POSTER PRESENTATIONS

P1.01

Investigation and management of diabetes in antenatal patients

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Introduction: The diagnosis of gestational diabetes mellitus (GDM) in Malta is based on the American Diabetes Association (ADA) guidelines. International Association of Diabetes and Pregnancy Study Group (IADPSG) guidelines have more stringent criteria for diagnosis. The aim of this audit was to assess adherence of current practice to ADA guidelines. Patients whose random blood glucose (RBG) levels fell under IADPSG criteria were also reviewed to identify patients diagnosed with GDM otherwise not identified on the basis of ADA criteria.

Methods: The medical data of patients attending for a booking visit in April and May 2014 at Mater Dei Hospital was reviewed. Blood results were obtained from iSoft clinical manager, focusing on the booking RBG, follow-up fasting blood glucose (FBG) and oral glucose tolerance test (oGTT).

Results: Out of a total of 819 cases, 13 patients had an RBG above the upper limit set by ADA. Out of these, 3 patients were followed up with an FBG and 4 with an oGTT and 3 patients had no follow-up blood glucose testing done. A follow-up post-partum oGTT was done for only one patient. 355 patients were identified to have an RBG level above the upper limit of the IADPSG guidelines; 35 patients had an oGTT, out of which 13 patients would be classified as having GDM.

Conclusion: Lack of adherence to ADA guidelines for GDM screening was noted. Moreover, GDM was diagnosed in patients who did not fall under ADA criteria for screening, questioning their suitability for the Maltese population.

P1.02

Clinically significant antibodies identified in obstetrics and gynaecology patients: a retrospective analysis

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Introduction: Allo-antibody formation arises upon a sensitising event occurring when there is exposure to red cells carrying foreign antigens, which are lacking on the patient's red cells. When these antibodies are clinically significant, they may cause mild to severe post-transfusion reactions. Additionally, these antibodies may cause haemolytic disease of the fetus and newborn (HDFN) if detected during pregnancy.

Methods: A type and screen is performed on all requests for blood at the Mater Dei Hospital Blood Bank. Pregnant ladies are also screened in a similar way (antenatal screening). Any detected antibodies are identified using the column agglutination technique. Requests from all gynaecology and obstetric wards at Mater Dei Hospital received between May 2009 and May 2014 were analysed.

Results: There were 1417 patients with a positive antibody screen (286 of which were duplicates, i.e. there was more than one request for screening). 150 patients had clinically significant antibodies and, in total, 167 antibodies were identified (17 cases had more than one antibody). The most common clinically significant antibodies identified were: anti-E (19.8%), anti-K (16.8%) and anti-c (13.2%). Anti-K and anti-c were more prevalent in obstetric cases, while anti-E was more commonly found in gynaecology patients.

Conclusion: It is essential to identify allo-antibodies in patients prior to transfusion and during pregnancy, as this influences patient management. For transfusion purposes, antigen-negative units have to be selected, and this sometimes requires collaboration with the transfusion service for adequate provision. During pregnancy, antibody titres are worked out to assess the severity of HDFN caused by the antibody.

P1.03

Operative management of severe post-partum haemorrhage

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Introduction: Severe postpartum haemorrhage (PPH) is a major obstetric emergency. When medical management does not control the haemorrhage, surgical methods are employed.

Methods: This study was a review of deliveries over a ten tear period in Malta's government hospitals. Operative interventions to arrest post-partum haemorrhage were analysed. The operative interventions included B-Lynch and peripartum hysterectomy. Peripartum hysterectomy cases included, were those performed after 20 weeks' gestation, and happening between 24 hours and 6 weeks postpartum.

Results: Over a ten year period 2004 to 2014, there were a total of 44,284 deliveries. In this period 14 documented deliveries had to undergo a peri or postpartum hysterectomy, a rate of 0.316 per 1000 deliveries. 8 cases out of these 14 (57.14%) were related to emergency deliveries. The use of the b-Lynch was documented only once. The most common indication for peripartum hysterectomy was abnormal placentation, including placenta praevia and morbidly adherent placenta (50% of cases). 10 cases (71.42%) had a history of previous caesarean deliveries, a defining risk factor for abnormal placentation. Use of blood products was also studied. Maternal morbidity noted in 5 cases (35.71%) including 2 cases of bladder injury, 1 case of ureteric injury, 2 cases of sepsis, and one case of pelvic haematoma. No maternal mortality reported.

Conclusion: The study confirms peripartum hysterectomy is a rare event, with possible serious complications. All obstetricians should be aware of predisposing risk factors. Senior members of the obstetric and the anaesthetic team should be involved early on in the management of severe post-partum haemorrhage.

P1.04

Lifestyle factors affecting the risk of recurrent miscarriage in the Maltese population

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Introduction: Recurrent miscarriage (RM) is defined by two or more failed pregnancies. It affects approximately 1% of families trying to conceive and may have a significant biopsychosocial burden. RM is associated with anatomical, genetic, endocrine, thrombophilia, immunological, infective or environmental factors. In more than 50% of cases it is idiopathic. RM can increase the risk for depressive and anxiety disorders, coronary artery disease, ovarian cancer, pre-eclampsia and may increase mortality.

Methods: To assess the effect of different factors on the order of miscarriage, data was gathered from all females (n=56) attending the Recurrent Miscarriage Clinic between January-2014 and June-2015. Data gathered included Body Mass Index (BMI), Order of Miscarriage, ultrasound (US) screening for anatomical abnormalities and presence of smoking or excessive alcohol consumption.

Results: Of the women attending the Recurrent Miscarriage Clinic within the set timeframe, the Average Order of Miscarriage (AOM) was as follows: AOM for females with BMI of 20.0 – 22.9 was 2.08 (n=13) whilst that for females with BMI of 29.0 – 31.9 was 2.44 (n=9). AOM for non-smokers was 2.33 (n=45) as compared to 2.27 for smokers (n=11). AOM for

normal ultrasound findings was 2.16 (*n*=32) as compared to PCOS with AOM of 2.29 (*n*=7), presence of fibroids in utero with AOM of 2.83 (*n*=6) and presence of an arcuate uterus with AOM of 2.60 (*n*=5).

Conclusion: In conclusion, RM is affected by a number of factors, most of which can be managed in order to increase the chance of a successful pregnancy, in turn improving the biopsychosocial outcome.

P1.05

Adolescent pregnancies in Malta

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Introduction: Teenage pregnancy has a significant impact on society, globally contributing to maternal and child mortality and to the cycle of poverty and ill-health, in part due to the associated socio-economic factors which contribute to pregnancy at a young age.

Aim: To compare Maltese adolescent pregnancies to European countries.

Methods: Maltese data from 2008 to 2012, was compared to that of other EU countries. Adolescence was defined as less than 19years of age. Onset of labour, mode of delivery and parity were also analysed.

Results: Overall in EU countries, teenage pregnancies have decreased from 2008 till 2012; in Malta a similar decrease was noted. However, the rate in Malta is noted to be higher than the average in the EU, ranking seventh from a total of 28 countries. Although birth rate in Malta has been on a slow increase, adolescent pregnancies have decreased slightly. From a total of 788 teenage pregnancies from 2008 to 2012, only 7% had had a previous live birth. Of those who deliver during adolescence, only about 6% have an elective C-section. The rest either go into labour spontaneously or had an induction of labour. Of the latter about 80% had a normal vaginal delivery – the rest had an emergency C-section or an instrumental delivery for foetal distress or no progress.

Conclusion: The impact of such pregnancies on the mother and her child must be analysed to better understand what needs to be done to offer the necessary infrastructure for help and support.

P1.06

Shoulder dystocia in Malta – A European Comparison

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Introduction: Shoulder dystocia is an obstetric complication during cephalic deliveries whereby the foetal shoulders get impacted against the maternal pelvic bones after the head is delivered usually due to malrotation. Risk factors include foetal macrosomia, maternal diabetes and maternal obesity.

Aim: To compare Maltese data of shoulder dystocia with European data.

Methods: Data was collected from the Maltese National Obstetric Information System hospitals for the years spanning from 2000 to 2012. Data was then compared to European.

Results: There were 258 cases of reported shoulder dystocia during the studies period from a total of 52,623 births. Incidence rate of shoulder dystocia in Malta from 2000 to 2012 was of 0.49% which is comparable to the European rate quoted in literature of 0.58% to 1.4%. The highest occurrence locally was in 2007. One can also note a general trend of decrease in the number of cases with shoulder dystocia.

Conclusion: From the data available, Malta has a lower rate of shoulder dystocia when compared to our European counterparts. Knowledge of the rates of shoulder dystocia and comparison with other centres allows for better monitoring and thus prevention of such occurrences. This also helps in implementing strategies such as obstetric emergency drills to decrease such occurrences.

P1.07

Anomaly Scans – A 1 year plus review at Mater Dei Hospital Obstetric Unit

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Introduction: Fetal anomaly scan are usually done between 18 to 22weeks of gestation. They are an essential aide for pre-natal fetal anomaly diagnosis whilst offering time for discussion at feto-maternal meetings for further management and care.

Aim: Review of anomalies picked up at the Anomaly Scan over an 18 month period.

Methods: All fetal anomalies picked up at Mater Dei Hospital obstetric ultrasound unit were reported and catalogued for the months between February 2014 till August 2015. All were discussed at the monthly Feto-Maternal meeting and outcome recorded.

Results: 26 foetal anomalies were picked up. Some fell under more than one heading of anatomical system. Most common were cardiac anomalies (8) followed by neurological and gastrointestinal anomalies (7cases each). Urogenital (3), skeletal (1) and iatrogenic (1) followed. 4 cases were classified under other since did not fit any particular system. There were 9 foetal demises intra-utero or after delivery.

Conclusion: The fetal anomaly scan at 18 to 22weeks is a useful milestone during pregnancy to detect major abnormalities and plan before-hand for deliver and care whilst counselling psychologically to parents to be.

P1.08

Importance of Antenatal screening and diagnosis in Maltese Medical Practice

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Introduction: Antenatal screening and diagnosis is an important aspect in antenatal care. With improved methods for screening and diagnosis, the accuracy of such investigations is high. Internationally all pregnancies are screened in first and second trimester. Most countries also perform tests in the third trimester. In Malta screening is sporadic, and most patients are actually not screened by certified professionals. Antenatal knowledge of foetal well-being has multitude of benefits to the parents, obstetricians, paediatricians and other specialities like paediatric surgeons, neurosurgeons, maxillofacial and plastic surgeons who will care for the baby once delivered. Knowledge of a foetal condition is vital for planning. In a small number of cases there is possible intra-uterine surgery in tertiary centres abroad, whereas in most cases planning of the timing, method and place of delivery. Knowledge of a condition allows discussion about the limited use of resuscitation procedures performed by paediatricians after delivery. Planning on timing of delivery with NPICU considering the limitations of space and resources is essential to allow paediatricians to be able to work with the adequate resources. Antenatal knowledge helps parents to deal with the news and plan with the medical professionals without the postpartum pressure. Antenatal screening also has important medico-legal implications as failed diagnosis can result in a worse foetal and/or maternal outcome, whereas false positive results which could result in extra stress and unnecessary procedures.

Conclusion: A proper multidisciplinary Foetomaternal Medicine Unit involving Obstetricians, Paediatricians, Psychologists, Midwives and Surgical specialists is required to allow an organized screening program.

P1.09

The use of amniotic fluid index *vs* deepest vertical pool in the Maltese population

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Introduction: Both AFI and DVP are measures of the amniotic fluid volume antenataly and are an indicator of foetal well-being. The more measurements an index requires, the more risks of error and unnecessary interventions. Aim: To check if there is a difference in using AFI vs DVP

Methods: 46 low risk antenatal patients with singleton pregnancies were evaluated for AFI and DVP between 36 and 40 weeks of gestation. Their pregnancy outcome was noted and results analysed using the unpaired student T-test.

Results: Out of the 46 patients, 39 delivered normo-vaginally between 38-41weeks with 2 requiring instrumental delivery due to prolonged second stage and 5 requiring an emergency caesarean section 4 for no progress and 1 for foetal distress. All babies were born with good apgars at 10minutes from birth. Comparing AFI to DVP, AFI varied from 5.3 to 24.86cm with a mean of 13.91cm (SD: 1.107). DVP varied from 2.54 to 7.94cm with a mean 4.54cm (SD: 2.845, $p<0.001$).

Conclusion: There was no difference between AFI and DVP indices making both suitable options to measure amniotic fluid index.

P1.10

Assessment of renal function in pregnancy: are we using the proper reference ranges?

Edith Sciberras, Sarah Sultana Grixti, John Mamo

Introduction: Reference values are usually defined based on blood samples from healthy men or non-pregnant women. This is not optimal as many biological markers changes during pregnancy and adequate reference values are of importance for correct clinical decisions. The aim of the study was to determine if trimester specific ranges should be used for serum creatinine.

Methods: This retrospective study, included 189 healthy females with uncomplicated pregnancy booked for lower segment cesearian section from January 2015 to June 2015. Their serum creatinine during the third trimester was recorded using Isoft clinical manager and this value was compared to the reference values for serum creatinine (44-80 micromoles/litre) given by the lab at Mater Dei Hospital. All data was kept anonymized.

Results: 29.1% of the patients had a creatinine that is below the range offered by the lab.

Conclusion: Without adequate reference intervals, there is both an increased risk of missing important changes due to pathological conditions and to erroneously interpret normal changes as a pathological event. This study highlights that there is a need for further population and trimester specific studies in order to determine whether trimester specific ranges should be employed in the local setting.

P1.11

Can the antenatal booking visit reduce caesarean section rate?

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Introduction: The objective was to assess any difference in Caesarean Section Rates of an Obstetric Firm between two time periods following intervention at booking visit.

Methods: From the 1/5/2012 the management of pregnancy and delivery was not only discussed verbally with the woman but the steps of the whole process were documented on the co-operation card and hospital notes. Spontaneous vaginal delivery was encouraged in all women where considered safe. In the majority of women a gestation of 41+3 weeks was advocated.

Results: Between May 2010 till April 2012, 681 were delivered under the Firm concerned while between May 2012 till May 2015, 686 women were delivered. The booking visit occurred significantly earlier in group 1 (15 weeks) when compared to group 2 (17 weeks). Induction rates rose from 24.6% (Group1) to 28.2% (Group 2). The vaginal birth after Caesarean section increased non-significantly by 4.9%. The caesarean section rate decreased non-significantly from 28.8% to 27.4%. The emergency Caesarean section rate decreased non-significantly 17.62% to 14.72%.

Conclusion: Downward trends in the Caesarean Sections rate and increased rates of vaginal birth after Caesarean section were noted when comparing both periods under study. Proper documented counselling at 17 weeks gestation gives timely direction to all the stakeholders involved including the parents.

P1.12

Antibiotics prophylaxis in Caesarian sections

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Introduction: Postpartum infection is a major cause of maternal morbidity and its incidence is greatly increased in delivery by Caesarian section. Prophylactic antibiotic use has been shown to significantly reduce this risk. This audit compares the adherence to antibiotic prophylaxis in Caesarian sections before and after an initiative to promote the antibiotic guidelines with the obstetrics and gynaecology department of Mater Dei Hospital.

Methods: The sample included patients undergoing Caesarian sections at Mater Dei Hospital in October 2014. The clinical notes and treatment charts were reviewed to assess antibiotic prophylaxis. After our quality improvement project, a re-audit was performed in December 2014. Quality improvement project during November 2014 the educational campaign took place. The promotion included the use of posters, repeated emails and education of personnel during induction meetings to the department. Standard used local guidelines recommend a single dose of intravenous co-amoxiclav 1.2g. In penicillin-allergic patients intravenous clindamycin 600mg should be used.

Results: During October 2014 data was collected from 54 cases and adherence to guidelines was 5.5%. Following the educational campaign data was recollected and 70 cases were assessed; adherence to guidelines was 50%. In all cases of non-adherence, the correct antibiotics were prescribed for a longer period than recommended.

Conclusion: Our simple, low cost initiative had drastic effects on adherence rates. Guidelines are still not being adequately followed in a large number of patients. We suggest further education of doctors, nurses and midwives via lectures and during departmental meetings.

P1.13

Neonatal group B Streptococcal disease in Malta

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Introduction: *Streptococcus agalactiae* (Group B streptococcus) is an important cause of early onset neonatal sepsis (EONS), presenting <7 days from birth, which may be may be prevented by the administration of intrapartum antibiotic prophylaxis to mothers at risk. The aim of this study was to describe the incidence, outcome and maternal risk factors for GBS sepsis in neonates.

Methods: All neonates aged <7 days who had *Streptococcus agalactiae* isolated from the blood or cerebrospinal fluid from December 2008 till July 2014 were identified. Neonatal and maternal data were collected retrospectively from their case notes.

Results: Over the 5 ½ year study period there were 18

neonates with EONS caused by GBS resulting in an incidence rate of 0.72/1000 live births. The mortality rate reached 11.1% (2/18), and 12.5% (2/16) of survivors had an adverse neurodevelopmental outcome. The following maternal risk factors for EONS were identified: GBS isolated from a high vaginal swab in 16.7% (3/18), premature delivery in 31.2% (5/16) and prolonged rupture of membranes (>18 hours) in 37.5% (6/16), of who 33% had fever during delivery. None of the parturient mothers were given intrapartum antibiotic prophylaxis.

Conclusion: GBS is still an important cause of EONS in Malta. Administration of intrapartum antibiotics to mothers with risk factors for GBS sepsis can potentially result in a reduction in the incidence of EONS.

P1.14

Varicella Seropositivity in the antenatal population

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Introduction: Chicken pox in pregnancy is associated with increased maternal mortality and morbidity from pneumonitis, encephalitis and hepatitis as well as foetal varicella syndrome and varicella infection of the newborn. To identify the frequency of varicella seropositivity and thus immunity to chickenpox in the local antenatal population. A secondary aim is to audit the current local practices regarding antenatal varicella serology testing.

Methods: A random sample of pregnancies was obtained from local registries. The patients whose varicella serology was tested were recorded.

Results: Of the 545 patients studied, 121 patients (22.2%) were tested for the presence of Varicella IgG antibodies. 82.6% of the local population tested was noted to be positive, 12.4% tested negative with the remainder 4.1% having an indeterminate result.

Conclusion: The prevalence of immunity for the varicella zoster virus is slightly lower at 82.6% in the local setting as compared to UK data. Whilst universal serological screening is not recommended, in view of the psychological consequences that expectant mothers endure, mothers-to-be without a history of exposure to Varicella or those coming from tropical or subtropical countries may be considered for antenatal serological screening. Varicella vaccination is an option for non-pregnant women of reproductive age who are seronegative for Varicella. Seronegative pregnant women with a significant exposure to varicella may be considered for varicella zoster immunoglobulin within ten days of exposure.

P1.15

Preventing post-partum haemorrhage in patients with cardiovascular disease

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Introduction: Cardiovascular disease causing fixed cardiac output states result in patients being exquisitely sensitive to the haemodynamic changes imposed by post-partum haemorrhage (PPH). This case report discusses a potential role for compression sutures in preventing post-partum haemorrhage in patients with cardiovascular disease having a lower segment caesarean section (LSCS).

Methods: A 31-year-old pregnant with monochorionic twins presented at 36 weeks gestation complaining of increasing shortness of breath and chest pain on exertion. The patient was known to suffer from moderate sub-aortic valvular stenosis. A repeat echocardiogram showed a peak gradient of 58mmHg from 42mmHg 9 days previously. In view of the maternal cardiac decompensation, the multidisciplinary team decided to expedite delivery. During LSCS a prophylactic compression B-lynch suture was employed. A lower dose of syntocinon of 2 units over 10-20minutes was used.

Results: The uterus remained well contracted and a syntocinon infusion was not required in the intra- or post-operative period.

Conclusion: According to national registries since 2005 pre-existing maternal cardiovascular disease was noted in 0.003% of Maltese pregnancies. Of the 124 expectant mothers with cardiovascular disease 46 were delivered by LSCS. Compression sutures are used as first line surgical management of PPH when routine medical management has failed. In patients with cardiovascular disease PPH can prove to be especially difficult to manage since syntocinon and overzealous correction of haemodynamic instability with fluids may result in cardiac decompensation and fluid overload. The use of prophylactic compression sutures during LSCS may help prevent PPH effectively, whilst utilizing lower doses of syntocinon.

P1.16

Relationship between maternal and foetal cord blood thyroid status – an exploratory study

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Introduction: The association between cord blood thyrotropin (cbTSH), cord blood thyroxine (cbT4) and obstetric, maternal and neonatal factors has been the subject of considerable interest in the recent past. We sought to explore the impact of this relationship in a University Teaching Hospital in Malta.

Methods: Pregnant women had thyroid profile measured at the antenatal booking visit. Past medical and obstetric history, maternal age and maternal body mass index were additionally recorded. Antenatal complications, maternal and neonatal outcomes and cbTSH and cbT4 values were traced for each patient/neonate following delivery.

Results: Data was collected from 93 patients (mean [SD] age=29.2 [5.1] years). Of these, 55 patients had normal thyroid function tests while 33 had isolated hypothyroxinaemia. There was no association between maternal booking thyroid profile and cbTSH and cbT4 levels. We report a negative correlation between maternal age at booking and cbT4 at delivery. (Spearman's rho=-0.227; p=0.046). There was no significant correlation with cbTSH. Similarly, there was no significant relationship between cbTSH / cbT4 and maternal BMI, mode of delivery, gestational age at delivery, neonatal birth weight, neonatal gender and Apgar scores.

Conclusion: To our knowledge, this is the first study investigating the relationship between cbTSH and cbT4 levels and perinatal, maternal and neonatal factors in a Maltese cohort. Results obtained justify embarking on a larger scale study.

P1.17

SNP in GDM and obesity

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Introduction: A complex interplay of obesity and inflammation combined with environmental influences lead to a change in the metabolic profile in pregnancy leading to the development of gestational diabetes.

Methods: We studied 309 random pregnant women that resulted in 61 GDM mothers analysed according to the IADPSG criteria and 248 normal women that were used as controls. The sample was further divided into lean and obese according to a BMI of under or over 30 respectively.

Results: FABP2 was significantly different between the GDM and the control cases in the homozygote state. FTO was statistically significantly different in those hetero and homozygous pregnant mothers in the cohort with a BMI of less than 30kg/m^2 divided into controls or GDM.

Conclusion: FABP2 was the only SNP to be statistically significant between the GDM and the control cases. It reached nearly statistically significance when the obese group was divided into those with normal biochemistry against those with GDM. FTO was the SNP to show statistical difference in the lean cohort between the control and the GDM cases. This proves that FTO is linked to the metabolic status associated with GDM. This study proves once more that single gene polymorphisms cannot explain the complex interplay of factors that characterize a complex disease such as gestational diabetes where gene to gene interaction, summative gene effects and gene-environment interaction have not been taken into account.

P1.18

Third trimester composite screening protocol for GDM

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Introduction: Screening methods using simple composite screening with a FBG and adiposity may effectively help reduce the need for OGTT in low resource countries.

Methods: The study was a prospective, non-interventional study carried out on 1368 pregnant women from around the Mediterranean. The population was divided into two groups: A: women diagnosed to have GDM according to the ADA criteria; and B: women found to have a normal glucose tolerance (NGT). Each of the two groups was divided into four sub-groups: 1: women with a FBG >5.1 mmol/l; 2: BMI >30kg/m^2 with FBG 4.5-5.0 mmol/l; 3: BMI <30kg/m^2 with FBG 4.5-5.0 mmol/l; 4: BMI >30kg/m2 with FBG <4.4 mmol/l; and 5: BMI <30kg/m2 with FBG <4.4 mmol/l

Results: Women with a FBG≥5.1 mmol/l are considered as suffering from GDM (73.9% of GDM cases, 9.8% of normal glucose tolerance [NGT]); Women with a FBG≤4.4 mmol/l are considered as normal (10.1% of GDM, 57.7% of NGT); and Women with FBG values of 4.4-5.0 mmol/l are considered as suffering from GDM if they are adipose. This would further correctly identify 5.9% of the GDM cases but wrongly identify 14.2% of the NGT women. An OGTT would then only be required in lean women whose FBG screening test was 4.4-5.0 mmol/l who account for only 17.6% of the population.

Conclusion: It is reasonable to adopt a composite screening protocol to identify GDM women especially when one considers that the adipose pregnant NGT woman carried similar risks and should receive similar lifestyle and nutritional advice as the GDM woman.

Disclosure: MDSG Study Group

P1.19

Available nutritional substrates in women with GDM

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Introduction: The present study investigates the physiological interrelationships in GDM between glycaemic levels and lipid metabolism.

Methods: The study was a prospective, non-interventional study carried out on a convenient sample of 178 pregnant women in Greece and 309 women in Malta who were not known to suffer from any form of carbohydrate metabolism problems outside their pregnancy. The study population was subdivided into two groups: A. women with normal glycaemic indices as defined by the IADPSG criteria [n=328]; and B. women identified as suffering from GDM [n=159].

Results: The lipid levels including cholesterol [p=0.03] and HDL [p=0.01] were all statistically reduced in the GDM group. LDL was similarly reduced but the difference did not show statistical significance. Triglycerides were statistically elevated [p<0.0001]. Maternal body weight correlated positively with the glycaemic indices reflected by the fasting blood glucose [p=0.002], AUC [p<0.0001] and HOMA-IR [p<0.0001]. It correlated inversely with cholesterol [p<0.0001], HDL [p<0.0001] and LDH [p<0.0001], but positively with triglycerides [p<0.0001]. The glycaemic indices correlated inversely with cholesterol, HDL and LDL, but positively with triglyceride. The infant birth weight correlated positively with maternal BMI, the glycaemic indices and triglycerides levels. It correlated negatively with cholesterol and HDL levels.

Conclusion: It would appear that in the presence of elevated glycaemic indices, the lipid levels represented by cholesterol, HDL and LDH are proportionately decreased. In contrast triglycerides are increased. This interrelationship appears further to relate to maternal body weight with obese women tending to have higher glycaemic indices and triglycerides but lower lipid levels.

Disclosure: MGSD study group

P2.01

The prevalence of parent reported food hypersensitivity at school entry in Malta

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Introduction: This research aimed to provide local statistics in the area of food hypersensitivity (FHS) in the paediatric population, as the prevalence of such allergic and non-allergic food hypersensitivity (intolerance) to food in Malta at the present time is previously undocumented.

Methods: Between January and March 2015, every school in Malta which included Year 1 children aged 5-to-6years (N=83 schools) was invited to participate in this research study. Participant schools (n=42) were then provided with a questionnaire to be distributed to those parents who had previously reported FHS to the school through the health information sheet.

Results: The point prevalence for food hypersensitivity in the 5-to-6 year old participant population in the study was found to be 3.4%. This prevalence is lower than internationally reported levels. Of the foods causing hypersensitivity in the studied group, milk and milk products were the main causes, affecting 38.9% and 30.6% of participant children respectively, followed by tree nuts which affect 22.2%.

Conclusion: The 3.4% point prevalence of Year 1 children with FHS in Malta indicates the need for school policy guidelines

in this area. Such local statistics also show that the Health Department needs to plan in this field. This could possibly include the set-up of a state clinic that holistically assists all patients with heightened reaction to food.

P2.02

An audit on the outcome of preterm babies born at 25-30^{+6} weeks of gestation

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Introduction: Determining the neurodevelopment at 12 months post conceptional age (PCA) of preterm infants after discharge from the NPICU at MDH.

Methods: Preterm infants of gestational age 25-30^{+6} weeks who were admitted to NPICU between 15th March 2011 to 14th March 2014, were identified. Neurodevelopmental outcome at 12 months PCA was recorded.

Results: 75 preterms were identified, 39 of which were randomly assigned under the care of Dr Paul Soler. Of these, 6 babies (15%) died from related complications; 8 (20.5%) were lost to follow up; 25 (64.1%) were assessed at 12 months PCA as out patients. Of these, 20 preterms had a normal neurodevelopmental examination; 4 showed global developmental delay; and 1 patient had an evolving left-sided hemiparesis secondary to right parieto-occipital cystic periventricular leukomalacia. During their stay at NPICU, 2 preterms had necrotizing enterocolitis, 2 developed chronic lung disease and 3 were diagnosed with retinopathy of prematurity.

Conclusion: Preterm infants of gestational age between 25 and 30^{+6} weeks are at significant risk of mortality (15%). The majority of survivors (80%) were found to have normal neurodevelopmental milestones at 12 months PCA, while 20% had global developmental delay or motor impairment secondary to brain injury associated with severe prematurity. It is encouraging to note that 80% of the preterms who were followed up, had no adverse sequelae.

P2.03

A review of attendances at Paediatric Accident and Emergency Department at Mater Dei Hospital for neurological complaints

Stephen Attard, Bettina Gauci, Amaris Spiteri, Adriana Warrington

Introduction: Attendances at paediatric accident and emergency department (A&E) during a six month period were reviewed, to determine the proportion of children with neurological complaints, type of symptoms and the outcomes in terms of admissions, discharges and out-patient referrals.

Methods: Neurological complaints were classified as (a) febrile convulsions, (b) unprovoked seizures, (c) status epilepticus, (d) headaches, (e) altered consciousness, (f) acute ataxia, (g) flaccid weakness, (h) visual loss, or (i) others. Outcomes of these attendances were also recorded as either admission, referrals to out-patient clinics or discharges from A&E.

Results: A total of 7670 children attended paediatric A&E during the study time of which 352 (4.5%) presented with neurological complaints. 173 children (49%) presented with headache, 54 (15.3%) presented with unprovoked seizures, 51 (14.4%) presented with febrile convulsions, 34 (9.6%) presented with altered consciousness and the remaining 40 children (11.7%) presented with various other complaints. 24.8% of children who presented with headache were admitted, 34.1% were referred to out-patient clinics and 41% were discharged. In contrast, 75.5% of children you presented with unprovoked seizures were admitted, 22.2% were referred to out-patient clinics and 3.7% were discharged. There were no deaths.

Conclusion: 1 in 20 children who attended paediatric A&E presented with neurological complaints. One half of these children presented with headache, around one third presented with seizures (febrile and unprovoked), around 10% presented with altered consciousness. Around a half of these children were admitted, a quarter were discharged home and the other quarter were referred to out-patient clinics.

P2.04

Public knowledge relating to head lice in Malta

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Introduction: Head lice are very common wherever children aggregate in close groups, particularly in schools and refugee centres. Although most families will experience head lice in at least one member, public misconceptions relating to lice and their treatment abound, and this study set out to assess this problem.

Methods: Over a six day period, all Maltese nationals presenting with diverse complaints to one public dermatology clinic (Boffa Hospital) and one health centre clinic (Floriana), were invited after verbal consent to fill a brief (5 minute) dedicated questionnaire that covered simple questions on lice, their prevention and treatment.

Results: Five declined to participate whilst 200 attendees, with a 160:40 female:male ratio, aged 17-77 years (mean 46.2), completed the questionnaire anonymously. Participants included individuals spanning 49 diverse jobs, of which 55 were housewives, 26 clerical workers, 25 health related workers and 17 worked in schools. 147 had children of which 75 (51%) had had lice aged between 2-12 years (mean 6.1). From the total of 200, 161 (81%) knew what lice were, and 135 (68%) were correct regarding the mechanism of spread. In contrast, 99 (50%) believed that lice resulted from poor hygiene and just 75 (38%) would have treated this condition appropriately.

Conclusion: Although the general public awareness on lice and its mode of spread was good, only a minority were sufficiently knowledgeable regarding prevention and treatment. A focused public campaign may help dispel myths and improve overall understanding of this common infestation.

P2.05

First urinary tract infections in infants less than 2 months of age

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Introduction: Guidelines on imaging following first urinary tract infections (UTIs) have been published since 2007. There is a paucity of evidence regarding investigation in infants <2 months of age. We reviewed our experience with UTIs in this cohort.

Methods: All infants <2 months of age presenting with a UTI between 2009-2013 were included. UTI was defined as a growth on urine culture; mixed growths were only considered if the urinalysis and microscopy (U&M) was suggestive and the CRP raised. We documented the method of collection, U&M, micro-organism, CRP and any imaging.

Results: 130 infants were included. There were 161 growths: 88 (54.66%) were from catheter specimens, 18 (11.18%) were from clean catches, 16 (9.94%) were from bag specimens. For 39 (24.22%) growths the method of collection was unknown. U&M was suggestive in 60 infants (46.15%) and omitted in 9 (6.92%). CRP was raised in 52 infants (40%) and omitted in 29 infants (22.31%). The commonest micro-organisms were E.coli (47.20%) and *E. faecalis* (18.01%). 87/130 (66.92%) infants had a renal ultrasound; 19/87 (21.84%) were abnormal. 53/130 (40.77%) had an MCUG;11/53 (20.75%) were abnormal. 42/130 (32.31%) had a DMSA scan; 6/42 (14.29%) were abnormal. 7/130 (5.38%) had a DTPA scan; 2/7 (28.57%) were abnormal.

Conclusion: NICE guidelines recommend ultrasound

imaging for first UTI in all infants <6 months and MCUG/DMSA scan with abnormal ultrasound or atypical/recurrent UTIs. In our series, the diagnostic yield from imaging was low. We would recommend ultrasound in all infants with first UTI <2 months with further imaging in selected cases.

P2.06

Vitamin D status in children with renal disease

Gianluca Bezzina, Valerie Said Conti

Introduction: The purpose of this study was to assess the Vitamin D status of children attending the outpatients renal clinic, allowing us to determine the prevalence of Vitamin D deficiency in Malta, where children presumably get adequate sun exposure all year round.

Methods: 61 children were enrolled in the study. 19 had congenital renal tract anomalies, 10 had meningomyelocoele, 7 had Bartter's syndrome, 5 had congenital nephrotic syndrome and 20 had a variety of renal conditions. The serum concentrations of Calcium, Phosphate, Total 25(OH) Vitamin D, Creatinine, Alkaline Phosphatase and PTH were recorded. A total 25(OH)VitD concentration of 31-100ng/mL was considered to be sufficient, a concentration of 20-30ng/mL insufficient, whereas <20mg/mL was considered to be deficient.

Results: 31 boys and 30 girls, ranging in age from 2 months to 16 years were included. Of the 61 subjects, 18% were found to be Vitamin D deficient, with total 25(OH)VitD concentrations of <20ng/mL. 44% were found to have insufficient 25(OH) VitD concentrations, with the remaining 38% having sufficient concentrations of 25(OH)VitD.

Conclusion: A significantly large proportion of the paediatric renal patients were found to have insufficient or deficient concentrations of Vitamin D. This raises concern towards the need for adequate monitoring of Vitamin D status and Calcium metabolism. Optimisation of Vitamin D levels is of utmost importance, given the morbidity and mortality that is associated with inadequate mineral metabolism seen in renal disease.

P2.07

Urinary tract infections in premature infants less than 37 weeks gestation on the neonatal intensive care unit

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Introduction: The prevalence of urinary tract infections (UTIs) in preterms is reported as 4-25%. Previous studies have not found an increased incidence of underlying anatomical anomalies in this cohort and there is no consensus on imaging. We sought to describe our experience.

Methods: Infants <37 weeks gestation on the unit between January 2008-December 2013 diagnosed with a UTI were included. Data collected retrospectively included gestational age, gender, presenting signs, CRP, micro-organism cultured from urine, cerebrospinal fluid and blood, and imaging studies performed.

Results: 10 of 1869 (0.53%) preterms had a UTI. 8 (80%) were male. Presenting features included apnoea (*n*=2), jaundice (*n*=1), irritability (*n*=1), weak cry (*n*=1), hypothermia (*n*=1), pallor (*n*=1), tachypnoea (*n*=1), anaemia (*n*=1), vomiting (*n*=1). Micro-organisms from urine included *E. faecalis* (37.5%), *E. coli* (25%), *Proteus mirabilis* (12.5%), *Enterobacter aerogenes* (12.5%) and *Morganella morganii* (12.5%). No fungal organisms were cultured. 6 had a CRP between 6-50mg/L, 1 had a CRP of <6mg/L. There was no concordance between urine, blood and CSF cultures. 5 (50%) infants had a renal ultrasound. All were normal. One preterm had an MCUG and DMSA scan, both of which were normal. None of the infants presented with recurrent UTIs following discharge from the unit.

Conclusion: The incidence of UTIs is less than reported in the literature. Few preterms underwent imaging studies, all of which were normal. Underlying anatomical abnormalities predispose to recurrent UTIs but none of the infants had subsequent UTIs, suggesting that no serious anomalies were missed. We suggest that this cohort does not require intensive imaging.

P2.08

Does the current gentamicin dosing regimen in neonates result in safe serum levels?

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Department of Paediatrics

Introduction: Gentamicin is used empirically in neonatal sepsis. In neonatal intensive care units gentamicin use is guided by protocols because of its narrow therapeutic window and the potential risk of oto- and nephrotoxicity. We aimed to determine if the current gentamicin prescribing practices on the Neonatal and Paediatric Intensive Care Unit (NPICU) at Mater Dei Hospital result in safe trough levels.

Methods: All neonates on gentamicin were recruited in the study carried out on NPICU from 2013-2015. Participants were stratified according to birth weight as follows: <1.5kg, 1.5-<3kg and ≥3kg. Risk factors for gentamicin toxicity and the first gentamicin serum trough levels were recorded. A gentamicin concentration of ≥2mg/l was taken as indicative of potential toxicity. Group differences were analysed using a z-test.

Results: A total of 119 neonates were recruited, 90% of who had safe gentamicin levels. Of the 41 babies with a birth weight ≥3kg (mean gestation 38.7 weeks), 39 (93%; 95% Confidence Intervals [CI]: 85-100%) had safe gentamicin trough levels. Safe levels were recorded in 55/61 (90%; 95%CI: 82-98%) of neonates weighing 1.5-<3kg (mean gestation 35.9 weeks). In comparison 13/17 (76%; 95%CI: 56-96%) of neonates weighing ≤1.5kg had gentamicin levels below the threshold of toxicity. Differences in the proportion of neonates with gentamicin levels <2mg/l were not significant between the groups. Of the 13 babies with high gentamicin levels, 38% (5/13) had risk factors known to potentially cause high gentamicin levels.

Conclusion: The current gentamicin prescription practices on the NPICU result in safe serum gentamicin trough levels.

P2.09

Building a multidisciplinary team to manage antenatal hydronephrosis

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Introduction: Antenatal hydronephrosis is detected in 1 in 200 pregnancies and half will have normal postnatal scans. Management by a multidisciplinary team will facilitate early treatment to minimise or prevent progressive renal damage and avoid over-investigation and unwarranted parental anxiety.

Methods: Consecutive postnatal referrals with antenatal hydronephrosis to the nephrologist in 2013 were reviewed. Age at referral, antenatal findings communicated to parents and paediatricians, age at first ultrasound, clinical course, subsequent imaging and any intervention were noted.

Results: Twenty-four infants were referred. First referral was to nephrology in 16 (67%), urology in 7 (29%) and 1 (4%) was to a general paediatrician. Antenatal diagnosis included hydronephrosis (5), hydronephrosis with specified side (5), bilateral hydronephrosis (4), bilateral hydronephrosis with degree of severity (6), left hydroureter (1), renal pelvis dilatation (3). 10 families (41%) were well-informed and 2 families (8.3%) presented antenatal reports at first visit. 15/24 (62.5%) postnatal ultrasounds, 9/19 (42%) MCUGs, 7/11 (63%) DMSA scans, 7/9 (77.7%) DTPA scans were abnormal. 7 infants (29%) required surgical intervention, 15 (62.5%) required prophylaxis,

9 (37.5%) presented with a urinary tract infection after 2 months of age.

Conclusion: The diagnostic yield from postnatal imaging is high. Information communicated to paediatricians is insufficient to council parents adequately antenatally. Most parents were not given formal antenatal reports and were unaware that antenatal scans are relevant during the first postnatal interview. A multidisciplinary team including the obstetrician, foetal ultrasonographer, paediatric urologist and paediatric nephrologist is essential to provide adequate antenatal counselling to worried parents and timely postnatal management.

P2.10

Screening for congenital hypothyroidisim in Malta

Tara Grima, Paul Soler

Introduction: Congenital hypothyroidism (CHT) is defined as thyroid hormone deficiency present at birth. The incidence of congenital hypothyroidism in Malta is 1 in 1,450. The clinical features of CHT may be very non-specific and a delay in the diagnosis may lead to irreversible cognitive impairment and loss of IQ points. The aims of this audit are: (1) to determine the sensitivity and specificity of the screening test using cord blood, (2) to determine the suitability of this method for mass screening, and (3) to determine the incidence of CHT in the Maltese population.

Methods: A retrospective analysis of the total number of live births from May 2013 to May 2015 (use official data from NSO/Obstetric dept) which had their cord blood taken to check their thyroid function tests. Those that were positive for congenital hypothyroidism were called again and the blood sample repeated (positive recall). From the positive recalls the true cases of congenital hypothyroidism were found.

Results: The total number of live births was 7,492. The number of births with a positive cord blood and needing a repeat was 1,748 however from these only 4 cases were actually found to have congential hypothyroidisim. Therefore, our form of testing has a sensitivity of 25% and specificity of 77%.

Conclusion: There is a high number of patients having false positive cord blood results with only few patients having congenital hypothyroidism. This raises question about our method for testing for congenital hypothyroidism.

P2.11

Rising trends in the prevalence of wheezing, rhinitis and eczema in 5- to 8-year old Maltese children over a decade (ISAAC - Malta)

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Introduction: The prevalence of asthma, rhinitis and eczema has been increasing worldwide, as a result of which, these allergic conditions became some of the most common conditions of childhood. The International Study of Asthma and Allergies in Childhood (ISAAC) was the largest standardised worldwide epidemiological research programme ever undertaken on allergies in children. 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 phase 3 of the ISAAC study in 2001, in which Malta participated.

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

Results: Data was obtained from 3071 5- to 8-year-olds in 45 randomly sampled primary state schools over 2013 and 2014. 52.4% were boys while 47.6% were girls. Our results indicate a statistically significant rise in both the cumulative and current prevalence of wheezing, rhinitis and eczema in Maltese children over a span of 11 years.

Conclusion: This has important implications in terms of: quality of life, economic burden and mortality.

P2.12

An increase in the severity of wheezing and rhinitis but not eczema in 5- to 8- year old Maltese children over a decade (ISAAC - Malta)

Eleanor Gerada[1], Hugo Agius Muscat[2], Liberato Camilleri[3], Stephen Montefort[1]

[1]Division of Respiratory Medicine, Mater Dei Hospital, [2]Department of Public Health, Faculty of Medicine and Surgery, University of Malta, [3]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 phase 3 of the ISAAC study in 2001, in which Malta participated.

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

Results: Data was obtained from 3071 5- to 8-year-olds in 45 randomly sampled primary state schools over 2013 and 2014. 52.4% were boys while 47.6% were girls. Data from our study shows that the prevalence of these 3 allergic conditions namely asthma, allergic rhinitis and eczema, has significantly increased. Our results indicate also a rise in severity of symptoms of wheezing and rhinitis ($p<0.05$) but not eczema in Maltese children over the last decade.

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

P2.13

The use of specific immunoglobulin E in the diagnosis of allergy in children

Tara Grima, Tara Giacchino, Elaine Pace Spadaro, Anne Marie Grima, Patrick Sammut

Background: Allergy is a common cause of morbidity with significant financial costs. Specific Immunolglobulin-E (s-IgE) is a useful tool in the investigation of children with suspected allergy. Knowledge of the indications and limitations of this test is essential.

Aim: To assess the use of s-IgE by paediatricians at Mater Dei Hospital.

Methods: A retrospective analysis of all s-IgE tests performed in children requested in 2014. Patients' files were used to collect the following information for each patient: clinical indication for testing, total IgE, s-IgE levels, action taken based on results.

Criteria and Standards: S-IgE testing was clinically indicated S-IgE requested was appropriate. Result had an impact on patient management. A standard of 100% for all criteria is the desirable end-point.

Results: A total of 74 children were included. The main indication for testing was food allergy (42%). The choice of s-IgE was appropriate in 66 % (n= 49). The results had a clear impact on patient management in 38 % (n=28).

Conclusion: There is a need for further education on the appropriate use of s-IgE. Large panels of S-IgE should be avoided as they represent inefficient use of resources. The choice of S-IgE should be based on the history, aided by knowledge of aerobiology in the case of respiratory allergy. There are large gaps in knowledge on local pollen aerobiology. The current

aeroallergen panel is likely to be inappropriate for the local population. Studies in this area are needed to guide clinicians.

P2.14

Improving the paediatric imaging service in Malta - a local perspective

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Medical Imaging Department, Mater Dei Hospital

Introduction: In a quality imaging service for children, the diagnosis is made by specialists with appropriate expertise, imaged using dedicated facilities and equipment and where the child is at the centre of all decisions made. In this presentation we seek to outline the gradual tailoring of our department to this aim; spanning from migration to Mater Dei Hospital to the present day and the scope for the future.

Methods: The paediatric patient presents specific difficulties including poor cooperation, small size, radiation dose considerations and the limited availability of sub-specialist radiology expertise. In addition, the local paediatric patient is imaged in a department primarily set up for the needs of an adult population which presents further limitations as rooms and equipment cannot be permanently tailored to the needs of the paediatric patient.

Results: From the introduction of dedicated children's play areas to significant changes in fluoroscopic imaging; the appointment and training of subspecialised paediatric radiologists and the resulting changes to the local training scheme; the increase in multi-disciplinary meetings; introduction of distraction techniques and increase in use of sedation and general anaesthetic lists among others. Audits demonstrating reductions in radiation doses and improvements in the investigation of the urinary system are also presented.

Conclusion: We hope this presentation will not only showcase the advances made in local paediatric radiology delivery but also improve local clinician's familiarity with the range of services and how they are provided. This should in turn cascade to better information to patients and their families regarding their imaging experience.

P2.15

Capsule endoscopy in the Maltese paediatric population - a descriptive analysis of a 6 year experience

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Introduction: Capsule endoscopy (CE) was introduced in 2001 as a means to evaluate small bowel pathology. It avoids ionizing radiation, deep sedation, and general anaesthesia. Given the wide range of indications produced by American Society for Gastrointestinal Endoscopy (ASGE), the aim of this descriptive analysis was to evaluate all capsule endoscopy procedures carried out in the paediatric population in Malta.

Methods: This is a retrospective analysis of prospectively collected data of all paediatric patients requiring capsule endoscopy. The variables: demographics, clinical presentation, Indication, anthropometrics, Lewis Score, Weight, Height, completeness of study, quality of Success of Procedure, Gastric passage time, bowel passage time and impact of capsule endoscopy findings on clinical management were recorded and analysed using Microsoft Excel 2011®.

Results: 26 paediatric patients between the age of 5 and 18 were evaluated between 2009 and 2015. The main indication for capsule endoscopy was occult gastrointestinal haemorrhage and in 5 patients capsule endoscopy was used to assess for inflammatory bowel disease. Other indications include evaluation and follow up of gastrointestinal polyps, evaluation of non-specific abdominal pain, and to determine a cause for bacterial overgrowth. In all but one study, capsule endoscopy was inconclusive. No complications from capsule endoscopy were reported and all capsules were retrieved.

Conclusion: This descriptive analysis highlights the benefits of capsule endoscopy in paediatric patients as no complications were reported. This study helps with the understanding of this novel technology, ultimately improving the quality of life of our paediatric gastrointestinal patients.

P2.16

The use of blood products in paediatric oncology in Malta

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Malta Foundation Programme

Introduction: Blood product transfusions aim to improve the quality of life in patients suffering from various haematological conditions. Consumption of blood products is significant, with costs of unjustified blood product transfusions accounting for 9% to 44% of the total consumption in centres abroad.

Methods: Patient files were analysed retrospectively, between January and May 2014, for demographics, disease, type and amount of blood products used. The costs involved were obtained from the Blood Bank at Mater Dei Hospital. The standard used was the Supportive Care Protocols of Paediatric Haematology and Oncology, issued by the Great Ormond Street Hospital for Children.

Results: 9 children were transfused in this period, with a range of 1 to 20 blood products per patient, amounting to a total of 77 units. The haemoglobin levels before transfusing red cell products (RCPs) ranged from 3.1 to 8.6g/dL and the platelet counts ranged from 9 to $60x10^9$/L. The total cost over this 5 month period for the department was €17,950; while the total amount spent for tests done prior to ordering blood products was €3,276.34. RCP transfusions occurred 22 times, with only 1 instance where RCPs were transfused above 8g/dL. Platelets were transfused 26 times, with 11 instances of platelet transfusions occurring when the platelet level was above $20x10^9$/L.

Conclusion: There have been no previous studies in Malta that guide the administration of blood products in children. Children are even more susceptible to transfusions; as such a general consensus on transfusion guidelines in this population needs to be established.

P2.17

Do not 'be a man about it': an analysis of the lived experience of male survivors of child sexual abuse

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Introduction: Research on child sexual abuse (CSA) is focussed predominantly on female victims. The aim was to search the available evidence in order to understand the experience and repercussions of CSA on male survivors and how this impacts on clinical practice.

Methods: A search strategy was devised in order to systematically search the major databases relating to the research question. Standardised checklists were used to critically appraise the evidence found. Common themes from the chosen studies were described in a narrative review.

Results: The barriers to disclosure of male victims of CSA include a culture that rejects male victimization, fear of homosexual stigmatisation and confusion with regards to the victim's role in the abuse, especially if they physically responded or enjoyed sexual stimulation by their perpetrator. Other barriers include being disbelieved when attempting disclosure, shame, guilt, denial, fear and self-blame. Non-disclosure fails to initiate the healing process resulting in feelings of betrayal

and helplessness that leads to a vicious cycle of isolation and alienation. This often leads victims to report a loss of childhood and negative psychosocial experiences including severe outbursts of anger, early sexualisation, sexual problems and negative interpersonal relationships.

Conclusion: Male victims of CSA face unique struggles that make it particularly difficult for them to disclose or seek help from professionals, increasing their risk of negative outcomes. A more holistic and cost-effective response to CSA can be achieved by focussing on early preventative strategies and awareness campaigns that accept male victimisation. Training of multidisciplinary professions and targeted therapeutic services for these victims is required.

Disclosure: This research is based on work done for an MSc in Child Health at Warwick University which is partially funded by the Malta Government Scholarship Scheme grant.

P2.18

A resilience-based model to child sexual abuse

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Introduction: The multiagency response to child sexual abuse (CSA) across a number of countries tends to focus on risk management and often lacks a co-ordinated response and follow up within a timely manner. We aimed at searching the evidence around resilience and CSA in order to propose a framework that guides better practice for professionals working with victims of CSA.

Methods: A search strategy was devised and a systematic literature search of the major databases followed. Both qualitative and quantitative peer-reviewed studies that included resilience and its promotion in victims of CSA were included. Standardised checklists were used to critically appraise the evidence found.

Results: Children alleging CSA need to feel believed in order to continue disclosing and this must be central to every initial response. Resilience post-CSA can be achieved through managing both risk factors and promoting the child's protective factors, since both are cumulative. Risk management includes targeted intervention and preventative strategies. The most powerful resilient promoting factor in CSA is support and stability predominantly from family members, but also from close friends. Engaging in positive experiences at school and within communities also enhances resilience. Internal resilient promoting factors include a positive self-esteem and better adaptive coping skills.

Conclusion: A resilience-based model to CSA is child-centred and advocates for services to work together and provide a holistic and ecological response to CSA that incorporates the child's family. This response aims at improving outcomes, preventing re-victimisation and being more cost-effective through early targeted intervention.

Disclosure: This research is based on work done for an MSc in Child Health at Warwick University which is partially funded by the Malta Government Scholarship Scheme grant.

P2.19

Screening for sexually transmitted infections in children being assessed for suspected sexual abuse: who, when and how?

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Introduction: Sexually transmitted infections (STI) are rare in child victims of sexual abuse. Positive STI results have important health and medico-legal repercussions. We aimed at creating an accessible and easy to follow STI protocol for a tertiary safeguarding clinic at University College London Hospital (UCLH) which can be adopted by other centres.

Methods: UK National Guidance on the Management of Sexually Transmitted Infections in Children was used as the reference standard. This was combined with expert opinions from genito-urinary medicine and safeguarding specialists, as well as microbiology and virology health professionals at UCLH.

Results: Serology for HIV, hepatitis B, C and syphilis need to be taken at initial assessment. HIV serology needs to be repeated after three months unless the disclosure was made after three months. Nucleic acid amplification testing (NAAT) of urine is a non-invasive method of screening for chlamydia and gonorrhea. If the child was assaulted within the last two weeks, a repeat urine NAAT needs to be taken given the incubation period of chlamydia. Depending on the clinical suspicion and whether tolerated by the child, further swabs should be taken during examination as per protocol devised.

Conclusion: Given the importance of a positive STI result in children being assessed for suspected sexual abuse, both symptomatic and asymptomatic children need to be investigated thoroughly for STIs. A protocol that includes clear illustrations of which swabs to use for STI screening in children was devised for health professionals. This has been made easily accessible and is currently being audited.

P2.20

Audit of pain diagnosis in children with severe to profound developmental disability

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Introduction: Children with severe to profound developmental disability (SPDD) are at risk of unrecognised pain, due their communicative problems. The aim of this audit is to see if doctors are enquiring about and looking for the cause of pain in children with SPDD.

Methods: Standards used were taken from guidelines of the American society for pain management nursing (ASPMN) for pain assessment in non-verbal patients. Case notes of children with SPDD were trawled to find documented evidence that 1) Doctors were enquiring about pain, and 2) Doctors were going through a mental check list looking for potential causes of pain. The target for each standard was set at 90% An attempt was made to search for reasons why standards were not being met, and what could be done to improve the quality of pain management in these children.

Results: 56% of doctors had documented that they were enquiring about pain in children with SPDD 30% of doctors had documented that they were looking for common causes of pain in these children.

Conclusion: The agreed standard of 90% for both standards was not met. Proposals for change in practice were suggested and implemented.

P2.21

A pain observed: a phenomenology of the experiences of Maltese parents of children with severe to profound developmental disability

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Introduction: In spite of advances in pain assessment, children with severe to profound developmental disability (SPDD) still remain vulnerable to sub-optimal pain management because they are unable to communicate pain in the usual vocal way and have pain behaviours that are diverse to those found in typically developing children. The aim of this study was to explore the lived experiences of Maltese parents who face the problem of pain in their children with SPDD.

Methods: Interpretive phenomenological analysis (IPA) underpinned the study, and consisted of interviews with seven family units of children with SPDD, aged 18 months to 19 years.

Results: Four main themes emerged: 'a life of pain', forever doubting', 'embodied knowledge', and 'overwhelming emotions'.

Conclusion: Maltese parents felt that their children suffer from more pain than their unimpaired peers. Although confident that they can recognise their children's pain behaviours, the feeling of uncertainty is always present. They have learnt to cope alone, developing the skills to assess pain over the years that they have looked after them. The lived experiences of 'a life of pain' have resulted in feelings of helplessness and frustration. They felt that doctors often do not prepare them for the pain problem, have poor communication skills, show lack of empathy and do not involve them actively in decision making. Positive feelings included feelings of coping, joy and the love they feel for their children. Recommendations for practice and research in Malta are suggested.

P3.01

Inpatient coronary studies and intervention 2013 *vs* 2014

Matthew Mercieca Balbi, Jessica Sammut, Andrew Cassar, Kay Vanhear, Andrea Vella Baldacchino, Simon Paul Micallef, Trevor Tabone, Christabel Mizzi, Rebecca Dalli, Elizabeth Cassar

Introduction: We compared the inpatient waiting time for inpatient coronary imaging and intervention comparing 2013 to 2014. At the end of 2014 great importance was given by all the cath lab staff to decreasing waiting times for outpatient coronary angiography waiting time, we believed this also made a difference to inpatient waiting time during 2014, and a study was performed to ascertain this.

Methods: Patient details of all coronary angiograms invasive or diagnostic in 2013 and 2014 where obtained from the cath suite registry, we then compared admission data to cath study time.

Results: Result showed a statistically significant decrease by more than 24 hours in waiting time for inpatient coronary angiography in 2014 as compared to 2013, average waiting time now confirms with international guidelines which is a true accomplishment.

Conclusion: The strive to reduce outpatient waiting time for coronary angiography has lead to a decrease in waiting time for inpatient coronary studies which has thus lead to better standard of cardiology care.

P3.02

Assessment of the use of telemetry in the investigation of patients presenting with syncope to the Accident and Emergency Department at Mater Dei Hospital

Edward Grech[1], Mohamed Salem, Robert Camilleri
[1]Malta Foundation Programme

Introduction: Syncope is a common presentation to Accident and Emergency Departments and a common reason for hospital admission. Diagnostic tests are used to differentiate between the benign and more serious causes of a syncopal episode. Telemetry is one of the most important investigative tools in such a case. This study is intended to be in two stages. In the first part, presented in this conference, the extent of usage of telemetry in the workup of patients presenting with syncope to Mater Dei Hospital is examined. In the second part, an observation study of the rate of arrhythmia detection in patients with telemetry will be carried out.

Methods: The risk stratification scores according to the task force for the diagnosis and management of syncope of the European Society of Cardiology in 2009 are used to define the need for telemetry in one hundred local admissions with syncope. A retrospective analysis of the cases admitted with syncope would reveal the extent of the use of telemetry. The degree of appropriate usage of telemetry in investigating cases of syncope can be obtained from the results.

Conclusion: A suggestive history, clinical examination findings, patient comorbidities, electrocardiogram features and family history provide invaluable information in analysing syncope. The use of tests which are limited in availability, powerful in diagnostics such as telemetry, is currently being investigated through this study.

P3.03

Iron deficiency screening at Heart Failure Clinic

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Mater Dei Hospital

Introduction: Studies have shown that patients with heart failure (HF) are prone to develop an active inflammatory state, with numerous studies having identified iron deficiency (ID) as an important prognostic predictor (independent of haemoglobin) for HF. In line with the European Society of Cardiology (ESC) heart failure guidelines, the aim of this audit was to compare local ID screening at heart failure clinic as recommended by the ESC.

Methods: A retrospective audit (June-August 2014) was completed to assess whether patients attending the HF clinic where being screened for ID and anaemia. A HF clinic database was used, together with blood results obtained respectively from Isoft. Data was then analysed using Microsoft Excel and summarised using percentages.

Results: A total of 275 patients attended HF clinic. Whilst all patients were screened for anaemia (with Haemoglobin and Mean Corpuscular Volume), 192 (69.82%) patients were not investigated fully for ID (missing tests or not screened at all). In summary, 83 (30.18%) had a ferritin assessed, 104 (37.82%) had a transferrin saturation (TSAT) tested, and 104 (37.82%) had an iron level. Blood results were also assessed with ID taken as a ferritin of <100µg/L or a TSAT of <20% and Ferritin of 100-299µg/L, using ESC recommended criteria. Out of the 83 patients fully investigated for ID, 46 (55.42%) had biochemical evidence of ID. Only 18 patients (6.54%) had a microcytic picture (MCV <76fL).

Conclusion: In conclusion, HF patients should be screened more thoroughly for ID as recommended by ESC guidelines.

P3.04

Anti-coagulation in patients with atrial fibrillation

Audrey Aquilina, John Bonello, Philip Dingli
Mater Dei Hospital

Introduction: Atrial fibrillation (AF) increases the risk of stroke, congestive heart failure and mortality. Successful anticoagulation can reduce these complications. To achieve this risk reduction, anticoagulants such as warfarin must be in the correct therapeutic range (i.e. INR 2-3) for greater than 70% of the time. However, today novel anti-coagulants do not require repeated blood investigations. Thus, these newer drugs may prove more cost effective in comparison to warfarin.

Methods: A random sample of 360 patients with AF were selected from Anti-Coagulation Clinic. Their INRs over the past one-year period were recorded. The percentage of time the patients' INRs were within the therapeutic range was calculated. The average cost of warfarin was computed and compared with the cost of rivaroxaban per patient per year.

Results: 59% of patients were under-coagulated and 9.4% of patients were over-coagulated for more than 30% of their results. 80% of the patients were out of range for more than 30% of their results. Rivaroxaban in comparison to warfarin is on average 60% more expensive.

Conclusion: Majority of patients on warfarin are under-coagulated; thus, increasing cardiovascular complications and mortality. With the current prices of novel anti-coagulants, warfarin is more cost effective. However, patients that have recurrent admissions to MDH in view of symptoms or high INRs, may reduce costs in the health sector by changing to novel anticoagulants.

P3.05

Cardiopulmonary resuscitation in the Maltese islands - knowledge and skills on the wards

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Introduction: Early and effective cardiopulmonary resuscitation (CPR) improves the chances of survival in cardiac arrest patients. Healthcare professionals are most often the first responders when a cardiac arrest happens on the wards, requiring them to be competent and skillful in such a life-saving procedure.

Methods: A questionnaire was formulated in order to obtain information about the participants' demographics, CPR training and knowledge of CPR administration and it was distributed in various departments in two main state hospitals in the Maltese Islands.

Results: There were 78 participants from Malta and 47 from Gozo, the majority being females. The majority of the participants were nurses, with the rest consisting of nursing officers, carers and midwives. The average time period since last formal CPR training attended was 1-4 years. In Gozo, 25% claimed of rating 3 from scale of 5 of being confident in participating in CPR, followed by 19% rating 4. Better results were obtained from Malta. 95% claimed that CPR trolley is easily accessible and more than half (53.8%) perceived the need of daily CPR trolley checks. Overall, fairly good scores were obtained from the multiple-choice questions devised to assess knowledge about CPR.

Conclusion: The audit conducted emphasises the importance of increasing CPR knowledge and training. The results obtained reflect the need for further training, provided that resuscitation is unfortunately a frequent activity on the wards, especially on medical and acute wards. Participants strongly expressed their wish to attend formal simulation sessions to stay in touch with recent guidelines and practices.

P3.06

Is valve size more important than patient-prosthesis mismatch in long-term survival after aortic valve replacement?

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Introduction: The effect of prosthesis-patient mismatch (PPM) on long-term survival was evaluated.

Methods: The indexed Effective Orifice Area (EOA) for each size category and for the entire group was calculated in 565 consecutive patients undergoing aortic valve replacement. An indexed EOA of ≤ 0.85cm2/m2 defined moderate PPM and ≤ 0.65cm2/m2 defined severe PPM. The EOA's for the valves were obtained from independent researchers and derived from in vivo studies.

Results: 71% of patients had no PPM. There were 10 cases of severe PPM, all in patients receiving size 19 valves and 156 cases of mild PPM (33 in size 19, 111 in size 21, 8 in size 23 and 4 in size 25). Ninety-three cases of mild PPM occurred in patients over 70 receiving a xenograft, in whom a presumed relatively curtailed activity would reduce the impact of trans-valvular flow on trans-valvular pressure gradient. Our incidence of mismatch is lower than that quoted in other series using the same criteria. For size 19 valves, mismatch impacted negatively on long-term survival, with mortality increasing by 12.7% when compared with the other sizes.

Conclusion: Our results suggest that a size 19 valve was a more important predictor than valve type or model. Mismatch in larger sizes had no significant impact on long-term survival.

P3.07

Mechanical behaviour of stent designs finite element modelling techniques

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Introduction: Common problems in stent design include inaccurate placement due to foreshortening of the stent, flaring out of the edges and malposition from lack of conformability. Many of these effects are related to the mechanical behaviour of the stent, which in turn relate to its geometry and the material properties.

Methods: The mechanical behaviour of stent designs was investigated using finite element modelling techniques in order to be able to find possible solutions to mitigate some of these effects.

Results: Dog-boning occurs because the terminal rings of the stent have a different connectivity than those towards the inner regions. Shortening of the terminal strut length from 1:1 to 1:1.7 (58% reduction) relative to the middle strut length resulted in a change from 30% to a -30% diameter dog-boning. A 1:1.5 terminal to middle strut ratio eliminated dog-boning. During stent deployment, thin struts are prone to bending in the radial direction, a behaviour that may decrease conformability. It is possible to decrease the flexibility of thin beam-shaped structures by increasing their radial thickness from 1:0.5 to 1:1, leading to a 43% improvement in conformability. This also decreases the overall flexibility of the stent, making it necessary to include features, such as S-shaped entities, to allow flexing.

Conclusion: Careful design of stents may diminish inherent stent geometry problems such as foreshortening, dog-boning and conformability.

P3.08

Why paramedian sternotomy fails

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Introduction: Paramedian sternotomy is often listed as a causative factor for sternotomy dehiscence. Inadvertent paramedian sternotomy is thought to be a poor surgical technique, however no adequate explanation for the requirement of midline sternotomy has been suggested.

Methods: A comparison of sternal and paramedian median sternotomy incisions was made in 5 cadaveric sternums, by comparing sternal cortical bone calcification or radio-density in the path of sternal closure for both midline and paramedian sternotomies, in order to predict resistance to wire cutting through bone. The sternotomy path was defined as the cortex 1 cm from the planned incision.

