OP1.01  
Contemporary clinical pharmacy practice and education  
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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  
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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, carriers of two *2 alleles, and two *2 alleles. With both laboratory-based assays, 12 were carriers of one *2 allele, and 1 was a carrier of two *2 alleles. With the POC assay, 21 patients were non-carriers and 12 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% (k=0.939, p=0.006).  
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  
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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’ 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  
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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 biologics 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 biologics. Out of the total respondents 6% consider themselves very familiar with the concept of biologics. About 47% were unaware that biologics 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 50% do not agree that these medicines could be safely switched during treatment.

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

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

**OP1.05**

**Chronopharmacology in hypertension – valsartan and amlodipine administration**

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**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 (123.9±77.9mmHg) and evening (121.3±76.0mmHg) 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 (126.2±77.3mmHg) and evening (127.7±78.7mmHg) 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 MannWhitney) 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**

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**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 newly diagnosed IBD.

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

**Results:** 70 patients (43 females; 27males) with a mean age of 30.6 (4-75 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 outpatient rather than ESR and CRP to assess clinical activity even in the absence of gastrointestinal symptoms.

**OP1.07**

**Upper gastrointestinal malignancy a losing battle?**

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**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 3290 years, follow up range 6 to 52 months). The lesions were distributed as follows: 20 oesophageal (17 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 oesophageal tumours, 12 gastroectomies, 2 EMR’s, 2 partial duodenectomies. All had Ro resections. Five patients had an unfavourable outcome. Four of these developed early metastatic and non-recurrent disease. One patient died 3 weeks postoperatively from failure to thrive and heart failure after emergency subtotal gastrectomy for exsanguination (50-day all cause mortality of 4%). Twenty patients were treated palliatively. Despite favourable imaging after neoadjuvant treatment, 4 patients had “open shunt” 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 endoprosthetic stents, 2 patients had palliative partial gastrectomy, 1 patient had an emergency gastrostomy 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
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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 19-94, 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
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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).

Conclusion: Pregnancy outcomes appear to be favourable in IBD patients. There still remains a lower breastfeeding 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
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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?

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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 (MCNs), 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. BDIPMN were commoner in the pancreatic head (55%); 94%<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% 23cm). 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 BDIPMN 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

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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.

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

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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 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. 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

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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**

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**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 (Seriel 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.**

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**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 cost-effectiveness of newborn thyroid screening.

**Methods:** Data on CTS was collected retrospectively from April 2012–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**

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**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 10^5, 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 microphalay 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

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**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 not only to 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 cross-sectional 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 news giving 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

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**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 (198) 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 over triaging of patients by inexperienced triage nurses, and the authors recommend further investigation into this and other possible causes for delays.
OP1.21

Percutaneous coronary intervention (PCI) related morbidity and mortality

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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 Cathetisation 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 instent 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 goin 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 procedures were noted. Data 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 revealed that RDW, HDL -cholesterol and alanine transaminase were independent predictors of mortality at 10 and 20 years.

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

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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 long term outcome following ACS.

OP1.23

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

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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 HIF1α, VEGF and obstructive sleep apnoea in the development of coronary collateral circulation

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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 factorα (HIFα) 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 HIFα 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 [AH1, $p=0.21$]), with a nonsignificant odds ratio of 2.17±1.61 ($p=0.21$), but was not related to the presence or absence of OSA. However, HIFα 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 HIFα and VEGF levels. Significantly, augmented HIFα 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.

OP1.26 Estimation of ejection fraction by ventriculography vs echocardiography: a comparative study

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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 trans-thoracic 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

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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 35.19%, 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. 24.39% 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**  
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**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.

**Conclusion:** The local ePortfolio has been very well taken up by the medical community, 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?**  
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**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 (3.4±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 speciality 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?**  
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**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=0.075). 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 skilltraining 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.**  
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**Introduction:** The study aimed to describe and quantify EoL (end-of-life) care locally.

**Methods:** A national crosssectional survey of all doctors
Results: Response rate was 39.7%. 31.2% received no training in palliative medicine and had been practicing for 19.72 years (95% CI: 18.98 – 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 always requests for euthanasia. 60.4% agreed (23.6% 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

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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 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/WCMC, JIRB #1400158.

OP1.33
The elicitation of Jung’s shadow in Star Trek

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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 Aristotelian moral virtue ethics, Kantian deontological principles, existentialism, Aristotelian 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
N-acetylaspargt (NAA) induces neuronal differentiation: a possible escape from neuroblastoma tumor

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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: SHS5Y 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 SHS5Y 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 SHS5Y 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 synap tic ectosomes and B cell activation**
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**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 and 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**
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**Introduction:** Acute myeloid leukaemia (AML) is the commonest acute leukaemia in adults which results from a block in the normal differentiatiation 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.

