



AAMS

Annals of the Academy of Medicine, Singapore

VOLUME 40 (SUPPLEMENT)

NUMBER 11

2nd SHBC

NOVEMBER 2011

Proceedings of the

SHBC 2011

Singapore Health & Biomedical Congress

Shaping our Regional Healthcare Systems: Innovation, Education, Research
Innovate to Integrate, Educate to Excel, Research for Relevance

11 & 12 November 2011

Suntec Singapore International Convention & Exhibition Centre

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Singapore Health & Biomedical Congress (SHBC) 2011

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Singapore Health & Biomedical Congress 2011

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SG-CIA-01

Erythrocytes: A Valid Source of Lipid-Based Biomarker in Schizophrenia

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Background & Hypothesis: Schizophrenia has been associated with peripheral lipid-related manifestations such as reduced niacin skin flush and increased risk of metabolic disorders. The membrane phospholipid hypothesis posited a disruption in neuronal membrane lipids in schizophrenia, and this disruption might involve the whole body. We conducted a multi-stage study to evaluate the validity of erythrocyte membranes as a source of lipid-based biomarkers in schizophrenia, and examine the effect of medication on these lipids.

Methods: Fifty-one patients with schizophrenia and 52 healthy controls were recruited for this study. Lipids extracted from erythrocyte membranes were profiled in a targeted approach via tandem mass spectrometry. A subset of samples were plated and examined under the scanning electron microscope. Effects of medication on membrane lipid profiles were examined in 11 drug-naïve patients who provided pre- and post-treatment blood samples.

Results: Twenty-five out of 120 erythrocyte membrane lipids detected from mass spectrometry were significantly different between the 2 groups. With these 25 lipids, we developed and validated a model that classified cases and controls with a sensitivity of 76.5%, specificity of 75.0%, and overall accuracy of 75.7%. We did not find significant effects of antipsychotic exposure on these 25 lipids. Abnormal erythrocyte morphological forms in schizophrenia patients were seen on electron microscopy.

Discussion & Conclusion: This study revealed morphological and membrane lipid abnormalities in erythrocytes in schizophrenia, and suggests that these abnormalities might pre-date disease onset. These lipids can be developed as candidate biomarkers to aid understanding of disease processes. Erythrocytes are highly accessible and improve the ease of translation into clinical practice.

SG-CIA-02

Relationship between Body Composition and Bone Mass in Singapore Chinese Men

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Background & Hypothesis: Body weight is positively correlated with bone mass. The relative contributions of fat and lean mass are more contentious. Recent evidence suggests that adipose tissue and lean mass have different effects on bone. The role of visceral fat is unclear.

Methods: A cross-sectional study was conducted on 100 Chinese men between 21 and 40 years. Dual-energy X-ray absorptiometry (DXA) was used to measure fat mass (FM), lean mass (LM) and bone mineral density (BMD). Magnetic resonance imaging (MRI) was used to quantify the visceral adipose tissue (VAT) and subcutaneous adipose tissue (SAT).

Results: Separate linear regression analyses showed that LM has strong positive associations with BMD at all skeletal sites, after adjusting for age and height. Conversely, associations between FM and BMD were not statistically significant. VAT was negatively associated with BMD, and this was significantly modulated by obesity. In overweight individuals (BMI >25 kg/m²), VAT demonstrated a greater negative association at the total hip BMD (P interaction = 0.03) and femoral neck BMD (P = 0.02), compared to lean individuals.

Discussion & Conclusion: Although increased body weight is associated with increased BMD, our data clearly shows that body composition is important. Lean mass, rather than fat mass, is the predominant predictor of BMD in this population. Strategies to increase and maintain lean mass are particularly important for bone health. The accumulation of fat in the visceral compartment has clear detrimental effects on total hip and femoral neck BMD in overweight individuals. This novel observation warrants further investigation to better understand the negative impact of visceral obesity on bone health.