Results: There was significantly stronger bone in the closure path of a midline sternotomy than in the closure path of a paramedian sternotomy, p=0.02. However, the difference in mineralization was present only in the anterior cortex (p=0.005), and not in the posterior cortex of the sternum in the midline (p=0.37, ns) due to the xiphisternum's location in the anterior sternal cortex. The highest degree of calcification was found in a vertical median strip of sternal bone, whilst the lowest occurred in the lateral sternal zones, with intermediate calcification present in the sternal mid-zone.

Conclusion: The results show that, whilst a perfectly midline sternotomy produces equal sides with high radio-density, a paramedian sternotomy results in unequal sides – a larger side with high radio-density, and a smaller side with low radio-density. This inequality leads to a high dehiscence rate since the strength of a closure is limited by its weakest part.

P3.09

Audit - post pacemaker insertion advice and care given to patients at Mater Dei Hospital

Doriella Galea, Yanika Gatt, James Farrugia, Sarah Cuschieri, Mark Sammut

Introduction: Pacemaker insertion is a daily procedure at Mater Dei Hospital where yearly, hundreds of patients have pacemakers inserted, for various cardiological problems. These are generally elderly patients. Current practice is to give advice by word of mouth while providing booklets in English postoperatively. Our aim is to assess patients' recollection of given advice, wishes and/or needs as to having more information given in the Maltese language.

Methods: Ethical approval was obtained from the Ethics committee after obtaining permission from consultant cardiologists performing pacemaker insertions at Mater Dei Hospital. Data of 45 patients who underwent the procedure was collected from the Catherisation Suite between March and April 2014. The patients were then contacted by telephone, verbal consent obtained, and asked questions as per questionnaire according to their language of choice (Maltese or English). Standard information booklet by the British Heart Foundation. 'Medtronic - For Your Pacemaker' booklet, which is provided to patients after the procedure.

Results: 73% of participants preferred the Maltese language, 25% had no preference and 2% preferred English. 50% of participants claimed that they were not given the booklet about pacemakers while 34% did not make use of the booklet because of language barrier and 4% were illiterate. Others felt that the information booklets were too long or deemed unnecessary. The majority of participants were happy with the advice being given pre-operatively, during consent and post-operatively.

Conclusion: The implementation of an information booklet in the Maltese language would be helpful to many patients who are more comfortable using the Maltese language.

P3.10

Cardiac rehabilitation in patients after percutaneous coronary intervention

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Introduction: A multidisciplinary cardiac rehabilitation (CR) program supports patients to implement long-term lifestyle changes to improve prognosis after percutaneous coronary intervention (PCI). The aims were to assess patients' response to the outpatient CR program offered at Mater Dei Hospital, follow-up patients to assess their progress with lifestyle changes and analyse pharmacist contribution in CR.

Methods: After obtaining informed written consent, patients who underwent PCI were followed during the CR program. A validated data collection form was completed at initial assessment (t=0), patients were followed during six educational sessions, and one-month after the sixth session (t=1). A validated follow-up form was completed at t=1. Comparison between t=0 and t=1 was undertaken.

Results: A total of 40 patients were recruited and interviewed at t=0. Thirty-two patients were male, mean age was 62 years (range 40-76) and myocardial infarction was the reason for PCI in most (26) patients. The majority of patients (28) attended all sessions and of these 21 patients attended at t=1. There was statistically significant improvement between t=0 and t=1 (p<0.05) for frequency of physical activity and changes in diet. The patients gave the pharmacist-led session about drug therapy a rating score of 4.62 out of 5.

Conclusion: CR is important for patients who underwent PCI since those who completed the program improved their lifestyle habits. Although patients rated the pharmacist-led session highly, pharmacist involvement should be extended to the initial assessment as well as the follow-up sessions rather than having only one educational session at the end of the program.

P3.11

Cardiac resynchronisation therapy in Malta: an evaluation of current practices

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[1]Department of Cardiology, Mater Dei Hospital, [2]Department of Cardiology, Mater Dei Hospital, [3]Department of Health Information

Introduction: Heart failure is a common medical condition which can cause significant morbidity and mortality. When lifestyle advice and medical treatment is not enough, implantation of a device that delivers cardiac resynchronisation therapy (CRT) may be indicated.

Methods: A retrospective cohort study was carried out. Data was collected for 100 patients who had CRT implantation until 2012. Demographic data, together with indications for CRT, device used and technique of implantation, complications, patient symptomatology and re-admissions with heart failure after implantation, and mortality data was collected. Pearson Chi2 and 2-sample t-test analysis was performed together with survival assessment.

Results: Descriptive analysis showed that there were more frequent implantation of devices in patients who had moderate

to severe heart failure symptoms, prolonged QRS duration >130ms and an EF <35%, despite optimal medical therapy. This was consistent with current recommendations. Analysis with Pearson Chi2 testing did not show statistical significance when the patients who were readmitted to hospital were analysed also for mortality (p=0.266). 2-sample t-test analysis of variables recorded for readmissions with heart failure and mortality showed that out of all the comorbidities investigated, there was a correlation with impaired renal function (p<0.001).

Conclusion: In most cases, current recommendations for CRT in Malta are being followed. The current pre-assessment clinic will re-inforce adequate selection of patients for device implantation, with extra care towards renal patients. Implementation of a new follow-up clinic for device patients should be introduced in order to further improve outcome in these patients and reduce hospitalisation and mortality.

P3.12

What do cardiovascular patients think about their referrals?

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Introduction: The referral process from primary to secondary care establishes the basis for subsequent care in chronic conditions. The aim of the study was to describe patient perceptions of the information in the Ticket of Referral (TOR) using cardiovascular referrals as an exemplar.

Methods: Consecutive cardiovascular referrals to MCC and Cardiology Outpatients were invited to participate anonymously in a brief semi-structured audio-recorded interview (Aug-Sep 2014). They ranked fields in the TOR on a scale of 1(essential) to 4 (should not be included), and identified the three most/least important fields. They indicated whether other information was required, and whether the inclusion of a checklist of cardiovascular risk factors would be helpful. Data was entered into Excel and analysed with descriptive statistics, ranking and content analysis.

Results: 53 patients were invited, three declined; most participants were over 50 years, 50% male, 50% female. Fields scored highly included 'Current treatment and allergies' and 'Clinical examination findings'; low scores were awarded to 'Next of kin,' 'telephone' and 'mobile' numbers'. The most important fields identified were 'Identity card number' and 'Reasons for referral'. Patient contact details including 'telephone number' and 'address' were identified as least important. Most patients did not consider other information was required; however, 96% considered it would be helpful to include cardiovascular risk factors.

Conclusion: 'ID number', and 'Reasons for referral' were identified as most important, with 'Current treatment and allergies' and 'clinical findings' highly scored. Patients considered the inclusion of relevant risk factors could be useful-which may be helpful for self-care.

P3.13

Transfer of ST elevation myocardial infarction patients by helicopter from Gozo General Hospital to Mater Dei Hospital

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[1]Malta Foundation Programme, [2]Department of Cardiology, Mater Dei Hospital

Introduction: The audit aims to identify the time consuming factors involved in transferring ST elevation myocardial infarction (STEMI) patients from Gozo General Hospital (GGH) to Mater Dei Hospital (MDH), to assess whether primary PCI is performed within 120 minutes as recommended by the European Society of Cardiology (ESC) guidelines and to estimate whether ferry transfers would be faster.

Methods: Data was retrieved using logbooks covering transfers between April and October 2014. Each stage of the transfer was analysed. The time of initial call from GGH was used as the start point. The transfer time had the Gozo ferry been used was estimated and compared to the total transfer time by helicopter.

Results: Five cases were analysed over seven months. The average time for helicopter transfer was 130.8 minutes. The time limiting factors identified were: Finding transfer anaesthetist (mean 20.5 minutes), transfer team preparation prior to dispatch (mean 22.5) and helicopter transit time (mean 76.75). Estimated transit times using the ferry ranged from 65 minutes less to 26 minutes more than actual helicopter transfer time (average 30.2 minutes less). The average estimated transfer time by ferry was 100.6 minutes. Only in one case was the transfer faster by helicopter; when ferries are less frequent.

Conclusion: Transit time was greater than the recommended 120 minutes in the majority of cases. Finding an anaesthetist and preparation for dispatch of the team are major contributing factors. Outside 21:45-06:00 ferry boat transfer is estimated to be faster and within ESC recommended time.

P3.14

Heart failure in geriatric population: an investigations audit

Paul Zammit, David Agius, Indika Thilan Perera, Santosh Kumar

Introduction: Heart failure (HF) is a complex syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the heart to function as a pump to support a physiological circulation. The echocardiogram (echo) and electrocardiograph (ECG) are the most useful tests in suspected HF (Class 1 recommendation). Other recommended investigations include numerous blood tests and chest X ray.

Methods: An audit was carried out to see if these investigations were carried out in geriatric patients labelled as having HF. Epidemiological data was also collected. Data was collected from patient's medical records and from healthcare IT software (isoft). Diagnosis of HF was taken form the medical records

Results: All the recommended investigations excluding the echocardiogram were routinely done in the absolute majority of the 33 cases under study. CBC was taken in all cases while iron studies was the least blood investigation that was used (78.8%). In total 14/33 (42.4%) had an echo despite being diagnosed with HF.

Conclusion: Though most investigations are carried out this is not the case with echocardiograms. Ordering this test should be emphasised as it provides much detailed information about the heart. It also allows a working diagnosis and treatment plan for the patient.

P3.15

Sudden cardiac death in the Maltese population

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Introduction: Sudden Cardiac Death (SCD) in young adults (under 40years old) is a predominant cause of death locally (42%). About 30% of sudden deaths involving otherwise healthy individuals have no identifiable morphologic abnormalities thus the SCD is labelled as autopsy-negative

sudden unexplained death (SUD). Channelopathies such as catecholaminergic polymorphic ventricular tachycardia (CPVT), congenital long QT syndrome (LQTS), congenital short QT syndrome and Brugada syndrome leave no evidence to be determined by a mediolegal autopsy.

Methods: 60 SCD cases under 40years of age were identified from Mater Dei Hospital's mortuary records over the past 10 years. DNA, RNA and protein are being co-extracted from FFPE heart tissue. The extracted DNA will be genetically analysed to search for mitochondrial and nuclear mutations which could be associated with SCD including RYR2, CPVT, KCNQ1, KCNH2, SCN5A, KCNE1, KCNE2. Mitochondrial DNA sequencing will determine if certain mutations are specific to Maltese mtDNA haplogroups. The study will be extended to family pedigrees of these subjects to screen for the same mutations. A cohort of healthy individuals will be obtained from the Malta BioBank and screened for the same mutations as a control.

Conclusion: Postmortem genetic testing (molecular autopsy) is not routinely performed in SCD cases and is recommended to be part of a comprehensive medico-legal investigation in SCD cases without apparent cardiac disease. A postmortem diagnosis in SCD is important to assess the risk of other family members. Further deaths in the family may be prevented with lifestyle modifications and medication if available.

Disclosure: Funding: Malta Government Scholarship Scheme.

P3.16

Negative myocardial perfusion imaging scans - a three year follow up

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Introduction: Stress MPI provides useful prognostic information in patients with known or suspected coronary artery disease (CAD). Annualised cardiac event rate after negative MPI has been reported to be less than 1%.

Methods: Patients who underwent MPI in 2011 were selected and classified into patients with or without known CAD. Each MPI result was classified into normal, reversible and irreversible filling defects. Patients had three year follow-up for all-cause and cardiac mortality and coronary revascularization.

Results: 1300 patients had an MPI study performed in 2011. 18% of females and 26% of males had negative MPI. All-cause mortality during three year follow-up was 2% (0.6% annual mortality). Of these, 26% had cardiac death. 6% of patients with negative MPI had positive angiography during three year follow-up. Kaplan-Maier survival analysis showed that following negative MPI studies, there is no difference in i) all-cause and cardiovascular mortality between genders and ii) mortality in patients with known or unknown IHD.

Conclusion: Negative MPI studies are associated with a low annual all-cause and cardiac mortality, in both genders. Negative MPI studies in patients with known IHD are as reassuring as those in patients with unknown IHD.

P3.17

Cardiac resynchronisation therapy in Malta: an evaluation of current practices

Daniela Cassar DeMarco[1], Oscar Aquilina[1], Matthew Mercieca Balbi[1], Robert George Xuereb[1], Albert Fenech[1], Neville Calleja[2], Mark Adrian Sammut[1]

[1]Department of Cardiology, Mater Dei Hospital, [2]Department of Health Information

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Results: Descriptive analysis showed that there were more frequent implantation of devices in patients who had moderate to severe heart failure symptoms, prolonged QRS duration >130ms and an EF <35%, despite optimal medical therapy. This was consistent with current recommendations. Analysis with Pearson Chi2 testing did not show statistical significance when the patients who were readmitted to hospital were analysed also for mortality (p=0.266). 2-sample t-test analysis of variables recorded for readmissions with heart failure and mortality showed that out of all the comorbidities investigated, there was a correlation with impaired renal function (p<0.001).

Conclusion: In most cases, current recommendations for CRT in Malta are being followed. The current pre-assessment clinic will re-inforce adequate selection of patients for device implantation, with extra care towards renal patients. Implementation of a new follow-up clinic for device patients should be introduced in order to further improve outcome in these patients and reduce hospitalisation and mortality.

P3.18

Retrospective audit - postoperative atrial fibrillation after major cardiac surgery in 2012

Alexia Farrugia, David Cini, Jessica Camilleri, Jessica Sammut, David Sladden

Mater Dei Hospital

Introduction: Atrial fibrillation is a common postoperative complication of cardiothoracic surgery.

Methods: In this study all patients undergoing cardiothoracic surgery at Mater Dei Hospital in 2012 were recruited retrospectively (CABG, AVR and MVR). Their postoperative course was monitored using electronic case summary discharge letters, blood test results from iSoft and patient files.

Results: A total of 244 patients were recruited in our study, 25% of whom went into AF post-operatively (new-onset). Of these, 74.6% achieved sinus rhythm on discharge and in 60.3% this sinus rhythm was maintained. Atrial fibrillation was much more common in combined CABG and valve replacement surgery (53.8%) and in valve replacement surgery (35.5%) on its own rather than CABG (20.12%) on its own. The average length of stay was 9.9 days with 3.83 days in CICU. No specific predisposing factors were indentified meaning that AF is the result of surgery and very difficult to predict or prevent pre-operatively.

Conclusion: In conclusion, our rates of postoperative AF compared well to centres abroad. AF is a significant factor in increasing length of hospital stay in cardiac surgery patients.

P4.01

Genetic determinants of visceral adiposity in type 2 diabetes mellitus

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Introduction: Obesity is a heritable trait that arises from complex gene-environment interactions and is rapidly increasing in prevalence. It is defined by anthropometric measures such as the body mass index and waist circumference. A large number of SNVs have been repeatedly associated with visceral adiposity and related traits in various populations using a hypothesis-free approach. Despite the robust genomic association reported in the literature, GWAS-identified loci often show poor reproducibility and deficient phenotype associations when investigated in other populations. The aim of this investigation

was to study the relationship between polymorphisms having established association with BMI, waist circumference (WC) and related traits in the Maltese population.

Methods: We selected 55 SNVs having known association with BMI (n=32) and WC (n=23). They were genotyped using allele-specific PCR and a MALDI-TOF detection platform in 187 overweight/obese T2DM patients. Genotype-phenotype associations were examined for individual risk alleles and in an aggregate risk score, adjusting for age and gender.

Results: The genotyping call rate was 98.75%. Most of the SNVs genotyped were in intronic or regulatory genomic regions. A detailed ontological description of gene function, biological pathways and disease annotations using ToppGene is given. This section will describe the anthropometric and biochemical parameters of the study cohort, and their statistical association with individual genotypes at each risk allele.

Conclusion: This study is a continuation of previous work on the prediction of risk in Maltese T2DM patients, and adds value by exploring new genetic associations with clinical and biochemical phenotypes linked with the development of obesity and insulin resistance.

Disclosure: This study was supported by a research grant from the Faculty of Medicine and Surgery, University of Malta.

P4.02

Molecular screening of the human melanocortin 4 receptor (*MC4R*) gene in obese Maltese type 2 diabetic patients

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Introduction: Obesity is a complex trait that arises from the interaction between lifestyle and a number of genetic factors. It is a risk factor for cardio-metabolic diseases, including type 2 diabetes (T2DM). GWAS have identified associations between around 50 individual SNVs and non-syndromic obesity, as defined by the BMI, waist circumference and waist-hip ratio. The first gene shown to have unequivocal association with obesity was *FTO*. Subsequently, investigations into early onset/severe obesity have identified variants in genes acting on the central regulation of appetite. Of particular interest is the melanocortin 4 receptor (MC4R). This is the hypothalamic receptor for melanocyte stimulating hormone, and blockade of this signalling pathway leads to hyperphagia and reduced energy expenditure. A large number of studies have investigated the role of genetic variation in *MC4R,* and mutations in this gene represent the most frequent cause of early-onset non-syndromic obesity. **Aim:** of this investigation was to perform mutational screening of the *MC4R* exon in obese T2DM patients.

Methods: We sequenced the *MC4R* exon in 192 obese T2DM patients of Maltese ethnicity. The single 1000bp exon was amplified by PCR using ATCAATTCAGGGGGACACTG and TGCATGTTCCTATATTGCGTG primers. The purified amplicon was then sent for Sanger sequencing at GATC Biotech, Germany, followed by bioinformatic sequence analysis.

Results: *MC4R* sequence variants are uncommon in obese T2DM patients. This section will describe the clinical characteristics of the study cohort, the identified variants, and their predicted effects.

Conclusion: This is the first investigation into the prevalence, spectrum and functional characterization of *MC4R* variants in obese Maltese adults.

Disclosure: This study was supported by a research grant from the Faculty of Medicine and Surgery, University of Malta.

P4.03

Investigating the role of HSP27 lysine methylation in chemoresistant pancreatic cancers

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Introduction: HSP27 has been shown to be up-regulated following acquisition of chemoresistance in a number of cancers including pancreatic cancer, which is one of the hardest types of cancers to treat. The importance of phosphorylation post-translational modifications (PTMs) on HSP27 are well known but methylation is still unexplored. The aim of this study was to try and identify functional methylations on lysine residues in HSP27.

Methods: GEM-sensitive and GEM-resistant pancreatic cancer cell lines were cultured with and without Gemcitabine and then HSP27 and lysine methylation were checked by Western blotting. To explore the role of methylation on HSP27 in overcoming stress, cells were transfected with a FLAG-tagged lysine methyltransferase and immunohistofluorescence was performed with and without Gemcitabine treatment. In an attempt to elucidate the positions and degree of methylation in HSP27, stable HSP27-FLAG over-expressing Hek293 cells were transfected with the lysine methyltransferase construct and HSP27 was immunoprecipitated (IP) for mass spectrometric analysis.

Results: Western blotting presented different overall lysine methylation patterns following Gemcitabine treatment but no specific change in HSP27 methylation. The FLAG-tagged lysine methyltransferase appears to be located in the nucleus both before and after Gemcitabine treatment. The IP of HSP27 was successful but the MS analysis is still on-going.

Conclusion: It is evident that any changes in PTMs are constitutive and once they become active, persist even if treatment is not administered for an extensive period of time. This indicates that a signalling process is initiated which maintains the inclusion of such PTMs even in the absence of external stress stimuli.

P4.04

Molecular genotyping of the Kidd blood group system in Malta

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Introduction: The Kidd blood group antigens, Jk^a and Jk^b, are two of the main surface markers which are found on the red blood cells' membrane. The determination of whether a donor or a recipient has the Jk^a and/or the Jk^b antigens is crucially important in order to have a successful transfusion without the development of adverse incompatibility-related reactions. This research was performed to determine whether a molecular-based technique such as Polymerase Chain Reaction - Restriction Fragment Length Polymorphism analysis (PCR-RFLP) is a suitable alternative technique for distinguishing amongst the three different Kidd phenotypes.

Methods: After extracting DNA from 60 blood samples obtained from serologically-tested healthy blood donors who expressed at least one of the Kidd antigens, Polymerase Chain Reaction - Restriction Fragment Length Polymorphism (PCR-RFLP) analyses were carried out. The digested products were visualized on a 3.5% MicroABagarose gel allowing a high resolution separation of the fragments. The genotypes were noted and recorder for each case.

Results: The results of all molecularly tested samples were then compared with the ones previously obtained with

haemagglutination and a complete match was observed between the two. In addition, the statistical Pearson-Chi Square test and the Scatter plot clearly showed the relationship between both assays.

Conclusion: PCR-RFLP method was confirmed as a suitable alternative laboratory technique that can be used to determine efficiently the Kidd blood group of both donors and recipients, in an accurate manner without subjectivity as encountered in the case of haemagglutination. This research further facilitates the introduction of molecular-based techniques in molecular blood transfusion.

Disclosure: Funding: University of Malta

P4.05

Identification of a subset of B cells expressing the CD5 marker in humans

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Introduction: Development of lymphoproliferative disorders have been studied extensively, but the origin of subpopulations of B cells expressing the CD5 marker is still not fully understood. Of interest, Chronic Lymphobalstic Leukemia (CLL) and mantle cell lymphomas are characterised by a subset of B cells that express the CD5 marker.

Methods: A cohort of individuals (*n*=50) over 65 years of age and 20 neonatal blood samples were collected. Following mononuclear cell isolation, the cells were incubated with anti-CD5 (FITC), anti-CD19 (PerCP-Cy5.5), anti-κ and anti-λ light chain. At least 200,000 events were acquired on a FACS Calibur equipped with a 488 argon ion laser and 635 red diode laser (Becton Dickinson) and analysed with the CellQuest software system (Becton Dickinson). The ratio of κ+ and λ+ events was evaluated following gating of CD19+ subsets.

Results: The CD19+ fraction derived from neonate cord blood, are positive for CD5. From a cohort of 50 senior citizens, 25 samples were selected on the basis of the number of CD19+ events (>100 events). Immunophenotyping identified a CD19+ CD5dim fraction. Of interest, one of the senior citizens samples showed that 57.12% of the B cells were CD19+ CD5dim. In this sample, l/k ratio indicate a monoclonal origin.

Conclusion: In this study we identified a subset of B cells expressing low levels of CD5. Further characterisation of these cells is required. The ultimate goal of this study is to identify instigating carcinomatous factors that may stimulate B1 cells to transform into a CLL-like model.

Disclosure: Finding through the Faculty of Medicine and Surgery, University of Malta.

P4.06

Nandrolone affects Leydig cells function: a pilot *in vitro* study

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Introduction: Anabolic androgenic steroids (AAS) are some of the most commonly used drugs among athletes, frequently in combination with resistance training to improve physical performance, or for aesthetic purpose. A number of scientific reports showed the detrimental effects of AAS on different organs and tissues. In particular, AAS are known to suppress gonadotropin releasing hormone, luteinizing hormone and follicle-stimulating hormone. The evidence coming from studies performed on animal models suggest a direct testicular toxicity due to synthetic AAS use. However, the mechanisms causing this reduction have not been elucidated. The use of in vitro assays could help to assess the effects of AAS on Leydig cells and to understand the complex pathophysiology of AAS-induced reproductive disorders.

Methods: Quantitative PCR, western blotting and confocal microscopy was used to investigate the in vitro effects of nandrolone (one of the commonly used AAS) on the testosterone biosynthesis pathway in Leydig cells and on stress associated proteins.

Results: Nandrolone treatment resulted in a decrease in the expression of Cyp11A1 (cholesterol side-chain cleavage enzyme) and Cyp17A1 (17α-hydroxylase/17, 20 lyase), and upregulated STAR (steroidogenic acute regulatory protein) and HSD3B1 (3-β-hydroxysteroid dehydrogenase/δ-5-δ-4 isomerase).

Conclusion: These results shed light on the mechanisms that may determine a reduced production of testosterone in Leydig cells at the base of the male infertility of the AAS abusers. Further studies are necessaries to confirm these results and to better clarify the extent to which heavy AAS use might contribute to gonadal failure.

P4.07

Betulinic acid analogues induce maturation in HL60 acute myeloid leukaemia cells

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Introduction: Betulinic acid (BA) is a naturally occurring pentacyclic triterpenoid found in some plants, predominantly the bark of birch wood (Betula pubescens) from which it derives its name. It has so far been shown to have cytotoxic and apoptotic properties against a number of different cancer types such as brain tumours, ovarian cancer and HL-60 leukemia cell lines. It has been found to induce apoptosis by the inhibition of the topoisomerase enzyme involved in releasing the tension that builds up in the double helix as DNA is being unwound in DNA replication and transcription. As such these processes are unable to occur, giving it its anti-proliferative properties and make it a potential anticancer therapeutic agent. Furthermore, it has been shown that BA enhances DHD3 (vitamin D) induced differentiation in HL-60 acute myeloid leukemia cells. A number of BA derivatives were tested on HL-60 cells to assess induction of differentiation in the absence of Vitamin D3. NBT and MTT tests were performed on HL-60 cells exposed to with the different BA analogues as crude markers of differentiation and survivability respectively. This was then followed up by morphology analysis of the treated cells. The results show that these BA derivatives have both differentiation inducing properties and a cytotoxic effect (which vary depending on the derivative itself and also on the concentration used) on human HL-60 acute myeloid leukemia cells.

Conclusion: We have shown, through chemical analysis, that certain betulinic acid derivates can induce myeloid leukaemia cell differentiation even in the abscence of Vitamin D3.

Disclosure: These chemicals, the betulinic acid derivatives, were received through collaborations with labs in the EU funded "STEMCHEM" COST consortium CM1106

P4.08

Exploring the protein methylation profiles of different colon cancer sub-types

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Introduction: Colorectal cancer (CRC) is the third most commonly diagnosed cancer in Malta after lung and breast or prostate. CRCs are sub-divided into 9 categories, based on histology, and this diversity is reflected in cellular metabolism, proliferation, differentiation, and survival. All these characteristics can be influenced by protein methylation so the aim of this study was to investigate any observable differences in

methylation pattern between the different CRC sub-types.

Methods: Differences in levels of lysine and arginine methylation due to carcinogenesis were analysed by comparing the pan-methylation pattern in cancer cell lines with healthy tissue using 1-dimension sodium dodecylsulfate polyacrylamide gel electrophoresis (1D-SDS PAGE) followed by Western blotting. Addition analysis comparing normal culture condition with Foetal Bovine Serum (FBS) starvation was performed by a similar method.

Results: Preliminary data confirmed a change in the methylation pattern of colonic tissue following carcinogenesis. Mono-/di- methyl arginines were far less common than mono-/di- methyl lysines in the CRCs analysed, while no changes in either arginine or lysine methylation patterns could be observed following FBS starvation.

Conclusion: The CRC cell lines analysed presented a slightly different pattern from immortalised epithelium for both lysine and arginine methylation but the resolution offered by 1D-SDS PAGE was too low to provide a clear distinction between CRC sub-types based solely on methylation analysis. A greater variety of CRC cell lines is currently being analysed.

P4.09

Structural and functional analyses of the aryl hydrocarbon receptor interacting protein (AIP) and mutant derivative associated with pituitary adenomas in Malta

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Introduction: Germline mutations in the aryl hydrocarbon receptor interacting protein (AIP) gene predispose to pituitary tumourigenesis. The AIP gene codes for a 330 amino acid protein which functions as molecular chaperone and tumour suppressor. A novel missense mutation, designated as R9Q, was identified in an acromegalic Maltese patient. The same mutation was also reported in international patients, all characterised by an aggressive clinical phenotype.

Methods: Recombinant human AIP and AIP[R9Q] were purified to homogeneity from *E.coli* cells. Similarly, two binding proteins of AIP, heat shock protein 90 (HSP90) and phosphodiesterase 4A5 (PDE4A5) were also purified. Proteins were characterised structurally through *in silico* modelling and circular dichroism spectroscopy and kinetically through surface plasmon resonance.

Results: The AIP[R9Q] mutant showed an increased tendency to aggregate with temperature-induced unfolding and displayed changes in the hydrogen bonding network within the mutation region. This, however, did not influence the overall stability of the protein. AIP exhibited a three-fold higher affinity to HSP90 than the mutant counterpart, with K_D values of 4.8μM and 13.6μM respectively. AIP and AIP[R9Q] showed comparable binding to PDE4A5, with slightly higher affinity observed in the case of the mutant. This correlates with the biochemical data, obtained through a PDE enzymological assay, in which PDE4A5 showed a maximal inhibition of 56.6% ± 2.0 in the presence of AIP and 64.0% ± 0.8 when treated with equimolar AIP[R9Q].

Conclusion: Our results suggest that R9Q is a functional mutation which might predispose pituitary tumours by affecting the stability of complexes requiring HSP90 and/or by altering cellular cyclic AMP levels.

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P4.10

Decreased expression of *CIP2A* and *SETBP1* following drug-induced activation of the PP2A complex in triple negative breast cancer cell lines

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Introduction: Triple negative breast cancer (TNBC) patients derive little benefit from target-specific therapies due to lack of the favourable prognostic targets. 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 namely CIP2A, SET and/or SETBP1. In this study we assess the effect of FTY720, an activator of PP2A, on breast cancer cell lines.

Methods: Twelve human breast cancer cell lines representing different breast tumour subtypes and a non-tumorigenic epithelial breast cell line were cultured. Luminex® bead-based multiplex assay was used to quantify transcript levels of PP2A and its inhibitors. FTY720 sensitivity was determined by MTT assays following treatment with incremental drug doses.

Results: *In silico* analysis of datasets show that CIP2A is significantly upregulated in the HER2+ and the TNBC patients. To support this, our data show higher expression of CIP2A in TNBC cell lines. In addition, the TNBC cell lines are more sensitive to low doses of FTY720. CIP2A and also SETPB1 are downregulated in TNBC cell lines following treatment.

Conclusion: The PP2A complex is perturbed in the majority of TNBC cell lines. Moreover, this subset of breast cancer cell lines with overexpression of PP2A inhibitors CIP2A and SETBP1 are sensitive to the PP2A activator, FTY720. This suggests a possible class of breast tumours that may be eligible to the novel PP2A activating targeted therapy.

P4.11

Expression of protein phosphatase 2 (PP2A) inhibitory subunits in breast cancer cell lines

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Introduction: PP2A plays an integral role in the regulation of a number of major signalling pathways involved in the maintenance of normal cell division and survival. PP2A endogenous inhibitory subunits, namely SET, CIP2A and IGBP1, commonly found overexpressed in cancer, can suppress this PP2A activity resulting in cell proliferation and survival. In this study we investigated the expression of PP2A inhibitory subunits in breast cancer cell lines and overexpressed SET, CIP2A and IGBP1 in selected breast cancer cell lines.

Methods: Twelve human breast cancer cell lines representing different breast tumour subtypes and a non-tumorigenic epithelial breast cell line were cultured. RT-PCR was used to quantify the transcript levels of PP2A inhibitory subunits. The SET, CIP2A and IGBP1 coding sequence were cloned in a mammalian expression vector. A transfection protocol was optimised to transfect selected cell lines. Western blot was used to quantify the protein levels of PP2A downstream effectors.

Results: Expression analysis showed that the MCF-7 and MDA-MB-453 breast cancer cell lines have the lowest endogenous levels of PP2A inhibitory subunits. Successful transfection of these cell lines with SET, CIP2A and IGBP1 constructs was confirmed by measuring the GFP expression using fluorescent microscopy and western blot analysis.

Conclusion: Overexpression of the PP2A inhibitory subunits allows investigation of differential expression, using a breast cancer cell model. Further studies include the isolation of polysome bound RNA followed by RNA sequencing, to identify potential therapeutic targets in breast cancer subtypes with high SET, CIP2A or IGBP1 expression.

P4.12
The fourth dimension of mitochondrial oxphos

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Introduction: Circadian rhythms in gene expression synchronize biochemical processes and metabolic fluxes with the external environment. The main organ controlling the diurnal rhythms is the suprachiasmic nucleus which is located in the hypothalamus pacing self-sustained and cell-autonomous molecular oscillators in peripheral tissues through neural and humoral signals. Even in the absence of external stimuli, all the cells exhibit intrinsic oscillation of clock genes.

Methods: HepG2 cells was synchronized using a protocol consists in a 2 hours serum shock followed by serum withdrawal. Every 3 hours for a total time of 24/30 hours the endogenous respiratory activity is assessed in intact cells by high resolution respirometry. Clock genes expression was observed by RT-PCR at different time points. mtDY-generation was detected by flow-cytometry following TMRM staining.

Results: We show a correlation between circadian oscillation of clock genes and mitochondrial respiratory activity (supported by flow-cytometric analysis of mt-DY-generation and ROS production). The treatment with dexamethasone show that the shifted circadian oscillation of clock genes matched the newly established period of the mitochondrial respiratory activity. The mitochondrial respiratory complexes content did not change following synchronization suggesting that the observed rhythmic changes of respiration were possibly due to changes in both/either the availability of reducing substrates and to regulatory post-translational modifications. We measured the expression level of nicotinamide phosphoribosyltransferase NAMPT, and we found that the transcript level of NAMPT followed oscillatory changes synchronized with both clock genes and respiration. The cellular content of total NAD matched the circadian oscillation of the NAMPT and the NAD+/NADH ratio was inversely correlated with the mitochondrial respiratory activity.

Conclusion: This results indicate the occurrence in HepG-2 cells of an autonomous clock genes-dependent and NAMPT/NAD-mediated circasemidian rhythm controlling the mitochondrial respiratory chain activity.

P4.13
Stability of ZFP36L2 mRNA targets in an erythroid model

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Introduction: Haematopoiesis requires a fine balance between progenitor commitment and proliferation *versus* differentiation. In decreased oxygen situations the balance is shifted towards proliferation. This is tightly regulated by the concert action of Erythopoietin (EPO), Stem Cell Factor (SCF) and Glucocorticoids (GCs). ZFP36L2 is a transcriptional target of glucocorticoid receptors in BFU-Es that rapidly decays mRNA.

Methods: A list of ZFP36L2 targets were selected using publicly available datasets. A starvation-stimulation experiment was performed and cells were exposed to combinations of EPO & Dexamethasone (ED) and SCF & Dexamethasone (SD), with or without Actinomycin-D. RNA was extracted and cDNA synthesised for qPCR. The degradation of ZFP36L2 targets was then investigated.

Results: There was an immediate increase in *ZFP36L2* expression after stimulation with combinations of ED and SD. With Actinomycin-D SD, there was no fold change observed signifying stability of ZFP36L2 under these conditions. A decrease in stability was noted with ED stimulation, when Actinomycin-D was present, implying ZFP36L2 has a short half-life under these conditions. Three of the identified genes were good ZFP36L2 targets.

Conclusion: In-depth understanding on erythroid renewal can be obtained by elucidating GC-triggered pathways, and their interplay with EPO/SCF. This gives better understanding of disease states, allowing novel therapies to be devised. This process could also be utilised for *ex vivo* expansion of normal progenitor cells, enabling the possibility of culturing erythrocytes for potential therapeutic use. Advantages include the reduction in alloimmunisation and potential infectivity of transfused erythrocytes; using these cells as drug vectors; and for research on the infectious/reproductive cycle of parasites.

P4.14
Triple-negative breast cancer cell-lines are sensitive to the pp2a activator, FTY720

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Introduction: Protein phosphatase 2A (pp2a) is a tumour suppressor phosphatase that is aberrantly expressed and inactivated in a number of malignancies, including breast cancer. FTY720 is a pp2a-activating drug that increases pp2a activity by decreasing the levels of pp2a negative regulators. In this study, we evaluated the sensitivity of a number of breast cancer cell-lines when exposed to different concentrations of FTY720.

Methods: Twelve different human breast cancer cell-lines representing the 4 receptor sub-types and a non-neoplastic epithelial breast cell-line were cultured. The different cell-lines were then exposed to incremental doses of FTY720 ranging from 0.05 – 25µM and the %viability, an indicator of the sensitivity to the drug, was determined using MTT assays.

Results: The triple-negative breast cancer (TNBC) sub-types showed the highest sensitivity to FTY720 at low doses, as evidenced by the significant drop in the %viability; the highest sensitivity to FTY720 at the lowest dose (0.05µM) was recorded for BT-20. Conversely, BT-474 (a triple-positive sub-type) and MDA-MB-453 (Human Epidermal

Growth Factor Receptor 2+ sub-type) were sensitive to FTY720 at the highest dose (25μM) while MCF-7 was resistant even at the highest dose. Interestingly, MCF10A (a non-neoplastic breast cell-line) was resistant up to 25μM.

Conclusion: The TNBC sub-type was the only sub-type to show sensitivity to FTY720 at low doses. Since there is no moleculary targeted therapy for the TNBC sub-type, the adminsitration of FTY720 may serve as a potential adjuvant therapeutic agent in the treatment of this sub-type, which is often associated with a poor prognosis.

P4.15
Stability of β-catenin as a potential mechanism of glucocorticoid dependant expansion of human erythroid progenitors

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Introduction: Cooperative signalling between the glucocorticoid nuclear receptor and the cytokine receptors was proven to be central for proper balance between progenitor proliferation and differentiation. The glucocorticoid, Dexamethasone (Dex) has been identified as an essential requirement for the generation of mass cultures of erythroblasts. The production of massive cultures of human red blood cells in vitro would possibly lead to ex vivo transfusions. Although many signalling pathways have been unravelled, transcription regulation induced by glucocorticoids in haematopoietic progenitors is still unclear.

Methods: Human mononuclear cells were isolated using gradient centrifugation and cultured in selective media to expand human erythroid progenitors (HEPs). HEPs were serum deprived followed by stimulation with different combinations of growth factors in the presence or absence of dexamethasone. Microarray data analysis provided by Erasmus Medical Centre, provided a list of potential dexamethasone targets. qPCR was used to measure expression following stimulation experiments. Western blot was used to measure protein expression.

Results: The Dex targets, YWHAH and Zfp36L2 were found to have a synergistic effect upon stimulation by growth factors and Dex. Enhanced expression of β-catenin was observed upon stimulation with erythropoietin and dexamethasone.

Conclusion: The YWHAH, part of the 14-3-3 family are known to shuttle transcription factor complexes. The transcription factor β-catenin was shown to bind to the 14-3-3 proteins resulting in increased stability. The enhanced stability of β-catenin by Dex (due to increased expression of YWHAH), suggests a potential mechanism of cooperation resulting in erythroid progenitor expansion.

Disclosure: Funded by the Malta Government Scholarship Scheme.

P5.01
Intra-pancreatic mucinous neoplasia - trends observed since 2007

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Introduction: The many varieties of cystic pancreatic tumor, and especially intraductal papillary mucinous neoplasia (IPMN), have attracted increased attention recently. Their incidence may be rising, and their histopathological evaluation and classification have become more precise than before. Here we present the results of an audit carried out to establish the incidence and management of IPMN in Malta since January 2007.

Methods: Patient files and imaging through our local PACS system were used to acquire data retrospectively. PubMed was used to generate a literature search using keywords: intra-ductal-pancreatic-mucinous-neoplasia.

Results: There were 57 cases of IPMN since January 2007. 65% were male. 87% were found incidentally on magnetic resonance imaging. Average tumour size was 10-20mm. Unifocal disease occurred in 60% of cases, the rest being multifocal. Side-branch disease ocurred in 83% of cases, main-duct disease in 2%, the rest being mixed-type. The head of the pancreas was most usually affected, in 70% of cases. Just 50% of cases were followed up with repeat scans and 11% were followed up after one year.

Conclusion: IPMN may be increasing in incidence. Guidelines should be adhered to in order to ensure adequate follow up of this disease with malignant potential.

P5.02
Pancreatic surgery: the Mater Dei Hospital experience

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Introduction: We audited all the pancreatic surgery done at Mater Dei Hospital (MDH) from 2008 to 2012. This includes demographics, surgery type, presenting symptoms, co-morbidities, predisposing factors, tumour markers, imaging, histology, morbidity and mortality.

Methods: The list of relevant patients was obtained from operating theatre registers after the required approvals. Other information was obtained from the patients' notes., was coded and analysed using MS Excel.

Results: 58% of the patients were male. 29% had a Whipple's procedure, 13% had a total pancreatectomy and 14% had a distal pancreatectomy. Most patients belonged to the 60-69 year old age group. The commonest presenting symptoms were abdominal pain and obstructive jaundice. 25% of the patients, were diabetic, 24% were smokers and 2% were alcohol abusers. 25% of the patients had a palpable mass and only 51% of them had a raised Ca 19.9. The head was the commonest location for pancreatic lesions. Most patients had their surgery from day 11 to day 15 from presentation. Only one patient needed re-operation for positive surgical margins. 3 patients died in the Intensive Therapy Unit from sepsis. 84% were discharged home and 11% were discharged to a rehabilitation hospital. One year survival was up to 86%.

Conclusion: The number of patients who had pancreatic surgery at MDH increased year after year. This might be due to an increasing incidence or because of increasing incidental findings and improved accessibility to hospital and increased capacity and confidence in performing this major surgery.

P5.03
Management by endoscopic stenting of acute colonic obstruction due to malignant strictures – the local experience

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Introduction: Self-expandable metal stent (SEMS) is being increasingly considered as a bridge to definite surgery or as a minimally invasive palliative procedure, in those patients presenting with malignant obstruction. Clinical success rates varying between 85 and 90 % have been reported. This procedure is gradually gaining ground locally. In this short case series we evaluate the outcomes of the first patients undergoing this procedure under the care of one firm.

Methods: Case series following the outcomes in the first patients undergoing colonic stenting for malignant bowel obstruction. Patients presenting with acute colonic obstruction were assessed by consultant and after initial resuscitation taken to theatre. All patients were consented for surgery in case stenting was unsuccessful. Demographic data, information about co-morbidities and oncological disease, as well as intervention time, length of stay and complications were collected prospectively.

Results: Mean patient age = 77.5 years. Success rate = 83.3%. Mean patient ASA = 3. None of the patients had complications directly related to the procedure. Although means inpatient hospital stay was 6.7 days, all stays longer than 1 day post operatively were due to optimization of pre-existing medical co-morbidities. No patients necessitated blood transfusion. Patients in whom stent placement was successful were all able to open their bowels within 6 hours of the procedure.

Conclusion: The results from this short case series compares well with data available from centres which have been using this option. Colonic stenting using SEMS is a safe and effective option for patients presenting with malignant colonic obstruction.

P5.04

Management of acute upper gastrointestinal bleeding in Mater Dei Hospital - comparing local practices to NICE guidelines

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Introduction: Upper Gastrointestinal Bleeding (UGIB) is a common surgical emergency. In this audit we compared the management of acute, non-variceal UGIB in our institution with NICE guideline CG141: 'Acute Upper Intestinal Bleeding: Management.'

Methods: We looked at patients who underwent emergency oesophagogastroduodenoscopy (OGD) for suspected UGIB, between June 2013 and June 2014. Information was obtained from clinical notes regarding further management, including use of scoring systems, timing to OGD, endoscopic treatment administered and use of proton pump inhibitors (PPIs).

Results: 47 patients were included in this audit. 74.5% were male, 25.5% were female. In none of the cases were the Glasgow-Blatchford or Rockall score documented. 37 (78.7%) cases underwent OGD within 24 hours of surgical contact. 9 cases underwent OGD after 24 hours elapsed. In 1 case timing to endoscopy was not documented. 1 case did not undergo OGD. 30 cases had macroscopic inflammatory changes on endoscopy. 30 cases had ulceration on endoscopy. 2 cases had evidence of malignancy. 4 cases had a normal endoscopy. 12 cases had signs of active bleeding at endoscopy, 8 of which were treated with adrenaline alone. 2 of these required conversion to open surgery. 1 case of active bleeding was treated with thermal ablation. 3 cases did not receive endoscopic treatment. 46 cases were given PPIs.

Conclusion: Validated scoring systems are not used within our practice. 78.7% of patients with suspected UGIB underwent endoscopy within 24 hours of presentation. At the time of the audit adrenaline was still being used as monotherapy in the treatment of active UGIB.

P5.05

Adherence to Mater Dei Hospital antibiotic guidelines (2004) in elective abdominal surgery

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Introduction: Prevention of surgical site infections (SSI) is an essential component of safe surgery. Antibiotic prophylaxis (AP) is a key component of such prevention strategies. However, inappropriate AP risks development of multi-drug resistant bacteria; proper use and targeting of AP is therefore important. We decided to audit the appropriateness of AP in general surgery at Mater Dei Hospital (MDH).

Methods: A stratified random sample of 100 patients undergoing elective general surgical procedures of the abdomen was obtained from general surgical wards and day care unit. Using the current MDH guidelines as a reference, we investigated indication, appropriateness, duration and timing of AP, as well as record keeping and justification of prolonged treatment or dose changes.

Results: Day cases mainly included hernia repairs; 35.4% were fully compliant to guidelines while 41.6% were only partially compliant with respect to type and duration of antibiotics. 23% were non-compliant and given antibiotics unnecessarily. In-patient surgeries included colectomies, gastric and pancreatic surgeries; 81.5% were partially complaint with deviations in type, number and duration. Documentation of timing of both incision and AP administration were virtually absent. Height and weight of patients was only documented in patients who had POAC (pre-operative assessment clinic). Pre-operative creatinine clearance was rarely calculated but creatinine was usually tested post-operatively after administration of gentamicin.

Conclusion: Most surgical firms adhere to guidelines in a partial manner. Documentation of timing of administration needs improvement as does recording of height and weight and creatinine clearance. A significant proportion of patients are given unnecessary antibiotic prophylaxis.

P5.06

Virtual colonoscopy - an abused service?

Ruth Scicluna, Kristian Micallef, Simon Gatt, Jo Etienne Abela

Introduction: To retrospectively assess the indications for virtual colonoscopy and to correlate the findings with the clinical outcome.

Methods: Since the introduction of virtual colonoscopy at the Gozo General Hospital Imaging Unit, 425 patients (159 males, 266 females with an age range of 21-91 years) have benefited from this service. In this retrospective study, the indications for the test were evaluated. Colonic and extra-colonic findings were noted and correlated with patient outcome.

Results: The commonest indications were change in bowel habit (94), anaemia (74) and abdominal pain (60). The service was also used for unsuccessful optical colonoscopy (39) and in 14 cases the patient refused the optical test. Two hundred and twenty five patients had no abnormality detected. The commonest finding was diverticular disease (115). The second commonest was an extra-colonic abnormality (44); of these, 65% were abdominal lesions and the remaining 35% were chest lesions. In 14 patients (3.3%) CT revealed possible colonic neoplastic lesions. Subsequently, 8 of these patients were diagnosed with colon cancer (1.8%), 3 patients were operated for diverticular strictures and 3 had no significant pathology.

Conclusion: Despite the large number of referrals since its inception, the service has yielded 8 cancers only. This suggests that in contrast to optical colonoscopy, virtual colonoscopy is being requested to assess "soft" indications where the index of suspicion for malignant disease may be low. We suggest that a new referral guideline be put in place in order to make better use of this service.

P5.07

Association of 3 severity of illness scoring systems with post-operative destination and 30-day mortality post-emergency laparotomy

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Introduction: Immediate post-operative destination can be at level I and level II (intensive care unit ICU) or level III (ward). For a patient who has undergone surgery, this decision is generally taken by the anaesthetist and surgeon involved in the case. The aim of this study is to determine the association of 3 severity of illness scoring systems (ASA, Apgar and P-POSSUM) with immediate destination and 30-day mortality in patients

who underwent emergency laparotomy to infer the need for level I or II care.

Methods: Consecutive patients above 18 years of age who underwent emergency laparotomy at Mater Dei Hospital Malta, between July 2013 and July 2014 were enrolled. Physiological parameters, operative details and 30-day mortality were noted. Data was analysed using SPSS.

Results: 187 patients were recruited in this study. Using 2-tailed independent t-test, ASA score (p=0.003), Apgar score (p=0.028) and P-POSSUM (p=0.000) were good indicators of patients who required ICU admission. Both P-POSSUM and ASA score were indicative of the 30-day mortality with P-POSSUM offering more sensitivity and specificity on the graph using Receiver Operator Characterisitc (ROC) curves. P-POSSUM value above 16 offered the best specificity (78%) and sensitivity (78.3%) to infer the need for level I or II care.

Conclusion: ASA, Apgar and P-POSSUM are good indicators of post-operative destination. ASA and P-POSSUM are good indicators of 30-day mortality post-emergency laparotomy with P-POSSUM having better specificity and sensitivity.

P5.08
A spectrum of uncommon intra-abdominal cystic disease and its management

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Introduction: Cystic disease of the abdomen and pelvis is diagnosed frequently. We present a case-series of six unusual cystic pathologies encountered over a 12 month period, which show case a spectrum of interesting conditions and discuss their diverse management. Imaging and endoscopic material is striking.

Methods: Three patients presented with multi cystic disease. All had innumerable large volume cysts filling the general peritoneal and pelvic cavities. A 38 year old male with a virgin abdomen was diagnosed with primary peritoneal mesothelioma, a 70 year old female had pseudomyxoma peritonei secondary to a previously excised ovarian mucinous cystadenoma and a 60 year old male developed incurable pseudomyxoma with multiple small and large bowel tumours secondary to a previously excised mucinous adenocarcinoma of the appendix. All three patients required laparotomy, peritoenectomy, various visceral resections and intraperitoneal chemotherapy (HIPEC). Another three patients presented with unilocular cysts. A 50 year old male developed a large 20cm cyst-like lesion occupying the right abdomen, displacing all other viscera and causing hydronephrosis and biliary stasis. Originally suspected to be a hydatid cyst, this lesion was excised in-toto and histology confirmed myxoid liposarcoma. A 38 year old female developed a left sided abdominal mass which was confirmed as an intra splenic hydatid cyst which was treated with splenectomy. A 60 year old male was diagnosed with a 5cm submucosal lesion of the transverse colon which was confirmed as a cystic lymphangioma after extended right hemicolectomy.

Conclusion: This case-series describes unusual but important conditions and their management.

P5.09
Bringing laparoscopy to your own home

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Introduction: The first recorded attempt of looking into the human body using a minimal intervention approach was in the year 1805, first documented by Bozzani of Frankfurt. The technique began with a candle as the main source of light and thereafter radically improved with the development of a high resolution camera defining a major advancement in the laparoscopic era of 1980. Laparoscopic surgery requires training on costly simulators of which the ratio of availability to the number of surgical trainees may be limited thus reducing the time of exposure on these simulators. We designed an inexpensive laparoscopic training device composed of a webcam and LED lights mounted in a specifically designed box which allows medics to practice laparoscopic exercises at their own pace and at their own convenience. With repetition of these exercises, future surgeons will improve their skills and comfortably apply them in the operating theatre of which the outcome is largely dependent on operator technique.

Conclusion: Current surgical practice is continuously changing due to rapid advancements in technology, we need to keep up with these changes and learn new skills quickly but appropriately. Our device is an inexpensive trainer of which anyone may build and use in their own home. The aim of the trainer is not to simulate real life operations in a live individual but to aid the individual to practice motor co-ordination prior to applying them in theatre.

P5.10
Collision carcinoma of the oesophago-gastric junction

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Introduction: A 60 year old male, presented with a 3 months' history of progressive dysphagia. The patient was investigated with a flexible oesophago-gastro-duodenoscopy which identified a 15cms Type 2 Siewert cancer of the oesophago-gastric junction.

Methods: Biopsies from the lesion were in keeping with an invasive adenocarcinoma. Staging CT scan of the neck and trunk confirmed a T3/4 N1 M0 lesion as described at endoscopy. A staging laparoscopy was performed confirming a bulky junctional cancer which was, however, mobile at the hiatus. The peritoneal and liver surfaces were clear and peritoneal cytology was unremarkable. Three-stage McKeown oesophagogastrectomy was performed.

Results: Haematoxylin-eosin stains showed two distinct tumours. The predominant component at histology was a neuroendocrine tumour. The other component consisted of a moderately differentiated tubular adenocarcinoma. Both components infiltrated the full thickness of the wall extending into the surrounding adipose tissue but R0 resection was achieved.

Conclusion: Most collision carcinomas are diagnosed from histological examination of the resected specimen. A preoperative diagnosis would most likely be of benefit for the patient's prognosis since the selection of neo-adjuvant radiotherapy or chemotherapy can be further targeted towards the two types of tumour.

P5.11
The physical and psychological effects of breast reconstruction in breast cancer patients

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Introduction: Breast cancer is a devastating disease afflicting many women. The aim of this retrospective review was to assess the physical and psychological effects of patients who underwent breast reconstruction after breast cancer surgery.

Methods: Clearance from the patients' consultants, data protection and ethics committee was sought and granted. A participation letter was sent to 67 eligible patients who had reconstructive breast surgery between 2009 and 2011. Only forty-two patients (63%) participated, who then attended a

short personal interview during which two questionnaires (SF-36v2 health survey and one on the physical aspects) were filled in.

Results: Patients' mean age was 53.9 years (range 31-75). Reconstructive breast surgery using implant- only was performed in twenty-eight (66.7%) patients. Twenty-three (54.8%) of the forty-two patients had complications, with 1.35 complications/per person affected. Complication rate did not differ significantly amongst the different reconstruction groups (p=0.196). Patients who underwent autologous and oncoplastic reconstructive procedures scored significantly higher satisfaction scores than the prosthesis and prosthesis/autologous group (p=0.01). Whether the reconstruction was immediate or delayed and whether the patients had complications, did not have statistically significant effects on the patients' health domain scores (p=ns). The difference of two proportions between the sample studied and the norm showed that the sample studied had a statistically significant higher depression risk than the norm population (p=0.0154).

Conclusion: Complication rates were comparable amongst the different reconstruction techniques. A higher than normal depression risk was found in the sample studied and therefore improvement of the support services given to patients is recommended.

Disclosure: The licencing and software from the Quality Metric Incorporated was granted for free under the students' scheme.

P5.12

Triple assessment in breast cancer patients

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Introduction: Triple assessment (clinical examination, radiologic imaging and pathology) is the diagnostic tool which is widely used to evaluate patients with suspected breast cancer. The aim of this audit was to assess whether patients diagnosed with breast cancer at Mater Dei Hospital are undergoing the gold-standard triple assessment.

Methods: A total of 708 patients who were discussed at the Breast Multidisciplinary Meeting during the year 2014 were identified from the electronic database. Histology results were reviewed to select the patients with invasive breast carcinoma who underwent surgery with curative intent. Demographic data, radiological and pathology results were accessed using iSoft. Presenting symptoms, type of biopsy and timing of first image and biopsy were recorded. The average time from triple assessment to surgery was calculated.

Results: From 196 incident cases, 96.9% (n=190) were females. Needle core biopsy was carried out in 82.7% of patients (n=162) and fine-needle aspiration (FNA) in 3.06% of patients (n=6). In 85.7% of patients (n=168), triple assessment was fully documented on iSoft. No biopsy/FNA was available on iSoft in 14.3% of patients (n=28). 47.4% of patients (n=93) were first imaged by a mammogram, 23% (n=45) by Ultrasound and 1.5% (n=3) by magnetic resonance imaging (MRI).

Conclusion: This retrospective audit only considered electronically documented imaging and pathologic biopsies. Subsequent audit cycles should consider reviewing patients' medical files and including also the investigations carried out at Lascaris Screening Unit. Having a one-stop clinic would enhance patient-centred care by decreasing delay in diagnosis and alleviating patients' distress.

P5.13

Stone free rates after surgical treatment of renal stone disease in local population

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Introduction: Urolithiasis is a common urological problem, with many stone patients eventually requiring active stone management. Different modalities of stone removal are available locally, offering a comprehensive stone service. Audit of such a stone service performance hinges on stone-free rates (SFR) as the primary outcome measure.

Methods: All adult patients who underwent surgical treatment for urolithiasis by the Urology Department in MDH over a period of 2 years were included in this retrospective audit.

Results: In all, 748 patients underwent 1585 interventions during the study period, including stent insertion, ESWL, PCNL, stent removal, change of stent and ureteroscopy (URS); of these, 1030 procedures were aimed at active stone removal. The efficacy and stone-free rate for the different procedures done are very dependent on stone position and size. In our cohort most stones were located in the renal pelvis (161), upper and lower ureters (123 and 121 respectively) and the lower calyx (112). Most patients had just one calculus (558) but 3 patients had 7 concurrent stones. The average stone size treated by PCNL was 25mm, by ESWL 17mm and URS 15mm.The calculated SFR for the study period were 64.8% for PCNL, 69.6% for ESWL and 55.9% for URS.

Conclusion: Most centres define SFR as leaving stones smaller than 5mm but here we defined our SFR as complete clearance, with no residual calculi on post-operative imaging, so compared to the EAU/AUA nephrolithiasis Guideline Panel 2007 meta-analysis, our SFRs are lower – with an average SFR of 79.6% quoted for ESWL and 86.3% for URS.

P5.14

Solid organ surgical strategy with volume rendering: a nephron-sparing procedure in an atypical horseshoe kidney

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Introduction: Volume-rendered computerised tomography (CT) angiography reconstructs vascular structures within solid organs in three dimensional (3D) space, allowing visualisation essential in cases of uncommon anatomical variants such as horseshoe kidneys. The identification of vascular supply and extent of tumour infiltration must be determined pre-operatively to permit optimum surgical strategy.

Methods: A CT for un-resolving pneumonia revealed an incidental tumour within the left component of an atypical horseshoe kidney. The right renal component was horizontally placed across the aorta and had a completely fused "lower pole". Further CT angiography revealed a renal artery supplying each renal moiety. The dominant left renal artery simultaneously supplied the "lower pole" of the right component. A reconstructed 3D image is presented.

Results: The patient underwent a nephron-sparing procedure using the Habib bipolar resection device with complete excision of the tumour. Preservation of the arterial supply to the "lower pole" resulting in an intact right renal moiety was achieved through planning using volume rendering. Post-operative recovery was uneventful with an estimated glomerular filtration rate (eGFR) consistent with the loss of renal mass and no transfusion requirements. Histology of the resected tumour showed a renal cell carcinoma with clear margins.

Conclusion: The arterial supply of horseshoe kidneys is reviewed and the benefits of enhanced three dimensional reconstructive imaging in the pre-operative planning of complex surgery are highlighted. Without this resource, patients

may have to undergo unnecessarily radical procedures, with associated morbidity - in this instance, unnecessary nephron loss and subsequent renal replacement therapy.

P5.15

Audit of patients with burn injuries presenting to Mater Dei Hospital, Malta

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Introduction: Referrals of burn patients seen at the Plastic Surgery and Burns Unit (PSBU) indicated that patients with burn injuries were being managed differently at a primary care level. The aim of this audit was to analyse the data of burns patients presenting to Mater Dei Hospital (MDH) during 2011, so as to improve the quality of care, and morbidity and mortality of these patients.

Methods: This is a retrospective study with a cohort of 279 patients presenting to Accident and Emergency (A&E) and PSBU. Data was obtained anonymously from tickets of referral and patients' notes and was coded and analysed using MS Excel. Data collected included: demographics, referral source, priority at A&E, type of burn, management, prescription of antibiotics, reason for admission, fluid resuscitation, calculation of percentage area of burns at A&E and at the PSBU, management of wounds, length of stay and patient outcome.

Results: Burns occurred most commonly in males aged 21-30 years, who presented mostly during July and specifically on Mondays. Thermal burns were the most common injuries. Discrepancy in percentage area of burns varied from -2% to +14% from that calculated at the PSBU. Antibiotics were prescribed in 9% of the patients and co-amoxiclav was the most frequently prescribed. Length of stay varied from 1 to 61 days. Only 23 patients required admission.

Conclusion: In view of these results, guidelines will be formulated and distributed to primary care and A&E physicians, so as to improve patient care, encourage accurate documentation and reduce unnecessary referrals. A re-audit will be done.

P5.16

Submandibular duct repositioning: a presentation of local practice

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Introduction: Sialorrhea is common in patients with poor oral and facial muscle control. Involvement of the multidisciplinary team is imperative in such cases, including speech therapists, chest physiotherapists and psychologists. Surgical measures include submandibular duct transposition to the posterolateral aspect of the tongue and sublingual gland excision.

Methods: This retrospective study focuses on the indication, procedure and outcomes of surgery. An analysis of local data was performed and chronological pictures of the procedure were taken.

Results: Since 2003, 9 patients were referred for otolaryngology review in view of chronic drooling, 6 of which underwent surgery. All patients suffered from a chronic neurological condition including Batten's disorder, Cri du Chat syndrome, Rett's Syndrome and Cerebral Palsy. Out of the 6 patients who underwent surgery, 4 were male and 2 female. Ages ranged between 4 and 21 years. All subjects had bilateral submandibular duct transposition with sublingual gland excision. One patient underwent re-exploration 5 years after the initial procedure, whilst another patient underwent repositioning of the duct after having previously undergone injection of Botilinium toxin into the submandibular duct.

Conclusion: Submandibular duct transposition is a good surgical option for patients with chronic sialorrhea with good functional and symptomatic results.

P5.17

Parotid duct ligation – the surgical approach to chronic parotitis

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Introduction: Chronic parotitis is an inflammatory disorder characterised by recurrent episodes of tenderness and swelling of the parotid gland. Initial management is generally conservative and it targets the inflammation and the symptoms. However, in cases of recurrent episodes parotid duct ligation is performed leading to atrophy of the gland parenchyma and causing complete resolution of symptoms.

Methods: In this retrospective study, data from 7 patients who underwent parotid duct ligation since 2009 was analysed. Indications, operative procedure and post-operative outcomes or complications were studied.

Results: 5 males and 2 females have undergone parotid duct ligation since 2009. 6 patients had bilateral parotitis associated with stricture or sialolithiasis of Stenston's duct. One patient suffered from chronic parotitis secondary to Sjogren's syndrome. Both female patients had bilateral duct ligation with 2-4 months between each operation. Two patients required re-exploration of the duct due to recurrence of symptoms. Long term follow up showed satisfactory results for all patients.

Conclusion: Parotid duct ligation is a simple yet effective procedure for the management of patients with recurrent or chronic parotitis with fewer complications and scarring when compared to superficial or total parotidectomy.

P5.18

The use of imaging in the diagnosis and management of rhinosinusitis

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Introduction: The use of imaging in the diagnosis and management of rhinosinusitis is a common practice. An audit regarding the use of imaging in rhinosinusits was published in 2009. The aim of this audit was to investigate whether a decrease in the use of inappropriate imaging occurred in the year 2013 compared to the year 2009, based on standards written in the European Position Paper on Rhinosinusitis (EPOS 2012), together with calculating the cost of these radiological investigations and estimating the amount of radiation patients are being exposed to.

Methods: All plain radiographs and computer tomography (CT) scans of the paranasal sinuses performed at Mater Dei Hospital between January 1st 2010 and May 31st 2014 were requested and analysed to obtain data for various parameters.

Results: A total of 1818 CT scans on the sinuses were taken over the 4 year period. Of these, 787 scans were not included in the study due to them also involving a brain scan which was in turn not related to sinusitis. In a direct comparison between the 2009 audit and the data gathered for the year 2013, it can be concluded that the indications used to order CT scans are still poor.

Conclusion: The use of imaging in diagnosis and management of sinusitis should be based on the EPOS 2012 guidelines. From the data gathered, it is evident that excessive amounts of CT scans are requested, together with hundreds of plain radiographs which do not have a place in the diagnosis or management of sinusitis.

P6.01

Timing and efficacy of orthodontic functional appliance therapy

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Objectives: To determine whether patients are being prescribed functional appliance therapy at right age and time of development

and to determine the efficacy of functional appliance therapy. **Design and setting:** A retrospective clinical audit carried out at Birmingham Dental Hospital, UK. **Gold standard Timing:** 100% of patients optimally treated during or just after the onset of puberty, corresponding with Cervical vertebral maturation staging (CVMS) II and III. **Efficacy:** Functional appliance therapy should reduce the overjet to 3mm or less; buccal segment relationship change of at least half a unit; reduction in angle ANB on cephalogram.

Methods: Consecutive patients, undergoing functional appliance therapy over a 2 years, were identified from the orthodontic laboratory and patient database at the dental hospital. Collection of data included patient demographics, treatment clinical parameters, cephalometric data and vertebral dimensional measurements using Dolphin software.

Results: 68 patient records were analysed. 63% of patients were treated at the ideal pubertal stage according to CVMS. However, the female group was treated later than optimal. Overall, patient compliance was good but 50% of the patients did not achieve ideal overjet reduction due to a higher DNA rate, poor wear and breakages. Efficiency of overjet reduction was greatest during puberty.

Conclusion: Timing of functional appliance therapy was found to be optimal for 63% of patients but over half the females were allocated later for treatment due to late referral. Further education of referring practitioners and assessment of CVMS for patients during treatment planning is recommended to improve the efficiency of functional appliance therapy.

P6.02

Assessment of acid attack on nickel-based and cobalt-based metal alloys used for dental prosthesis

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Introduction: Both nickel-chromium (NiCr) alloys and cobalt-chromium (CoCr) alloys are used as a base material for partial dentures. The purpose of this study was to compare the results of acid attack on these alloys and compare their corrosion resistance.

