychiatric disorders as well as other psychosocial and personality factors are known to play a role. The aim of this study was to identify trends in suicides in Malta as well as conditions and precipitating factors contributing to suicide locally.

Methods: Number of deaths due to suicide by age group, gender and year of death were extracted from the National Mortality Register from 1995-2014 ($N=462$). More detailed analysis was conducted on a subset of suicides (2002-2013, $N=293$), by reviewing psychiatric notes at Mount Carmel Hospital as well as reviewing autopsy reports. Trends in suicide rates were analysed using Poisson regression.

Results: There has been a significant increase in suicide rate in all males ($p=0.007$) as well as those between 45-64 years ($p=0.004$) over the past 20 years. No significant increase was found in females. At least 50% of the subset studied had been in contact with the mental health services sometime in the life. Conditions and factors leading to suicide included mental ill health, physical illness and marital/relationship problems amongst others. At least one fifth of persons with mental ill health who had committed suicide had a documented previous suicide attempt.

Conclusion: Though suicide rates in Malta are lower than the European average there is however a rising trend. High risk groups include middle aged men, people with mental health problems and persons with previous suicide attempts amongst others.

Disclosure: This study is being carried out in collaboration with Richmond Foundation.

OP6.03

A case control and follow up study of 'Hard to Reach' young people who also suffered from multiple complex mental disorders

Nigel Camilleri¹, Dorothy Newbury Birch², Paul McArdle³, Deborah Stocken⁴

¹Mount Carmel Hospital; University of Newcastle, ²Teeside University, ³Northumberland Tyne and Wear NHS Foundation Trust, ⁴University of Newcastle

Introduction: IP was a new multidisciplinary team based within an inner city, walk-in health centre, North East England (throughout 2011).

Methods: To describe the mental disorders and social function of the Hard to Reach Young People (HTRYP) from the InnovationsProject (IP) and compare to a matched sample from a Community Mental Health Team (CMHT) Phase 1 and 2: Retrospective review of clinical case notes of YP who attended the IP and CMHT. Phase 3: 24months follow up evaluation of the mental state and social function, using Health of the Nation Outcome Scales for Child and Adolescent Mental Health (HoNOSCA) and Children's Global Assessment Scale (CGAS).

Results: 36 referrals accepted by the IP, 31 met criteria for HTRYP, 15 were offered individually tailored therapy. IP group experienced more deprivation compared to the CMHT matched sample ($n=115$). At baseline the HTRYP had more

mental disorders, higher severity scores and lower levels of social function (HTRYP HoNOSCA mean: 19.1 and CMHT mean: 11.2 $p<0.001$, and HTRYP CGAS mean: 51.0, CMHT mean: 58.9, $p=0.05$). The HTRYP made significantly greater improvement compared to CMHTYP; (HoNOSCA $p<0.001$ and CGAS $p<0.002$). 13 HTRYP attended the follow up review at 24 months compared with 9 of CMHTYP. There was great variability in terms of social function between the YP within each sample.

Conclusion: The term 'HTR' describes a state which the YP may be at a particular point in their lives. A service which utilises a developmental theoretical framework, offers regular reviews and an individualised care plan, could reduce longer term morbidity and mortality suffered by HTRYP.

Disclosure: The Innovations Project was funded by the Strategic Health Authority. MD funded by the Malta Government Scholarship Scheme. NIHR portfolio study

OP6.04

Mental health problems in medical students at the University of Malta. A longitudinal study

David Cassar¹, Mary Anne Lauri², Josef Lauri³

¹Department of Psychiatry, Faculty of Medicine and Surgery, University of Malta, ²University of Malta, ³Department of Mathematics, Faculty of Science, University of Malta

Introduction: Mental health problems amongst university students are known to be a cause not only of suffering but also of decreased academic performance and premature termination of studies. Universities abroad have seen an increasing prevalence of mental health problems. Medical students are identified in the academic literature as being at greater risk by nature of the stress of their course, competitive aspects and their inherent perfectionist and driving personalities.

Methods: A longitudinal study over four years, using robust screening questionnaires has explored depression, anxiety and suicidal thoughts, alcohol and drug problems and eating disorders. Study specific questions have also explored bullying, help seeking behaviour and effects on academic performance. The same cohort of students were followed up throughout their course.

Results: Initial results identify clinical anxiety and depression in 67%, 19% with hopelessness, thoughts of suicide in 9%, eating problems in 25%, possible alcohol problems in 31%, possible drug problems in 7%, bullying in more than 11%, seeking help in 7.4% and subjectively decreased academic performance in 35%.

Conclusion: The identified morbidity has prominent implications for the medical course, its methods, its structures, the support provided and future service development. These will be discussed.

Disclosure: University of Malta research grant.

OP6.05

A snapshot of child and adolescent inpatient psychiatric services in Malta: uptake and implications for future services

Anton Grech¹, Sally Jane Axiak²

¹Department of Psychiatry, Mount Carmel Hospital; Fondazzjoni Kenn għal Sahhtek; Department of Psychiatry, University of Malta; BCMHRCambridge University, ²Department of Psychiatry, Mount Carmel Hospital

Introduction: This retrospective study is a national snapshot of inpatient child and adolescent services over a five year period. It identified socio-demographic characteristics, psychiatric diagnoses and treatment and service contact and uptake.

Results: Between 2010 and 2014 there were 212 admissions to inpatient services. 57% of these were boys and 43% were girls. 70% of the sample were Maltese nationals. There was a steady increase of admissions over the period, with 31 inpatients in 2010 rising to 52 in 2014. 25% of these were readmissions. The largest age group was 15 to 18 years accounting for 58% of admissions. 11.3% were admitted under a Care Order and 23% had previous contact with other professionals prior to admission. 9% were referred on to adult services upon reaching 18. Conduct disorder was the primary diagnosis on discharge in 21% of cases and also accounted for the most bed nights.

Conclusion: This study was the first undertaking which attempted to chart the characteristics children and adolescents with co-morbid disorders in Malta. Although lacking generalisability to a wider audience it is an important first step in using researched evidence as a tool for future service policy and planning. Whilst the findings have shown that young people with co-morbid disorders in Malta share many similarities in characteristics with similar children and adolescents in other countries, this study has also revealed that there is a clear and pressing need to develop research systems and conduct more detailed enquiries.

OP6.o6

pH and steroid orthoester hydrolysis

Nicolette Sammut Bartolo, Theresa Hörnemann, Victor Ferrito, Janis Vella, Anthony Serracino Inglott

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: Orthoesters have an important role in organic synthesis and are used for various purposes. One of the main uses of orthoesters is as a protective group due to the ease with which they are hydrolysed to the parent compound using acid catalysis. However orthoesters can also be partially hydrolysed to add an ester group to a molecule. This study assessed the effect of pH on the partial hydrolysis of steroid orthoester.

Methods: The steroid orthoester was dissolved in methanol and hydrolysed using an acetic acid/sodium acetate buffer at a pH of 5. The reaction was then refluxed at 62°C. The same procedure was then repeated using oxalic acid at a pH of 1.4 instead of the acetic acid/sodium acetate buffer. The reaction using oxalic acid was conducted at 45°C ±5°C. Samples were then analysed using thin layer chromatography and high performance liquid chromatography.

Results: When sodium acetate buffer was used to catalyse the partial hydrolysis of the steroid orthoester the reaction was not successful. When oxalic acid was used as the acid catalyst, two products were obtained.

Conclusion: It was observed that when a weak acid (pH 5) was used to catalyse the reaction, hydrolysis of the steroid orthoester was not achieved. While when a stronger acid (pH 1.4) was used the reaction was successful. This indicates that the pH of the acidic medium used for the hydrolysis of orthoesters has an important effect on the outcome of the reaction.

OP6.o7

Development of a greener selective acylation method for steroids

Darren Cioffi, Anthony Serracino Inglott, Nicolette Sammut Bartolo, Victor Ferrito, Janis Vella, Lilian M Azzopardi

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta,

Introduction: Solvents used in the synthesis of active pharmaceutical ingredients are mostly toxic to the

environment. This study aims to synthesise a 17 α ,21 die-ster steroid using a greener method.

Methods: Selective acylation of the primary hydroxyl group at C21, in the presence of a secondary group at C11, of a 17 α monoester steroid was performed. The steroid was dissolved in ethyl acetate and reacted with acetic anhydride in the presence of tri-methylsilyl tri-fluoromethanesulfonate at 05°C followed by the removal of solvent using rotary evaporation. Samples were taken to monitor the reaction using thin layer chromatography (TLC) and high performance liquid chromatography (HPLC).

Results: In TLC chromatograms the compound with a retention factor (Rf) of 0.13, present in the starting material was no longer visible after adding the catalyst, showing that this compound was immediately used up. HPLC chromatograms showed that one of the peaks present in each of the reaction samples matched with the retention time (5.32 minutes) of the reference standard of the compound of interest. This indicates that the desired product might have been synthesised. As the reaction progressed, the concentration of the product decreased, while that of the impurity increased with the highest product yield estimated to be 49.59%.

Conclusion: A greener solvent, ethyl acetate, was used instead of dichloromethane. The reduction in the yield of the product may be attributed to the formation of the triester due to acylation of the secondary alcohol group in the starting material. The reaction should be stopped within 5 minutes when the highest yield is obtained.

OP6.o8

Waste management in pharmaceutical processes

Shirley Tabone, Anthony Serracino Inglott, Lilian Azzopardi

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: In 2011, 6,500 tonnes of waste including pharmaceutical waste, were incinerated at the Marsa Treatment Facility. No solvents were managed in the non-hazardous public landfills. Currently, in Malta, there are no facilities which cater for the recovery and disposal of pharmaceutical wastes such as solvent waste. Solvents are sent abroad where they are incinerated or recovered into the pure state. The aims of this study are to determine the current local scenario with respect to pharmaceutical waste processes, which options are available to dispose of or recycle solvents and whether it is feasible and cost-effective to set up a solvent recovery plant locally.

Methods: Structured and unstructured interviews were conducted with different stake holders in order to assess the local scenario. A cost-benefit analysis was carried out by indentifying the costs of equipment, electricity, labour and premises incurred to implement a local waste recovery system.

Results: Some methods used for the processing of solvent waste abroad include: waste solvent incineration and solvent distillation, for example, vacuum distillation and fractional distillation. Since different types and amount of solvent waste is generated by pharmaceutical industries in Malta, vacuum distillation would be the most appropriate method for the recovery of solvents. Locally, the most suitable solvent recovery plant is the ECOpure SR180V which works by vacuum distillation.

Conclusion: The cost-benefit analysis demonstrated that it is not feasible to build a solvent recovery plant in Malta. It is more costeffective to upgrade the local incinerator for the disposal of solvent waste.

OP6.09

Factors affecting the concentration of ciprofloxacin in ischaemic tissue

Janis Vella¹, Maria Vella¹, Kevin Cassar², Lilian M Azzopardi¹, Anthony Serracino Inglo¹, Godfrey LaFerla¹

¹University of Malta, ²Mater Dei Hospital

Introduction: The efficacy of an antibiotic is often determined by how well it penetrates the tissue of interest. Ciprofloxacin is a fluoroquinolone antibiotic with excellent tissue penetration which is often given prophylactically or therapeutically to patients suffering from diabetic foot infections during debridement or amputation procedures related to these infections. The aim of this study was to determine which factors influence the concentration of ciprofloxacin in infected tissue of patients suffering from diabetic foot infections and peripheral arterial disease (PAD).

Methods: Blood and tissue samples were collected from patients who were admitted to Mater Dei Hospital for a debridement or amputation procedure over a 6 month period. Concentrations of ciprofloxacin in blood and tissue were determined using previously validated chromatographic methods and results were correlated to patient data and history.

Results: Blood and tissue samples were collected from 50 patients (33 male, 17 female; age 28-92 years). Forty-nine patients suffered from diabetes mainly type 2 diabetes ($n=35$). There was a significant positive correlation between the concentration of ciprofloxacin in the ischaemic tissue and the degree of PAD ($p=0.00$). A significant negative correlation was found between the concentration of ciprofloxacin and the number of different medications that these patients were taking ($p=0.05$).

Conclusion: PAD severity has an influence on the amount of ciprofloxacin reaching ischaemic tissue. Patients taking a greater number of medications to treat different comorbidities had a lower amount of ciprofloxacin reaching the infected area.

Disclosure: We declare that the work is original, has not been published before and is not currently being considered for publication elsewhere. We wish to confirm that there are no known conflicts of interest that are associated with this publication and there has been no significant financial support for this work.

OP6.10

Design and optimisation of novel structures for the management of Alzheimer's disease

Neil John Bugeja, Claire Shoemake

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: Literature indicates an association between Alzheimer's disease and the M1 muscarinic receptor. Specifically, it is known that abnormal tau phosphorylation causes hippocampal plaque formation which prevents entry of endogenous acetylcholine into the cognate M1 receptor ligand binding pocket (LBP), consequently impairing neuronal conductivity. This project aimed to use the antimuscarinic high-affinity antagonist tiotropium to design novel modulators of the M1 receptor.

Methods: To date, Xray crystallographic evidence describes exclusively the M3 isoform. A homology model was consequently created and tested for robustness using USCF Chimera. Tiotropium was extracted from the M3 LBP, docked into its M1 counterpart and conformational analysis performed. The optimal conformer was selected as a scaffold for the creation of a seed structure onto which novel molecules were introduced computationally using the Grow algorithm in

LigBuilder.

Results: This process resulted in 200 molecules, classified into 12 chemical families. These were evaluated for Lipinski rule compliance, which reduced the molecular cohort to 124 in 11 chemical families. This was further analysed according to pharmacophoric structure and affinity. The highest-ranking structures in each family were proposed for optimisation and in vivo validation.

Conclusion: This study is valuable in proposing a homology model for the M1 receptor and for delineation of a pharmacophoric space in which novel molecular high-affinity Lipinski rule-compliant growth was computationally sustained.

OP6.11

Optimisation of novel selective cyclooxygenase2 inhibitors using resveratrol analogues as lead molecules

Clarissa Caruana, Claire Shoemake

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: Cyclooxygenase (COX)2 catalyses the synthesis of prostaglandins which contribute to inflammation and cancer. Studies show that COX2 selective inhibitors have antitumour effects. However, their longterm use is limited by the risk of cardiovascular complications. COX2 is consequently a viable target for the design of inhibitors with an improved safety profile. This study considered resveratrol analogues which are selective COX2 inhibitors, namely 3,3',4',5 tetrahydroxystilbene and 3,3',4',5,5' hexahydroxystilbene, as lead molecules for the design of novel COX2 inhibitors.

Methods: Xray crystallographic deposition 3LN1, describing the bound coordinates of the celecoxib: COX2 complex, was selected from the Protein Data Bank. Celecoxib was extracted from the Ligand Binding Pocket (LBP) and its Ligand Binding Affinity (LBA) was calculated. 3,3',4',5 tetrahydroxystilbene and 3,3',4',5,5' hexahydroxystilbene were constructed and docked into the COX2 LBP. The 20 highest affinity conformers were generated, and LBA and Ligand Binding Energy (LBE) were calculated for each conformer. Graphs of LBA and LBE were plotted and the best conformers were identified. These conformers were edited to create seed structures with appropriately designated growing sites. Molecular growth was sustained and novel molecules were generated.

Results: 10% of the molecules derived from the seed of 3,3',4',5 tetrahydroxystilbene and 10% of those derived from the seed of 3,3',4',5,5' hexahydroxystilbene were Lipinski Rules compliant. The LBAs (pKd) of these molecules ranged from 9.71 to 10.00, higher than that of celecoxib (7.40).

Conclusion: This study identified novel molecules which have high LBA for COX2, and oral bioavailability. These are suitable for inclusion into libraries of molecules which inhibit COX2 in order to be used in high-throughput screening.