SG-CIA-03

In Vitro Testing to Quantify Allergy and Initiate Immunotherapy

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Background & Hypothesis: Traditionally, skin prick test (SPT) and intradermal testing are used to quantify and initiate immunotherapy, but they are over sensitive, involve multiple pricks with risk of anaphylaxis. In vitro testing, on the other hand is easier and safe involving only one venepuncture. We proposed to use in vitro testing to diagnose an inhalant allergy as well as to initiate of immunotherapy by quantifying it with SPT and modified quantitative testing (MQT).

Methods: All patients with allergic rhinitis suitable for immunotherapy were recruited prospectively and subjected to multi-testTM skin prick testing, modified quantitative testing, and had blood taken for in vitro allergy testing at the same setting by a single qualified allergy nurse.

Results: Twenty patients (12 male, 8 female) were recruited between May 2006 and December 2007. After comparing results from all three tests, 262 sets of allergens were available for analysis. We found that there was significant correlation between SPT and in vitro testing ($r = 0.649$, $P < 0.001$). When results from individual testing kits were analysed separately, SPT still have significant correlation for both Euroline ($r = 0.339$, $P = 0.012$) and ImmunoCAP ($r = 0.719$, $P < 0.001$). Similarly in vitro grading also correlated significantly with MQT grading ($r = 0.566$, $P < 0.001$), with r of 0.358 ($P = 0.008$) for Euroline and r of 0.613 ($P < 0.001$) for ImmunoCAP.

Discussion & Conclusion: With good correlations between the classes of in vitro testing and MQT grading, in vitro testing could potentially be used for vial preparation during initiation of immunotherapy and monitoring follow up. By using in vitro methods, patient can experience less pain and has no anaphylaxis risk.

SG-CIA-04

A Novel Angiographic and Anatomic Classification of Polypoidal Choroidal Vasculopathy Predicts Its 5-year Clinical Outcomes

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Background & Hypothesis: Polypoidal choroidal vasculopathy (PCV) has high prevalence among Asians, with variable clinical course and visual prognosis, suggesting the existence of clinical subtypes. Confocal Scanning Laser Ophthalmoscopy (CSLO) demonstrates the microvasculature of PCV, while Optical Coherence Tomography (OCT) allows in vivo anatomic visualisation. We describe a novel classification system for PCV based on CSLO indocyanine green (ICG) angiography, and correlate it with OCT and clinical outcomes.

Methods: Interventional longitudinal 5-year study of 112 consecutive patients with PCV. Images were independently graded by 2 consultant ophthalmologists. Risk factors for clinical outcomes were analysed using multivariate analysis.

Results: Three distinct PCV subtypes were seen: Type I (interconnecting channels) – 25%, Type II (branching vascular network) – 26.2%, Type III (active leakage) – 48.8%. The ICG subtypes correlated with specific, differentiating pathologic features which were consistently demonstrated on OCT. At all review periods, the highest rate of moderate visual loss occurred in Type III PCV, followed by Types II and I (41.2% vs 11.1% vs 0% at 5 years). Good visual outcomes (>6/12) were highest in Type I, compared to Types II and III (83.3% vs 62.5% vs 20%, $P = 0.034$). Independent risk factors for visual outcomes were PCV subtype (odds ratio [OR] 2.84, $P = 0.025$) and age (OR 0.91, $P = 0.022$).

Discussion & Conclusion: We have established a novel classification system for PCV based on angiography and anatomy. The clinical and visual outcomes are reliably predicted by this classification, demonstrating that PCV consists of distinct, previously unrecognised, clinical subtypes instead of a single disease entity as originally believed. This classification system has potential application in clinical practice and multicentre randomised trials.

SG-CIA-05

Aberrant Cerebral Frontotemporal Connectivity and Characterisation of a Neural Mechanism for Psychotic Symptoms in Schizophrenia

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Background & Hypothesis: Disruptions of brain frontotemporal connections involving the arcuate fasciculus (AF) are thought to underlie language processing anomalies and psychotic features such as auditory hallucinations in schizophrenia. We hypothesise that white matter abnormalities along the AF and its regional lateralisation correlate with psychotic symptoms in schizophrenia.