Methods: Two materials were used, nickel-chromium and cobalt-chromium. Two sets of each alloy were cast, discs- 8mm diameter and 1mm thickness, cylinders- 8mm diameter and 15mm height. Both sets were immersed in three media for one month- de-ionised water, artificial saliva and acidified artificial saliva. The discs were used for X-ray diffraction (XRD), scanning electron microscopy (SEM,) leaching and micro-hardness testing. Potentio-dynamic scans was performed on the cylinders with 0.9% NaCl solution, artificial saliva and acidified artificial saliva.

Results: SEM showed an attack at the dendrite and interdendritic regions of the grain boundaries in both alloys but very minimal in the CoCr when compared to the NiCr when they were immersed in acidified and artificial saliva. No phase changes were observed on XRD analysis. NiCr exhibited a lower microhardness value than CoCr at 180 and 380 HV500 respectively with no change in hardness between the immersion solutions. During potentiodynamic scanning both alloys underwent transpassive dissolutions instead of pitting. A difference was only noted when the alloy was the variable and the medium used was the artificial saliva.

Conclusion: CoCr's corrosion resistance was better than the NiCr's as although no pitting/crevices was observed during potentiodynamic scans, attack on the grain boundaries of NiCr was visible during SEM when the solutions were the acidified and artificial saliva.

P6.03

Patient experience with TAD placement with O-cap: a pilot RCT

Audrey Frances Pace, John Scholey, Louise Mangnall, Jinesh Shah[2], Thomas Dietrich

Objective: To determine whether placement of an O-cap reduces discomfort after temporary anchorage device (TAD) placement and to assess the expectations and discomfort experienced by patients after TAD placement.

Design and Setting: A multi-centre, pilot, split mouth RCT. **Materials and Methods:** 30 patients (14 female,16 male;mean age 14y6m) requiring bilateral TAD(3M Unitek) placement for maxillary anchorage reinforcement, completed short answer and 100mm visual analog scales (VAS) questionnaires at different time-points prior to and 6 weeks following TAD placement. One of the TADs on each patient was randomly fitted with an O-cap.

Results: VAS scores were higher in the control side compared to the cap side for all time-points. Wilcoxon signed-rank test showed statistically significant levels at time-points 2(4hour post-placement $p<0.05$), 3(24hour $p<0.05$) and 4 (1 week $p<0.0005$) for cheek discomfort and time-points 4($p<0.05$) and 5 (2 weeks $P<0.05$) for gum discomfort. Mean VAS for cheek discomfort with cap and control scored highest at time-point 2 with 31.18mm (SD ± 22.14) and 45.75mm (SD ± 23.01) respectively. Mean VAS for gum discomfort with cap and control scored highest at time-point 1(1 hour post placement) with 36.71mm (SD ± 26.47) and 48.17mm (SD ± 27.76) respectively. Null hypothesis rejected. 87% reported extractions to be more painful than TAD placement.

Conclusion: TAD experience during the first 6 weeks is deemed more comfortable with placement of O-cap particularly as local anaesthetic starts to wear off.

P6.04

Investigation of the disinfection of acrylic dentures using chemical and ultrasonic methods

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Introduction: This study tests the effect of ultrasound disinfection, compared with the effect of chemical disinfectants. Both *in-vitro* and *in-vivo* studies were carried out.

Methods: For the *in-vitro* study, samples of self-curing acrylic were infected with both *Candida albicans* and *Streptococcus oralis*. The samples were then treated with different disinfection methods, including ultrasound treatment for 15s and 30s, and immersion in chemical disinfectants MD520 and Minuten. Colony forming unit analysis was carried out and remaining bacterial colonies were grown on BHI agar. SEM imaging was also carried out. For the *in-vivo* study, 10 volunteers were given a self-curing acrylic plate to wear for one week, and acrylic samples were then taken from these plates. These samples were treated with either MD520 or ultrasound disinfection for 30s. CFU analysis was carried out.

Results: In the *in-vitro* study, MD520 was the most effective, followed by Minuten and ultrasound treatment for 30 seconds. Ultrasound treatment for 15 seconds seemed to be the least effective. There was no significant difference between the effectiveness of the disinfectants on rough and polished surfaces. From the *in-vivo* study, ultrasound treatment was 99.9% effective, yet immersion in MD520 was 98.6% effective.

Conclusion: Even though all the disinfectants showed a good degree of effectiveness, some microorganism growth was still present after the treatment. MD520 was the most effective

against *Candida* and *S. oralis*, yet some microorganisms from the oral flora still remained after the disinfection. On the other hand, ultrasound treatment was the most effective against *Candida*, *S. oralis* and the oral flora.

P6.05

Polishing of zirconia fixed prosthetic teeth and restorations and its effect on material properties and wear of opposing teeth

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Introduction: Large restorations and also fixed replacement of missing teeth necessitates the use of materials such as zirconia, which help support the occlusion since natural tooth tissue is missing. After placement the restoration may require intra-oral adjustments by grinding and polishing. These adjustments may result in changes in the surface characteristics of the zirconia. The aim of this study was to assess the effect of polishing procedures on surface roughness, topographical and phase changes of zirconia.

Methods: Pre-sintered and pre-cut yttria-stabilized zirconia specimens were divided in four groups (Control, Intensiv, Shofu and 3M) depending on the polishing method used to prepare the specimens. The samples were polished according to the polisher type, while the control was left untreated. The specimens were thermocycled for 3000 cycles with a temperature range of -5°C to 55°C. to simulate oral conditions The surface roughness, elemental and phase changes caused by polishing before and after thermocycling were assessed by profilometric analysis, energy dispersive spectroscopy and X-ray diffraction analysis.

Results:

The polishing procedures increased surface roughness of zirconia, which was reduced by thermocycling for all polishing groups except 3M specimens. Deposition of aluminium when using Shofu abrasives and nickel in Intensiv was demonstrated. Phase changes were observed on the zirconia surface with formation of monoclinic phase in all polishing methods. Specimen aging enhanced the surface phase changes and also induced compressive stresses in zirconia polished with Intensiv.

Conclusion:

Polishing zirconia increased surface roughness, led to surface phase changes and contamination, which affects the long term clinical function of the restoration.

P6.06

Novel *PAX9* mutation in a family with oligodontia

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Introduction: Oligodontia is defined as the developmental absence of more than six permanent teeth, not including third molars. Mutations in Muscle segment homeobox 1 (*MSX1*) and Paired box 9 (*PAX9*) are associated mainly with the absence of premolar and molar teeth respectively. The reported prevalence of oligodontia is 0.08-0.16 %.

Methods: A survey of 1000 Dental Panoramic Tomograms from the archives of the Dental Department, Mater Dei Hospital, Malta revealed a prevalence of oligodontia of 0.8%. Two unrelated nuclear families with oligodontia were tested at a genetic level. Saliva samples were collected and DNA extracted. Primers were designed to span the exons and intron-exon junctions of *MSX1* and *PAX9*. The primers were optimised using gradient PCR, and High Resolution Melting Analysis identified variations for DNA sequencing.

Results: A missense mutation (A40G) in *MSX1* (rs36059701), was found to segregate with the phenotype in both nuclear families. A novel missense mutation in *PAX9* (A99P) was also found in two severely affected members of one family. Both exhibiting typical *PAX9* mutation phenotypes, with the father exhibiting absence of all second molars and a lower right first molar. Interestingly, he also has diminutive, conical, lateral incisors.

Conclusion: The *MSX1* A40G SNP is relatively common with a Minor Allele Frequency (MAF) of 0.20 in European populations, found associated with both Oligodontia and Cleft Palate. The *PAX9* mutation is in the DNA binding domain (homeobox) and is predicted to be pathogenic. It is possible that the *PAX9* and MSX1 mutations act synergistically to produce the oligodontia phenotype.

P6.07

Evaluation of clinical outcomes among hospitalised patients with positive OXA-48 *Enterobacteriaceae* isolates at Mater Dei Hospital, Malta

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Mater Dei Hospital

Introduction: OXA-48 Carbapenamase-producing *Enterobactericeae* have become endemic in the Maltese healthcare setting. Multidrug resistant pattern of the isolates is a challenge for treatment decision of the infected patients The aim of this study was to examine the clinical variables and treatment options of a series of patients with OXA-48 Carbapenemase-producing isolates.

Methods: Following ESCMID and EUCAST guidance, a total of 56 OXA-48 *Enterobactericeae* were isolated repeatedly from a 52 in-patient cohort between November 2011 and April 2013. Data collected included clinical focus of infection, antibiotic use, co-morbidity, CRP, neutrophil count, fever and hypotension. Isolates were deemed clinically important if they were: (1) from a usually sterile site, (2) causing signs of sepsis, (3) required specific treatment for resolution.

Results: Clinically important (infection) were 43.6% of isolates. OXA-48 co ESBL *Enterobacteriaceae* were 85% of total, expressing multidrug resistance with a few therapeutic options for amikacin,tigecycline,colistin and carbapenes. We reported 65% sensitivity to meropenem and 94% to amikacin. Patients had a mean age of 69.8, WHO performance status of 2.65, average length of stay of 29 days. 31% were in Intensive Care. Within the infected group, in-hospital mortality was up to 38%, patients deemed to be colonized had an in hospital mortality of 30%.

Conclusion: Most isolates retained low MIC to carbapenems, sensitivity to amikacin and colistin during the study period but background mortality is high reflecting the level of comorbidity. Inclusion of amikacin and meropenem in empirical treatment for gram negative sepsis could be considered but data from controlled trials is needed.

P6.08

Carbapenem resistant gram negative organisms as emerging pathogens in neutropenic fever

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Introduction: Neutropenic fever and sepsis are considered

to be among the primary causes of morbidity and mortality in patients with haematological malignancy undergoing treatment. Identification of causative organisms and their susceptibility patterns is therefore imperative to provide effective initial antibiotic cover.

Methods: A retrospective review of haematology patients treated for neutropenic fever in Mater Dei Hospital during the period of April 2013 to March 2014 was carried out. Patients aged 18 years or older, with febrile neutropenia secondary to chemotherapy or underlying disease were included. A systematic review of case notes and culture and sensitivity reports was performed.

Results: A total of 112 patients (61 males, 51 females) with 275 episodes of febrile neutropenia were identified. About 47% of patients had positive cultures. In 77% of all culture positive episodes, a Gram negative organism was cultured. The most common Gram negative organisms were *E. coli* (34.2%), Klebsiella spp (24.6%) and *P. aeruginosa* (5.3%). The most common Gram positive organisms were coagulase negative *Staphylococci* (11.8%) and *Enterococci* (7.5%). Approximately 30% of Gram negative organisms were resistant to piperacillin/tazobactam, 20% were resistant to gentamicin and around 10% were resistant to meropenem. Approximately 10% of all Gram negative isolates were carbapenem resistant *Enterobacteriaceae*, all of which were *Klebsiella pneumoniae*. Of these, 92.3% were sensitive to colistin and all were sensitive to tigecycline.

Conclusion: This study shows that in our department, Gram negative organisms remain the commonest pathogens and there is a worrying emergence of multi-drug resistant organisms.

P6.09

Detection of syphilis via molecular techniques

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Introduction: The etiologic agent of syphilis, *Treponema pallidum* causes a multistage disease which is most commonly sexually transmitted. During the last decade, there has been an increase in the reported incidence of syphilis in industrialized countries, emphasizing the need for reliable diagnostics. The reliable and fast diagnosis of syphilis and early treatment could improve public health.

Methods: Several detection methods have been employed to screen for syphilis, including microscopy and serological techniques. However, such methods are often subject to limitations with regards to sensitivity and specificity. For this reason, detection of *T.pallidum* DNA by Polymerase Chain Reaction (PCR) methods have been developed and have proven to be more accurate in detecting syphilis infection.

Results: Within the Molecular Diagnostics laboratory at Mater Dei Hospital, primary syphilis is detected by means of real-time PCR from swab samples. In the last six months, 7 out of 49 swabs tested positive for syphilis. All specimens were also screened for *Herpes simplex* virus types I and II, since both infectious organisms have similar clinical symptoms.

Conclusion: The advantage of real-time PCR is the ability to detect the pathogen directly in a short turnaround time. The detection of *T. pallidum* using PCR is therefore of great potential value for the diagnosis of primary syphilis, especially with the increased frequency of men having sex with men (MSM) and human immunodeficiency virus (HIV)-infected patients, who tend to be more prone to the infection. The accurate diagnosis of syphilis-causing *T.pallidum* is critical for efficient treatment and patient care.

P6.10

The design and optimisation of novel human dihydrofolate reductase inhibitors for the management of proliferative disease

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Introduction: Tetrahydrofolate (THF) mediates DNA and RNA synthesis via the production of purine and thymidylate precursors. During this process THF is reduced to the inactive dihydrofolate (DHF) and recycled back to the active DHF via a redox reaction, catalysed by dihydrofolate reductase (DHFR). DHFR inhibition prevents cellular growth, hence drug design at this locus is considered valuable with DHFR antagonists having clinical relevance in proliferative disease management. This study utilised methotrexate (MTX) as lead molecule in the design and optimisation of novel DHFR antagonists.

Methods: PDB crystallographic deposition 1U72 describing the holo MTX:humanDHFR complex was modelled in Sybyl-X® and affinity of MTX for the cognate receptor measured in X-Score® to establish baseline affinity. Structure activity data and 2D-topology maps generated in Poseview® guided the creation of 7 seeds in which moieties considered non-critical for binding and clinical effect were computationally modified using the GROW module of LigBulider®.

Results: Each of the 7 seeds yielded 200 novel structures which were classified according to pharmacophore structure, physiochemical parameter and binding affinity. This molecular cohort was assessed for Lipinski Rule compliance. This reduced the total number of viable molecules to 200 (n= 90, 19, 5, 3, 27, 8, 40) from seeds 1-7 respectively.

Conclusion: The optimal structures combining affinity and Lipinski Rule compliance from each pharmacophoric group were identified for optimisation and *in vitro* validation on the premise that they hold promise as clinically use anti-proliferative drugs.

P6.11

An evaluation of the prevalence of *Mycobacterium marinum* in aquaria and its impact on man

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Introduction: *Mycobacterium marinum* is a pathogenic organism normally found in aquaria and is the cause of fish tuberculosis. However, it also has the zoonotic potential to affect man. Granulomatous lesions of the hands are the common presenting manifestation and while this infection is generally cutaneous, it can disseminate if not treated. Although publications on this organism exist, studies have not investigated aquarium water as the source of infection. This infection has been observed amongst the Maltese population, resulting in an annual incidence of circa five cases per annum being detected at Mater Dei Hospital.

Methods: Two-hundred and thirty-five (235) specimens of aquarium water were collected to determine the prevalence of *Mycobacterium marinum* in Malta. All of these were treated to concentrate the bacterial load and enhance the possibility of mycobacterial isolates using Petroff's technique, with subsequent subculture onto egg-based inspissated solid media and broth media pre-treated with antibiotics. Growths were identified as positive for mycobacteria by a Ziehl-Neelsen stained smear. Phenotypic and biochemical tests were performed on all samples with a positive mycobacterial culture. Real-time PCR was used to fully identify and, hence, confirm the presence of

Myco. marinum in suggestive aquarium water samples.

Results: An overall prevalence of 1.3% positive cultures for *Mycobacterium marinum* was subsequently found.

Conclusion: Although the prevalence is low, this confirms that the micro-organism is present in Maltese aquaria and corroborates the possibility that contact with contaminated aquarium water may lead to infection in man. Hence, a greater awareness should be established amongst both the aquarist and medical community.

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P6.12

Glycopeptide heteroresistance and the influence of elevated glycopeptide MICs on treatment outcomes in *Staphylococcus aureus* bacteraemia in Malta

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Introduction: Glycopeptide heteroresistance in *Staphylococcus aureus* (hGISA) isolates from systemic infections is associated with glycopeptide therapy failure and poor patient outcomes and is difficult to detect in the clinical bacteriology laboratory using routine antimicrobial susceptibility (AST) methods due to the small number of hetero-resistant sub-populations within a clone (~1 in 106).

Methods: A retrospective cohort study of all *Staphylococcus aureus* isolates from blood stream infections (BSI) between 2009 and 2014 (n=798) were investigated for the incidence of hGISA, using the population analysis profile/area under curve (PAP-AUC) method. The glycopeptide susceptibilities of these isolates were determined, together with other relevant antimicrobial agents. Isolates were also investigated for accessory gene regulator (agr) dysfunction, and 2 screening and 4 confirmatory methods were evaluated for detection of hGISA. A subsequent two-matched case-control study was conducted for patients determined to have hGISA BSI to determine the impact of this type of infection on patient outcomes.

Results: The incidence of hGISA BSI was determined to be 2.68%. Analysis of vancomycin minimum inhibitory concentrations (MIC) showed a significant increase over time, known as 'vancomycin MIC creep'. A significant association was found between hGISA and agr dysfunction. hGISA BSI was significantly associated with osteomyelitis and endocarditis but not with increased risk of mortality.

Conclusion: Low levels of detection with routine AST indicate that *Staphylococcus aureus* isolates from serious infections should be investigated further for the presence of the hGISA phenotype.

P6.13

Induced cytokines / chemokines response patterns to human metapneumovirus in nasal secretions

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Introduction: Severity of illness during respiratory infection is often associated with high levels of cytokines / chemokines produced due to inflammatory responses caused by pathogens.

Methods: In this study cytokines and chemokines associated with acute inflammation were measured in 11 subjects that resulted as human metapneumovirus (hMPV) positive by real time polymerase chain reaction (RT-PCR). An ElisArray wa used to simultaneously detect 12 Toll-Like receptor induced cytokines / chemokines; TNF, IL1b, IL6, IL12, IL17A, IL8, MCP-1, RANTES, IP-10, MIG, TARC, IFNa. Similarities in the clinical presentations of subjects infected with hMPV and other respiratory viruses have been documented and suggest a similar inflammatory response. To determine this cytokines / chemokines levels induced by hMPV were compared with the levels induced by respiratory syncytial virus (RSV), influenza H1N1(H1N1) and parainfluenza virus (PIV).

Results: From the results obtained, levels of inflammatory cytokines/chemokines in hMPV infection were 2 fold lower than those elicited by RSV, H1N1 and PIV. Interestingly enough hMPV did not yield anf TNF, IL1b, MCP-1, IL-12, IL17A, TARC and IFNa. It did induce however the following; IL8, RANTES,MIG, IP-10 and IL6. No association was found to severity of disease or clinical presentation.

Conclusion: All of the induced cytokines / chemokines are important in the stimulation of granulocytes thus attracting white blood cells such as neutrophils and monocytes to the site of infection / inflammation therefore initiating innate immunity through inflammatory reactions.

P6.14

Human Parechovirus: an emerging pathogen of sepsis like illness and meningitis in young children

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Introduction: Human Parechovirus (hPeV) has been recently recognised to cause various illnesses in young children, ranging from mild diarrhoea, to sepsis and menigitis.

Methods: A total of 115 cerebrospinal fluids (CSF) samples submitted for a viral screen over a period of one year (Dec 2013-Dec2014) were tested for herpes simplex type I (HSV I), herpes simplex type II (HSV II), enteroviruses, mumps, varicella zoster virus (VZV) and hPeV. Qualitative testing was performed by using a multiplex real time polymerase chain reaction (RT-PCR) technique.

Results: hPeV RNA was detected in 7(6%) CSF samples of young children aged less than 1 year. Clinical presentations of the hPeV infected children were mild with a final diagnosis of sepsis like illness, but white matter injury in one child was also reported.

Conclusion: Testing for emerging pathogens like hPeV improves the differential diagnosis / etiological identification of sepsis like illness and viral meningitis in young children.

P6.15

A novel method of cooling in an operating theatre environment

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Introduction: An optimized theatre environment, including personal temperature regulation, can help maintain concentration, extend work times and may improve surgical outcomes. The use of a low-cost, low-energy 'bladeless fan' as a cooling device was tested within the operating theatre environment.

Methods: The safety profile of this device within a theatre setting was investigated by testing air quality using 0.5 and 5 μm particle counts as well as airborne bacterial counts on an operating table whilst simulating an operation in a thoracic operation in a busy theatre environment with ten staff present. Particle and bacterial counts were obtained with both an empty and full theatre, with and without the 'bladeless fan'.

Results: The results showed no statistical difference in either particle counts or airborne bacteria with the use of the Dyson Air Multiplier, even with the presence of ten individuals in the operating theatre. Two-way ANOVA testing showed that the staff count in theatre was an almost significant predictor of bacterial counts at P = 0.06 and large particle counts P = 0.09. Clean room conditions of ISO Class 7/8 were maintained throughout.

Conclusion: The 'bladeless fan' is a safe, effective, low-cost and low-energy consumption solution for personnel cooling in a theatre environment that maintains the clean room conditions of the operating theatre.

P6.16

A case for introducing a new old drug on the formulary

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Introduction: Antimicrobial resistance (AMR) has become an increasingly worrying challenge to modern healthcare. This is especially the case in Gram-negative bacteria (GNB), where carbapenem-resistant Enterobacteriacae (CRE) are often practically pan-resistant. Unfortunately, there is a dearth of novel drugs on the horizon . In such circumstances, older antibiotics can offer a viable therapeutic alternative. Fosfomycin, discovered in 1969, is one such formulation. Oral fosfomycin can be used in Urinary Tract Infections (UTI) caused by susceptible multidrug-resistant GNB including extended-spectrum beta-lactamase (ESBL) producers whereas parenteral fosfomycin offers a possible role in treatment of systemic CRE infections.

Methods: Utilising 2014 Microbiology data, using WHONet®, we reviewed all cases of urine GNB cultures resistant to ciprofloxacin and ceftazidime as well as clinical isolates resistant to both meropenem and amikacin.

Results: A total of 446 Enterobacteriaceae urinary isolates from 404 patients were resistant to ciprofloxacin and ceftazidime. In 399 of these episodes (89.5%), the isolate was susceptible to fosfomycin. In addition, 26 Enterobacteriaceae clinical isolates (26 patients) were resistant to carbapenems and amikacin. In 18 of them, parenteral fosfomycin would have been a therapeutic option.

Conclusion: Oral fosfomycin offers a less invasive option for resistant UTI infections, where up till now, in-patient carbapenem treatment has been the only option.. In addition, it would result in savings of more than €200,00 per year. The savings from the introduction of parenteral fosfomycin are less marked (almost €4000) but would avoid use of toxic colistin. This data supports the case for introduction of fosfomycin on the local formulary.

P7.01

Gynaecologic laparoscopic surgery: is it worthwhile?

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Introduction: Minimally invasive surgery is changing the management of many gynaecological disorders. Allowing patients access to such procedures leads to a shorter hospital stay and a better recovery.

Methods: A number of laparoscopic procedures were compared with their non-laparoscopic counterparts. Vaginal hysterectomies were compared with laparoscopic-assisted vaginal hysterectomies, total laparoscopic hysterectomies with total abdominal hysterectomies and laparoscopic Burch colposuspension with Burch colposuspension. Patient's age, length of stay and pre and post-operative haemoglobin and haematocrit were considered. Patients' perspective on their recovery was taken via phone surveys.

Results: Overall, patients who had laparoscopic surgery were younger and had a shorter stay as an inpatient. There was also a difference between the two groups with regards to readmission and complication rates.

Conclusion: As agreed globally, minimal access surgery is a reasonable alternative and should be considered with proper patient selection.

P7.02

Audit of colposcopy practice

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Introduction: 353 colposcopies were carried out at Mater Dei Hospital in 2014. This retrospective audit has analysed 50 consecutive colposcopy cases performed between January and March 2014.

Methods: The reason for referral, the demographics of the population and risk factors were collected. Operator experience, anaesthetic preference, if any ,together with the number and nature of punch biopsies were analysed. The correlation between the index smear, colposcopy findings and histology results was analysed. Use of HPV DNA testing was also collected.

Results: Results highlighted poor documentation. Patient demographics were incomplete in 80% of patients. The colposcopy examination findings were incomplete in 55 % of cases. The development of a colposcopy sheet would aid with standardization of data collection, help in future reaudits and be an indispensible tool for quality assurance. Development of appropriate software should be considered. The discrepancy between cytology and histology should be addressed. In our audit, 42% of referral smear were carried out privately, of which 12 used Liquid Based Cytology. 16 smears were carried out at MDH. 90% of smear reports used either the Bethesda classification or the WHO cytology classification. However, few of the histopathology reports used a conventional classification; a large number were reported as acute or chronic cervicitis. The use of a standardised and internationally recognised classification for histopathology reporting would improve interpretation of results and patient management, and aid in quality assurance of the colposcopy service.

Conclusion: HPV testing is a useful adjunct to colposcopy. 48% of women had HPV testing, of which 50% were positive.

P7.03

Minimal invasive surgery training in hysteroscopic resection

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Introduction: Minimally invasive surgery in the form of hysteroscopic resectoscopic procedures have been increasingly applied at Mater Dei Hospital to treat patients with intrauterine pathology. This mentoring and "hands on" training was initiated for minimal invasive gynaecological procedures in 2012.

Aim: To evaluate the increase in operative hysteroscopy with the use of the monopolar electrosurgical system. The variables analyzed were clinical characteristics, complication rate and number of patients requiring this procedure.

Methods: A total of 47 operative hysteroscopic resections were performed. A monopolar resectoscope 26 Fr was utilized to treat intrauterine pathology employing 1.5% Glycine as a distension media.

Results: The most common procedure was hysteroscopic resection of submucosal fibromas. No complications were registered. There was a steady increase in number of the patients from 2012 to 2014, with the most noticeable progress in the resectoscopic procedures during the last seven months of 2015.

Conclusion: Minimal invasive surgery for intrauterine pathology is increasingly being applied at Mater Dei Hospital thus reducing the need to resort to hysterectomy. It is imperative

that patients are well selected and with increasing application of these procedures, confidence of the operators will also increase.

P7.04

Why introduce cervical cancer screening?

Dorianne Spiteri, Isabelle Ann Saliba, Luke Daniel Saliba

Introduction: Death from cervical cancer in Malta has not decreased appreciably, unlike what has occurred in most developed countries. In compliance with EU recommendations, Malta introduces a national cervical cancer screening program in October 2015. The audits performed highlight the importance of the introduction of cervical cancer screening.

Methods: The target female population was determined by obtaining figures from the Census report on population demographics. The total number of smears performed in the Maltese Islands during 2013 was determined by obtaining information from all cytology laboratories in Malta. The percentage was worked out. The frequency at which patients attended for cervical screening was estimated by taking a sample of patients attending a private clinic.

Results: The percentage of target population attending for cervical screening in 2013 was 23.1%. With regards to the frequency at which patients attend screening, 86.4% of smears were done more frequently than recommended guidelines.

Conclusion: For a screening program to be effective, 70% of its target population must attend within the recommended time frame. This audit shows that the percentage being screened is low. A large proportion of the population are not being screened or screened infrequently, while a small proportion are attending more frequently than necessary. A call and recall system is essential.

P7.05

Laparoscopic ovarian cystectomy

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Introduction: Patients with ovarian cysts who are scheduled for operation, are counselled regarding the different methods of surgical approach for ovarian cystectomy, namely open or laparoscopic. Aim: to identify the success rate of laparoscopic ovarian cystectomy

Methods: Patients who underwent laparoscopic surgery for ovarian cyst/s between January 2014 and July 2015 were included. The conversion rate to laparotomy was assessed.

Results: Between January 2014 and July 2015, forty-one patients underwent laparoscopy for adnexal cysts, age ranged between 16 and 70years. Only three patients (7.3%) needed to proceed to laparotomy following laparoscopy. These included a case of bilateral borderline ovarian cysts in a 26year old, a solid ovarian cyst in a 66year old, for which a total abdominal hysterectomy and bilateral salpingo-oophorectomy was carried out and a peritoneal inclusion cyst. Of the thiry-eight procedures which were successfully carried out laparoscopically (92.6%), thirteen cysts were endometriotic (34%), six were benign teratoma (16%) and five were mucinous cystadenomas (13%). Other histolopathological findings included ovarian fibroma, serous cystadenoma, developmental cyst, paratubal cyst, borderline and haemorrhagic cyst. During laparoscopic ovarian cystectomy, the cyst is removed either via endobag through the laparoscopic incision or via the posterior fornix.

Conclusion: The success rate of laparoscopic ovarian cystectomy is high (92.6%). As compared to laparotomy, laparoscopic cystectomy for non-malignant ovarian cysts is increasingly becoming the preferred method because of its associated quicker recovery time, less need for analgesia and earlier discharge from hospital.

P7.06

An analysis of the patients presenting to the admissions' room in obstetric ward 2 at Mater Dei Hospital

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Introduction: All women who present to the Mater Dei Casualty Department with gynaecological symptoms or problems associated with pregnancy in the first or second trimester are referred to the Admissions' Room located in Obstetric Ward 2. There they are reviewed by one of the gynaecologists/obstetricians on call for the day, who decides on the appropriate course of action.

Methods: This is a retrospective study which analysis the patients attending the Admissions' room during the first 2 weeks of January 2015. The data was collected from the Admissions' book found in Obstetrics Ward 2 where all the patients using the service are logged. The following data was collected: age, locality, time of review, patient category (whether obstetric, puerperal or gynaecological), presenting complaint, whether an ultrasound was done and whether the patient was admitted or not. In the case of obstetric patients, the gestational age was also recorded.

Results: A total of 232 patients were reviewed during these two weeks. This amounted to a total of 307 visits (average of 22 logs per day), as some patients were seen more than once. The majority presented with gynaecological complaints (53.32%). The commonest presenting complaint in both obstetric and gynaecological patients was vaginal bleeding. The majority of patients (54.62%) presented during normal working hours (8am-2pm) and most (83.26%) did not require admission. A total of 70 ultrasounds were ordered.

Conclusion: This study highlights the great number of patients being reviewed by the on-call team and the type of pathologies which they face.

P7.07

Gynaecological issues in adolescent females with special needs in Malta.

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Introduction: Adolescent females with special needs may have difficulty coping with physiological changes in their bodies at the time of puberty. Their parents sometimes struggle to help them cope both with these physiological changes and with any gynaecological problems that arise.

Methods: Parents of adolescent females with special needs were interviewed at schools and special needs clinics regarding gynaecological problems that their children face and their coping skills. They were also asked about the provision of medication to control menstruation as well as on the issue of contraception for their adolescent children.

Results: Of the 85 female adolescents who were interviewed in the presence of their parents, there were 24 with Trisomy 21, 29 with autism and 14 with cerebral palsy, whilst the others had various other diagnoses. Most used oral analgesia for pain control in dysmenorrhoea and also as a means of controlling menorrhagia, but 35% were on the oral contraceptive pill to control the heavy periods. Some were considering hormonal implants, injections and laparoscopic sterilization to control menstrual problems and avoid unwanted pregnancies.

Conclusion: We found it encouraging that parents and their adolescent children with special needs generally coped well with their gynaecological problems. There was good liaison between the parents of the adolescent females with special needs and the gynaecology department through the community paediatric team providing a medical consultancy service at the four resource centres in Malta.

P7.08

Determining the spectrum of gynaecology referrals in Malta's largest long term care facility - St Vincent de Paul Residence (SVPR)

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Introduction: SVPR is Malta's largest long term care facility with 769 females currently residing in the institution at the time. Since 1993, a visiting consultant gynaecologist has been reviewing any patients referred by the ward-based doctors. Our aim was to study the spectrum of these referrals.

Methods: A retrospective observational study of 51 gynaecology referrals over a 24 month period (2013-2014). Data extracted included age, reason for referral, date of referral, waiting time, investigations done, subsequent management and follow - up.

Results: The incidence of referrals in 2013 and 2014 were 3.5% and 2.96% respectively. 96.08% of the patients were menopausal. Out of 51 referrals, 34% were due to post menopausal bleeding, 9% pelvic organ prolapse, 6% vaginal discharge, 6% atrophic vaginitis, 4% urinary problems, 3% suspected prolapse, 2% menstrual disturbances and 2% other pathologies. Highest amount of referrals were from the 80-90 years age group.

Conclusion: The spectrum of disease in the geriatric community is unique both in incidence and method of presentation. Our local results were also compared with similar internationl studies and an interesting difference in gynaecological referrals was noticed.

P7.09

An audit on inappropriate referrals to gynae outpatient clinics

Helga Consiglio, Carmen Portelli, Sarah Ellul, Igenielumhe Omogbai, Joel Pollacco

Introduction: The Gynaecology outpatient department is a high-turnover department. Consequently, waiting times for new cases are always a challenge. Moreover, the appropriateness of referral is oftentimes questionable.

Methods: This retrospective audit looked at 503 Gynae New Cases over a 3-month period. Data collected included sources of referral, waiting times and if surgery was offered. Most importantly it focused on whether referral was appropriate or not.

Results: 37.7 % were referred by Consultants, 22.4 % by non- Consultant Gynaecologists, 23.4% by GPs. The rest were referred by other doctors. The referral time ranged from 1day to 186 days with a mode of 40 days. 55% were booked for surgery. 18.3% of cases were inappropriate referrals and would have been more efficiently dealt with in a Gynae health clinic. These included "Gynae check up", smear, acne, hirsutism with/without Oligomenorrhoea, menopausal symptoms, vulval itching, vaginal infections , contraception, mammography and Bone density. When the colposcopy clinic will be set up, abnormal smears directly to the colposcopy clinic hence reducing a further 8.92%. A total of 26.9% of cases could be seen at the gynae clinic. This would improve quality of care and patient satisfaction rates

Conclusion: The efficiency and smooth running of GOP clinics could be significantly improved by directing referrals to the appropriate channels. Efforts at improving communication between specialities should be implemented and the audit cycle can be completed by a re-audit in 12-18 months time.

P7.10

The handover register in the Department of Obstetrics and Gynaecology

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Introduction: Meticulous handover is a crucial aspect of Patient Safety as it reinforces continuity of care. In April 2015 a handover register was introduced to replace verbal handoff between incoming and outgoing teams on call.

Methods: A total of 475 patients were included in the handover register from the 24 April 2015 till the 23rd August 2015. The variables required included the patients' demographic data, ward placement and caring Consultant. Clinical data involved the diagnosis and the plan of management.

Results: A provisional or a definite diagnosis was noted down in all patient entries (100%) and a plan of management in 23% of cases. Handovers concerning obstetric cases comprised 65.7% of entries while 34.3% were gynaecological related cases. The most common diagnosis in early pregnancy was silent miscarriage (13.4%) while the commonest gynaecological diagnosis was ovarian cyst (15.43%). A minority of entries were noted for most variables: demographic data (26%), ward placement (17%) and caring Consultant (25%).

Conclusion: All cases had a diagnosis written in the handover register. A significant number of entries did not have demographic data, ward placement, caring Consultant and plan of management. A new structured register will shortly be introduced so as to attain completion of case entries in the Handover Register. Besides the clinical value, the Handover Register also assists the administration of the Department in auditing the performance of the emergency services.

P7.11

Comparison of different surgical managements for genuine stress incontinence

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Introduction: Stress incontinence symptoms can severely affect a women's activities of daily living. Behavioural changes as well as pelvic floor exercises are the first line management options. However if these fail, a surgical option may be considered. Aim: to compare the surgical management options for stress incontinence.

Methods: Patients who presented for a surgical intervention for stress incontinence –Burch colposuspension (laparoscopic or open) or a mid-urethral tape procedure between 1st June 2013 and 31st May 2014 were included in the study. The length of stay following the respective surgical intervention as well as the readmission rate were assessed.

Results: Seven patients underwent laparoscopic Burch procedure (age range between 37 to 72years) while nine patients underwent open Burch procedure (age ranged between 40 to 62years). Mid-urethral tape procedures was carried out on twenty patients (age ranged from 37 to 71years). The average length of stay was 2.57days (ranging from 1-3days), 6.22 days (ranging from 4-9days) and 2.95 days (ranging from 1-9days) for laparoscopic Burch colposuspension, open Burch colposuspension and mid-urethral tape procedure respectively. There were no readmissions after laparoscopic Burch colposuspension while there were two readmissions after open Burch colposuspension and two readmissions after mid-urethral tape procedures.

Conclusion: Patients who underwent laparoscopic Burch procedure had the lowest days of hospital stay and thus earlier recovery and return to daily work; as well as requiring no readmissions. If expertise is available, laparoscopic Burch colposuspension appears to be worth considering as the surgical management for stress incontinence.

P7.12

Severe oligospermia: testicular sperm aspiration (TESA) versus fresh sample results during assisted reproduction

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Introduction: Male factor infertility, mainly severe oligospermia, contributes to up to 40% of causes of infertility. Testicular sperm aspiration (TESA) using an open biopsy is one option inorder to retreive sperm for intracytoplasmic sperm injection (ICSI).

Methods: A cohort of male patients were recruited from the Male Urology Infertility Clinic, after being referred together with their female partners from the ART Clinic at Mater Dei Hospital. To date, out of a total of 50 males seen at the clinic, 5 underwent TESA.

Results: To date, there have been 2 successful fertilizations resulting from the use of sperm retrieved from TESA.

Conclusion: TESA is a viable option in cases of severe oligospermia.

P7.13

Premenstrual syndrome prevalence, severity and it's impact on the life style among Libyan females

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Introduction: PMS (premenstrual syndrome) is a condition which manifests with distressing physical, behavioral and psychological symptoms. Symptoms severity of premenstrual syndrome varies widely into: Mild, moderate, and severe premenstrual syndrome. PMS prevalence varies based on criteria used to define illness.

Aim and objectives: To find out; The prevalence of premenstrual symptomes in Libyan females at reproductive age; the common symptoms, severity, and their effects on the life style; how many of patients voluntarily disclose symptoms of PMS to doctors; whether gynaecologists are paying attention about PMS symptoms.

Methods: A total of 504 cases were randomly chosen, then concented, each individual is given a written questionnaire to fill in based on the symptoms they suffered during at least three consecutive cycles. Names are omitted for confidentiality. The data are coded and statistically analyzed using SPSS version 13.0.

Results: The number of participants who complain of one or more symptoms of premenstrual syndrome were 182 (36.1%),and whom without premenstrual symptomes about 322 (63,9%). Mild symptoms: (38.5%) with acne, and (17.6%) for headache. Moderate symptoms: tension (46.2%), and headache (17%). Severe symptoms: (20.9%) with mood instability, and abdominal bloating (10%).

Conclusion: PMS is a major health issue that is largely under-estimated. In agreement with most studies majority of women have mild symptoms. One third have PMS but only a few having PMDD. There is a tendency among doctors to overlook PMS symptoms during history taking but similarly their patients. Patients with PMS may have poor school performance, family disharmony and working difficulties.

Disclosure: Libyan Government

P7.14

Early pregnancy problems at emergency unit

Kimberly Caruana, Janine Mifsud

Introduction: Early pregnancy can be associated with a multitude of problems and early pregnancy complications may be an indication of whether a pregnancy will progress or not. The aim of this study was to assess the different presenting complaints of obstetric patients in early pregnancy and the percentage that required inpatient management.

Methods: This is a retrospective study of obstetric presentations over a 3 month period from January 2013 till April 2013, at Mater Dei Hospital. The data was collected from the record of admission and patients' old notes.

Results: A total of 1169 patients presented to admission room at Obstetric ward, 302 of which were early pregnancy problems. Admission to the ward was required in 53 of the cases giving a percentage admission rate of 17%. Presenting complaints included abdominal pain, vaginal bleeding and lower urinary tract symptoms; vaginal bleeding being the commonest complaint. The age distribution of the obstetric population ranged from 16 to 43 years of age, with the 26-30 years being the modal group.

Conclusion: Early pregnancy complications were frequent. However, the majority of cases did not require admission.

P7.15

Presentation and management of miscarriages

Janine Mifsud, Kimberly Caruana

Introduction: Vaginal bleeding and abdominal pain in early pregnancy are the usual presentations of miscarriage. Different types of miscarriages are described including complete, incomplete, missed and threatened. The aim of this study was to determine how patients with miscarriage presented at admission room, whether surgical or non-surgical management was required and outcome.

Methods: This study included obstetric patients who presented with vaginal bleeding and abdominal pain in early pregnancy and were admitted, over a 3 month period. Patients' old notes were reviewed to determine management and pregnancy outcome.

Results: A total of 53 obstetric patients were included in the study. The mean gestational age at presentation was 6-10 weeks gestation. The types of miscarriages included complete (17.0%), incomplete (41.5%), missed (17.0%) and threatened (24.5% - of which 84.6% were viable and 15.4% non-viable pregnancies). Of those admitted, 46% required surgical and 54% non-surgical management. Average length of stay in hospital did not vary between surgical and non-surgically managed patients.

Conclusion: Incomplete miscarriage was the most commonly found type of miscarriage and in all cases, surgical intervention was needed. Of note is the high percentage viability in threatened miscarriages.

P7.16

Introduction of the 'King's Quality of Life Questionairre' in Maltese clinical practice

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Introduction: Urinary incontinence is still considered quite a 'taboo' amongst the Maltese public and clinicians alike, leading to its underdiagnosis and underreporting. The incidence of this problem amongst Maltese women is unknown. In clinical practice ,the 'King's Quality of Life (QOL) Questionnaire' is used in the outpatients setting, initially to assess the patients' symptoms and the impact these have on their quality of life, and subsequently to assess outcomes after conservative, pharmacological or surgical management.

Methods: The 'Kings QOL Questionnaire' was translated to

Maltese. The Maltese version of the 'Kings QOL Questionnaire' was handed out to twenty Maltese women attending the 'Urodynamics Clinic' at Mater Dei Hospital. The women were also asked to complete a short survey on the Questionnaire itself.

Results: All questionnaires were completed in less than 15 minutes. In the accompanying survey, the patients were asked to assess the ease, or otherwise, in completing the questionnaire, and its usefulness. They found the Questionnaire in Maltese not difficult to comprehend. Overall they rated it as useful and very useful as a tool to be used during their consultation.

Conclusion: The results of this study are encouraging. The Questionnaire is easy to use, easy to understand, and easy to complete in a very short time. It provides invaluable information about the patients' symptoms. Used in conjunction with other tests such as physical examination and Urodynamics, it will aid the clinician in tailoring management. Based on these findings, it is strongly recommended that the 'King's QOL Questionnaire' be introduced in Maltese Clinical Practice.

P7.17

Protocols and patient selection in IVF clinics: Is it ethical to favour guidelines, instead of patient centric care?

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Introduction: The National Institute for Health and Care Excellence in the UK suggests specific criteria for age and Anti-Mullerian Hormorne (AMH) levels for NHS funding. This study analysed whether these parameters were unduly restrictive in influencing patient selection.

Methods: Patient characteristics including assessment of ovarian reserve and follicle progression data were collected for controlled stimulation IVF cycles and mild stimulation IVF cycles. Chi-squared test was used to relate pregnancy to treatment strategy and to the NHS cut-off limits: age >40 years and AMH levels <5.4pmol/l. One-way ANOVA was used to compare oocyte count/ progression versus treatment strategy.

Results: Amongst patients undergoing IVF treatment, there was a 31.8% pregnancy rate in >40years versus 38.6% <40years. Similarly, there was a 38.9% pregnancy rate with AMH levels >5.4pmol/l, versus 8.6% chance with AMH <5.4pmol/l. Chi-squared tests showed no statistical significance between pregnancy and age group, p=0.443, and between pregnancy and AMH group, p=0.373. There was a non-statistically significant reduction in pregnancy rates from 37.3% for controlled stimulation to 28.6% for mild stimulation, Chi-squared test p=0.521, even though the mild treatment was statistically inferior in oocyte count/progression as compared with controlled stimulated treatment groups, one-way ANOVA p<0.001.

Conclusion: There was a difference of 6.8% in pregnancy between age groups with a cut-off of 40years, and 10.3% between the AMH groups with a 5.40pmol/l cut-off. This indicates that the NHS limits are restrictive. Mild treatment resulted in an 8.7% reduction in pregnancy, and may be an acceptable option in couples that do not wish to freeze embryos.

P7.18

The appropriateness of pre-operative investigations prior to elective gynaecological surgeries

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Introduction: Pre-operative investigations, namely blood investigations, electrocardiography and chest radiographs, are often performed prior to elective gynaecological procedures. These investigations are aimed at stratifying risk; however, they are often done habitually, rather than as a medical necessity. They do not commonly influence management and may lead to unnecessary follow-up and delay. The financial impact of over-investigating patients also needs to be considered.

Methods: The cohort included adult patients who underwent elective major or minor gynaecological surgeries in the first two weeks of February 2015. This data was extracted using the operation lists of each consultant. Data collected included the patient age, co-morbidities, name and grade of the operation performed and any pre-operative investigations carried out. The appropriateness of these pre-operative investigations was determined using the American Society of Anaesthesiologists (ASA) grade of the patient and the grade of the operation. The standard used was the National Institute of Clinical Excellence (NICE) guideline 3: The use of routine pre-operative tests for elective surgery (issued in June 2003).

Results: In a period of 2 weeks, a total of 399 pre-operative investigations were carried out on 120 patients. Out of these, only 124 tests were actually required; meaning that 69% of all the tests carried in those two weeks were not warranted. A total cost of €4729.10 for non-indicated tests was incurred in this period.

Conclusion: Several studies concluded that there is no evidence supporting routine pre-operative testing. An approach of selective investigations based on risk assessment reduces cost without compromising patient safety or quality of care.

P7.19

Evaluation of FRAX® score use in Maltese osteoporosis management guidelines

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Introduction: Recent years have brought a shift towards evidence-based fracture risk engines. FRAX® is one such diagnostic tool used to evaluate the ten-year probability of osteoporotic fracture risk. This study evaluated the Maltese FRAX® score-based osteoporosis management guidelines and assessed the suitability of using such a risk factor engine-based protocol.

Methods: Data from 702 patients presenting for bone mineral density (BMD) estimation in 2010-2011 were collected. In this period, local guidelines were devised but not yet put into practice so all referred patients underwent BMD estimation using Norland/Hologic densitometers. These patients were below 65 years of age and above the minimum age for FRAX® use: 40 years. Data included Age, Weight, Height, BMI and the presence of any risk factor components of the FRAX® score tool. FRAX® scores (excluding BMD) for each patient were calculated using the online tool www.shef.ac.uk/FRAX. The resulting major osteoporotic fracture risk was compared to age-specific assessment thresholds set by J.A.Kanis *et al.*(2013). Thus the appropriateness of densitometry measurements as dictated by local guidelines was determined.

Results: Local guidelines for managing <65 year olds were found to have a positive predictive value of 11.26% and a negative predictive value of 94.38%. Mean sensitivity across age-groups was of 76.56% (CI:64.3-86.2%) while mean specificity was of 39.21% (CI:35.7-43.41%). Positive likelihood ratio for the protocol was found to be 1.27 meaning 1 in every 8.8 patients that would have been referred for BMD estimation were actually osteoporotic.

Conclusion: FRAX®-guided local guidelines are well suited at excluding non-osteoporotic patients (False omission rate of 5.62%).

P8.01

Audit on the appropriateness of referral to upper gastrointestinal endoscopy at Mater Dei Hospital. Do referrals for endoscopy currently meet guidelines?

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Introduction: Upper gastrointestinal symptoms are remarkably common, non-specific complaints resulting in diagnostic challenges in medical practice. The introduction of upper gastrointestinal endoscopy managed to overcome the diagnostic difficulties present in this field. The aim of the audit was to assess the appropriateness of referrals for oesophago-gastrointestinal endoscopy (OGD) at Mater Dei Hospital according to the British Society Guidelines (BSG) 2002.

Methods: All data sheets of patients, under the care of all gastroenterology firms, who had undergone OGD in the period between 1st June and 31st July 2014 were accessed and reviewed retrospectively after obtaining the necessary approvals. The indications for OGD as proposed by BSG were used as a standard to assess the appropriateness of the indications for the procedure. Data was collected and analysed using Microsoft Excel® 2010.

Results: During the period of study, 282 patients underwent OGD with an age range of 16 to 86 years and a mean age of 56.3 years. The indications of 245 (86.9%) patients were according to the BSG. The most common indication that warranted referral to endoscopy was unexplained and persistent recent onset dyspepsia in patients aged 55 years or older (*n*=52, 21.2%). Only 37 of the referral cases (13.1%) were not in accordance to the standard guidelines with the commonest inappropriate indication being vomiting (29.7%, *n*=11).

Conclusion: The increasing number of endoscopies done in the past years may have led to inappropriate referral and overuse of this procedure. However this audit shows that referrals for OGD are in accordance to the current indications stated in BSG.

P8.02

Anaemia investigation in practice: how appropriate are our referrals?

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Introduction: The aim of this audit was to establish the yield rates of positive findings related to anaemia in patients accepted for endoscopic investigation of anaemia.

Methods: A total of 490 patients who underwent endoscopy between 12/4/13 and 13/5/14 were identified retrospectively through the electronic endoscopy database. Haemoglobin (Hb) levels, iron studies (including ferritin and iron saturations) and Hb electrophoresis studies were analysed using iSOFT. The proportion of patients who had low Hb was calculated. The investigations carried out in the anaemic cohort were evaluated and the yield rates for gastroscopy and colonoscopy were determined.

Results: 46.5% of the patients who were accepted for endoscopy (*n*=228) were being investigated for anaemia. 20.6% of the anaemic cohort (*n*=47) did not have any iron studies taken. Hb electrophoresis was carried out in 29.8% of patients (n=14) with a low MCV. From 14 patients who had Hb electrophoresis, Beta-thalassaemia trait was ruled out in one patient (7.14%). The yield rates of gastroscopy and colonoscopy were 34.6% and 9.76% respectively.

Conclusion: Results demonstrate the heavy burden of investigating anaemia on secondary care. A significant proportion of patients referred did not have any iron studies carried out. We recommend a referral proforma including the relevant points in the history which should be identified and the entry of MCV, ferritin, iron (Fe) and total iron-binding capacity (TIBC), when available, in order to reduce the number of inappropriate referrals. This would allow better selection of patients for endoscopy to improve the yield rate, which would then be followed by a re-audit.

P8.03

An audit on the appropriateness of referrals for colonoscopy

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Introduction: Colonoscopy is a common investigation used for the clinical evaluation and treatment of lower gastrointestinal tract pathology. The aim of this audit was to assess the appropriateness of referrals for colonoscopy. Colonoscopies performed for appropriate indications, yield more significant findings, and are essential to the rational utilisation of the finite healthcare resources.

Methods: All patients who underwent colonoscopy, within the Gastroenterology Department at Mater Dei Hospital between 1st June 2014 and 31st July 2014, were included in the audit, excluding paediatrics. Data was retrieved retrospectively: colonoscopy datasheets were used, and the reason of referral for colonoscopy was recorded and compared to the guidelines issued by the British Society of Gastroenterology (BSG), to assess the appropriateness of referrals.

Results: A total of 201 patients underwent colonoscopy during this time-frame. 170 patients (84.6%) had colonoscopy for an indication that was considered appropriate, according to the BSG guidelines. On the other hand, 31 patients (15.4%) of the sample population, were inappropriate referrals with no BSG indication for colonoscopy. Surveillance of patients with inflammatory bowel disease constituted the leading indication for colonoscopy (12.4%, *n*=25).

Conclusion: Whilst the majority of colonoscopies performed were clinically indicated, with reference to the BSG guidelines, results show that further improvement is required to reduce the number of inappropriate referrals for colonoscopies. The implementation process is currently being carried out through the distribution of BSG guidelines, amongst physicians referring patients for colonoscopies. Our plan is to re-audit, aiming for a higher percentage of adherence to the BSG guidelines.

P8.04

The prevalence of *Helicobacter pylori* amongst patients presenting with dyspepsia.

Martina Muscat, Mario Blackman, Pierre Ellul

Introduction: Helicobacter pylori (H.pylori) has been implicated as a cause for dyspepsia. Our aim is to determine its prevalence amongst patients presenting with dyspepsia to the gastroenterology outpatients. Dyspepsia was defined according to the American College of Gastroenterology (ACG) as chronic or recurrent pain or discomfort centred in the upper abdomen.

Methods: This was a prospective study where all patients with symptoms of dyspepsia, without any alarm symptoms, were invited to undergo a H.pylori stool PCR.

Results: 218 patients were recruited. The majority (71.5%) were <55 years of age. The rest (28.5%) were ≥55 years of age. 61.9% of patients were female. Gender proportion was similar in both age groups. 70% of females were <55 years of age and 30% were ≥55 years. 73% of males were <55 years. The rest of the males (27%) were ≥55 years. H.pylori was present in 6.4% of patients. There was no difference in the prevalence of H.pylori in patients who were above or below 55 years. There was no gender difference in the positivity rate (*p*=0.26).

Conclusion: In our cohort, females exhibited more dyspeptic symptoms than males. No gender or age differences in H.pylori positivity rate was found. According to the ACG guidelines, patients <55 years, with no alarm features, in a society with a prevalence of H.pylori of less than 10%, a proton

pump inhibitor trial should be attempted first rather than a test and treat approach. Only if this fails, should one consider testing and treating for the bacteria, followed if necessary by endoscopy.

P8.05

Anti-endomysial antibody may predict a second endoscopy in coeliac-suspected patients with false negative index duodenal biopsies

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Introduction: A subset of coeliac-suspected patients requires 2 Oesophagogastroduodenoscopies (OGDs) to achieve histological confirmation. Their index OGD would fail to reach diagnosis despite 4 duodenal biopsies suggested by guidelines. We compared this subgroup of patients with other coeliac patients requiring 1 endoscopy and recognize any predictors to identify the former group.

Methods: Coeliac-suspected patients at our department underwent an OGD. Clinical, serological and histological data were retrieved from medical notes. Group 1 comprised patients who achieved diagnosis with 1 OGD. Group 2 required 2 OGDs.

Results: 178 patients underwent an OGD (mean age 47 years; 73.6% females). 12 patients (6.7%) required 2 OGDs. Both groups had the same mean number of duodenal biopsies at their index endoscopy (4.6 *vs* 4.5, *P*=0.76). In Group 2, the number of biopsies was higher at the second endoscopy (6.4 *vs* 4.5, P=0.028). Group 2 showed a negative or lower positivity for anti-EMA (*P*=0.039) and a lower anti-tTG IgA level (*P*=0.06) than Group 1.

Conclusion: Anti-EMA seronegativity or low positivity in coeliac-suspected patients indicates the need for more duodenal biopsies to achieve diagnosis and avoiding subsequent OGDs. This finding makes anti-EMA testing crucial in coeliac diagnostics.

P8.06

The role of patency capsule prior to small bowel capsule endoscopy

Martina Muscat, Pierre Ellul

Introduction: Capsule retention is one of the complications of Small bowel capsule endoscopy (SBCE). The patency capsule is a useful tool prior to SBCE to help identify those patients with a higher retention risk. The aim was to determine the patency capsule retention rate and the underlying associated pathologies.

Methods: Patients who had a patency capsule (2009-2015) were identified through a database. Their clinical notes were reviewed.

Results: 148 patients, mean age being 37.8 years (8-78 years) (76.5% female) were recruited. 23% of patency capsules were retained. 11.8% of these had a repeat patency capsule which was also retained. The main indication for the patency capsule, in the retained cohort, was inflammatory bowel disease (38.2%). The rest were performed in the investigation of; anaemia (23.5%), familial polyposis (8.8%), abdominal pain (5.9%), coeliac disease,(5.9%) tufting enteropathy (5.9%) and abnormal imaging of the small bowel (5.9%). 58.8% had a retained patency capsule with no evidence of stricturing disease or other abnormality on imaging to suggest retention due to mechanical reasons. Thus, retention may be due to slow intestinal transit times. 41.2% had evidence of stricturing disease, small bowel thickening or masses on imaging.

Conclusion: The patency retention rate is much higher than that described in the literature. Thus, more careful patient selection is suggested. Meanwhile a careful history may identify those patients with a slow transit time. The use of bowel preparation and prokinetics may actually enable the patency to be excreted within 30 hours, thus allowing for small bowel capsule administration.

P8.07

Efficacy of printed material at preoperative colonoscopic workup

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Introduction: Current practice involves voluntarily supplying patients undergoing elective colonoscopies a non-standard printed information sheet, which delineates what the procedure entails and details of the risks, benefits and post-operative care in non-medical terms. This audit aims to assess patient retention of the information supplied and whether supplying a leaflet has had any effect on preparation.

Methods: All patients undergoing a colonoscopy within a 12 week period were recruited. The patients were randomly assigned into two groups. During the pre-operative assessment, patients who were assigned to group-A were supplied with essential preparation details only, whilst those in group-B were supplied with both essential preparation details and the information leaflet.The patients were questioned by blinded medical interviewers on the day of the colonoscopy. This involved a number of questions on the material discussed and this was correlated to observed colon preparation at endoscopy.

Results: There was no significant difference in adherence to bowel preparation or the quality of bowel preparation in groups-A and B. There was statistically significant difference in awareness that one should not drive or operate heavy machinery up to 24hrs post-procedure(p=0), awareness that should be accompanied up to 24 hr post-procedure(*p*=0.05) and awareness that one should not sign legal documents up to 24hr post-procedure(*p*=0.03).

Conclusion: In this study, patients that were given the information leaflet were more aware of recovery requirements during the 24 hour post-procedure period. Based on these findings a standard information sheet will be given pre-operatively to improve patient education and understanding of their post procedure care.

P8.08

An analysis of the quality of bowel preparation for colonoscopy in a local hospital setting

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Introduction: Colonoscopy plays a pivotal role in the investigation and surveillance of several bowel conditions. It has the potential to prevent future colonic malignancies. The effectiveness of colonoscopy depends on the quality of bowel preparation, since it prevents pathological lesions from being missed making interventions easier to carry out by minimizing risk to the patient and preventing the need to repeat the procedure. The aim of this study was to assess the quality of bowel preparation for colonoscopy.

Methods: This was a prospective study where consecutive patients from 2 medical and 2 surgical teams at Mater Dei Hospital (MDH), who underwent colonoscopy between May 2014-August 2014 were recruited. All patients were administered the same bowel preparation. The Boston Bowel preparation Scale was used to assess the adequacy of bowel preparation. A score >5 was considered adequate.

Results: 121 patients (64 males) were recruited. 31.4% of patients had a score of 5 or less and thus were not adequately prepared. The adenoma detection rate was 26.4%. Risk factors

for an inadequate bowel preparation were male gender, age group of 50-69 years and active IBD. Meanwhile patients referred for a change in bowel habits were found to be best prepared (90%).

Conclusion: This analysis provides evidence that MDH patients need better bowel preparation. Recommendations include: reviewing and improving MDH bowel preparation instruction sheets; providing nurse-led telephone support; emphasizing the critical importance of adequate bowel preparation to patients; consider the introduction of a split dosing regimen for laxative use which may yield better bowel preparation.

P8.09

Stricter adherence to surveillance colonoscopy guidelines for colorectal adenomas could result in reduced burden on endoscopy services

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Introduction: International guidelines recommend repeating surveillance colonoscopy in patients with colonic adenomas. We aimed to study local adherence to such guidelines.

Methods: Patients diagnosed with colonic adenomas between March and August 2008 were enrolled. Surveillance colonoscopy following adenoma removal was audited against the British Society of Gastroenterology guidelines: repeat in 5 years or no follow-up in low risk patients, repeat in 3 years in intermediate risk patients and repeat in 1 year in high risk patients.

Results: 165 patients (61.8% males; mean age 62.1) were risk stratified as per guidelines. 95 patients (57.6%) were low risk, 61 (37%) intermediate risk, and 9 (5.4%) high risk. In the low risk group, 43 patients (45%) had surveillance either ≥ 5 years or never and 52 (55%) had a shorter follow up. In the intermediate risk group, 9 (14.8%) patients had surveillance at 3 years, 28 (45.9%) patients before 3 years, 8 (13.1%) patients after 3 years and 16 (26.2%) patients had no follow up colonoscopy. In the high risk group, 5 (55.6%) patients had surveillance at 1 year, 1 (11.1%) patient before 1 year, 2 (22.2%) patients after 1 year and 1 (11.1%) patient had no follow up colonoscopy. 2 patients (1.2%) were diagnosed with interval colon cancer in the same year as the index colonoscopy.

Conclusion: Guideline non-adherence was noted in 65.5%, mainly due to too aggressive surveillance (49.1% early colonoscopies), increasing burden on endoscopy services. Late colonoscopies (6.1%) or no follow up colonoscopies (10.3%) were not the cause for interval cancers.

P8.10

No change in disease pattern for colorectal adenomas in 25 years.

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Introduction: Morphology, anatomic distribution and cancer potential of colorectal adenomas have been described over 25 years ago. We aimed to study whether such disease pattern changed over time.

Methods: Adult patients with adenomatous colonic polyps diagnosed by histology following their index colonoscopy performed between March and August 2008 were studied. Patient demographics and polyp characteristics were obtained from medical notes.

Results: 175 patients (107 males, 61.1%; mean age 62, range 25-87), having a total of 259 adenomatous polyps, were enrolled. 70.3% of patients had 1 polyp (range 1-7). The mean polyp size was 11mm (range 1-75mm; 30.5% polyps <5mm, 34.5% polyps 5-10mm, 35% polyps >10mm). The majority of adenomatous polyps were tubular adenoma (66%), harboured low grade dysplasia (87%), were located in the sigmoid (26%) and were removed piecemeal (64%). 2% harboured malignancy within the polyp (80% Haggitt 0). The larger the polyp size, the higher the association with malignancy risk (p=0.004) and of being removed piecemeal (p<0.001), but no association noted with adenoma type (p=0.174), grade (p=0.063) or polyp location (p=0.814). In contrast, polyp location was associated with adenoma type (p<0.0001; tubulovillous or villous adenoma in rectum, tubular adenoma in sigmoid, sessile serrated adenoma in hepatic flexure) and grade (p=0.005; high grade dysplasia in recto-sigmoid). Interval colon cancer was noted in 1.2% of cases.

Conclusion: Current disease pattern of colorectal adenomas is very comparable to that of 25 years ago. This may indicate that environmental factors responsible for this disease have not changed.

P8.11

Faecal calprotectin levels may distinguish inflammatory bowel disease from other inflammatory conditions of the gut

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Introduction: Faecal calprotectin (FC) is an effective tool that may differentiate inflammatory from functional bowel conditions. FC is not specific to inflammatory bowel disease (IBD) and is frequently elevated in other bowel pathologies.

Methods: The positive predictive value for gastrointestinal pathologies with positive FC levels (>50mg/L) was analysed. Patients with a positive FC level who underwent a colonoscopy between January 2013 and July 2014 were included. The endoscopy and histology reports were analysed to identify the utility of FC levels in distinguishing different bowel disorders.

Results: 413 patients (158 children (<16 years); 255 adults (>16 years); mean age 29.7 years) with positive FC levels were included. In 52.3% of cases, no histologic or endoscopic evidence of inflammation was identified. FC was falsely elevated more frequently among paediatric patients (62.6% children; 46.6% adults; p: 0.0002). 31.7% of patients, with positive FC and positive endoscopic/histological findings, were diagnosed with IBD. 68.3% were diagnosed with: eosinophilic enteropathy, infections, focal active colitis, adenomatous polyps, allergic enteritis, coeliac disease, chronic appendicitis, adenocarcinoma, diverticulosis, ischaemic colitis and lymphocytic colitis. The mean FC level in patients with Crohn's disease was 741, ulcerative colitis 769, indeterminate IBD 188, focal active colitis 314, eosinophilic enteropathy 321, coeliac disease 117 and no histological evidence of inflammation 237.

Conclusion: IBD patients have higher FC levels than patients with other inflammatory bowel conditions. More than half of individuals with high FC levels did not have inflammation at endoscopy, however patients with underlying IBD tend to have significantly higher FC levels than individuals with false positive FC.

P8.12

Elevated calprotectin levels are an indication for colonoscopy

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Introduction: Calprotectin is a major protein found in inflammatory cells, and is elevated in stools when there is intestinal inflammation. However this is not specific to any particular bowel condition; though it may aid in the diagnosis of inflammatory bowel disease (IBD). A positive faecal calprotectin (FC) is an indication for a colonoscopy. Our aim was to determine the predictive value of a raised FC for pathology.

Methods: All FC requests from January 2013 to August 2014 were obtained. The clinical case notes of the patients with an elevated FC were analysed.

Results: 863 requests for faecal calprotectin were requested with 413 positive results in 356 patients. 228

patients (64.0%) were colonoscoped, with 50.4% being females. Their mean age was 35 years and the mean FC level was 547mg/L (range 0-50mg/L). 32% had a normal endoscopy and histology. IBD was diagnosed in 100 patients (43.9%) – 57 patients had Crohn's disease, 36 patients had ulcerative colitis and 7 patients had indeterminate colitis. Other diagnoses included colonic polyps (5.27 %), adenocarcinomas (0.44%), infectious colitis (6.58%), coeliac disease (2.63%), ischaemic colitis (0.44%), gastric pathology (0.88%) and eosinophilic gastroenteropathies (7.89%). There were 128 patients whose FC, requested by non-gastroenterologists, was elevated and did not have a colonoscopy. Thus, potentially 80 patients may have undiagnosed gastrointestinal pathology.

Conclusion: The presence of pathology in 68% of patients with an elevated faecal calprotectin makes colonoscopy mandatory in patients with an elevated FC. However, performing this test when indicated can decrease the burden on endoscopy units.