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

OP1.37
**Investigation of antimicrobial activity of restorative materials in relation to material properties and methods used for antimicrobial activity assessment**
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**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®, Dyrax 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, Dyrax 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
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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 5fluouracil, 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 (r2=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
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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 PDGFRα 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 PDGFRα 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
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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 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.

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, Sientech Ltd., E.J. Busuttil Ltd., Malta Heart Foundation
OP2.01
Diagnostic-therapeutic imaging through nuclear medicine: still discovering the egg of Columbus?
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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: still discovering the egg.

OP2.03
Adequacy of ultrasound-guided fine needle aspiration (FNA) of thyroid nodules
Christine Jo Cannataci, Reuben Grech
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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 35.5% 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 34.2% 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
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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 local therapy still constitutes the quintessence of nuclear medicine.
Physician and pharmacist perception on risks associated with potential antibiotic prescribing by pharmacists

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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, 56% 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.

OP2.06

Outcomes of endovascular treatment of critical ischaemia in the Maltese population

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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. 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 infrainguinal vessels (439 SFA, 309 popliteal, 249 calf arteries, 6 CFA) and the rest suprainguinal (43 CIA and 43 EIA). 739 patients (87%) underwent successful angioplasty +/- stenting. 40 (4.7%) were only partially successful. 141 patients (16.6%) and a pharmacist patient profile have been included.

OP2.05

Pharmacist prescribing

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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**

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**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**

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**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 checkers. Logistic regression determined the odds ratio for the association of DDIs with the number of medication prescribed. One way 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 175 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 1.633-8.9). 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**

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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 Cassar*, Anthony Serracino Inglott*, Stephen Montefort†, Christopher Duganver†, Lilian Azzopardi†

Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, †Department of Medicine, Mater Dei Hospital, †Sleep 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 Sechena, 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**

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**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**

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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 101 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 (34.98%) and current wheezing (17.8%) were in keeping with ISAAC Malta data. Southern cumulative (32.98%) and current wheezing (17.8%) were in keeping with ISAAC Malta data. Southern residential areas increased rhinitic symptoms (OR 3.14; \( p=0.001 \)) 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 (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 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. 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)**  
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†Division of Respiratory Medicine, Mater Dei Hospital, ‡Department of Public Health, Faculty of Medicine & Surgery, University of Malta, §Department 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 standardised 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 Balzan†, Gaspare Dragò†, Christopher Zammit†, Silvia Ruggieri†, David Bilocca‡, Fabio Cibella‡, Stephen Montefort‡, Giovanni Vigei‡  
†Mater Dei Hospital, ‡Istituto di Biomedicina e di Immunologia Molecolare, Consiglio Nazionale Delle Ricerche, Palermo, †Institute for Atmospheric Pollution, Consiglio Nazionale Delle Ricerche, Rome, ‡Chemistry 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 1543(620-1946) ng/m³, Organic Carbon 848(319-1149). Using ICPMS, Fe 99.3(53.6-154.6), Vanadium 7.14(2.1-9.0), Ni 5.0(1.9-8.2), Cu 12.2(2.3-8.2). Lower than reference: S04 ++ 1621(446-2449), Nitrate 382(178-446), NH4 + 504(170-687), Ba 244(109.3-386), Zn 24.16(10.9-28.2). 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).

**Conclusion:** The chemical fingerprint of PM2.5 in Malta 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.

**OP2.17**  
**RESPIRA project: the chemical fingerprint of outdoor PM2.5 in Malta**  
Martin Balzan†, Fabio Cibella‡, Christopher Zammit†, David Bilocca‡, Cinzia Perrino3, Silvia Canepari4, Stephen Montefort‡, Giovanni Vigei‡  
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**Conclusion:** The chemical fingerprint of PM2.5 in Malta 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.
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. 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 anaesthesia 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
Tatjana Farrugia, Federica Sant, Christabel Mizzi, Karen Sapiano, Matthew Bonello

Introduction: Caesarean 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 Caesarean sections 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 Caesareans 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 Caesarean sections carried out, 72% of category 1 sections and 90% of 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?
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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
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‘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.
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OP2.22

Introduction of a ventilator associated pneumonia (VAP) prevention bundle

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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

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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 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

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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 8% (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

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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**

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**Introduction:** Hair has many biological functions and hair diseases have a great impact on patients’ physical and psychosocial wellbeing. The aim 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**

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**Introduction:** Psoriasis is a chronic inflammatory affliction hallmarkd 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 mononuclear 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?**

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**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 agematched 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 ($P=0.03$) and flatter ($P=0.009$) 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 ($\times 5-\times 10$) 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.
OP2.29
Inducing differentiation of HL60 cells via a nucleoside analog and 3-bromothiophene
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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 μM or 10 μM 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 μM and 10 μM. 3-bromothiophene resulted in significant differentiation on day 3 at both concentrations of 1 μM and 10 μM. On day 5, 3-bromothiophene resulted in significant differentiation at 10 μM.