Methods: We examined white matter changes, namely, fractional anisotropy (FA), axial diffusivity (AD), and asymmetry indices along the whole extent of the AF and their relationship with psychotic symptoms in 32 males with schizophrenia and 44 healthy males. Large deformation diffeomorphic metric mapping and Fiber Assignment Continuous Tracking were employed to characterize FA and AD along the geometric curve of the AF.

Results: Our results show that patients with schizophrenia have lower FA in the frontal aspects of the left AF compared to healthy controls. Greater left FA and AD lateralisation in the temporal segment of AF are associated with more severe positive psychotic symptoms such as delusions and hallucinations in patients with schizophrenia.

Discussion & Conclusion: Disruptions of white matter integrity in the left frontal AF and accentuation of normal left greater than right asymmetry of FA/AD in the temporal AF further support the notion of aberrant frontotemporal connectivity in schizophrenia. AF pathology can affect corollary discharge of neural signals from frontal speech/motor initiation areas to suppress activity of auditory cortex that may influence psychotic phenomena such as auditory hallucinations and facilitate elaboration of delusional content. Better understanding of such neural mechanisms can potentially assist in identification of intervention targets and markers for monitoring of disease severity and progression.

SG-NA-01

Enhancing Bedside Checking Methods for Feeding

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Background & Hypothesis: The gold standard of verifying the nasogastric tube placement with radiography is impractical for routine use. A careful adaptation and improvement of current bedside methods is an attainable solution.

Methods: A decision tree was created to introduce a novel approach for nurses to determine the feeding tube location reliably at the bedside. Nurses used the decision pathways and recorded their actions accordingly. We modeled the mean aspirate pH on pH-alternating medication and demographic factors using linear regression.

Results: We observed 2529 feeding episodes from 45 patients on nasogastric feeding over 20 days. Of these, 2439 cases (96.4%) were fed. 30 feedings were withheld because of persistent absence of aspirate or high pH. Fifteen radiographs were taken in 9 patients, and all confirmed gastric positioning. The additional measures enabled nurses to obtain aspirate successfully at second (74 cases, 61.2%) and third (32 cases, 78.0%) after failing the first attempt. 1704 cases (67.9%) had aspirate pH 4 or less. Through the new algorithm, nurses fed 37 cases safely after accounting for the previous pH trend and pH-altering medication in spite of high pH 7. Five hundred-one cases of aspirate pH 5 to 7 (86.4%) were fed though the colour appeared dubious. On a same day, the use of pH-alternating medication did not affect the patients' mean aspirate pH differently from those who were not on them ($P = 0.256$).

Discussion & Conclusion: The decision tree gives nurses the flexibility to consider more criteria in determining tube placement without compromising patient safety. The compliance to the new approach, however, needs improvement.

SG-NA-02

A Telemetry Nurse's Soliloquy — To Call or Not to Call, That is the Question

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Background & Hypothesis: Inaccuracies or overdiagnoses have been known to occur in Coronary Care Unit telemetry nurses who remotely monitor cardiology patients in general wards. This study aims to (1) assess the nurses' telemetry diagnostic accuracy, (2) determine error types and (3) evaluate effectiveness of a structured Electrocardiography (ECG) course.

Methods: Baseline and post-course nurses' telemetry diagnostic accuracy was measured before and after an ECG course. Nurse diagnosis of either "daily" (routine) or "alarm" (abnormal rhythm) telemetry strips was matched against blinded cardiologist diagnosis. All nurse-cardiologist matched and unmatched diagnoses were categorised as accurate, clinically significant, overdiagnosis, inconsequential or dangerous. Positive (accurate and clinically significant) and negative (dangerous) diagnostic outcomes were calculated. Fisher's exact test was used to compare between baseline and post-course diagnostic outcomes.