OP6.12

Design of novel nonsteroidal structures capable of antagonism of the oestrogen related receptor alpha for the management of breast cancer

Keith Muscat, Claire Shoemake

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta

Introduction: Oestrogen related receptor alpha (ERRα) maintains the growth of breast cancer cells by simulating oestrogen receptor function and vital cancer cell

metabolic processes. This makes ERR α a viable drug target specifically for ERnegative breast cancer management. The experimental steroidal molecule SR16388 is a high affinity inverse ERR α agonist and was used as a template for the in silico design of novel ERR α modulators. The aim was to eliminate the steroidal nucleus and associated adverse effects.

Methods: Protein Data Bank (PDB) X-ray crystallographic deposition 2PJL describing the bound coordinates of the inverse agonist cyclohexylmethyl(1ptolyl 1Hindol3ylmethyl)-amine:ERR α complex was modelled in SYBYLX[®]v1.1 and the components separated. SR16388 was docked into the ERR α Ligand Binding Pocket (LBP) and conformational analysis was performed and the optimal scaffold for further modelling was identified. Structure Activity Relationship studies (SARs) guided the formation of seed structures onto which novel structures were computationally attached using the genetic algorithm embedded into the GROW module of LigBuilder[®]v1.2.

Results: A total of 310 molecules were generated ($n=67, 84$, and 159 from seeds $1, 2$ and 3 respectively). These were segregated into pharmacophorically similar families and ranked according to physicochemical properties and Lipinski Rule compliance.

Conclusion: The study was successful in the design of nonsteroidal ERR α high affinity structures that were also Lipinski Rule compliant. These were identified for optimisation and in vitro validation with a view to proposing lower side effect profile molecules suitable for long term use.

OP6.13

Audit of heart failure treatment in patients with an ejection fraction less than 50% on echocardiography

Amy Christine Chircop, Maria Bonnici, Alice Moore, Herbert Felice, Andrew Cassar

Mater Dei Hospital

Introduction: Ischaemic heart disease and heart failure (HF) account for 46.7% of all deaths in the Maltese islands. 3 classes of drugs are vital in the management of HF with left ventricular systolic dysfunction: angiotensin converting enzyme inhibitors (ACEI), beta-blockers, and mineralocorticoid receptor antagonists (MRAs). The aim of this audit is to verify whether patients diagnosed with HF are reaching the stipulated target doses according to guidelines, and to identify factors that influence HF treatment.

Methods: 150 patients who performed an ECHO in Mater Dei Hospital between May and August 2013, found to have an ejection fraction (EF) less than 50% were selected. Patients were contacted telephonically and asked about current treatment and doses.

Results: From 150 patients, 89 participated. Difference in EF between participants and non-participants, including deceased, was statistically significant ($p=0.04$). 73% were on ACEI/ARB, 26% and 17% reaching target doses respectively. 49% were on beta-blockers, with 16% reaching target dose for carvedilol. Factors which positively influence appropriate ACEI/ARB treatment include cardiology follow-up (75% vs. 69%; $p=0.08$) and decreasing age (67.5% vs. 72%; $p=0.048$). There was no significant difference in gender and EF. There was trend towards positive influence for appropriate beta-blockers treatment with decreasing EF ($p=0.06$) and cardiology follow-up ($p=0.08$)

Conclusion: A significant number of patients are not on recommended HF medications and doses; especially the elderly, those with borderline/low EF, and those without cardiology followup. An educational campaign targeting general physicians should be instituted to ensure evidence-

based management of all patients with a reduced left ventricular ejection fraction.

OP6.14

Predictors of outcome following myocardial perfusion scan

Caroline Jane Magri¹, Dillon Minto², Ramona Camilleri², Malcolm Minto², Julian Cassar², Robert George Xuereb³, Stephen Fava⁴, Joseph Galea⁵

¹Department of Cardiology, Mater Dei Hospital; Medical School, University of Malta, ²Department of Medicine, Mater Dei Hospital,

³Department of Cardiology, Mater Dei Hospital, ⁴Department of Medicine, Mater Dei Hospital; Medical School, University of Malta,

⁵Department of Cardiac Services, Mater Dei Hospital; Medical School, University of Malta

Introduction: We sought to determine predictors of outcome following myocardial perfusion (MIBI) scanning, mainly myocardial ischaemia, myocardial necrosis, occurrence of coronary artery disease on coronary angiogram and 3 year mortality.

Methods: A sample of 479 patients who underwent MIBI during 2011 were investigated. Age, gender, full blood count, estimated glomerular filtration rate (eGFR), fasting blood glucose, liver and lipid profiles were evaluated. The presence of myocardial ischaemia, necrosis, positive coronary angiogram and 3-year mortality were noted. Data were analysed using IBM SPSS Statistics 23.0. Univariate followed by multivariate analyses were performed to assess for predictors of the above-mentioned outcomes.

Results: Twenty-three percent of patients exhibited ischaemia on MIBI. In univariate analysis, only higher RDW (red blood cell distribution width) showed a trend towards being higher in ischaemia ($p=0.063$). Myocardial necrosis was present in 34 patients; in multivariate analysis, only male gender was an independent predictor (OR 10.75; 95% CI 2.52-45.66; $p<0.001$). Thirty-six patients had a positive coronary angiogram; in multivariate analysis, male gender (OR 2.59; 95% CI 1.15-5.85; $p=0.022$) and eGFR (OR 0.98; 95% CI 0.960.99; $p=0.005$) were independent predictors. At 3 years, 11 patients had died. Multivariate analysis revealed that eGFR was the sole predictor of mortality (OR 0.96; 95% CI 0.93-0.98; $p<0.001$).

Conclusion: In the study population, male gender was a predictor of myocardial necrosis and positive coronary angiogram while eGFR was a predictor of positive coronary angiogram and 3-year mortality. The results in the whole population of 1380 patients will be presented.

OP6.15

Uptake of unhealthy habits among Maltese grownup congenital heart disease patients

Maryanne Caruana¹, Victor Grech²

¹Department of Cardiology, Mater Dei Hospital, ²Department of Paediatrics, Medical School University of Malta; Mater Dei Hospital

Introduction: Most patients with congenital heart disease are followed up into adulthood. Follow-up became more structured from the early 1990s (individuals born after ~1976). We investigated differences in uptake of unhealthy habits by grown-up congenital heart disease (GUCH) patients (aged ≥ 16 years) when compared to the general Maltese population.

Methods: A specifically designed questionnaire modelled on 2008 European Health Interview Survey (EHIS) was given to consecutive GUCH outpatients between June 2013 and June 2014. Data on smoking, alcohol consumption and substance misuse was compared with that from 372 age and sex-matched EHIS 2008 responders (general cohort)

provided by the Department of Health Information and Research. Analysis was carried out using contingency tables.

Results: There were 125 GUCH responders (65 males; mean age 30.64 ± 12.80 years). There were significantly less smokers in the GUCH cohort (GUCH 18.4% vs general 32.0%, $p=0.004$), but no significant difference in alcohol consumption or substance misuse was noted. Analysis by age (born before vs after 1976) and sex revealed that the difference in smoking was only statistically significant for patients born after 1976 ($p=0.011$) and for females ($p=0.013$). Male GUCH patients showed a statistically significantly higher frequency of alcohol consumption when compared to general male counterparts ($p=0.02$).

Conclusion: Smoking is less prevalent among younger and female Maltese GUCH patients when compared to matched general population counterparts. Conversely, male GUCH patients drink alcohol more often than the general male population. More regular advice at clinical encounters might reduce uptake of these unhealthy habits.

OP6.16

Outcomes of transcatheter aortic valve implantation in Malta

Andrew Cassar¹, Elton Pllaha¹, Alexander Manche², Albert Fenech¹, Robert George Xuereb¹

¹Department of Cardiology, Mater Dei Hospital, ²Cardiac Services Department, Mater Dei Hospital

Introduction: Transcatheter Aortic Valve Implantation (TAVI) in patients turned down for surgical aortic valve replacement (sAVR) has been shown to offer significant prognostic and symptomatic benefit over conservative management in the PARTNER B trial. TAVI has been introduced in Malta for the treatment of severe symptomatic aortic stenosis. The aim of this registry is to monitor outcomes and complication rates of TAVI locally.

Methods: A prospective registry of patients undergoing TAVI in Malta has been kept since the programme started. Data regarding demographics, baseline characteristics, clinical history, reason for being turned down for AVR, procedure outcome and long term cardiovascular outcomes has been collected.

Results: Seventy-one patients (67.6% males) underwent TAVI between June 2010 and August 2015. The mean age was 76 ± 8.16 years. An Edwards Sapien (ES) valve was used in 51 cases, while a CoreValve (CV) was used in 20 cases. The percutaneous trans-femoral route was used in 48 patients, while a femoral route using surgical cutdown was used in 4 patients. Nineteen patients underwent a surgical approach, 12 transapical and 7 using the direct aortic approach. The 30 day, 1 year, and 3 year mortality was 1.4%, 10% and 18.5% respectively. Peri-procedural stroke rate was 5.6%. Permanent pacemaker implantation rate was 10.9% and 41.2% when using the ES and CV devices respectively. 14.6% of percutaneous trans-femoral cases needed surgical intervention for vascular complications.

Conclusion: The outcomes from the TAVI programme in Malta has had excellent results comparable to international registries.

OP6.17

Haematological parameters in a trial of Perceval and Mitroflow aortic valve implantation

Aaron R Casha¹, Stephanie Santucci², Liberato Camilleri³, Kentaro Yamagata⁴, Joseph Galea², Alexander Manché²

¹Department of Cardiothoracic Surgery, Mater Dei Hospital; ²Department of Anatomy, Faculty of Medicine and Surgery, University of Malta, ³Department of Cardiothoracic Surgery, Mater Dei Hospital, ⁴Department of Statistics and Operations Research, Faculty of Science, University of Malta, ⁵Department of Cardiology, Mater Dei Hospital

Introduction: The Perceval tissue valve is a sutureless aortic valve that allows for fast implantation, reducing the morbidity of myocardial ischaemia. The Perceval valve uses similar valve leaflet treatment as the Mitroflow valve. We compared the haematological parameters in the first 20 patients receiving the Perceval valve with a propensity-matched control series of patients receiving Mitroflow valves.

Methods: Data was collected and completed at the point of discharge from hospital. Parameters included age, gender, length of stay, risk stratification scores, mortality and complication data, pre-operative stroke volume and ejection fraction, bypass and cross-clamp time, and pre-operative to post-operative day 7 blood test results. These were compared with the control series, matched for Euroscore.

Results: Results showed a statistically significant drop in platelet counts from day 0 to 6 t test $p=0.038$, post-operative white cell counts $p=0.034$, and red cell distribution width (RDW) $p=0.001$ in the Perceval group as compared to the Mitroflow group. There was no difference in post-op haemoglobin levels. Logistic regression showed several predictors including cross-clamp time $p<0.01$, bypass time $p<0.01$, day 3 red cell distribution width $p=0.02$, and day 4 platelet count $p=0.03$.

Conclusion: The sutureless Perceval valve has the potential of shortening surgical time as compared to sutured valves. The low platelet counts in the initial post-operative period in the Perceval patients requires aspirin to be withheld initially. The drop may be due to platelet consumption onto the bare metal struts and may be mitigated by the introduction of a drug-eluting coating similar to the latest generation stents.

OP6.18

Longterm survival after aortic valve replacement: a twenty year relative survival study

Alexander Manche¹, Liberato Camilleri², Dorothy Gauci³

¹Department of Cardiothoracic Surgery, Mater Dei Hospital, ²Department of Statistics and Operations Research, Faculty of Science, University of Malta, ³Directorate for Health Information and Research, Department of Health

Introduction: This 20 year relative survival study investigates life expectancy in defined age cohorts and evaluates the role of patient, procedural and peri-operative variables on absolute survival after aortic valve replacement.

Methods: Absolute long-term survival variance was calculated using Cox regression analysis in 585 consecutive aortic valve replacement patients. Relative survival curves in defined age groups were constructed using age and gender-matched controls.

Results: There were 12 perioperative deaths (2.1%), and 11 further deaths (1.9%) during the first year. 154 patients (26.3%) died subsequently and 408 patients (69.7%) were alive after 20 years. Relative survival increased with age: in patients over 68 survival was equivalent to an age and gender matched population. Patient risk indicators for decreased absolute survival included age, Parsonnet score, additive and logistic

EuroSCORE, and for increased absolute survival included weight, body surface area, and stroke volume. Procedural risk indicators for decreased absolute survival included bypass time, use of a tissue valve, and prosthesis/patient mismatch with size 19 valves, and for an increased absolute survival included use of a mechanical valve. Postoperative risk indicators for decreased absolute survival included ITU stay, ventilation time, transfusion, haemorrhage volume and new-onset atrial fibrillation/flutter. Strong risk indicators included intra-aortic balloon pump use, and dialysis.

Conclusion: Patients over 68 years discharged from hospital after aortic valve replacement had a similar 10-year survival as an age and gender-matched population. In this age cohort surgery restored the patient's normal life expectancy.

OP6.19

Galectin3 levels in aortic stenosis patients

Andrew Cassar¹, Daniela Cassar Demarco², Graziella Zahra³, Stephen Fava⁴, Joseph Galea⁵

¹Cardiology Department, Mater Dei Hospital; Medical School, University of Malta, ²Department of Cardiology, Mater Dei Hospital, ³Molecular Diagnostics Unit, Pathology Department, Mater Dei Hospital, ⁴Department of Medicine, Mater Dei Hospital; Medical School, University of Malta, ⁵Department of Cardiac Services, Mater Dei Hospital; Medical School, University of Malta

Introduction: Aortic stenosis (AS) patients with increased myocardial fibrosis have a worse long-term outcome when undergoing aortic valve replacement (AVR). Galectin3 is a member of a family of β -galactoside-binding proteins that modulates cell to extracellular matrix interaction. Galectin3 level in the blood was shown to be a strong and independent predictor of heart failure hospitalisation and mortality in heart failure patients. The aim of this study is to look for a correlation between AS severity and blood galectin3 levels.

Methods: 69 AS patients together with 15 controls (7 with no AS, 8 with AVR or TAVI) were recruited for this study. All patients had an Echocardiogram, Galectin 3 and NTpro-BNP blood levels.

Results: Mean Galectin3 levels were 13.43ng/ml, 8.26ng/ml and 10.88ng/ml in AS patients, normal controls, and AVR controls respectively. There was a significant difference in Galectin3 levels between AS cases and normal controls ($p=0.01$), but no statistical difference between cases and AVR controls or between normal and AVR controls. No significant correlation between Galectin3 or NTproBNP levels and severity of AS. However, a reversed U-shaped curve was noted. There was a positive correlation between Galectin3 and NTproBNP levels ($p=0.004$).

Conclusion: This study did not show a correlation between Galectin3 levels and the severity of AS. However, this might be due to selection bias, as patients with severe AS and high Galectin3 levels might have undergone AVR or passed away.

Disclosure: Government PhD MGSS scholarship; University of Malta teaching resource funds.

OP6.20

ePortfolio for postgraduate medical training: the Malta experience

Raymond Galea, Fabio Bajada, Emanuel Gatt

Malta Postgraduate Medical Training Centre, Mater Dei Hospital

Introduction: The ePortfolio is a dynamic, educational tool that records and facilitates the management of clinical and personal development through reflective learning. It exhibits the trainees' efforts, progress and achievements in one or more areas thus improving medical postgraduate training by enhancing the learning experience of our trainees and trainers.

Methods: Several foreign training institutions have their own training ePortfolio and in most countries this is speciality specific. The Malta Postgraduate Medical Training Centre (MPMTC) also felt such a need locally. A European Social Fund application was submitted and funding to create a local ePortfolio for all the medical specialities was awarded in October 2012. The software was developed over the last 30 months and was officially launched on the 24th April 2015.

Results: One hundred and fifty three (43.7%) trainees and 102 trainers have registered on the system in the first four months. After 3 months using the ePortfolio a 26-point satisfaction questionnaire is circulated electronically to the trainees. This shall be repeated after 6 months and after a year so as to gauge user satisfaction and so the MPMTC will be in a better situation to develop further the ePortfolio.