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
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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
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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

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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

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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 ‘Q chapter’ of the WHO International Statistical Classification of Diseases were taken as deaths attributed to congenital anomalies. The congenital causes were grouped according to anomaly underlyings, non-congenital anomaly causes decreased over the period (4.6/1000 livebirths 1994 1998 vs. 2.5/1000 livebirths 20092013) 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

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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 selfefficacy 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 selfcare 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 selfcare. 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 subgroups 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

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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 cross-sectional European Health Interview Survey (EHIS) was used. Data for the population less than 65 was analysed (n=18,48) 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/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**

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**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=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 ebbing of frail/small male foetuses. 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 65.8% 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**

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**Mater Dei Hospital, -Mount 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 214 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 (72.9%) were on at least one medication that interacts with nicotine via the cytochrome
Results: 10 patients were included. The mean age was 58.7 years. The median length of post-operative hospital stay was 2.43 (range 2-3) 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
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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 ration was 3:3:1. 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
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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 linea alba and the umbilical vessel is preserved. The Ultrapro® Plug is then inserted through a 2-3 cm incision in the left supraumbilical area and netting is then passed around the defect. The mesh is then anchored to the linea alba using non-absorbable sutures and then to the rectus sheath and external oblique fascia with absorbable sutures. The wound is then closed in a standard manner.

Results: Twenty four patients were operated on and there was a 100% success rate with no recurrence at a mean follow up of 24 months. There were no instances of mesh exposure and no complications related to the use of the Ultrapro® Plug.

Conclusion: The Ultrapro® Plug is a reliable substitute for a permanent mesh in the repair of umbilical hernias. The simple technique avoids the risk of wound infection and is associated with no recurrence.
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
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Introduction: The prevalence of type 1 diabetes (T1DM) is increasing worldwide, with varying incidence rates between countries. Such cases can 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
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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,
**OP3.09**

**Type 2 diabetes, bone and disc height**

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**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 fmeoral neck and spine in diabetic and non-diabetic subjects, after adjusting for multiple covariates which may affect BMD. Interveteral 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 non-diabetic subjects were recruited. A cross-sectional 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 ± standard deviation [SD] 0.08 ± 1.2 vs 0.20 = 1.24; *p*=0.040 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 z2nd and z3rd 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**

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**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 (56) 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**

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**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) and HDL cholesterol (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**

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**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), homostatic 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 screening programme**

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**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**


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**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® bead based 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%
OP3.15
Novel molecular classifiers of basal-type subset in breast cancer patients
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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® bead based expression assay was validated and used to analyse 44 Laser microdissected Maltese formalin fixed paraffin embedded (FFPE) breast tumours. Data was compiled, consisting of basal/luminal classifiers; epithelial-mesenchymal transition markers; PP2A subunit expression; basal PP2A biomarkers and housekeeping genes. The Luminex® bead based expression assay was validated and used to analyse 44 Laser microdissected Maltese formalin fixed paraffin embedded (FFPE) breast tumours. Data was converted to a 2-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=6520).

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
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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 basal tumour subtypes were cultured. Forty breast cancer tumours from various subtypes were collected. A Luminex® bead based 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
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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
lation-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 HNF4α 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**

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**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, 50, 100 ng/mL. Following 24 hours the cell viability was measured using an MTT assay, or lysed to prepare RNA for transcript quantification using Luminec® 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**

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**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 PCR-based assay amplification, followed by a hybridisation step and identified via a Luminescence 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 low-risk 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 response to the 2014 Ebola epidemic in West Africa**

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**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 real-life Ebola threats happening during normal hours and out of
OP3.21

Novel tricalcium silicate cements: not just common cements

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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 biomimeralization. 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 biomimeralization 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

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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 diabetes 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

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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 Dyraet 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 Dyraet 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 Dyraet 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 Falcon Parascandalo, 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. The Mantoux test is a screening tool 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.

**OP3.26**

**Evaluating fosfomycin as an alternative treatment for infections caused by highly resistant OXA48 entero bacterial 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+AmplScreen kit from Rosco Diagnostica, OXA48 gene was confirmed by RT PCR (RotorGene Q).