Results: Baseline sampling obtained 126 telemetry strips, 47% were unmatched. Of 7 "daily" strips, 5 were inconsequential and 2 were dangerous; of 40 "alarm" strips, 26 were overdiagnoses and 14 were dangerous. Post-course sampling obtained 166 telemetry strips, 64 (38.6%) were unmatched. Of 6 "daily" strips, 4 were inconsequential and 2 were dangerous; of 58 "alarm" strips, 35 were overdiagnoses and 23 were dangerous. The ECG course had no impact on the positive diagnostic (baseline 44.4% vs post-course 41.6%, $P = 0.64$) or negative diagnostic (baseline 12.7% vs post-course 15.1%, $P=0.61$) outcomes.

Discussion & Conclusion: One-third of telemetry abnormalities were interpreted incorrectly (13-14% dangerous errors, 35-38% overdiagnostic errors). These errors may suggest both knowledge as well as clinical judgment deficiencies. Teaching interventions that address both knowledge and clinical judgment deficiencies may need to be implemented.

SG-NA-03

A Randomised Controlled Study Examining the Impact of a Staffing Model and Nursing Care Delivery System on Patient, Nurse and Organisational Outcomes

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Background & Hypothesis: With a global shortage of nurses, it is important to examine the impact of nursing staffing level and nursing care on patient and hospital outcomes, especially in the ill-explored area of mental health. We hypothesise that increasing nursing headcounts with appropriate skill mix, and the implementation of Primary Team Nursing positively impacts nurse, patient, and organisational outcomes.

Methods: A controlled experimental study was conducted at the Institute of Mental Health (IMH), Singapore. Eight acute adult psychiatric wards were randomly assigned into the experimental wards and control wards. Two experimental wards were implemented with increase in nursing staffing (M) and two experimental wards were implemented with increase in nursing staffing and introduction of primary team nursing (P). Patient related adverse events (falls, physical restraints, assaults, medication errors) and organisational outcomes (length of stay, readmission rate) were monitored and compared. Patient satisfaction was compared using the Client Satisfaction Questionnaire 18B. Staffs were surveyed pre and post intervention for job satisfaction using the Nursing Staff Questionnaire (Ayre, 2008).

Results: Results showed a decrease in fall and assault rates in P when compared to control wards (C). Patient satisfaction level proved to be significantly higher in P when compared to C. Also, significantly more nurses in P reported spending more time on patient care and perceived that staffing level is adequate in their wards.

Discussion & Conclusion: Our findings confirmed the importance of adequate nursing staff with appropriate skill mix in improving patient and nurse outcomes.

SG-AH-01

Evaluating the Psychometric Properties of the Dementia Management Strategies Scale

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Background & Hypothesis: Quality of care in persons with dementia (PWD) depends much on the caregiver. The Dementia Management Strategies Scale (DMSS) is a useful instrument to appraise care styles of dementia caregivers and serves as a surrogate measure of care quality. The present study expanded on previous research by refining and establishing the scale's content validity and psychometric properties in the Singapore context.

Methods: Five family caregivers and 4 dementia care professionals (nurse, occupational therapist, social worker, and doctor) reviewed the DMSS for content validity. One hundred and ninety-six family caregivers completed questionnaires which assessed caregiver and patient characteristics as well as dementia management strategies with DMSS. Reliability by internal consistency was assessed while construct validity was evaluated through Pearson's correlation with extant instruments.

Results: Eight items from the 28-item DMSS were omitted after content review as they were deemed unnecessary or inappropriate in our socio-cultural setting. Principal components analysis confirmed a two factor structure (positive and negative dimensions) that was hypothesised by reviewers for the revised DMSS (rDMSS). The two subscales showed good internal consistency (Cronbach's alpha 0.89 and 0.87). Moderate to strong correlations (0.35 to 0.53) with the scales Zarit Burden Instrument, General Health Questionnaire, Short Sense of Competence Scale, Gains in Alzheimer's Care Instrument and Positive Aspects of Caregiving established convergent and divergent construct validity of rDMSS.