Conclusion: The local ePortfolio has been very well adopted by the various medical specialities, auguring well for the future. The overall satisfaction of the trainees who are already using it has been very positive (93% of respondents) expressing their satisfaction with the system. It is also helping to improve further the training programmes of the various specialities.

Disclosure: This project was cofunded by the European Union Social Fund (ESF).

OP6.21

Psychometric properties of the UMKCSOM Climate of Professionalism instrument

David M Mangion

Pilgrim Hospital, United Lincolnshire Hospitals Trust

Introduction: The learning of professionalism, primarily those moral and humanistic elements that underpin trust between doctor and society, often occurs within the 'hidden' curriculum. Since the learning environment critically influences professional behaviour of learners and faculty, assessment of the learning environment for professionalism is warranted. The UMKCSOM Climate of Professionalism instrument (UMKCSOM) offers a global measure of the climate of professionalism. This gives a measure of the perception of the frequency of professional behaviour (PB) and the teaching of professionalism (ToP) using a 4-point Likert type scale. To be useful, the UMKCSOM must be reliable and valid. This study describes its psychometric properties.

Methods: The UMKCSOM was completed by 37 trainers (response rate 35.2%) and 64 trainees (response rate 53%). Reliability was assessed by Cronbach's α . Construct validity was assessed by Factor analysis. The level of significance was taken as $p=0.05$.

Results: Cronbach's α was good for the PB subscale alone (0.85), the ToP subscale alone (0.92) and both subscales combined (0.89). Principal Component Analyses gave a 4-factor model explaining 64.78% of the total variance. Factor 1 corresponded primarily with role modelling and teacher qualities, Factor 2 with explicit teaching of professionalism, Factor 3 with demonstration of good professional behaviour and factor 4 with demonstration of inadequate professional behaviour. Factors 1 and 2 accounted for most of the variance.

Conclusion: The UMKCSOM distinguishes between professional behaviour and teaching of professionalism. Psychometric properties are adequate to allow for its use for assessment of the climate of professionalism.

OP6.22

Peer teaching in anatomy: does it really work? A cross-sectional, retrospective survey

Andee Agius¹, Neville Calleja², Christian Zammit¹, Richard Pullicino³, Christian Camenzuli⁴, Roberta Sultana⁵, Jean Calleja Agius¹, Cristoforo Pomara¹

¹Department of Anatomy, Faculty of Medicine and Surgery, University of Malta, ²Directorate of Health Information and Research, ³Department of Medical Imaging, Mater Dei Hospital, ⁴Department of Surgery, Faculty of Medicine and Surgery, University of Malta, ⁵Department of Occupational Therapy, St. Vincent de Paul Residence

Introduction: During the last decade there was a raised global interest regarding the multiple benefits at different levels of formal peer teaching. This study aimed to explore the perceptions of first year medical students towards learning anatomy (using cadaveric specimens) through peer teaching.

Methods: A descriptive, cross-sectional, retrospective survey was carried out. Data was collected using an online questionnaire which was administered to all medical students who were in their second year of the Medicine and Surgery course and who had participated in sessions taught by their peers during their first year.

Results: 'Peer teaching' was reported to be one of the most effective methods of learning anatomy by more than half of the participants. Analysis of mean responses revealed that 'the peer teachers created a positive, nonintimidating learning environment'. Overall, participants gave positive feedback on their peer teachers. Seven categories emerged from the responses given by participants to why they would or would not recommend peer teaching. Ways of improvement as suggested by the respondents are also reported. Variables found to be significantly associated with the extent of learning through peer teaching included; gender, age, educational level and recommendations for peer teaching.

Conclusion: Peer teaching provides a sound platform for teaching and learning anatomy. This study brings to light the merits and demerits of peer teaching as viewed through the eyes of the peer learners. We hope that this study will encourage further discussions at higher levels in order to explore the feasibility of introducing formal peer teaching in the Maltese medical curricula.

OP6.23

The impact of the annual August trainee changeover on cardiac surgical outcomes in a single UK institution

Edward Joseph Caruana, Samer Nashef

Cardiothoracic Surgery, Papworth Hospital NHS Foundation Trust

Introduction: It has been previously demonstrated that the month of August is associated with adverse patient outcomes, commonly attributed to trainee changeover and novice doctors. We sought to reevaluate this phenomenon at a UK-based specialist cardiac surgical centre with a focus on long-term outcome.

Methods: Prospectively collected data was obtained for all patients who underwent cardiac surgery at our institution between January and December 2013. Student t-test and Pearson's Chisquared test were used for statistical analyses.

Results: 165 patients (8.5% of the annual cardiac surgery workload) had operations in August. There was no difference in logistic EuroSCORE between August and the other months collectively (9.1 ± 11.4 vs 9.8 ± 12.4 , $p=0.496$). Pre-operative (2.1 ± 3.7 vs 2.5 ± 4.6 , $p=0.353$) and post-operative (10.2 ± 6.0 vs 10.4 ± 8.0) lengths of hospital stay were similar in both groups. Hospital mortality was higher in August (4.8 vs 2.0%, $p=0.019$). The difference at 90 days (6.1 vs 4.1%, $p=0.236$)

and at one year (9.1 vs 6.5%, $p=0.199$) was not statistically significant.

Conclusion: Inhospital mortality is higher for operations in the month of August.

OP6.24

Cardiac surgical training is safe for patients

Edward Joseph Caruana, Samer Nashef

Cardiothoracic Surgery, Papworth Hospital NHS Foundation Trust, Cambridge

Introduction: We sought to evaluate the post-operative results of patients operated upon by trainees as the primary surgeon, at a single cardiac surgical centre in the United Kingdom.

Methods: Prospectively collected data were obtained for all patients who had cardiac surgery at our institution between January and December 2013. Patients operated by trainees were identified, and compared with propensity-matched control patients operated by consultant surgeons. Student's t-test and Pearson's Chisquared test were used for statistical analyses.

Results: During the study period, trainees performed, under direct consultant supervision, 482 surgical procedures of which 135 (28.0%) were urgent or emergent. There was no difference between trainee-led and consultant-led cases in logistic EuroSCORE (7.96 ± 9.44 vs 7.72 ± 9.52 , $p=0.691$), operative time (227.1 ± 64.8 vs 222.5 ± 68.9 minutes, $p=0.284$), bypass time (95.1 ± 42.9 vs 89.7 ± 45.1 minutes, $p=0.055$), and aortic cross-clamp time (60.6 ± 28.7 vs 57.0 ± 32.8 minutes, $p=0.072$); hospital mortality (1.2 vs 2.3%, $p=0.221$) and 90-day mortality (2.5 vs 3.7%, $p=0.266$) mortality. Those patients operated on by trainees had a slightly shorter length of stay (9.2 ± 5.2 vs 10.7 ± 9.4 days, $p=0.0023$).

Conclusion: There is no demonstrable increase in operative times, morbidity or mortality associated with trainee-led cardiac surgical procedures performed under appropriate consultant supervision.

OP6.25

Evaluation of a teaching programme in an acute medical unit

Jonathan P Mamo

Snowdon Neuro Rehabilitation Unit, Western Community Hospital, Millbrook, Southampton

Introduction: Workbased education including learning and teaching are considered to be vital aspects of ongoing medical education. Acute medical units (AMUs) are busy departments where the opportunities for learning are substantial.

Methods: This cross-sectional survey evaluates the current state of postgraduate teaching in a busy Acute Medical Unit in a District General Hospital in the East of England. An electronic questionnaire was sent to all doctors who had worked in the department over the previous two year period. Descriptive statistical data analysis was performed on the obtained responses.

Results: There were 29 respondents representing a final response rate of 63%. The majority of respondents (75.9%) led at least one session with most agreeing that the opportunity had positively impacted on their teaching and presentation skills. The majority of respondents (85.7%) also agreed that the sessions were effective and translated adequately to their medical practice. Most respondents (89.7%) stated that the topics discussed were relevant to the daily practice of the unit with 65.5% indicating that their clinical decision making had been enhanced by the teaching on that subject.

Conclusion: In the future, it is hoped that newer evidence-based strategies for teaching will enhance the learning experiences in the Acute Medical Unit's educational programme by improving on an already positively received format. This survey demonstrates the overall positive impact that this training programme has after just two years of existence and it has been met by positive and constructive responses further indicating the need for such a teaching programme in the department.

OP6.26

Beware email invitations to submit a paper!

Justine Bugeja, Victor Grech

Introduction: Publishing is important for career progression. The traditional journal model results in subscribers bearing publication costs. The eagerness with which researchers seek journals for the publishing of their work, along with the internet, has resulted in the creation of a new model called Open Access (OA). Author/s or their institution/s pay an actual publication fee. This has in turn resulted in the creation of questionable journals which charge steep publishing fees.

Methods: Emails soliciting publication to one of the authors (VG) were collected for March 2015. Information collected included costs of OA publishing, and whether this information was readily available. Multiple solicitations from the same publishing house were counted only once. The appropriateness of said solicitations was also assessed, being considered appropriate if they suitably appertained to paediatrics, paediatric cardiology, or other topics with which the targeted author (VG) was familiar with.

Results: There were a total of 44 solicitations. 3 were duplicates. Out of 41 solicitations, 20 (49%) were appropriate. The open access fee was readily available in 27 out of 41 solicitations (66%). The open access fee averaged \$475, ranging from \$25 to \$1500. The only journal which provided true OA was Medical Principles and Practice, with no fees charged whatsoever.

Conclusion: Potential authors should carefully investigate OA journals prior to choosing journals wherein to submit their work.

OP6.27

Assessing frailty and anaesthetic risk in the older patient

Christine Debattista, Neville Aquilina, Peter Ferry

Department of Geriatrics, Karin Grech Hospital

Introduction: Frailty is an important assessment tool in the geriatric population, wherein decreased physiological reserve across multiple organ systems, leads to a diminished capacity to compensate effectively for external stressors. The aim of this study was to determine whether frailty correlates with anaesthetic risk in the older patient.

Methods: Frailty and anaesthetic risk were evaluated in the rehabilitation setting, at Karin Grech Hospital in Rehabilitation Ward 9. The former was quantified objectively using the Edmonton Frail Scale, whereas the latter was determined using the American Society of Anaesthesiologists Physical Status Classification System. The two were assessed blindly to limit researcher bias. Acutely ill patients were excluded from this study, on the assumption that their Edmonton frailty scores would be spuriously low. Spearman's correlation analysis was conducted to measure associations between anaesthetic risk and frailty.

Results: There were 26 patients evaluated: 77% were female. The mean age was 82 years (range 64-99 years). All patients were found to be frail; 69% scored as very frail on

the Edmonton Frail Scale. Frailty was found to be positively correlated with anaesthetic risk (Spearman Correlation = 0.688, $p=0.01$). Regression analysis was conducted to account for potential confounders namely age and gender, with a resultant persistent positive correlation ($r=0.662$, $p=0.001$).

Conclusion: Frailty and anaesthetic risk were found to be strongly correlated in a population of older patients undergoing inpatient rehabilitation.

OP6.28

The use of enoxaparin in medical admissions to prevent hospital-acquired venous thromboembolism (VTE)

Nicholas Paul Delicata, Justine Camilleri, Jonathan

Gauci, Darlene Muscat, Anthea Brincat, Stephanie Attard,

Kyra Bartolo, Robert Camilleri, Karen Anne Cassar

Department of Medicine, Mater Dei Hospital

Introduction: Venous thromboembolism has a high prevalence in hospitals with considerable morbidity, mortality and cost. In 2010, the National Institute of Clinical Excellence (NICE) issued guidelines aiming to decrease the number of VTE in inpatients. This audit aimed to assess the adequate prescription of enoxaparin as thromboprophylaxis (TP) in highrisk patients at Mater Dei Hospital.

Methods: Patients admitted under the care of seven medical firms from July 2013 to October 2013 were assessed. Risk factors for VTE and contraindications to TP were considered. Correct renal dosing of TP and appropriate enoxaparin use were noted. Patients on therapeutic doses of enoxaparin or on anticoagulation were excluded.

Results: A total of 558 admissions were analysed (51.1% males; 48.9% females). 167 patients (29.9%) were started on thromboprophylaxis; 159 had risk factors and from these 157 had no contraindications and 2 had contraindications to thromboprophylaxis. 8 patients on TP had no risk factors for VTE. 391 patients (70.1%) were not given thromboprophylaxis; 265 had risk factors for VTE with 84.9% having no contraindications to TP and 15.1% having contraindications. The remaining 126 patients had no risk factors for VTE. 14 patients had an eGFR $<30\text{ml/min/1.73m}^2$; the dose was correctly decreased in 57.1% and not decreased in 42.9%. All patients with a normal eGFR were given the correct TP dose.

Conclusion: Thromboprophylaxis in patients with risk factors for hospital-acquired VTE remains inadequate. A modified treatment chart including a section for thromboprophylaxis or anticoagulation may be introduced to alert doctors to prescribe TP in high-risk patients to improve outcome.

OP6.29

An audit on testosterone therapy in adult males with androgen deficiency

Josephine Bigeni¹, Mark Gruppette¹, Yanica Vella²,

Matthew Zammit³, Clayton Micallef³, Maria Mifsud²,

Josanne Vassallo¹

¹Diabetes and Endocrine Centre, Mater Dei Hospital; Department

of Medicine, Medical School, University of Malta, ²Department of

Medicine, Mater Dei Hospital, ³Medical School, University of Malta,

Msida

Introduction: Hypogonadism affects around 2.1% and 12.8% of adult males. The aim of the audit was to determine concordance with the Endocrine Society Clinical Guideline on testosterone therapy in adult men with androgen deficiency syndromes (2010).

Methods: Case notes of 235 patients prescribed testosterone esters between 2006 to 2014 were reviewed.

Results: Data analysis was carried out on 65% of the cohort ($N=153$). Patients complained of 0, 14, 58 hypogonadal

symptoms (N= 17%, 67% and 16% respectively). 76.5% of the patients had repeatedly low testosterone. 77% and 20% of the patients suffered from secondary and primary hypogonadism respectively. Patients suffering from secondary hypogonadism had thyroid-stimulating hormone levels (94%), serum prolactin (92%), serum cortisol (91%), growth hormone levels (89%) and iron studies (43%) taken. 77% of patients suffering from secondary hypogonadism had magnetic resonance imaging of the pituitary, with abnormality reported in 53%. 2.5% of these patients had computed tomography scan of the brain. No patient had a past history of breast or prostate cancer. Pre-treatment, patients were assessed for prostate pathology (7%), prostate-specific antigen (PSA) (39%) and bone mineral density (BMD) (33%). Patients were reviewed at 36 months (35%) and then annually (88%) after treatment initiation. Testosterone esters used and treatment outcomes in terms of sexual function and osteoporosis will be presented.

Conclusion: The audit identifies the need for detailed documentation of signs and symptoms and to reconfirm testosterone levels prior to starting treatment. Pre-treatment and follow-up BMD and PSA estimates are mandatory, with patient review at 36 months.

OP6.30

Detailed epidemiology and radiological geometric assessment of pituitary macroadenomas: a population based study

Mark Gruppetta, Josanne Vassallo

Department of Medicine, Faculty of Medicine and Surgery, University of Malta; Department of Medicine, Mater Dei Hospital; Neuroendocrine Clinic, Mater Dei Hospital

Introduction: Pituitary adenomas are relatively common tumours with diverse clinical features and considerable health burden. Epidemiological data is important to quantify health burden. The aim of the study was to provide indepth epidemiological data on macroadenomas and radiologically characterise macroadenomas.

Methods: Population based retrospective analysis: Main outcome measures: prevalence rate 2014; standardised incidence rates (SIR) 2000-2014; retrospective analysis of baseline MRI. Patients: 173/136 patients with macroadenomas for prevalence/SIR estimates respectively, 122 baseline MRI for radiological characterisation.