P8.13

Haematological and Inflammatory Markers for non-invasive diagnosis of Crohn's colitis

Stephanie Galea, Neville Azzopardi, Pierre Ellul, Gabriella Balzan

Introduction: Recent evidence has shown that Red Cell Distribution Width (RDW) is associated with active Crohn's disease (CD). The usefulness of a risk score was analysed based on RDW, platelet count, ESR and CRP in assessing disease activity in CD.

Methods: Serum CRP, ESR, platelet count and RDW in CD patients were assessed on the day of colonoscopy and compared with CD activity. 308 endoscopic procedures on 161 CD patients were performed over a 48 month period. Disease activity was determined according to endoscopic and histologic findings. A risk score for disease activity was created by attributing one point to each elevated marker.

Results: Confirmation of disease activity was present in 191 colonoscopies (62%). All serum biomarkers were elevated in patients with active CD (independent samples t test p <0.005) when compared with patients with quiescent disease. RDW, platelet counts, ESR and CRP had low sensitivities (43%, 21%, 68% and 44%) and specificities (73%, 93%, 40% and 64%) in detecting disease activity. The scores for histologically active disease were; 90% of patients scored 4 (n=10), 89% scored 3 (n=37), 66.6% scored 2 (n=72), 53% scored 1 (n=91) and 54 % of patients scored 0. There was a statistically significant difference (p<0.0001) between the mean risk score in quiescent disease (mean 0.9145, n=117) and the mean risk score in active disease (mean 1.461, n=191).

Conclusion: RDW as a single biomarker has a low sensitivity, however, the presence of three or more elevated biomarkers should raise the suspicion of ongoing inflammation.

P8.14

Vitamin D deficiency in inflammatory bowel disease; is malabsorption to blame?

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Introduction: Vitamin D insufficiency is common in inflammatory bowel disease (IBD). This used to be attributed to factors such as anorexia and malabsorption, however more recent studies show that Vitamin D has an important role in numerous immune regulatory pathways, particularly in the innate immune system.

Methods: We recruited 63 patients known to suffer from Ulcerative Colitis (UC). Unlike Crohn's disease, UC is not typically associated with malabsorption. All patients recruited were of Maltese descent and had been living in Malta for at least one year thus eliminating bias from geographical and genetic variations in Vitamin D levels. 60 gender and age matched healthy volunteers were selected and had their serum Vitamin D levels checked.

Results: Average age was 46.3 years and average age at diagnosis was 38.1 years. Vitamin D levels were significantly lower in the UC group (mean 24.95ng/mL) compared to the controls (mean 37.29ng/mL) (p=approximately 0). Vitamin D levels were not found to be associated with neither age nor gender. 68.3% of patients had no or minimal symptoms (Montreal 0 or 1) with only 20% and 11.7% being respectively classified as Montreal 2 and 3. Disease activity was also found not to be statistically associated to Vitamin D levels.

Conclusion: IBD might be associated with Vitamin D deficiency for reasons other than malabsorption and disease activity. Indeed, the idea that IBD leads to Vitamin D deficiency needs to be questioned, as it might be that in a proportion of patients it is abnormalities in Vitamin D metabolism that predispose towards IBD.

P8.15

Complications related to the late diagnosis of coeliac disease

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Introduction: Coeliac disease (CD) can lead to complications including adenocarcinoma of the small bowel (SB), lymphomas and refractory coeliac disease (RCD). Their incidence is higher in patients with CD who have a prolonged exposure to gluten. We present four cases of complicated CD.

Conclusion: This highlights the importance of an early diagnosis of CD in patients with non-specific gastrointestinal symptoms, the need for long term follow-up and the role of thorough investigations when patients are still symptomatic post-CD diagnosis despite a GFD.

P8.16

Capsule endoscopies at a regional, general hospital

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Introduction: Capsule endoscopy (CE) is a good modality to visualise the small bowel (SB). The aim was to assess indications and yield of CEs at Mater Dei Hospital.

Methods: Patients who had CE were identified. The p score for SB lesions was used to determine the bleeding potential for any pathology.

Results: 80 patients (40 males; mean age 59 years) were recruited. 16.25% had a normal SB. 36 patients (45%) had p2 lesions+/-p1+/-p0. 20 patients (25%) had p1 lesions+/-p0. 11 patients (13.75%) had p0 lesions. P2 lesions included ulcerations (15), angioectasias (19). Blood was detected on 10 instances. 1 patient had a tumour. 1 patient who had SB findings on imaging (5) had a p2 lesion (20%). 2 patients who presented with abdominal pain (7) had p2 lesions (28.6%). 22 patients (57.9%) with IDA (38) had p2 lesions. 1 patient (33.3%) with OGB (3) had p2 lesions. 6 patients (42.86%) with a suspicion of SB Crohn's disease (total 14) had p2 lesions. 3 patients (50%) with suspected complicated coeliac disease (total 6) had p2 lesions. The caecum was not reached in 23%. The average SB transit time was 3:55:40 hours. The only premenopausal female with IDA wasn't referred to a gynaecologist before CE. Only 10.5% of IDA patients were seen by a haematologist, 50% had a coeliac screen and 55.3% had a urinalysis before CE.

Conclusion: Less than half of the patients had p2 lesions. A significant number of patients with IDA had SB findings. Patients were not properly investigated for IDA before CE.

P8.17

Fertility and pregnancy related misconceptions in female patients with inflammatory bowel disease

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Introduction: Reproductive issues in patients with inflammatory bowel disease (IBD) have been shown to be inadequately addressed by clinicians. Patients opt for voluntary childlessness due to misconceptions about fertility and pregnancy.

Methods: Female IBD patients were prospectively recruited from 5 different European centres. They were interviewed through the use of a questionnaire.

Results: 233 patients were recruited (mean age 40; SD±11.9). 85.5% patients with ulcerative colitis (UC) had a Montreal classification of E2 or E3. Crohn's disease (CD) patients predominantly (64.7%) had a non-stricturing and non-penetrating phenotype. Only 57.9% of patients were counseled on IBD and fertility. 27.5% admitted to considering voluntary childlessness. This correlated with lack of counseling delivered by health care professionals (coefficient 1.147; $p<0.003$). 19.7% expressed fear of infertility following the diagnosis of IBD. 8.2% were aware that the mode of delivery could be influenced by IBD. 15.5% and 36.5% knew that surgery could influence fertility and mode of delivery respectively. 15.0% thought that all medications should be stopped during pregnancy. 12.0% believed that some medications should be stopped. 63.1% were unsure about what to do with medications. 1.7% of patients stopped medications without consultation with clinical teams. 26.6% of patients were uncertain if patients with IBD could breast feed. 37.0% said that they could not. 15.9% were counseled to undergo regular pap smears. 61.8% received information about the HPV vaccine.

Conclusion: This study highlights the need to improve care for this cohort of patients and eliminate their misconceptions through the development of a multidisciplinary team management.

P8.18

Cervical cancer screening and prevention among females with inflammatory bowel disease

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Introduction: Patients with inflammatory bowel disease (IBD) on immunomodulators have a higher incidence of abnormal Pap smears. The aim of this study was to assess patients' knowledge, rate of cervical smear testing and uptake of HPV vaccine.

Methods: Female patients with IBD were recruited from 6 southern European centres. Patients were interviewed through a specifically designed questionnaire.

Results: 348 female patients (mean age 37.4 years SD±2.1) were recruited. Most patients (88.5%) claimed that females with IBD should undergo regular cervical smears. Only 17% were counseled by health care professionals to undergo regular smears. This was only done in 35.6% of cases by gastroenterologists, 62.7% by gynaecologists and 1.7% of patients by their general practioner. 64.36% of patients were undergoing regular screening. 98.2% of patients had a normal smear test. 45.4% of patients received information about the HPV vaccine. Most information was given by gastroenterologists (57.6%) and gynaecologists (427.2%). Both gastroenterologist and gynaecologist delivered information in 4 patients (2.53%). GP gave information to 14.0% of patients. Only 4.9% of patients had received the vaccine.

Conclusion: This study demonstrates that although patients have an adequate knowledge about cervical Pap smears and HPV vaccines, their uptake was low. There should be specifically designed clinics to help increase the prevention of such a preventable pathology.

P8.19

Co-morbidities in patients hospitalized for *Campylobacter* infection.

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Introduction: Immunocompromised patients and those with multiple underlying co-morbidities are more prone to being infected with common pathogens. Our aim was to determine if patients with co-morbidities are more likely to be admitted to hospital.

Methods: Patients diagnosed with Campylobacter infection needing admission to Mater Dei Hospital (2008-2013) were identified through the Microbiology database. Clinical case notes were reviewed.

Results: 421 patients were recruited (51% males). 52% of patients with culture positive results had underlying co-morbidities.13% of patients had documented ischaemic heart disease. 5.46% had AF. 6.89% had neurological disorders. 1.27% had renal diseases. 2.37% were immunologically compromised.13.1% had malignancies. 7.13% had chronic respiratory disorders. 71.3% were admitted with symptoms of gastroenteritis. The rest were admitted for other reasons. 43 patients (10.2%) suffered from gastrointestinal pathologies. 21 had liver disorders. Other gastrointestinal disorders included coeliac disease (3 patients), pancreatic insufficiency (1 patient), diverticular disease (7 patients), Hirschprung's disease (1 patient), bowel atresia (1 patient). 9 patients suffered from inflammatory bowel disease. 5 patients (56%) were on immunosuppressants. 1 patient was on 3 immunosuppressants. 1 patient was on 2 immunosuppressants and another patient was on another immunosuppressant. 4 of these patients had other underlying co-morbidities.

Conclusion: Almost half of the hospitalized patients had no underlying co-morbidities. Only a small percentage of patients with gastrointestinal co-morbidities suffered from Campylobacter infection. Thus, Campylobacter might affect healthy individuals with a need for hospital admission.

P8.20

Campylobacter infection at Mater Dei Hospital

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Introduction: Campylobacter is the bacterium most commonly responsible for causing gastroenteritis worldwide. Our aim was to determine the local incidence rate and antibiotic sensitivity.

Methods: Patients with Campylobacter positive (2008-2013) results were identified through the pathology department. Demographic and clinical data were analysed.

Results: 421 patients were admitted to hospital (51% males). Patients admitted with gastroenteritis had a mean shorter hospital stay (5.95 days) than those admitted for other reasons (10.2 days) (p<0.007). The most common subspecies was Campylobacter jejuni (67.7%). In 1.9% of cases, Campylobacter was present in blood cultures. Patients with positive blood cultures had a longer hospital duration (25 days) and were older than those with positive stool cultures (6.6 days) (p<0.0001; p<0.007). 19.5% of patients were hospitalized and 3.8% reported a history of travel abroad in the preceding 3 months. 2.1% died during the hospital stay. 59.4% were sensitive to erythromycin. 27.8% were sensitive to both erythromycin and ciprofloxacin. 54.9% and 0.2% were resistant to ciprofloxacin and erythromcyin respectively. 3.3% were resistant to both antibiotics. Highest resistance was that of Campylobacter jejuni to Ciprofloxacin (p<0.0001). The estimated incidence of Campylobacteriosis in Malta is 54.2 new cases per 100,000 per year with 16.7 new cases per 100,000 per year needing hospital admission.

Conclusion: Campylobacter gastroenteritis does not usually result in a long hospital stay and is associated with a low inpatient mortality. The incidence of Campylobacter infection in this study is higher than that reported in the literature. However, fluoroquinolone resistance is less common.

P8.21

High body mass indexes preserve bone mineral densities in patients with non-alcoholic fatty liver disease

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Introduction: The effect of non-alcoholic fatty liver disease (NAFLD) on bone mineral density (BMD) is poorly understood. NAFLD is more prevalent with higher body mass indexes (BMI). We aimed to evaluate the effect of different BMI classes on NAFLD patients' BMD.

Methods: NAFLD adults diagnosed on liver imaging in 2013 were enrolled, excluding patients with concomitant liver pathologies. Demographics were obtained from medical notes. BMI was calculated and classified using WHO classification. Femur and lumbar spine BMD were measured by dual energy X-ray absorptiometry. Age and gender-matched Z and T-scores were analysed against different BMI classes using ANOVA model.

Results: 197 NAFLD patients were enrolled (178 females, 90.3%; mean age:63.5, range:35-82; mean BMI:32.8, range:22-48.6). Obese patients had higher BMD T-scores (-0.38±1.12) of whole femur than overweight patients (-0.82±1.074) and normal BMI patients (-1.53±0.89) (p=0.001). This also applied for femoral neck (-0.97±1.14, -1.41±1.00, -1.77±0.95respectively, p=0.007) and lumbar spine (-0.71±1.38, -1.06±1.16, -1.80±1.62respectively, p=0.017). Likewise, obese patients had higher BMD Z-scores of whole femur (0.71±1.09, p=0.002), femoral neck (0.59±1.1, p=0.005) and lumbar spine (0.46±1.36, p=0.008) compared to overweight (0.26±1.15, 0.16±1.03, 0.04±1.15respectively) and normal BMI patients (-0.25±0.79, -0.25±0.84, -0.65±1.31respectively). Subgroup analysis showed obese class 3 patients had higher BMD T-scores of whole femur (p=0.002) and lumbar spine (p=0.003) but not of femoral neck (p=0.321) when compared to obese class-2 and class-1.

Conclusion: A linear relationship was found in NAFLD patients, between increasing BMI and stronger bone mineralisation. NAFLD patients with normal BMI should be screened for osteopenia. Weight loss in NAFLD obese patients might impair bone health.

P8.22

Bowel preparation for colonoscopy: a randomised controlled trial comparing two polyethylene glycol based laxatives

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Introduction: Colonoscopy is the gold standard investigation for the large bowel. To be able and give the highest possible yield, a good bowel preparation is essential. A wide variety of laxatives exist. This single blinded randomised controlled study aims to valuate whether there is any advantage in using a traditional Polyethylene Glycol (PEG) + Electrolytes laxatives as compared to the newer PEG + Ascorbic acid preparations. Particularly this study looks at adequacy of bowel preparation at colonoscopy and any electrolyte disturbances consequent to laxative use.

Methods: Patients where randomly assigned to PEG + Electrolytes group or PEG + Ascorbic acid groups. Blood electrolytes and haematocritc were taken prior to the intervention. Careful explanation on diet restrictions on the eve of intervention and laxative regime was performed. During the intervention level of colonic cleansing was scored using the Boston Bowel Preparation score and the serum investigations were repeated.

Results: 117 patients were successfully enrolled. 53 of which took PEG+ Ascorbic acid and 64 of the patients took PEG + Electrolytes. There were no significant differences in the level of bowel preparation between the two formulations. However PEG + Ascorbic acid dehydrated the patients significantly less than PEG + Electrolytes preparations.

Conclusion: Both PEG based preparations are effective laxatives for bowel preparation prior to colonoscopy. Since PEG + Ascorbic acid dehydrated significantly less patients it might have a more selected use in the elderly or patients with multiple co-morbidities.

Disclosure: Moviprep was provided by Beta Pharma Ltd

P9.01

Medicinal plants research in Malta: studies carried out at the Pharmacy Department and at the Argotti gardens

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Introduction: Since centuries, people from different countries used natural plants and products as herbal medicines. The role of Argotti Gardens is to maintain indigenous and exotic collections of plants which have adapted themselves to the Mediterrean climate. The Gardens attract a number of students each academic year, in order to conduct research projects.

Methods: The aim of the dissertation is to research on studies about herbal products carried out by pharmacy students. These are compared to the related scientific studies conducted by biology students. The differences and similarities in these research projects and their outcomes are analysed. A data base search was conducted at the Pharmacy Department of the University of Malta and Argotti Gardens in order to identify

undergraduate pharmacy research projects concerning plants and natural products. A step – by - step content analysis was conducted for each research project chosen.

Results: Essential oil extraction, analysis and identification were common to all seventeen projects. Twelve students conducted antimicrobial tests on the essential oils. Two experiments carried out by the biology students only were Germination Inhibition tests and the bioactivity of the essential oils on cancer cell lines. One pharmacy student formulated a cream with local thyme fragrance.

Conclusion: The dissertation offers an opportunity to explore connections between a sample of pharmacy-oriented and biology-oriented studies on medicinal plants. The study promotes and increases awareness about the studies carried out by students at the University of Malta related to medicinal plants including some combined with those at Argotti Gardens

P9.02

Design of novel anti-prostate cancer drugs which modulate the CYP17A1 receptor using abiraterone as lead molecule

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Introduction: Having a very similar structure to the endogenous male androgens, abiraterone is a drug that competitively inhibits the CYP17A1 enzyme to which the androgens bind. It consequently decreases testosterone biosynthesis which in turn mitigates prostate cancer progression. Abiraterone was selected as lead molecule for the design of novel anti-prostate cancer drugs owing to the fact that it may be administered orally and exhibits low toxicity.

Methods: Protein Data Bank (PDB) crystallographic deposition 3RUK describing the *holo*- abiraterone:CYP17A1 complex was used as a template. Abiraterone was extracted from its cognate Ligand Binding Pocket (LBP) and used to generate 3-Dimensional (3D) maps of the CYP17A1_LBP. *in silico* binding energy (kcal mol-1) and binding affinity (p*K*d) were calculated for abiraterone, the latter result being used as baseline when calculating the p*K*d of the newly generated structures. A total of three seed structures were generated- with the steroidal nucleus and the pyridyl moieties being removed in seeds 1 & 2 respectively, and a growing site being introduced on carbons 11 and 12 for seed 3. Each seed was used as a scaffold in the generation of pharmacophorically diverse novel structures using the GROW algorithm of LigBuilderv1.2.

Results: 727 novel structures were generated, 465 of which were Lipinski rule compliant. All three seeds generated Lipinski Rule compliant structures whose p*K*d exceeded the baseline value of 7.04 calculated for abiraterone.

Conclusion: This study is valuable in the identification of high affinity CYP17A1 modulators with predicted oral bioavailabilty. Optimisation and *in vitro*validation could yield clinically useful abiraterone alternatives.

P9.03

Medicine reconciliation: a review of a pharmacist-led exercise in a Cardiac Medical Ward

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Introduction: Routine Medication reconciliation is not performed during admission, hospitalization and discharge. The impact of this process was measured at discharge.

Methods: A cross-sectional study with intervention was conducted over 16 weeks at the cardiac medical ward. A non-resident clinical pharmacist performed medication reconciliation for cardiac patients prior to discharge. This involved a comprehensive medication review from admission to discharge. Treatment interventions were confirmed with the discharging physician.

Results: The study had a capture rate of 45% of discharged patients with 180 patients reviewed for treatment reconciliation at discharge. Out of this group, 77% required an intervention. Further classification of the intervention group revealed that 40% of patients required correction of accompanying documentation whereas 60% of patients required correction of treatment prior to discharge. This included deletion of wrong or unnecessary treatment, correction of wrong or inappropriate dose, change in drug selection, addition of omitted treatment, and change in route of administration.

Conclusion: Medication reconciliation avoids medication error associated harm and improves treatment accuracy. It is a critical safety goal that should be done at all transitions of care for all hospital patients. Efforts must be directed to expand this clinical pharmacy service to all care areas.

P9.04

Inaccuracies in drug history taking: an audit in acute medical patients in 2012

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Introduction: Errors in drug history taking can lead to serious prescription errors and patient adverse events. This audit aimed at assessing the accuracy in drug history taking in acute medical patients.

Methods: All patients admitted under a single Consultant Physician between April and September 2012 were included. Data collected included age, gender, nationality, time of admission and history. The drug history was rechecked by the admitting firm on the first post-admission review and discrepancies were noted and evaluated.

Results: There were 215 patients with a mean age of 66 years. Drug history was written in full by the admitting doctor in 68.3% (n=147). In 19%, (n=47), it was not documented or noted "as per chart" or "as per casualty sheet". Doubts regarding accuracy were highlighted in 8.8% (n=19). A discrepancy in the drug history was found in 91 patients (42.3%), of which 73.6% were deemed to be serious errors. The mean number of errors per patient was 2 (range 1-10). Errors included omission of medication/s, (63.7%, n=58), inclusion of erroneous medications (18.7%, n=17) and incorrect dose (37.3%, n=34).

Conclusion: There is significant room for improvement in drug history taking. Doctors need to verify each medication and dosage with the patient / relatives and avoid copying old treatment cards and discharge letters. When necessary, relatives should be asked to bring in the patient's medications. A hospital campaign reminding patients to bring an updated list of their medications to all hospital visits would also help decrease the error rate.

P9.05

Prescribing antibiotics to children with upper respiratory tract infections

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Introduction: Children suffer 3 to 8 episodes of upper respiratory tract infections (URTI) per year, the majority of which are self limiting and do not necessitate antibiotic treatment. We aimed to investigate the use of antibiotics in children with URTI presenting to the paediatric accident and emergency department at Mater Dei Hospital.

Methods: All children aged 0-<16 years presenting consecutively with a diagnosis of an URTI (laryngotracheitis, otitis media, pharyngitis, tonsillitis, and sinusitis) were enrolled. If prescribed, the appropriateness of the antibiotic prescription was assessed according to the NICE guidelines for antibiotic prescribing in respiratory tract infections and the Infectious Disease Society Guidelines of America for the treatment of pharyngitis. A sample size of 320 children was needed to attain a study power of 90%.

Results: A total of 326 children (mean age 3.4 years) were enrolled from January-February 2015. Out of the whole population, 30% (98/326) were prescribed an antibiotic of which 70% (69/98) were inappropriate. Children presented most frequently with pharyngitis (68%; 221/326) of whom 22% (49/221) were prescribed an antibiotic. An analysis of the antibiotics prescribed for pharyngitis revealed that the antibiotic choice was inappropriate in 69% (34/49) and the antibiotics prescribed in all 49 children were not according to recommendations.

Conclusion: Prescription of antibiotics from hospital should be rationalised and in accordance to set standards. A change in practice is urgently required to ensure that children with URTIs are prescribed an antibiotic only if indicated and, if prescribed, the antibiotic choice should be appropriate.

P9.06

Paediatric off-label and unlicensed prescribing in primary care in Malta

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Introduction: Reviews of paediatric prescriptions in the community setting have quantified off-label (OL) use to reach 51.7% and unlicensed (UL) use to reach 17%. The aim of the study was to investigate the incidence of paediatric OL and UL prescribing in primary care in Malta.

Methods: A prospective pharmaco-epidemiological review of 1507 medicines recommended to 924 children by 7 paediatricians and 24 family doctors was carried out with a validated data collection sheet which was constructed de-novo. OL medicines were defined as medicines that were not prescribed in accordance with their summary of product characteristics (SmPC) with respect to age, dose and indication as well as frequency, duration and route of administration. UL medicines were defined as medicines that either did not have a marketing authorisation or medicines whose formulation was modified.

Results: 721 from 1507 medicines (47.8%) were prescribed in an OL/UL manner, the highest incidence in the 1 month - 2 years age range (210 from 345 medicines; 60.9%). More paediatricians rather than family doctors prescribed in an UL (11.6% *vs* 3.6%, $p<0.001$) and OL manner for age (25.7% *vs* 19.6%, $p<0.001$). Conversely, more family doctors rather than paediatricians prescribed in an OL manner for dose (33.5% *vs* 21.4%, $p<0.001$).

Conclusion: Similar to other studies, the two main contributing factors for the high rates of OL/UL prescribing were lack of licensed paediatric medicines and failure by prescribers to follow recommendations detailed in the SmPC, principally caused by lack of harmonisation between SmPCs and published literature.

P9.07

Prescribed drug omissions in hospitalised patients

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Introduction: In-patient prescribing errors are common. Drug doses may be omitted or delayed for various reasons. In most cases, this does not cause patient harm, however certain critical omissions may result in detrimental outcomes. This audit aims to determine the omission frequency of a prescribed drug, the reason for omission, drug classes omitted and to identify critical drug omissions.

Methods: In-patient treatment charts in the departments of medicine, surgery and orthopaedics were analysed retrospectively over a 24-hour period. The total number of drugs prescribed, frequency dosage regimen and the number of doses omitted were recorded. The omitted drugs were classified as critical or non-critical. The reason for omission was recorded using a reference coding system.

Results: A total of 468 treatment charts with 5751 prescribed doses were analysed. The omission frequency was 8.1% (n=466) over the 24-hour study period. The most common reasons were unavailable medication on the ward (10.5%; n=49) and "nil by mouth" (10.5%; n=49). In 6.44% (n=30) omission was due to full treatment charts. In 49.8% (n=232), the reason for omission was unknown. Critical drug omission occurred in 19% (n=88), out of which 61% (n=54) were antibiotics.

Conclusion: This audit demonstrated reasonable compliance levels, with areas for improvement. Critical drug omission is frequently avoidable. Appropriate action in the form of incident reporting can help reduce this, thus improving patient care and outcomes. Moreover, this audit demonstrates the need for a proper coding system for prescribed drug omissions. This will highlight deficiencies and will ensure appropriate action.

P9.08

Professional development of pharmacists

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Introduction: Professional Development is a concept which has evolved from Continuing Education. Continuing Professional Development is the process by which professionals increase their level of competence, and improve and maintain their excellence in practice.

Methods: CPD trends in pharmacy in different countries around the world were determined. Updates on breast cancer and mood disorders were compiled according to an already established template from earlier work in this field of research by Spiteri (2013). An expert panel was selected for the validation of the updates which was carried out by means of a questionnaire based on a likert scale.

Results: 38 countries out of the 47 studied have a mandatory CPD system in place, while 9 do not. CPD activities included lectures, conferences, mentoring, publishing journals or books and computer programs. The updates developed within this study were prepared and presented in the form of a powerpoint presentation. Each update consisted of a general overview of the condition with special focus being made on the management of each condition and the pharmacotherapeutic agents used. Validation of the updates revealed that the updates consisted of clear, concise, comprehensible and reliable scientific information.

Conclusion:
The pharmacotherapeutic updates are compiled with the aim to serve as a CPD activity for pharmacists practicing in Malta.

P9.09

Medication compliance in paediatric and elderly patients

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Introduction: The study aimed at assessing patient compliance in elderly and paediatric patients and identifying major factors that impact on patient adherence to treatment.

Methods: A recruitment of 200 participants was undertaken, 100 elderly patients and 100 paediatric patients. The main focus was on individuals suffering from chronic conditions. Data collection was done by means of a questionnaire. The elderly patients were recruited randomly from community pharmacies and parents of paediatric patients attending the outpatients department at Mater Dei Hospital were invited randomly to participate.

Results: From the elderly population, 80% forget to take their medication, 47% have difficulty in swallowing the medication and 57% complained that they have too many

medications to administer. Forty elderly patients claimed to be non-compliant to the prescribed medication. Statistical methods run for this population have shown that age, patient-pharmacist relationship, living alone and the number of drugs administrated per day all affect compliance negatively. In the paediatric population 95 parents, complained about the taste of most medications, mainly of antibacterial suspensions. Ninety-three parents also reported the children had trouble swallowing the medication particularly when dealing with relatively large tablets or capsules. Twenty-one parents reported that their child was non-compliant mostly due to the lack of paediatric formulation, intolerable tastes and palatability. Statistical methods run for this population, have revealed how duration of treatment and number of drugs administered affect compliance.

Conclusion: The quality of therapy outcomes rely on patient compliance, patient communication, patient knowledge as well as the way the medication is made available to the patient.

P9.10

The pharmacy of your choice scheme

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Introduction: The pharmacy of your choice (POYC) Scheme was launched in 2007 to improve the delivery of free medication to patients. It involved moving medication dispending into private pharmacies to increase accessibility to pharmacists and decrease associated errors. This study aims to assess patient and pharmacist perspectives of the Scheme and their opinions on potential future plans.

Methods: The first phase involved organising and conducting a focus group as a pilot study followed by an improved second focus group consisting of 4 POYC patients and 5 community pharmacists selected from the 5 statistical districts in Malta. Questions on various aspects of the scheme were discussed, voice recorded and transcribed.

Results: All pharmacists felt that the Out Of Stock situation had improved greatly whilst the patients had never been affected to comment. All 9 participants were in favour of warning and alert systems being implemented into the I.T. system to detect interactions and duplicate therapies. They also wished to see E-prescriptions replacing paper prescriptions and for myHealth to be coordinated with the Scheme. When asked whether a bar coding system would be helpful, 2 pharmacists agreed whilst 3 felt it would be more time consuming.

Conclusion: The main conclusion drawn was that all participants felt that the relationship between patients and pharmacists has improved and that pharmacists are helping more in the detection and prevention of medication errors. The second phase will consist of visiting a sample of 12 pharmacies, one from each electoral district in Malta and disseminating questionnaires to patients and pharmacists.

P9.11

Use of spironolactone for acne in female patients among dermatologists in the United Kingdom

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Introduction: Spironolactone can be a useful alternative treatment for acne in female patients, either as monotherapy or as an adjunct. However, it is probably underused and some clinicians may not offer it to patients at all. We investigated its use by UK dermatologists.

Methods: An electronic survey asking about use of spironolactone in female acne patients was circulated to members of the British Association of Dermatologists (n=768) in January 2014.

Results: 81 dermatologists replied; in the preceding year 45/81(56%) had prescribed spironolactone; 5/81(6%) had prescribed it more than 10 times; 7/81(9%) had used it 6-10 times; 33/81(41%) had prescribed it 1-5 times. Thirty four percent had sometimes prescribed it as a combination treatment (with tetracyclines or anti-androgens). Of the 48 dermatologists who had ever prescribed spironolactone, 36 cited the main reason for selecting it was failure/unsuitability of other systemic treatments; 27: concomitant polycystic ovary syndrome; 25: hirsutism; 24: distribution of acne along the jaw and lower face; 22: recurrent acne post-isotretinoin.The most frequent blood monitoring regimen was every 2-4 months (n=18). Treatment duration was typically 6-24 months (n=42) with great variability in time to improvement (mode=4-8 weeks). Thirty-nine (81%) users found spironolactone generally useful, or believed it should be used more often; 9/48(19%) reported poor results.

Conclusion: Spironolactone is currently prescribed by a minority of UK dermatologists, however since most experienced prescribers find it useful, it could be more frequently considered, especially where other treatments have failed or are contraindicated. A randomised controlled trial is required if its use is to be evidence-based.

P9.12

Warfarin use and its interactions. Who is aware?

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Introduction: Warfarin is a Vitamin K antagonist, and is widely used for its anti-coagulant effect and the prevention of thrombosis. Its titrated dose requires the monitoring of a patient's INR (International Normalized Ratio) and frequent visits to the Anti-Coagulation Clinic (ACC).

Methods: With the utilisation of feedback from various healthcare professionals, 15 questions were targeted at revealing whether patients attending this clinic were familiar with the information that was given to them by their caring physicians. Questionnaires were administered verbally to 50 patients attending the clinic on 7th August 2015.

Results: The sample had an equal male to female distribution, most of which were over 75 years. Atrial fibrillation was the most common indication for use. The majority were on warfarin for less than a year and frequented the ACC on a weekly basis. 95% of this cohort knew the purpose for use, with a small majority aware of its complications. Awareness about warfarin interactions varied with alcohol (48%), antibiotics (56%), cranberry juice (38%) and green vegetables (64%) - which contrasts with published results outlining smaller minorities. From a cohort of 50, 10 patients encountered problems with use, reporting persistent epistaxis.

Conclusion: The results show that there is a lack of information about warfarin use. This highlighted the need for the introduction of a formal session targeted at educating patients about warfarin. An informative leaflet will be formulated after discussion with healthcare professionals and attendees working at the ACC, with the aim of re-auditing.

P9.13

Partial manufacturing within the pharmacy of your choice scheme

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Introduction: The POYC Unit carries out partial manufacturing of medicinal products so to prepare smaller quantities from bulk packages. This process follows GMP to ensure quality and safety of the products.

Methods: The structured interview was selected for data collection and a series of questions were formulated accordingly. Five medical professionals and four lay persons, who use the POYC scheme, validated the questions. Two pharmacies, having adopted this scheme were selected randomly in each of the 13 electoral districts. A brief fieldwork session was carried out at each pharmacy. This provided a scenario where 20 patients

who collect drugs via the POYC scheme, could be recruited for completion of the brief interview. The second aspect of this project involves analysis of the partial manufacturing process within the POYC area using a pre- designed template.

Results: Current results are from 5 of the 13 electoral districts. Hence data has been collected from a total of 10 pharmacies. From the 10 pharmacists interviewed, 9 believe that an improved labelling system is crucial so to reduce dispensing errors and also improve patient acceptability. Results show that 86% (*n*= 172) of the patients interviewed feel that an improved labelling system is required for the drugs collected through the POYC Scheme. The concept of having a sticker bearing an identical template surfaced in 91% of the interviews. The template found on the sticker will include pharmacological class, active product ingredient as well as other important information.

Conclusion: Improvements are being suggested, these will be compiled in an official document.

P9.14

Pharmacist manpower

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Introduction: Pharmacy is an active and an increasingly diverse profession which opens career opportunities in different areas. This study aims to retrieve information on the supply and demand of pharmacists within the pharmacy scenario. The pharmacists' current areas of practice are examined to give an identification of job preference and job satisfaction.

Methods: A pilot study was carried out based on a compiled questionnaire which was disseminated to a panel of 10 pharmacists practising indifferent areas of the profession. The panel reviewed the questionnaire for face and content validity. Feedback obtained from the pilot study was evaluated and the necessary amendments were made. The validated questionnaire was circulated via email to all registered pharmacists within the Pharmacy Council.

Results: One hundred and seventy out of 935 registered pharmacists completed the questionnaire to date. Sixty respondents work within a community setting followed by 30 who work in hospital and 20 in wholesale and distribution sector. Only 3 respondents were found to be working in academia. Twenty nine percent of the respondents defined their career choice as very satisfactory while 62% stated that they are satisfied with their job. Nine percent were not satisfied with their job and these were mainly community pharmacists (*n*=5).

Conclusion: The community pharmacists who were not satisfied stated that they have been working for 11 to 30 years with minimal increments in their yearly salary. They have also stated that they are underpaid for the advice and service which they offer.

P9.15

Management in chemotherapy admixtures

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Introduction: Oncology hubs worldwide have raised concern on the significant portions of viable chemotherapy residues that are being discarded from partially-used vials and their corresponding costs. This study seeks to quantitatively log cytotoxic waste in local settings and perform cost analysis on the captured data.

Methods: Fieldwork was conducted in a cross-sectional study at Mater Dei Hospital (MDH) and Sir Paul Boffa Hospital (SPBH) cytotoxic units throughout August and September 2014 respectively. Data was recorded by means of a validated data collection sheet and volumetric values were translated to costs based on drug unit prices for October 2014, obtained from the Government Central Procurement and Supplies Unit. Cost-cutting strategies were described following a comprehensive literature search and consultation with quality assurance pharmacists.

Results: For MDH, a sample of 320 chemotherapy doses ensures a maximum margin of error of 3.52% assuming a 95% confidence level. At SPBH, 743 doses were collected ensuring a margin of error of 2.51% at the same confidence level. Combined wastage for both institutions totalled at €10,380, with an annual extrapolated waste cost, computed using the actual number of preparations, of €239,000 estimated for 2014. Bortezomib was shown to predominantly account for 42% of the wastage sum at MDH whilst 28% of drug losses at SPBH are attributed to trastuzumab.

Conclusion: Despite present efforts to mitigate cytotoxic waste, substantial unusable amounts are still being generated in the settings studied. Potential measures must regard economic considerations in light of factors such as time implications, personnel duties, quality risks and patient satisfaction.

P9.16

Drug design at the oestrogen receptor

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Introduction: Breast cancer is defined as the uncontrolled growth of neoplastic cells in breast tissue, which can be environmentally and or hormonally induced. This project uses GW 5638, a selective oestrogen receptor modulator with clinical potential in the management of tamoxifen-resistant breast cancer as lead molecule in the *in silico de novo* drug design of novel antagonists. This molecule is particularly interesting due to its ability to induce a hitherto undocumented conformational change in receptor structure, delineating a new ligand binding domain (LBD) conformation in which helix 12 occupies a distinct spatial orientation.

Methods: Protein data bank crystallographic deposition 1R5K describing the *holo* GW 5638:oestrogen receptor complex was identified and mutual affinity calculated in X-SCORE ® V1.3 for baseline affinity establishment. GW 5638 was edited computationally and five seed structures were generated. Each seed sustained molecular growth using the GROW module of LigBuilder ® V1.2 at pre-selected *loci* considered as non-critical to binding and clinical efficacy on the basis of SAR studies.

Results: The 1000 molecule cohort initially generated (*n*=200 for each seed 1 to 5 respectively) was segregated according to molecular weight similarity, physiochemical structure and Ligand Binding Affinity. This was reduced to 482 molecules (*n*=168, 144, 109, 57 and 4 for seed 1 to 5 respectively) post Lipinski Rule compliance assessment.

Conclusion: The major study outcome was the identification of a number of novel, high affinity structures with superior predicted bioavailability, which were considered as suitable for further optimisation, synthesis and *in vitro* validation.

P9.17

Drug design at the HIV reverse transcriptase enzyme

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Introduction: Reverse Transcriptase (RT) is a key enzyme which drives Human Immunodeficiency Virus (HIV) replication. This was used in this study as a target for the design of novel Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs) which bind at an alternative locus to the catalytic site of RT causing a conformational change that inhibits the conversion of

viral RNA to DNA, a process vital to its viability.

Methods: Six protein crystallographic depositions each describing the NNRTIs, Nevirapine (3HVT), Efavirenz (1FK9), Rilpivirine (2ZD1), Doravirine (4NCG), MK-4965 (3DRP) and GW695634 (3DOL), bound to RT were selected as templates for this study. Structure Activity Relationship (SAR) data, guided the creation of a seed structure for each lead NNRTI. The seeds were planted into the RT ligand binding pocket and novel molecular growth sustained at non-critical binding sites in each case. The Ligand Binding Affinity (pKd) of the generated molecular cohort was compared to that of the lead molecules, and categorised for each lead according to pharmacophoric similarity, physicochemical parameters and ligand binding affinity. The generated molecular cohort was assessed for Lipinski rule compliance.

Results: A total of 1266 novel structures were generated from 7 seed structures. Lipinski rules compliance reduced this cohort to 824 molecules. The optimal structures derived from each pharmacophoric family were proposed for optimisation, synthesis and *in vitro* validation.

Conclusion: This study proposed novel structures of *in silico* demonstrable high affinity for RT and predicted oral availability.

P9.18

Medication administration systems at Mount Carmel Hospital

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Introduction: Medication administration is the act of giving medication, requiring insight into the route of entry of medication, dosage intervals, regimen, potential toxicity, and proper storage, handling and disposal practices. Administration errors contribute to more errors than prescribing, dispensing and transcribing errors combined. Psychiatric settings, such as Mount Carmel Hospital (MCH), present added obstacles to smooth medication administration. The aims of this project are to propose improvements to increase efficiency and quality assurance levels of medication administration systems at MCH.

Methods: Three wards were selected for the direct observational study and the necessary approval was granted. A baseline of preparation and administration processes were formulated into data collection sheets. 385 preparations and 350 administrations were observed. A previously published questionnaire was adapted and disseminated to nurses on the three wards to establish the effect of being observed and their opinions regarding medication administration.

Results: The One-Way ANOVA Test compared the mean observed actions between the 44 statements on the checklist and it was accepted that the variation was significant as the p-value obtained was less than the 0.05 criterion. The results of the questionnaires, N=42, with a 47.6%response rate, n=20, indicated that the main hindrances to the process are interruptions, n=20, understaffing, n=19, and stress, n=18.

Conclusion: Nurses rely on identification of patients based on familiarity rather than the proposed minimum of two patient identifiers such as photo identification and wrist-bands. Nurses tend to deviate from the Guidelines mainly due to understaffing, with a possible way of decreasing the burden being task delegation.

P9.19

Veterinary medicine: a guidebook for pharmacists and pet owners

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Introduction: A study to analyse the daily transactions of prescription and Over-The-Counter (OTC) medicines dispensed from veterinary pharmacies was conducted. A booklet on common animal diseases for pets was compiled.

Methods: The method consisted of the taking of a random stratified sample (n=264, 100%) from veterinary pharmacies (n=6) over a week (6 days). It comprised primarily the identification of the general classes of medicines most commonly used by veterinary practitioners and apothecaries for the most common ailments attributed to pets.

Results: The sample collected was found to comprise the following: anthelmintics (6.8%), insecticides (9.1%), antibiotics (33%), antifungals (1.1%), antiprotozoals (9.1%), topical agents (15.1%), minerals and vitamins (11.4%) and others (13.6%). For each class which were mostly used, minerals and vitamins (74%) use was predominantly in avians, followed by insecticides (69%) and other medicinal classes (63%) in canines. Topical agents (52%) and anthelmintics (53%) use in canines was almost equal. The use of antifungals (40%) was the same for both canines and felines. Antiprotozoals (100%) were solely used for avians.

Conclusion: The booklet on common animal diseases is available online on the Department of Pharmacy University website. The data presented with regards to medicine use in pets doesn't include medicines acquired from community pharmacies and is restricted to data obtained from veterinary pharmacies.

P9.20

Over-use of carbapenem antibiotics at Mater Dei Hospital: are we killing the goose that lays the golden egg?

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Introduction: Carbapenems are invaluable last resort antibiotics in sepsis due to their spectrum of activity and safety profile. However overuse and abuse risks the development of Carbapenem Resistant Enterobacteriacae (CRE), which can cause practically untreatable infections. After a significant reduction in 2011, carbapenem consumption in Mater Dei Hospital (MDH) has more than doubled between 2012 and 2014.

Methods: We prospectively reviewed 2122 requests for meropenem or imipenem between August 2011 and December 2014. In each case, patient notes were reviewed for documentation of sepsis (the primary indication for carbapenems), including episodes of pyrexia. Laboratory data was examined to see if blood cultures were taken and if the white blood cell count (WCC) was outside normal limits.

Results: Annual requests increased from 295 in 2012 to 652 in 2014; primarily from medical (47%) and surgical (36%) firms. In more than 70% of prescriptions in 2014, no documentation validating carbapenem use was found in the notes. 56% of surgical and 45% of medical patients did not even have a pyrexial episode; 55% did not have an abnormal WCC whereas blood cultures were not taken in 34% of cases, despite "sepsis" being the justification for empiric requests. Antibiotic Team input was only sought in 25% of prescriptions.

Conclusion: The results suggest that a significant proportion of carbapenem prescriptions at MDH are unjustified and this crucial class of antibiotics is being overused, if not abused. It is also likely that the hyper-endemicity of CRE at MDH is being driven by these unsustainable antibiotic practices, which require urgent rectification.

P9.21

Analysis of the use of gentamicin in a teaching general hospital

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Introduction: Gentamicin, an aminoglycoside antibiotic used in prophylaxis and treatment of gram negative infections, is potentially ototoxic and nephrotoxic, hence the importance of weighing the risks and benefits before use and identifying inappropriate prescription and monitoring. The aim of this study is to analyse the use of gentamicin at a teaching general hospital and determine whether guidelines are being followed.

Methods: Data were collected on the indications, use, documentation and monitoring of gentamicin prescription in 13 medical and 4 surgical wards over an eleven day period. The results were compared with national NHS guidelines.

Results: Out of a total of 812 patients, 74.8% were medical (MP) and 25.2% surgical patients (SP). 19% of SP were prescribed gentamicin compared to 8% of MP. The main indications for gentamicin use in MP (93.3%) was the treatment of sepsis, mainly urosepsis and cellulitis. In contrast, 60.5% of SP had gentamicin to treat intra-abdominal sepsis, whilst in 39.5% of SP gentamicin was used as prophylaxis prior to gastrointestinal surgery. Creatinine level, prescription and administration record were documented appropriately in 89% of the patients as per protocol. However, the monitoring record was only correct in 63%.

Conclusion: Whereas the use of gentamicin as a therapeutic and prophylactic antibiotic is appropriate, there are deficiencies in prescription, administration and monitoring documentation. Given the narrow therapeutic index of gentamicin, accurate adherence to the guidelines is vital. Education of doctors on these guidelines and possible changing of the hospital systems regarding prescribing and monitoring may be required.

P10.01

Outcomes of surgically treated non-functioning pituitary adenomas

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Introduction: The sequelae of surgically treated non-functioning pituitary adenomas (NFPA) is an important area of study to help plan management. The aim was to study all Maltese patients who had a surgically treated NFPA and analyse the results of surgery, risk factors for tumour recurrence/regrowth and the role of postoperative radiotherapy.

Methods: 175 patients were identified as having a NFPA of whom 77 had underwent pituitary surgery. Detailed analysis of these patients was done including their demographic details, surgical details, post-surgical management, regrowth and recurrence patterns.

Results: 63.6% of patients presented with visual field defects, 40.3% had headaches at presentation and 87.0% had chiasmal compression by their NFPA. Residual tumour post-operatively was evident in 67.5% of patients while 29.9% of patients had immediate postoperative radiotherapy. Recurrence /regrowth was documented in 18.2% of patients within a median time of 3.2 (IQR: 1.6-5.6) years. Factors that were found to be statistically significantly associated with a higher rate of regrowth were the presence of residual tumour (p=0.036), presence of cavernous sinus invasion (p=0.034) and the lack of post-operative radiotherapy (p=0.004).

Conclusion: By studying this cohort of patients we were able to characterise better the outcomes of NFPA management and outline risk factors which can effect prognosis.

P10.02

Thyroid disease in Malta - observations from a local thyroid clinic

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Introduction: Patients suffering from thyroid dysfunction were reported to make up 30-40% of patients seen in endocrine clinics. We sought to (i) investigate the relative proportions of thyroid disease presenting at an endocrine clinic at Mater Dei Hospital, Malta; (ii) characterise patients belonging to each thyroid disease category.

Methods: 269 patients suffering from thyroid disease were reviewed between May 2014 and May 2015. An initial retrospective analysis of case notes and investigations pertaining to 54 such patients was carried out. Further data analysis is ongoing.

Results: Data was accrued from 39 females (mean [SD] age = 47.4 [15.0] years) and 15 males (mean [SD] age = 54.5 [21.0] years). The most common pathologies diagnosed were Graves' disease (35%), primary hypothyroidism (26%; autoimmune hypothyroidism comprised 15% of all patients) and amiodarone induced thyroid dysfunction (6%). 24% of patients were pregnant at presentation. Dysthyroid eye disease was present in 42% of patients suffering from Graves' disease, and occurred exclusively among female patients. 19% were overtly hypothyroid while 30% were overtly hyperthyroid at presentation. 6% had evidence of subclinical hypothyroidism and an equal proportion exhibited subclinical hyperthyroidism. 74% of patients underwent an ultrasound of the neck; 19% requiring further invasive testing via fine-needle aspiration biopsy. 4% of patients were referred for thyroid surgery and an additional 4% proceeded to radioactive iodine therapy. Further data analysis is ongoing.

Conclusion: Preliminary data suggests that thyroid disease is common in the Maltese population. Larger scale observational studies are warranted in this field.

P10.03

Presentation, management and follow-up of patients with Graves' disease

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Introduction: Aim of this study was to analyse the management of patients presenting with Graves' disease identifying challenges and complications.

Methods: Case notes of patients who had a positive TSH receptor antibody result between 2010 and 2012 were reviewed. Data collected included presenting symptoms, reason for modality of treatment chosen, side effects, time to euthyroidism, duration of treatment and frequency of medical follow-up. Findings were compared to the American Thyroid Association/ American Association of Clinical Endocrinologists Hyperthyroidism Management Guidelines.

Results: 172 patients were identified and their case notes analysed, 82 of whom had all the requested data available and were thus chosen for further analysis. The most common symptoms reported were weight loss (62%), palpitations (61%), tremor (54%), anxiety (49%) and increased stool frequency (43%). 12 patients were documented to have Graves' Ophthalmopathy. Mean age at presentation was 44.3±15.0 years. The median time from initiation of treatment to resolution of hyperthyroidism was found to be 4 months (IQR 3-7). 94% of patients who were prescribed anti-thyroid drugs were started on Carbimazole, with 15% having documented side-effects to the drug. The mean duration of treatment was 18.6 ± 7.9 months. 5% of patients were referred for radioiodine while 11% of patients were referred for surgery. The median number of follow-up visits per year was

4. 11% of patients were documented to have had relapses of Graves' disease. Treatment of Graves' disease was complicated by hypothyroidism most commonly at 6 months (34%).

Conclusion: Our findings emphasize the need for close follow up of these patients.

P10.04

Audit on the management of hyperthyroidism

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Introduction: The aim of the study was to compare the management of patients with hyperthyroidism attending the Diabetes and Endocrine Centre at Mater Dei Hospital with the following guidelines: 'Hyperthyroidism and other causes of thyrotoxicosis: management guidelines of the American thyroid association and American association of clinical endocrinologists', published in 2011.

Methods: Patients who had a TSH receptor antibody requested between February 2010 and October 2011 were recruited. The management of these patients was analysed.

Results: 66 patients had a TSH receptor antibody requested. Only 21 patients had biochemical hyperthyroidism: 8 had positive TSH receptor antibody (Graves' disease) and 13 had negative TSH receptor antibody. Hyperthyroid antibody positive patients were all started on Carbimazole. Duration of treatment ranged from 6 to 29 months. 1 patient relapsed and was referred for surgery. Of the hyperthyroid TSH receptor negative patients, 2 patients had ultrasound findings suggestive of thyroiditis and required no treatment. 6 patients had normal thyroid on ultrasound. All the latter patients were started on Carbimazole. None relapsed till end of audit (March 2013). 4 patients had multinodular goitre on ultrasound and these were also started on Carbminazole.

Conclusion: 90% of patients in this audit were started on Carbimazole as the first-line treatment, irrespective of TSH-receptor antibody result or ultrasonographic findings. Recent guidelines suggest that for Graves' disease all three modalities of treatment, namely radioactive iodine, anti-thyroid drugs and surgery, can be considered as first-line treatment options. Patients with toxic multinodular goitre should be referred for radioactive iodine or surgery in the first instance.

P10.05

Isolated hypogonadotropic hypogonadism – a review in a Maltese cohort

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Introduction: Isolated hypogonadotropic hypogonadism (IHH) is a rare genetic disorder of isolated GnRH deficiency, characterised by varying degrees of disruption in sexual maturation. When associated with anosmia, it is termed Kallmann's Syndrome. The purpose of this study was to evaluate clinical data in a cohort of IHH patients.

Methods: Medical records of 18 IHH patients, attending a specialised endocrine clinic at Mater Dei Hospital were assessed retrospectively. Data collected included: clinical phenotype, congenital anomalies, co-morbid conditions, bone density status, family phenotype, treatment options, treatment response and long-term outcomes of sexual function.

Results: Of 18 IHH patients included in this study (13 males, 5 females), 5 patients had Kallmann's Syndrome. 7 patients exhibited spontaneous complete puberty, 4 patients gave a history of partial pubertal progression, whilst 7 patients did not exhibit spontaneous pubertal maturation. Of the total cohort, 2 patients were recorded to have cleft lip/palate, 1 bifid uvula, 1 tooth agenesis, 1 mental retardation, 1 heart defect, 1 renal agenesis, 3 growth retardation and 1 syndactyly. Of 11 patients who underwent dexa scanning, 6 were noted to be osteoporotic, 2 osteopenic and 2 had a normal bone mineral density. Of 13 males, 12/13 were treated with androgen replacement therapy. 5/5 of females were treated with oestrogen replacement therapy. 4/13 males required gonadotropin combination therapy.

Conclusion: This study helped us better characterise our local IHH patients. Over all, there was great variability of recorded events in patients' notes. This data will help us in streamlining management and follow up of these patients.

P10.06

Hypercalcaemia audit

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Introduction: Hypercalcaemia is an acute medical emergency which requires prompt diagnosis and management. The aim of this audit was to assess the acute management of patients admitted to Mater Dei Hospital (MDH) with hypercalcaemia and compare this with standard management of acute hypercalcaemia.

Methods: All patients admitted under medical firms to MDH with hypercalcaemia (corrected calcium >2.65mmol/l) during a three-month period (January to March 2013) were recruited. The acute management was compared to guidelines issued by the Society for Endocrinology in 2013. Exclusion criteria included patients with chronic kidney disease and patients who were hypocalcaemic on calcium supplements.

Results: 318 patients were identified as having hypercalcaemia during the study period but only 64 patients fulfilled the study criteria. Out of these, 59% were females. 78% were symptomatic and 23% had ongoing or past history of malignancy. Corrected calcium level ranged from 3.05mmol/l to 4.78mmol/l. All patients received normal saline and the average fluid given was between 3 and 4l/day. 53% of patients received pamidronate, 25% received zolendronate and 0.08% received steroid therapy during admission.

Conclusion: Notwithstanding the underlying cause of hypercalcaemia, the clinical features are similar. With corrected serum calcium <3.0mmol/l, significant related symptoms are unlikely. Management of acute hypercalcaemia should focus on replenishing fluid losses, so intravenous fluids constitute the most important initial treatment. All patients with cancer-associated hypercalcaemia should receive treatment with bisphosphonates since the 'first line' therapy with rehydration cannot be continued indefinitely nor is it without risk.

P10.07

Audit on management of hypoglycemia

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Introduction: This audit assesses the presenting symptoms and signs, causes and management of hypoglycemia as well as follow-up and how this fares with our local guideline.

Methods: All patients admitted with a diagnosis of hypoglycemia through casualty were recruited over a 6-month period. Demographic data as well as data pertaining to management, treatment and follow up of hypoglycemia was captured using a predefined proforma after reviewing each patient's case notes.

Results: 92 patients were recruited of whom 52.2% were female. 92.4% (n=85) were diabetic of whom 94.1% (n=80) were type 2 and 5.9% (n=5) were type 1. 7.6% (n=7) were not diabetic. Commonest presenting symptoms were confusion (38%) and drowsiness (39%). Most common cause for hypoglycemia was renal impairment (40%) with OHA/insulin excess and lack of calories a close second and third (31.8 **% and 22.4% respectively). In non-diabetics the commonest cause was renal failure (28.6%). Commonest reason for admission was profound hypoglycemia (42.9%). With**

respect to treatment, of the 58.2% patients who were conscious, 39.6% were given a sugary drink, 35.8% a snack, 9.4% were given glucagon, intravenous dextrose was used in 62.3% of whom 66.67% were given a bolus and 60% were given dextrose infusion. In the unconscious patients 48.7% were given glucagon and 47.2% were given dextrose either as a bolus or infusion. 35% were reviewed by a diabetologist during their admission but only 11% were seen by the specialist nurse.

Conclusion: Doctors need to be made more aware of the hypoglycemia guidelines.

P10.08

Audit on the management of diabetic ketoacidosis (DKA) in adults

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Introduction: DKA is a complex disordered metabolic state characterised by hyperglycaemia, acidosis and ketonaemia that requires emergency treatment with insulin and intravenous fluids. It is associated with increased morbidity and mortality.

Methods: All patients admitted to Mater Dei Hospital (MDH) between March 2013 and December 2013, fulfilling the biochemical triad of DKA: 1) blood glucose > 11.0mmol/L or known to have diabetes mellitus, 2) metabolic acidosis with bicarbonate < 15.0mmol/L and/or venous pH < 7.3 and 3) significant ketonuria > 2+ on standard urine sticks, were included in the study. 49 patients were identified and their in-hospital management of DKA was analysed in detail. Management was compared to the current DKA guidelines available at MDH and to recently published UK guidelines.

Conclusion: Resolution of DKA in a shorter period of time has been associated with less morbidity and mortality. Therefore the results of this audit might point towards the need to modify our current local guidelines. One area could be the introduction of blood ketone meters, which offer a more efficient way to measure ketones, thus aiding in shortening the time patients spend in DKA.

P10.09

Assessing diabetes knowledge among the Maltese diabetic population

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Introduction: Diabetes mellitus is a worldwide growing epidemic with its prevalence and associated comorbidities increasing every year. Educational interventions are therefore crucial to ensure good management. A local study in 2007 found that diabetic patients in Malta lacked proper knowledge about their condition. The aim of this study is to asses whether there has been improvement in patient education since 2007.

Methods: A validated questionnaire was distributed to 130 patients visiting Mater Dei Outpatient Diabetic Clinic. Volunteers were given the option to fill the questionnaire by themselves or with the aid of a member of the study group.

Results: 40.6% of respondents were unsure what type of diabetes they had, though most knew about the effects of drug therapy, glucose in urine and stress. Furthermore, most patients recognized the risk of common comorbidities. 18% failed to answer correctly questions about symptoms of hypoglycaemia. 97.7% knew the importance of sugary drinks to treat acute symptoms of hypoglycaemia but 83% also considered chocolate a good alternative. 97% of respondents knew about the importance of exercise and its effect on blood glucose, although most did not know how much daily exercise was required.

Conclusion: Most volunteers knew about diabetes, its effect on other comorbidities and how to control it via medications and exercise. They were also quite knowledgeable on symptoms and treatment of hypoglycemia. Nonetheless, most patients lacked knowledge on the health value of food and the effect of alcohol, the effects of alcohol consumption and the optimal glucose levels.

P10.10

SMS prompting to exercise in type 1 diabetics

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Introduction: Telecommunication technology has a fundamental role in modern medicine. Malta has a high prevalence of type 1 diabetes. Exercise has been proven to improve glycaemic control. The aim of this study was to assess the impact of motivational SMSs on exercise amongst diabetics.

Methods: A randomised controlled trial was conducted. Eligibility criteria included type 1 diabetes, owning a smartphone, no regular exercise and age between 20 and 40 years. All participants were asked to walk for an hour or jog for 30 minutes 3 times a week. Exercise compliance was monitored with a smart phone application that recorded distance, time and calories burnt per session. Online tutorials and a help line were provided. The study group received weekly motivational SMSs for 2 months while the control group did not.

Results: 60 patients were recruited from a registry of type 1 diabetics from the diabetic clinic at Mater Dei Hospital and randomly assigned to the study or control group. Only 4 of 30 in the study group returned data and followed the exercise regime. No data was received from the participants in the control group. 25% of the study population was contacted at random to assess the poor response rate. Common reasons included lack of time to exercise and a busy schedule.

Conclusion: Motivational SMS prompting did not result in significantly increased exercise compliance levels in type 1 diabetics. The very poor compliance with the exercise regimen amongst young diabetics requires further study.

P10.11

Outcomes of lower limb open surgical revascularisation for critical ischaemia

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Introduction: Critical ischaemia of the lower limbs is the commonest cause of major lower limb amputation and is associated with low survival rates. The risk of limb loss amongst diabetics is 17 times higher than in non-diabetics. The high prevalence of diabetes mellitus in the Maltese population is the main cause for the very high major amputation rates recorded in Malta. A vascular surgery service was introduced in late 2007. The aim of this study was to determine the outcomes of patients presenting with critical ischaemia undergoing open surgical revascularisation at Mater Dei Hospital.

Methods: All patients presenting with critical ischaemia (rest pain, tissue loss and/or gangrene) to one vascular surgeon over a 7-year period (1/1/2008-31/12/2014) and undergoing open surgical revascularisation were included in the study. Data prospectively recorded in a vascular database including the presentation and indication for intervention, the type of procedures performed and the date of intervention was analysed.

Results: 437 open revascularisation procedures were performed during the study period including 363 infrainguinal bypass, 41 common femoral endarterectomy, 15 aortobifemoral bypass, 9 femorofemoral bypass, 4 axillofemoral bypass and 5 other procedures. 65 (14.9%) of these patients presented with rest pain, 182 (41.6%) with ulceration and 190 (43.5%) with gangrene. Over a mean follow-up period of 40 months, 14 patients required major amputation (3.2%), of which 9 were transtibial and 5 transfemoral.

Conclusion: The limb salvage rates recorded (96.8% at 40 months) compare very favourably with the published literature.

P10.12

Assessment of glycaemic control in diabetic patients undergoing percutaneous coronary intervention

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Introduction: In diabetic patients, hyperglycaemia triggers an inflammatory response involved in the process of atherosclerosis and platelet hyperactivity may lead to increased platelet aggregation and vascular occlusion. The aim was to assess glycaemic control in patients with type 2 diabetes mellitus (DM) who were undergoing percutaneous coronary intervention (PCI).

Methods: After obtaining written informed consent, 23 diabetic patients undergoing PCI were consecutively recruited. Patients were interviewed using a validated data collection form. Glycaemic profile, including glycated haemoglobin (HbA1c) and estimated average glucose (eAG) levels, was assessed considering values up to 12 months prior to PCI.

Results: Of the 23 patients, 17 were male, mean age was 66 years and mean duration of DM diagnosis was 12 years. Out of the 22 patients who had at least one HbA1c level recorded, the level was above the reference range (RR) in 19 patients (mean=8.2%). For the 17 patients who had an eAG level recorded, 11 had a level above the RR (mean=10.2mmol/L). Metformin (MET) was the most commonly prescribed oral hypoglycaemic drug in 19 patients. Most patients (11) were on dual therapy with MET and a sulphonylurea (SU), 10 were on monotherapy with MET or a SU and 2 were prescribed insulin.

Conclusion: Most diabetic patients undergoing PCI had poor glycaemic control. Pharmacist intervention in diabetic patients should focus on ensuring regular blood glucose monitoring, patient follow-up, and driving updates in the hospital formulary to include new anti-diabetic drugs as pharmacotherapeutic options.

P10.13

An audit on lipid management in type 2 diabetes

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Introduction: Lipid lowering agents improve cardiovascular morbidity and mortality. The aim of this audit was to determine whether type 2 diabetic patients suffering from dyslipidaemia at Mater Dei Hospital are managed in concordance with current protocol and the 2014 NICE guideline.

Methods: 50 consecutive type 2 diabetic patients attending follow-up visits were assessed over a 1 month period in 2014.

Results: 29 males and 21 females were analyzed. The mean duration of diabetes was 13.89 +/-10 years. All patients assessed were advised about lifestyle changes. According to NICE guidelines, 46 patients would benefit from statin therapy but 44 patients were given such treatment. 18 patients were started on the correct intensity statin as per NICE recommendation. 16 patients treated with statin achieved target cholesterol reduction of more than 40%. 20 patients did not achieve this target and in 8 patients data was missing. 6 patients achieved target LDL levels of less than 2mmol/l. LDL level pre-treatment was 4 (SD+/- 1.2) mmol/l which decreased to 2.9 (SD+/- 1) mmol/l 1year after statin use. 82% of patients who were prescribed a statin had alanine transaminase (ALT) taken pre-treatment. 70% and 68% of the patients on statins had repeat ALT at 3 and 12 months, respectively.

Conclusion: This audit identifies the need to prescribe the correct intensity statin. Monitoring cholesterol levels is important so as to upgrade statin to a higher intensity if targets are not achieved. ALT levels should be taken in all patients pre-treatment and at 3 and 12 months after starting statins.

P10.14

Assessment of diabetes mellitus in elderly patients

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Introduction: Type 2 diabetes mellitus (T2DM) affects about 23% of adults aged 60 and over. The aim of this audit was to determine the compliance of screening for T2DM complications in elderly patients.

Methods: 94 diabetic patients from 11 wards in Saint Vincent de Paule Residence (SVPR) were identified. iSOFT Clinical Manager was used to establish whether the following investigations were taken in the past year: HbA1c, eGFR, lipid profile and Albumin/Creatinine Ratio (ACR). Retinopathy and foot screening were evaluated from patients' medical notes. The results obtained were compared to the American Diabetes Association/ American Geriatrics Society (ADA/AGS) recommendations.

Results: From a total of 94 patients, 39.3% (*n*=37) had their HbA1c last taken in 2014. 26.6% of patients (*n*=25) did not have any HbA1c monitoring since 2008. In 30.9% (*n*=29), the most recent lipid profile was taken in the past year while in 17% of patients (*n*=17), there were no lipid profiles taken since 2008. 14 .9% of patients (*n*=14) had their ACR monitored in the past year whilst in 60.6% of patients (*n*=57), ACR was not taken since 2008. 16% of patients (*n*=15) were screened for retinopathy and 71.3% of patients (*n*=67) were seen by a podiatrist in the past year. 65.9% (*n*=62) and 26.5% of patients (*n*=25) did not have any retinopathy and podiatry assessment respectively.

Conclusion: The data demonstrates that optimisation of screening for diabetic complications is necessary. Following this audit, a proforma was developed with checklists on reminders to screen and recommendations for frequency of screening.

P10.15

Adherence to treatment in elderly women with type 2 diabetes mellitus: a prospective study

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Introduction: Literature indicates that only few studies adequately quantify adherence to diabetes medication, including oral hypoglycaemic agents (OHAs), despite the established importance of patient self-management and medication adherence to positive outcomes. This study aimed to develop and pilot an investigative tool to identify adherent non-responders to OHAs from a cohort of Type 2 diabetes mellitus (T2DM) patients registered in the Pharmacy of Your Choice (POYC) scheme in Malta.

Methods: 60 T2DM patients were recruited prospectively by convenience sampling when they visited their pharmacy to refill their prescriptions post positive validation of the tool among 10 patients. Informed consent was obtained, and the tool, in questionnaire format consisting of 9 domains, administered. The domains assessed demography, treating health care professionals, medical history, lifestyle, prescribed pharmacological and non-pharmacological regimens, physical activity, self-management and self-monitoring, adherence and non-adherence to pharmacologic treatment, medication profile and clinical assessment.