**Results:** Out of total, 74% CPE were susceptible to fosfomycin (MIC <=16mg/mL). Pse isolates were less susceptible compared with those from urine (75% vs 90%). Co ESBL/OXA48 entero bacterial 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 entero bacterial 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 Attard, Jurgen Abele**

*Department of Primary Care, Ministry of Health and Energy, 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...
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 notes 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.
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 SAHHTek survey: results from the pilot study
Sarah Cuschieri1, Fatemah Abdullah1, Bader A Ali1, Gary Bonnici1, Yimeng Zhang1, Anthony Cini1, Christopher Barbara2, Neville Calleja2, Josanne Vassallo2, Julian Mamo2
1University of Malta, *Mater 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% 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 Mizi 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 Microsoft Excel and chi-square tests for trend.

Results: Between 2000-2014 a total of 60,380 deliveries from 2000-2014 was obtained from NOIS and from 22 weeks gestation occurring in Malta. Anonymous data (NOIS) collects comprehensive data on all births and deliveries to mothers in the 30-34 and 35+ year age groups 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.

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

Disclosure: University of Malta, *Mater Dei Hospital

OP3.33
It’s not all about time: factors implicated in food choices among Maltese mothers
Elaine Dutton1, Lynn B Myers
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 to 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 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 Brinca, 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.
Treatment of psoriasis with biologic agents in Malta

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1Department of Dermatology and Venerology, 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.

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

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.

OP3.36 Monitoring of patients with systemic lupus erythematosus in local practice

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OP3.38
The outcome of kidney transplantation in antineutrophil cytoplasmic antibody-associated vasculitis
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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. Patien 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 allograft survival were examined together with disease recurrence 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.

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 Rezzino1, Garbiella Balzan2, Daniel Debbattista2, Emanuel Farrugia1
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 incidence rate was higher in males (average 64.8%). The 2012 incidence rate of patients receiving RRT in Malta was similar to that of Portugal (211 pmp vs 219 pmp) but was nearly double the UK incidence 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.

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 first-line 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 used to determine the most suitable antibiotic regimes 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 sepsis 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.

**OP4.03 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 sepsis 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 cystourethrogram in Malta**

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**Introduction:** Low-grade vesico-ureteric reflux (VUR) is unlikely to be of clinical significance whereas high-grade VUR may be associated with renal dysplasia/sclerosis, hypertension and chronic kidney disease. Micturating cystourethrogram (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 NICC 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
OP4.05 Reversible intestinal failure from a milder phenotype of tufting enteropathy caused by a novel large deletion in the EPCAM gene

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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

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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 (25%). 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)

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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

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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 show 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

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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%/6.74%) and also in combined cleft lip and palate (17.62%/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?

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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 pressure expression energy of pressure vessels size 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, R²=0.958, p<0.001; flow rate allometry 1.028, R² =0.933, p<0.001; pressure allometry 0.057, R² =0.174, p=0.304. Test 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

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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

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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

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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

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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.

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**OP4.15**  
**Assessment of antiretroviral drug resistance mutations in HIV seropositive patients in Malta**  
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**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/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**  
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**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 anti-retroviral 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  
Agenzia Sedaqa  

**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 Fibrosis 4 score were available for 127. A higher Fibrosis 4 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 Fibrosis 4 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 Fibrosis 4 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, Fibrosis 4 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?**  
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**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.
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 Parascandalo, Elizabeth Anne Scicluna, Rodianne Abela, Karl Galea, Claire Farrugia, Ermira Tartari Bonnici, Deborah Xuereb, Noel Abela, Simeone Zerafa, Michael Angelo Bory

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

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Introduction: 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.

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 (80-100 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

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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 post mortem 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 post mortem brain samples of suicidal patients, with a clinical psychiatric anamnesis.

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increased in the cortical GABAergic and glutamatergic neurons of suicidal subjects as well as in glial cells, more likely via interleukin-6 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
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**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 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.

**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, is treated as an area of future investigation.

OP4.23
In vivo imaging and monitoring astrocytes in health and disease
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**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 employed by a highly 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 semi-quantitative 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?
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**Introduction:** Spinal Muscular Atrophy (SMA) is an untreatable neuromuscular disorder resulting from limiting levels of the Survival Motor Neuron (SMN) protein. SMN interacts with Gemin 28 and Unrip to form a macromolecular complex whose best characterised function concerns the assembly of spliceosomal Smn small nuclear ribonucleoproteins (snRNPs). Each SMN2Gemin complex member is thought to have a key role during this process. It is however unclear how defects in snRNPs assembly lead to the selective neuromuscular degeneration that is typical in SMA.