Results: The prevalence for macroadenomas was 40.67/100,000 people and the SIR was 1.90/100,000/year. Giant pituitary adenomas (>40mm) constituted 4.8% of the whole cohort of PAs and the SIR was 0.18/100,000/year. Giant prolactinomas constituted 4.7% of all the prolactinomas and the SIR was 0.07/100,000/year, while giant NFPA constituted 6.0% of all NFPA and the SIR was 0.12/100,000/year. There was a statistically significant difference in the degree of suprasellar extension ($p<0.001$) and infrasellar extension ($p=0.028$) between the different macroadenoma subtypes and in the suprasellar extension values (median suprasellar extension value NFPA 3.0mm; PRLoma 7.7mm; GHsecreting PA 1.7mm; $p<0.001$). Pituitary macroadenomas with cavernous sinus invasion were statistically significantly larger than those without cavernous sinus invasion ($p<0.001$). NFPA had predominantly a superior extension into the cavernous sinus (63.6%) compared to the functional PAs who had predominantly an inferior extension into the cavernous sinus (59.1%) ($p=0.032$).

Conclusion: The various macroadenoma subtypes' epidemiological data are presented and differences between growth patterns among the various subtypes are highlighted.

OP6.31

A local study on patient knowledge on the use of botulinum toxin in neurological disorders

James Gauci, Maria Alessandra Zammit, Darren Sillato, Beatrice Farrugia, Maria Mallia

Mater Dei Hospital

Introduction: Patient education is central to clinical management as it allows for proper informed consent, as well as compliance and satisfaction with treatment. Our aim was to ascertain patients' knowledge regarding botulinum toxin in comparison with the general population, in order to identify areas of unfamiliarity with this medicine.

Methods: Patients receiving botulinum toxin for any neurological disorder over a 1-year period were identified. The control group consisted of age and gender matched individuals who have had no contact with the drug. Both groups were required to answer the 'Patient Knowledge Questionnaire on botulinum toxin Use in Movement Disorders', designed and presented by Schoffer et al. in 2007. We assessed the knowledge of our local population of patients and compared this to the control group using the Kruskal Wallis statistical test. Patients were also asked to grade the importance of counseling on various aspects of knowledge related to this drug.

Results: 69% of identified patients agreed to participate in the study. Patients felt that education on all aspects of treatment was 'very' or 'somewhat' important. Despite this, their knowledge about botulinum toxin was not significantly greater than that of controls ($p=0.134$). Patients were more confident in asserting whether a statement on the drug was correct or not ($p=0.03$), however, they were much more likely to answer erroneously ($p<0.0001$).

Conclusion: Patients are lacking in knowledge about botulinum toxin, despite recognising the importance of counseling about this treatment. An information leaflet has been drafted for the consenting of future patients.

OP6.32

An audit of respiratory assessment and noninvasive ventilation management in motor neurone disease

Jonathan P Mamo

Snowdon Neuro Rehabilitation Unit, Western Community Hospital, Millbrook, Southampton

Introduction: Motor Neurone Disease (MND) results in respiratory muscle weakness and respiratory failure with significant morbidity and mortality consequences. Non-invasive ventilation (NIV) improves quality of life in MND. Caring for MND in a multidisciplinary clinic has demonstrated better prognosis for survival than care from general neurology clinics and there is marked national variation in clinical practice. The aim of this audit was to review current respiratory assessment practice and to compare compliance to the levels advised by the NICE Guidelines in the Wessex Deanery.

Methods: MND patients currently under the care of our NHS trust were retrospectively reviewed through review of online and paperfile based records. The NICE CG105 Guideline Collection Tool was used to assist data collection.

Results: Of the 35 patients eligible for review, 26 were included (74.3%). Of the participants, 9 were male and 17 were female with a mean age of 65.5 years (range 44 – 87 years). Four patients had bulbar onset type (15.4%), twelve were limb onset type (46.2%) and the remainder ($n=10$; 38.5%) were of an atypical onset / undocumented. The majority of patients were reviewed more frequently than three monthly as required by NICE.

Conclusion: The care and management of NIV in MND patients was noted to be good with some areas of concern due to documentation limitations. Follow-up is conducted on a regular basis as agreed by NICE guidance and respiratory assessment is excellent. The areas for improvement were documentation methodology and respiratory referral in the community.

OP6.33

Male infertility at the male urology infertility clinic, Mater Dei Hospital Malta

Martha Anne Zammit¹, Gregory Philip Apap Bologna¹, Andrew John Mercieca², Jean Calleja Agius³

¹Medical School, University of Malta, ²Mater Dei Hospital, ³Mater Dei Hospital; Medical School, University of Malta

Introduction: Male infertility in the Maltese islands is poorly characterised. This retrospective study aims to determine whether the Maltese population, as presenting to the Male Urology Infertility Clinic (MUIC), is comparable to the patients attending the Institute of Reproductive Medicine of the University of Münster, a typical dataset quoted in the 2015 European Association of Urology (EAU) Guidelines on Male Infertility.

Methods: A total of 85 (n=85) patients with an average age of 35.3 years, range: 30-55, SD±4.9, attended the MUIC from 17/01/2015 to 01/08/2015. Clinical data pertaining to the complete cohort of the clinic's first intake was digitized from notes and analysed.

Results: The aetiological proportions of the MUIC and Münster cohorts were compared using the Chisquared test. All categories investigated showed no significant difference, excepting hypogonadism (p=0.034). Further subgroup analysis of the azoospermic subset (n=19) was also performed, though the numbers were too limited for a meaningful mathematical comparison. The commonest aetiology encountered within this subpopulation were anomalies of the cystic fibrosis locus. Five patients had polymorphisms of the CFTR gene, all of which exhibited 7T polymorphisms, including two which had concurrent 9T polymorphisms. A further patient was heterozygous for two separate CFTR gene mutations.

Conclusion: The aetiologies appear to follow those of a major European tertiary referral centre, with the difference being possibly attributable to the smaller number of patients investigated locally. Considering that this is the initiation of the MUIC program, case selection procedures may have prioritised certain characteristics of presentation, introducing a further confounding factor.

OP6.34

Thyroid aspiration cytology: a three year correlation study with histopathology

Roderick Busuttil, Jonathan Galea, Mario Taliana, James DeGaetano, Alexandra Betts

Department of Cellular Pathology, Mater Dei Hospital

Introduction: Thyroid gland fine-needle aspiration cytology (FNAC) is a routine diagnostic test for the evaluation of thyroid disease. The procedure is rapid, cost effective and safe, especially when the aspirate is ultrasound guided. The aim of this study was to correlate the cytological findings with subsequent histological follow up of the excised specimens in order to assess diagnostic accuracy and evaluate quality of cytopathology reporting at Mater Dei Hospital and to improve outcomes.

Methods: This study was conducted on all thyroid FNAs performed between January 2012 and December 2014. The cytological diagnosis was categorised using the Bethesda System for Reporting Thyroid Cytopathology. All FNAs were

reviewed and compared to the subsequent histology when this was available.

Results: A total of 1076 FNA cases were included; of these 308 patients (29%) had a partial or complete thyroidectomy. The sensitivity, specificity, positive predictive value and negative predictive values of a thyroid aspirate for the detection of a neoplasm were 96%, 75%, 72% and 96% respectively. The specificity rises to 93% if benign aspirates which did not have follow up histology and are assumed to actually represent benign conditions are included.

Conclusion: Fine needle aspiration thyroid cytology is an effective and minimally invasive technique for the pre-operative assessment of patients with thyroid nodules. Diagnostic pitfalls include adequacy of the aspirate, overlapping cytological and histological criteria and diagnosis of suboptimal specimens.

OP6.35

Personalized medicine: KRAS genotyping of colorectal adenocarcinomas in Malta

Jeanette Scerri¹, Malcolm Buhagian², Maria Mifsud³, Dorianne Buttigieg¹, Allison Cordina¹, Catherine Grima¹, Stephen Brincat², Claude Magri², James DeGaetano¹, Christian Scerri⁴

¹Department of Pathology, Mater Dei Hospital, ²Department of Oncology, Sir Anthony Mamo Hospital, ³Department of Oncology, Sir Anthony Mamo Hospital; Royal College of Physicians, ⁴Department of Physiology and Biochemistry, University of Malta

Introduction: Mutations in the KRAS oncogene are negative predictors of response of advanced colorectal cancer (CRC) to antiepidermal growth factor receptor (EGFR) antibodies. KRAS mutation analysis has been offered as part of the local genetics service for the past three years. The aim of this study was to assess the findings and correlate them to treatment outcomes.

Methods: All CRC cases referred to the Laboratory of Molecular Genetics for KRAS mutation analysis were included. Specimens (n=16) consisted of histological shavings from formalin-fixed, paraffin-embedded sections from primary or secondary tumours consistent with CRC. DNA extraction was followed by the detection of KRAS mutations using a highly sensitive realtime PCR kit which detects 1% mutant DNA in a background of wildtype DNA.

Results: To date, KRAS mutations were found in 56.25% of all the specimens tested. Two thirds (66.7%) of the mutations were found in codon 12, while the remaining third was found in codon 13. The absence of KRAS mutations made patients eligible for the addition of biological agents to chemotherapy; correlation of tumour genotypes with actual treatment outcomes will be discussed in detail.

Conclusion: KRAS mutations are highly prevalent in advanced CRC. The correlation of these mutations with lack of response to antiEGFR therapy highlights the importance of KRAS testing as a predictive tool in personalized medicine. Patients harbouring KRAS mutations can be directed to other treatment options with a higher chance of success. Future work will include continuous monitoring of findings as well as retrospective validation of results by Sanger sequencing.

Disclosure: KRAS testing was carried out through the Pathology Department, Mater Dei Hospital

OP6.36

Cost comparison of oral capecitabine versus intravenous 5fluorouracil/folinic acid in cancer based treatment

Lorna Marie West¹, Alison Brincat¹, Joseph Nicholas Sciberras², Rachel A. Micallef¹

¹Sir Anthony Mamo Oncology Centre, ²Sir Paul Boffa Hospital

Introduction: Fluoropyrimidines play a central role either as monotherapy or as part of a combination therapy in the management mainly of colorectal cancer. Due to poor oral absorption, 5Fluorouracil (5FU) is administered parenterally together with folinic acid (FA) for an improved response rate and survival time. With comparable efficacy and safety profile to 5FU, capecitabine was rationally designed as an oral tumour-activated 5FU prodrug thereby preventing complications and inconvenience of intravenous administration. The aim of this study was to compare direct costs associated with two chemotherapy regimens [capecitabinebased therapy versus 5FU/FAbased therapy] in patients suffering from malignancy.

Methods: A retrospective study was conducted over a 6 month period (January to June 2015) for all patients requiring 5FU/FAbased therapy as part of their chemotherapy protocol at Sir Paul Boffa Hospital. The economic implications associated with the administration of 5FU/FA were calculated and compared to that of capecitabine. Direct costs include expenses involved in drugs acquisition, consumables for reconstitution, intravenous infusion bags and hospital admission costs. Indirect costs involved in prescribing, quality control documentation, reconstitution and administration of the drug were not financially quantified.

Results: An average of 126±10 patients were administered 5FU/FA each month. 84±5 of these patients required hospitalisation for two nights for treatment with 5 FU/FA/oxaliplatin every fortnight for a total of 12 cycles. This amounts to €617,774.16±45937.26. On comparison, the total cost of capecitabine/oxaliplatin treatment regimen is €150,958.08±8985.60. Hence, a resultant costsaving amount of €466,816.08±36951.66.

Conclusion: Capecitabine offers a costsaving alternative to intravenous 5FU/FA for patients requiring hospitalisation in this clinical setting.

OP6.37

Cost implications of current dose rounding in high cost parenteral anticancer treatment and potential cost savings with a 5% dose rounding

Alison Brincat¹, Joseph Nicholas Sciberras², Lorna Marie West¹, Ian Rapa¹

¹Sir Anthony Mamo Oncology Centre, ²Sir Paul Boffa Hospital

Introduction: Literature indicates that a 5% decrease in doses of parenteral anticancer treatment is practised and acceptable for a number of oncologists as a source of cost savings and waste minimisation. Locally, dose is rounded from the original prescribed dose to the nearest graduation on the syringe by the pharmacy reconstitution unit. The aims of the study were to explore the current variance in dose rounding from the original prescribed dose in high cost anticancer treatment, and to determine the potential financial benefits of up to 5% dose rounding.

Methods: A retrospective study was conducted over a 5month period for all patients at Sir Paul Boffa Hospital requiring parenteral anticancer treatment (monoclonal antibodies and cytotoxic chemotherapy) which cost ≥€50 per unit vial. Eight drugs were selected. The cost of the variance between the prescribed and the rounded dose was calculated and compared to theoretically reduced doses of 5%. A 10% variance, as cited in literature, was also calculated

for trastuzumab as a monoclonal antibody with the highest consumption.

Results: In all, 671 doses of trastuzumab, rituximab, bevacizumab, pemetrexed, raltitrexed, topotecan, vinorelbine and ifosfamide were identified. Current dose rounding resulted in a cumulative cost increase of €278.62 for these selected drugs. A potential theoretical dose rounding of 5% translated in cost saving of €19,450.71. A potential cost saving of €21,154.20 was calculated when trastuzumab doses were rounded up to 10%.

Conclusion: Dose rounding of anticancer agents to 5% of the prescribed dose and 10% for trastuzumab could result in cost savings and waste minimisation.

OP6.38

Glucose deprivation affects pancreatic cancer cells survival: a new therapeutic approach

Tiziana Tataranni¹, Carmela Mazzoccoli¹, Vitalba Ruggieri¹, Francesca Agriesti¹, Ilaria Laurenzana¹, Rosella Scrima², Valerio Pazienza³, Nazzareno Capitano², Claudia Piccoli⁴

¹Laboratory of PreClinical and Translational Research, IRCCS-CROB, Referral Cancer Centre of Basilicata, Rionero in Vulture (Pz), ²Department of Clinical and Experimental Medicine, University of Foggia, Foggia, ³Division and Laboratory of Gastroenterology, IRCCS Casa Sollievo della Sofferenza, Research Hospital, Opera di Padre Pio da Pietrelcina, San Giovanni Rotondo (FG), ⁴Laboratory of PreClinical and Translational Research, IRCCSCROB, Referral Cancer Centre of Basilicata, Rionero in Vulture (Pz); Department of Clinical and Experimental Medicine, University of Foggia

Introduction: Pancreatic cancer (PC) is the fourth leading cause of cancer related deaths and available therapeutic strategies, based on conventional chemotherapy, result in a progressive resistance to treatment. As PC cells metabolism significantly diverges from normal cells, targeting cellular metabolism may represent a new therapeutic strategy. In this study we characterized the metabolic profile of PC cell lines and investigated their response to glucose deprivation.

Methods: BXPC3 and PANC1 cell lines were cultured in control medium (CM) or in glucose deprived medium (GDM). O₂ consumption was measured by a Clark type electrode. OXPHOS enzyme complexes subunits were evaluated by Western blotting. MTS assay assessed cell viability, apoptosis and ROS were detected by flow cytometry following AnnexinV assay and DCFHDA staining, respectively.

Results: BXPC3 and PANC1 were assayed by a comparative analysis of the rate of mitochondrial respiration, displaying a lower efficiency of oxidative phosphorylation system by BXPC3. GDM culture increased mitochondrial respiration in BXPC3, upregulating OXPHOS enzyme complexes subunits expression with a significant increase in complex I and IV ($p < 0.05$ versus CM). Interestingly, GDM culture significantly reduced cell viability in both cell lines compared to CM with BXPC3 showing a marked sensitivity to energy deprivation compared to PANC1 ($p < 0.001$). Moreover, apoptosis and ROS measurement showed a remarkable cytotoxic effect in BXPC3 grown in GDM compared to PANC ($p < 0.01$).

Conclusion: Our results reveal that the reduction of the glucose intake significantly affects the drug response in highly glycolytic cells. Defining the metabolic feature may represent an additional important target for developing new therapeutic strategies to overcome chemoresistance.

OP6.39

Assessing the quality and completeness of request forms in the histopathology department

Adriana Grech, Michelle Ceci, James Degaetano

Introduction: The histopathology department receives on average 70 specimens a day. These specimens are received from different departments and from different hospitals, including Mater Dei Hospital, Sir Paul Boffa Hospital/Sir Anthony Mamo Oncology Centre, Gozo General Hospital and also health care centres. Each of these specimens are sent with an accompanying handwritten request form, which must be filled in diligently. This request form includes details about the specimen and the patient it belongs to, which are crucial for a histopathologist to give an accurate pathological diagnosis. This audit aims to assess the quality and completeness of these request forms.