Results: 33.33% of patients reported self-monitoring and dietary adherence and 16.67% claimed vigorous exercise three times weekly. This was in contrast to 100% adherence to prescribed OHAs, even though patients were not necessarily aware of what medication they were taking.

Conclusion: This study was valuable in the development of a validated tool that distinguished between patients who adhered to their OHAs and lifestyle recommendations and their counterparts who did not. It showed adherence to be multi-factorial, and that limiting adherence exclusively to pharmacotherapy is not robust if the aim is to evaluate OHA efficacy. Rather, non-pharmacologic adherence must be exhaustively evaluated if adherent non-responders are to be identified and further studied.

Disclosure: This submission forms part of a doctoral study supported by the Malta Government Scholarship Scheme - Postgraduate (MGSS - PG) **and** the University of Malta.

P10.16

Audit on the management of inpatient hyperglycaemia requiring intravenous insulin infusion

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Introduction: Hyperglycaemia is a frequently encountered complication, both at the Accident and Emergency Department and on the wards. This audit was carried out to assess whether inpatients with uncontrolled blood glucose who are prescribed an intravenous insulin infusion manage to achieve adequate control of their blood glucose.

Methods: Data was collected between September 2013 and February 2014. In-patients who were admitted with hyperglycaemia or developed hyperglycaemia during admission and were prescribed an intravenous insulin infusion were included in the audit. Patients prescribed intravenous insulin infusion for diabetic ketoacidosis or pre-operatively were excluded.

Results: 104 patients were included in the audit, with a mean age of 60 years. 53.8% were male, while 78.8% were previously diagnosed with diabetes, with type 2 diabetes predominating, being present in 67.3% of patients. 15 different insulin regimens were identified and 21.7% of patients had their insulin infusion regimen altered in view of persistently elevated blood glucose. The amount of time spent on an insulin infusion ranged from 1.5 to 158 hours. 67.3% of patients were reviewed by a diabetologist during the admission, while 55.8% were given diabetes clinic follow-up. Data on the number of hours in range, above and below the normal range of blood glucose while on the intravenous act-rapid infusion will also be presented.

Conclusion: Guidelines are needed which can aid doctors with intravenous insulin infusion prescription to achieve earlier and better control of blood glucose and thus earlier patient discharge.

P10.17

Follow-up of newly diagnosed diabetic admissions

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Introduction: Malta has the second highest percentage of diabetes mellitus (DM) in the Mediterranean and a significant number of patients remain undiagnosed leading to long term complications. The aim of this audit was to assess the management of patients without previously diagnosed diabetes who are admitted with a random plasma glucose (RPG) of ≥7.8mmol/L.

Methods: This is a retrospective analysis of patients admitted for medical care in 2014. Data was obtained from clinical patient administration system, iSOFT and Electronic Case Summaries. Exclusion criteria include a RPG <7.8mmol/L, history of diabetes, patients already on treatment for diabetes or who are being followed up at diabetes clinic.

Results: A pilot audit of 269 patients was carried out and based on this analysis 6.3% of patients satisfied the inclusion criteria (RPG of ≥7.8mmol/L and not previously known to be diabetic). 17% of patients did not have a RPG taken and were not previously known to be diabetic. Based on the results of this pilot analysis, we will be screening a larger cohort of around 3500 patients. The results of patients fulfilling the inclusion criteria within this larger cohort will be presented.

Conclusion: Studies have shown that early glycaemic control will reduce long-term complication rates. This audit aims to instil more awareness on the importance of early diagnosis and follow-up of DM thus avoiding unforeseeable complications which may occur if the condition is diagnosed at a later stage.

P10.18

Assessing diabetes knowledge amongst a 'high risk' Maltese cohort

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Introduction: Type-2 diabetes mellitus (T2DM) is a global epidemic. The onset of T2DM in high-risk cases may be prevented by increasing the level of education and awareness.

Methods: A 'high-risk' population was selected from an on-going, national, cross-sectional study. This complies with the ADA criteria for identifying impaired fasting glucose (IFG) and implies the requirement for an oral glucose tolerance test (OGTT). The tool of measure used was a validated questionnaire. 54 participants (30 males, 24 females) requiring an OGTT were asked questions about their knowledge of risk factors, complications and management of diabetes. Participants' responses were compared to the correct answers.

Results: The participants were inhabitants from the central region of Malta and were between the ages of 27 and 70 years old. The majority knew all the symptoms and most of the complications of diabetes (78.4% and 64.1% respectively). The participants were mostly unaware of the association of arthritis and birth control pills with T2DM (48.1% and 72.1% accordingly). Additionally, they had the misconception that it is recommended for diabetic women to become pregnant (46.3%). Friends or relatives and the media were the prevailing source of knowledge concerning diabetes (70.4% and 68.5% subsequently).

Conclusion: The media should be utilized as the preeminent portal to further the public's education. The majority of the participants' responses concerning the risk factors and the definition of diabetes were correct. However, some participants' knowledge regarding complications and management was inadequate. Additional studies are needed to further analyse the knowledge amongst the high risk population.

P10.19

Quantifying the level of GRP78 lysine methylation in diabetic patient sera

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Introduction: The biochemical mechanisms involved in Type 2 diabetes mellitus (T2DM) are still poorly understood, and very little is known about the role played by protein methylation in signalling insulin-resistance induced stress. The aim of this study was to investigate if there is any relationship between T2DM progression and the methylation status of the stress protein 78-kDa glucose-regulated protein (GRP78) in serum.

Methods: Blood samples were obtained from 50 consenting male diabetics and 50 non-diabetic male controls. Following albumin depletion, the general methylation profile of diabetic *vs* non-diabetic sera was performed by Western blotting. A custom designed sandwich enzyme-linked immunosorbent assay

(ELISA) was constructed for the quantification of GRP78 lysine methylation. In this set-up the anti-GRP78 antibody was used as bait and the sandwich antibody was against pan methyl-lysine. The colorimetric assay was quantified using a Mithras LB940 microplate reader.

Results: The methylation profile of diabetic sera was indistinguishable from healthy controls using currently available commercial pan-methylation antibodies. The ELISA allowed for the successful quantification of GRP78 but generating a standardised baseline for normalisation and segregation of the sera just by GRP78 methylation status was not possible, mainly due to a number of confounding effects.

Conclusion: While the ELISA design was a success, the statistical power is still low. A stress protein that changes relatively linearly with age (e.g. HSP60) is needed to facilitate normalisation together with the inclusion of an unrelated methylated chaperone (e.g. HSP90) to improve the robustness of signal-to-noise ratio analysis.

P11.01

Is chronic pain associated with worse outcomes after cardiac surgery?

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Introduction: Acute Pain is a significant concern after cardiac surgery, with increased morbidity being associated with poor control. Pre-existing chronic pain (CP) is associated with more challenging post-operative pain control and development of further chronic pain conditions. We sought to assess the impact of integrating specialist pain team input throughout the perioperative period in general cardiac surgical patients.

Methods: Patients with known CP issues undergoing cardiac surgery at a single UK institution, between January and December 2014, were identified. All patients were assessed by the chronic pain team and a plan for postoperative pain management made. Prospectively collected preoperative characteristics, early postoperative outcomes, and survival data were reviewed. Propensity score matching was used to account for differences between the two groups. Student t- test and Pearson's Chi-squared test were used for statistical analyses.

Results: 2073 patients underwent cardiac surgery in the period considered. 72 (3.47%) were being treated for other-cause CP, preoperatively. Propensity-matched pairs were derived for all 72 patients. There were no differences in age (non-CP *vs* CP, 69.4±10.7 *vs* 69.0±9.3years, p=0.83) or logistic euro SCORE (6.55±6.11 *vs* 7.18±7.73 p = 0.59) between matched groups. There was no difference in duration of intubation (17.5±40.9 *vs* 12.6±24.2hrs, p=0.38), blood loss at 12 hours postoperatively (466±543 *vs* 428±408mL, p=0.633), critical care (2.1±3.6 *vs* 1.5±1.5days, p=0.19) or hospital lengths of stay (8.8±4.8 *vs* 8.2±3.5days, p=0.438), hospital and 90-day mortality (3 *vs* 0 deaths, p=0.08).

Conclusion: Patients suffering preoperatively from chronic pain can achieve similar recovery and survival, when managed preoperatively by a dedicated specialist pain team.

P11.02

A study to investigate the effects of radiofrequency to genicular nerves in patients with severe osteoarthritis

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Introduction: Chronic osteoarthrosis of the knees is often not effectively managed with the current pharmacological and non-pharmacological methods. A therapeutic alternative that is carried out in the pain clinic, is radiofrequency to the genicular nerves. We investigated whether this procedure is effective in our local population.

Methods: The study involved 18 patients with severe knee osteoarthritis. Prior to the procedure, the pain score and Oxford knee score were measured for each patient. The procedure was carried out under fluoroscopic guidance. The pain scores, Oxford knee scores and global perceived effect were measured after 6 weeks.

Results: The pain scores showed that 16% of patients had a reduction in pain. The Oxford knee scores showed similar findings pre- and post-procedure. The global perceived effect showed that 66.7% of patients felt the same and 22.2% of patients improved. No patients reported post-procedural adverse events during the follow-up period.

Conclusion: Radiofrequency to the genicular nerves can offer significant pain reduction if the appropriate patients are selected.

P11.03

An audit of mode of anaesthesia preferences in patients undergoing major orthopaedic surgery at Mater Dei Hospital comparing with UK data

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Introduction: Spinal anaesthesia in major orthopaedic surgery is steadily increasing in the U.K. The local rate of spinal anaesthesia in major orthopaedic procedures is not known. This audit aims to determine the frequency of spinal anaesthesia locally and compare with U.K data.

Methods: Data was collected for analysis, from theatre registers and admission records of 273 consecutive patients that underwent Dynamic Hip Screw (DHS) (n=103), Total Hip Replacement (THR) (n=21) and Total Knee Replacement (TKR) (n=149) in 2015.

Results: The mean ages of patients undergoing DHS, THR and TKR were 81.8 years, 67 and 69.1 years with female to male ratios of 1.4, 1.6 and 2.2 respectively. Spinal anaesthesia was used in 32/103 (31.1%), 8/21 (38.1%) and 60/149 (40.3%) of patients undergoing DHS, THR and TKR respectively. There was wide variation in the choice of anaesthesia between anaesthetists with no correlation with age or gender.

Conclusion: The rate of spinal anaesthesia for DHS at MDH (31.1%) is less than that of the national UK average (44%) but is similar to that of the Royal Free Hospital (28%). Spinal anaesthesia is used less frequently for joint replacement surgery at MDH (40.0%) compared to the UK (67%).

P11.04

An audit comparing outcomes of spinal and general anaesthesia for major joint surgery at Mater Dei Hospital

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Introduction: Studies comparing outcomes of spinal and general anaesthesia in major orthopaedic surgery show borderline or no difference in outcomes. The aim of the audit was to compare outcomes for spinal and general anaesthesia for major orthopaedic surgery at MDH.

Methods: Data were collected from orthopaedic theatre registers and admission records on 273 consecutive patients who had total knee replacement (TKR), total hip replacement (THR) and dynamic hip screw (DHS). Outcomes included postoperative length of stay (excluding inpatient rehabilitation) and mortality at 1 month.

Results: The median length of stay for DHS, THR and TKR was 6.5, 3.5 and 3.0 days and 8.0, 4.0 and 3.0 days for spinal and general anaesthesia respectively. There was no significant correlation between anaesthesia type and length of stay in DHS (p=0.059), THR (p=0.176) and TKR (p=0.106). None of the

patients undergoing THR or TKR died at 1 month. Mortality at 1 month for DHS was 4/32 (12.5%) and 7/71 (9.9%) for spinal and general anaesthesia, respectively, whilst no correlation was found between anaesthetic technique and mortality (p=0.463).

Conclusion: No significant difference was observed between spinal and general anaesthesia in length of stay and mortality at 1 month among patients undergoing major orthopaedic surgery. This correlates with international published data.

P11.05

Adherence to the new PONV and pain management guidelines 2014

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Introduction: In 2014 new guidelines were implemented for Post Operative Nausea and Vomiting (PONV) and Pain management at Mater Dei Hospital. These guidelines identify patients at risk for PONV in adults and include the recommended approaches for reducing baseline risks for PONV. The APFEL score performed preoperatively is used to determine the prophylactic measures outlined by the guideline. A pain score (0-10) is used for guiding pain management.

Methods: A list of all the day-care surgeries was obtained everyday from Section C Day Care Unit. The data for pre-operation prophylaxis, peri-operation, Stage 1 and take home medications was obtained from the anaesthetic and prescription sheets. The information for the APFEL Score and Stage 2 recovery PONV and pain were obtained through questioning each patient in Stage 2 recovery.

Results: A very low proportion of patients had correct PONV prophylaxis (32%) which resulted in a few patients developing PONV in both stages (10% and 7%). In Stage 1 a high proportion of patients had their moderate pain treated (91%) but few had it according to guidelines (43%). Only 54% of all patients were prescribed correct take home medication.

Conclusion: This audit showed poor APFEL score taking which reflects incorrect PONV prophylaxis. As a result patients are at a risk of unnecessary discomfort which could be avoided. There is poor assessment of the severity of the operation as well as a lack of consideration of the patients' medical history with regards to the determining the correct type of take home medication. A need to improve score taking is greatly recommended.

P11.06

Acute kidney injury in patients with fracture of the proximal femoral metaphysis at Mater Dei Hospital: a retrospective study

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Introduction: There are several postulated possible causes for an increased risk of acute kidney injury (AKI) in patients with fracture of the proximal femoral metaphysis. This study aims to analyse the incidence of AKI in patients admitted with these types of fractures.

Methods: Patients admitted between January and March 2015 with a fracture of the proximal femoral metaphysis were reviewed retrospectively. Diaphyseal fractures managed with an intramedullary device were excluded. Demographic data, delay to surgery, pre and post-operative creatinine values and 30 day mortality were collected. Patients found to satisfy criteria for AKI according to KDIGO guidelines were noted.

Results: A total of 125 patients were included in the study having a mean age of 80, of which 66.40% were females. A total of 17 patients (13.60%) were found to have sustained AKI. The mean waiting time for operation amongst all patients was of 48 hours however the average duration until operation in patients who suffered an AKI was 60 hours. A 30 day mortality of 24 % was noted in patients sustaining an AKI in contrast to an overall 30 day mortality of 19.20%.

Conclusion: Despite the fact that the incidence of AKI was found to be similar to that found in previous studies further work needs to be done to ensure that all patients undergo operative intervention within the 48 hour time period suggested by current NICE guidelines. Early identification is key especially since renal dysfunction has been linked with an increased likelihood of death and post-operative complications.

P11.07

Post-operative pain relief management audit in in-patients at the main operating theatres at Mater Dei Hospital

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Introduction: Patients undergoing surgery at the main operating theatre (MOT) at Mater Dei Hospital (MDH) are routinely prescribed post-operative pain relief. The aim of this intra-departmental audit was to analyse post-operative pain relief management, including anti-emetic drugs, prescribed by anaesthetists.

Methods: A prospective study involving a random sample of patients undergoing surgery at the MOT at MDH, between the 14th of April and 16th of May 2014 was done. Permission for the study was obtained from the chairman of anaesthesia. The data collected included patient's demographics, regional anaesthesia used, analgesics and anti-emetics prescribed. Data was obtained anonymously from patients' notes in the immediate post-operative period in the recovery area at MOT. Patient below 18 years-of-age and day surgery cases were excluded.

Results: 130 patients were included, 52 females and 78 males, with a mean age of 52.2 years. The age range was 18 to 90 years of age. Regional analgesia was used in 23 patients (17.7%). This included nerve blocks (n=14) and neuraxial blockade (n=9). The commonest analgesic prescribed was intravenous or oral paracetamol 1g 6 hourly (n=103). The main analgesic regimen combination prescribed was intravenous or oral paracetamol 1g 6 hourly and intramuscular pethidine 50-75mg 8 hourly or as required (n=18). Two patients had no pain relief prescribed. The main antiemetic prescribed was intramuscular prochlorperazine 12.5mg 8 hourly or as required (n=63). A total of 50 different analgesic regimen combinations were prescribed.

Conclusion: This study highlights that as yet there is no standardised protocol for prescribing post-operative pain relief medication.

P11.08

Sedation by non-anaesthetists - is safety being compromised?

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Introduction: Sedation is a fundamental aspect of gastrointestinal endoscopy and is associated with high patient satisfaction and procedural quality. Sedation of endoscopic procedures within the gastroenterology department is administered by non-anaesthetic doctors.

Methods: A questionnaire was distributed to gastroenterologists to ascertain their clinical practice, knowledge, and training regarding sedation. The questionnaire was modified from that developed by Fanning. The standard used was the European Curriculum for Sedation Training in Gastrointestinal Endoscopy.

Results: Response rate was 81.8% (n=9), consisting of 5 higher specialist trainees, 2 specialists and 2 consultants. Procedures performed were oesophagogastroduodenoscopy and colonoscopy. The regular sedatives were midazolam and pethidine. Only 66.7% of endoscopists used risk assessment scores to select patients prior to sedation. 88.9% and 100.0% respectively completed a monitoring data form during and after the procedure. An assistant was always present, oxygen was always administered, and resuscitation equipment was always available. 88.8% doctors were competent in basic life support, and 66.6%

in advanced life support. Only 22.2% received formal teaching prior to using sedation; 33.3% were formally examined in its use. Mean score in the pharmacology section testing knowledge of metabolic pathways, duration of action and side effects was 66.3%. All doctors experienced at least one complication, the commonest being hypotension (80%). 33.3% respondents had at some stage contacted the anaesthetic department for assistance.

Conclusion: There is potential for significant morbidity and mortality when administering sedation. Guidelines need to be drawn and adequate training incorporated into postgraduate training programmes to ensure safe sedation practices.

P11.09

Emergency clinic in Raigmore Hospital, Inverness Scotland - can it apply to Mater Dei Hospital?

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Introduction: The Emergency Clinic (EC) is a new service started Oct 2014 in the surgical department in Raigmore Hospital. GPs referring patients for admission are safely deferred to the next morning to be assessed and triaged by the on-call consultant. The helps minimise inpatient stay safely and maximise the use of resources.

Methods: This audit was done in 3 cycles over 8 months. The first cycle was a retrospective study over a 6-month period where-by all patients attending the EC (22 patients) were identified and a new set of admission criteria were devised. The second cycle involved testing the safety of the new criteria over a 2-week period applied to all admitted surgical patients referred by their GPs (61 patients). The third cycle focused on abdominal pain patients (32 patients) who were seen in the 2nd cycle.

Results: Of the patients referred by GPs, a small category presenting with abdominal pain and all systemically stable pilonidal sinus may be referred to the EC. Although the period of study was short, the new criteria set up after the first cycle were found to be safe.

Conclusion: The criteria for referral to the EC require a longer period of study. They can be similarly tested in the emergency department in Mater Dei Hospital for surgical patients referred by their GP to help defer unnecessary overnight admissions.

P11.10

The management of primary spontaneous pneumothorax at Mater Dei Hospital

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Introduction: Spontaneous pneumothorax is a common presenting condition to emergency departments and its management may vary. Guidelines for its management are issued regularly by national and international respiratory and/or emergency medicine bodies.

Methods: All patients admitted with spontaneous pneumothorax to Mater Dei Hospital (MDH) from January 2010 to December 2014 were included in the study. This data was supplied by the hospital Medical Records Department. The relevant data was collected from the patients' case notes. The 2010 British Thoracic Society (BTS) guidelines were used as a reference guideline to obtain criteria for their suggested management.

Results: 112 patients with a mean age of 22 years were admitted with spontaneous pneumothorax. 91 (81.25%) and 21 (9.5%) patients were diagnosed with the first and same side second episode pneumothorax respectively, within the 5 year period of the study. First episode pneumothorax was treated by chest drainage in 60.7% of patients and needle aspiration in 16.9%. Conservative treatment without intervention was the management of choice in 21.4%. Of the patients treated by aspiration, 10.5% required subsequent tube drainage. Following the first pneumothorax episode 44.4% had video assisted thoracoscopic surgery (VATS) bullectomy and pleurectomy. This went up to 55.5% after the 2nd episode. Two (1.8%) patients had recurrence after VATS. The management for pneumothorax at MDH did not follow the 2010 BTS guidelines.

Conclusion: The management of pneumothorax in MDH did not follow the BTS guidelines. Nevertheless the treatment followed is effective and with minimal recurrence rates.

P11.11

Design and manufacture of the Ribridge artificial rib

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Introduction: Rib replacement may be required during chest wall reconstruction performed after chest wall resection for malignancy. Present repair techniques can be prevent movement and affect ventilation. The aim was to design a novel and alternative chest wall reconstruction technique with an artificial rib.

Methods: An artificial rib was designed using three dimensional (3D) modelling with computer-aided design (CAD) and prototyped using computer aided manufacturing (CAM) techniques at the University of Malta. Rapid prototyping machines were used to produce ABS and titanium prototypes. A later prototype was manufactured from titanium using water jet technology. These prototypes were assessed for fit and ease of placement on a plastic human skeleton. A survey of cardiothoracic surgeons at Mater Dei Hospital was performed to measure satisfaction by surgeons using the device.

Results: Tensile testing of the titanium prototype showed that it could withstand over twice the maximum tensile strength that it would be exposed to in the body without any material deformation. Evaluation of user friendliness was accomplished with the use of a questionnaire. The artificial rib was rated as good (4/5) for surface finish and surgical satisfaction and excellent (5/5) for ease of use, fixation properties, flexibility and biomechanical fit.

Conclusion: The design and manufacturing of an artificial rib that mimics normal rib shape and contour should be a significant improvement in patient comfort over the methylmetacralyte sandwich prosthesis currently used in chest wall reconstruction. A United States patent has been applied for the Rib Bridge in March 2015.

P11.12

A preliminary investigation into the use of thermography during cardiac surgery

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***Introduction*:** Thermography is an imaging technique that relies on the use of an infrared camera to measure surface temperatures, allowing variations in temperature to be easily distinguished. This preliminary investigation explored the use of thermography in open-heart surgery, where the heart, and sometimes the brain, are cooled to 4°C.

Methods: A high-resolution infrared camera was used to image cardiac surgical procedures in real-time to assess the use of thermography in this setting. This was combined with normal photography for comparison. Imaging was further processed using software to improve definition of the contrast-range and colouration.

Results: Thermography was useful to assess the location of cardiac vessels and the temperature change upon cardioplegia, delivery - assessing adequacy of delivery and the onset of rewarming of the heart; as an assessment of blood flow in the grafts as warm blood is delivered down grafts; and to assess the adequacy of brain cooling upon deep hypothermic circulatory arrest.

Conclusion: Cardiac thermography is a useful tool for the surgeon during cardiac surgical procedures but is limited in visualising only the anterior aspect of the heart and by the quick equilibration of temperatures within the heart. Thermography adds a further non-invasive method of 'safety-net' monitoring during cardiac surgical procedures.

P11.13

Weekend operating is not associated with adverse outcomes in cardiac surgery

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Introduction: There is on-going concern that procedures performed at weekends are associated with worse outcomes than those undertaken on weekdays. We sought to evaluate the impact of weekend operating at a UK-based specialist cardiac surgical centre, on length of stay of stay and mortality.

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: A total of 139 of 1,941 (7.16%) procedures were performed at the weekend. The weekend case mix was similar to that of weekdays in terms of clinical urgency (weekday vs weekend, 71.2 vs 71.9% elective cases, p=0.852). There was no difference in logistic EuroSCORE (9.65±12.07 *vs* 10.79±15.56, p=0.297) between cases undertaken on weekdays and weekends respectively. Length of hospital stay (10.5±7.9 *vs* 9.6±7.3 days, p=0.203), hospital (2.4 *vs* 0.7%, p=0.203), 90-day (4.4 *vs* 2.2%, p=0.200) and one-year (6.9 *vs* 4.3%, p=0.244) mortality was similar in both groups.

Conclusion: This study demonstrates that in our centre, weekend surgical outcomes are equivalent to those of operations performed during the working week.

P11.14

Infected foot ulcers: are local antibiotic guidelines followed?

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Introduction: Infected foot ulcers are the commonest cause for admission to hospital in diabetics. Appropriate treatment is important in reducing morbidity and mortality. The aim of this study was to determine compliance with local antibiotic guidelines in patients admitted with infected foot ulcers to Mater Dei Hospital, Malta.

Methods: All patients admitted with lower limb ulcers over a period in July 2015 were included. Patient demographics, comorbidities, description and severity of infection, and risk status were recorded. The initial antimicrobial regimen on admission as well as any modifications made later were noted. This was compared with local antibiotic guidelines.

Results: 30 patients (19 males (63.3%)) with a mean age of 70.1 years were included. Of these, 9 (39.1%) were on insulin and 14 (60.9%) on oral hypoglycaemics. Wound swabs for culture and sensitivity were taken in 17 patients (56.7%) at admission. Severity of infection was not documented in the case history in any patient. 43.3% (n=13) had non-severe, 53.3% (n=16) severe and 1 patient a life-threatening infection. 90% (n=27) were started on antibiotics but only 7 (23.3%) in accordance with guidelines. Of the 11 patients with severe infection not following guidelines, 5 (45.5%) had their treatment modified later to guidelines.

Conclusion: Compliance with local antibiotic guidelines in patients presenting with infected foot ulcers is poor. Efforts to improve compliance should be implemented in an attempt to reduce morbidity and mortality in this group of patients.

P11.15

Leg wound infection after coronary artery bypass grafting surgery: a prospective study

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Introduction: Leg wound infection is an important cause of morbidity after saphenous vein harvesting for coronary artery bypass grafting (CABG).

Aim: Evaluate and assess the risk factors that may be associated with an increased risk of leg wound infections after CABG.

Methods: A case controlled prospective study was designed and ethical approval granted. All the patients undergoing CABG surgery from October 2014 till May 2015 were studied. The data was gathered from patients and their medical case notes. The parameters studied included age, sex, diabetes, hypertension, BMI, smoking, peripheral vascular disease (PVD), length of stay in hospital and the method of leg closure used. Such patients were seen immediately post-operatively and after 2 weeks. The wound was assessed for signs of infection.

Results: Fifty-three patients with a mean age of 64.6 years were studied. 35% of the females and 12.8% of the males had leg wound infection. The rate of infected wounds in diabetics and non-diabetics was 24.39% and 16% respectively. 24.39% of hypertensives developed infection. The BMI and the presence of PVD was not associated with leg wound infection. Ten patients (18.9%) had leg wound infection. There was an increase of 1.84 days in hospital stay in patients with infection. Skin suture closure had an 8.33% infection rate while clip closure had 27.58%. Above knee and below knee incisions had a leg infection rate of 4.87% and 16.32% respectively.

Conclusion: Females, hypertensives, clip usage and below knee incisions are more likely to get leg wound infection.

P11.16

Varicose vein surgery and hospital stay at Mater Dei Hospital, Malta – an overview

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Introduction: NICE guidelines published in 2013 recommend endothermal or laser venous ablation as first line treatment for patients with superficial venous incompetence. Foam sclerotherapy is second line treatment and open surgery third line. Endothermal ablation was introduced in Malta in February 2015. Prior to that, patients unsuitable for foam sclerotherapy were offered open surgery. The aim of this study was to determine the duration of hospital stay after open venous surgery in patients under care of the vascular surgery firm in Malta.

Methods: All patients undergoing open varicose vein surgery between 2012 and 2013 were analysed. Data collected including date of admission, time of surgery, length of hospital stay, age and medical history and reason for delayed discharge where applicable.

Results: 182 patients were analysed. 51% of patients required overnight stay while 46% were discharged on the same day. No difference was noted between age group, end time of surgery and length of stay. Only one patient aged 50-60 and one aged between 61-70 remained overnight for medical reasons while 5 patients stayed for 2 days for medical reasons.

Conclusion: 93 bed days over a period of 24 months were occupied by patients undergoing venous surgery for no medical reason. Adopting the NICE guidelines and introduction of endothermal venous ablation should lead to a significant reduction in hospital bed use in relation to treatment of venous disease.

P11.17

Pleural pressure theory revisited: hypothesis for capillary equilibrium

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Introduction: Theories elucidating pleural pressures should explain all observations including the equal and opposite recoil of the chest wall and lungs, why the hydrostatic gradient in the pleural space is less than expected and varies at lobar margins, why pleural pressures are negative and how pleural circulation functions.

Methods: Based on Archimedes' paradox, the lung can be considered to be floating within the chest cavity, with the buoyancy force exerted by the lung displacing pleural fluid downwards and sideways, balanced by capillary forces. A hypothesis proposing a passive equilibrium between buoyancy hydrostatic pressure, and capillary pressure is described. Mathematical modelling of capillary surface interaction aimed at calculating pleural pressure was performed, using angle of contact and surface tension values determined by a literature search.

Results: Capillarity explains the equal attraction between the lung and chest wall, their recoil when capillary attraction is disturbed, and the negative value for pleural pressure. Based on a surface tension of 18 dynes/cm and contact angle of 38°, pleural capillary fluid thickness and pleural pressures were determined, and a pleural fluid gradient of 0.89 gram/centimeter^3 was calculated for confluent pleura. In the thick lobar margin, there is normal hydrostatic pressure, with active cardiac pumping.

Conclusion: The hypothesis of elasto-capillary equilibrium satisfies all salient requirements for a model describing pleural pressure. The equilibrium between capillarity and buoyancy hydrostatic pressure depends on control of pleural fluid protein content and a low pleural fluid volume, powered by an active pleural pump limiting pleural volume.

P11.18

The demographics of cancellations in orthopaedic trauma

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Introduction: Theatre cancellations are a frequent cause of much distress to patients. We sought to delineate a population of patients planned for emergent orthopaedic surgery who were more likely to suffer cancellation.

Methods: Data for all patients in a busy trauma and orthopaedic emergency service in Scotland over an eight week period between November 2013 and January 2014 were collected and analysed prospectively. Student t-test and Pearson Chi squared test were used for statistical analyses.

Results: 50 of 247 (20.2%) consecutive patients had their procedure cancelled on at least one occasion. Those whose surgery was cancelled were more likely to be older (69.9±20.2 *vs* 62.9±22.1 years, p=0.043), and have a higher ASA score (p=0.010). Diabetic status (p=0.409), site of injury (p=0.939) and nature of pathology (p=0.303) had no impact. Most cases were cancelled for logistical reasons (n=16; 32%) or medical comorbidity requiring optimisation (n=14, 28%). Patients whose procedure was cancelled had been fasted for 11.4±4.7 hours in anticipation of the procedure.

Conclusion: Same-day cancellation is an ongoing challenge in orthopaedic trauma surgery. Older patients with more significant comorbidities are more likely to be effected. Prediction of patients likely to experience cancellation may allow limitation of unnecessary peri-procedural starvation.

P11.19

An evaluation of the variability and standard error of measurement of the measured gait kinematics when using 3D motion analysis equipment for use in clinical gait analysis

Mark Farrugia

Introduction: While most 3D motion analysis systems can very accurately determine marker position in a properly set up and calibrated space, the actual reliability of the measurements taken depends largely on the accuracy, as well as the consistency of the precise placement of those markers.

Methods: 3D kinematic gait data from five healthy subjects was acquired on two separate occasions using a clinical wand-based anthropometric model marker set by the same clinician. Marker trajectories were acquired while subjects were asked to walk at a self-selected speed in a straight line. Two sources of variability were measured.

1. The inter-trial variability arising from a subject's natural differences in walking between 6 trials per session (with the same markers) from two sessions per subject.
2. The inter-session variability where the largest potential source of errors in clinical gait analysis can arise from marker placement differences.

Results: The inter-trial differences were below 2% except for knee flexion and left foot progression and represent the natural variability of walking in the subjects. The inter-session differences displayed increases with the highest total variability in the transverse (rotational) plane kinematics.

Conclusion: The results illustrate acceptable standard error of measurement (SEM) values that were similar to and sometimes lower than those reported in the literature. It is recommended that the accuracy of gait measurement is known when interpreting patient data, and calculation of the SEM (the minimum clinically meaningful difference) minimises the possibility of inferences that could otherwise be attributed to poor marker placement techniques.

P11.20

An audit on cliff diving injuries and their management since 2010

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Introduction: Cliff diving has become a popular sport amongst young revellers visiting the Maltese Islands during the summer months. In this report we outline the incidence and nature of spinal injuries resulting from this practice in a series of twenty cases since May 2010.

Methods: Hospital records, medical imaging through a local PACS system and admission clerking were used for data collection. A questionnaire used to interview cliff divers on site and fieldwork was carried out to assess Comino's topography and bathymetry in relation to the most popular cliff diving spots.

Results: There were twenty cases of spinal injury resulting from diving off Gozo and Comino's cliffs between May 2010 and August 2014. The age range was 13 to 34 years. The cliff heights ranged from 10 to 28 metres, with Cominotto's East-facing cliff being the most popular site. 25% of admissions were intoxicated with alcohol. Half of all cases required helicopter rescue and mean time to hospital was 41 minutes. Vertebral compression fractures comprised 80% of all spinal injuries. Mean hospital stay was 5 days and rehabilitation period was 40 days. Residual pain was present after one year in 40%.

Conclusion: A lack of awareness amongst throngs of young cliff divers has led to a high incidence of vertebral injuries over the summer months. We the authors wish to raise aware-

ness of this problem and ensure that coastal management policies are set up.

P12.01

Aetiology and investigations of patients undergoing endoscopic retrograde cholangiopancreatography

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Introduction: The aim of this study was to assess the characteristics of those patients who required an Endoscopic Retrograde Cholangiopancreatography (ERCP).

Methods: All ERCPs carried out at Mater Dei Hospital, between 2009 and 2012 were included in this study. Demographic data, laboratory investigations, imaging results and ERCP findings were recorded.

Results: 420 patients underwent a total of 552 ERCPs (average age: 69 SD ±14.79) (216; 51.4% females). The commonest indications for ERCPs were choledocholithiasis (42.4%) and pancreatic cancer (20%). 30.73% were diagnosed with a malignant stricture. Males more commonly underwent an ERCP between 50 and 69 and females between 70 and 89 years. 26.0% patients who presented with painless jaundice had an underlying malignancy. 44.0% of patients who had a benign stricture or choledocholithiasis presented with painful jaundice ($p<0.001$). The sensitivity in detecting CBD obstruction by US, CT, MRCP and ERCP was 77.1%, 84.6%, 73.6% and 91.1% respectively. MRCP was the most sensitive imaging modality in determining the level of obstruction (96.9%). Sensitivity in determining the final diagnosis was as follows: 48.8%, 68.5%, 75.9% and 85.6% for US, CT, MRCP and ERCP respectively. Alkaline phosphatase ($p<0.001$), alanine amino transferase ($p<0.014$) and bilirubin ($p<0.001$) were highest in patients with underlying malignancies. Patients with choledocholithiasis had the highest CRP values recorded ($p<0.021$).

Conclusion: MRCP is more sensitive than CT in determining the underlying cause of obstructive jaundice before ERCP. High alkaline phosphatase, alanine amino transferase and bilirubin indicate a higher likelihood of an underlying malignant stricture. A high CRP suggests underlying choledocholithiasis.

P12.02

Complications arising after endoscopic retrograde cholangiopancreatograpy plastic stent insertion

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Introduction: Biliary stenting is performed to relieve biliary obstruction. Patients with cholelithiasis and benign strictures usually undergo elective stent change at 3-4 months. Patients stented for malignancy undergo re-stenting after onset of complications. Biliary sepsis was defined as: fever, right upper quadrant pain and jaundice requiring intravenous antibiotics and hospitalization. Stent failure was defined as recurrent obstructive jaundice with biliary hypertension confirmed on CT scan or MRCP but without signs of sepsis.

Methods: All patients who underwent an ERCP between 2009 and 2012 at Mater Dei Hospital were included in this study. Patients were then followed up until 2013 to determine complication rates.

Results: 552 ERCPs were carried out in 420 patients. 22.9% underwent an ERCP more than once. Of these 41.4% had a stent inserted, and another 11.4% underwent a change of stent. 50.7% underwent stent insertion due to a malignant stricture. 24 of these patients underwent a change of stent. Stents were inserted in 12.0% with underlying benign strictures. 37.3% had a stent inserted due to incomplete CBD stone clearance. On follow-up 21.2% required hospitalization after stent insertion due to biliary sepsis or stent failure. The average time span till re-admission was 232 days. Complications were most common beyond 6 months and similar in all 3 groups.

Conclusion: Leaving a plastic stent for 6 months appears to be safe and does not seem to result in a disproportionate increase in the rate of biliary sepsis or stent failure.

P12.03

Endoscopic retrograde cholangiopancreatography-related complications: an observational study

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Introduction: This is a retrospective, observational study that characterizes a series of Endoscopic Retrograde Cholangiopancreatographies (ERCPs) and outlines the incidence and predictors of complications.

Methods: All patients who underwent an ERCP between 2009 and 2012 at Mater Dei Hospital were included. Demographic data, underlying causes, details of ERCP procedures and complications were recorded.

Results: 552 ERCPs were carried out with 33 complications (5.98%), none of which were fatal. The most common cause was post-ERCP pancreatitis (PPP) (3.99%). Other complications included hepatic abscess (0.362%), cardiopulmonary complications (0.543%), bleeding from sphincterotomy (0.543%), a stone crusher being stuck in the common bile duct (CBD) and perforation of the small bowel each occurring in 1 patient (0.181%). There were more complications in patients 70 years or older (7.84%), in females (6.92%) and in those with underlying choledocholithiasis (8.50%). Complication rate was 3.60%, 5.70% and 5.60% ($p<0.374$) in those with malignant strictures, benign strictures and those with a dilated CBD without any cause at ERCP respectively. 46.6% had a transient amylase rise. This was significant in only 8.56% who developed PPP. All were managed conservatively. The average length of hospital stay in PPP was 7 days. PPP was more likely if there was pancreatic duct cannulation and a precut or a sphincterotomy was performed. Rate of PPP was much lower if patients underwent both precut and sphincterotomy (1.9%; $p<0.182$). None of the patients who underwent balloon dilatation due to an underlying stricture suffered from PPP ($p<0.0001$).

Conclusion: Pancreatic duct cannulation, a precut or sphincterotomy predispose to PPP.

P12.04

Palindromic rheumatoid arthritis: could it be Whipple's disease?

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Introduction: Whipple's disease is a rare infection of the gastrointestinal tract caused by the actinomycete *Tropheryma whipplei*. It most commonly presents with arthralgia, abdominal pain, diarrhoea and weight loss. Invasion of the bacterium through the gastrointestinal mucosa leads to small intestinal villus blunting and malabsorption. Diagnosis is made by histological examination of small bowel biopsies. We report the case of a 78 year-old gentleman with a 2-year history of flitting joint pains and multiple hospital admissions for varying symptoms. He was treated with antibiotics for a chest infection with improvement only to present again after 1 year with anorexia, fatigue, blackish loose stools and epigastric pain. Microscopic examination of duodenal biopsies showed a stunted villous architecture and expansion of the lamina propria by foamy macrophages. These expressed CD68 and cytoplasmic contents were strongly PAS positive, consistent with a diagnosis of Whipple's disease. He

was started on intravenous ceftriaxone and a prolonged course of oral co-trimoxazole (at least 1 year) with marked clinical improvement.

Conclusion: The previous year's admissions might have also been due to Whipple's disease but since the patient did not have the full course of the appropriate treatment he relapsed. Whipple's disease is a difficult diagnosis to make because of the variety of clinical symptoms and the long time span between the initial unspecific symptoms (the prodromal stage) and the full-blown clinical picture of the illness (the steady-state stage). It may be misdiagnosed with a non-infectious rheumatic illness and is fatal if untreated.

P12.05

Stroke discharge planning and documentation: quality improvement project and two-cycle audit

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Introduction: Discharge letters on the Electronic Case Summary (ECS) system have become invaluable tools both for community follow-up, as well as for physicians at casualty. Incompleteness of such documents greatly impacts on the safe management of patients and a great example of this is in cases of stroke. Latest NICE guidelines (CG162, 2013) highlight the importance of a comprehensive, multidisciplinary team (MDT) approach, good discharge planning and documentation.

Methods: An audit was conducted on a sample of discharge letters (2013-2014) with diagnosis of Stroke (ICD I61-I64) looking at a checklist of information recommended to be documented as per NICE CG162. Subsequently, the Quality Improvement Project was launched to facilitate and standardize the documentation of relevant, NICE- recommended information within discharge letters of patients post-stroke. A one-click template function was integrated into the ECS and subsequently, a second cycle audit (2014-2015) was conducted to identify any change in practice. Circulars were sent every 3 months to remind users of this update.

Results: From the first to the second audit, better documentation was identified in key fields including examination on admission (5% rise), advise given (10% rise) and the functional and medical status on discharge (19% and 5% rise respectively). Documentation on MDT management improved, although there was a reduction in the overall mention of MDT reviews.

Conclusion: More awareness and training is needed for more comprehensive documentation within discharge letters to ensure safe and efficient inter-speciality handover and transfer of care. In-built templates like the one implemented should also be reproduced for other diseases.

P12.06

Outcomes of a community NeuroRehabilitation Unit - a four year review

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Introduction: Outcome analysis of rehabilitation units together with resource assessment indicate possible changes in management and care to provide improved services and subsequently aiming for augmented outcomes. The aim of this review was to conduct a retrospective review of clinical activity within our 14-bed neurorehabilitation unit and to quantify the improvement noted during in-patient rehabilitation of our service-users.

Methods: Retrospective review of outcomes of in-patient rehabilitation of 362 patients who used our services over 48 months (April 2007 to March 2011). The patients were divided into six sub-groups based on diagnosis; Brain Injury & Trauma, Multiple Sclerosis, Neuropathies, Spinal Cord Compression, Stroke, and "Other" diagnoses.

Results: The measures reviewed included; diagnosis type, age (mean: 56 years), length of stay (mean: 41 days), level of disability as assessed through the Barthel Index, and complexity of management as measured through the Rehabilitation Complexity Score. Significant improvement in disability was demonstrated in all groups ($p<0.05$). Improvement in the complexity of management needs was seen to be significant in four of the six sub-groups ($p<0.05$).

Conclusion: The multidisciplinary in-patient rehabilitation provided at our department leads to functional improvement in the majority of our patients with overall improvement in complexity of rehabilitation needs. Despite the limitations of our retrospective data collection, adequate data was obtained to confirm the positive influence our department imparts on our service users. There is a need for a more robust and detailed data collection system. Education and training (for patients, staff and junior doctors), specifically tailored and individualized rehabilitation programs, continued multi-professional collaboration, and community follow-up post-discharge can significantly improve patient outcomes in a broad spectrum of patients undergoing rehabilitation.

P12.07

Safer methotrexate therapy: the importance of a pre-treatment chest X-ray

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Introduction: Methotrexate is one of the most frequently used disease-modifying anti-rheumatic drugs (DMARDs). Despite the established safety profile of low dose weekly methotrexate, patients are still at risk of adverse events including life-threatening pulmonary complications, the commonest being methotrexate-induced pneumonitis. In order to help clinicians detect this pneumonitis as early as possible, the Searles and McKendry diagnostic criteria can be utilized in conjunction with the advice given in the 2008 British Society of Rheumatology guidelines for DMARD therapy. This audit was carried out to assess if patients had a pre-treatment chest X-ray (CXR) within six months prior to starting methotrexate therapy, as mentioned in the above guidelines.

Methods: A retrospective review of sixty consecutive patients who were prescribed methotrexate for rheumatological conditions was done. These patients were started on methotrexate from May 2012 to June 2015 by a consultant rheumatologist at Mater Dei Hospital. Data collected consisted of the date of methotrexate initiation, the condition for which it was prescribed, and whether a CXR was performed within six months prior to starting methotrexate.

Results: Only 40% of patients had a CXR within six months prior to initiating methotrexate therapy.

Conclusion: The risk of methotrexate-induced pneumonitis, although uncommon, should not be overlooked and physicians should adhere to guidelines. Despite exposing the patient to a dose of radiation, the benefits of a pre-treatment CXR outweigh the risks when considering the fatal potential of unrecognized methotrexate-induced pneumonitis.

P12.08

Colonoscopy screening in moderate risk family groups

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Introduction: Colorectal cancer (CRC) is one of the commonest forms of cancer in Malta. The aim of the study is to evaluate the colonoscopy screening patterns for individuals at moderate risk of developing CRC and then compare this pattern to the NICE guidelines for colorectal screening and surveillance.

Methods: Data was collected retrospectively from April-June 2015 using the endoscopy database of a surgical firm. 90 patients screened by colonoscopy due to a family history of CRC in one or more first degree relatives (moderate risk cat-

egory), were sub-categorized into high and low moderate risk categories by means of a telephone interview. Each category was benchmarked to the NICE guidelines using specific parameters including age of colonoscopy, number of first degree relatives and their age of diagnosis, and number of colonoscopies within a 5-year interval.

Results: Full compliance was not observed in any of the risk subcategories. The highest average percentage compliance (75%) was found in the low-moderate risk category. Full compliance was observed in both categories when it came to the screening of patients that had first degree relatives with a history of CRC. Lowest compliance was observed when it came to the number of colonoscopies performed over a 5-year period for both low moderate (33%) and the high moderate risk(20%) groups, with most patients having more colonoscopies than recommended by guidelines.

Conclusion: Colonoscopy screening is more aggressive than recommended due to inaccurate history taking and categorization of patients, unawareness of guidelines, practice of defensive medicine and pressure on clinicians by patients/relatives.

P12.09

Video-EEG long-term monitoring as a new service at Mater Dei Hospital

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Introduction: Video-EEG long-term monitoring (LTM) was introduced into Mater Dei Hospital (MDH) in May 2012. The audit aims to evaluate LTM in terms of diagnostic outcomes and impact on patient management.

Methods: A descriptive analysis was carried out after retrospective review of 30 in-patients who underwent LTM at MDH between May 2012 and May 2014. 31 LTM sessions were performed. Referrals were made by 3 consultant neurologists. LTM and medical records were compared to evaluate whether LTM determined a change in diagnosis and how this affected management outcomes.

Results: Patient ages ranged from 3 months to 73 years (35.5% paediatric cases) (16 male: 15 female studies). The most common indication was for uncontrolled seizures (54.8%), followed by suspected non-epileptic seizures (NES) (29%). The average hospital stay was 2 days for paediatric patients and 5 for adult cases. Major monitoring interruptions were recorded in 5 paediatric and 1 adult case. Comparing pre- with post-LTM diagnosis shows that the investigation changed or identified a new diagnosis in 38.7%, confirmed the diagnosis in 29%, and was inconclusive in 32.3% (inconclusive in 45.5% of paediatric cohort and 25% of adult cohort). LTM led to medication optimization in 38.7% and neuropsychiatry referrals in 22.6%. The remaining were unchanged, not followed up or referred for other tests. None were referred for surgery.

Conclusion: LTM is an important tool which influenced patient management through changes in medication or referrals in 73.3% of cases. Continuous evaluation of the techniques used and resources available is recommended to increase the yield of conclusive LTM studies.

P12.10

Endoscopic ultrasound findings of the extra-hepatic biliary tree in patients with chronic opioid usage

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Introduction: Opioid analgesics may cause sphincter of Oddi spasm, causing upstream biliary dilatation. Anecdotal results suggested that some patients receiving opioids had dilated common bile duct (CBD) on cross-sectional imaging. The aim was to study, using endoscopic ultrasound (EUS), the extra-hepatic biliary tree of patients receiving opioid medications.

Methods: Patients receiving opioids and undergoing EUS for investigation of a dilated extra-hepatic biliary tree seen on cross-sectional imaging (CT or MRI) were prospectively enrolled. Demographic, radiological and endoscopic sonographical data were collected for the period October 2012 and October 2013.

Results: 8 patients (4 males, mean age 55, range 45-75) receiving opioids, namely morphine or methadone, underwent an EUS after cross-sectional imaging, showed a dilated CBD. EUS confirmed CBD dilatation in all patients (mean size 12mm (range 9mm - 22mm)). No obstructing lesions were noted on EUS. The mean CBD diameter on EUS in patients receiving morphine was higher than those receiving methadone (p=0.654). Using equi-analgesic opioid doses for both patient groups, no correlation was noted between CBD size on EUS and opioid daily dose (p=0.684), and CBD size and length of opioid usage (p=0.661).

Conclusion: Albeit a small study, patients with chronic opioid usage had concomitant extra-hepatic biliary dilatation in the absence of an obstructing lesion, which was attributed solely to the effect of opium. Such patients, if found to have normal liver function tests, would not require further investigations. This study failed to show correlation between CBD diameter and the type, dose and duration of opioid usage.

P12.11

Chronic kidney disease referral practices amongst non-nephrology specialists at Mater Dei Hospital

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Introduction: Early referral of chronic kidney disease (CKD) patients to a Nephrology Team (NT) is essential in order to identify those patients most likely to progress and provide them with planned renal replacement therapy.

Methods: We retrospectively investigated referral practices and frequency of performing urine investigations in CKD patients at MDH.

Results: Out of 482 patients recruited; 4.9%, 11.2%, and 15.5% in CKD3A, 3B and 4+5 respectively were referred to a NT upon discharge (CKD3A *vs* CKD4+5, p=0.004). Patients were more likely to be referred if they were younger (OR: 1.04, CI: 1.01 to 1.07, p=0.009), males (OR: 2.10, CI: 1.05 to 4.22, p=0.036), in CKD3B (OR: 2.64, CI: 1.21 to 5.75, p=0.014) and CKD4+5 (OR: 4.35, CI: 1.81 to 10.49, p=0.001) when compared to CKD3A. 27.4% of patients not referred were ≤75 years. Only 25.7%, 42.0% and 47.9% of patients with CKD3A, 3B and 4+5 respectively were followed up with urine investigations after discharge (CKD3A *vs* 3B, p<0.0001). CKD3B (OR: 3.52, CI: 1.39 to 8.90, p=0.008), CKD4+5 (OR: 7.04 CI: 2.12 to 23.42, p=0.001), DM (OR: 4.23, CI: 1.81 to 9.88, p=0.001) and having been referred to a NT (OR: 12.40, CI: 2.92 to 52.66, p=0.001) were independent predictors for patients to have urine investigations.

Conclusion: The highest rate of referral was achieved in males, younger age groups and those who have reached CKD3B or worse. Urine tests remain largely underutilized and only a minority (15.5%) of patients with an eGFR <30mL/min/1.73m^2 were referred to a NT.

P12.12

Peritoneal dialysis peritonitis in Malta

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Introduction: Peritonitis is still one of the most serious

complications of peritoneal dialysis (PD), causing significant morbidity and mortality. This study aimed to analyze the peritonitis rates and microbiology in all prevalent patients between 2013-2014. Changes since the introduction of local guidelines in 2012 were assessed.

Methods: A prospective study analyzing episodes of peritonitis in all patients undergoing PD in Malta between 2013-2014. The International Society for Peritoneal Dialysis Guidelines were used to define peritonitis and standardize rates. Microbiological data was analyzed.

Results: The mean number of patients undergoing PD during 2013 and 2014 was 85.80, 85.25 respectively. The median age was 64.8 years and 60.4 years respectively. There was male predominance. Frequency of diabetes was 42%. Automated PD was used in 55% and 43% respectively. During 2013, 41 patients had PD peritonitis, 36 in 2014. Peritonitis rates were 0.57 and 0.54 episodes for 2013, 2014 respectively. Gram-positive organisms predominated, at 0.40 and 0.26 episodes/patient in 2013 and 2014 respectively, mostly Coagulase-negative *Staphylococcus*. The predominant Gram-negative flora for 2014 were *E.coli* and *Klebsiella* at 0.05 episodes/patient/year; *E.coli* and *Pseudomonas* for 2013, and *Pseudomonas* for 2008-2012 at 0.06 episodes/patient/year. There was one episode of MRSA peritonitis (1.8%) each year, but no infection-related deaths in 2013-2014. Between 2008-2012 MRSA peritonitis rates stood at 4.2%, while the infection-related mortality was 4.4%.

Conclusion: There was an improvement in PD peritonitis and infection-related mortality rates, especially after 2012, coinciding with the introduction of local PD peritonitis management guidelines. Change in flora was also noted with decreases in MRSA, pseudomonal peritonitis.

P12.13

Acute kidney injury after transcatheter aortic valve implantation

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Introduction: Transcatheter aortic valve implantation (TAVI) is an alternative procedure for patients with severe aortic valve stenosis who cannot undergo open heart surgery due to unacceptably high estimated risks. We investigated acute kidney injury (AKI) post-TAVI and analyzed any associated risk factors.

Methods: All patients who had a TAVI at MDH between 2010-2014 were retrospectively studied. AKI was defined using the Acute Kidney Injury Network (AKIN) classification.

Results: A total of 58 patients were included. Median age was 75.1±8.6 years and 69% were males. A total of 22 patients suffered AKI (37.9%) with 16 classified as stage-1 AKI (27.6%), 5 (8.6%) Stage-2 AKI and 1 (1.7%) Stage-3 AKI, requiring 3 sessions of HD before recovery. EuroSCORE II (U=214, p=0.005) and pre-procedure creatinine (U=248, p=0.025) were higher in those suffering an AKI. The length of stay was also longer in those with AKI (U=243, p=0.019). Increasing age (OR: 1.13, 95% CI: 1.00 to 1.28, p=0.049), higher EuroSCORE II (OR: 1.70, 95% CI: 1.15 to 2.51, p=0.007), EF <50% (OR: 10.62, 95% CI: 1.18 to 95.58, p=0.035) and male gender (OR: 8.37, 95% CI: 1.18 to 59.12, p=0.033) were independent predictors of AKI. The actuarial patient survival at the end of follow-up period was 87.9%. The 30 day all-cause mortality was 1.72% (1 patient suffered cardiac arrest during procedure). None of the deaths were renal related.

Conclusion: In our centre, 37.9% of patients undergoing the TAVI developed an AKI. Increasing age, higher EuroSCORE II, EF <50% and male gender were the main independent predictors of AKI.

P12.14

Influenza vaccine uptake rates in the kidney transplant population: a single centre experience

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Introduction: International guidelines, recommend the yearly inactivated influenza vaccine for both chronic kidney disease (CKD) patients and those after transplantation. This retrospective analysis was performed to evaluate the uptake rate of the influenza vaccine in kidney transplant recipients (KTRs) and compare it with CKD, peritoneal dialysis (PD) and haemodialysis (HD) population.

Methods: Data was collected by means of a standardised questionnaire delivered via a personal interview and using the hospital electronic database system.

Results: A total of 93 KTRs, 100 CKD, 84 PD and 100 HD patients were interviewed. KTRs (19.4% *vs* 55%, 69%, 59%, p<0.0001) were significantly less likely to receive the influenza vaccine on an annual basis between 2012 and 2014. Nearly half of the patients (53.8%) considered the vaccine as not recommended and 34.4% were concerned of the possible adverse effects. Indeed 9 patients (9.7%) were erroneously informed by their doctor to avoid the influenza vaccine, something which none of the CKD, PD and HD patients experienced. The majority of KTRs who accepted the vaccine (91.3%) did so to protect oneself. 11.1% of the KTRs, 16.4% CKD, 17.2% PD, 25.4% HD patients who received the vaccine on each consecutive year and 6.7%, 18.2%, 0%, 7.7% (p=NS) of those who never took the vaccine respectively, were admitted to hospital at least once over the three-year period attributed to a respiratory condition.

Conclusion: Only a minority of the KTRs receive the influenza vaccine on an annual basis. We plan to improve practice via education and implementation of established international guidelines.

P12.15

Vasculitis and thrombophilia screening in cryptogenic stroke

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Introduction: Although uncommon ischaemic stroke is a major cause for morbidity in the young. Hypercoagulable states contribute for 5-10% of ischaemic strokes in young patients. We aim to determine the proportion of young ischaemic stroke patients screened for thrombophilia and vasculitis. The secondary prevention of stroke as outlined in the local Department of Neuroscience Stroke Management Common Pathway Guideline states that a thrombophilia screen is indicated for patients less than 55 years.

Methods: Following data protection clearance, we conducted a retrospective survey of discharges from Mater Dei Hospital with a primary diagnosis of stroke/ cerebrovascular accident (CVA) between April and August 2014 incorporating ICD-10 diagnoses I60-I64. We analyzed the percentage of patients who underwent vasculitis and thrombophilia screening and whether the correct components of each screen were assayed.

Results: From 220 incident cases, 17 patients were under 55 years of which 12 had an ischaemic CVA. Vasculitis screen was performed in 44.4% of patients while thrombophilia screen in 33.3%. Most components of each screen were booked however tests for protein C and S activity were most likely to be missed. None of the incident cases had repeat protein C and S testing booked as outpatients.

Conclusion: Data were communicated to the neuroscience audit lead. Doctors will aim to ensure that all required tests have been booked at the first outpatient visit. A tentative re-audit is scheduled for May 2015.

P12.16

Adherence to hepatocellular carcinoma surveillance programme in patients with liver cirrhosis

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Introduction: International guidelines recommend that patients with liver cirrhosis, of any cause, undergo six monthly surveillance abdominal ultrasounds to detect early hepatocellular carcinoma (HCC), which would be amenable to curative treatment. The objective of this study was to evaluate if cirrhotic patients were being screened for HCC as per guidelines.

Methods: Patients diagnosed with liver cirrhosis between 2008 - 2013 at Mater Dei Hospital were enrolled. Adherence to HCC surveillance, using abdominal imaging (ultrasound, CT scan or MRI) and alpha-fetoprotein every 6 months (± 2 months), was retrospectively studied from the time of diagnosis of cirrhosis onwards. Patients diagnosed with cirrhosis and HCC concomitantly or patients with HCC but no cirrhosis were excluded.

Results: 156 patients (72.4% males, mean age 57.6, range 12–70) were enrolled. HCC surveillance guidelines using abdominal imaging were adhered to in 37.8% of cases. 62.2% non-adherence rate included patients lost to follow-up (22.4%), patients followed up at primary care level (10.9%) and patients followed up at secondary care level (both GI and non-GI physicians) (28.9%). Using alpha-fetoprotein, HCC surveillance was performed in 27.5% (lost to follow up - 24.4%, primary care level follow-up - 12.2%, secondary care level follow-up - 35.9%).

Conclusion: HCC surveillance in cirrhotic patients was only performed in one third of cases. Stricter adherence is strongly recommended. Ensuring follow up appointments and referring patients from primary to secondary care would aid better access to abdominal imaging. Patients at secondary care level should be managed by gastroenterologists, as other types of screening, like variceal screening, would be required.

P12.17

Osteoporosis in men

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Introduction: Men account for 20% of the osteoporotic population. The Endocrine Society published guidelines in June 2012 to improve the diagnosis, investigation and treatment of osteoporosis in men. The aim of our project was to study the risk factors for osteoporosis in men, and to review whether the bone mineral density (BMD) measurements performed at Mater Dei Hospital were indicated. The project also aimed to evaluate the investigation and management of osteopaenia and osteoporosis in men.

Methods: The study population encompassed all males who had a BMD measurement at Gynaecology Outpatients during the period September to December 2012. The data was collected from medical notes and iSoft Clinical Manager®.

Results: The study included 116 patients, with a mean age of 56 years. 49.1% (*n*=57) had their bone mineral density result recorded in the medical notes. Of these, 24.6% (*n*=14) were osteoporotic at the hip, and 14.0% (*n*=8) at the spine. 59.5% (*n*=69) had at least one documented risk factor for osteoporosis and therefore an indication for BMD measurement. From the cohort of patients with osteoporosis or osteopaenia, 40.9% (*n*=18) had testosterone levels taken, 27.3% (*n*=12) had Vitamin D levels, and none had 24-hour urinary calcium levels. Of all cases where bisphosphonate therapy was indicated, 55.6% (*n*=15) were receiving bisphosphonates, of which 46.7% (*n*=7) had a prior dental exam or consultation.

Conclusion: A significant proportion of male BMDs were requested in patients with no risk factors, though this could be partly due to poor documentation. Investigation of men with low BMDs is suboptimal.

P12.18

Management of status epilepticus in an acute general hospital in Malta

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Introduction: Status epilepticus (SE) is defined as an epileptic seizure lasting longer than five minutes, or more than one seizure within a five-minute period without the person returning to full consciousness between them. The aim of this audit was to assess the acute management of such patients in 2014 and compare to the new national guidelines (2015).

Methods: We included all patients with SE in 2014 as identified through admission to the Intensive therapy Unit (ITU) and Accident and Emergency (A&E). We also made use of the hospital Picture Archiving and Communication System (PACS) and Electronic Case Summary (ECS).

Results: The total number of patients who matched the inclusion criteria amounted to 36, 2 of whom had 2 episodes of SE. 26 were male and 10 female with ages ranging from 16 to 78 years. 21 had a previous history of epilepsy. Other variables analyzed were duration and type of epilepsy, treatment and compliance and a history of SE. The aspects of management that were assessed included duration of SE before first treatment given and treatment sequence. 37% of the status epilepticus terminated spontaneously. 34% of treated individuals required ITU admission. Of the 24 patients who were treated for SE, 92% followed the guidelines regarding treatment sequence.

Conclusion: Management does not yet completely conform with current recommendations and there is room for improvement. It is recommended to re-audit after widespread dissemination of guidelines and education.

P13.01

The acute management of asthma in A&E Department - adherence to guidelines

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Introduction: Asthma has a high prevalence in Malta, approximated to be 10% of the population. Guidelines were set up to lead physicians and nurses in the management of acute asthma as first-liners in Emergency Department (ED).

Methods: Quality of care at ED was assessed by conducting a retrospective case study of the patients who were discharged to the community between December 2014 and April 2015. The relevant discharge notes were analysed and data was logged in Microsoft Excel 2010, based on the local clinical practice guideline of Acute Asthma Management.

Results: Fifty-five patients were found eligible to be included in the study, with equal sex distribution and average age of 38.6 years. The majority complained of dyspnoea (65.5%), followed by 27.5% who complained of having an asthma attack. Whilst that 27% were asked about smoking and 14% about nocturnal symptoms, only 5-7% were asked about previous hospitalization or admission to intensive care with acute asthma attack. During examination, documentation was significantly lacking. 45.5% had documented peak expiratory flow rate, 14% of which were specified whether being measured prior or after nebulized treatment. Upon discharge, 29% of the population were given a follow-up appointment.

Conclusion: The study performed highlights the lack of adherence to local guidelines, probably attributed to the under-

recording of clinical information in the medical notes. However, mismanagement at ED may lead to failure in adequate control of the condition with subsequent consequences. Communication between ED and general practitioners or asthma clinic should be improved to ensure patients have remained stable after discharge.

P13.02

Hand hygiene at Mater Dei Hospital - back to square one?

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Introduction: Hands are the main transmission route for micro-organisms in health care setting. Hand hygiene (HH), using soap or alcohol, is one of the most effective interventions in reducing the burden of health care associated infections and the transmission of antimicrobial resistance.

Methods: Using the WHO assessment tool, four trained students overtly measured HH compliance in selected medical and surgical wards at Mater Dei Hospital by observing compliance with the 5 moments of HH and glove use among doctors, nurses, and other health care providers.

Results: The total number of wards observed was 23 while 1,275 opportunities were observed over the 6-week study period in July/August 2015. The overall HH compliance was 36.8% (95% CI: 34.2-39.5). The compliance of doctors, nurses and other health care providers was found to be 32.2%, 44.6% and 34.8% respectively. There was a significant difference in the compliance between nurses and doctors ($p<0.05$). The HH compliance 'before patient' contact was significantly lower than 'after patient contact' ($p<0.05$); with compliance rates of 22.6% and 48.1% respectively.

Conclusion: Despite all the myriad of interventions - which have even been endorsed internationally - and concurrent availability of soap, paper towels and alcohol rub during the audits, HH compliance within MDH continues to be significantly suboptimal. Indeed there has been a major reduction from reported levels from 2013. There is no doubt that health care professionals at MDH are putting their patients at risk of serious HAI; alternative approaches are needed to address this worrisome situation.

P13.03

Long-term efficacy of omalizumab in severe asthma in Malta

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Introduction: Omalizumab is a recombinant monoclonal anti-IgE antibody used in severe IgE-mediated asthma. Few studies include analysis of long-term efficacy beyond 1 year, and most patients require long-term treatment beyond 1 year. Our aim was to analyse the long-term efficacy of omalizumab in severe IgE-mediated asthma in Malta in patients receiving omalizumab for 3 years.

Methods: All adult patients who were started on omalizumab for severe persistent allergic asthma since 2012 were included in this on-going study. Exacerbations and Asthma Control Test (ACT) scores were documented prior to omalizumab treatment, after 1 year and after 3 years of treatment.

Results: A total of 18 patients were included in this study, 66% males, mean age 5.2 (±9.7) years. The mean IgE level was 413.4 (±409) IU/ml. ACT score improved at 1 year ($p<0.001$) and was maintained at 3 years. Exacerbation rate decreased at 1 year ($p=0.05$) and even further at 3 years ($p=0.004$). Healthcare visits decreased at 1 year and at 3 years ($p=0.05$). Number of systemic corticosteroid courses required decreased at 1 year ($p=0.02$) and at 3 years ($p=0.01$). There was no significant improvement in hospitalisation rate and FEV_1.