**Conclusion:** We propose that a disruption in the normal stoichiometry of the SMN2Gemin complex depresses its function, with consequences that lead to SMA. We are present elucidating which function of the SMN2Gemin 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
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Introduction: Autism spectrum disorder (ASD) is a group of heterogeneous neurodevelopmental disorders that severely impair the CNS and affects 2-70 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 on subthalamic nucleus and L-dopa on TMS-evoked cortical reactivity in Parkinson’s disease patients
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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/OND; iii) double ON (ONtherapy/OND). In each condition, 80 single TMS pulses are delivered over left M1 while simultaneously acquiring EEG.

Results: When turning STNDBS ON (OFFtherapy/OND-DBS and ONtherapy/OND) 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/OND condition promoted a synergistic increase of GMFP peaking at 100ms (P3). Time/frequency analysis showed a synchronization of activity in the 107 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
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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
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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
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 intertrochanteric 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 intertrochanteric hip fracture. Special care should be given to this subpopulation to try to reduce compounding factors that may increase the mortality rate.

OP4.30 Delirium and its management in hip fracture patients
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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.

OP4.29 Comparison of the total care pathway for neck of femur fractures between Mater Dei Hospital, Malta and Barnet Hospital, London UK
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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.

OP4.31 Mortality following hip fracture in Malta
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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**

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**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**

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**Introduction:** 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**

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**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 MnSOD-3 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 Xray 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 azide with azide is the first that shows how the substrate is positioned as the MnSOD azide 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.

**Disclosure:** Project “R&I2015001” is being financed by the Malta Council for Science & Technology through the R&I Technology Development Programme.
DNA microarrays and RNA seq in macrophages stimulated with bacterial lipopolysaccharide.

**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 (NFκb) and IRF5 was investigated by co-immunoprecipitations and chromatin immunoprecipitation (ChIP) procedure followed by qPCR. This model was further investigated on a genomewide level using ChIP-seq, protein:DNA microarrays and RNAseq in macrophages stimulated with bacterial lipopolysaccharide. OneStrep truncation mutants of IRF5 and NFκb member RelA were used to map the interacting domains.

**Results:** We discovered that IRF5 binds to regulatory elements of the irf gene locus and other highly transcribed elements of the gene locus and other highly transcribed elements of the genome.

**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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studied. Cell proliferation was determined using 3H-thymidine incorporation and the presence of proliferating cell nuclear antigen (PCNA). Tissue viability was established by measuring adenosine nucleotides using HPLC.

**Results:** Increased expression of c fos, c jun and cmyc was shown in surgically prepared saphenous vein. Intraluminal treatment with c fos 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 c fos, c jun and cmyc in the surgically prepared vein may be involved in increased cell proliferation and the treatment with c fos antisense reduces c fos expression and may have an impact in SVQ disease

**OP4.38**

**Serum amyloid A in chronic obstructive pulmonary disease**

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**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-1β, IL6, LIF and IL8. Six and 24h post incubation, promoter activity was quantified using dual luciferase reporter assays. Stable COPD patients were recruited from Mater Dei Hospital outpatient clinic, as part of a separate project, and serum SAA concentrations were analysed using ELISA.

**Results:** IL1β 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±4.4µg/ml (SEM) at baseline, 76.6±11.3µg/ml after 8 weeks (difference from baseline; p<0.05), and 56.0±9.5µg/ml at week 12.

**Conclusion:** Inflammatory microenvironments can induce SAA2 transcription in airway related cells, with the promoter being most active in IL1β-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**

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**Introduction:** As known, oral squamous cell carcinomas (OSSC) 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 OSSC-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 proliferation 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**

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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
A retrospective observational study of the causes and treatment of recurrent early pregnancy loss

OP5.02

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.


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.

Awareness of the human papillomavirus (HPV) and HPV vaccines

OP5.03

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 outpatient’s 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.

The role of cytokines in cutaneous aging during menopause

OP5.04

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-alpha (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. TNFs 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 (TGFβ), cytokineinterich 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.

Serum cytokines in Maltese women with miscarriage

OP5.05

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: TNFα, IFNγ, IL10 and transforming growth factor β1 (TGFβ1). Comparison will be made between maternal circulation linked to a T helper (TH)-1 cell type immunity. 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.

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 0.35(0.14 0.88, p=0.05) were positive predictors, while Hypercholesterolemia OR 3.91(1.16 12.07, p<0.06), Diabetes OR 4.2(1.45 12.2, p<0.06), Education on scale of 14, OR 1.35(0.951-0.94, 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, 43.1% 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.

OP5.07
Predictors of inhaler technique in asthma and COPD
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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: 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 75% 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
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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 follow-up 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 extra pulmonary malignancy, concurrent CT during 2012, excluding those with a history of malignancy, Mater Dei Hospital with one or more pulmonary nodules on Fleischner recommendations.