Methods: This was a prospective audit done over a span of 4 days, in which all request forms received on each day at the histopathology department were considered. Specimens that were sent as part of a clinical study and those which required further fixing or decalcification, were excluded from this audit.

Results: A substantially large amount of request forms lacked important information, which included fundamental details such as the patient's identity card number and other basic information like the patient's age and gender. Moreover there were some request forms which were completely illegible.

Conclusion: There definitely is room for improvement with regard to the submitting of histopathology request forms. Most problems that were identified, could very easily be avoided with some care and attention to what is required on the form. Inadequate request forms submitted to the laboratory create delays in issuing reports and hence reduce the efficiency of the department.

OP6.40

The efficacy of lymph node fine needle aspiration cytology

Jason Attard, Jonathan Galea, Alexandra Betts

Department of Histopathology, Mater Dei Hospital

Introduction: Fine needle aspiration cytology (FNAC) of lymph nodes is a safe, easy, cheap and quick tool, which involves the examination of a random sample of cells from a lymph node. To assess the distribution of diagnostic categories and the efficacy of lymph node fine needle aspiration cytology at our institution. These were compared to the literature.

Methods: All of lymph node FNAC cases taken between the 1st January 2012 and the 31st December 2013 were retrieved from our Laboratory Information System. A total of 300 cases were retrieved and then placed into one of six categories; Category 1: Nondiagnostic, 2: Reactive, 3: Probably reactive but lymphoma cannot be excluded, 4: Non-Hodgkin lymphoma, 5: Hodgkin lymphoma, and 6: Metastasis. These were then correlated with the histology of the lymph node excision specimens.

Results: The proportion of diagnoses placed under categories 1, 2, 3, 4, 5 and 6 represent 14%, 53%, 4.3%, 5.7%, 1.7% and 21.3% of the total respectively. The overall efficacy of FNAC showed a sensitivity of 84.5%, specificity of 99.3%, a false negative rate of 10%, a false positive rate of 0.7%, accuracy of 93.1%, positive predictive value of 98.8% and negative predictive value of 89.9%.

Conclusion: FNAC of lymph nodes is a very useful and effective tool in triaging patients with lymphadenopathy.

OP7.02

An observational study of obstructive sleep apnoea in Malta

Darlene Muscat¹, Paul Torpiano², Matthew Mercieca Balbi³, Peter Fsadni¹, Stephen Montefort¹

¹Department of Medicine, Mater Dei Hospital, ²Department of Paediatrics, Mater Dei Hospital, ³Department of Cardiology, Mater Dei Hospital

Introduction: The Maltese population has one of the highest BMIs. Up to 10% of the population suffers from diabetes, with coronary artery disease being the top cause of death. No data exists about OSA and associated comorbidities in Maltese patients.

Aims: To assess appropriateness of referrals to sleep laboratory; to describe local OSA population; to assess coexistence of OSA and CAD.

Results: 377 patients included, referred to the sleep laboratory between August 2010 & December 2011. Mean BMI: 37.31kg/m². Mean AHI: 31.81. 86.21% diagnosed with OSA; 50.77% of these having severe OSA. Average HbA1c: 7.3%. 78 (20.69%) of 377 patients underwent coronary angiography; 46 (58.95%) being diagnosed with CAD. 43 (93.48%) of those having documented CAD also had OSA. A positive correlation found between AHI and BMI ($r=0.35$, $p=0.001$)

Conclusion: The local OSA population was severely obese with a mean AHI of 31.81. Referrals for investigation were appropriate in most cases (86.21%), more than half (50.77%) having severe OSA. 12% of patients referred for sleep study had documented CAD with the majority diagnosed with OSA (93.48%). The high mean AHI suggests that patients are being identified at a later stage of their disease. OSA is an independent risk factor for CAD and the two often co-exist. This is especially relevant in our local OSA population due to the high prevalence of diabetes and CAD. This study confirms that OSA within the local population is a potential major health problem that needs more research to describe the prevalence of the condition and associated comorbidities.

OP7.03

A local perspective on risk factors and short term outcomes in community-acquired pneumonia

Caroline Gouder¹, Michael Borg², Donia Gamoudi³, Marija Agius³, Nadia Gamoudi³, David Farrugia³, Josef Micallef¹

¹Department of Medicine, Mater Dei Hospital, ²Infection Control Unit, Mater Dei Hospital, ³Mater Dei Hospital

Introduction: Community-acquired pneumonia (CAP) remains a common serious infection in developed countries. Several studies have described factors that have been shown to influence CAP outcomes. This observational study sought to identify which risk factors are associated with short-term outcome in adult patients hospitalised with radiologically-confirmed CAP in Malta.

Methods: All adult patients admitted with a radiologically diagnosed CAP for 2 consecutive years were included in this retrospective observational study. Demographic data was collected. In-hospital stay was monitored to record duration of hospitalisation, complications, level of care required and outcome morbidity and 30-day mortality. A $p<0.05$ was statistically significant.

Results: Our cohort included 211 patients (mean age 77 ± 12 , 58.8% males). Mean duration of hospitalisation was 9.9 ± 7.5 days. Regression analysis identified that an increased 30-day mortality was positively associated with increased CURB score (OR 15, 95%CI: 5.1-44.2 for CURB score of 3 and OR 13.2, 95%CI: 3.07-56.6 for CURB score of 4), radiological severity of pneumonia (OR 2.76, 95%CI: 1.3-5.8),

and increasing age (OR 1.03, 95%CI:1.002-1.06). In contrast, mortality was lower in patients taking warfarin treatment on admission (OR 0.24, 95%CI: 0.11-0.52). Such patients also exhibited fewer complications when compared to the control group. Smoking history and the presence of comorbidities did not show statistical significance.

Conclusion: In hospitalised patients with CAP, increased 30-day mortality was increased with age, radiological extent and increased CURB65 score. Anticoagulation with warfarin seems to have a better outcome. Early identification of CAP patients at risk, can help decrease complications and improve outcomes.

OP7.04

Pulmonary rehabilitation in pulmonary fibrosis patients benefits of a 12 week programme

Anabel Sciriha¹, Stephen Lungaro-Mifsud¹, Rachelle Asciak², Darlene Muscat³, Caroline Gouder⁴, Simon Gouder⁵, Peter Fsadni⁶, Josianne Scerri¹, Liberato Camilleri¹, Stephen Montefort²

¹Faculty of Health Sciences, University of Malta, ²Department of Medicine, Mater Dei Hospital, ³Department of Physiotherapy, Mater Dei Hospital, ⁴Faculty of Sciences, University of Malta

Introduction: Pulmonary Rehabilitation (PR) is now well-established in the care of chronic obstructive pulmonary disease patients. Thus, it seemed reasonable to see whether this benefit extended to other notably common respiratory conditions like pulmonary fibrosis.

Methods: Forty-six subjects diagnosed with pulmonary fibrosis were recruited in this study. A baseline assessment was carried out before enrolment into the programme which included lung function tests, haematological investigations, exercise tolerance and health related quality of life measures. A twice weekly, 12 week multidisciplinary PR programme was delivered. All participants were assessed at 4 weekly time points throughout the intervention.

Results: From the 46 subjects enrolled, 35 patients completed the full programme. Exercise tolerance as measured by the 6 minute walk test significantly improved after 12 weeks of rehabilitation by a total distance of 52-metres ($p=0.002$; SD=95.51; $F=697.947$; $df=1, 34$). Significant changes in this measure were recorded by the 8th week and were maintained till the 12th week ($p=0.002$). According to the St George's Respiratory Questionnaire (SGRQ), there was only a significant improvement in symptom domain ($p=0.004$; SD=18.84; $F=105.368$; $df=1,34$) noted by the 8th week of rehabilitation.

Conclusion: From this study, one can note that this PR programme resulted in significant improvement in the functional aspect as measured using the 6 minute walk test and symptomatology as recorded by the SGRQ.

OP7.05

The effects of pulmonary rehabilitation (PR) on inflammatory markers in stable chronic obstructive pulmonary disease (COPD) patients

Anabel Sciriha¹, AnneMarie Bonello², Stephen Lungaro-Mifsud¹, Josianne Scerri¹, Liberato Camilleri³, Bridget Ellul⁴, Anthony Fenech⁵, Stephen Montefort⁶

¹Faculty of Health Sciences, University of Malta, ²Faculty of Medicine and Surgery, University of Malta, ³Faculty of Science, University of Malta, ⁴Department of Pathology, University of Malta, ⁵Department of Clinical Pharmacology and Therapeutics, University of Malta, ⁶Department of Medicine, University of Malta

Introduction: COPD is characterised by persistent and progressive airflow obstruction with enhanced chronic

pulmonary inflammatory responses, possibly also having a systemic component. In view of the current debate, this study explores the response of several inflammatory markers commonly elevated in COPD patients following PR.

Methods: Forty-nine patients participating in a 12 week PR programme were screened for a series of inflammatory markers. White blood cell count (WBC), Erythrocyte Sedimentation Rate (ESR), C Reactive Protein (CRP), eosinophils and neutrophils were taken at 4 weekly time points during the intervention and repeated at 28 and 52 weeks after completion of the programme. Serum Amyloid A (SAA) was measured at baseline, 8th and 12th week and exhaled nitric oxide was measured at the start and end of PR.

Results: No significant changes in these markers was noted with this intervention. However, at 8 weeks, CRP [mean value 8.93mg/L (SD:7.99) to 11.88mg/L; (SD:14.08)] and ESR [mean value 16.83mm/h (SD:12.37) to 21.98mm/h (SD:18.66)] showed an impressive peak which however was not statistically significant. SAA levels were significantly higher at 8 weeks as compared to baseline ($z=2.114$, $p<.05$). In the final 4 weeks there was a decline to starting levels. This increase was not related to a rise in WBC, eosinophil and neutrophil counts. Exhaled nitric oxide levels decreased from 20.58ppb (SD:17.44) at baseline to 16.9ppb (SD:8.10) at 12 weeks.

Conclusion: Exercise delivered through a PR programme did not result in any statistically significant change in the inflammatory markers.

OP7.07

Mental health literacy what we don't know, we fear!

Miriam Camilleri, Natasha Barbara

Office of the Commissioner for Mental Health

Introduction: The Malta Health Literacy Survey, 2014 revealed that 45.6% of respondents found it "fairly difficult", "very difficult" or "didn't know" how to find information on managing mental health problems. This contrasts with the European Health Literacy Survey, 2012 finding of 37.2%. Whilst investment in health promotion for physical diseases is justified, adequate local investment in public mental health remains lacking. This study aims to introduce the concept of mental health literacy, analyse the social determinants of persons experiencing difficulty with this question, and propose recommendations for action.

Methods: Following a literature review, an analysis was carried out using the anonymised dataset ($n=1514$) of the Malta Health Literacy Survey in relation to a number of social determinants.

Results: From records available for analysis, 46.5% of males and 48.1% of females had difficulty with the relevant question, with women experiencing more difficulty. 50.4% of those aged <25 years and 50.0% of those aged >76 years also experienced difficulty. 47.9% of persons in the Northern Harbour compared to 41.2% in the Western district experienced difficulty, whilst 33.3% of those in the "very difficult" response group were from the South Harbour. 13.9% of persons in the "very difficult" group gave a bad/very bad self-assessed health status compared to none in the "very easy". 58.4% of the "very difficult" group had one or more long term illness, compared to 35.7% of the total sample.

Conclusion: The analysis indicates the need to invest in public mental health, targeting women, youths, the elderly, and the Northern and South Harbour districts.

OP7.08

Pilot testing international diabetes definitions

Sarah Cuschieri, Janice Abela, Tiziana Farrugia, Matthew Scicluna, Ayrton Borg, Ryan Camilleri, Russell Bonnici, Angeline Sapiano, Ritianne Buhagiar, Julian Mamo
University of Malta

Introduction: Lack of consensus prevails regarding the definition of impaired fasting glucose (IFG). The World Health Organization (WHO) defines IFG as a fasting glucose (FBG) > 6.1mmol/L whilst the American Diabetes Association (ADA) defines it as FBG > 5.6mmol/L. Both set its upper limit at <7mmol/L. IFG cases are at higher risk for impaired glucose tolerance (IGT) and diabetes type 2 (T2DM).

Methods: An ongoing prevalence study in Malta followed ADA criteria for IFG and performed 2 hours, 75g oral glucose tolerance tests (OGTT) on all IFG cases among participants. Initial FBG and subsequent OGTT results were compared to WHO criteria. Data for the first 3 months are presented.

Results: Of 314 persons tested, 70 fell in the IFG range and required OGTT testing. Among these, 1.4% ($n=1$) qualified as diabetic; 12.9% ($n=9$) had impaired glucose tolerance (IGT); 50% remained in the IFG category ($n=35$) while 35.7% ($n=25$) were normoglycemic. Initial fasting levels of 36 cases fell within IFG range (WHO criteria). Yet, OGTT revealed 22 as having subsequent fasting levels of <6.1mmol/L i.e. no longer IFG. Ultimately, OGTT testing revealed 40.9% as normal, 45.5% as IFG, and none fell in the DM criteria. The only T2DM case had an initial fasting of >5.6<6.1mmol/L i.e. IFG by ADA criteria. However, OGTT here revealed fasting >7.0 and an abnormal 2nd hour level.

Conclusion: WHO criteria lacked sensitivity and missed the T2DM case here. Contrastingly, ADA criteria lacked specificity but ultimately had higher sensitivity and enabled DM identification.

Disclosure: University of Malta, Alf Mizzi Foundation, Atlas Insurance and RIDT as main funding sources

OP7.09

Teenage delivery rates in Malta

Miriam Gatt¹, Nicholas Vella Laurenti², Neville Calleja²

¹Directorate for Health Information and Research, ²Office of Commissioner for Children

Introduction: Teenage deliveries are associated with poorer health outcomes, increased chances of the mother leaving school with little or no qualifications and an increased risk of living in poverty. Developed countries have documented recent decreases in teenage pregnancies. This analysis aims to examine rates of teenage deliveries (<18 years) in Malta over the past 15 years.

Methods: Data for all births and deliveries on the Maltese islands is routinely collected by the National Obstetrics Information System (NOIS) within the Directorate for Health Information and Research. Anonymous data on teenage deliveries occurring between 2000-2014 were obtained from NOIS and analysed using MSExcel and chi-square test for trends.

Results: In the 15 year period 2000-2014, a total of 60,380 deliveries and 61,365 births were registered with NOIS, of these 1,259 deliveries and 1,268 births occurred to mothers <18 years. The rate of deliveries in teenage mothers shows a steady increasing trend between 2000-2009, from 1.81% ($n=78$) in 2000 to 2.72% ($n=112$) in 2009 ($p=0.001$), followed by a very significant decrease in the past 5 years from 2.35% ($n=93$) in 2010 to 1.07% ($n=46$) in 2014 ($p<0.0001$). Data on terminations of pregnancies in the UK and Italy on women residing in Malta show no significant changes over the

time period.

Conclusion: Malta is currently experiencing a decrease in teenage deliveries; the reason for this is unclear and merits further research into possible related factors. The literature documents several sociocultural factors as influencing teenage delivery rates, including education, sexual behaviour, terminations, low family socio economic status and family disruption.

OP7.10

Life expectancy, mortality and elections: are elections bad for our health?

Elaine Claire Lautier, Natasha Azzopardi-Muscat, Kathleen England, Neville Calleja

Directorate for Health Information and Research

Introduction: Examination of trends in Malta shows a visible stagnation of life expectancy around general election years. This study seeks to explore this phenomenon through epidemiological analysis.

Methods: Dates of general elections for the period between 1985 and 2013 were obtained. Cause specific mortality data was extracted from the Malta National Mortality Register and included all-cause mortality, circulatory diseases, ischaemic heart disease, cerebrovascular disease, other heart diseases and suicides. These were examined on the basis of literature from other countries. Age specific mortality rates for the same period were calculated. Data was analysed using Poisson's regression.