Conclusion: Omalizumab in patients with severe asthma leads to improved ACT scores, decreased number of exacerbations, and decreased oral corticosteroid courses. These benefits were noted after 1 year of treatment, and maintained 3 years later. Further evaluation of our cohort will assess treatment efficacy in the longer term.

P13.04

Chemical and microbiological pollutants influencing air quality within Maltese schools

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Introduction: The importance of school indoor air quality (SIAQ) has been recognised since children spend most of their time outside home within the school environment. The aim of the study was to identify indoor air pollutants within local schools and the impact they had on the children's health.

Methods: Five primary state schools were selected randomly throughout the Maltese Islands. Indoor air sampling was carried out within three classrooms in each school together with simultaneous outdoor air sampling. Chemical and microbiological pollutants that are known to have an impact on indoor air quality were investigated.

Results: Indoor formaldehyde, carbon monoxide and particulate matter (PM 2.5; PM 10) levels exceeded WHO **thresholds**. Maximum levels of indoor CO2 (3212 ppm in Fgura school) were well above WHO thresholds and a negative correlation was seen between indoor CO2 and ventilation rate (r–0.76 $p<0.001$). PM 2.5 in schools 1 (Qormi) and 5 (Fgura) was contaminated with perchlorate with Fgura school having the higher level. PenAsp microorganisms had the highest mean concentration within local schools followed by the Mycobacterial and Streptomyces species. There was a significant negative correlation between PenAsp and Mycobacterium spp levels in all the participating schools (r=-0.42; $p=0.03$). High exposure to indoor chemical and microbiological pollutants was associated with both upper and lower airway disease. Atopy was also significantly associated with deranged indoor physical parameters.

Conclusion: Indoor and outdoor pollutants influence air quality in schools. High exposure to specific pollutants has been associated with an increase in atopy.

Disclosure: Study financed as part of the SINPHONIE Project (DG SANCO).

P13.05

The effects of smoking on asthmatic children - how can we study this in indoor air quality

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Introduction: The RESPIRA study involved standard respiratory questionnaires, environmental monitoring of homes and clinical exam of cases and controls aged between 11 and 14 years.

Aims and Objectives: To compare the different effects of smoking in asthmatic children ($n=65$) and controls ($n=59$) in various phases of their life, and to attempt to identify the presence of smoking related elements in particulate matter (PM2.5) sampled in 45 homes.

Methods: Parents were given questionnaires and a subgroup of homes were chosen to have indoor air sampling of PM2.5 and this was analysed for various elements.

Results: Children with asthmatic symptoms had greater exposure to daily smoking ($n=15/65$) than controls ($n=5/59$) ($p=0.0271$) and in the first year of life ($p=0.00596$). There was no statistical significance for smoking during pregnancy ($p=0.961$), exposure to second hand smoke during pregnancy ($p=0.138$) or

breastfeeding. The relationship of cadmium and thallium levels in PM2.5 was compared to symptoms and the smoking habits. There were marginal differences in cadmium and thallium levels between the asthma (mean 0.439 ng/m3) and control (mean 0.268ng/m3) groups (p=0.254). There was no significant difference in cadmium and thallium levels in homes where there was smoking on a daily basis when compared to smoke-free houses (p=0.254).

Conclusion: Children with asthma had a greater exposure to smoking both in their early years of life and presently. There is no correlation between cadmium and thallium levels in PM2.5 and smoking habits, and therefore there must be other sources for these two elements in PM2.5 in this study.

Disclosure: The RESPIRA Project funded through the Italia-Malta 2007-2013 Social Funds.

P13.06

Prevalence of respiratory symptoms with pets in Maltese homes

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Introduction: The RESPIRA study included standardized respiratory questionnaires and clinical exam of children aged 11-14 years.

Aims: To identify associations between prevalence of respiratory symptoms and pet ownership amongst children aged 11-14 years in Malta.

Methods: 862 questionnaires were distributed to parents and analysed comparing prevalence (univariate) and using a binary logistic regression model.

Results: Children with pets had a higher prevalence of lifetime wheeze (n=175/332; p=0.04), and rhinitis past 12 months (n=153/354; p=0.028) when compared to no pet ownership. Wheeze past 12 months (n=73/434; p=0.086), lifetime rhinitis (n=168/339; p=0.069) showed a similar trend, but failed to reach statistical significance. In a binary logistic model cat ownership, after correcting for gender, age, socio-economic status, indoor exposure to smoking, and bronchitis in the first year of life, showed an odds ratio of 1.55(95% CI 1.06-2.28 p=0.025) for wheeze in the last 12 months. Cat ownership was not a predictor for asthma treatment in 12 months, or a diagnosis of rhinitis. Ownership of any pet, dog or bird failed to show any significant odds ratio wheeze in the last 12 months.

Conclusion: Children with pets had a higher prevalence of respiratory symptoms, however in a multivariate model only cat ownership predicted wheeze in the last 12 months, while ownership of any pet, dog and bird ownership was not.

Disclosure: The RESPIRA Project was funded by the Italia-Malta 2007-2013 European Social Fund.

P13.07

RESPIRA PROJECT: Outdoor PM2.5 Chemical composition in 3 areas with Urban/Rural difference in Prevalence of Respiratory diseases

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Introduction: RESPIRA Study showed living in Malta (urban), Gela (industrial) is a risk for respiratory symptoms compared to rural south Sicily.

Aim: To chemically analyze outdoor PM2.5 in these locations.

Methods: Using FAI pumps at 10l/min and Teflon (Whatman) filters for 48 hours, PM2.5 was collected from Malta (n=54), Gela (n=42) and rural areas (n=42), including schools and homes. The ionic component of ICP extraction was measured at CNR Rome. Aeroqual IQM60 measured PM2.5 levels in Malta. PM2.5 in Sicily was calculated from filter weights.

Results: Outdoor PM2.5 Malta (n=53) Mean 41.1 micro g/m^3, Median 29.7, Q1 13.9, Q3 57.7, p<0.001, Gela (n=34) MN 16 micro g/m^3, MD 15.1, Q1 12.1, Q3 19.1 p<0.01 and Rural (n=35) MN 12.36, MD 11.28, Q1 9.4, Q3 14.2. Chemical analysis showed higher metal levels in Malta and Gela compared to rural. (Malta, Gela, rural, mean and (Median) in ng/m^3) of V 4.0(1.76), 2.3(1.50), 0.6(0.27), Ni 2.18(1.37), 0.98(0.82), 0.47(0.64), Cd 0.32(0.07), 0.11(0.072), 0.05(0.027), Pb 1.39(1.01), 0.91(0.81), 0.39(0.29), Fe 45.0(27.76), 3.5(3.05), 3.5(1.03), Cu 3.49(1.22), 1.44(1.07), 1.09(0.56), Sr 1.21(0.14), 0.18(0.075), 0.5(0.078), Ba 1.08(0.52), 0.36(0.25), 0.04(0.06), Sn 0.1(0.059), 0.053(0.032), 0.04(0.0035), Mn 1.01(0.8), 1.37(1.19), 0.66(0.41). Sulphur 460(209), 741(705) 342(202), and Antimony Sb 0.42(0.18), 0.72(0.85) 0.22(0.19) were higher in Gela. No difference noted for As 0.19(0.13), 0.19(0.19), 0.17(0.17), Rb 0.37(0.18), 0.45(0.37), 0.53(0.33).

Conclusion: Malta with risk for asthma symptoms, had higher PM2.5 level and most heavy metals. Gela with risk for rhinoconjuctivitis had higher level of sulphur content.

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

P13.08

RESPIRA Project: Indoor and Outdoor Airborne Black Carbon using portable meter and GPS in Fgura and Cospicua

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Introduction: Fgura, a town in Malta has high prevalence of respiratory symptoms and is traversed by heavy traffic, with the adjacent walled city of Cospicua.

Methods: To map airborne Black Carbon (BC) levels along the streets of Fgura Microaeth® AE51 with a pump working at 150ml/min, was carried by a pedestrian along a 6km/45 minute course, along a busy road in Fgura, and less busy road in adjacent walled town Cospicua, between 4.00-6.00p.m. on 14 days in January and February 2015. Indoor measurement in a house in Fgura close to both roads. GPS, BC in micrograms/m^3 **and GPS measurements were taken every 30s.**

Results: All three traffic outdoor areas had higher BC levels than indoor. (p<0.0001). Outdoor levels showed a wide inter quartile range, and high 90th centile. Levels-Mean, Median, IQR, 90th cent. Indoor Fgura 1322, 1246(1024-1449,1996), Outdoor Fgura main roads 6083, 4032(2122-7584, 12831), Outdoor Fgura side roads 8241,3691(1873-8381, 16887), Cospicua side roads 3683, 2307(1409-4475, 7413). No difference was noted in mean and median levels between main roads and side roads in Fgura. (p=0.59). Outdoor BC in Fgura was higher than adjacent Cospicua. (p<0.001). Difference between the highest and lowest days in all three areas. p<0.001

Conclusion: Outdoor BC in a town with heavy traffic were on average 3-4 times higher than indoor, and twice the adjacent town with peak levels reaching 10 or more times the indoor level.

Disclosure: RESPIRA 85% EU funded - Italia-Malta programme.

P13.09

Decreasing prevalence of wheezing and rhinitis but not eczema in 12- to 15- year-old Maltese children over two decades (ISAAC - Malta)

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Introduction: The prevalence of asthma, rhinitis and eczema has been increasing worldwide, as a result of which, these

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

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

Results: Data was obtained from 3263 '12- to 15-year-olds' in 16 randomly sampled secondary schools over 2013 and 2014. The cohort consisted of 46.6% boys and 53.4% girls. Our results indicate a significant decrease in both the cumulative and current prevalence for both wheezing and rhinitis with the prevalence of eczema remaining stable over the last two decades in Maltese school children.

Conclusion: The public health conundrum of over-diagnosis of all these three allergic conditions is however of some concern.

P13.10

Gender differences in the prevalence and severity of wheezing, rhinitis and eczema in 5- to 8- year old and 12- to 15- year old Maltese children (ISAAC - Malta)

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Introduction: The International Study of Asthma and Allergies in Childhood (ISAAC) was the largest standardized worldwide epidemiological research programme ever undertaken on allergies in children. The aim of our study was to investigate the current prevalence and severity of childhood allergic conditions in Malta.

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

Results: Data was obtained from 3071 '5- to 8-year-olds' in 45 randomly sampled primary state schools over 2013 and 2014 in which 52.4% were boys while 47.6% were girls; and from 3263 '12- to 15-year-olds' in 16 randomly sampled secondary schools over 2013 and 2014 in which 46.6% were boys and 53.4% were girls. Our results indicate that allergic conditions in 5- to 8- years are more prevalent in boys; while in adolescence the pattern changes, being more prevalent in girls. On the other hand, these allergic conditions tend to be more severe in girls in both age groups.

Conclusion: Hormonal differences or gender-specific differences in environmental exposures may be to blame; but more research in this area is needed.

P13.11

Follow-up of positive Legionella urine antigen tests with respiratory culture specimens in Malta – a retrospective audit

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Department of Medicine

Introduction: Positive Legionella urine antigen tests (UAT) should be followed up by respiratory specimens for culture and sensitivities to guide antibiotic treatment and aid outbreak and source investigation. Given that legionellae require a specific culture medium, legionella needs to be specified in the online request whenever respiratory culture specimens are ordered.

Methods: A retrospective analysis of 127 positive legionella UATs taken between 5/3/2008 and 29/1/2015 in Malta was performed. Using iSoft Clinical Manager software it was determined what proportion of these tests were followed up by respiratory culture specimens and whether legionella was mentioned in the request.

Results: Out of 127 positive legionella UATs, 54 (42.5%) were followed up by a respiratory culture specimen. Of these, 49 (90.7%) consisted of sputum samples only. The rest consisted of pleural fluid, broncho-alveolar lavage and endotracheal secretions. Legionella was not mentioned in any request and was never cultured in any of the respiratory specimens (0%). 23 (42.55%) culture results were reported as no pathogens cultivated. 16 (29.6%) culture results were reported as sample unsuitable. In 15 (27.8%) cases other organisms were cultured.

Conclusion: The British Thoracic Society's guidelines with regards the follow-up of positive legionella UATs by respiratory culture specimens are poorly adhered to in Malta. An increase in awareness is needed and can be aided by dissemination of the audit results. It is recommended that whenever a legionella UAT is positive, the clinician responsible is notified along with a recommendation to submit a respiratory specimen for culture with legionella specified in the request.

P13.12

Re-auditing - Are we following guidelines for oxygen prescription, administration and monitoring?

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Introduction: Oxygen is a widely used drug, which is essential in the management of hypoxaemia.

Methods: Patients admitted to Mater Dei Hospital during unselected acute medical admissions (excluding cardiology, neurology and haematology admissions) between August and November 2013 were included in the audit. The consultant firms participating in the audit were randomly chosen from the medical subspecialties so as to eliminate selection bias as much as possible. A standard proforma containing demographic data and details on the prescription, administration and monitoring of oxygen use was filled in for each patient.

Results: This audit was performed on 655 patients, of whom 15.7% (n=103) were on oxygen. The majority of these patients (93%) had instructions for oxygen administration, however the oxygen had only been prescribed (written in the drug chart) in 38.8% of cases. A target oxygen saturation was written in 41.7%. Despite oxygen saturation charting being requested in 80.6% of patients, actual charting of saturations was done in 81.6% of patients.

Conclusion: Prescription of oxygen in drug charts is still lacking. Hospital drug charts which have oxygen included by default may help in increasing prescription rates. The medical proforma admission sheet seems to have helped increase awareness for the need of oxygen saturation monitoring.

P13.13

Identifying high risk patients for tuberculosis through a clinical prediction score

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Introduction: WHO has identified tuberculosis (TB) as the second deadliest infection due to a single infectious agent worldwide, only after HIV/AIDS. In Malta, a TB clinical-prediction score has been proposed to flag high-risk patients and isolate them until laboratory results are reported as negative.

Methods: The study retrospectively studied the medical notes of 53 laboratory-confirmed TB positive and 51 TB negative patients, admitted between January 2010 and March 2013 to Mater Dei Hospital. Presence of signs, symptoms and risk factors normally associated with TB were evaluated, including pulmonary infiltrate on radiological assessment, chronic cough, low grade fever, haemoptysis, unexplained weight loss or having previously lived for at least six months in a country designated by WHO as having high TB prevalence.

Results: Stepwise logistic regression identified significant associations between TB positivity and fever (p<0.01), weight

loss (p<0.001) and previously living in a high risk country for six months (p<0.0001). Presence of two or more of these factors had a positive predictive value of 76.2% that the subjects had TB with a negative predictive value of 84.1%.

Conclusion: Patients presenting at Mater Dei Hospital with two or more of: history of fever, weight loss, stay of at least six months in a high risk country for TB, should be immediately isolated until three sputum samples have been reported negative. The TB prediction score should be amended in the light of these findings.

P13.14

Antibiotic prescribing practices: Are microbial cultures being submitted prior to antibiotic prescription and are patients' renal function and drug allergies being considered?

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Introduction: Antibiotics are some of the most widely used therapeutic drugs worldwide. Important considerations when prescribing antibiotics should include identifying the likely causative pathogen and certain host characteristics. The audit's aim was to verify whether this is being done.

Methods: The audit was conducted on acute medical admissions of seven randomly-chosen firms between August and November 2013 at Mater Dei Hospital. A standard proforma was completed for each patient giving details on: antibiotics prescribed (if any), whether cultures were taken prior to antibiotic prescription and if these reached the laboratory, documentation of drug allergies, dose adjustment according to the patient's renal function, time taken until first dose and type of antibiotic prescribed.

Results: Of the 655 patients included in the audit, 177 (27%) were prescribed antibiotics. Only in 62.1% (n=110) of these were cultures obtained. Out of the 179 cultures taken, 150 samples reached the laboratory. History of drug allergies was documented in 96% (n=170) of cases, of which 1.8% (n=3) were incorrect. 7.34% (n=13) of patients required a dose adjustment but in 23.1% (n=3) this was not done. The mean time from first medical contact to first dose was 4.47 hours (range from 0-18 hours). In 10.2% (n=18) of patients the time of dose given was not documented. The most commonly prescribed antibiotic was co-amoxiclav (39.5%).

Conclusion: Although antibiotic resistance is a well-known problem, the importance of obtaining diagnostic specimens is still being overlooked. However, these results also highlight that doctors are taking into consideration certain patient characteristics prior to prescribing antibiotics.

P13.15

Demographic study of the HIV positive population in Malta

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Introduction: The number of newly diagnosed HIV positive patients in Malta has increased over the last 10 years. The aim of the study was to analyse the HIV positive population in Malta.

Methods: A demographic study of HIV positive patients currently attending the Infectious Disease clinic at Mater Dei Hospital.

Results: The total population currently attending our clinic consists of 248 patients, 58% of whom are Maltese. Out of all the patients studied, 77 % are males and 53% are men who have sex with men (MSM). At diagnosis, the majority were asymptomatic and diagnosed through screening tests carried out at the genitourinary and antenatal clinics or through contact tracing. The symptomatic patients presented with one of the following: opportunistic infections, tuberculosis, seroconversion illness, fever, diarrhoea, pneumonia, lymphadenopathy or haematological abnormalities. HIV infection was most commonly transmitted through sexual intercourse, with MSM being the commonest mode of transmission amongst Caucasians. Other less common modes of transmission included transfusion of contaminated blood products, mother-to-child transmission and intravenous drug use. The mean age at diagnosis was 34.9 years and the mean CD4 count at presentation was 352 cells/µL. To date, 89% of the patients are taking anti-retroviral treatment. The most common sexually transmitted disease in the population studied was syphilis.

Conclusion: This study showed that HIV infection in Malta is most prevalent in males and MSM. It was noted that MSM present with higher CD4 counts. The majority of patients are diagnosed at 30-40 years of age and are asymptomatic at diagnosis.

P13.16

Gastroenteritis…Are we putting our foot in it?

Anthea Brincat, Daniel Micallef, Claudia Fsadni

Introduction: Worldwide, gastroenteritis is the second leading cause of morbidity and mortality. The Infectious Diseases Society of America issued guidelines for the management of infectious diarrhoea with main recommendations being early rehydration, thorough clinical and epidemiological evaluation of the illness, selective faecal studies and selective antibiotic therapy. The aim of the audit was to evaluate current local practice so as to assess the need to for local guidelines.

Methods: All clinical notes of patients admitted to Mater Dei Hospital with a working diagnosis of gastroenteritis in October and November 2014 were reviewed.

Results: 96 patients were audited. The mean age was 48.6 years and the average length of stay was 5.7 days. Hydration status was recorded in 23.7% of patients. Travel history, health care contact, consumption of unsafe food and recent antibiotic was documented in less than 30%. Stool samples for culture were sent in 60.8% and a positive growth was detected in 27.1% of these samples. 50% were Salmonella, all of which were sensitive to ciprofloxacin. The other 50% were Campylobacter of which only 25% were sensitive to ciprofloxacin. 52.6% of patients were given antibiotics for an average duration of 7 days. 80.4% of which were given ciprofloxacin.

Conclusion: There is a strong need for local practice guidelines for the management of patients admitted with gastroenteritis. The focus should be on acquiring a thorough yet targeted history including risk factors that can aid identification of the most likely pathogen. Adequate samples, judicious use of antibiotics and awareness of local resistance patterns should be highlighted.

P13.17

Compliance with Carbapenem Resistant Enterobacteriaceae (CRE) infection control precautions at Mater Dei Hospital: a pressing concern

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Introduction: Carbapenem Resistant Enterobacteriaceae (CRE) are a growing concern in Malta. These organisms are often resistant to practically all antibiotics currently available. Therefore, the emphasis must be on effective infection prevention and control (IPC), particularly staff compliance with contact precautions in known CRE cases.

Methods: We studied adherence to IPC protocols in CRE patients within Mater Dei Hospital (MDH). 48 patients, colo-

nized or infected with CRE, were followed up 4 times over a 14-day period. A 10-point survey tool was used to assess adherence to MDH IPC policy, including direct observations of health care workers having contact with these patients.

Results: Facilities for compliance were generally available; alcohol rub, aprons and gloves were present in >95% of observations, but availability of dedicated equipment was only 13%. However only 35% of doctors and nurses donned the proper Personal Protective Equipment (PPE) and then 64% and 58% respectively did not remove them after exiting the room. When PPE was removed, 87% of doctors and 67% of nurses failed to perform proper hand hygiene afterwards. Cleaners were aware and able to explain correctly how the room should be cleaned in 76% of cases.

Conclusion: The findings of the study suggest that, despite adequate facilities and guidance, health care workers at MDH are failing to comply with evidenced based IPC procedures and exposing patients to potential harm from cross infection. These results would explain the recent marked increase in CRE cases and highlights the need for more intensive IPC efforts to correct these practices.

Disclosure: This study received ethical approval from the University Research and Ethics Committee of Malta and Data protection approval from Mater Dei Hospital. This study was carried out under the Infection Control Department of Mater Dei Hospital in conjunction with its staff. The authors claim receiving no funding from outside sources.

P13.18

Community-Acquired Pneumonia – Are we CURBing it appropriately?

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Introduction: The CURB-65 score is a validated tool used in defining severity and prediction of mortality in patients with community-acquired pneumonia. The 6-point score is easy to calculate in all patients presenting to A&E and helps in decision-making regarding the need for hospital admission and the choice of the most appropriate antibiotic. The aim of our audit was to assess if the CURB-65 score was calculated and whether decisions were truly based upon this score and local guidelines.

Methods: All patients admitted to Mater Dei Hospital with a diagnosis of pneumonia, lower respiratory tract infection or chest infection in October 2013 had their notes reviewed. Only patients with community-acquired pneumonia were included in the audit.

Results: 63 patients were admitted with community-acquired pneumonia in October 2013. The average patient age was 68.5 years. While all the data required for calculation of the CURB-65 score was documented in 54.7% of cases, the actual score was only present in 21.9%. The commonest missing parameter was confusion (39.1%), followed by respiratory rate (12.5%). Most patients were treated with co-amoxiclav monotherapy (31.7%), followed by co-amoxiclav and clarithromycin (30.2%) and levofloxacin monotherapy (20.6%). The management followed the local guidelines in only 36.5% of patients. In cases where the treatment was inappropriate, 58.3% were prescribed broader-spectrum agents than recommended by the guideline and CURB-65 score.

Conclusion: The audit shows that the CURB-65 score and the local guidelines for community-acquired pneumonia are grossly underutilized. The use of such tools can significantly prevent unnecessary hospital admissions and inappropriate treatment.

P13.19

Audit on management of acute exacerbation of COPD at Mater Dei Hospital

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Introduction: The aim of this audit was to analyse the assessment and management of patients admitted to Mater Dei Hospital with acute exacerbation of COPD, and to compare this with evidence-based guidelines.

Methods: Data was collected on assessment and management of patients admitted to Mater Dei Hospital with acute COPD exacerbations between January and May 2015.

Results: Preliminary results of one month of admissions with COPD exacerbations show a total of 54 patients (mean age 72±13, 70% males). 35 were current smokers. 92% were previously diagnosed with COPD. Whilst at A&E, nebulised salbutamol was prescribed in 92% of patients, ipratropium bromide in 87%, and systemic corticosteroids in 68%. A CXR was performed in all patients. ABGs, SpO2 and blood cultures were taken in 91%, 100% and 11% respectively. 2 patients required NIV and no patients required intubation. In the admission plan, nebulised salbutamol was prescribed in 100%, nebulised ipratropium bromide in 96%, systemic steroids in 83%, oxygen in 89%, thrombophylaxis in 87%, hydration in 24%. The flow rate of oxygen was not always documented and not always according to recommended concentrations. The inhaler technique was only assessed in 18.5%. The mean hospital stay was 6.4±4 days. Prior to discharge, few patients were referred for pulmonary rehabilitation and advised regarding recommended vaccinations.

Conclusion: Local management of acute COPD exacerbations is lacking in some areas. The implementation of a local guideline could help to optimise management of our patients.

P13.20

An audit on clinical practice guidelines for pneumonia at Saint Vincent de Paule Residence

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Introduction: Clinical practice guidelines (CPG) are designed to support the decision-making processes in patient care. The content of a guideline is based on a systematic review of clinical evidence - the main source for evidence-based care. CPG, based on standardised best practice, have been shown to be capable of supporting improvements in quality and consistency in healthcare. An audit in 2015 was done to see if local guidelines for community-acquired pneumonia is being followed at Saint Vincent de Paule Residence (SVPR). Auditing of antibiotic use and for investigations for severe chest infections was carried out. 60 patients with a chest infection were included in the audit. Mean age was 84.2 years. 42 (70%) had a mild chest infection whilst 18 (30%) had a severe chest infection. Appropriate prescribing was done in 91.7% of cases. As regards investigations, the audit showed that 55.6% had the appropriate blood investigations taken but only 33.3% had a CXR and only 16.7% had blood cultures taken.

Conclusion: This audit showed that doctors at SVPR are following CPG regards antibiotic prescribing for the treatment of pneumonia. On the other hand CPGs for investigations for severe pneumonias were not followed. It is recommended that the importance of following CPG in the investigation of pneumonias be discussed with the doctors at SVPR.

P13.21

The influence of immigration on extrapulmonary tuberculosis in Malta, 1995-2010

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Introduction: In the European Union, one-in-five tuberculosis patients has extrapulmonary tuberculosis (EPTB) and unlike pulmonary TB, this form of the disease does not show a downward trend. Since EPTB can effect virtually all organs, it has a wide range of clinical manifestations, which may cause difficulty and delay in diagnosis. This can cause complications, disabilities and lifelong sequelae. Following the large influx of irregular boat immigration from Africa to Malta since 2002, it was noticed that the number of EPTB cases in Malta was increasing. Thus this study sets out to analyse the EPTB trends in Malta to tailor TB control strategies accordingly.

Methods: Retrospective population study of national TB surveillance data from 1995-2010.

Results: Between 1995-2010, a total of 107 EPTB cases were reported in Malta and the reported incidence of EPTB increased from 0.53/100,000 to 3.11/100,000 person-years ($p<0.001$). The proportion of EPTB cases of total TB cases decreased pre-2002, from 20% in 1995 to 6% in 2001 (χ^2 $p=0.048$) and increased post-2002, from 21% in 2002 to 41% in 2010(χ^2 $p=0.019$). The migrant EPTB rate was 116/100,000 compared to 0.56/100,000 Malta-born rate. (χ^2 $p=0.001$). Post 2002, 58% of EPTB cases were among African migrants.

Conclusion: Between 1995-2010, the rate and proportion of EPTB cases in Malta has increased, mainly due to an increasing proportion of cases in African migrants. Clinicians should have a higher index of suspicion of EPTB in these migrants to avoid diagnostic delays.

P14.01

Physical restraint use at Mater Dei Hospital

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Introduction: According to the most recent local guidelines issued in September 2011, "a physical restraint is an object which lessens the patient's freedom of movement". However, if used adequately, physical restraints are of benefit for a patient's safety. The aim of the audit is to identify the different types of physical restraints used at Mater Dei Hospital and assess whether there is adherence to local guidelines.

Methods: A total of 6 wards were used, including medical, surgical and orthopaedic wards. The number of restrained patients was documented together with patients' demographics, the type of restraint, the reason and duration of restraint. Great importance was given to documentation. Comparison between the use of restraints in the morning and afternoon was also made. The data collected was then compared to local guidelines on use of restraints issued in 2011.

Results: A total of 272 patients were included in the audit, of which 36% were restrained. 60% of people restrained were males and 40% were females. The commonest age group being restrained was that between 81 and 90 years of age. Moreover, there was a greater number of restraint **use** in the afternoon as opposed to morning. The most common type of restraint used **were** bed rails in view of confusion. Only 9% documentation was present.

Conclusion: There is lack of adequate documentation when it comes to using physical restraint at Mater Dei Hospital. We suggest a standard document to be filled in and included in the patients' notes.

P14.02

The lived experience of daughters whose parents currently live in a residential home

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Introduction: Immediate family members are a critical source of support and informal care in late **life,** such family members play an important role in the admission and transition of the ageing into residential homes (RH). Research has shown that, after spouses, daughters of older people are usually those who take up most of the responsibilities of care within the care-receiver's family. This study therefore aimed at exploring the lived experience of daughters whose parents were currently living in a RH.

Methods: A qualitative method using interpretative phenomenological approach was adopted. Data was collected via audio recorded individual semi-structured interviews with six participants who were recruited through purposive sampling from a government residential home.

Results: Results highlight the stressful nature of tending to one's frail relatives. The findings uncovered a variety of elements that influence the subjective quality of the participants' experience with care-giving and residential home placement. A sense of filial obligation and duty to care were found to be central motives for care-giving. Furthermore, spirituality was a common method of coping. Finally, having control with the parents over the decision for admission to residential care, coupled with positive relationships with formal carers and non-familial residents, were found to appreciably enhance the resultant overall experience of RH.

Conclusion: The study emphasises that open communication between informal caregivers and service providers is critical to avoid conflicting views of care and enhance the overall experience for all parties involved by taking their needs and preferences into consideration.

P14.03

A complete audit of blood pressure control in stroke patients in a geriatric hospital in Malta

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Introduction: The National Institute for Health and Care Excellence (NICE) states that blood pressure (BP) control in stroke has the same guidelines as for BP control in high cardiovascular risk patients. The targets for non-diabetic stroke patients are a BP of less than 140/90 mmHg and for diabetic ones a BP of less than 130/80 mmHg. An audit was done in 2009 to show if BP in stroke patients is well controlled. A second cycle was repeated in 2015. The cohort of patients selected were those found in geriatric wards in Malta's geriatric hospital. Patients who had a very recent stroke (less than 2 weeks) were excluded from the audit as elevated BP levels are a common complication of acute stroke and usually normalise a few days to weeks after the event. As well as a BP reading by the doctor, epidemiological data, risk factors and anti-hypertensive medications if any were collected. Results of the both the first and second cycle showed that there is good BP control in this cohort of patients in Malta's geriatric hospital when compared with the guidelines as well as studies done in other countries.

Conclusion: BP is one of the main risk factors in stroke and so it is of paramount importance to have as optimum control as possible. The results of the audit showed that compared to other countries the department had a better control of BP in this cohort of patients.

P14.04

Are we sensitive enough to pain in older people in institutions?

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Introduction: Managing pain is a constant challenge in patients in long term care, yet there are few and limited studies on pain in institutionalised patients. The largest

study was the SHELTER (Services and Health for Elderly in Long TERm care) study (2013), which showed that up to 24% of elderly patients in significant pain were not on any analgesics. The aim of this study was to assess the prevalence of analgesic use among institutionalized individuals, to investigate factors associated with analgesic use and to compare analgesic use with the SHELTER study.

Methods: A randomised sample of 100 institutionalised patients from Saint Vincent de Paul Residence was taken, aged between 65 and 99 (mean age 79.73). Data was collected on prescription of analgesics and patient factors, including level of dependency. The frequency of use was then compared to the patient's perception of pain, collected by a short survey.

Results: Comparing this study with the SHELTER study, the main difference is in prescription of regular analgesia and analgesia as needed (PRN). In this study, less patients were prescribed regular analgesia (41.6% as compared to 53.7%) whilst more patients prescribed analgesia as needed (PRN) (25% as compared to 11.2% in the SHELTER study). 58% of patients in moderate to severe pain were found not to be on any regular analgesics.

Conclusion: There is a good proportion of inadequately treated pain amongst the elderly for several reasons. Chronic pain has serious detrimental effects on the quality of life and functionality of individuals.

P14.05

Prolonged outbreak of gastroenteritis in a nursing home in Malta, April 2014

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Infectious Disease Prevention and Control Unit; Health Promotion and Disease Prevention Directorate

Introduction: On the 1st of May 2014 we were notified of an outbreak of gastroenteritis in a nursing home affecting 20 residents since 30th April 2014. We initiated an outbreak investigation to identify the source of infection and implement prompt control measures to prevent further cases.

Methods: We conducted a descriptive epidemiological investigation and calculated attack rates (AR), risk ratios (RR) and ***p-values*** for each of the affected floor using logistic regression. Cases were defined as residents/staff at the nursing home **who** developed at least one episode of diarrhoea and/or vomiting since 30th April 2014. An environmental inspection was carried out and faecal specimens were collected from cases for analysis.

Results: A total of 72 cases were reported throughout the duration of the outbreak which lasted 28 days. Sixty-three of the reported cases were residents (AR=31%) and 9 were staff (7%). Symptoms were mild with an average duration of 1.5 days. Twenty-five (40%) of the affected residents were located in High Dependency Unit (HDU) (AR=53%). When compared to residents on the 1st floor, HDU residents were 3.5 times more likely of being a case (***p-value***=0.006). Seven out of 10 stool specimens were positive for Norovirus by RT-PCR.

Conclusion: Norovirus is known to cause large outbreaks of gastroenteritis particularly in institutional settings due to person-to-person transmission. This outbreak identified a number of deficiencies in infection control, notably inadequacies in contact precautions and environmental cleaning amongst staff that could have led to undue prolongation of the outbreak.

P14.06

DAM anticholinergic burden in elderly

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Introduction: Anticholinergic burden has been linked to cognitive impairment, falls and death in the geriatric population. The anticholinergic burden score indicates clinically relevant anticholinergic burden.

Aims: To highlight commonly used drugs with anticholinergic side effects. **To assess how many patients in an institution have a clinically relevant anticholinergic burden score (>3).**

Methods: Treatment charts of 4 random patients from each ward at St. Vincent de Paule Residence were reviewed - a total of 112 patients. Data collected included age, gender, anticholinergic drug, dose and frequency. The anticholinergic burden scale on the STOP START (Screening Tool of Older People's potentially inappropriate Prescriptions and Screening Tool to Alert doctors to Right i.e.appropriate, indicated Treatments) toolkit was used as standard guidance.

Results: 57% of the sample had a clinically relevant anticholinergic burden score. Scores ranged from 0 to 14. 86% of the patients were on at least one drug with anticholinergic properties. The top class of drugs with anticholinergic properties used was benzodiazepines.

Conclusion: Anticholinergic burden is a modifiable risk factor for cognitive impairment, falls and death. There is potential to DAM anticholinergic burden by checking if there are any Drugs (anticholinergics) on board, opt for Alternatives (if possible) and Monitor patients for side-effects which can be wrongly attributed to ageing.

P14.07

The changing longevity of patients at St Vincent de Paul Residence

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Introduction: Long term care allows people, who are unable to care for themselves, retain their existing abilities as much as possible, while reaching their full potential.

Methods: Data was extracted manually using the mortality register at St Vincent de Paul Residence (SVPR). Two retrospective cohorts included a total of 719 patients, who died between July 2003-2004 and July 2013-2014. The collected demographic data included ages on admission and at death, gender, dates of admission and death, cause of death and co-morbidities. The length of stay was calculated using the dates of admission and death. The modified Crichton Royal Behavioural Rating Scale was used to assess the patients' cognitive function and dependency on admission, which was then correlated with the calculated length of stay.

Results: 50% of residents died within 23 months of admission in July 2003-2004; while in July 2013-2014, 50% died within 17.5 months. There was an increase in the mean age of admission over the decade under study: from 78.8 years in 2003-2004 to 80.4 years in 2013-2014. The combined mean length of stay for both genders was 4.4 years in the first cohort and 3.0 years in the second. Males also survived for a shorter period of time when compared to females in both cohorts. Cardiac conditions accounted for the commonest causes of death in both years.

Conclusion: The results suggest that more emphasis should be placed on palliative rather than restorative care at SVPR, given that patients are surviving for a shorter period of time.

P14.08

Assessment of vital sign charting at Karin Grech Hospital and Saint Vincent de Paule Residence

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Introduction: Rehabilitation Hospital Karin Grech (RHKG) and Saint Vincent De Paule Residence (SVPR) are two geriatric facilities. Vital signs and scores such as the Early Warning Score (EWS) are used to identify high-risk ward patients. The current situation in RHKG and SVPR is that there are several observation charts for taking parameters which are cumbersome to follow and detect early signs of deterioration.

Methods: A prospective study was carried out during 15

on-call duties at RHKG and SVPR during which a record of the parameters used to trigger calls was kept. The parameters used in Early Warning Score charts at Mater Dei Hospital were included for this purpose, namely respiratory rate, pulse oximetry, temperature, systolic blood pressure, heart rate level of consciousness and blood glucose levels.

Results: RHKG: 22 out of 50 acute calls (44%) did not communicate any of the EWS parameters to the doctor on call. Respiratory rate was not recorded in any of the calls. SVPR: 28 out of 34 acute calls (82.35%) did not communicate any of the EWS parameters to the doctor on call. Respiratory rate, oxygen saturations, pulse and consciousness were communicated in none of the calls. A complete set of parameters was available in none of the calls.

Conclusion: Parameter charting in acutely ill patients in both geriatric hospitals could be improved. Introduction of modified EWS charts may facilitate serial parameter charting, improve documentation of parameters such as respiratory rate and, therefore, provide a better picture of the deteriorating patient.

P14.09

Medical documentation practices at Karin Grech Hospital

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Introduction: Although the world of medicine seems to be changing and progressing with each day, the need for proper medical documentation has not changed. The medical record of today does not only reflect the level of care of the patient but also a communication tool to a wide variety of players including the medical team. Complete medical records are the cornerstones of quality health care.

Methods: An audit was carried out to assess the medical documentation practices within 6 wards at KGH and to see whether these meet the **RCP** (Royal College of Physicians) approved standards. The audit involved sampling 10 files at random from 6 wards using an online random number generator. The Audit was carried out over a span of three months. Only medical entries were considered in the audit. Using the RCP approved Generic Medical Record Keeping standards as the gold standard**, each** standard of Documentation was assessed per file per ward.

Results: 63% of files did not have the patient's name or ID on the medical record sheet. 100% of **files** lacked the date or time or the name of the medical officer making the entry. 2% of files did not use a standardised layout for documentation. 100% of files had patient admissions documented on a standardised proforma. 28% of files did not identify the most senior health care professional present at the time of documentation. 98% of files did not have **a** CPR status documented.

Conclusion: On average most of the medical entries were up to RCP medical documentation standards.

P14.10

Audit - medical record keeping at Mater Dei Hospital

Doriella Galea

Introduction: Good medical record keeping is of utmost importance for effective communication amongst the members of the multidisciplinary team. It is also a legal document, hence accurate record keeping may save many from medico-legal litigations which are on the increase.

Methods: Five acute medical wards were randomly chosen and the medical notes of the patients present were reviewed (total of 98). Medical notes were reviewed and standards compared with the "RCP Approved Generic Medical Record Keeping Standards"

Results: 19.4% of medical records did not have identification number (ID) while 1% did not have the patient's name. 4.1% had both name and ID missing. The rest (75.5%) had full patient identification. 3% of entries did not include physical examination. 100% were dated but 54.1% did not have the time documented. 55.1% did not have a name of the person making the entry or their designation. 3% of the entries were not signed. 7.1% did not have the name of the senior reviewing the patient.In 2% clear transfer plan was found. 69% had the old notes available at any point in time. 1% had a CPR status clearly documented. 2% had documented consent for different procedures. 1% had signed for refusal of treatment.

Conclusion: In general, medical record keeping is satisfactory but more awareness is necessary in order to improve the current standards. This would ensure a safer working environment with more effective handover.

P14.11

A comparison of level of documentation between the different admission proformas at Mater Dei Hospital

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Introduction: The aim of this audit was to assess the level of documentation for different aspects of the patient's social history and examination comparing this across the various hospital proformas. The results were compared to a previous audit that had shown an improvement in documentation following the introduction of the medical proforma in 2011.

Methods: All patients admitted immured the care of 7 consultant physicians between August and November 2013.

Results: The audit included 655 patient admissions. Blood pressure was documented in 97.7% (*n*=640) of all cases, the highest percentage across all proformas. The **mean** lowest percentage documentation was for urine testing (16.6%) (*n*=111). In clerkings on **the** medical proforma, living alone was documented in 76.8% (*n*=86), mobility in 53.4% (*n*=55), potential social casein 43.1% (*n*=29), Glasgow coma scale in 86.7% (*n*=130), oxygen saturation in 99.3% (*n*=149), blood pressure in 100% (*n*=150) and haemoglucose test in 88% (*n*=131). This compared well to a previous audit that had shown documentation of GCS, oxygen saturations and haemoglucose test in 80% of cases. Comparing different proformas, documentation was least in the old A&E sheet and most in the medical proforma. Documentation was noted to be better in the new A&E proforma compared to the old A&E sheet.

Conclusion: This audit confirms that the medical proforma can help improve the level of documentation in medical patients. It will be interesting to compare this data to future audits analysing use of the updated medical proforma that was launched earlier this year.

P14.12

Acute medical admissions: writing up a management plan

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Mater Dei Hospital

Introduction: The role of the admitting doctor is to assemble the relevant points from the patient history, examination and investigation in order to draft a management plan for each patient, facilitating continuity of care between the emergency department and the medical ward. The aim of our audit was to assess the quality and clarity of the medical admission plan.

Methods: The study population encompassed all patients admitted to Mater Dei Hospital under the care of seven medical firms during the period August to November 2013. These patients were admitted by doctors ranging from basic specialist

trainee to consultant level, from the Medicine and Emergency departments. The data was collected by seven medical basic specialist trainees who studied the patient files on the first day post-admission.

Results: The study included 655 medical admissions. The provisional diagnosis was documented in 83.5% (*n*=547). The management plan was deemed clear in 98.3% (*n*=644) and legible in 99.1% (*n*=649), while the treatment chart was deemed legible in 98.6% (*n*=644). Blood pressure charting was requested in 97.7% (*n*=640), temperature charting in 95.7% (*n*=626), oxygen saturation charting in 79.0% (*n*=365), and urine output charting in 11.6% (*n*=59) of relevant cases. Cardiopulmonary resuscitation (CPR) status was specified in 3.1% (*n*=20) of acute medical admissions.

Conclusion: There is room for improvement in the documentation of provisional diagnoses. While the management plan is largely clear and legible, not all the relevant parameter charts are requested by the admitting doctor. Importantly, CPR status is very poorly documented by admitting doctors.

P14.13
Medication errors: an audit on drug history-taking

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

Introduction: Errors in drug history taking can lead to errors in prescription, which can in turn lead to serious patient adverse events. The study aimed at quantifying the frequency and type of errors noted in newly admitted acute medical patients.

Methods: The admission notes of all patients admitted under the care of seven medical consultants between August and November 2013 were analysed with regards to drug history. This was then compared to the drug history taken by the investigators on the following day from the patients or their relatives.
Results The study included 655 medical admissions. One or more drug errors were found in 104 patients (15.9%). In these patients, documentation in the medical histories regarding possible inaccuracies in the drug history was present in 14.4% (*n*=15). Source of drug history was specified in 16.3% (*n*=17). Drug omission noted in 65.4% (*n*=68). Additional incorrect medication/s were written in 10.8% (*n*=11). Dosage errors were noted in 26.0% (*n*=27). 6.7% (*n*=7) of patients had a medication erroneously recorded as a drug allergy instead of an adverse event whilst 1.9% (*n*=2) had an allergy that was not identified on admission.

Conclusion: Efforts to obtain a more accurate drug history, including correct history of drug allergies, should be made in order to decrease the frequency of errors in newly admitted medical patients. Suspicions of incorrect or incomplete drug histories should be documented in order to alert the caring clinician of possible inaccuracies.

P14.14
Presentation of falls to the Emergency Department

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Introduction: Falls and collapse are a common cause of presentation to the Emergency Department, and are often multifactorial in origin. The aim of this study was to assess the relative causes of falls in a cohort of subjects presenting at St James' Hospital in Dublin, Ireland over one week. This study took into consideration the age of the patient, taking 60 as the lower limit for the older population as defined by the WHO (World Health Organization). It also included whether an injury was sustained during the fall or collapse.

Conclusion: On further assessment of this older cohort, there is evidence for a linear relationship between frailty and frequency of falling. A minimum involved accidental injury, and where an intrinsic cause was suspected, appropriate referral for further patient assessment and follow-op was observed.

P14.15
Paracetamol overdose management - are we following the guidelines?

Kyra Bartolo, Maria Mifsud, Sarah Marie Vella, Pierre Ellul

Introduction: Paracetamol overdose can be potentially life-threatening. However, it is also one of the drugs to which an antidote exists.
Aims: To determine if the current guidelines are being adhered to **and the** outcome for these patients.

Methods: Patients admitted to MDH between April 2013 and March 2014 **were** recruited after being identified through the toxicology database. Their clinical notes were analysed.

Results: 47 patients with a mean age of 28 years (13-64) were admitted following a Paracetamol overdose. 40% of patients were students and 11% were unemployed. 57% of patients ingested other drugs together with paracetamol. 30% of patients ingested alcohol. 19% had a psychiatric history and 55.3% of all patients admitted to suicidal intent. Venous blood gases were only performed in 67% of cases. Other investigations not performed at presentation included ECG (13%) and blood glucose level (13%). 72% of patients presented at 1-8 hours after paracetamol ingestion. 32% had Paracetamol levels checked before 4 hours and thus these could not be plotted on the normogram. A total of 24 patients were given NAC, in 3 of whom it was not indicated. Only 63% of patients presenting at 8-24 hours had NAC started immediately. NAC doses, solutions and infusion rates were all according to guidelines.

Conclusion: This data demonstrates an overall good outcome for patients admitted with paracetamol poisoning. However, stricter adherence to the guidelines is required for this potentially lethal drug to which an antidote exists.

P14.16
Safe intravenous fluid prescription and administration in hospitalised adult patients: Where do we stand?

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Introduction: Fluid management should be accorded the same status as drug prescription. Inadequate fluid prescription (FP) has been associated with significant morbidity and mortality. We hereby present an audit on FP practises at MDH. Our aim is to improve the safety of FP in the adult in-patient population by the end of 2016.

Methods: FP appropriateness was analysed through case note examination. Subsequently, essential FP knowledge was evaluated via a questionnaire distributed amongst junior/middle grade doctors.

Results: A total of 32 case notes were studied, equating to 70 maintenance-fluid-days and 10 resuscitation-fluid-days. In terms of maintenance-fluid-days, fluid balance assessment was documented in 20%, indication 23%, oral-intake 3% and urine-output 14%. Type and rate of FP was documented in 67% and 51% respectively. Daily electrolyte analysis was performed in 54% and FP plan executed as prescribed in 63%. Maintenance fluid volume was inappropriately administered in 74%, excess sodium in 74%, insufficient potassium and glucose in 83% and 80%. The resuscitation strategy of 250ml bolus followed by re-assessment was carried out merely in 20% of resuscitation-fluid-days. There were a total of 106 questionnaire respondents. 57% of doctors feel insufficiently confident in FP. Fluid status assessment prior to FP and daily electrolyte analysis are routinely performed in

66% and 58% respectively. Electrolyte concentration of 0.9% saline and Hartmann's was unknown to 54% and 49% of doctors. 58% and 62% of respondents are uninformed of the daily recommended maintenance volume and potassium supplementation.

Conclusion: We aim to improve FP practices through teaching programs and novel fluid balance/prescription charts.

P14.17

Study on the responses to Early Warning Score (EWS) prior to in-hospital mortality

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Introduction: Early warning score (EWS) is a guide used by medical health care workers to quickly determine the degree of illness of a patient. Increasing EWS require escalation in medical attention. The aim was to identify responses to EWS prior to death.

Methods: Data regarding in-hospital mortality between May and August 2015 were obtained from the clinical performance unit. Clinical data were gathered from patient files. Patients from ITU, A&E and patients which were under non-medical consultants were excluded.

Results: There were 413 cases of inpatient mortality, of which 289 were included for analysis, of which 52.9% were female whilst 47.1% were male with an age range of 19 to 100 years. 21.1% were younger than 69 years of age whilst 25.3%, 40.5% and 27.7% were aged 70 – 79, 80 – 89 and 90– 99 years respectively. Data analysis includes the level of the EWS at which patients were reviewed prior to cardiac arrest, and the presence of documentation regarding DNR (do not resuscitate) status.

Conclusion: The audit studied the level of responses to increasing EWS in patients with deteriorating clinical status.

P14.18

Audit on the local hospital management of deep vein thrombosis

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Mater Dei Hospital

Introduction: Following established local and international hospital guidelines, patients with DVT may be managed in the community, unless any of the exclusion criteria are present. The current practice in Mater Dei Hospital is to admit all cases of suspected DVT, resulting in a number of unnecessary hospital admissions. This audit was carried out to determine the number of patients who could have been managed in the community and their total hospital stay. The aim is to design recommendations for the local outpatient management of DVT.

Methods: All patients with suspected DVT admitted in August 2014. Data collected included investigation tools, **treatment,** follow up, length of hospital stay and possible exclusion criteria using iSoft, electronic case summaries and medical notes. The data was analysed and recommendations for local outpatient management of DVT have been drawn up.

Results: Twenty-six patients were admitted to Mater Dei Hospital with suspected DVT. Of these, twenty cases were confirmed with Doppler ultrasonography. Six of the patients with confirmed DVT had at least one of the exclusion criteria for outpatient management. Fourteen patients did not have any criteria for hospital admission. This resulted in 84 unnecessary hospital bed days with a mean of 6 days per patient.

Conclusion Adherence to the local DVT hospital guidelines would save at least two hospital beds every day. These patients can be managed in the community provided the outpatient framework exists including a DVT clinic. As a conclusion to this audit we have made recommendations for the outpatient management of DVT **patients.**

P14.19

An audit of electrocardiogram (ECG) documentation in medical discharge summaries

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Introduction: Most patients admitted to hospital have a baseline ECG taken either in Emergency Department or in the admitting ward. In the absence of a fully computerised system it is important that on discharge the ECG findings are documented in the discharge letter. This ensures better continuation of care by general practitioners and aids the prompt assessment by physicians during subsequent admissions.

Methods: In this retrospective audit all medical discharge summaries over 1 month (September 2013) were analysed. The number of discharge letters with documented ECGs was recorded. The authors also compared if the ECGs documented were admission ECGs or ECGs taken during the patients' hospital stay. Patient demographics including age, sex and date of birth were noted. The documented ECGs were classified as those with regular rhythms, arrhythmias, ischaemic changes or other significant abnormalities. Patients admitted under cardiology and for elective procedures were excluded.

Results: 904 discharge summaries were reviewed. It was noted that in 21% of discharge letters there was no ECG documentation. 55% of documented ECGs reported normal sinus rhythm, with the remaining 45% reporting abnormal ECG changes. Despite this, only 11% of discharge letters had any record of ECG findings after the initial admission ECG.

Conclusion: The purpose of discharge summaries is to communicate information about patients' care. If notes are not completed properly, it can lead to clinical misadventure. Our aim is to insert a template in the Electronic Case Summary where ECGs can be documented to aid the rapid assessment of patients who are re-admitted with potential cardiac problems.

P14.20

Patients' perception and satisfaction of waiting time at medical outpatients

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Introduction: Patient satisfaction is an important determinant of health care quality. Decreasing waiting time is imperative in achieving patient satisfaction. The aim of this study was to determine the mean waiting time at medical outpatients and to assess waiting time satisfaction. A further aim was to identify factors that affect the patients' perceived waiting time.

Methods: Data was collected through questionnaire responses from 190 patients attending medical outpatients between 20th March and 9th April 2013. This included demographic data, waiting time and service satisfaction, expected and perceived waiting time, level of boredom and comfort while waiting. Moreover the actual waiting time was noted by the observer.

Results: On a 10-point Likert scale, the mean waiting time satisfaction was 7.1, while the mean service satisfaction was 9.3. The mean perceived waiting time was 55 minutes and the mean actual waiting time was 51 minutes. As perceived waiting time increased, patient satisfaction tended to decrease consistently and significantly ($p<0.001$). On the other hand, perceived waiting time had a positive and significant linear relationship with the actual waiting time ($p<0.001$) and the boredom level ($p<0.001$). Patients seated comfortably had a significantly lower perceived waiting time that those who were not ($p<0.001$). Perceived waiting time was not influenced by whether the patient was accompanied or being seen for the first time.

Conclusion: Overall service satisfaction was extremely positive, while waiting time satisfaction was moderate. Although reducing the actual waiting time may be difficult, altering patients' perceived waiting time may be beneficial to increase their satisfaction.

P14.21

Dermatology admissions: 2010-2014

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Introduction: A significant minority of dermatology patients require inpatient care. Locally, these are admitted to the eleven-bedded Dermatology Ward at Sir Paul Boffa Hospital. The aim of our study was to identify the commonest reasons for admission and trends over the past five years.

Methods: All patients admitted to the dermatology ward between 2010 and 2014 were included. Data was collected from patients' notes, iSoft and discharge summaries.

Results: 549 patients were admitted to the Dermatology ward over this time period. 62% of admissions were unplanned, 18% were day cases and 8% of admissions were elective. Data for the remaining 12% was not available. Whilst the number of elective and unplanned admissions remained stable over the years, the number of day cases is increasing significantly owing to an increasing number of patients on biologic agents. The commonest five diagnoses of patients admitted are: infected lower limb ulcers (22.0%), non-infected lower limb ulcers (11.4%), pyoderma gangrenosum (11.3%), psoriasis (8.1%) and bullous pemphigoid (7.5%). When day cases are excluded, 49% of admissions were re-admissions, reflecting the relapsing-remitting nature of most diseases. Patients staying for longer than a day are mainly admitted for topical therapy only (51%), or topical treatment combined with intravenous agents (33%).

Conclusion: The number of admissions to the dermatology ward remained stable over the past five years, a third of which related to lower limb ulcers. The fact that topical therapy is important in most patients highlights the importance of a specialised dermatology ward with staff trained in the management of such conditions.

P14.22

Care in the last days of life

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Introduction: Recognition that a patient is entering the dying, followed by the sensitive communication required with the person and those dear and near to the dying person is an integral and increasingly common part of our caring professional work. There, however, remain many areas for improvement in this. **This study aims to assess how often the health care team recognises a patient as dying, as well as their communication and care around this difficult time.**

Methods: Thirty predictable deaths at the Wirral Hospital in March 2015 were identified and case notes reviewed. These case notes were reviewed to look at rates of recognition of dying, communication with patient and relatives, as well as medical and nursing assessment of patients' symptoms and dying wishes. These results were compared to a similar review of case notes from October 2013.

Results: The dying phase was recognised in 73% of patients in this study. Most often this happened in the last day of life; reversible causes of deterioration were considered in all cases. The preferred place of death was only documented in 7 out of 30 patients. In 95% of cases, there was discussion of dying with the relative, but only in 18% was **the** case with patients. There was quite a high rate of anticipatory prescribing, with 83% having opioid analgesia and 70% having anticholinergics prescribed.

Conclusion: Much improvement needs to be made by health care workers in End-Of-Life Care, in **both their** care and compassion as well as the medical aspects of the dying phase.

P15.01

The determinants of first aid knowledge - a national cross-sectional study in Malta.

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Introduction: Timely and appropriate bystander first aid is the key to improving survival and outcome of acute injury and illness. This study aims to capture the current relevant knowledge and training status of the lay public in Malta.

Methods: Volunteers, recruited according to a probability quota sample, underwent a structured interview on which their first aid knowledge was scored. Student t-test, ANOVA and Pearson's Chi-squared test were performed for statistical analysis.

Results: 1,579 individuals (48.6% male, n=768) participated in the study. The score obtained was 67.1% overall, with no significant difference noted between genders (p=0.293). Age (p<0.0001), level of education (p<0.0001), occupation (p<0.0001), geographical region (p<0.0001), and language preferred at interview (p=0.0007) were all associated with differences in performance. Those previously formally trained in first aid (29.9%, n=473) performed better (70.2±9.3 *vs* 65.7±9.8%, p<0.0001), with no difference noted with additional training exposures (p=0.061), time since last training course (p=0.564), and between the various organisations delivering training (p=0.085). Reported exposure to first aid information in print (68.8±9.9 *vs* 66.8±9.8%,p=0.004) or social media (68.7±8.2 *vs* 66.7±10.1%, p=0.002) was associated with improved scores.

Conclusion: The general public has a limited knowledge of basic first aid. Informal exposures, and formal training, are associated with improved knowledge - although this is restricted in extent. There is need for greater emphasis on education in this field.

P15.02

Are patients with mental disorders getting the right deal?

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Introduction: The Mental Health Act lists nineteen rights applicable to persons suffering from mental disorders. This study describes the state of compliance with these rights in the public mental health services at end 2014.

Methods: 46 mental health care facilities were visited between June and September 2014. A standard questionnaire was devised to evaluate qualitatively the care environment, documentation, patient experience, privacy, autonomy, communication and social aspects of care. Further evidence was collected from information provided by staff, examination of patient records and private interviews with patients.

Results: No evidence of discrimination, abuse of restrictive care or cruel, inhuman or degrading treatment was elicited. Most mental health care is offered from derelict and shabby institutional facilities. A mix of acute, rehabilitation, residential and long term care services are often delivered within the same ward, impacting quality of care. Privacy and level of cleanliness varied between units. Communication is restricted in all inpatient wards. The inadequate development of outreach, crisis intervention and community support services cannot realistically facilitate treatment within community settings as the preferable care option. Good leadership and commitment of unit managers were the main determinants of good quality care. Motivation was better in acute wards and community services.

Conclusion: In public metal health facilities, the overall care ambience is austere and dated. The basic needs of the patient were satisfied in most cases. There was wide variation in quality of care. Substantial investment in infrastructure, human resources and training is required.

Disclosure: This study was the joint effort of all the professional staff of the Office of the Commissioner for Mental Health through their comments, remarks and observations during visits.

P15.03

Treatment chart audit of Mount Carmel Hospital

Chris Cremona
Malta Foundation Programme

Introduction: Aim: to evaluate the 435 inpatient treatment charts spanning over 23 wards in Mount Carmel Hospital so as to assess whether their quality is up to standards set forth by the BNF, Royal College of Psychiatrists and guidelines of the pharmacy department at MCH.

Methods: All treatments charts were reviewed and assessed based on the British National Formulary guidelines on treatment charts. 15 criteria were established. Each treatment chart given score from 0 to 15, based on fulfillment criteria. Two data sets were provided: (i) A compliance indicator by ward at Mount Carmel Hospital based on a 15 point system. (ii) Analysis of each criterion, and assessment of adherence on a hospital basis. All treatment charts were reviewed in the span of 10 days between 18th and 28th April.

Results: Compliance indicator by ward: The best performing wards were Female Ward 8 with a score of 13.6/15, Male Forensic Ward 13.2/15 and Seclusion with a score of 13.0/15.The worst performing wards were: Male Intellectual Disability Unit (23rd) with a score of 10.7/15, Female Ward 3A (22nd) with a score of 10.9/15 and Asylum Unit 8B (21st) with a score of 11.0/15. Analysis of each criterion: Least adhered criterion - Mention of date of birth - 6.2% Mention of allergy history - 33.8% (Full data set to be provided for adherence of each criterion).

Conclusion: Establish pro-active culture through awareness campaigns, making doctors, nurses and health care staff aware of the ramifications of treatment chart errors.

P15.04

Foundation doctors confidence in managing patients with mental health illness

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Introduction: Mental health illness is very common. As foundation doctors there are numerous circumstances where management of these patients is necessary. The aim of this audit was to check how confident foundation doctors are in managing patients with psychiatric problems.

Methods: A questionnaire was set up and distributed to all foundation doctors working at Mater Dei Hospital in August 2015, via an email. All data was kept anonymised. Perceived confidence for each question was rated on a 5-point Likert scale ranging from 1-little confidence, 2-somewhat confident, 3-confident, 4-quite confident to 5-extremely confident.

Results: 80 responses were obtained in total. Only 36.7% of the foundation doctors felt confident in taking a psychiatric history. 47.5% showed little confidence in using the DSM5 or ICD-10 to reach a diagnosis. Confidence in starting patient on first line medication was very low with 47.4% of foundation doctors stating that they have little confidence in doing so. In addition, only 2.5% of doctors felt extremely confident in identifying medication side effects. Assessing a patient's risk to self-harm varied from 35.9% feeling somewhat confident and 38.5% feeling confident in doing so. Only 3.9% feel extremely confident in identifying drug overdose.

Conclusion: The confidence of foundation doctors when dealing with psychiatric patients is poor. Continuous medical education in psychiatry needs to be organised during the foundation years in order to improve the knowledge, skills and confidence in psychiatry. A provisional teaching programme can be implemented and audited again to check if there is an improvement in foundation doctor confidence.

P15.05

An audit on foundation programme doctors attitudes towards psychiatry

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Introduction: 18 medical trainees were interviewed. Likert-type scale tool ATP-30 (attitude towards psychiatry-30 questions) was used and analysed. This allowed an assessment of the common attitudes, negative and positive that Foundation Programme trainee doctors have towards Psychiatry. In addition to ATP-30, questions were posed regarding the study of Psychiatry as an undergraduate, any interest in pursuing the speciality as a career, factors that influence the latter choice, and ways to transform Psychiatry into a more desirable speciality.

Methods: Questionnaires which included ATP-30 questions were assimilated to anonymous trainees.

Results: The results include those noted in the conclusion.

Conclusion: A positive response was noted whereby doctors felt that Psychiatry makes good use of medical training, allowing the appreciation of patients' medical and surgical problems. Unfortunately, a proportion of responders believe that it is not a substantial part of the medical curriculum and varied opinion regarding pursuing Psychiatry as a career was acknowledged. Response also enlightened the FP trainees' appreciation of the effectiveness of psychotherapy and pharmacotherapy, with the accompanying therapeutic attainment of rewarding outcomes.

P15.06

The mental health of newly graduate doctors and the effects of migration.

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Introduction: Several studies have shown high rates of psychiatric morbidity in doctors at various stages of their training (*Paice, et al.*, 2002; *Levine et al.*, 2006). Migration is also known to impact emotional wellbeing (*Bhugra*, 2004). Foreign doctors in Malta now make up over 30% of the junior doctor cohort.

Methods: A quantitative cross-sectional analysis was carried out by means of a self-report questionnaire including the General Health Questionnaire-28 (GHQ-28) (*Goldberg*, 1972) and the Cultural Distance Questionnaire. Interviews were carried out with experts and with subjects, and the information was triangulated.

Results: 117 (78.5%) junior doctors participated. 70.9% (83) of them were Maltese. 49.4% (58) were found to have GHQ-28 scores of more than 6, indicating significant psychological distress. Further analyses revealed that lacking leisure time ($p<0.001$), uncertainty ($p=0.009$), migration ($p=0.03$) and being female ($p=0.04$) were significantly related to caseness. In the migrant group it was lack of leisure time which, through logistic regression analysis, was found to explain caseness ($p=0.01$), whereas in the non-migrant group, lacking leisure ($p=0.008$), uncertainty ($p=0.002$), and being female ($p=0.013$) all individually contributed to caseness. No relationship was found between cultural distance and psychological distress ($p=0.35$). The themes that emerged from interviews were transition, lack of leisure and lack of personal relationships.

Conclusion: It is important for supervisors in medical education to be aware of the difficulties that trainees face, which may include psychological distress, significant enough to reach caseness. Lack of leisure time seems to be an important factor which may be an area addressed in a relatively straightforward manner.

P15.07

House officer stress syndrome: an overlooked reality?

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Introduction: The transition from medical student to medical doctor in training can be a stressful period for young doctors and this can have a negative impact on their mental well-being. House Officer Stress Syndrome was first described in 1981 by Dr. Gary Small in his article of the same title and this study is based on negative features described within the article.

Methods: An online questionnaire was submitted to Foundation doctor trainees via social media and data was collected over two months. Subjects were requested to select any negative symptoms they may have experienced during their training, the factors that contributed to these and ways that can improve their training experience and diminish stress.

Results: 47.7% of House Officers responded to the questionnaire. 29% of responders experienced depression, 3% resorted to substance abuse and surprisingly, 12% of responders stated that they had suicidal ideations. 87% claim that the negative effects are the result of an excessive work. 76% blame sleep deprivation. 60% blame lack of leisure time and 61% owe these negative effects to the fear of making mistakes. 41% of responders believe that more free time available to them will help combat stress. 21% have suggested a decreased number of night duties.

Conclusion: The majority House Officers have experienced some form of stress during their training. Awareness of House Officer Stress Syndrome may need to be increased and systems improved to reflect this and prevent devastating consequences.

P15.08

Breaking bad news in cancer: an assessment of Maltese patients preferences

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Introduction: It is unclear among Maltese physicians whether cancer patients wish to know their diagnosis. The aim was to assess Maltese patients› preferences for receiving a cancer diagnosis and being involved in their treatment, and then compare with results from similar international studies.

Methods: 199 Maltese adult patients with a diagnosis of malignancy of >1 month completed 2 standardised tools: the Measure of Patients› Perspective (MPP), a 32-item tool assessing patient›s preferences for being given news about their cancer, and the 2-item Control Preferences Scale (CPS) assessing patients› involvement in the decision-making process. Patients rated characteristics of the information, context and support given, on a scale from 1-5 for the MPP and their involvement in treatment decisions, from A-E, for the CPS. Demographic and medical data were collected. T-tests, one-way ANOVA and post-hoc analysis were used.