Results: The study population consisted of 135 SPNs, and 56 patients with multiple nodules. All SPNs ≤8mm were benign, while those measuring >8-20mm had a 21.8% (n=12) risk for malignancy, and those measuring >20-30mm had a 28.6% (n=8) risk. SPNs ≤8mm were followed up in agreement with Fleischner recommendations in 49.6% (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
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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±9.6years, 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 12months. 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
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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 4.3%, 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
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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 Bugeda, Jesmar Buttigieg, Paul Glynn, Joseph Farrugia Agius, Mario Pio Vella, Louis Buhagiar,**

**Emanuel Farrugia**

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**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 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.

**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 66.0% (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 21.4) for every session.

**OP5.14 Is surveillance of native arteriovenous fistulae required in the Maltese haemodialysis population?**

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**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 159±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**

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**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 1 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**

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**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 route of incompetence (60.4%). A completely intact source (69.8%), while the great saphenous vein was the most affected. 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**

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**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, ps0.001, and disease staging were statistically significant predictors of survival, ps0.001. 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
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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 decision making. 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=6). 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.
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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 satus. 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
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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 (IFN γ), lipopolysaccharides (LPS), tumour cell free DNA (cfDNA) and TexOE® (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 will be effective in Tregs eradication.

Results: RTPCR indicated that IFNγ and TexOE® did not alter the FOXP3 expression in an isolated Treg population, however LPS caused an increase in FOXP3 expression.

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
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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 Vetranal, 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 GSK3β, suggesting the potential involvement of GSK3β 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
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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 30x10^9/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 Becl lymphoma?
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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 Grade 3 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 70 years (average 26.34 days) compared to patients over 70 (average 23.74 days) (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?
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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.

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Introduction: Experimental Medicine, University of Foggia were performed on 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.
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% (± 8.6% 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 weight or ideal body weight, patient height, ENT review and was missing in 100% of patients. Height was recorded in 15.6% (± 8.9% at 95% confidence level) of patients. 29.6% were over the 76 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**

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**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 IgE-mediated 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 asthma-related 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-6%, 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 rs124777314 with pulmonary function**

**Godwin M Grech1, Godfrey Grech2, Roger Ellul Micallef1, Ian Hall3, Anthony G Fenech1**

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**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 (rs124777314) in an intergenic region on 2937.3 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) rs124777314 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 rs124777314 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 rs124777314 may underlie the observed association seen with pulmonary function.

**OP5.28**

**Pharmacogenetic aspects of thiopurine methyltransferase in Maltese individuals**

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**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 TMPT 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 PCRFFLP, tetramer arm 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: 6% (n=390), TPMT*3B: 1.3% (n=390), TPMT*3C: 1.1% (n=380). Promoter sequencing (n=126 chromosomes) revealed 3 SNPs (4567T>G, 4622T>A, 4793A>T) and homozygous or heterozygous deletions of 17 or 34bp occurring between positions 49865023 (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**

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**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 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.
A closed cycle audit of coagulation screen requests of patients admitted to the Emergency Department at Mater Dei Hospital

**Aim:** 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 evaluates 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.

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**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 Lasagna

**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 with re-assessment after each component.

**Aim:** To determine number of RCU transfused per episode in non bleeding 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 8.4% 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.

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**OP5.33**

**Launching and running “SA Learn” - a safety alerting system for learning at Mater Dei Hospital**

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**PaSQuIT** 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 (PaSQuIT) was tasked by hospital management to develop such a system, in order to improve patient safety at Mater Dei Hospital.

**Methods:** A PaSQuIT 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

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**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, 17.4% 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 Micalef Ejnaoua1, Franklin Abela1, Julian Delicata2, Benedict Aixsa1*

1‘Department 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.
Trends and patient characteristics of suicides in Malta

Elena Marie Felice, Ethel Felice, Marie Therese Camilleri Podesta, Dolores Gauci, Kathleen England, Neville Calliope, Lydia Grixti, Charlene Bondin, Sephora Santucci

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 90% 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.

A case control and follow up study of ‘Hard to Reach’ young people who also suffered from multiple complex mental disorders

Nigel Camilleri, Dorothy Newbury Birch, Paul McArdle, Deborah Stocken

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 ofYP who attended the IP and CMHT. Phase 3: 24-months 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 theYP within each sample.

Conclusion: The term ‘HTR’ describes a state which theYP 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
**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. 22% 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.

**OP6.06 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 for 60 minutes. The orthoester was not achieved. While when a stronger acid (HCl) was used to catalyse the reaction, hydrolysis of the steroid orthoester was not achieved. 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:** 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.

**OP6.07 Development of a greener selective acylation method for steroids**

*Darren Cioffi, Anthony Serracino Inglott, Nicolette Sammut Bartolo, Victor Ferrito, Janis Vella, Lilian M Azzopardi*

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**Introduction:** Solvents used in the synthesis of active pharmaceutical ingredients are mostly toxic to the environment. This study aims to synthesise a 17α,21 di-steroid using a greener method.