Results: A significant increase in mortality during election years resulted for circulatory diseases ($p<0.005$; IRR 1.058; 95% CI 1.029 – 1.087), cerebrovascular disease ($p<0.005$; IRR 1.09; 95% CI 1.03 – 1.15) and heart failure ($p<0.005$; IRR 1.36; CI 1.28 – 1.45). An increased mortality also occurs during pre-election years for circulatory disease ($p<0.005$; IRR 1.046; CI 1.017 – 1.075) and heart failure ($p<0.005$; IRR 1.33; CI 1.25 – 1.42) and during post-election years for cerebrovascular disease ($p<0.05$; IRR 1.08; CI 1.02 – 1.15) and heart failure ($p<0.005$, IRR 1.19; CI 1.11 – 1.27), with respect to other years. Less suicides take place during election year than any other years.

Conclusion: This study confirms earlier local work which found an association between acute cardiac coronary events and election years. Further research on individual physiological and psychological responses around election times is warranted to provide evidence for awareness amongst the general public and health care workers during election times.

OP7.11

Catheter-related peritoneal dialysis infections in Malta

Angela Borg Cauchi¹, James Farrugia¹, Michael Borg²

¹Department of Medicine, Mater Dei Hospital, ²Department of Sterile Services and Infection Control, Mater Dei Hospital

Introduction: Catheter-related infections (CRIs) are still a cause of morbidity and mortality in peritoneal dialysis (PD) patients. The epidemiology of CRIs in Malta is largely undocumented.

Methods: This was a prospective study on all prevalent PD patients in Malta between 2013 and the first quarter of 2015. Analyses of CRI rates and microbiology was done. PD catheter-related infections included both exit-site and tunnel infections. Exit-site infections were defined according to the recommendations of the International Society of Peritoneal Dialysis (ISPD). A peritoneal exit-site scoring system was incorporated according to ISPD guidelines.

Results: CRIs for 2013, 2014, and first quarter of 2015 were 0.35, 0.91 and 0.85 episodes/patient/year at

risk respectively. The relatively low value in 2013 coincided with a relatively high number of relapse episodes, mainly of *Staph aureus* and *Pseudomonas aeruginosa* infections. Gram-negative organisms accounted for 50.6% of infections. The predominant Gram-positive infections were due to *Staphylococcus* and that for Gram-negative due to *Pseudomonas*. There was no PD related mortality during these years, unlike the previous five year period 2008-2012, with a total PD infection rate of 4.4%.

Conclusion: Peritoneal dialysis catheter-related infection rates have improved over last year. Mortality rates have drastically decreased. The predominant organisms remain *Staphylococcus aureus* and *Pseudomonas aeruginosa*, similar to universal variation. Possible salient factors in amelioration of rates included the introduction of local guidelines, increased awareness of infection control, increasing educational efforts and an active interdisciplinary approach between the Nephrology and Infection Control Department.

OP7.12

Seasonal variation in the peritoneal dialysis related infections in Malta

Jesmar Buttigieg¹, Angela Borg Cauchi², Marilyn Rogers², Emanuel Farrugia¹, Stephen Fava³

¹Renal Division, Mater Dei Hospital, ²Department of Medicine, Mater Dei Hospital, ³Department of Diabetes and Endocrine, Mater Dei Hospital

Introduction: There are limited studies which investigate the effect of seasons on the incidence of peritoneal dialysis related infections (PDRI) and microbiology, especially in the Mediterranean basin. Our aim was to explore this association in Malta.

Methods: All PDRI occurring between Jan2008 and Dec2012 were retrospectively studied using a local electronic database system.

Results: A total of 137 patients were followed-up for a median of 32.5 months (range:281). During this time; 19% never had PDRI, 11.7% transferred permanently to haemodialysis and 6.6% received a kidney transplant. All cause mortality was 0.09/patient-year-at-risk and the rate of peritonitis related death was 0.02/patient-year-at-risk. A total of 279 PDRI were identified, equating to 145 catheter related infections (CRI) and 144 peritonitis episodes (including 10 catheter related peritonitis). A significant peak in the overall PDRI (0.85 vs. 0.64/patient-year-at-risk, $p<0.0001$) and overall peritonitis episodes (0.49 vs. 0.31/patient-year-at-risk, $p<0.0001$) was noted in spring when compared to autumn. The overall CRI were significantly higher in winter when compared to autumn (0.49 vs. 0.34/patient-year-at-risk, $p<0.0001$). Spring was associated with the highest incidence of coagulase-negative *staphylococci* (0.22 vs. 0.08/patient-year-at-risk, $p<0.0001$) and *streptococci* (0.13 vs. 0.04/patient-year-at-risk, $p<0.0001$) whereas winter was associated with peak incidence of *pseudomonas aeruginosa* (0.17 vs. 0.09/patient-year-at-risk, $p<0.0001$) when compared to autumn.

Conclusion: This is the first study which examines the effect of seasons on the incidence of PDRI in Mediterranean region. Spring is associated with the highest incidence of overall PDRI and peritonitis episodes; winter is associated with the highest incidence of CRI, whereas autumn confers some protection against infection.

OP7.13

A Maltese perspective on the microbiological prevalence, pathogenicity, distribution and metamorphosis of antibiotic susceptibilities of uropathogens over the past years

Edward Calleja¹, Andrew Sammut², Patrick Zammit³

¹Urology, Royal County Sussex Hospital, ²Department of Obstetrics and Gynaecology, Mater Dei Hospital, ³Department of Surgery, Mater Dei Hospital

Introduction: Bacterial resistance is an emerging threat to the medical health care system on an international scale. Genitourinary tract infections are among the commonest culprits of this health burden. Concomitantly, investment in antibiotic production has dwindled. To counteract such imbalance, various hospitals have adopted an antibiotic stewardship policy.

Methods: The urine isolates of an entire National Health Scheme for the years 2005 to 2013 were retrospectively analysed using World Health Organisation and other international agency criteria for the formulation of a non-nosocomial acquired (NNA) and nosocomial acquired (NA) definitions of urinary tract infection (UTI). Structured Query Language was used to separate the isolate data into NAUTI and NNAUTI, to depict the emerging uropathogen resistance patterns and outline the relative species prevalence.

Results: Over a 9year period, a total of 33,986 positive specimens were analysed (22,267 NNAUTI and 9,068 NAUTI). For purposes of clear group separation, 2,651 specimens were excluded. The total antibiotic sensitivities for each cultured microbe were 532,326. *Escherichia coli* was found to be the most causative microorganism for both NA and NNAUTI.

Conclusion: There are distinct NA and NNA bacterial population frequency and resistance evolution. Analysing this diversity and change will form the foundation of our national antibiotic stewardship dissemination plan to limit waves of resistance and preserve our antibiotic armamentarium.

OP7.14

A reaudit of the management of acute infective admissions to Mater Dei Urology Unit

Tiziana Pirotta, Karen Sapiano, Gerald Busuttil

Mater Dei Hospital

Introduction: Urinary tract infections are common and range from simple cystitis to urosepsis with shock requiring urgent treatment with potent antibiotics.

Methods: A prospective audit included all patients admitted to urology at Mater Dei Hospital with any urinary tract infection between 23rd March 2015 to 8th June 2015. A custom designed Access® database was used to register data including demographic data, nature of infection, antibiotic use, microbiological investigations, management and outcome. The management of these cases was compared to the European Association of Urology 2015 guidelines.

Results: 52 patients required inpatient care for urological infections during the study period. Ten cases were post-operative complications, mostly associated with prostate biopsy. The most common infections were urosepsis (10), obstructive pyonephrosis (9) and uncomplicated cystitis (9), with the most common causative organism being *E. Coli*. Urine and blood cultures were requested in the majority of patients (51) and the most common empirical antibiotics used were ciprofloxacin and piperacillin/tazobactam. Urine cultures were positive in only 18 patients and blood cultures in 5 patients. The antibiotic regimen was changed accordingly

in all 23 patients with positive cultures. Most of the patients (44) did well with intravenous therapy alone; a small number required additional surgical procedures. One patient passed away as a result of severe sepsis. The antibiotic management complied with the mentioned guidelines in 43 out of 52 cases.

Conclusion: Urological infections remain a common cause for unplanned admissions to urology. Most patients improve significantly with antibiotic therapy which is in line with guidelines in the majority of cases.

OP7.15

Nephrolithiasis, stone composition, meteorological conditions and seasons. Is there any connection?

Jesmar Buttigieg¹, Stephanie Attard¹, Ruth Galea², Alex Carachi²

¹Division of Nephrology, Mater Dei Hospital, ²Department of Surgery, Mater Dei Hospital

Introduction: The effects of seasons and meteorology on the incidence of nephrolithiasis have been studied in various regions around the globe, but seldom in the Mediterranean basin. This retrospective analysis aims at investigating these putative effects in the Maltese Islands, whose climate is typically Mediterranean, followed by a systematic review of literature.

Methods: All self-submitted kidney stones at Mater Dei Hospital between Jan2009 and Dec2011 were included. Stone submission rate and chemical composition were analysed according to seasons and corresponding meteorological data.

Results: A total of 389 stones were analysed. Mean age of patients was 47.8±14.8 years and males composed 75.6% of the study population. A higher stone submission rate occurred in summer compared to winter (31.6% vs. 20.8%, $p=0.01$) and in the warm period compared to the cold period (57.1% vs. 42.9%, $p=0.0001$). A significant correlation was established between the number of stones and mean monthly temperature ($r=0.69$, $p=0.01$), mean monthly maximum temperature ($r=0.70$, $p=0.01$) and mean monthly Humidex ($r=0.67$, $p=0.03$). The majority of stones contained calcium (83.3%), combined with oxalate (77.6%), phosphate (14.7%) and carbonate (2.8%). Some stones (11.8%) contained a mixture of >1 negatively charged molecules. Urate (11.6%), cysteine (4.6%) and ammonium-magnesium-phosphate (0.5%) constituted the rest. There was no association between chemical composition and seasons. Literature review included a total of 21 articles. Ambient temperature and warm seasons were the most commonly identified risk factors for nephrolithiasis.

Conclusion: A significant association was established between ambient temperature and stone submission rate, which was significantly higher during summer and warm months.

OP7.16

Adverse events following intravesical Bacillus Calmette-Guérin therapy in Mater Dei Hospital, Malta

Gerald Busuttil, Luke Zammit, Christine Debattista

Introduction: Intravesical administration of Bacillus Calmette-Guérin (BCG), following transurethral resection of bladder tumour, has been shown to reduce recurrence and progression in appropriately selected patients with non-muscle invasive bladder cancer. The aim of the study was to report the local incidence and range of side effects experienced by patients managed with intravesical BCG.

Methods: All patients who received at least one dose of intravesical BCG treatment at Mater Dei Hospital in 2014 were included in the study. A database including

demographic, histological and chronological data, together with complication type, degree and treatment required was created. The Clavien-Dindo Classification of complications was used to stratify complications by severity. Patient medical files were reviewed and the patients were invited to take part in this audit via a telephone survey

Results: The total number of patients included were 55. 22 of these experienced at least 1 adverse event with BCG, whilst 33 had no complications. 1 patient had 3 adverse events, 7 patients had 2 adverse events and 14 patients had 1 complication. 54 patients were documented to have had induction BCG, with maintenance BCG in 32 patients. 30 patients recurred whilst on treatment, 1 patients progressed to muscle invasive disease and underwent radical cystectomy, whilst 3 patients died of bladder cancer. No death as a consequence of intravesical BCG therapy recorded.

Conclusion: Intravesical BCG therapy remains one of the mainstay therapies in the management of bladder cancer. The majority of adverse effects recorded were self-limiting or easily treatable with oral analgesics or antibiotics.

OP7.17

Quality of informed consent for elective transurethral resection of the prostate (TURP) in Mater Dei Hospital

Keith Pace, Petra Mallia

Malta Foundation Programme

Introduction: Patients should be fully informed of the benefits and risks of an elective procedure through informed consent. Failure to obtain consent and document adequately may lead to medicolegal issues, and patient dissatisfaction.

Methods: The aim of this audit was to assess the quality of consent form completion, legibility, and patient satisfaction; and achieve a more accurate consent process for TURP procedures performed at Mater Dei Hospital. A list of patients who underwent a TURP procedure between January 2012 and April 2015 was obtained, and patients selected at random. The quality of consent form completion and legibility was assessed by retrospectively analyzing patient files using a proforma. The patients were contacted, to assess satisfaction with the consent process.

Results: 43 patient files were analysed. The patient details (83.7% $n=36$), signature of doctor (100% $n=43$) and signature of patient (93% $n=40$) were the categories most often documented. The intended benefits were never documented, whereas bleeding (34.9% $n=15$) and urinary tract infection (34.9% $n=15$) were the complications most often documented. Urethral strictures and TURP syndrome were never documented by the doctor. 14% ($n=6$) of the consent forms analysed included an illegible component. 36 patients were contacted; 67% ($n=24$) were satisfied with the consent process.

Conclusion: This audit demonstrated that there was a considerable amount of undocumented data, highlighting the need for increased awareness of the importance of documentation. The type of procedure, intended benefits and the complications (general and specific) need to be given attention. Efforts should also be made to eliminate illegibility.

OP7.18

Demographic changes Impacting obstetric practice in Malta: a review of 61,336 births

Ramona Camilleri¹, Miriam Gatt², Yves Oscar Muscat Baron¹

¹Department of Obstetrics and Gynaecology, Mater Dei Hospital,

²National Obsteric Information Unit

Introduction: Over the past 15 year significant changes have occurred in the demography of births in Malta. In 2001

the percentage of non-Maltese babies was 4.5% while in 2014 this has risen to 17%.

Methods: A total 61,336 births occurring from 2000 till 2014 were assessed. The data on 78 variables concerning patient characteristics, obstetric history, antenatal care, mode of delivery and neonatal outcome was provided by the National Obstetric Information Unit. The majority of deliveries 56,113 occurred to Maltese nationals. The other nationalities included 1,763 from the Africa, 513 from Asia and the Middle East, 1,630 from Eastern Europe, 1,316 from Western Europe and 241 Americas and Oceania.

Results: Significant differences between variables of mothers hailing from the African continent and the other groups were noted. Mothers from the Africa were significantly younger (27.1+/8 years national average (NA) 28.5), higher parity (0.88 per patient, NA 0.16), higher stillbirth rates (2.1/1000 NA 1.2/1000), unbooked cases/nonattendance for antenatal visits and highest Caesarean section rates (37.37%, national rate 31%) in particular Emergency Caesarean Section rates (19.9%). The first minute APGAR scores were significantly lower (8.32+/3.5, NA 8.95 +/- 4.2). However there was no significant difference in the 5 minute APGAR score.

Conclusion: This study identified a subgroup of pregnant women of African origin who are at risk of adverse pregnancy outcomes. This subgroup of women requires added support in antenatal care possibly by improving communication and offering outreach assistance to compensate for the poor antenatal attendance.

OP7.19

Who gets pre-eclampsia in Malta?

Andee Agius¹, Miriam Gatt², Neville Calleja³, Roberta Sultana⁴, Rena Balzan⁵

¹Department of Obstetrics and Gynaecology, Mater Dei Hospital,

²Directorate for Health Information and Research, ³Directorate for Health Information and Research, ⁴Department of Occupational Therapy, St. Vincent de Paul, ⁵Department of Physiology and Biochemistry, Medical School

Introduction: Pre-eclampsia remains a “disease of theories”. Despite the growing body of research exploring this multifactorial disorder, the aetiology of pre eclampsia remains elusive. Pre-eclampsia is exclusive to human pregnancy and defined as new hypertension presenting after 20 weeks with significant proteinuria. The study aimed to explore the risk factors associated with pre-eclampsia in the Maltese population.

Methods: Case-based non-identified data of a number of variables were obtained from the National Obstetric Information system for the years 2000 to 2014 (both years included). The Statistical Package for Social Sciences (version 23) was used to analyse the data using logistic regression.