Results: Patients rated the ‹content› subscale (mean 4.17, CI 4.08-4.25, SD 0.59) as significantly more important (p=0.047) than 'support' (mean 3.73, CI 3.63-3.83, SD 0.68) and 'facilitation' (mean 3.86, CI 3.76-3.96, SD 0.68). On the CPS, although there is a trend away from a passive role, patients still exhibit a paternalistic attitude towards their physician. Patients with higher levels of education had significantly higher scores for 'content' (p=0.018) and 'facilitation' (p<0.001) on the MPP, as well as for choice of role on the CPS (p=0.036).

Conclusion: Maltese cancer patients want to be informed of their diagnosis, its treatment and its prognosis, with results similar to those from international studies.

P15.09

Prescription of benzodiazepines in acute psychiatric disorders

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Introduction: The benefit of benzodiazepines in reducing anxiety and agitation occurs at the expense of possible adverse effects including sedation, tolerance and dependence. A consensus statement issued by the Council of the College of Psychiatry of Ireland in 2012 asserts that these can largely be prevented by keeping dosages minimal, using short courses (four weeks or less) and by careful patient selection. The aim of our audit was to assess the quality and duration of benzodiazepine prescription.

Methods: The records of all patients in the two acute admission wards at Mount Carmel Hospital in July 2013 were reviewed.

Results: 54.2% out of 142 patients had been prescribed benzodiazepines, 79.2% of whom had been taking these drugs for longer than four weeks. Anxiety was the most common indication for starting a benzodiazepine (47.5%), followed by psychosis (21.3%). In patients on benzodiazepines for more than four weeks, the consultant was involved in this decision in 85.7% of cases. However, a documented explanation for this decision was present in only 11.3% of cases. Evidence of an attempt in decreasing the dose was available in 28.6% and documentation of patient education regarding dose reduction was present in 3.3%.

Conclusion: Our data shows that benzodiazepines are commonly used for longer than four weeks in acute admission wards. We propose that dispensing of benzodiazepines beyond the recommended period should require a documented reason by the prescriber. This may provide an opportunity for the prescriber to reconsider the appropriateness of such treatment and look into other effective options available.

P15.10

The acute management of aggressive inpatients at Mount Carmel Hospital

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Introduction: Aggression in a mental health facility can create a volatile environment which might threaten the well-being of patients, their relatives and the staff. Carers in psychiatric hospitals must receive ample training that enables them to manage aggressive patients safely and effectively, without disregarding proper patient care.

Methods: Episodes of aggression that took place in the acute wards of Mount Carmel Hospital (MCH) between the months of September to December 2014 were recorded retrospectively. The acute wards consisted of Mixed Admissions Ward, Male Ward 1, Female Ward 1 (FW1), Male Dual Diagnoses Unit (DDU), Female DDU and Asylum Seekers Unit. The patients' demographics, diagnoses, stages of illness, modes of admission and the management of each episode were recorded. The standard used was the National Institute of Clinical Excellence Quick Reference Guide titled Violence: The short-term management of disturbed/violent behaviour in psychiatric inpatient settings and emergency departments.

Results: There were 59 cases of aggression during the period under study. Most cases of aggression were by female patients and mainly took place in FW1. The majority of these patients had been informally admitted. De-escalation was attempted in 42% of the cases, chemical restraint in 34% and physical restraint in 3%.

Conclusion: There is currently no standard pathway at MCH for managing cases of acute aggression and such cases are not usually properly documented. The recommendations listed in the NICE guideline should be adhered to as much as possible when managing aggressive patients, so that the safety of both patients and staff is guaranteed.

P15.11

Referral practice among doctors for patients needing admission to Mount Carmel Hospital.

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Introduction: Tickets of referral assist clerking and in the enforcement of the mental health act. Initial reviewers who may be more aware of the patient's background may provide this information when transferring a patient to Mount Carmel hospital.

Methods: Permission to review ticket referrals for new admissions from the community to Mount Carmel Hospital during the month of June 2015 was attained from the Chairman of Psychiatry. Files of new admissions were assessed to see if the following were present: referral ticket; drug history; next of kin details; documented handover with staff at Mount Carmel hospital. Place of initial assessment was also noted. All data was anonymized and data input was done using a prepared proforma. Patients referred from Corradino Correctional Facility were not included as referrals were made by the caring consultant's firm.

Results: 72 admissions were assessed. 88.89% (*n*=64) of these admissions included an official ticket of referral. Health centres referred most patients (29.17%, *n*=21). A similar number lacked a drug history. 78.08% (*n*=56) were lacking next of kin details. 40.28% *(n*=29) of the cases had documentation of a handover with a senior on call.

Conclusion: Poor quality and missing information are often present in referral tickets. Continuous medical education and a referral ticket specific to Mount Carmel hospital would be ideal.

P15.12

Demographic characteristics of the local parasuicide population: A retrospective review over four months

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Introduction: Epidemiological knowledge of parasuicide is still limited by lack of data. Published literature and a number of preliminary studies have shown that parasuicidal acts are more common than thought of among society. Identifying common characteristics in these patients may help identify the patients at risk of committing suicide and help in prevention.

Methods: The aim of this study was to describe the epidemiological characteristics and clinical variables of a cohort of subjects admitted to the Emergency Department at Mater Dei Hospital in Malta following the ingestion of an illicit substance with suicidal intent between June and September 2013. The study also looked at whether patients had already been diagnosed and were being treated for a psychiatric disorder prior to the event. It excluded events related to alcoholism and illicit drugs of abuse.

Results: A total of 56 patients (M:F 55.4:44.6 %) fulfilled inclusion criteria. There was a bimodal distribution by age, with a female prevalence in the older age group. 62.5% of the patients had a previous diagnosis of psychiatric problems with a preponderance of depression and anxiety disorders. The majorities of patients were unemployed and came from the southern eastern district of the island. The drugs which were commonly being used are benzodiazepines and SSRIs (selective serotonin reuptake inhibitors).

Conclusion: The study highlighted the need for better patient documentation as well as the identification of preventive strategies that can help decrease the problem.

P15.13

Service evaluation of the perinatal mental health clinic in Malta

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Introduction: Mental disorders, most commonly depression and anxiety, are seen to affect 10 – 15% of women within the perinatal period (pregnancy to one year postpartum). This is considered a public health issue due to the debilitating effects on the mother, her relationship with the unborn child and the rest of the family. This evaluation of the Perinatal Mental Health Clinic (PMHC), aims to provide an overview of the women who have been referred in 2014; including their management and outcomes. Gaps within the services will also be addressed in order to propose a way forward.

Methods: Data which included demographics, referral source, time of assessment, marital status, past psychiatric history, diagnosis, treatment, and referrals to other professionals, was extracted from all new cases referred to the PMHC in 2014. Evaluation of this specialist service will then be compared to international guidelines.

Results: The National Obstetric Information System (NOIS) registered a total of 4335 births in 2014. The PMHC saw 112 new cases; 64.3% were pregnant and 35.7% postpartum. Notably, 65.1% had a previous psychiatric history and 56.3% were married. Referrals were made through midwives (56.3%), obstetricians (14.3%) or self-referred (17.9%). The main diagnoses were depression (24.1%), anxiety (24.1%) and personality disorder (13.4%). A biopsychosocial treatment approach was used; including psychiatric medication (42.9%) psychological services (59.8%) and social work services (17.9%).

Conclusion: The need for a perinatal mental health strategy with integrated pathways and community outreach is felt within the service in which all mental health providers would participate and providers reached more effectively.

P15.14

Incident reporting in a mental health facility - an exercise in futility?

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Introduction: Incident reporting systems provide vital information on adverse events in a healthcare setting. Analyses of incident reports lead to guidelines and protocols that enhance patient safety and quality of care. Literature shows gross underreporting of incidents and more so of near-misses. This may be due to a blame culture and finger-pointing towards persons submitting reports. Aim: Apart from fulfilling a legal requirement, this study aims to stimulate an increase in incident reporting and improve its quality.

Methods: Healthcare professionals working in mental health inpatient facilities were informed about the benefits of blame-free reporting, report writing, incident categorisation and report submission. Data from reports received were inserted in an excel spreadsheet.

Results: Throughout 2014, 74 incident reports involving 89 patients were submitted. No near-misses were reported. All reports were submitted by health care workers. Males were twice more likely to be involved in incidents. The commonest were 'Patient Protection Events'. Incidents were more likely to occur between 16:01h and 20:00h. The highest number of incidents occurred on the Maximum Secure Unit.

Conclusion: There is selective reporting of incidents. Near-misses were not reported. Staff is reluctant to report any

incident that can go by unreported. Reporting is the realm of nurses. Reporting will improve by supporting a blame-free culture in health care settings. Staff will perceive inherent value in reporting incidents when action is taken to prevent the recurrence of such incidents. This improves both patient safety and quality of care.

P15.15

Drivers of change for life expectancy and mortality in Malta

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Introduction: Life expectancy (LE) increased significantly across Europe over the past 40 years. Whilst general trends in life expectancy patterns characterise Western and Eastern Europe, country specific patterns also occur. This study presents detailed demographic and epidemiological analysis of changing life expectancy in Malta and compares this to other European countries.

Methods: Mortality data for Malta by cause of death, gender and age were extracted from the World Health Organisation Database for 1955-2013. Life expectancy at birth by gender and age group were calculated. Changes in life expectancy at birth were then decomposed into contributions by age groups and selected causes of death. Trends in life expectancy for Malta were also compared with selected EU countries.

Results: Between 1955 and 2013 LE in men and women increased by 13.2 and 14.95 years respectively. Two distinct demographic periods emerge. During the first period increasing LE was driven by a fall in infant mortality. LE in older age groups only started to increase in the 1980s in Malta, later than in other Western European countries, and coincided with the start of a downward trend in cardiovascular mortality.

Conclusion: The period under study was a critical time for political, economic and social development in Malta. Patterns of migration, development of the social welfare state and expansion in health services are all believed to have shaped the unique pattern of LE. Malta has transitioned from an Eastern European to a Western European country in terms of its mortality profile over the past 30 years.

P15.16

Who are the frequent attendees in the Mater Dei Hospital A&E Department?

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Introduction: In the Malta Health Literacy Survey 2014, 3.1% of the study population aged 18+ years reported attending the A&E Department more than 3 times in the previous two years. Nationally, this represents around 4500 adults sharing 20,000 visits to the A&E Department in one year.

Methods: The subset of frequent attendees was identified and analysed. Data was compared to national figures from the same survey, in order to determine the typical profile of the frequent A&E attendees and to focus upon and reduce the burden and cost of frequent attendance.

Results: No gender differences were elicited. Those in the 31-40 and the 71+ year's age groups and those residing in the Northern Harbour and South Eastern Regions were more represented. Frequent attenders were more health literate compared to the general Maltese population. They tended to have smaller monthly incomes, were overweight or obese, were less well-educated, had more long term illnesses, and had worse self-assessed health and worse self-assessed social status. The co-terminosity of A&E and Health Centre services made it impossible for Gozitan participants to report frequent A&E attendance.

Conclusion: Frequent A&E attendance is often a sign of vulnerability. Identifying them presents an opportunity to improve care and use resources more efficiently. Patients suffering from chronic or terminal conditions should still benefit from safe care including primary care, social care and palliative care as necessary. Challenging behaviour, substance abuse and mental disorders should be tackled and managed by establishing and addressing underlying causes, whilst ensuring safety of other patients and staff.

Disclosure: Data extracted from the NSO source data utilised in the Malta Health Literacy Survey 2014, commissioned and funded by the Office of the Commissioner for Mental Health.

P15.17

How is the updated ticket of referral doing?

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Introduction: The outpatient interface is important for patient care. An updated Ticket of Referral (TOR) was introduced end 2013; our study reviewed its usage in referrals from primary to secondary care, using Medical Consultant (MCC)/ Schedule V clinics as an exemplar.

Methods: Prospective study of consecutive new case referrals with all personal data anonymised. Completeness of field completion, established quality criteria, and legibility were assessed, and whether written or printed.

Results: Of 103 consecutive referrals, 3 exclusions were due to an older version submitted, resulting in *n*=100. Identity card number, name, address, r easons for referral and referring doctor signature were completed in 100%; with 'date' in 98% and 'referring doctor' name, and 'registration number' in 96%. 88% had a rubber stamp; 79% completed 'age', 76% 'telephone', 47% 'mobile'; date of birth complete in 10 out of 66 possible, (due to differing versions of the TOR). 19% completed 'Next of Kin' - with telephone number (13%) and mobile numbers (18 %). 22% were noted to have investigations and 1% attendance at other clinics. Quality criteria included past history (54%), current treatment (71%) and blood pressure (34%); 100% were written, with 19% containing illegible areas.

Conclusion: Data completion was high for patient and doctor details and reasons for referral, whilst fields related to 'Next of Kin' were mainly omitted. Quality criteria were variably completed - notably current treatment was absent in over a quarter - with implications for patient safety. Legibility was an issue in 19%.

P15.18

Documentation standards for inpatient file entries at Mater Dei Hospital

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Malta Foundation Programme

Introduction: Proper documentation in inpatient files is vital for patient safety and accountability.

Methods: Medical, surgical, obstetric and gynaecological wards at Mater Dei Hospital (MDH) were included in the audit after obtaining necessary permissions. All entries in each patient file over the previous day were analysed. Each entry was checked for inclusion of date, time, place, signature, registration, name, designation and pager number. Empty beds and patients who had not been inpatients for the full 24 hours on the previous day were excluded. Statistical analysis was applied to results to ascertain any significant differences in documentation between different departments.

Results: A total of 682 entries were included in the audit. Date (98.4%, *n*=671), signature (97.7%, *n*=666) and registration number (82.7%, *n*=564) were most documented. Name (14.5%, *n*=99) and designation (2.1%, *n*=14) were least documented. Pager number was never documented. Of the entries included, 8.2% (*n*=56) had one or more illegible components. Surgical en-

tries were statistically more likely to have a documented name, while medical entries were more likely to have a documented time (p=0.05). Moreover, it was noted that out of 500 beds included in the audit, 8.6% (n=43) had no entry as the patient was not seen by a doctor.

Conclusion: The results highlight inconsistencies in documentation by doctors at MDH, which can deduct from patient safety and accountability. This highlights the need for a local guideline outlining documentation standards expected from doctors at MDH.

P15.19

Patients' willingness to cross-border healthcare: the Maltese perspective

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Introduction: The purpose of this study is to identify and analyze factors influencing willingness to access cross-border healthcare by evaluating patients' behaviours, attitudes, experiences and expectations.

Methods: This study employed a quantitative cross-sectional approach surveying outpatients of a general hospital. Quota sampling was used to recruit patients who have never experienced treatment abroad and patients who did experience treatment abroad. Univariate analysis was used to analyse the data.

Results: The respondents were found to be willing to access cross-border healthcare. Age (p-*value*=0.006), education (p-*value*=0.008), language literacy (p-*value*=0.000), literacy on cross-border healthcare (p-*value*=0.000) and financial resources (p-*value*=0.000) were found to have a significant association with willingness to access cross-border healthcare. Gender, employment status, and occupation were not found not to be significantly associated with willingness to access cross-border healthcare. The respondents would base their decision to seek treatment abroad on the GPs/specialists referral and they are willing to seek treatment abroad for specialised care.

Conclusion: The respondents are more likely to access treatment abroad for specialised care rather than to by-pass long waiting times in Malta. The study is context specific. Education of the public on the differences between specialised care programme and patients' rights under EU directive should be implemented with GPs/specialists playing a major role. The EU policy on cross-border healthcare should consider focus on country specific factors when EU citizens access cross-border healthcare.

P15.20

How do medical students study anatomy?

Mubarak Alghuroba, Ahmad Abdulrhman, Isabel Stabile

Introduction: The purpose of the study was to examine how Year 1 and 2 students study gross anatomy and its relationship to their socio-demographic features.

Methods: All Year 1 and 2 students were asked to respond to a short anonymous online questionnaire.

Results: 177 students responded (59.9% of Year 1 and 40.1% of Year 2), of whom 25.4% had a previous degree. Almost 80% of those with a previous degree found lectures to be useful as a learning method compared with 68% of those without (p<0.05). Almost two thirds of those without a degree learned best by working on their own time in the dissection hall compared to just under half of those without a degree. Critical thinking sessions and writing and answering quizzes were found to be more useful by students without a degree than those with (72% *vs* 62%; 82% *vs* 72% respectively). Significantly more Year 1 students found video dissections useful as a learning tool (88% Year 1 *vs* 67% Year 2). Overall, significantly more year 1 students feel more time should be dedicated to lectures (35% *vs* 24%) and working alone in the dissection room (73% *vs* 51%) compared to Year 2 students. There were no significant differences between male and female students in either year.

Conclusion: Degree students appear to be more independent in their approach to learning anatomy, while those without a degree (ie. most local students) preferred critical thinking and other more active learning approaches.

P15.21

Usefulness of online self-learning tutorials and quizzes for medical students at the University of Malta

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Introduction: Self-directed learning, e-learning, and formative assessment in the form of online quizzes, have been shown to be associated with enhanced learning and improved test scores among medical students. This study aimed to assess the perceived usefulness of online self-learning tutorials and formative assessment (online quizzes) for medical students.

Methods: A questionnaire and online tutorial on thoracic imaging were distributed to medical students who had prior exposure to studying thoracic anatomy.

Results: All respondents had previously utilised an online learning tutorial and all of them had found it helpful (47% moderately helpful; 53% very helpful). The majority found the supplementary thoracic imaging tutorial to be moderately to very helpful in: understanding thoracic anatomical relations (81%); learning thoracic anatomy (78%); revising thoracic anatomy (86%); and, application of clinical relevance (81%). Nearly all students (97%) reported the desire to utilise similar online tutorials to study other topics. In addition to taking advantage of online tutorials, 92% of respondents had utilised online quizzes with 79% finding them moderately to very helpful and only 21% finding them slightly helpful.

Conclusion: Most medical students at the University of Malta believe there is benefit to utilising online self-learning tutorials and quizzes to enhance learning. Greater efforts should be made to increase the availability and quality of these self-learning tools in order to meet the increasing demands of our crowded curricula.

P15.22

Unskilled and unaware: self-assessment of first and second year medical students in anatomy spotting examinations

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Introduction: Accurate self-assessment and insight into limitations are an important part of medical training. The aim of the study is to investigate the ability of low and high performing students in judging their performance in their practical anatomy exams.

Methods: At the end of the practical exams in 2014/15 Year 1 and 2 students were asked to estimate the mark they felt they had obtained. The difference between actual and perceived marks was further analysed based on gender, nationality and year of study.

Results: A statistical significant difference of 9.9 and 12.4 marks was found between actual and perceived results for first and second years respectively. High performing students estimated an average of 18.4 marks below their actual mark, compared to 2.5 marks for low performing students. A statistically significant difference of 13.1 marks was found for female students compared to 5.6 marks for male students. There

was no difference based on nationality and between first and second year students.

Conclusion: The lack of insight of low performing, especially female students is cause for concern and may indicate that additional training is required. It remains to be determined whether this lack of insight also extends to written examinations in this and other disciplines as well as clinical skills. It is unclear whether poor performers over-estimate their performance because their relative incompetence deprives them of the skills needed to recognise their deficits.

P15.23

Attitudes of medical students in Malta to the teaching of embryology and histology

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Introduction: Embryology and histology are two aspects of basic biomedical sciences. The aim of this study is to investigate the attitudes of pre-clinical students, who are undergoing tuition in the basic biomedical sciences, towards these two subjects.

Methods: The data was collected by means of a survey. Apart from filling in their gender, age, nationality, year of study, participants ticked statements regarding embryology and histology that they completely agreed with.

Results: 50.9% of the students participated in this survey. Some interesting findings from the data collected were either regarding both histology and embryology combined, such as the fact that only 3.2% believe that embryology is one of the most clinically relevant basic sciences, while 4.3% believe that histology is one of the most clinically relevant basic sciences. Furthermore, only 25.9% of the participants believe that a doctor would be of limited effectiveness without embryology, while 37.8% believe the same for histology. Interestingly, 3.8% of the students believe that Western medicine can do without embryology, like Eastern or alternative medicine, while 4.3% believe the same for histology. The study also discovered some differences between the students' regard for embryology and that of histology. For example, 45.9% of the students believe that although embryology is interesting, it needs selective understanding in the clinic, while only 31.9% believe the same thing for histology.

Conclusion: In conclusion, the study has shed further light on how medical students regard histology and embryology with the rest of their medical curriculum.

P16.01

Implementation of pre-emptive pharmacogenomics in the Maltese population

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Introduction: Genetic variation between individuals provides predictive information on treatment effectiveness and risk of toxicity in commonly used pharmaceuticals. Pharmacogenomic approaches are increasingly being used to assist in the rationalization of drug use, and hence improving the quality of personalized health care and reducing the costs of the overall healthcare expenditure.

Methods: 45 DNA samples from healthy volunteers residing in Malta were analyzed with the DMET+ platform (Affymetrix, Santa Clara, CA, USA), including a broad coverage of 1,936pharmacogenomic markers in 231 relevant pharmacogenes on a single GeneChip platform. Data analysis included principal component analysis, ancestry analysis and shortlisting of the most relevant actionable pharmacogenomic biomarkers.

Results: Although the Maltese population clusters together with the Caucasian population, as expected, the allele frequencies for several pharmacogenomic markers, in the Maltese population are significantly different compared to those observed in the Caucasian population. For example, the allele frequencies observed for several CYP2D6 alleles in the Maltese population are different compared to those observed in Caucasians, while although the TPMT*3C allele frequency is 3% in the Caucasian population, this allele is completely absent in the Maltese population.

Conclusion: These findings warrant further investigation during the Phase II of the project that will soon commence. Overall, individualization of drug therapy is the ultimate goal, providing the rationale for implementing pre-emptive pharmacogenomics in healthcare provision in developing countries in Europe and worldwide.

Disclosure: The DMET+ funding was provided by Affymetrix through the PGENI initiative.

P16.02

Design of novel inhibitors of *Mycobacterium tuberculosis* replication using azole antifungals as leads

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Introduction: Mycobacterium tuberculosis (Mtb) continues to be a source of significant morbidity and mortality due to the constant emergence of resistant strains. Azole antifungals have been found to exert an inhibitory activity on Mtb CYP121 enzymes, compromising its viability; and were used in this study as leads for the *in silico* design of novel agents capable of superior inhibitory activity at this locus.

Methods: Protein Data Bank (PDB) crystallographic deposition 2IJ7 describing the coordinates of the Mtb CYP121 enzyme: fluconazole complex was selected as a template. Fluconazole was extracted computationally from the Mtb Ligand Binding Pocket (LBP), and its affinity for its cognate receptor was calculated *in silico*. The two triazole rings and the hydroxyl group inherent to azoles constituted the pharmacophoric scaffolds onto which novel moieties could be added for the construction of novel structures.

Results: Novel high affinity structures capable of binding to the Mtb LBP with high affinity were designed and segregated into families according to pharmacophoric structure and Lipinski rule compliance.

Conclusion: The designed molecules exhibiting the optimal combination of affinity and Lipinski rule compliance are suitable for further optimisation and *in vitro* validation studies. The entire molecular cohort may be included into chemical libraries for high throughput screening.

P16.03

Design and optimisation of novel lead carbonic anhydrase inhibitors for the management of neoplastic disease.

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Introduction: Neoplastic disease progression results in a scenario in which tumour cell vasculature is not sufficient to maintain homeostasis. Compensatory mechanisms have consequently evolved, an example of which is the over-expression of Carbonic Anhydrase IX (CA (IX)) which, through reduction of intracellular CO_2, reduces hypoxia and promotes metastasis. This study uses CA (IX) as a target for the design of novel inhibitors.

Methods: Protein Data Bank crystallographic deposition 3IAI describing the holo acetazolamide: CA (IX) complex was used as a template. The affinity of the complex components was

measured in X-Score v1.3 to establish a baseline. Structure activity data from the literature identified the sulphonamide moiety on acetazolamide as vital for inhibition, and used as a scaffold for the design of 3 seeds with pre-designated growing sites which sustained novel chemical growth within the CA(IX) ligand binding pocket according to the GROW algorithm of LigBuilder v1.2.

Results: A total of 465 Lipinski's rules compliant molecules (*n*=120, 172 and 173 from seeds 1, 2 and 3 respectively) were generated. These were segregated, for each seed, into pharmacophorically distinct families and ranked according to affinity and physicochemical parameters. The binding affinity of the generated structures (p*K*d) ranged between 9.46 and 10, significantly higher than the established baseline for acetazolamide (p*K*d=4.90).

Conclusion: This study was successful in designing Lipinski's rule compliant molecules of an affinity higher than acetazolamide for CA (IX) which was attributable to accessing of hydrophobic pocket proximal to the amine moiety of the acetazolamide seed. The optimal structures were identified for further optimisation synthesis and *in vitro* validation.

P16.04

The design and optimisation of novel structures capable of epidermal growth factor inhibition for the management of neoplastic disease

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Introduction: Over-expression of Epidermal Growth Factor Receptors (EGFRs) due to gene amplification has been associated with the development of tumours of epithelial origin, including breast, lung and colon. EGFRs are consequently targets for the design of antagonist molecules with the potential of solid tumour management. 2-O-caffeoyl tartaric acid (2OCTA), 2-O-feruloyl tartaric acid (2OFTA), Emetine (EMT) and Rosmaricine (RSM) are molecules for which there is evidence, from Chinese Pharmacopeia, of their ability to antagonise EGFR. These molecules were used as templates in the *de novo* design of novel EGFR inhibitors.

Methods: Protein databank crystallographic deposition 2ITY, describing the *holo* gefitinib: EGFR complex, was used to define the pharmacophoric space available for novel molecular growth. 2OCTA, 2OFTA, EMT and RSM were successively docked into the EGFR ligand binding pocket (LBP) and conformational analysis performed. The optimal conformer for each molecule became the scaffold onto which novel moieties were computationally introduced at *loci* considered non-critical to binding using the GROW module of LigBuilder®.

Results: 66, 16, 17 and 55 molecules were designed from 2OCTA, 2OFTA, EMT and RSM scaffolds respectively after a larger cohort (*n*= 1770) was assessed for Lipinski rule compliance. These molecules were classified according to pharmacophoric similarity, physiochemical parameters and ligand binding affinity. Their binding affinity (p*K*d), ranged between 10 and 5.76 compared to 6.05 for gefitinib.

Conclusion: The highest affinity Lipinski rule compliant molecules are being suggested for further optimisation, synthesis and *in vitro* validation. This *in silico* study validated the utility of the selected lead scaffolds in the design of novel EGFR inhibitors.

P16.05

Design and optimisation of novel anti-prostate cancer drugs capable of CYP17A1 receptor modulation using Galeterone as a lead molecule

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Introduction: Galeterone is an experimental drug that shows promise in the management of advanced prostate cancer, a leading cause of mortality in males. It was used in this study as a lead for the design of novel anti-prostate cancer drugs which modulate the CYP17A1 receptor.

Methods: Protein databank deposition 3SWZ, describing the *holo*- Galeterone: CYP17A1 complex was identified, and the affinity of Galeterone for its cognate receptor quantified in X-Score for baseline establishment. The complex was also used to generate 2D topology maps in Pose view which, together with Structure Activity Relationship data from the literature, guided the generation of a seed structure that retained the critical hydrogen bonding moieties and eliminated the hydrophobic steroidal side effect provoking nucleus *de novo* design was carried out subsequent to ligand binding pocket mapping, using the LINK algorithm of LigBuilder v1.2 which tethered the polar moieties in synthetically feasible modalities.

Results: A total of 65 molecules were generated, 18 of which were not Lipinski rule compliant. The 47 remaining molecules were ranked according to affinity and physicochemical parameter.

Conclusion: None of the generated molecules had a binding affinity that equalled that of Galeterone, however, the drug design strategy employed, eliminated its steroidal core making this molecular cohort important for further optimisation given that it is expected that all steroid associated adverse effects would no longer be part of their side effect profile.

P16.06

Targeting the mevalonate and mammalian target of rapamycin pathways in breast cancer

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Introduction: Breast cancer is the commonest cause of cancer mortality in Maltese females. The availability of eukaryotic translation initiation factor 4E (eIF4E) is reduced by mammalian target of rapamycin (mTOR) inhibitors e.g. rapamycin and metformin. Expression of 3-hydroxy-3-methylglutaryl-coenzyme A reductase (HMG-CoA reductase), the mevalonate pathway rate limiting enzyme, is regulated by eIF4E. Additionally statins e.g. simvastatin, are HMG-CoA reductase inhibitors.
Aims: Investigating the effect of HMG-CoA inhibitors in breast cancer cells, when used in combination with mTOR inhibitors, as opposed to being used alone.

Methods: Previous results indicate that when Hs 578T, MDA-MB-468 (ER- PR- HER2-), MCF7 (ER+ PR+ HER2-) cells were treated with rapamycin or metformin; sensitisation was reached by MDA-MB-468 and MCF7 with rapamycin. Sensitisation is cell viability decrease, statically maintained through 3 consecutive higher concentrations. Sensitisation concentration (C_s) and time-point (T_s) were determined. Both cell lines were exposed to rapamycin C_s. Following T_s, simvastatin was added as 0, 5, 10, 15, 20, 65, 110, 155, 200μM. After 24 hours an MTT assay was carried out.

Results: For both cell lines C_s and T_s were 35ng/mL and 24 hours respectively. MDA-MB-468 and MCF7 cells did not

reach IC_{50} with simvastatin alone, but when pre-exposed to 35ng/mL rapamycin both attained an IC_{50} at 5.7μM and 134 μM simvastatin respectively.

Conclusion: The results obtained indicate that addition of an mTOR inhibitor decreases the HMG-CoA inhibitor dose required to attain IC_{50}. This depicts that pursuing two different pathways converging on the same target, using the lowest possible drug concentrations, results in an optimum response.

P16.07

DESIRE: an EU FP7 funded project on strategies for innovative research to improve diagnosis, prevention and treatment in children with difficult to treat epilepsy

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Introduction: DESIRE is an FP7 funded project involving 25 partners in 11 countries, with more than 250 researchers and 19 centres involved in the clinical trial. DESIRE will focus on epileptogenic developmental disorders (EDD), i.e. early onset epilepsies whose origin is closely related to developmental brain processes.

Methods: A major cause of EDD is malformations of cortical development (MCD), either macroscopic or subtle. EDD are often manifested as epileptic encephalopathies (EE), i.e. conditions in which epileptic activity itself may contribute to severe cognitive and behavioural impairments. EDD are the most frequent drug-resistant paediatric epilepsies carrying a lifelong perspective of disability and reduced quality of life. Although EDD collectively represent a major medical and socio-economic burden, their molecular diagnosis, pathogenic mechanisms (PM) and rationale treatment are poorly understood.

Results: The work plan is organised in a series of work packages (WPs) which span from clinical observation, to whole exome studies, cellular and animal models and basic research, identification of biomarkers and improvement of diagnostic methods, and back to the clinical trials and assessment of innovative, targeted treatment strategies.

Conclusion: DESIRE will advance the state-of-the-art with respect to the genetic and epigenetic causes of EDD, to elucidate molecular networks and disrupted protein complexes and search for common bases disorders; diagnostic tools (biomarkers) through the study of a unique and well-characterized cohort of children to provide standardized diagnosis for patient stratification and research across Europe and treatment of EDD using randomized, multidisciplinary clinical protocols a to address novel preventative strategies.

Disclosure: This project is funded by the FP7 Research Programme of the European Commission. Call Identifier: F7-health-2013 Innovation-1; Project ID: Health-F2-602531-2013

P16.08

The design of novel structures with an aminopiperazinone, aminoimidazole and aminoquinazoline scaffold capable of inhibiting the β-secretase enzyme for the management of Alzheimer's disease.

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Introduction: Alzheimer's disease (AD) is a progressive neurodegenerative disorder associated with dementia. Amyloid-beta plaques, the formation of which is mediated by β-secretase, are characteristic neuropathological hallmarks that may be associated with disease pathogenesis. This project aimed to utilise the aminopiperazinone, aminoimidazole and aminoquinazoline scaffolds for the *in-silico* design of novel structures capable of its inhibition.

Methods: 3 pdb crystallographic depositions describing the bound coordinates of the *holo*- β-secretase bound to an aminopiperazinone, aminoimidazole and aminoquinazoline molecule (pdbIDS 3u6a, 3igb & 2q11 respectively) were identified and their affinity measured using X-score to create a comparative baseline. 2D topology maps were generated in Poseview and used together with structure activity data from literature to create 2 seed structures from each representative molecular class which were planted into their cognate ligand binding pockets such that novel moieties could be introduced at the pre-designated growing sites using the GROW module of LigBuilderv1.2

Results: 200 novel structures were generated from each seed segregated into families according to structural similarity and ranked by affinity and physicochemical parameters. The affinity of the optimal generated molecules exceeded baseline (p*K*d = 8.87 and 6.8, 9.95 and 8.35, 9.99 and 10.00 *vs* 6.38, 5.98 and 6.76 for both seeds of the aminopiperazinones, aminoimidazoles andaminoquinazolines respectively. Subsequent assessment for compliance with Clark's rules yielded 176, 58 and 15 moleculesfrom the aminoimidazole, aminopiperazinone and aminoquinazoline seeds respectively.

Conclusion: *In silico* calculated high affinity and predisposition for cerebral penetration makes a case for synthesis of the optimal generated molecules and further *in vitro* validation.

P16.09

Drug design at the beta- secretase enzyme for the identification of novel structures for the treatment of alzheimer's disease

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Introduction: Alzheimer's disease affects cognitive function through formation of ß- secretase mediated extracellular cerebral protein plaques and intracellular neurofibrillary tangles. This implies that ß- secretase is a key mediator of this condition, and its antagonism could effectively mitigate disease progression. This project uses three experimental molecules GRL-8234, AZD3839 and an indole acyl guanidine as leads in the *in silico de novo* design of novel antagonist molecules.

Methods: Protein databank (PDB) depositions describing the bound coordinates of the three lead structures complexed with ß- secretase were identified (PDB ID- 2VKM, 4B05, 4IVS respectively). The affinity of each small molecule for its cognate receptor was calculated in X-Score for baseline affinity establishment. 2D topology maps explaining the important interactions between resident ligand and receptor were generated in each case using Pose view and non-critical moieties computationally removed in the process of creating seed structures (*n*=3,2,3 respectively) on to which novel moieties were computationally introduced using the GROW module of LigBuilder.

Results: A total of 60 novel structures were generated and were classified according to lead molecule provenance, pharmacophoric structure, ligand binding affinity, and Lipinski rule compliance. Special attention was given to log P, which was skewed in the direction of increased lipophilicty, given that blood brain barrier (BBB) penetration was a prerequisite.

Conclusion: The highest ranking molecules from each pharmacophoric family were singled out for optimisation and *in vitro* validation. This study is valuable in identifying molecules of high ß- secretase affinity with computed physicochemical parameters that predict oral bioavailability and BBB penetration.

P16.10

Design of novel A_{2A} adenosine receptor antagonists for the treatment of Parkinson›s disease

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Introduction: Parkinson's Disease (PD), a chronic neurodegenerative condition, arises from progressive damage of intra-cerebral dopaminergic neurons resulting in decreased dopamine concentration and generalised muscle contractions. Management of PD includes restoring dopamine levels to compensate for the loss of intra-cerebral dopamine input. Research focuses into the design of non-dopaminergic agents specifically at the A_{2A} adenosine receptors found abundantly in the basal ganglia co-localised with the D_2 receptor. A_{2A} adenosine receptor inhibition enhances D_2 receptor signalling, increasing dopamine levels and causing motor symptoms to subside. This study consequently aimed to design and optimize *in silico*, novel molecules capable of antagonising the A_{2A} adenosine receptor using the investigational antagonist SCH412348 as lead molecule.

Methods: Protein Databank crystallographic deposition 3EML describing the bound co-ordinates of the human A_{2A} adenosine receptor bound to the experimental drug ZM241385 was used as a template for this study. The affinity of the complex was established; SCH412348 docked into the A_{2A} adenosine receptor ligand binding pocket, and conformational analysis performed such that two SCH412348 conformers with optimal stability and affinity were identified each being used to generate a seed capable of sustaining molecular growth.

Results: This process led to the identification of 24 of structurally diverse high affinity Lipinski rule compliant molecules with a log P that favoured intra-cerebral penetration and that bound to the A_{2A} adenosine receptor in diverse poses.

Conclusion: This study has produced a cohort of 24 molecules that are sufficiently robust for further optimisation and molecular dynamics validation. The optimal structures will be recommended for synthesis and *in vitro* studies.

P16.11

Design of novel anti-prostate cancer drugs which modulate the CYP17A1 receptor using ketoconazole and orteronel as lead molecules

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Introduction: Prostate cancer is one of the most prevalent forms of the disease, causing significant morbidity and mortality. Ketoconazole (anti-fungal) and orteronel (experimental anti-androgen), have been implicated as inhibiting the CYP17A1 enzyme, a mediator in androgen synthesis, and a target for the management of prostate cancer. These molecules were used as leads in the design of novel anti-prostate cancer drugs.

Methods: PDB X-ray crystallographic deposition 3RUK describing the *holo*-CYP17A1: abiraterone complex was modelled in Sybyl-X, and their mutual affinity calculated in X-Score. Ketoconazole & orteronel were docked into the CYP17A1 ligand binding pocket (LBP), and conformational analysis performed in each case. Optimal conformers for each were identified, and, based on structure activity data, and topology maps created in Pose view, 2 and 3 seed structures capable of sustaining novel molecular growth, were designed for ketoconazole and orteronel respectively. Novel growth at these *loci* was sustained by the GROW module of LigBuilder v1.2.

Results: A total of 1000 molecules were generated by LigBuilder v1.2 and grouped into pharmacophorically similar families and ranked by LBP (p*K*d), physicochemical parameter, and Lipinski rule compliance. This yielded 6 and 59 novel molecules deriving from ketoconazole and orteronel respectively.

Conclusion: This study demonstrated from affinity data, that both ketoconazole and orteronel present good scaffolds for molecular growth within the CYP17A1 receptor ligand binding pocket. Further *in silico* studies, molecular dynamics simulations and *in vitro* studies on the molecular cohort obtained from this study could yield novel molecules, capable of CYP17A1 inhibition which would have clinical utility in the management of prostate cancer.

P16.12

The design and optimisation of novel structures capable of modulation of a homology model of the human 1 adrenergic receptor for the management of hypertension

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Introduction: Hypertension is the cause of significant morbidity and mortality. The design of novel high affinity β_1-antagonists could result in dose reduction and more effective management of hypertension. This project aimed to construct a homology model of the human β_1-adrenoceptor and to design, *in silico*, novel structures capable of its inhibition.

Methods: Execution of this study was limited by non-availability of crystallographic data describing the human β_1-adrenergic receptor. Protein databank crystallographic deposition 2YCW describing the bound coordinates of the turkey β_1-adrenergic receptor: carazolol complex was used as a template for the construction of a homology model using UCSF Chimera. Carazolol was docked into the homology model ligand binding pocket, conformational analysis performed and the optimal conformation identified. Seed structures, capable of sustaining molecular growth were modelled and planted inside the mapped LBP in an orientation identical to that of the best conformer *de novo* growth was then allowed using LigBuilder.

Results: The homology model with the lowest Root Mean Squared Deviation (5.673Å) was selected from five proposed models. 19 carazolol conformers were generated and the one with the highest affinity (p*K*d: 5.9) and lowest energy (414.1 kcal/mol) was the selected scaffold for seed structure creation. Of the four seed structures modelled, 798 structures were generated, 69 of which were Lipinski rule compliant.

Conclusion: This study was successful in generating a homology model for the human β_1-adrenergic receptor in whose ligand binding pocket novel molecular growth was sustained. The highest affinity Lipinski rule compliant structures are proposed for optimisation and *in vitro* validation.

P16.13

Drug design at the angiotensin converting enzyme using rubiatriol as lead molecule

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Introduction: Angiotensin Converting Enzyme (ACE), a key enzyme in Renin Angiotensin System for production of angiotensin II and a mediator for hypertension, is a target for cardiovascular disease management. Arisawa *et al.* claim that the naturally occurring triterpene Rubiatriol, has ACE-inhibitory activity. This study aimed to, using Rubiatriol as lead molecule, validate this hypothesis using *in silico* techniques and to design novel high affinity structures for the ACE using *de novo* methods.

Methods: Protein Databank crystallographic deposition 2C6N describing the ACE: Lisinopril complex was selected as a template. Binding affinity of Lisinopril for the ACE was calculated using X-Score. Rubiatriol was docked into the ACE Ligand

Binding Pocket (LBP), and conformational analysis performed. Structure activity relationship data and 2D topology maps generated in Pose view highlighting the interactions of the optimal conformer with the LBP amino acids, guided the creation of five seed structures onto which novel growth was sustained within the ACE ligand binding pocket using the GROW module of LigBuilderv1.2. The generated molecular cohort was assessed for Lipinski rule compliance.

Results: The Lipinski rule compliant molecular cohort was, for each seed, segregated into families of similar pharmacophoric structure, and ranked according to binding affinity and physicochemical parameter. The highest ranking molecules were identified for optimisation and *in vitro* validation.

Conclusion: This study is valuable for validation of the hypothesis of Arisawa *et al.* using *in silico* methods, and for suggesting that the rubiatriol scaffold was a suitable lead for the generation of ACE modulating molecules with a binding affinity superior to that of Lisinopril.

P16.14

Drug design in order to modulate the PDE4B receptor

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Introduction: Cyclic nucleotide phosphodiesterase 4B (PDE4B) isozymes catalyse the hydrolysis of cyclic AMP to 5' AMP. Inhibition of the receptor preserves intracellular cAMP resulting in the suppression of TNF-α and other pro inflammatory cytokines whilst promoting the expression of anti-inflammatory mediators. *In vitro* evidence from workers at the Jagellonian University in Poland was indicative of the fact that an analog series of xanthine derivatives were antagonists of this receptor. This study sought to validate this theory computationally and to use their respective scaffolds as templates in order to model analog structures capable of superior antagonism at the target.

Methods: Protein databank crystallographic deposition 4MYQ describing the *holo*-PDE4b: antagonist A-33 complex was used as a template. The small molecule was separated from the complex and baseline binding affinity determined. Each xanthine analog was successively docked into the PDE4b ligand binding pocket, conformational analysis performed and the optimal scaffold determined for each. The two overall best scaffolds were selected for construction of a seed structure, with seed modelling being based on 2D topology maps generated in Pose view. *De novo* growth was subsequently sustained using LigBuilderv1.2 and the generated structures evaluated for Lipinski rule compliance.

Results: 1 and 42 novel structures deriving from seeds 1 and 2 respectively were Lipinski rule compliant. Their affinities (p*K*d) ranged between 5.27 and 6.96 *vs* 7.55 for A-33.

Conclusion: The xanthine scaffold is suitable for the design of PDE4b modulators. The designed molecules were computationally locked into an antagonist conformation. The optimal structures require further computational validation, synthesis and *in vitro* testing.

P16.15

Drug design at the sphingosine-1-phosphate receptor for the management of multiple sclerosis

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Introduction: Multiple Sclerosis (MS) is a chronic autoimmune, progressive disorder affecting the central nervous system through inflammation, demyelination and neurodegeneration. Sphingosine-1-phosphate receptor (S1PR1) modulators have been approved for the management of MS. Phosphorylated fingolimod mimics endogenous sphingosine-1-phosphate (S1P), a bioactive lipid that regulates remyelination. Fingolimod was used in this study as a lead molecule for the *in silico* design of novel S1PR1 modulators.

Methods: Protein Data Bank crystallographic deposition 3V2Y describing the *holo*-selective antagonist mimic {(3R)-3-amino-4-[(3-hexylphenyl) amino]-4-oxobutyl} phosphonic acid (ML5), bound to S1PR1 was selected as a template. Molecular modelling was carried out in Sybyl-X®. The apo-S1PR1 Ligand Binding pocket delineated the 3D-space within which novel molecular growth could be sustained. Structure activity data and 2D topology maps generated in PoseView guided the creation of seed structures onto which novel moieties could be computationally introduced at loci considered non-critical for binding onto the scaffold of a fingolimod conformer identified as optimal through conformational analysis. Four such seed structures were generated.

Results: A total of 630 molecules (*n*=30, 200, 200 and 200 for seeds 1 to 4 respectively) were generated and classified according to physicochemical parameter, structural similarity and binding affinity. Assessment for Lipinski rule compliance further reduced the cohort size to 125 (*n*=3, 9, 2 and 111 for seeds 1 to 4 respectively).

Conclusion: The optimal structures from each pharmacophoric class are suggested for optimisation, synthesis and *in vitro* validation to assess potential clinical efficacy.

P16.16

Estimation of chiral pharmacokinetics of fluoxetine from urine samples

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Introduction: Fluoxetine is aracaemic mixture of (R)-fluoxetine and (S)-fluoxetine enantiomers. Population pharmacokinetics is the study of the sources and correlates of variability in drug concentrations among individuals who are the target patient population receiving clinically relevant doses of the drug.

Methods: The chiral pharmacokinetics of fluoxetine and nor fluoxetine were investigated utilising a validated methodology for the extraction and chiral separation of the enantiomers of fluoxetine and nor fluoxetine, in urine and plasma with GC-MS. A total of 10 urine and saliva samples from 10 unrelated patients were employed in the studies.

Results: A two-compartment model was found to be adequate to describe the saliva concentration-time profile of nor fluoxetine. Mean half-life of (S)-fluoxetine in the patients was found to be 97.47±0.14h (mean±SD), while the mean half-life of (R)-fluoxetine in the patients was equal to 97.52±0.34h (mean±SD).

Conclusion: These values agree with previously published data for the racemic drug. This analytical methodology thus enables the determination of the enantiomers of fluoxetine in biological samples, following the administration of the racemic drug, alone or in combination with other medications.

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P16.17

A validated HPLC method for lamotrigine analysis in plasma samples

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Introduction: Lamotrigine is one of the new AEDs which widely used as mono or poly-therapy in treatment of epilepsy in Maltese paediatric population. Monitoring of LTG levels in biological fluids is a valuable aid to adjust the administered dose,

monitor pharmacokinetic interactions and assess patient compliance.

Methods: The chromatographic analysis of spiked plasma samples was carried out on a reversed phase Waters Symmetry® C18 column (250mm x 4.6mm; 5.0µm particle size), using water, methanol, acetonitrile, and trimethylamine (68.7:25:6:0.3, v/v/v/v) as mobile phase. The wavelength detection was set at 237nm.

Results: Validation of the method was carried out in regard of selectivity, linearity, precision, accuracy, limit of detection and quantification, and recovery. At 30□ C and flow rate of 0.8ml/min, the peak for lamotrigine was symmetrical in shape with a retention time 20.358min. Lamotrigine analog [2,4-Diamino-6-(4-methoxyphenyl)-1,3,5-triazine] was found to be best internal standard with good resolution and no interference with endogenous matrix.

Conclusion: This analytical method will be used to analyse patient samples for the development of a pharmacokinetic model for lamotrigine. The model will include the influence of covariates such as drug plasma concentrations, age, weight, cytochrome 450 (CYPs) genotypes and co-administered AEDs.

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P16.18

SPAN: EU lifelong learning funded project on science for prevention academic network

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Introduction: The Science for Prevention Academic Network (SPAN) has been awarded a large grant to support the establishment of a network of prevention scientists and educators across Europe. The project will develop and share best practice in the prevention science education training and workforce and support the development of innovative ICT based content for prevention science.

Methods: SPAN will achieve this by bringing together experts from 32 European institutions across 25 countries to map the prevention science sector, improve education and training, build networks and run workshops with researchers, with a particular focus on young researchers.

Results: SPAN has assessed how improve the integration of Prevention Science degree/quality assurance standards, methods and approaches in the European Higher Education Sector in such a way that improves the quality and increases the volume of staff and student mobility across Europe. it is also implementing the sharing of best practice and facilitating the development of innovative practices in Prevention Science education and training.

Conclusion: The project is presently developing a quality plan designed to improve the integration of prevention science in higher education across Europe and will provide recommendations on how best to align prevention science with the European Credit Transfer and Accumulation System (ECTS) and encouraging institutions to develop their internal quality assurance procedures, create credit allocations for their programmes, to validate them according to their national and/or institutional rules and to monitor the credit allocations

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P16.19

Tex-OE enhances the oxidative burst response in neutrophils differenciated in vivo with high levels of glucose.

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Introduction: Diabetics exhibit an increased risk of developing infections due to glycosylated albumin, which bind to neutrophils, rendering them defective. Changes develop in the oxidative burst capability which reduces the leukocyte's ability of killing pathogens. Tex-OE is an active extract which has been shown to rapidly increase the production of Heat shock proteins in the presence of stress, thus reducing the neutrophilic defect and providing a protective function.

Methods: Since neutrophils have a developmental life span of 5-8 days, a technique other than HGT or HbA1c testing was developed. Stem cells were collected from fresh cord blood using theHistopaque technique. These were differenciated into neutrophils using Filgrastim; a G-CSF, and subjected to either normal glucose or high glucose levels for 7 days; mimicking the haematologicalenvironment of a poorly controlled diabetic. Neutrophils were then subjected to Tex-OE, and the extent of the neutrophilic oxidative burst, at normal or high glucose levels, was determined using nitro blue tetrazolium reduction (NBT). The above mentioned techniques shall be repeated on fresh blood samples obtained from the Diabetic clinic.

Results: Tex-OE allows a correction of the defective oxidative burst in differentiated neutrophils exposed to glucose during their development. Ongoing work will be presented to show whether selecting neutrophils on the basis of glycated albumin will allow this *in vitro* effect to be replicated in vivo.

Conclusion: Tex-OE should result in a better microbial kill and enhanced immune response. Whether this can also be shown to be the case in patient derived neutrophils in-vivo remains to be seen.

Disclosure: TEX-OE was extracted from the skin of the prickly pear (*Opuntia ficus indica*) by the Institute of Cellular Pharmacology (ICP) Ltd. The Malta Council for Science and Technology (MCST) was also involved in the funding of this project through the HOTSPOTS project. We would also like to give our special thanks to the Diabetic outpatient staff and diabetic consultants for supplying us with blood samples.

P17.01

Learning the hard way: an analysis of current patterns of radiological errors and discrepancy at Mater Dei Hospital

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Introduction: Error in the interpretation and reporting of radiological examinations has long been recognized and is felt to be unavoidable. Retrospective review of cases where errors have been made and an appreciation of the error and possible causal factors have educational benefit. Furthermore, it may enable modification of reporting behaviour, radiological technique or even departmental practice to reduce the frequency of errors in future studies. There is evidence that error rates are reduced following the establishment of a departmental discrepancy review meeting. Such a meeting is held fortnightly in the local Radiology Department.

Methods: All discrepancies from January 2012 till present will be included in this review; the imaging modality, error type (interpretation; observation; communication; technical errors) and relative frequency will be recorded. The errors themselves as well as teaching points will also be recorded and an attempt will be made to draw out recurrent error patterns and review areas on various modalities in an attempt to better understand

why errors occur and reduce their frequency; selected cases will be used to better illustrate these learning points.

Results: Data collection is currently ongoing; results are not yet available for analysis.

Conclusion: Error will remain an inevitable part of Radiology. However, we hope that this review of local discrepancies may allow us to recognise certain suboptimal areas in our practice and make the necessary changes to reduce error to the minimum possible.

P17.02

An audit of staff knowledge of Royal College of Radiologists current recommendations on the management of mild and severe contrast medium reactions.

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Introduction: To ensure that all staff involved in administering intravenous contrast knows how to manage mild and severe contrast reactions. This is based on the fact that internal guidelines currently do not exist. This audit's aim is thus to help elicit the gaps in knowledge of the staff concerned.

Methods: A questionnaire is distributed via an online survey to: All radiologists, radiographers who work in CT, radiographers who work in MRI, and staff who work in the angiosuite. Once the audit is performed, internal guidelines are drafted to protocol treatment of allergic contrast reactions. Guidelines for patients at risk of contrast reactions including pre-medication should also be drafted. Once these guidelines are in practice a re-audit will be performed.

Results: Preliminary results demonstrate that there are lacunae in the recognition, prevention and management of allergic reactions to contrast.

Conclusion: The preliminary results demonstrate a need to formalise a protocol for the recognition, treatment and prevention (pre-medication) of contrast reactions. Posters will be created with treatment guidelines. These will be readily available in places where contrast administration occurs.

P17.03

Percutaneous varicocele embolization at Mater Dei Hospital: A five-year review.

Lara Sammut, Nathania Bonanno, Adrian Mizzi

Medical Imaging Department

Introduction: To assess the efficacy of percutaneous varicocele embolization over five years.

Methods: Patients who underwent percutaneous varicocele embolization for symptomatic varicoceles or fertility problems between January 2010 and August 2015 were audited retrospectively. All procedures were performed under local anaesthesia. Catheterization was performed via right common femoral vein puncture. Cobra catheter was advanced into the left gonadal vein. Embolisation was performed using platinum coils (average 4 coils of 8mm-10mm diameter). All patients were discharged home on the same day of procedure.

Results: 27 male patients (aged 19-46years; mean age, 31years) were audited. The indication in 63% was pain/discomfort, fertility problems in 33%, whilst in one patient the varicocele was an incidental finding on ultrasound. All, but two, of the unilateral embolisations were technically successful and venography post-embolization showed complete venous occlusion with no passage of contrast through the coils. In the above-mentioned two patients, the procedure was abandoned, as the left testicular vein could not be catheterized. There were no immediate complications. So far, 75% of patients reported complete resolution of symptoms. When the indication was fertility, sperm counts were noted to increase post-embolization. There were 5 patients who experienced a recurrence after an average of 6 months, but only 1 patient had to be re-treated. This patient had re-embolization after 1 week and was successful. No recurrences required surgery.

Conclusion: This audit represents a 93% success rate of unilateral percutaneous retrograde varicocele embolization in our hospital. This minimally-invasive outpatient procedure offers many advantages including a high success rate, low recurrence rate and rapid return to normal activity.

P17.04

Are we imaging low-risk prostate cancer patients unnecessarily?

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Introduction: The combined use of Prostate-Specific Antigen (PSA) and Gleason score in prostate malignancy to assess risk of metastatic disease is an established practice and is important in planning treatment options. Low-risk patients are defined as having a PSA ≤10 and Gleason ≤6. Established evidence-based guidelines discourage staging imaging for patients newly diagnosed with low-risk prostate carcinoma. This audit aims to assess local adherence to the above guidelines, namely whether whole-body bone scintigraphy and staging Computed Tomography (CT) scans are being performed unnecessarily exposing the patient to the risks of radiation and contrast and placing financial burdens on the healthcare system.

Methods: Patients with histologically-proven prostate malignancy diagnosed between June 2014 and June 2015 were included in the audit (n=362). Demographic details, Gleason score and PSA were collected using iSoft ICM software; patients at low-risk for disseminated disease were identified. The frequency of inappropriately performed whole-body bone scintigraphy and staging CT studies was recorded; the frequency of positive findings on the two modalities was also recorded. American College of Radiology Standards: - 0% of patients diagnosed with low-risk prostate cancer should have a staging CT scan - 0% of patients diagnosed with low-risk prostate cancer should have whole-body bone scintigraphy performed, unless the patient complains of bone pain

Results: The audit is ongoing; therefore complete data is not yet available for analysis.

Conclusion: If results show that standards are not currently being met, appropriate measures will be taken to reduce the unnecessary financial and radiation expenses being incurred.

P17.05

Radiographic assessment in patients with haematuria, post-blunt abdominal trauma, at Mater Dei Hospital's Accident & Emergency Department.

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Introduction: The kidneys are the most commonly injured genitourinary organ. Blunt mechanisms of renal injury include motor vehicle collisions, falls, sports injuries, etc. The 2015 Guidelines on Urological Trauma by the European Association of Urology clearly state the indications for radiological investigation. The aim of this audit was to assess the indications for radiological assessments performed so as to rule out any underlying renal trauma, in patients who presented to the A&E De-

partment post-blunt abdominal trauma and were noted to have either gross or microscopic haematuria.

Methods: The Picture Archiving and Communication System (PACS) at Mater Dei Hospital was used to review results of radiological investigations performed in the setting mentioned above, throughout the year of 2014. Data, both positive and negative findings was recorded on a spreadsheet. Results were recorded as percentages, portraying the number of renal traumas which were detected and the number of radiological assessments which were actually indicated.

Results: Results show that the majority of imaging performed, did not reveal any underlying renal trauma & was not actually indicated. No patients with microscopic haematuria were found to have renal trauma of note.

Conclusion: One must not immediately resort to imaging in patients with haematuria post-blunt abdominal trauma, keeping in mind that imaging costs time, money and radiation (when performing CT Scans).

P17.06

A study comparing computed tomography and magnetic resonance imaging in the loco-regional staging of colorectal cancer

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MID

Introduction: MRI is the optimal imaging modality for pre-operative local staging of Colo-Rectal Cancer (CRC). Nevertheless advances in CT, have raised interest in the potential role of CT for this purpose. Our study compares CT and MRI in the local staging of CRC.

Methods: Twenty-two patients who specifically had a 64-slice CT and 1.5T MRI of the rectum for staging of CRC between January 2013 and January 2014 were included retrospectively: 16 male (median age 66years). The radiological parameters assessed include tumor (T) stage, tumor distance from the anal verge, regional lymph node involvement (*N* stage) and Circumferential Resection Margin (CRM) involvement.

Results: In 45% the same tumor stage was reported in both CT and MRI. CT down-staged the tumor in 55% but never upstaged. Tumor distance from the anal verge was equal in CT and MRI in 0.05%. In 77%, tumor distance from the anal verge was less on CT than on MRI and vice versa in 18%. In 59%, N Stage was the same on both CT and MRI. CT under-staged the *N* Stage in 14% whilst upstaged in 27%. In assessing CRM involvement, CT findings were the same as MRI in 68%. In 18%, CT showed involvement of the CRM whilst MR didn't. In the remaining 14%, CT showed no CRM involvement whilst MRI showed involvement.

Conclusion: Results show concordance between CT and MRI in *N* Stage and CRM involvement. CT down-staged the T stage and tumor distance from the anal verge due to reduced contrast resolution of CT when compared to MRI.

P17.07

Outcomes of arterial embolization of renal angiomyolipomas; A 7-year overview

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Introduction: Angiomyolipoma (AML) is a benign renal neoplasm. Indications for intervention are therapeutic or prophylactic. This study was conducted to evaluate the outcomes of AML embolization at our institution.

Methods: This is a retrospective study of all AMLs treated at Mater Dei Hospital over the past 7 years with Selective Arterial Embolization (SAE). Nine patients (2 male; mean age, 47) underwent embolization for 10 AMLs between January 2008 and July 2015. Of these, 5 had tuberous sclerosis with multifocal AMLs and 4 had a solitary sporadic AML. Polyvinyl alcohol particles and micro-coils were the embolic agents of choice. In all technically- successful cases, embolization of the feeder artery and vascular stasis was achieved. The outcomes of embolization were determined over a mean follow-up period of 16.7 months (range, 2-72).

Results: 75% of SAE of renal AMLs were technically successful. Therapeutic embolization was performed in two patients to control acute tumour haemorrhage; prophylactic intervention, in 7, and for 8 lesions with a demonstrable increase in size. All tumours were >4cm at time of intervention. Eight had no immediate complications; one experienced post-embolization syndrome. One had retro-peritoneal haemorrhage with superimposed infection 3 months post-procedure. Repeat embolization was carried out in one case. No recurrence was recorded; all embolized tumours were smaller on follow-up imaging. One patient underwent partial nephrectomy following SAE of a large AML.

Conclusion: Embolization has an emergent therapeutic role in patients with acute retro-peritoneal haemorrhage secondary to AML, and prophylactic in patients with AMLs > 4cm. It can be combined with surgical treatment.

P17.08

ALVARADO, ultrasound and computed tomography for the diagnosis of acute appendicitis in the Emergency Department.

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MDH

Introduction: Appendicitis is one the most common causes of an acute abdomen. The ALVARADO score is a clinical decision rule that uses a 10 point scale to aid diagnostic accuracy. Ultrasound (US) and CT scans are imaging modalities often used to aid in the diagnosis of appendicitis. This audit compared imaging with ALVARADO scores and assessed whether scans were being performed unnecessarily in the Emergency Department (ED).

Methods: ALVARADO scores were calculated for all patients (*n*=310) presenting to the ED over a 3 month span that had either an US or CT scan in view of suspected appendicitis. Scores were also calculated for all patients undergoing an appendectomy during the same time period. Histology results for all appendectomies were obtained.

Results: This audit showed a positive correlation between rising ALVARADO scores and the probability of a histologically positive diagnosis of appendicitis. Of the 90 patients presenting to the ED with ALVARADO scores of <3 and were scanned, only 1 patient (1%) had confirmed appendicitis on histology. Of the 52 patients with ALVARADO scores of 4 who received scans, 5 (10%) had appendicitis. 52 patients with ALVARADO scores >6 underwent appendectomies, 47 (90%) of which had appendicitis on histology. Only 13 of these patients had undergone surgery without any imaging.

Conclusion: The data gathered adds support to literature which recommends that scanning patients with ALVARADO scores of 4-6. It also demonstrated that a large number of scans are being performed in patients with scores of ≤3 and ≥7.

P17.09

An audit of current investigation and management of the incidentally discovered adrenal mass in order to establish local guidelines

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Introduction: Adrenal incidentalomas are adrenal masses, generally 1cm or more in diameter, discovered incidentally. The widespread use of medical imaging has resulted in the frequent discovery of asymptomatic adrenal masses. As such, guidelines are useful to guide appropriate treatment.

Methods: We hereby present a retrospective audit identifying all newly diagnosed adrenal lesions over a 6-month period between January and July 2014. Formal imaging characterisation and hormonal profiling are reviewed for the relevant patient population in order to determine whether appropriate investigation and follow up is performed. It became clear that there were no formal local guidelines regarding the long term management and follow up of adrenal incidentalomas. For this reason we determined to review existing international guidelines in order to compile and build acceptance for local guidelines.

Results: To propose local guidelines for the management of adrenal incidentalomas, published international guidelines published from 2010 to 2014 were reviewed.

Conclusion: Adrenal incidentalomas have become an increasingly common radiological finding. Auditing of local practice and the establishment of locally accepted guidelines has therefore become imperative. We hope our review will increase local awareness and lead to streamlined investigation and treatment of such cases.

P17.10
CT pulmonary angiograms at Gozo General Hospital

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Introduction: Diagnosing and managing Pulmonary Embolism (PE) early is imperative. A guideline exists whereby a work-up for suspected PE can be carried out. Our aim was to identify all CTPAs done at Gozo General Hospital (GGH) and assess whether the Two-Level PE Wells score for suspected PE was followed.

Methods: All CTPAs done at GGH, 85 in total, were included. In cases where no PE was present, presence of other pathology was noted. Clinical details were collected from online request forms, discharge letters and patients' clinical notes. For each patient, available D-dimer result was noted. Patients were then divided into high and low risk groups according to the mentioned score. The number of high risk patients in whom an unnecessary D-dimer level was taken was recorded as well as low risk patients with a low D-dimer level (0.5 ug/ml or less) and thus with an unnecessary CTPA.

Results: Of all CTPAs, 12 were PE positive giving a 14.12% positive result. Of the negative cases, 37 (43.53%) had an alternative diagnosis. Patients were categorised into high (61%) and low risk (39%) groups. In the high risk group (Wells score >4) D-dimer was requested in 74.19%. In the low risk group, 21.16% had low D-dimer while in 13.46% no D-dimer was requested; all low-risk cases with low D-dimer level had negative CTPA.

Conclusion: More adherence to the mentioned Wells score when doing a workup for suspected PE is needed. This reduces unnecessary CTPA's and D-dimer testing.

P17.11
Achieving the anatomical image criteria for PA chest radiography

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Introduction: The chest radiograph remains the most frequently requested radiological investigation. It is essential to specify the anatomical structures that should be visible on the chest radiograph to ensure an accurate diagnosis. In our local practice, we have identified this area as one that should be subject to audit process.

Methods: One hundred and fifty posteroanterior erect chest radiographs performed in Primary Health Centres and at the Medical Imaging Department at Mater Dei Hospital over five consecutive weekdays during June 2015, were retrospectively evaluated. The criteria used were obtained from guidelines published by the American College of Radiology and the European Commission.

Results: The 150 radiographs reviewed were of 62 females and 88 males. The age range varied from 5 to 89 years, with a median age of 56 years. Compliance rates exceeded 95% in 3 criteria. 82% of radiographs were obtained at full inspiration. Patient rotation was observed in 37% of cases. The medial borders of the scapulae were projected outside the lungs in only 43% of radiographs. Lung apices were visualized in all radiographs. The costodiaphragmatic recesses were not always depicted. The vertebral bodies were seen in approximately 81% of cases.