**Methods:** Selective acylation of the primary hydroxyl group at C21, in the presence of a secondary group at C17, of a 17αmonoester steroid was performed. The steroid was dissolved in ethyl acetate and reacted with acetic anhydride in the presence of tri-methylsilyl tri-fluoromethanesulphonate at 65°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.
OP6.09
Factors affecting the concentration of ciprofloxacin in ischaemic tissue
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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
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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
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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',4,4',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',4,4',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',4,4',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
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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 ERs a viable drug target specifically for ER-negative breast cancer management. The experimental steroidal molecule SR16388 is a high affinity inverse ERs agonist and was used as a template for the in silico design of novel ERs 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 cyclohexymethyl (1-potol yl 1Hindolyl methyl)-amine:ER complex was modelled in SYBYLX®v1.1 and the components separated. SR16388 was docked into the ERα 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 pharmacochemically similar families and ranked according to physicochemical properties and Lipinski Rule compliance.

**Conclusion:** The study was successful in the design of nonsteroidal ERs 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**

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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. 66%; 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**

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**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 = 0.069). 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 0.96–0.99; 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**

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**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)
Haematological parameters in a trial of Perceval and Mitroflow aortic valve implantation

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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 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 (ttest p=0.038, post-operative white cell counts p=0.034, and red cell distribution width (RDW) p=0.011 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.

Longterm survival after aortic valve replacement: a twenty year relative survival study

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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 (26.33%) 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
Methods: Several foreign training institutions have their own training ePortfolio and in most countries this is specialty 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).

OP6.20
ePortfolio for postgraduate medical training: the Malta experience
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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.

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.
OP6.22
Peer teaching in anatomy: does it really work? A cross-sectional, retrospective survey
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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
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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 Chi squared 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 (7.9±4.9 vs 7.7±4.5, p=0.691), operative time (227±64.8 vs 222±68.9 minutes, p=0.284), bypass time (95±42.9 vs 89±45.1 minutes, p=0.055), and aortic cross-clamp time (50±42.7 vs 57±42.8 minutes, p=0.072); hospital mortality (1.2 ± 2.3%, p=0.221) and 90-day mortality (2.5 ± 3.7%, p=0.266) mortality. Those patients operated on by trainees had a slightly shorter length of stay (9±4.5 vs 10±7±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.

OP6.24
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 Chi squared 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 (7.9±4.9 vs 7.7±4.5, p=0.691), operative time (227±64.8 vs 222±68.9 minutes, p=0.284), bypass time (95±42.9 vs 89±45.1 minutes, p=0.055), and aortic cross-clamp time (50±42.7 vs 57±42.8 minutes, p=0.072); hospital mortality (1.2 ± 2.3%, p=0.221) and 90-day mortality (2.5 ± 3.7%, p=0.266) mortality. Those patients operated on by trainees had a slightly shorter length of stay (9±4.5 vs 10±7±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.
OP6.26 Beware email invitations to submit a paper!
Justine Bugajska, 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 new models 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
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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 with 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)
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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 high-risk 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 768 admissions were analysed (51.1% males; 48.0% females). 167 patients (29.4%) were started on thromboprophylaxis; 159 had risk factors and from these 117 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 <30ml/min/1.73m2; 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
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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 295 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
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 3 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
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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.


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 NFPAs 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 NFPAs 3.0mm; PRLomas 7.7mm; GHSecting 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). NFPAs had predominantly a superior extension into the cavernous sinus (63.6%) compared to the functional PAs which had predominantly an inferior extension into the cavernous sinus (59.1%) (p=0.022).

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
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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 had 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 Kruskall 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
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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**

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**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 Chi squared test. All categories investigated showed no significant difference, excepting hypogonadism (p=0.034). Further subgroup analysis of the azoospermic subset (n=10) 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**

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**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**

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**Introduction:** Mutations in the KRAS oncogene are negative predictors of response of advanced colorectal cancer (CRC) to anti epidermal 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
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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 [capecitabine-based therapy versus 5FU/FA-based 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/FA-based 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 required hospitalisation for two nights for treatment with 5 FU/FA each month. 84±5 of these patients 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.

OP6.37
Cost implications of current dose rounding in high cost parenteral anticancer treatment and potential cost savings with a 5% dose rounding
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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 up 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 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 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 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 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 to the nearest graduation on the syringe by the pharmacy reconstitution unit.

Methods: A retrospective study was conducted over a 5 month 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
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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 Annexin V assay and DCFDA 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 PANC1 (p<0.01).