Results: The total number of cases studied was 380. Risk of developing pre-eclampsia seems to be higher amongst primiparous women ($p<0.001$), women with secondary and postsecondary education ($p<0.001$), pregnant women with multiple pregnancies ($p<0.001$), smokers ($p=0.023$), women who underwent artificial reproductive interventions ($p<0.001$) and women with a history of pre-gestational diabetes ($p<0.001$). Moreover, an increase in both age ($p<0.041$) and body mass index ($p<0.001$) was found to be significantly associated with the risk of developing pre-eclampsia. On multiple variate analysis all risk factors retained their independent significance with the exception of cigarette smoking.

Conclusion: This study highlights the main risk factors associated with pre-eclampsia in the Maltese population. In this way health professionals will be in a better position to intervene at an earlier stage. Prevention and early detection

of pre-eclampsia remain the ultimate goal to ensure better outcomes for the mother and her infant.

OP7.20

The first 100 cycles

Jean Calleja Agius¹, Mark Brincat², Mark Sant², Olivianne Cassar², Johann Craus², Max Dingli², Heidi Gauci Grech², Josephine Xuereb²

¹Assisted Reproductive Technology Clinic, Department of Obstetrics and Gynaecology Mater Dei Hospital; Department of Anatomy, Faculty of Medicine and Surgery, University of Malta, ²Assisted Reproductive Technology Clinic, Department of Obstetrics and Gynaecology, Mater Dei Hospital,

Introduction: Following the enactment of the Embryo Protection Act in December 2013, patients have been treated for primary infertility using assisted reproductive technologies (ART) at Mater Dei Hospital (MDH). Previous to that, couples had to undergo treatment privately, or else go to clinics abroad. The current legislation states that during every cycle, only 2 oocytes (or 3 oocytes in very exceptional circumstances) can be fertilized and the rest of the oocytes frozen for future use. The first case of oocyte pick up and embryo transfer at MDH was on the 30th January 2015. To date, the cycles have been carried out in groups of 30 couples approximately every 2 months.

Methods: This is a prospective observational study, where the details of the parameters and outcome of the first 100 cycles of in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI) carried out at the ART Clinic at Mater Dei, are outlined.

Results: To date, there has been a 28% success rate, with the main outcome being pregnancy. ICSI and Day 3 embryo transfer have been carried out in the majority of cases. Both fresh and frozen oocytes have been used. Sperm retrieved using testicular sperm aspiration was used in 3 cases of severe oligospermia. The first livebirth from the first IVF cycle of January 2015 was born by Caesarian section in October 2015.

Conclusion: In spite of all the hurdles of starting off a new IVF lab, the first 100 cycles carried out at MDH gave promising results in terms of pregnancy outcome.

OP7.21

Advanced maternal age and pregnancy outcome – a review of 39,683 births

Mandy Caruana¹, Miriam Gatt², Yves Oscar Muscat Baron¹

¹Department of Obstetrics and Gynaecology, Mater Dei Hospital,

²National Obstetric Information Unit

Introduction: The aim of this study was to compare the pregnancy outcomes of women with advanced maternal age (>35 years) to women aged 20 – 29 years.

Methods: All mothers aged 35 years and over and mothers aged 20 – 29 years who delivered a singleton baby between 1st January 2000 and 31st December 2014 were studied. The data was obtained from the National Obstetric Information System.

Results: A total of 39,683 mothers were assessed. In the 20 – 29 years cohort included 31,037 mothers while 8,646 patients were 35 years and over. In the 20 – 29 year age group 67.77% of mothers delivered vaginally while 27.73% delivered by caesarean sections. Contrastingly 56.73% of mothers with advanced age delivered vaginally and a significant 40.08% delivered by Caesarean sections. The mean birth weight of neonates of mothers aged 20 – 29 years was 3228.89g while the mean birth weight of neonates of the elderly mothers was 3208.52g (p value: 0.300653). There was also no statistical difference between the two average Apgar scores at 1 min

($p=0.748359$). Live births and neonatal survival up to 28 days occurred in 99.09% of babies delivered by mothers of 20 – 29 years and 98.87% of babies delivered by mothers with advanced maternal age.

Conclusion: Mothers with advanced maternal age were found to have a significantly higher Caesarean rate when compared to younger aged mothers but there was no statistical difference in the neonatal outcomes.

OP7.22

Maternal weight gain in pregnancy

Silvaine Marie Dalli, Theresia Anne Dalli, Estelle Abela, Isabelle Saliba

Introduction: Maternal BMI should be calculated during the first antenatal visit and the mother should be counselled regarding appropriate weight gain, exercise and diet. The higher the BMI at onset of pregnancy, the less the weight gain during pregnancy should be, as high BMI increases the need for medical inductions or emergency Csections. There is also an associated increased risk of complications including shoulder dystocia and postpartum haemorrhage.

Aim: To assess maternal weight gain during pregnancy in mothers delivering at MDH and the foetal weight at birth.

Methods: Data was collected after delivery from the antenatal and delivery records over a number of weeks. Maternal BMI and age at onset of pregnancy were noted. Weight gain, medical conditions which complicated the pregnancy and foetal weight were also recorded.

Results: From a total of 153 mothers, 1% were underweight at onset of pregnancy, 47% were within normal range, 29% were overweight and 22% were obese. An average weight gain of 12.55kg was noted, with the higher weight gain seen in those with a normal BMI. Foetal weight was also noted with 21% of babies born to obese mothers having either low or high birth weight compared to the 6.9% born to those having normal BMI. In total, 188 mothers were included but 19% did not have data at onset of pregnancy whilst 26% were not having regular weight checks.

Conclusion: The importance of educating expectant mothers regards diet and exercise and of doctors being meticulous and monitoring weight gain to be able to advise accordingly.

OP7.23

Risk factors analysis as a diagnostic aid for the diagnosis of gestational diabetes mellitus

Johann Craus,¹ Charles Savona-Ventura,¹ Josanne Vassallo²

¹Department of Obstetrics and Gynaecology, Medical School, University of Malta, ²Department of Medicine, Medical School, University of Malta

Introduction: Gestational Diabetes Mellitus (GDM) is an important medical condition that is defined as any degree of glucose intolerance with onset or first recognition in pregnancy.

Methods: 309 pregnant ladies were invited to attend for a 75g OGTT between 24 and 32 weeks of gestation [28.85 weeks $\pm$ 1.65 weeks] after an overnight fast of at least 8 hours.

Results: The results show that the pre-pregnancy BMI and 3rd trimester BMI are the most common statistically significant risk factors in the cohort. Both pre-pregnancy BMI and the 3rd trimester BMI yielded a good sensitivity of 63.46% and 63.5% and a specificity of 58.4% and 62.6 % respectively. Both pre-pregnancy BMI and BMI in the 3rd trimester showed a statistically significant risk factor with a p-value of 0.004 and 0.0005 respectively. Combining the biochemical screening with 3rd trimester BMI gave a

sensitivity and specificity of 86.5% and 62.6% respectively

Conclusions: The risk factor analysis shows that an elevated BMI is the best clinical risk factor with an acceptable discriminatory power by itself. A possible algorithm would be to screen all pregnant women by a fasting blood glucose sample [FBG]. If one uses an FBG and BMI estimation as a screening method it will identify 86.5% of diseased individuals [GDM cases] and wrongly identify 37.4% of obese non-GDM mothers as diseased [obese non-GDM]. This would result in only 13.5% of GDM women being missed while requiring only 54.4% of women that are of normal BMI with a normal FBG to undergo a formal OGTT.

OP7.24

Thyroid dysfunction in pregnancy – a pilot analysis of a Maltese cohort

Katia Vellat, Mark Formosa², Sandro Vella³

¹Department of Obstetrics and Gynaecology, Mater Dei Hospital; Department of Medicine, Mater Dei Hospital, ²Department of Obstetrics and Gynaecology, Mater Dei Hospital, Msida, ³Department of Medicine, Mater Dei Hospital, Msida; Department of Medicine, Medical School, University of Malta

Introduction: Maternal thyroid dysfunction has been associated with adverse obstetric and neonatal outcomes. The impact of isolated hypothyroxinaemia in this setting remains a source of considerable medical debate. This study aimed to investigate the relative frequency of thyroid disorders in an exploratory cohort of Maltese pregnant women and pregnancy outcomes arising in patients with such thyroid dysfunction.

Methods: Women attending for their antenatal booking visit had blood sampled for thyroid profile (thyrotropin and free thyroxine [FT4]). Routine maternal clinical data (past medical and obstetric history, age, body mass index) were additionally recorded. Antenatal complications, maternal and neonatal outcomes were traced for each patient/neonate after delivery.

Results: 33 out of 93 patients (mean [SD] age = 29.18 [5.12] years) had biochemical evidence of isolated hypothyroxinaemia at booking. 55 patients were euthyroid. Two patients were diagnosed with subclinical hypothyroidism. Single patients were noted to have overt hypothyroidism, subclinical hyperthyroidism and overt hyperthyroidism (Graves thyroiditis). While over half (42) of recruited mothers were overweight or obese, we report no significant differences in maternal thyrotropin and FT4 levels across maternal body mass index categories between euthyroid patients and those with isolated hypothyroxinaemia. The latter did not impact on gestational age at delivery, neonatal birth weight and Apgar scores.

Conclusion: Isolated hypothyroxinaemia constitutes the commonest thyroid abnormality amongst pregnant women in the Maltese Islands, with rates approaching those seen in iodine deficient regions. Exploratory evidence suggests no adverse impacts on perinatal and neonatal outcomes. Further research is warranted in this field.

OP7.25

Pathophysiological mechanisms of absence seizures

Vincenzo Crunelli

Neuroscience Division, School of Bioscience, Cardiff University

Introduction: Absence seizures (ASs), consisting of loss of consciousness and 3Hz spike-and-wave discharges (SWDs) in the EEG, are a feature of many generalized epilepsies and the defining seizure type of childhood/juvenile absence epilepsy. Despite being considered relatively benign, absence epilepsy involves learning difficulties, behavioural disorders and other psychiatric conditions, and monotherapy

with gold-standard anti-absence drugs is only effective in only 50% of patients. Nevertheless, our limited knowledge of the pathophysiological mechanisms underlying absence seizures has so far precluded the identification of novel molecular/cellular targets for these idiopathic epilepsies.

Conclusion: In my lecture, I will discuss how advances in human genetics have provided limited breakthroughs, whereas imaging, electrophysiology and optogenetics (in humans and in different experimental models) have unravelled key pathophysiological mechanisms of novel potential therapeutic targets. In particular, it is now well documented that SWDs are not generalized from their start, but begin from a localized (frontal) cortical area, from where they then spread to other cortical areas and to the thalamus. Moreover, an increased function of extrasynaptic GABA_A receptors (eGABAARs) (due to a decreased activity of a GABA transporter) is necessary and sufficient for the expression of absence seizures. The importance of this experimental finding is supported by human data showing that in contrast to convulsive epilepsy drugs that increase GABAAR activity worsen absence seizures, and by finding that knockdown of one of the eGABAAR subunits rescues the experimental absence phenotype. Thus, direct or indirect modulation of eGABAAR function can provide suitable alternatives to current medication for these idiopathic epilepsies.

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OP7.26

A critical role for serotonin 2A (5HT_{2A}) and 2C (5HT_{2C}) receptors in modulating experimental absence seizures

Giuseppe Di Giovanni

Malta Neuroscience Network, Department of Physiology and Biochemistry, University of Malta

Introduction: Absence seizures, with their characteristic EEG spike and wave discharges together with concomitant lack of consciousness, are the hallmark of childhood absence epilepsy. ASs involve abnormal firing in corticothalamic networks. Unfortunately, ethosuximide, the firstline anti-epileptic drug, controls ASs in only 50% of patients. There is, therefore, the need for discovery of new treatments for this type of epilepsy. Serotonin and its 5HT₂ receptors, known to modulate corticothalamic circuitry, might represent promising candidates.

Methods: We used EEG recording in freely moving animals to investigate the role of 5HT_{2A} and 5HT_{2CRs} on the control of SWDs in GAERS rats via systemic pharmacological injection of selective ligands.

Results: 5HT_{2A} antagonist TCB2 treatment (0.03, 0.3, 3 mg/kg, i.p.) decreased dose-dependently SWD activity, while the selective antagonists M100,907 (0.5, 3 mg/kg, i.p.) and MDL11,939 (5 mg/kg, i.p.) increased the length of ASs and blocked TCB2 effects. 5HT_{2C} agonists lorcaserin and CP809,101 suppressed dose dependently epileptic activity an effect blocked by antagonist SB242984.

Conclusion: In conclusion, both 5HT_{2A} and 5HT_{2CRs} control negatively the expression of ASs in GAERS, with only a potential tonic role for 5HT_{2ARs}. Moreover, a dysfunction of 5HT_{2A} and 5HT_{2CRs} might be involved in the pathogenesis of absence seizures and selective agonists at these receptors might be potential new anti-absence drugs. Crucially, the 5HT_{2CR} potential therapeutic effect could readily be assessed, since lorcaserin is already on the market.

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OP7.27

Transient modulation of olfactory information processing by the brainstem dorsal raphe nucleus

Szabina Furdan, Magor L Lőrincz

Research Group for Cellular and Network Neurophysiology of the Hungarian Academy of Sciences; Department of Physiology, Anatomy and Neuroscience, University of Szeged

Introduction: The neuromodulator serotonin (5HT) originating from neurons in the brainstem raphe nuclei (RN) is involved in many brain functions including the regulation of sensory perception and mood and is the major target in several psychiatric disorders. RN neurons show slow state dependent fluctuations in their firing rate, but also respond to sensory events including olfactory, auditory and somatosensory stimuli with transient (< 1 sec) modulation of their firing, but little is known about how 5HT impacts sensory processing.

Conclusion: These results identify the origin of olfactory input to the RN and argues that the olfactory system can regulate its own activity via LH and OFC derived transient firing rate changes in RN neurons. Olfactory information processing may thus be placed under the control of hypothalamic and higher order behavioral states and conditions.

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OP7.28

Impairment of synaptic homeostasis in Parkinson's disease: a highdensity EEG study in different stage of the disease

Salvatore Galati

Neurocentro della Svizzera Italiana

Introduction: Recent evidence in animal models have shown that an impaired synaptic homeostasis (SH) underlies the appearance of levodopa-induced dyskinesia (LID) attesting the importance of homeostatic adjustments of network excitability occurring during sleep. In order to confirm these findings in human, we submitted 29 Parkinson's disease (PD) patients with different stage of disease to an all-night highdensity EEG (hdEEG) study.

Methods: We performed an hdEEG (256 channels) in three PD patients groups: (i) de novo ($n=7$), (ii) advanced ($n=12$); (iii) dyskinetic ($n=10$). An age-matched control group was also subjected to the same hdEEG study ($n=6$). Slow wave activity (SWA) with an average spectral density between 0.5 and 4 Hz, was computed for NREM epoch and then normalized by the average SWA across all NREM epochs in the recording time. We compared the average SWA of early (the first five deciles) and late (the last five deciles) NREM sleep.

Results: We found that there was a difference between normal subjects and PD patients in terms of the physiological reduction SWA power, i.e. synaptic strength. Of interest, we found a difference within the three groups of suggesting a not adequate synaptic down-scaling during NREM sleep in patients with LID.

Conclusion: Our results are consistent with an impaired SH in patients with PD that is more pronounced in those patients with dyskinesia.

OP7.29

GuillainBarré syndrome in Malta

Marilyn Rogers, James Gauci, Malcolm Vella, Maria Mallia

Mater Dei Hospital

Introduction: Since the near global eradication of poliomyelitis, GuillainBarré syndrome (GBS) has become the commonest cause of acute neuromuscular paralysis. Despite available treatment, GBS still results in a significant amount of morbidity and mortality. Our aim was to conduct a retrospective analysis of the epidemiology and management of GBS in Malta.

Methods: All cases of GBS presenting between 2002 and 2012 were identified and studied.