Conclusion: Thoracic symmetry and projection of the scapulae outside of the lungs were the criteria least satisfied. A departmental presentation to address the criteria not being fully achieved has been held and changes have been implemented. The results for the second round radiographs will be presented and compared to the first round results at the Malta Medical School Conference.

P17.12
Lateral chest x-ray use

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Introduction: A lateral Chest X-Ray (CXR) delivers more than twice the dose of ionising radiation than a PA CXR. Very often lateral CXRs add little clinical value to the diagnosis obtained on the PA CXR. Traditional indications for a lateral CXR have largely been surpassed by Computed Tomography (CT) of the chest.

Methods: All lateral CXRs taken in government hospital and health centres over a two-week period were collected using Picture Archiving and Communication System. Clinical details provided, referring department and official diagnosis on the report of each radiograph were noted. The images were then reviewed independently by a consultant radiologist to assess whether the lateral CXR was indicated and whether it had provided useful information to facilitate the diagnosis.

Results: Clinical indications on requests varied from assessment of resolution of pneumonia to assessment of a lung lesion prior to biopsy. In most cases a CT scan was carried out a few days later to reach a diagnosis. Review of previous imaging would have been sufficient in the rest. Almost half of the CXR taken were taken in view of chest trauma. More than half of oblique/rib views were taken in spite of a lack of online request by requesting physician.

Conclusion: None of the lateral CXRs taken were indicated or contributed to the diagnosis. Lateral CXRs should only be performed when requested specifically by the radiologist. Education of staff on requesting lateral CXRs and radiation exposure associated with these views will aid in decreasing the amount of inappropriate requests.

P17.13
Skull x-rays for head injury: an audit of local practice

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Introduction: Skull X-Ray (SXR) is not indicated in head injury. In January 2014, the National Institute of Health and Clinical Excellence (NICE) updated clinical guideline 176. This guideline advises that SXRs should not be used to diagnose brain injury. With availability of Computed Tomography (CT) scanning, the SXR can almost never be justified in the assessment of head injury. However, it is an important part of a skeletal survey in suspected Non-Accidental Injury (NAI). The absence of a fracture on SXR can be falsely reassuring, and SXR

is suboptimal in revealing a basal skull fracture. This audit aims to look at our local situation – to assess whether SXRs are being performed for head injury.

Methods: Patients who had a skull radiograph as a first investigation for head injury between January 2012 and December 2013 were included retrospectively in this audit. Radiograph findings were categorized into normal or abnormal, and any subsequent work-up with CT, if present, was noted.

Results: 384 patients (mean age, 46; range 3months-90years) were audited. 32.8% of SXRs were requested from Accident & Emergency (A&E) Department at Mater Dei Hospital; 44.8% from A&E Department, Gozo General Hospital; 18.8% from Health Centres; 3.6% were requested on an in-/outpatient basis. 370 patients (96.4%) had a normal skull radiograph; 20 of these went on to having a CT brain. No SXRs were performed in the setting of NAI.

Conclusion: This audit illustrates that guidelines are not being closely adhered to, and a large proportion of unwarranted SXRs are being requested at our institution.

P17.14

Venous thromboemobolism and screening for occult cancer - a retrospective study of current local practice

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Introduction: Unprovoked Venous Thrombo Embolism (VTE) may be the first indicator of occult cancer. Current literature notes that up to 10% of patients with unprovoked VTE will be diagnosed with cancer in the following year.

Methods: The reports of 514 computed tomography pulmonary angiograms (CTPA), 1123 lower limb Doppler ultrasound scans and 179 lung perfusion scans were reviewed to determine the number of VTE events. Available clinical details of these cases were then reviewed to assess whether VTE was truly unprovoked. The extent to which patients with VTE are investigated for occult cancer with Computed Tomography (CT) or ultrasound of the abdomen at Mater Dei Hospital was established and the number of patients diagnosed with occult malignancy recorded. Information was gathered from Radiology Information System, Picture Archiving and Communication System, Electronic Case Summaries and patient notes.

Results: Out of 1816 investigations, 217 were positive for VTE. In 3 of these cases, malignancy was concomitantly detected on CTPA. Fifty-two out of the remaining positive 214 VTE cases were unprovoked and almost two thirds of these were investigated further for occult malignancy. Occult malignancy was identified in 9% of unprovoked VTE cases.

Conclusion: A significant number of patients at MDH are subjected to further investigations to detect occult abdominal or pelvic malignancy. Malignancy detection rates are similar to those quoted in a recent large randomised controlled clinical trial. The results of this study will be used to formulate local guidelines for screening for occult cancer with abdominal imaging in patients with unprovoked VTE.

P17.15

Accuracy of arterial duplex ultrasound scanning in the assessment of peripheral arterial disease

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Introduction: Angiography is the gold standard for assessment of Peripheral Arterial Disease (PAD) however its invasive nature and potential to cause nephrotoxicity make it less than ideal as a diagnostic tool. Arterial Duplex Scans (ADS) are a safer and cheaper assessment tool which can provide the necessary information to guide interventional management. Aim: To assess accuracy of arterial scans performed at the Vascular Laboratory (VL) at Mater Dei Hospital (MDH)

Methods: Analysis of ADS and subsequent angioplasties carried out at MDH since the official opening of the VL in January 2015 is carried out. Site and degree of stenoses described on reports from the VL are compared with findings on Digital Subtraction Angiography (DSA) carried out during the subsequent intervention.

Results: A total of 17 legs were analysed over the first 3 months. Patient distribution was balanced (53% female, 47% male) with an average age of 74 years. The average time from ADS to intervention was 26.2 days with 53% of patients having an intervention within 12 days of ADS. 88% of scans were carried out for native vessels. Image analysis revealed 94% concordance between ADS and DSA in the femoropopliteal segment but only 66% concordance in the infrapopliteal segment.

Conclusion: Findings are in keeping with those found in literature review which shows that ADS are a safe, cheap and reliable method of assessing PAD with good diagnostic agreement with findings on DSA, especially in the above popliteal region.

P17.16

Audit of appropriateness and outcome of CT and MR brain scanning for headaches at a regional general hospital

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Introduction: Headache is a common disorder with numerous potential causes. The relative rarity of secondary headaches, compared with the large number of patients with primary headache, brings into question the value of routine neuroimaging studies, either CT or MR to exclude underlying causes of headache. The aim of this audit is to assess the appropriateness and outcomes of CT and MR brain scanning for headaches at a regional general hospital. The American College of Radiology Appropriateness Criteria (ACRAC) for headaches was selected as the standard for this audit.

Methods: This audit involved a retrospective review of radiological requests and reports from the local Radiology Information System (RIS) for all CT and MRI brain scans performed for patients with a clinical history of headache at Mater Dei Hospital, Malta from the January to June 2015. The headache variants were allocated an AR according to the ACRAC-assigned values for patients presenting with headache. Cases were further divided into 'normal', and 'positive' findings (i.e. intracranial or extracranial lesions). The distribution of normal versus positive findings among groups with different AR values will be reviewed.

Results: Results are still ongoing. However, thus far suggest that up to 10% of CT and MR brain scans for headaches may have been inappropriate. The yield of positive findings was highest in those with a history of trauma.

Conclusion: This audit suggests that a significant proportion of CT and MR brain scanning for headaches is inappropriate, and the development of a local guideline for imaging referral is indicated.

P17.17

CT colonography - a patient satisfaction survey

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Introduction: CT Colonography (CTC) is a radiological examination of the large bowel which is safe and involves minimal bowel preparation. This service was introduced locally in July 2014 and has been performed at Gozo General Hospital since then. The service is now well-established and over 500 examinations have been performed thus far. The aim of this survey was to prospectively assess patient satisfaction with the service offered and identify areas needing improvement.

Methods: The service was audited using a written questionnaire that was distributed to the patients immediately after the procedure. Participation was voluntary and anonymous. Patients were asked eight questions including: whether they were given sufficient information about the examination, how they preferred to receive the information, any side effects encountered with the bowel preparation and how they rated the discomfort of the examination.

Results: 70 out of the 100 distributed questionnaires were returned. 95% of patients felt they were given enough information about the examination. 49% of patients preferred to receive the information verbally. 83% did not have any undesirable side effects from the bowel preparation prescribed. 91% found the diet instructions easy to follow. Most of the patients found the exam only mildly uncomfortable. The majority of patients praised the excellent service received by the radiographers in Gozo and found them very helpful.

Conclusion: The majority of patients are satisfied with the CTC service. A number of useful suggestions were also made and where possible these will be implemented to continue improving this service.

P17.18

An evaluation of the CT enterography service in Malta

Stefan Zammit, Kristian Micallef

Introduction: CT enterography is a very useful tool for the assessment of small bowel pathology and is often regarded as a first line modality in the evaluation of suspected inflammatory small bowel disease. We therefore aim to assess the service provided in Malta. A cohort of 88 patients undergoing CT enterography from November 2013 through to April 2014 was recruited. We aimed to identify whether we have appropriate age cut-off point for MR *vs* CT enterography and assess the effective radiation doses for this examination, the indications and referrers.

Conclusion: With an average local range of 10.7mSv - 14.3mSv, the results fall well below the internationally quoted 15mSv per CT enterography assessment. Currently only patients below 16years are offered MR instead of CT enterography. 4 patients from a total of 88 were younger than 20 years. In view of such a small number of patients below the age of 20 requiring CT enterography it would be commendable and feasible to increase the age cut off to perform a MR enterography to 20 years.

P17.19

An MRI care pathway for Malta

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Introduction: Healthcare systems should compete at the right level to create value in terms of improved service quality by developing expertise, reducing errors, increasing efficiency and improve outcomes. Service quality is contingent on the design of the care pathway through which the service and the value within it are experienced by the patient. A clinical pathway defines the optimal care process, sequencing and timing of interventions by health care professionals for a particular diagnosis or procedure. The purpose of this study was to develop further a model of MR Care Pathway appropriate for a regional healthcare system.

Methods: A nominal group technique was conducted amongst a panel of 13 MRI experts to gather qualitative and quantitative data about the MR Care Pathway, and the outcomes required to evaluate the process using established quality criteria.

Results: The outputs and associated quality criteria required at each stage of the pathway were discussed. The data indicate that participants attached the highest importance (>70) by means of ranking to setting a safety checklist at referrer stage, MR education to referrer, benchmarking and defining quality. The experts were also of the view that the current model should include the provision of adequate patient information prior to MRI and the establishment of referral guidelines and transparent prioritisation guidelines.

Conclusion: A model of a MR Care Pathway has been successfully refined using a multi-stakeholder approach. This is the first published medical imaging care pathway developed in Malta using a formal research process.

P17.20

Qualification and certification frameworks for MRI radiographers in the major English speaking countries

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Introduction: In response to the rapid expansion in MRI technology, it is essential that MRI radiographers acquire the specific competences necessary for the effective, safe and economical use of MRI devices and that these competences be assessed, corresponding qualifications established and fitness for practice certified. A comparative survey of MRI qualification and certification frameworks for MRI radiographers was carried out with the aim of identifying elements of good practice which could be utilized in the development of national qualification and certification frameworks.

Methods: Documentary analysis of the English language literature and websites of professional bodies and data from a web based questionnaire amongst MRI radiographers.

Results: The initial results indicated that the English speaking countries (UK, US, NZ, AU and CA) are the most advanced in MRI qualification and certification framework. The documentary evidence supported by survey results indicate that NZ and CA have a mandatory MRI qualification and certification that is accredited and based on a national competence profile. US have two registration pathways. UK and AU an MRI qualification and registration is desirable but not mandatory.

Conclusion: It is being recommended that MRI courses to be based on a competence profile based on the novice-expert continuum and referenced to an international qualification framework. Professional regulatory body should establish a specialist register based on mandatory qualification, and certification process. Regulatory body establishes a list of accredited schools and universities offering PG qualifications in MRI.

P17.21

Carotid ultrasound doppler imaging at Mater Dei Hospital

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Introduction: Significant carotid stenosis, defined as >70% by the North American Symptomatic Carotid Endarterectomy Trials (NASCET), carries serious prognostic implications and may incur surgical intervention. Carotid Ultrasound Doppler (CUD) imaging should be requested when relevant in view of the patient's clinical presentation - namely onset of occlusive disease related to the territories supplied by the internal cerebral artery (ICA). The 2011 Society for Vascular Surgery guidelines recommend that surgical intervention is performed

within 2 weeks in symptomatic patients with significant stenosis, highlighting the importance of early investigation. Our aim was to determine the common reasons for CUD requests, as well as the average waiting time between symptom onset, investigation and surgery if appropriate.

Methods: All the CUD procedures performed over an 8-month period in 2014 were audited.

Results: 73.4% of CUD requests were in relation to potential ICA embolic disease. 26.6% had no clear indication, of which 1.9% were coincidentally found to have significant stenosis. Waiting times between the index event and imaging were less than 6 weeks in 72.1% of cases, and over 6 months in 0.9%. Only 20% of individuals with significant stenosis underwent carotid endarterectomy, two thirds of whom were within 2-4 weeks of the index event. The date of the index event in the other third was not known. Of the remaining 80% with significant stenosis, the decision not to opt for surgery was clearly documented in only one case.

Conclusion: More appropriate and timely referrals for imaging and surgery are indicated. The development of a guideline should be encouraged.

P18.01

The experience of spouses whose children survived cancer

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Introduction: This qualitative study aims to better understand the lived experience of spouses whose children survived cancer.

Methods: The data was obtained through joint in-depth semi-structured interviews with each of the five couples. The emergent themes were analysed through Interpretative Phenomenological Analysis.

Results: The major themes revolved around the resiliency that couples showed in dealing with a myriad of emotions as time stood still. The various coping styles the couples used were also given prominence. These included the support they received from: the extended families, work, religion and spirituality. Additionally, changes in marital intimacy were noted. Some spouses highlighted that their communication increased, while for others it decreased. This was also linked with the time allocation to the couple dyads and the level of conflict the spouses claimed to engage in. Finally, the experience these couples underwent seems to have also marked their parenting style particularly with regards to their child who had cancer.

Conclusion: This study highlighted the importance of providing ongoing support for families experiencing cancer. It is also helpful for professionals working in the field of cancer as it may help them to better understand the families' experiences and to also pay special attention to the couple dyad.

P18.02

T-lymphocytes and natural killer cells in B-Cell chronic lymphocytic leukaemia; what is their role in the disease?

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Introduction: B-cell chronic lymphocytic leukemia (B-CLL) is a lymphoproliferative disorder which manifests in immunodeficiency and infections. Studies show that both the B-cell and the T-cell compartment impact prognosis and disease. Our study quantified the T-lymphocytes and Natural Killer (NK) cells in untreated B-CLL patients and were compared to an age-sex matched healthy control population. Patient's results were then correlated with prognostic indicators (Rai Stage, Lymphocyte Doubling Time (LDT), CD38 and ZAP70).

Methods: Peripheral blood was collected from 25 B-CLL patients and 20 healthy control population. The blood was stained with the following monoclonal antibodies (CD3/CD4/CD8/CD16+56/CD19). The lymphocyte subsets were identified using a 4-colour FACS Calibur flow cytometer (BD Biosciences).

Results: Statistical analysis showed that T-lymphocytes (predominantly CD8+ cytotoxic T-cells) and NK levels were significantly increased in the B-CLL population. A noticeable increased level of NKT cells was also observed suggesting a correlation with a prolonged treatment free survival due to tumour lysing capabilities. Moreover, the T-cell expansion paralleled the tumour clone (CD19+Bcells). Different scenarios were observed in poor risk patients (CD38+ve, ZAP70+ve and elevated Rai Stage) who tend to have both the CD4 and CD8 elevated. The association of CD4 and CD8 with prognostic markers could distinguish a group of patients with an indolent course of disease from patients with a poor clinical outcome.

Conclusion: Evaluating the immune status (T and NK cells) at the time of diagnosis for B-CLL patients could provide an insight into prognostication and treatment response thus providing better patient management.

Disclosure: Faculty of Health Science (University of Malta) Pathology Department (Mater Dei Hospital)

P18.03

Sensitivity and specificity of troponin I in the detection of acute myocardial infarction at the Emergency Department, Mater Dei Hospital

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Introduction: Troponin I exists in three isoforms, the cardiac form being the only one present in the myocardium. This specificity makes it a suitable cardiac marker in the diagnosis of acute myocardial infarction. We here investigated the sensitivity and specificity of the ultra sensitive Troponin I assay in relation to the golden standard electrocardiogram for the local Maltese population in the Accident and Emergency setting.

Methods: Electrocardiograms being performed at the Accident and Emergency Department where screened for ST/non -ST elevation myocardial infarction for a period of 1 year. Utilising the iSoft database, results were extracted for all cases having serial testing of Troponin I. Statistical analysis was performed so as to obtain the sensitivity and specificity of Troponin I.

Results: A total of 922 cases where documented in this study and clustered according to their electrocardiogram and their primary and secondary Troponin I results. The sensitivity and specificity of Troponin I was found to be 91% (95% CI 89.1%-92.8%) and 62% (95% CI 59.1%-65.4%) respectively.

Conclusion: The sensitivity of Troponin I in the detection of acute myocardial infarction is relatively high. The low specificity can be attributable to other conditions that may give rise to elevated Troponin I results. Whilst the electrocardiogram is regarded as the golden standard technique for early diagnosis of ST elevation myocardial infarction, it is of little diagnostic value in non-ST elevation myocardial infarction cases. Serial testing of Troponin I and electrocardiograms is recommended for a definitive diagnosis of acute myocardial infarction.

P18.04

Pre-analytical variables affecting FVIII levels

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Introduction: Factor VIII or the anti-haemophilic is an important constituent of the coagulation cascade and decreased levels lead to the classical Haemophilia A. FVIII is well known for its instability and immediately after blood collection the FVIII activity levels are gradually reduced. Pre-analytical vari-

ables may affect haemostasis assays mainly due to the release and activation of platelet factors. We investigated 4 different pre-analytical variables and their effect on this assay.

Methods: Plasma from healthy donors was utilised for the analysis of Factor VIII and determine whether 4 pre-analytical variables namely (I) delivery via pneumatic tube system versus by hand, (II) immediate versus 24 hours post blood collection processing, (III) single versus a double spin centrifugation and (IV) a refrigerated versus a non refrigerated centrifugation would affect the precision of the assay. Statistical analysis was utilised to determine if such variables would produce a significant impact on FVIII levels.

Results: Only the processing variable produced a statistically significant effect (*p-values* <0.05) on FVIII levels.

Conclusion: The results obtained clearly demonstrate that all requests for FVIII levels should be rapidly processed by the laboratory. It is therefore of outmost importance that when blood is withdrawn, samples are to be immediately sent to the laboratory for further processing.

P18.05

Preanalytical variables affecting free Protein S levels

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Introduction: Protein S acts as a cofactor for activated protein C and therefore decreased levels are associated with an increased risk for thrombotic events. Free protein S is measured locally using an enzyme linked immunosorbent assay which has been described by the College of American Pathologists as having intermediate precision. Pre-analytical variables may affect haemostasis assays mainly due to the release and activation of platelet factors. We here investigated 4 different pre-analytical variables and their effect on this assay.

Methods: Donated plasma from healthy controls was utilised for the analysis of free protein S and determine whether the pre-analytical variables, namely (I) delivery via pneumatic tube system versus by hand, (II) immediate versus 24 hours post blood collection processing, (III) single versus a double spin centrifugation and (IV) refrigerated versus a non refrigerated centrifugation would affect the precision of the assay. Statistical analysis was utilised to determine if such variables would produce a statistical significant impact on free protein S results.

Results: All variables tested produced statistically significant effects (*p-values* <0.05) on free protein S estimation.

Conclusion: The results obtained clearly demonstrate that all requests for free protein S and thrombophilia screens should be delivered by hand directly to the laboratory where they are to be immediately processed. Plasma separation should be performed using the double spin technique in a temperature controlled centrifuge.

P18.06

Establishing the pre-analytical variables for FVII and FXI levels

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Introduction: Factor VII and FXI are two haemostatic factors which when deficient, give rise to Proconvertin deficiency and Rosenthal syndrome respectively. Whilst FXI deficiency is usually asymptomatic, severe FVII deficiency may even lead to intracranial haemorrhages. Haemostasis assays are greatly affected by pre-analytical variables thus giving rise to inaccuracies which may eventually lead to misdiagnosis or erroneous patient management.

Methods: Plasma from 9 healthy donors was utilised for the analysis of Factor VII and FXI levels against a set of pre-analytical variables, namely (I) delivery of plasma using the pneumatic tube system versus by hand,(II) immediate processing versus a 24 hour delay, (III) single versus a double spin centrifugation and (IV) refrigerated versus a non refrigerated centrifugation. Statistical analysis was carried out to determine if such variables would produce a statistical significant impact on the accuracy and precision of these assays.

Results: FVII levels were statistically (*p-values* <0.05) affected by a delay in processing, delivery by pneumatic tube system and also with a single centrifugation, whilst FXI levels where only affected with a single centrifugation.

Conclusion: The results obtained emphasise the need to implement guidelines for the reduction of pre-analytical errors when requests for such assays are necessary. Such guidelines will ensure a higher precision and accuracy of haemostasis assays.

P18.07

Investigating patients with non-haemolytic transfusion reactions for IgA deficiency and Anti-IgA antibodies.

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Introduction: IgA-related transfusion complications form part of non-haemolytic transfusion reactions (NHTRs) where patients with selective IgA deficiency and/or anti-IgA antibodies are most likely to develop life-threatening allergic reactions. Most of these reactions are caused by the interaction of anti-IgA antibodies in an individual with very small quantities of IgA present in the supplied blood product. Those patients who suffer from allergic reactions following transfusion of blood products due to IgA deficiency and/or the presence of anti-IgA antibodies can be identified using new commercialised kits based on the Particle Gel Immuno-Assay (PaGIA) technique; where agglutination in the gel cards is assessed visually using plasma from the affected patient.

Methods: Plasma samples from 27 patients who had experienced an NHTR between January and April 2015 were tested using PaGIA cards to detect the presence of anti-IgA antibodies or the abscence of IgA. The tests were carried out as per manufacturer instructions; they were loaded with the plasma and anti-sera manually and the reactions were also interpreted manually.

Results: The results showed that all 27 patients had sufficient levels of IgA and also lacked anti-IgA antibodies.

Conclusion: This resaerch concludesa that these adverse events were not induced by IgA deficiency or the presence of anti-IgA antibodies. Implementation of the PaGIA technique will help determine if NHTRs are IgA-related, thus providing suitable blood components e.g. washed red cells, only when necessary.

P18.08

Validation of the pneumatic tube system at Mater Dei Hospital for the transport of red cell units

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Introduction: The aim of this study was to validate the Pneumatic Tube System (Sumetzberger, Austria) installed at Mater Dei Hospital for transportation of Red Cell Units (RCUs) from the blood bank to selected hospital wards which would

require blood urgently. The current delivery system involves the physical transportation of RCUs from the blood bank to the ward by trained couriers in validated blood transport boxes.

Methods: Prior to the departure of the RCUs to the ward an aliquot of blood from the blood bag was aseptically drawn to measure the haematocrit and haemoglobin levels to establish the extent of haemolysis. The RCU was then placed into a sealable plastic bag, into a PTS canister and transported to the pre-set destination using the PTS. In each canister a temperature data logger was placed to record the temperature during the journey. After the journey, another aliquot was taken to compare pre- and post-transport haemolysis levels. The haemolysis levels were measured spectrophotometrically. The collective effect of haemolysis, temperature and journey duration on the red cells were used to determine if the PTS is safe to transport RCUs.

Results: The results showed that there was no effect on the red cell integrity during the journey. However, the system was unreliable due to prolonged waiting times prior to the initiation of the journey from the blood bank.

Conclusion: Although the PTS does not affect the integrity of the red cells the system, as it is set, is not reliable for urgent transport.

P18.09

Age but not body mass index affects overall survival in Hodgkin Lymphoma

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Introduction: Literature review indicates that there is an association between risk of developing Hodgkin lymphoma and body mass index (BMI). However, there is sparse data on the association between BMI and survival rate in patients with Hodgkin lymphoma. We investigate the relationship between BMI and survival rate of Hodgkin lymphoma patients at Mater Dei Hospital, Malta.

Methods: Patients with Hodgkin lymphoma treated at Mater Dei Hospital between January 2010 and December 2013 were identified. Data on BMI, performance status, albumin, glomerular filtration rate (eGFR), lactate dehydrogenase (LDH) and stage of Hodgkin lymphoma at diagnosis were retrospectively collected.

Results: Out of a total of 54 patients identified 57% were males. There was no statistical difference across genders in survival rate. Approximately 36.5% of the patients presented with BMI <25 whereas 63.5% presented with BMI >25. There was no statistical difference in survival rate between the two groups. The mean age was 45 years (range 16-82 years) and 33.3% (n=18) were aged >60 years. A significant difference in overall survival was detected between patients >60 years of age and those <60 years of age (p=0.003). Eight (44%) patients aged > 60 years died. There was a positive correlation between age and performance status (p=0.0002) and a negative correlation between age and eGFR (p=0.0001) and albumin levels (p=0.0001) but not with stage, BMI, height, weight or LDH.

Conclusion: We concluded that the younger the patients are at diagnosis, the better the overall survival (OS). However, there is no correlation between BMI and OS for our population.

P18.10

Optimization, validation and comparison of flow cytometric methods for the measurement of ZAP-70 in B-cell chronic lymphocytic leukemia

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Introduction: B-cell Chronic Lymphocytic Leukemia (B-CLL) is a clonal lymphoproliferative disorder which exhibits clinical heterogeneity. A prognostic marker for B-CLL is Zeta-chain-associated protein kinase-70 (ZAP-70) which is an intracellular protein. When expressed in high levels in B-CLL cells, ZAP-70 implicates a poor prognostic outcome. The aim of this study was to introduce ZAP-70 as part of the diagnostic and prognostic services in Malta by establishing a method for the determination of ZAP-70 in B-CLL patients.

Methods: A technically validated method of sample preparation was optimized for use within the Haematology Laboratory, Pathology Department at Mater Dei Hospital. This method was then compared to two other methods of sample preparation to determine the best method to use for ZAP-70 testing. The Percentage Positivity (PP) and the Mean Fluorescent Intensity (MFI) were determined for each sample and the best approach to report ZAP-70 positivity was chosen.

Results: Statistical Analysis showed that our optimized method, cytoplasmic to membrane staining (C&M) discriminates better between ZAP-70 positive and negative populations. Moreover, false positives were reported with the MFI approach and hence, the PP approach was chosen to identify ZAP-70 positivity.

Conclusion: This study established the best method for ZAP-70 testing which is currently in use at the Haematology Laboratory Mater Dei Hospital as part of the B-CLL diagnostic and prognostic panel. ZAP-70 plays an important role in patient management, it helps the Haematologists to distinguish between the aggressive and the indolent B-CLL, with ZAP-70 positive patients being monitored more closely.

Disclosure: Faculty of Health Sciences. Pathology Department, Mater Dei Hospital.

P18.11

Disease-free survival in molecular subtypes of breast cancer in Malta

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Introduction: Breast cancer is the commonest incident tumour in the Maltese islands. The disease is heterogeneous and exhibits diverse clinical prognosis and survival rates. Proper patient classification helps stratify breast cancer groups to ascertain likely prognostic outcome and select treatment. Breast cancer survival has commonly been described in terms of disease-free survival and five-year overall survival. The aim of this study is to determine disease-free survival together with site of metastasis while stratifying clinical outcomes with known prognostic markers and novel genetic markers.

Methods: We randomly selected 100 patients in each year between 2009 and 2011 notified with a primary diagnosis of invasive breast cancer at the Malta Cancer Registry. We collected retrospective data pertaining to patient demographics, tumour type, treatment undertaken and time to relapse with site of metastases. The primary end-point was disease-free survival; defined as the first documented radiological relapse following complete tumour resection. Patient survival data was stratified using multiple prognostic variables.

Results: The average annual incident rate of breast cancer was calculated at 317.4 cases per year between 2009 and 2013. The mean age of presentation is 61.5 years with 46.7% presenting at Stage I, 42.2% at stage II and 11.1% with Stage III disease (p<0.01). 91.3% were estrogen receptor positive and 6.9% HER2 positive. 3-year overall survival was 80.2% and 84% in 2009 and 2010 respectively.

Conclusion: This study helps classify the Maltese breast cancer cohort and determine selective survival by subgroup analysis while helping to identify variables with prognostic clinical relevance to the Maltese population.

P18.12

Cytogenetics of chronic lymphocytic leukaemia in Malta

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Introduction: Chronic lymphocytic leukaemia (CLL) is a haematological malignancy which is commonly found in adults. It is characterized by mature B lymphocytes which accumulate in the blood. CLL has various prognostic indicators which include age, gender, chromosomal abnormalities and haematological parameters. Chromosomal abnormalities seen in CLL include crytpic abnormalities which require the use of molecular cytogenetic methods or molecular genetic methods for detection.

Methods: Blood was collected from 21 untreated patients with CLL who consented to participate in this study. Chromosomal suspensions were prepared using standard methods in the Cytogenetic Laboratory. Fluorescence in situ hybridization (FISH) using probes specific for 17p13.1, 11q22.3, 13q14.3 & CEP 12 *loci* were used. The results obtained by FISH were compared with those obtained using G-banded karyotyping. Furthermore the chromosomal aberrations detected were correlated with the patients' age, gender and haematological parameters.

Results: The most common chromosomal abnormality was deletion (del) 13q14x1 (40%), followed by del 17p13x1 (20%), del 11q22x1 (15%), trisomy 12 (10%) and del 13q14x2 (10%). FISH results obtained proved more robust when correlated with other prognostic indicators. The results were also compared with karyotype results seen in the Cytogenetic Laboratory. Karyotyping identified chromosomal abnormalities, which were not detected by the FISH panel but failed to identify some cryptic chromosomal abnormalities which were seen only by FISH.

Conclusion: In conclusion, both FISH and karyotyping techniques are recommended in patients with CLL in the Maltese medical setting to improve patient management.

P18.13

Sunitinib therapy and cardio-vascular toxicity in the local population: are we doing enough?

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Introduction: Sunitinib is an oral chemotherapy consisting of a multi-target tyrosine kinase inhibitor resulting in inhibition of tumour angiogenesis and proliferation. Amongst its side effect profile are its adverse effects on cardiac function, including grade 3 hypertension (systolic >180mmHg or diastolic >110mmHg), QTc prolongation, left ventricular dysfunction and cardiac failure. Our aim was to audit local practices for cardiovascular monitoring in those patients on Sunitinib therapy.

Methods: The reference protocol adopted was the Royal Surrey Chemotherapy Protocol for Sunitinib. Patients were recruited over a 5-year period from 2010 till 2015. Data was collected from case notes, discharge summaries and transthoracic echocardiogram results. Demographics, clinical indication for Sunitinib, cardiac history and adverse cardiac events while on Sunitinib were noted. The aim was to identify those patients with a positive cardiac history or subsequent cardiac events and correlate this with cardiac imaging.

Results: 113 patients were recruited with a male to female ratio of 2.2 and mean patient age of 64 years. 84% of patients received Sunitinib for metastatic renal cell carcinoma, followed by carcinoid (5%) and gastro-intestinal tumours (5%). 56 patients (49.5%) had a documented cardiac history. Only 17 out of 56 patients (30%) had documented transthoracic echocardiography screening as per Royal Surrey Guidelines.

Conclusion: This audit highlights the need for increased awareness of cardio-toxic potential of Sunitinib and standardisation of national protocols in this regard.

P18.14

Chemicals from the quinolone and colchicine analogues cause differentiation in human acute myeloid leukaemia stem cells.

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Introduction: Acute Myeloid Leukaemia (AML) is the commonest leukaemia of adulthood and carries a dismal prognosis. One subtype of AML known as Acute Promyelocytic leukaemia (APL), was found to respond to All-Trans Retinoic Acid (ATRA) which resulted in an improved prognosis. The aim of the study was to identify a number of chemicals which cause cell differentiation in HL-60 AML cells similar to the effect of ATRA on APL.

Methods: The cells were exposed to 126 different chemicals at a concentration of 1 μM and 10 μM. 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. The effects at day 3 and day 5 post-incubation at 37°C were noted to assess for both monocytic and granulocytic differentiation.

Results: Of the 126 chemicals tested, 30 showed promising results. Cells exposed to these chemicals showed increased differentiation when tested using the NBT/MTT assay and compared to controls. From these 30 chemicals, those from two particular groups (Colchicine Analogues and Quinolones) appeared to be among the most effective chemicals at inducing differentiation in HL-60 AML cells.

Conclusion: Chemicals such as the Quinolones and Colchicine analogues tested during this study appear to lead to the differentiation of HL-60 AML cells. Such chemicals may, in the future, lead to a new group of oncological agents which aim to treat cancer through differentiation of cancer cells.

Disclosure: Chemicals for this study were received from STEMCHEM COST consortium CM110.

P18.15

Low Incidence of venous thromboemolism (VTE) but with high early mortality in patients with diffuse large B cell lymphoma (DLBCL) receiving rituximab based chemotherapy

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Introduction: The incidence of Venous Thromboembolism(VTE) in patients with Diffuse Large Bcell Lymphoma(DLBCL) is 8.9-12.8%[1,2]. We analysed the incidence of VTE in patients with DLBCL at our Level3 HaematologyUnit and considered the effect of VTE on survival.

Methods: The hospital electronic-results systems, patients' notes and local databases were used for data collection of patients with new onset DLBCL or grade3 Follicular Lymphoma presenting between January 2010–December 2014. The vari-

ables studied were VTE (proven radiologically with Ultrasound Doppler, Computed Tomography or Ventilation/Perfusion scans), age, gender, Lactate Dehydrogenase, Stage, WBC, eGFR and Albumin.

Results: We had a total of 140 patients. Mean age, stage and LDH were 62.4 years, 2.8 and 483 respectively. 8 VTEs were recorded (incidence 5.7%). 75% of episodes occurred in females. Median age for patients with VTE was 64.5years whilst mean time was 34days (range 0-95). Mean stage and LDH were 3.5 and 706 and all had bulky disease (maximum diameter>5cm). Median survival for those with VTE was 16.8 months whilst this has not been reached for those without. There was a correlation between survival and age (Pearson r -0.26, *p* 0.0018) and VTE (Spearman r -0.2, *p* 0.02). We found no correlation between age and VTE and no correlation between survival and the other variables.

Conclusion: A relatively low incidence (5.7%) of VTE was found; most occurring early in the disease; the majority within the first cycle of chemotherapy. 75% were females over 60 years. We found a correlation between survival and VTE which seems to be independent from age. VTE is a poor prognostic factor in DLBC.

P18.16

Correlation between different INR tests in patients with stable anti-coagulation control

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Introduction: Warfarin treatment is usually monitored using the international normalized ratio (INR). The INR can be performed using a laboratory analyser or a point-of-care (POC) machine. However, the two ways of measuring the INR may vary in their results. The aim of this study was to compare the accuracy of these different INR tests.

Methods: Consecutive adult patients, attending the Anticoagulation Clinic at Mater Dei Hospital (Malta) during the month of August 2015, were screened. Inclusion criteria were: diagnosis of atrial fibrillation, venous thromboembolism or mechanical aortic valve replacement; ongoing warfarin treatment for at least 3 months; and stable anti-coagulation control (defined as two previous INRs between 1.8 and 3.2). Patients were tested simultaneously for laboratory INR and for capillary and venous INR, using the POC Coagucheck XS Plus.

Results: Thirty patients were enrolled. Mean (SD) age was 70 (±10.9) years; 33.3% were males. Indications to anti-coagulant treatment were: atrial fibrillation (66.7%), venous thromboembolism (26.7%) and aortic valve replacement (6.7%). The duration of anticoagulant treatment was 3-6 months (10%), 6-12 months (10%), and more than 1 year (80%). The current mean (SD) warfarin dose was 4.4 (± 2.3) mg. Median (IQR) laboratory INR was 2.30 (1.94-2.56). The POC capillary and venous INR showed a very strong positive correlation with the laboratory INR (both r = 0.95, $p<0.001$) and more than 90% of results were within 0.5 INR units.

Conclusion: The results of our study confirmed the POC system as a valid alternative to the laboratory INR in patients with stable anticoagulation control.

P18.17

A hairy cause of cytopenias

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Haematology Department

Introduction: Hairy cell leukaemia (HCL) is a mature B-cell lymphoproliferative disorder characterised by the presence, in peripheral blood and bone marrow, of lymphoid cells with 'hairy' cytoplasmic projections. The most common clinical presentations are cytopenias (particularly monocytopenia) and splenomegaly. HCL accounts for 2-3% of all leukaemias. 600 new cases are diagnosed in the United States each year. This is the first ever report on local Maltese data relating to HCL.

Results: A total of 9 patients were diagnosed with HCL in the period between January 2010 and August 2015. This gives an incidence rate in Malta of 1.6 cases per year. Male to female ratio is 8.1 with a median age of 64 years (range 53 - 79). Four patients (44%) had circulating HCs identified by peripheral blood morphology. Seven patients out of the eight that had imaging studies had splenomegaly (87.5%); two patients (25%) had hepatomegaly; two patients (25%) had lymphadenopathy. All patients received cladribine as first-line treatment. One patient did not have a bone marrow aspirate carried out at any stage of management. Two patients have not yet had response assessment. Two out of the six patients in whom response assessment is available, achieved a complete remission (33%); four achieved a partial remission (67%). All patients are alive with a mean follow up of 26.2 months.

Conclusion: HCL is a rare disorder with a good prognosis. The incidence in Malta is similar to that in the US. It needs to be borne in mind in any patient being investigated for cytopenias.

P18.18

Cystic fibrosis mutations and polymorphisms in men at the assisted reproduction clinic at Mater Dei Hospital, Malta

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Introduction: Cystic fibrosis transmembrane receptor (CFTR) mutations and certain intron 8 thymidine polymorphisms, particularly 5T homozygosity or compound heterozygosity with another CFTR mutation, are associated with male subfertility. Congenital absence of the vas deferens causing obstructive azoospermia is typical of these genetic profiles. Other mechanisms may contribute to functional and secretory pathologies.

Methods: The CFTR profile and fertility status of men attending the male urology infertility clinic (MUIC) at Mater Dei Hospital were evaluated. CFTR screening was performed utilising allele specific hybridisation technique for a panel of 57 mutations and 3 poly-T allele (5T/7T/9T) variants. Statistical analysis of these parameters was used to characterise the presenting population.

Results: From 89 eligible individuals, 48 were investigated for subfertility at the MUIC. Fisher's exact test revealed no significant difference in the incidence of mutations and 5T polymorphisms between subfertile and non-subfertile subgroups (p=0.410). 10 of the 48 patients from the subfertile group were azoospermic, one of whom had congenital bilateral absence of the vas deferens, with Phe508delta/Asp110Glu mutations. Comparison of mutation and 5T rates of severely dyspermic groups from the MUIC and from the Sapienza University, Rome cohort n=4/31 and 11/99 respectively, revealed no significant difference between the two populations, Fisher's test p=0.825.

Conclusion: No significant difference was detected in CFTR mutation and 5T allele variant frequency between the individuals investigated for infertility and other men in the assisted reproduction cohort, or between the severely dyspermic group and a similar Italian population. The MUIC was launched in December 2014, and significance may change with increasing numbers.

P18.19

The investigations taken when a low vitamin B12 level is noted.

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Introduction: Vitamin B12 (B12) is important in many of the body's metabolic processes, and its deficiency has many well known causes and complications. A proper work-up is thus essential when investigating a low B12 level. In this audit B12 deficiency was considered to be B12 levels less than 200 pg/mL.

Methods: A retrospective analysis of the investigations performed on all patients found to have B12 deficiency from January 2014 till June 2014 was done using the Isoft Clinical Manager. The number of patients with B12 deficiency who had associated investigations done were noted.

Results: 21,678 B12 levels were taken in total, of which 1,687 (7.78%) had B12 deficiency. In patients with B12 deficiency, the following number of the following investigations were taken: full blood count: 1667 (98.8%) , folate: 1637 (97.0%), ferritin: 1552 (92.0%) , thyroid stimulating hormone: 1559 (92.4%), T4:1563 (92.6%), anti-intrinsic factor: 62 (3.67%), anti-gastric parietal cell antibody: 120 (7.11%), tissue transglutaminase: 519 (30.8%), calcium: 1176 (69.7%), albumin: 834 (49.4%), total protein: 656 (38.8%), vitamin D: 76 (4.50%), iron profile: 511 (30.3%), gastroscopy: 79 (4.70%), colonoscopy: 43 (2.56%).

Conclusion: It was noted that full blood count, folate, ferritin, thyroid stimulating hormone and T4 were most commonly taken, that anti-intrinsic factor, anti-gastric parietal cell antibody, vitamin D, gastroscopy and colonoscopy were rarely taken and that tissue transglutaminase, calcium, albumin, total protein and iron profile were taken at an intermediate level. Using this data a guideline will be created so that B12 deficiency can be adequately investigated.

P18.20

Wrong blood in tube: A retrospective analysis of potential adverse events.

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Introduction: Wrong blood in tube (WBIT) occurs when a blood sample for blood transfusion is collected and labelled with the details of another patient. In European hospitals patient misidentification has been classified as a 'never event'; because of its potential to cause severe adverse events such as transfusion of wrong components. WBIT is usually detected if the patient has a historic blood group available at the blood bank. It is suspected therefore, that more WBIT events are occurring without being detected.

Methods: Between January 2013 and July 2015 a total of 26 WBIT were detected at the Mater Dei Hospital Blood Bank. Each WBIT was investigated by finding out the health care professional who took the blood sample for re-training and fact finding. The Health Care Services Standards would also be notified with the case.

Results: Most cases (80.8%) were detected because of the availability of a historic blood group on the laboratory information system. The other cases (19.2%) were detected at ward level and subsequently the blood bank was informed. Three of the latter cases had the request form and blood sample bottle prewritten, while in the remaining two cases the erroneous patient had the same blood group as the proper patient.

Conclusion: In order to avoid WBIT, positive patient identification must be carried out proactively. It is being recommended that each request incorporating a blood group should be repeated on a second sample and additionally, a detailed root-cause analysis should be carried out.

P19.01

Genetic polymorphisms associated with loss of immunologic self-tolerance in myasthenia gravis

Melanie Grima, Keith Sacco

Introduction: Myasthenia Gravis (MG) is a B cell driven, T cell dependent autoimmune neuromuscular disorder characterised by a relapsing-remitting disease pattern. The presence of polyclonal IgG anti-acetylcholine receptor antibodies (anti-AChR) or anti-muscle specific kinase antibodies suggests that loss of immune self-tolerance is key to the pathogenesis of MG. Auto-reactive AChR specific CD4+ T cells interact with B cells to produce anti-AChR antibodies. It is postulated that regulatory T cells lose their suppressive capabilities due to reduced cellular expression of transcription factor forkhead protein 3 (FOXP3) hence mRNA and protein expression of FOXP3 is reduced, leading to production of pathogenic T helper 17 cells. Increased levels of interleukins 10 and 17 lead to chronic inflammation, contributing to T cell impairment. MG associated thymomas lack functional tolerogenic autoimmune regulators, expression of human leukocyte antigen class II molecules and tolerogenic AChR positive thymic myeloid cells. For this reason, AChR positive myasthenia gravis improves after thymectomy.

Conclusion: Myasthenia gravis may be associated with genetic polymorphisms, microRNAs such as miRNA-146a whose expression may be significantly increased. The TT homozygous genotype of DNMT3B-579 T allele is associated with risk of thymomas, but not to other myasthenic features. FOXP3 IVS9+459 G is protective against myasthenia. Dysregulated FOXP3 may be the cause of failure of self-tolerance. This review sums the key genetic polymorphisms recently described that affect the immunopathogenesis of myasthenia gravis. Further knowledge of such mechanisms can aid in patient classification for prognosis and therapeutic management.

P19.02

A novel system for testing seizure prediction models based on scalp electroencephalogram

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Introduction: Epilepsy is a serious neurological disorder, which renders its victims susceptible to repeatedly occurring seizures. Affecting around 1% of the entire population, it persists as the third most occurring mental disease and while a substantial sub-set of these cases can be treated through medication or respective surgery, around 25% are medically intractable and thus require alternative approaches towards better handling this disorder. This project presents a novel system designed with the overarching goal of facilitating the process of testing various seizure prediction models based on the vast CHB-MIT scalp Electro-Encephalo-Gram (EEG) database.

Methods: The system presents an environment which allows users to inject their own models for testing, with minimal effort, while at the same time providing the flexibility to alter various parameters of the tests, as they deem necessary. As an evaluation of the system proposed, the results obtained from three different seizure prediction models based on Empirical Mode Decomposition (EMD) and Phase Space Representation (PSR) plots for five patients from the CHB-MIT database are presented.

Results: The overall best average sensitivity and specificity obtained across the three models were 52.18% and 78.21% respectively for a two-minute time window prior to a seizure onset. While somewhat disheartening, it is worth noting that the models seemed to perform remarkably better for some patients over others.

Conclusion: The results obtained show reasonable cause for further investigation into the applicability of the models tested in the field of seizure prediction. Such research could be facilitated through the use of the system proposed herein.

P19.03

Episodic ataxia type 1: typical and atypical clinical phenotype associated with mutations in Kv1.1 K channel

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Introduction: Episodic ataxia type 1 (EA1) is an autosomal dominant K^+ channelopathy characterized by constant myokymia, episodes of spastic contractions of the skeletal muscles and epilepsy. To date ***KCNA1*** is the only gene known to be associated with EA1, which encodes for the ***voltage-gated*** K^+ channel Kv1.1.

Methods: Medical history, neurophysiological investigations and genetic analysis of patients were performed. To examine the structural and functional consequence of the mutation on Kv1.1 channels, homology models were constructed, mutant and wild-type ***KCNA1*** cDNAs were cloned and, the heterologous expression of channels was performed by means of mRNA microinjections into Xenopus ***laevis*** oocytes. Whole-cell and single-channel K^+ **currents were measured using the two-electrode voltage-clamp and patch-clamp techniques.**

Results: In this presentation, we summarise the main breakthrough findings in the pathogenesis and therapeutics of EA1. Furthermore, we report several new cases characterized typical and strikingly atypical phenotypes. The functional studies showed that the new heterozygous point mutations identified in the ***KCNA1*** gene impair Kv1.1 channel function with variable effects on channel assembly, trafficking and biophysics.

Conclusion: Loss-of-function mutations in ***KCNA1*** may result in high variable and unexpected neurological deficits.

P19.04

X-linked Charcot Marie-tooth due to a c.475G>A mutation in the GJB1 gene in the Maltese population

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Introduction: X-linked Charcot Marie-Tooth (CMTX) is the second commonest type of hereditary motor and sensory neuropathy after CMT1A, occurring in approximately 10% of cases of Charcot Marie Tooth syndrome. CMTX1 - the commonest subtype of CMTX - is caused by mutations in the ***GJB1*** gene.

Methods: Patients with hereditary peripheral neuropathy attending the genetic clinic were asked to participate in the study. Clinical, electrophysiological, pedigree analysis and mutational data was collected on all. We identified 7 individuals from four families segregating the same mutation, a c.475G>A change in exon 2 of the ***GJB1*** gene. The c.475G>A mutation has been reported previously in one patient and segregation studies were lacking. To determine whether the c.475G>A mutation is a polymorphism among the Maltese population, we analysed 400 random samples of cord blood from the Malta Biobank for the presence of the mutation.

Results: The c.475G>A mutation in the ***GJB1*** gene was segregated in all affected members of the 4 families; both male and female family members carrying the mutation had symptoms and signs of polyneuropathy. The mutation was not identified in 400 random cord blood samples, confirming that it is not a polymorphism. The clinical and neurophysiological phenotype of the individuals with CMTX will be presented.

Conclusion: CMTX seems to be a common cause of inherited peripheral neuropathy in Malta. The presence of the c.475G>A mutation in the ***GJB1*** gene in all families might indicate a founder effect.

Disclosure: Research Grant, University of Malta

P19.05

Functional electrophysiological assessment from optic nerve and callosal slice in mice to study ischemic injury

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Introduction: White matter injury is increasingly recognised as an essential contributor to brain injury in stroke. Sequential compound action potential (CAP) recordings across axonal fibres is a key technique for functional assessment, and an invaluable tool to test for promising therapeutic drugs White matter tracts frequently used in basic experimental research are the optic nerve and the corpus callosum. The aim of this study was to establish an ***in vivo*** protocol for these preparations.

Methods: We directly compared the effects of ischemia on nerve conduction using the adult optic nerve (a completely myelinated white matter tract) and the adult neocortical slice (consisting of approximately 70% unmyelinated axons), employing the same perfusion chamber, flow rate, artificial CSF composition, and gas mixture. CAP was recorded in vivo using suction electrodes and bipolar electrodes respectively. CAP failure and the extent in recovery following ischemia was subsequently tested.

Results: The CAP recorded from the optic nerve consisted of three discrete peaks, while that recorded from neocortical slices had a typical biphasic profile. These peaks represent the heterogeneous velocity of impulse propagation of the various axons. Minimal difference in sensitivity to ischemic injury was found between the two preparations.

Conclusion: Both tracts offer a valuable medium for the study of the pathophysiology of white matter injury during ischemia.

P19.06

Neural networking in cognitive mindfulness

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Introduction: Recent advances in the fields of neuroscience and psychology have led to a greater understanding of data integration from interoceptive and exteroceptive sources. This review highlights the neural networks and anatomical structures associated with the development of 'self', as well as how they are influenced both anatomically and physiologically by disease processes.

Conclusion: Emphasis is placed on the working of the default mode, salience and executive networks and their dysregulation in individuals practicing meditation and individuals suffering from Attention Deficit Hyperactivity Disorder (ADHD). The importance of the Anterior Cingulate Cortex (ACC) in these networks is discussed in terms of its anatomy and functional connections in normal individuals and disease states. Integrative body mind training will also be discussed for its beneficial role in neurocognitive health, and how it may be of use in individuals suffering from neurocognitive diseases. We review how such diseases alter an individual's perception of stress, and the resultant effects from a neuroendocrinological perspective.

P19.07

A novel phenotype in a patient harboring a heterozygous point mutation in the *KCNJ10* gene

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Introduction: A 2-year old boy from non-consanguineous parents presents with tonic-clonic seizures, ataxia, hypotonia, profound developmental delay and failure to thrive. EEG recordings were typical of hypsarrhythmia. All family members were clinically unaffected. Genetic screening revealed a novel heterozygous missense variant in the gene ***KCNJ10*** that encodes for the Kir4.1 channel known to be essential for glial function, control of neuronal excitability, and systemic K^+ homeostasis.

Methods: To examine the functional consequence of the mutation on Kir4.1, mutant and wild-type ***KCNJ10*** constructs were cloned and heterologously expressed in Xenopus ***laevis*** oocytes. Whole-cell K^+ currents were measured using the two-electrode voltage-clamp technique.

Results: Wild-type ***KCNJ10*** expression resulted in robust and typical inward-rectifier currents. In contrast, currents from oocytes expressing the mutation were significantly reduced. Kir5.1 subunits display highly selective heteromultimerization with Kir4.1 subunits constituting channels with unique current kinetics. The effect of the mutation on the current from the heteromeric Kir4.1/5.1 channel was examined and was also found to be significantly reduced.

Conclusion: In this study, we present a heterozygous (***non-compound***) ***KCNJ10*** mutation that results in the reduction of inwardly- rectifying currents from homomeric Kir4.1 and heteromeric kir4.1/5.1 channels. This loss-of-function mutation results in a novel severely-disabling phenotype involving dysfunction of multipleorgans.

Disclosure: Telethon GGGP11188A

P19.08

5-HT_{2C} receptor modulation of the lateral habenula activity: an electrophysiological and neuroanatomical study

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Introduction: The role of serotonin (5-HT) in the modulation of the lateral habenular nucleus (LHb) is poorly understood. We focused our study on the role of the 5-HT2C receptors (5-HT2CRs) in the LHb.

Methods: Standard single cell extracellular recordings were performed *in vivo* in anaesthetized rats. The effects of intravenous (i.v.) administration of different 5-HT2C agonists, RO60-01745, lorcaserin and CP-809101 on LHb neuronal activity were investigated. The expression of 5-HT2CRs in the LHb was investigated by immunohistochemical approach using mouse anti-5-HT2CR monoclonal antibodies.

Results: Among the different 5-HT2CR ligands used in this study only RO60-01745 (5-640 μg/kg, i.v.) caused a significant dose-dependent increase of the firing rate with the maximum effect elicited by the dose of 640 μg/kg, with a 64 ± 12% increase in the basal firing rate ($p < 0.01$). Lorcaserin (5-640 μg/kg i.v.) and CP-809101 (5-640 μg/kg i.v.) did not induce any significant changes. Immunoishochemical experiments showed a diffuse 5-HT2CR immunolabeling in cell bodies and neuropil of the LHb.

Conclusion: Our data shows for the first time that i.v. administration of 5-HT2CR agonist RO60-0175 increases LHb neural activity and that this receptor is expressed in the LHb. Nevertheless, the effect might be mediated by 5-HT receptors other than 5-HT2CRs since lorcaserin and the very selective CP-809101 lacked of any effects. These findings might be important for therapeutic intervention for those CNS disorders in which a dysregulation of the LHb has been suggested, such as depression and anxiety.

P19.09

Glutamate release mechanisms in pre-myelinated CNS white matter

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Introduction: Ischemic injury to developing White Matter (WM) can lead to a selective pattern of injury known as periventricular white matter injury, the most common pathological substrate associated with cerebral palsy. There is evidence that the over-activation of ionotropic glutamate receptors mediates the ischemic cell injury/death of both developing oligodendrocytes and small pre-myelinated axons which populate WM regions at this age. Here we investigate possible mechanisms of ischemia-induced glutamate release from developing WM.

Methods: Using glutamate-specific microbiosensors, real-time extracellular glutamate concentrations were recorded during 30 minutes of modelled ischemia from inside the developing rat optic nerve (postnatal day 10). Glutamate concentrations were monitored under a variety of conditions and pharmacological treatments aimed at blocking potential release mechanisms. Compound action potential recordings were used as a measure of functional recovery.

Results: The mean resting extracellular glutamate concentration was 1.41±0.33μM (mean ±SEM). Glutamate concentrations increased steadily during modelled ischemia, increasing by 5.64±0.84μM before returning to baseline following reperfusion. Blockade of excitatory amino acid transporters, swelling-mediated release, hemi-channels and system Xc- did not inhibit glutamate release. However, removing calcium or depleting nerves of their vesicular stores significantly attenuated total release. Furthermore, vesicle-depleted nerves showed improved functional recovery following oxygen-glucose deprivation.

Conclusion: Ischemia evokes a robust release of intracellular glutamate in developing WM, leading to a significant increase in extracellular glutamate concentrations. The results suggest that a significant component of release is mediated through vesicular exocytosis.

P19.10

In vivo real time non-invasive monitoring of brain penetration of chemicals with near-infrared spectroscopy: concomitant PK/PD analysis

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Introduction: Near-Infrared Spectroscopy (NIRS) is a non-invasive technique that can be used to monitor changes in oxygenation of hemoglobin. Importantly, the absorption spectra of near-infrared light differ for the oxygenation–deoxygenation states of hemoglobin (oxygenate (HbO2) and deoxygenate (Hb), respectively) so that the two compounds can be directly monitored. In the literature, different methodologies report different basal values of HbO2 and Hb absolute concentrations in brain. In the present work, an attempt to calculate basal HbO2 levels in rat CNS has been attempted via evaluation of the influence of exogenous oxygen or exogenous carbon dioxide (CO2) on the NIRS parameters measured in vivo.

Methods: The possibility that changes of hemoglobin oxygenation in rat brain as measured by NIRS might be a useful index of brain penetration of chemical entities has been investigated. To test this hypothesis, different compounds from differ-

ent chemical classes were selected on the basis of parallel ex vivo and in vivo pharmacokinetic (PK/PD) studies of brain penetration and overall pharmacokinetic profile.

Results: It appeared that NIRS might contribute to assess brain penetration of chemical entities, i.e. significant changes in NIRS signals could be related to brain exposure, or vice versa the lack of significant changes in relevant NIRS parameters could be indicative of low brain exposure.

Conclusion: Non-invasive NIRS allows determining penetration of drugs in brain and therefore could be used to study neurobiological processes and psychiatric diseases in preclinical but also in a translational strategy from preclinical to clinical investigations.

P19.11

Acute nicotine induces anxiety and disrupts temporal pattern organization of rat exploratory behaviour in hole-board: a potential role for the lateral habenula

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Introduction: Nicotine is a very addictive drug, and it has been shown to exhibit anxiogenic behaviour. The Lateral Habenula plays a vital role in the regulation of anxiogenic behaviour. The aim of our study is threefold: firstly, to clarify the effect of a wide range of nicotine doses on the anxiety state of animals in the unfamiliar hole-board environment; secondly, to explore the effects of the LHb lesion in comparison to the sham lesion on basal animal emotional reactivity and finally, to evaluate the effect of the LHb lesion on nicotine-induced changes of rat exploratory behaviour.

Methods: 80 male Sprague Dawley rats weighing between 250 and 350g were used. The treatment groups were: saline (vehicle), nicotine and 1 mg/kg, 0.5 mg/kg and 1 mg/kg, all administered intraperitoneally (i.p.). The animals were subsequently placed in the center of the hole-board for 10 min, whilst being recorded by video camera. The video recordings were blind analyzed off-line.

Results: Video analysis and statistics show that treatment with nicotine has an anxiolytic effect on lesioned rats, indicating the involvement of the lateral habenula in the anxiogenic pathway.

Conclusion In conclusion, this study demonstrates that nicotine itself leads to anxiety-like behaviour under normal conditions and acts as an anxiolytic under some circumstances (i.e., stressful conditions). The LHb greatly potentiates the anxiolytic-like properties of nicotine, further supporting the role of the LHb in the neuronal circuits that mediates nicotine's aversive effects.

P19.12

Synergistic activity of cannabinoid type 1 and serotonin 2B/2C receptors for the prevention of status epilepticus in rats

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Introduction: Cannabinoid type 1 receptor (CB1R) **mediates the anticonvulsant effects of cannabinoids in different animal models of epilepsy. Activation of the serotonin 2C receptor (5-HT2CR) has been shown to be antiepileptic and KO mice for this receptor displayed increased seizure susceptibility.** Furthermore, CB1R KO mice exhibit altered expression and impaired functionality of the 5-HT2CR in several brain areas. Here we tested the interaction between 5-HT2CR and CB1R in the prevention of status epilepticus (SE) using the rat pilocarpine (PILO) model.

Methods: Sprague Dawley rats were injected with PILO (360mg/kg) and monitored for 3 hours by cortical electroencephalographic (EEG) and hippocampal **field potential recording. Pre-treatment with the cannabinoid agonist WIN 55,212**2 (WIN), the 5-HT2C/2BR agonist RO60-0175 (RO) or their combination (RO+WIN) was performed 45 min before PILO administration. Antagonists were injected 15 min before the agonists**.**

Results: PILO induced SE in the 85% of rat tested with a dramatic increase of EEG total power in both cortex and hippocampus. WIN and RO had no effect in preventing SE. Co-administration of RO+WIN significantly reduced the occurrence of PILO-induced SE. Administration of CB1R antagonist AM251 completely blocked behavioural and EEG antiepileptic effects of RO+WIN. Intriguingly, antiepileptic effects of RO+WIN were potentiated by the administration of 5-HT2CR antagonist SB242084 while were prevented by the treatment of 5HT2BR antagonist RS127445. The administration of the 5HT2AR antagonist MDL11,939 had no effect on RO+WIN treatment.

Conclusion: These data indicate a synergistic interaction between the 5-HT and EC system which might represent a suitable target for the identification of new antiepileptic treatment.

P19.13

Role of the lateral habenula in mediating rewarding properties of nicotine

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Introduction: Tobacco smoking represents a well-known risks factor for health. So far, a better understanding of the neurobiology of nicotine addiction is still needed. The Lateral Habenula (LHb) is an epithalamic structure known to inhibit the DA system through activation of the RMTg, a GABA-ergic area located caudally to the ventral tegmental area (VTA). The RMTg receives a strong glutamatergic input from the LHb and is activated bynicotine in rats. Thus, the LHb might represent a possible target for the action of nicotine.

Conclusion: The LHb might play an important role in mediating the effects of nicotine on the midbrain DA system.

P19.14

A laser speckle contrast imaging system to study blood flow dynamics in the rodent brain

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Introduction: Optical imaging modalities have become increasingly prevalent in biomedical research for discerning functional and anatomical information. Laser Speckle Contrast Imaging (LSCI) is a non-invasive full-field optical imaging technique that gives a 2-D microcirculatory surface flow map within live tissue. We have developed the hardware of a laser speckle imaging system to permit the functional study of blood flow dynamics in the rodent brain. A graphical user interface was designed in LabVIEW for system control and image processing algorithms were coded in MATLAB.

Methods: Laser speckle imaging and two-photon imaging were employed to assess the role of astrocyte $K_{ir}5.1$ channels in vasodilation after a period of hypercapnia in ***Kcnj16*** knock-out mice. In parallel experiments, LSCI and two-photon imaging were used to map the spatiotemporal evolution in cerebral blood flow around the ischemic focus in a mouse stroke model.

Results: In the $K_{ir}5.1$-/- knockout group, the mean increase in arterial blood flow and vasodilatory response was found to be less than that of the control group. A delayed response to vasodilation during hypercapnia was followed by a delay in blood flow normalization after the insult. During focal ischemia, blood

flow data revealed a high correlation between measurements obtained from LSCI and Doppler flowmetry. The phenomenon of neovascularization and collateral perfusion to the ischemic focus was a prominent feature.

Conclusion: The simple non-invasive setup of LSCI that excludes exogenous contrast agents is a powerful tool to monitor in real-time cerebral vascular reactivity and blood flow dynamics in physiology and disease.

Disclosure: Malta Government Scholarship Scheme (MGSS)

P19.15

Assessment of neuronal and glial injury in a rodent model of focal ischemia

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Introduction: Animal models of focal ischemia simulating human stroke are indispensable tools to investigate mechanisms of injury and develop potential therapeutics. Since human cortical strokes affect both grey and white matter equally, we sought to directly assess the spatio-temporal dimension of the ischemic core as well as of perilesional tissue in a rodent model of stroke. Here we systematically evaluated regions differently impaired by focal ischemia and assessed the cellular identity of the cell types that are most affected.

Methods YFP and CD-1 mice underwent a transient 60 minute occlusion of the middle cerebral artery (MCAO) via an intraluminal filament followed by 24 hours of reperfusion. Successful occlusion was followed by Laser Doppler Flowmetry. Infarct volume was assessed by 2,3,5-triphenyltetrazolium chloride staining since this reliably identifies the infarct core at 24 hours of reperfusion. Infarct volume was corrected for edema. Cresyl Violet (CV) and Fluoro-Jade B were used to visualise degenerative neurons and Luxol Fast Blue (LFB) to assess myelin damage. The modified Bederson score, corner test and wire hanging test complemented neurological assessment. **:**

Results: Ischemic lesions were observed in cortical and subcortical regions. Histological assessment of damaged neurons showed structural abnormalities, nuclear shrinkage and overall loss in CV staining. White matter regions revealed a loss in oligodendrocyte number and myelin. Neurological deficit scores reflected sensorimotor damage.

Conclusion: The mouse intraluminal filament model provides the advantage of reproducible transient ischemia of the MCA territory and for the assessment of neuronal and glial injury which are both equally vulnerable to ischemic damage.

P19.16

Role(s) of the 5-HT2C receptor in the development of maximal dentate activation in the hippocampus of anesthetized rats

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Introduction: Substantial evidence indicates that 5-HT2C receptors are involved in the control of neuronal network excitability and in seizure pathophysiology. Here, we have addressed the relatively unexplored relationship between Temporal Lobe Epilepsy (TLE), the most frequent type of intractable epilepsy, and 5-HT2CRs.

Methods: In this study, we investigated this issue using a model of partial complex (limbic) seizures in urethane-anesthetized rat, based on the phenomenon of Maximal Dentate Activation (MDA) using 5-HT2C compounds, electrophysiology, immunohistochemistry, and western blotting techniques.

Results: The 5-HT2C agonists mCPP (1mg/kg, i.p) and lorcaserin (3mg/kg, i.p), but not RO60-0175 (1-3mg/kg i.p.), were antiepileptogenic reducing the MDA response duration. The selective 5-HT2C antagonist SB242084 (2mg/kg, i.p) unveiled antiepileptogenic effects of RO60-0175 (3mg/kg, i.p) but did not alter those induced by mCPP and lorcaserin. Compared with control rats, electrically stimulated rats showed an increase in glutamic acid decarboxylase levels and a heterogeneous decrease in 5-HT2CR immunoreactivity in different hippocampal areas.

Conclusion: In our animal model of TLE, mCPP and lorcaserin were anticonvulsant; likely acting on receptor subtypes other than 5-HT2C. Epileptogenesis induced early adaptive changes and reorganization in the 5-HT2CR and GABA systems.