Conclusion: Our results reveal that the reduction of the glucose intake significantly affects the drug response in highly glycolitic cells. Defining the metabolic feature may represent an additional important target for developing new therapeutic strategies to overcome chemoresistance.
Assessing the quality and completeness of request forms in the histopathology department

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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.

The efficacy of lymph node fine needle aspiration cytology

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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: 1: Non-diagnostic, 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.

An observational study of obstructive sleep apnoea in Malta

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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: 37.3±10.1 kg/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.

A local perspective on risk factors and short term outcomes in community-acquired pneumonia

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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 9.94±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),
Pulmonary rehabilitation in pulmonary fibrosis patients - benefits of a 12 week programme

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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.

The effects of pulmonary rehabilitation (PR) on inflammatory markers in stable chronic obstructive pulmonary disease (COPD) patients

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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:8.16) at 12 weeks.

Conclusion: Exercise delivered through a PR programme did not result in any statistically significant change in the inflammatory markers.
OP7.08
Pilot testing international diabetes definitions
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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 40.6% as normal, 45.5% as IFG, and none fell in the DM category. 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 Mizz Foundation, Atlas Insurance and RIDT as main funding sources

OP7.09
Teenage delivery rates in Malta
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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 obtained from NOIS and analysed using MS excel 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?
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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 1.18; 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 years 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
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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 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.

**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**

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**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 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 peritonitis (0.22 vs. 0.08/patient-year-at-risk, p<0.0001) and *streptococcus (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**

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**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 NNA 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**

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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 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?**

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**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-Guerin (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 Camilleri**, **Miriam Gatt**, **Yves Oscar Muscat**

*Baron*

**Introduction:** Over the past 15 year significant changes have occurred in the demographics 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, 531 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.

**OP7.20**

**The first 100 cycles**

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**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 90th 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.

**OP7.19**

**Who gets pre-eclampsia in Malta?**

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**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 pregnancy. 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 primaparous 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.

**OP7.21**

**Advanced maternal age and pregnancy outcome – a review of 39,683 births**

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**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 section. Contrarily, 56.73% of mothers with advanced age delivered vaginally and a significant 40.08% delivered by Caesarean section. The mean birth weight of neonates of mothers aged 20–29 years was 3288.86g 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.
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(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 interventions or emergency Caesarean sections. 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 12.55 kg 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
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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: 390 pregnant ladies were invited to attend for a 75g OGGT between 24 and 32 weeks of gestation [28.85 weeks ± 1.65 weeks] after an overnight fast of at least 8 hours. 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.

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 OGGT.

OP7.24
Thyroid dysfunction in pregnancy – a pilot analysis of a Maltese cohort
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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 hyperthyroidism. 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 Appgar 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
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Introduction: Absence seizures (ASe), 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 form 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 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 (5HT2A) and 2C (5HT2C) receptors in modulating experimental absence seizures

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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 5HT2A and 5HT2CRs on the control of SWDs in GAERS rats via systemic pharmacological injection of selective ligands.

Results: 5HT2A 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. 5HT2C agonists lorocaserin and CP809,101 suppressed dose-dependently epileptic activity an effect blocked by antagonist SB242984.

Conclusion: In conclusion, both 5HT2A and 5HT2CRs control negatively the expression of ASs in GAERS, with only a potential tonic role for 5HT2ARs. Moreover, a dysfunction of 5HT2A and 5HT2CRs might be involved in the pathogenesis of absence seizures and selective agonists at these receptors might be potential new anti-absence drugs. Crucially, the 5HT2CR potential therapeutic effect could readily be assessed, since lorocaserin is already on the market.

Disclosure: This work was supported by the ERUK (grant P1202 to VC and GDG), the Malta Council of Science and Technology (grant R&I201314 to GDG and VC) and EU COST Action CM1103.

OP7.27
Transient modulation of olfactory information processing by the brainstem dorsal raphe nucleus

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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 argue 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.

Disclosure: Hungarian Scientific Research Fund, Hungarian Brain Research Program, Human Frontier Science Program.

OP7.28
Impairment of synaptic homeostasis in Parkinson’s disease: a highdensity EEG study in different stage of the disease

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Introduction: The neuromodulator serotonin (5HT) 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
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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
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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
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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 9.0 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 Chi squared 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
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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 proportion 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 breast cancer patients undergoing surgery with intention to treat in Malta in 2014; a retrospective analysis**  
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**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 (SOFT), 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**  
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**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**  
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**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.

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OP7.36
Improving skin graft meshing
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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 Iα/Iβ/Iα/Iβ 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 Iα/Iβ/Iα/Iβ 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
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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 16.7 mm, with an average depth of 3.8 mm. 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
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Introduction: A weekly see-and-treat 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.