Results: The incidence of GBS ranged from 0.25 to 3.58 per 100,000 per year, with 80% admitting to an antecedent infection. Contrary to available European data, 74% of nerve conduction studies were of the axonal subtype, while only 15% were of the demyelinating subtype. Typical albuminocytological dissociation in the cerebrospinal fluid was present in 62%. Lung function tests were performed in only 4%. Most patients were treated with intravenous immunoglobulins, while 9% also received plasma exchange. 28% of patients required ITU/HDU admission. Autonomic involvement and neuropathic pain were observed in 26% and 36% respectively. No thromboembolic events were reported. There was a dramatic improvement in the Modified Rankin scale between presentation and follow-up. 74% of patients were discharged within 20 days; 17% of these were transferred to a rehabilitation hospital. We report a mortality rate of 0%.

Conclusion: This is the first national study on GBS. Most of our data is in concordance with international data, save for the predominance of the axonal subtype. This suggests the possibility of a specific aetiological agent with resultant cross-reactive antibody production and axonal damage.

OP7.30

A retrospective cross-sectional analysis of CT brain scans in elderly patients presenting with acute confusion at the emergency department

Julian Sammut Alessi, Anna Spiteri, Richard Apap Bologna, Sarah Darmanin, Joel Pollacco

Department of Accident and Emergency, Mater Dei Hospital

Introduction: Acute confusion is a common presenting complaint at the Emergency Department (ED) which is often investigated with Computed Tomography (CT) brain scans. The practice of requesting routine CT brain scans in confused elderly patients at the ED at Mater Dei Hospital was evaluated.

Methods: A retrospective cross-sectional analysis was conducted on all triage entries of patients over 70 years presenting at the ED with acute confusion during January 2014 to June 2015. The case notes, official radiology reports and hospital-based software were used as data sources. Odds ratio with 95% confidence intervals were calculated in order to determine risk factors for a positive CT brain scan finding.

Results: The cohort consisted of 194 elderly patients with the mean age being 82 years. Amongst the 139 (71.6%) patients who had a CT brain scan performed only 9 (6.4%) patients had acute positive radiology findings, of which 5 (3.60%) were ischaemic strokes, 3 (2.16%) were cerebral hemorrhages and 1 (0.72%) had post traumatic fractures. Twenty-three (16.5%) patients had no identifiable reason for a CT brain scan to be ordered. A statistically significant association between the presence of acute CT brain scans findings was found in patients with head injury (OR 4.50, CI 1.00-20.16), neurological signs and symptoms (OR 3.39, CI 0.68-16.96), loss of consciousness (OR 3.36, CI 0.84-23.43),

falls (OR 2.67, CI 0.67-10.56) and presence of anticoagulants/antiplatelets (OR 2.48, CI 0.60-10.36).

Conclusion: Improving the ordering efficiency of CT brain scans can reduce financial costs and unnecessary waiting time at the ED.

OP7.31

Recurrent cerebrovascular events in the Maltese population

Kurt Magri Gatt', Sean Mizzi', Maria Mallia'

'Department of Medicine, Mater Dei Hospital, 'Department of Surgery, Mater Dei Hospital, 'Department of Neurosciences, Mater Dei Hospital

Introduction: A recent metaanalysis (Mohan et al, 2011) cites an 11.1% cumulative risk of stroke recurrence one year after the initial, index stroke. Targets of this study were determining Maltese recurrent cerebrovascular event types, demographics, national recurrence rates, and comparing treatment and comorbidities of recurrent stroke patients with appropriate controls.

Methods: Patients with a diagnosis of stroke or transient ischaemic attack (TIA) in 2012 were recruited and followed for two weeks, six months and one year post index event. Subjects with recurrent events were compared to controls (randomly selected patients who had a single stroke/TIA).

Results: 570 patients were recruited, of whom 47 had recurrence within one year. 57.4% were males and 42.6% were females. 53.2% of the second episodes were ischaemic, 8.5% were haemorrhagic, while 38.3% were TIAs. One-year cumulative risk for recurrent cerebrovascular events was 8.25%. The calculated incidence rate of recurrent events is 90 per 1000 strokes/TIAs per year. Statistical testing confirmed matching demographic features between recurrent event subjects and the control group. No statistically significant differences were noted on Chisquared analysis of arterial territory, type of stroke, co-morbidities and all treatment. It was noted that more patients in the control group were receiving loop diuretics and this nearly reached statistical significance ($p=0.081$).

Conclusion: The calculated national cumulative risk for recurrent cerebrovascular events is slightly lower than that quoted by Mohan et al. No significant differences were noted between cases and controls. Further studies are needed to characterize patients at increased risk, so as to target management accordingly.

OP7.32

Breast cancer patients diagnosed by national breast screening programme

Sarah Ellul', Kay Vanhear', Ramona Camilleri', Gordon Caruana Dingli'

'Mater Dei Hospital, 'Breast Clinic, Mater Dei Hospital; Medical School, University of Malta

Introduction: Breast cancer is the most common cancer in Malta. A National Breast Screening Programme (NBSP) was introduced in 2009 for women in the 50 to 60 year old age group.

Methods: The first 112 patients diagnosed by the NBSP were compared to a matched control group of symptomatic patients randomly selected from the Breast Clinic. The files of all these patients were reviewed retrospectively. In the screening group there were 94 patients with invasive cancer and 18 patients with ductal carcinoma in situ (DCIS) while in the control group there were 114 patients with invasive cancer and 3 with DCIS.

Results: In the screening group, 81 (86.2%) patients with invasive cancer underwent wide local excision (WLE)

and 13 (13.8%) underwent mastectomy. In the control group 88 (77.2%) patients with invasive cancer underwent WLE and 26 (22.8%) had a mastectomy. Out of all the patients in the screened group with DCIS, 12 (66.7%) underwent WLE and 6 (33.3%) underwent mastectomy. In the control group only 3 patients had DCIS and these were all treated by WLE.

Conclusion: The average Nottingham Prognostic Index (NPI) of the screening population with invasive cancer is (3.28 (95% CI)) and is lower than the NPI of the control group is (3.74 (95% CI)). This study shows that in the screening group there is a higher percentage of patients with DCIS when compared to the control group. Furthermore, the screened group patients with DCIS were more likely to undergo mastectomy than those with invasive cancer.

OP7.33

Time-frames in the management of new case breast cancer patients undergoing surgery with intention to treat in Malta in 2014: a retrospective analysis

Daniela Magri¹, Joseph Debono², Gordon Caruana Dingli², Danika Marmara^{2}*

¹Department of Surgery, Mater Dei Hospital, ²Cancer Care Pathways Directorate, Department of Health

Introduction: Approximately a third of new cancer cases in Malta yearly are cases of breast cancer. GLOBOCAN estimates anticipate a further increase. Ensuring timeliness in breast cancer care impacts prognosis. The Agatha Breast Unit (ABU) at Mater Dei Hospital (MDH), Malta, sees the vast majority of breast cancer cases. The aim of this study is to retrieve data for service dates in the management of breast cancer patients in order to identify pitfalls in patient care, suggest improvements and provide a framework for the implementation of the first breast cancer management pathway in Malta.

Methods: Data protection unit approval was obtained. Newly diagnosed patients who underwent surgery with intention to treat under the care of the ABU in 2014 were included. Service dates were collected from each patient's physical case file at MDH and Sir Anthony Mamo Oncology Centre, iSoft, the ABU database and PACS. Service dates were audited from initial referral, first contact at ABU, all steps of investigations including triple assessment, surgery, all steps of management at oncology as well as multidisciplinary team meetings.

Results: Preliminary data shows a mean 74 day wait from first contact to surgery for patients referred from screening and 53 days for patients referred to ABU from classical routes. Triple assessment completion mean was 15 days. Further results are pending and will be in hand by end October 2015.

Conclusion: Delay from first contact to surgery is acceptable for symptomatic patients but delayed in screen referred patients. Further conclusions are pending.

OP7.34

Preoperative axillary ultrasound staging in breast cancer surgery

Keith Sacco¹, Kirsten Schembri¹, Shawn Baldacchino², Elaine Borg³, John Agius³, Joseph Debono³

¹Malta Foundation Programme, Mater Dei Hospital, ²Department of Pathology, Medical School, University of Malta, ³Department of Surgery, Mater Dei Hospital

Introduction: While essential in breast cancer management, the extent of axillary surgery could lead to substantial morbidity. Pre-operative axillary ultrasound staging is an essential modality to guide the extent of axillary surgery so as to ensure optimal tissue resection while

minimising patient morbidity. Our aims were to identify the proportion of patients who underwent axillary ultrasound and calculate the test's sensitivity and specificity.

Methods: We conducted a retrospective survey of the 2014 incident breast cancer cohort undergoing surgery at Mater Dei Hospital. We calculated the proportion of patients who had a pre-operative axillary US report from iSOFT. The sensitivity of axillary US was determined by calculating the proportion of patients with an US report of malignant nodes having lymph node metastasis in the surgical specimen.

Results: 196 patients were identified of which 35.7% (95% CI 29.0, 42.4) had an electronically documented pre-operative axillary US report. 29.7% of reports had normal nodes, 54.7% indeterminate nodes and malignant nodes in 15.6%. The crude sensitivity of axillary US was 60% with a specificity of 68.4%.

Conclusion: Data was communicated at the breast cancer multidisciplinary team meeting (April 2015) and to radiologists with interest in breast cancer. If malignant axillary lymph nodes are detected and biopsied/FNA pre-operatively confirming metastasis, axillary clearance should be performed thus avoiding sentinel lymph node biopsy. At present, an axillary clearance without histologically proven malignant axillary nodes should not be performed in view of low sensitivity and specificity of US alone. A tentative reaudit is scheduled for January 2016.

OP7.35

Bilateral breast reduction surgery at Mater Dei Hospital: analysis of physical and psychological symptoms using the BREAST Q

Juanita Parnis, Duncan Aquilina, Matthew Borg, Francis Xavier Darmanin, Joseph Emanuel Briffa

Mater Dei Hospital, Malta

Introduction: The literature describes the high patient satisfaction rate after breast reduction. In this retrospective study, we use the BREASTQ to analyse satisfaction with breast appearance and physical, psychosocial and sexual wellbeing of patients who underwent bilateral breast reduction (BBR) at Mater Dei Hospital (MDH). We also looked into whether age, comorbidities and weight of breast tissue removed makes a difference to the overall satisfaction rate.

Methods: Permission to use the BREASTQ questionnaire and translate it into Maltese was obtained from Mapi Research Trust. The questionnaire was offered either in Maltese or in English, after an official translation was produced following a linguistic validation process. All patients who underwent BBR at MDH under the care of both consultant Plastic Surgeons were invited to complete the BREASTQ questionnaire via a telephone call and asked to come to MDH to fill it in. Other patient specific information was obtained from their hospital notes.

Results: We hope to demonstrate a better quality of life following surgery and aim to compare the results of this study to others carried out worldwide. In this way we can better understand the local situation and see where there is the room for improvement.

Conclusion: In this world of evidence-based medicine, the BREASTQ is ideal for a holistic approach in analysing patient satisfaction after BBR. Having local data at hand makes it easier for patients who are interested in undergoing the surgery to associate themselves with other local individuals.

Disclosure: BREASTQ translation fees were kindly sponsored by Collis Williams and Silderm.

OP7.36

Improving skin graft meshing

Daphne Attard¹, Aaron R Casha², Ruben Gatt¹, Joseph N Grima¹

¹Metamaterials Unit, Faculty of Science, University of Malta,

²Department of Anatomy, Medical School, University of Malta;

Department of Cardiothoracic Surgery, Mater Dei Hospital

Introduction: Conventional skin grafting meshing allows skin grafts to increase in size in one dimension. Changes in the pattern of meshing were investigated to optimize recipient site coverage area whilst keeping a small pore size.

Methods: Different meshing patterns were modeled as auxetic 2D sheets with a rotating quadrilateral mechanism using rotating squares, types I/II rectangles, types α/β rhombi, and types Ia/I β /II α /II β parallelograms. The Poisson ratio, fractional pore coverage and maximum pore size were measured for various degrees of rotation.

Results: Space-filling rotating units included squares, types I/II rectangles, type α rhombi and types Ia/II α parallelograms may be useful skin meshing patterns. All these patterns showed a negative Poisson ratio over some degrees of rotation becoming wider when stretched uniaxially (auxeticity). With rotating squares and type II rectangles, the Poisson ratio was negative at all times. The fractional pore coverage was lowest in the rotating squares pattern.

Conclusion: Skin meshing can be optimized using meshing patterns that produce rotating squares resulting in a larger area of coverage, thus reducing the donor site size, whilst maintaining small pore sizes, lessening the distance for cellular ingrowth and improving wound healing times. The auxetic patterns described are particularly suited for grafting domed areas.

OP7.37

A review of cutaneous squamous cell carcinoma excisions: a 5 year follow-up study

Matthew Borg¹, Tara Grima², Juanita Parnis¹, Duncan Aquilina¹, Francis Darmanin¹, Joseph Briffa¹

¹Plastic Surgery and Burns Unit, Mater Dei Hospital, ²Department of Surgery, Mater Dei Hospital

Introduction: Cutaneous squamous cell carcinoma (SCC) is the second commonest cutaneous carcinoma. The mainstay of treatment is surgical excision. Recurrences and metastasis occur more commonly in the first 2 years. This study looks at the data of SCCs excised in 2009, and followed up for a 5 year period to assess recurrence and/or metastasis.

Methods: All SCCs excised at the Plastic Surgery Unit in 2009 were included in the study. Data was collected from the theatre registry, iSOFT clinical manager and PACS.

Results: 79 patients were included in the study. 7 patients had synchronous lesions. 24 patients had metachronous

lesions. The average size of the lesions was 16.7mm, with an average depth of 3.8mm. The most common site to develop a SCC was the scalp (23.7%). 92.2% of all lesions were completely excised. 33.3% of incompletely excised lesions were reexcised and had remnant carcinoma. 69.9% of lesions were well differentiated, 27.4% were moderately differentiated and 2.74% were poorly differentiated. Recurrence occurred in 4.3% of lesions at an average of 15.5 months after excision. 50% of recurrences resulted from lesions which were incompletely excised. Metastasis occurred in 5.38% of patients, at an average of 18.8 months after primary excision.

Conclusion: This study gives a local picture of the presentation and treatment of cutaneous squamous cell carcinomata that is very similar to that described in the literature. Although a larger cohort of patients is required to more accurately assess recurrence, metastasis and mortality rates, these rates fall well within international standards.

OP7.38

Audit of the introduction of a see-and-treat clinic in the Plastic Surgery and Burns Unit, Mater Dei Hospital

Kurt Magri Gatt¹, Matthew Borg², Gary Magri Gatt¹, Victoria Rizzo¹, Joseph Briffa²

¹Mater Dei Hospital, ²Plastic Surgery and Burns Unit, Mater Dei Hospital

Introduction: A weekly seeandtrear clinic was introduced in January 2014. Patients referred for benign procedures were asked to attend the Plastic Surgery and Burns Unit (PSBU) early morning (instead of the outpatient department), reviewed by a consultant plastic surgeon and offered an immediate procedure with the aim of reducing the number of patient hospital visits, and eliminated the waiting time from assessment till surgery.

Methods: A list of procedures performed under local anaesthesia from February till May of 2014 was obtained from the PSBU theatre registry. Patient files were reviewed and the date of the referral of the patient to hospital as well as the date of operation was noted. The nature of the procedure (benign, malignant) was also noted. This data was compared to the same period in 2013.

Results: 50 additional procedures were performed between February and May 2014 compared to 2013. 57% (146) of procedures were of a benign nature in 2014, compared to 47% (97) in 2013. The average time from referral to operation for benign procedures was 4.8 months in 2014, and 1 month for malignant procedures, compared to 6.5 months and 1.1 months respectively in 2013.

Conclusion: This audit shows an increase in the number of procedures performed, as well as a reduction in the time from referral to treatment. The increase in procedures was mainly in those of a benign nature, without affecting the number of malignant procedures performed (110 vs 109) and the time from referral to excision of these lesions.