Discussion & Conclusion: The shortened 20-item rDMSS is a psychometrically valid instrument which can serve as a good measure of dementia care strategy and quality from the perspective of the caregiver in Singapore.

SG-AH-02

Malnutrition and Its Impact on Cost of Hospitalisation, Length of Stay, Readmission and 3-Year Mortality

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Background & Hypothesis: The confounding effect of disease on the outcomes of malnutrition using diagnosis-related groups (DRG) has never been studied in a multidisciplinary setting. This study aims to determine the impact of malnutrition on hospitalisation outcomes, controlling for DRG.

Methods: Subjective Global Assessment was used to assess the nutritional status of 818 patients within 48 hours of admission. Prospective data were collected on cost of hospitalisation, length of stay (LOS), readmission and mortality up to 3 years post-discharged using National Death Register data. Mixed model analysis and conditional logistic regression matching by DRG were carried out to evaluate the association between nutritional status and outcomes. All the results were adjusted for gender, age and race.

Results: Malnourished patients (29%) had longer hospital stays (6.9 ± 7.3 days vs 4.6 ± 5.6 days, $P < 0.001$) and were more likely to be readmitted within 15 days (adjusted relative risk = 1.9, 95% CI 1.1–3.2, $P = 0.025$). Within a DRG, the mean difference between actual cost of hospitalisation and the average cost for malnourished patients was greater than well-nourished patients ($P = 0.014$). Mortality was higher in malnourished patients at 1 year (34% vs 4.1%), 2 years (42.6% vs 6.7%) and 3 years (48.5% vs 9.9%); $P < 0.001$ for all. Overall, malnutrition was a significant predictor of mortality (adjusted hazard ratio = 4.4, 95% CI 3.3 to 6.0, $P < 0.001$).

Discussion & Conclusion: Malnutrition was evident in up to one third of newly hospitalised patients and led to poor hospitalisation outcomes, even after matching for DRG. Strategies to prevent and treat malnutrition in the hospital and post-discharge are needed.

SG-AH-03

Predictive Ability of Montreal Cognitive Assessment (MoCA) Versus Mini-Mental State Examination (MMSE) for Moderate-Severe Cognitive Impairment (CI) After Stroke

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Background & Hypothesis: Acute post stroke cognitive screening is required to predict moderate-severe CI in the convalescent phase to aid early detection of high-risk patients for incident dementia. Both MoCA and MMSE tests were moderately sensitive to acute post stroke CI. However, there is no comparison of the prognostic value of both tests at baseline for CI at month 3-6 after stroke. We aimed to examine the predictive ability of both MoCA and MMSE at baseline to detect moderate-severe CI at 3 to 6 months after stroke. We hypothesised that both tests could predict moderate-severe CI at 3 to 6 months after stroke.

Methods: Patients with ischaemic stroke and transient ischaemic attack were assessed with both MoCA and MMSE after acute stroke (≤ 14 days) and received a formal neuropsychological evaluation 3 to 6 months later (n = 239). Cognitive outcomes were classified as 'no to mild cognitive impairment' (n = 180) and 'moderate to severe cognitive impairment' (n = 59).

Results: On receiver operating characteristic curve analysis, areas under curve of both tests were >0.80 . Baseline MoCA at cutoff 21/22 had an excellent sensitivity and moderate specificity (sensitivity, 0.90, specificity, 0.64, PPV, 0.45, NPV, 0.95) whilst baseline MMSE at cutoff 24/25 had a good sensitivity and adequate specificity (sensitivity, 0.80, specificity, 0.77, PPV, 0.53, NPV, 0.92). MoCA had higher sensitivity than MMSE in discriminating between the unimpaired and impaired cognitive domains of the formal neuropsychological test battery.

Discussion & Conclusion: Both MoCA and MMSE had adequate prognostic value to detect moderate-severe CI at month 3 to 6 after stroke. However, MoCA was a better screening tool than MMSE due to better psychometric properties.

YIA-BSTR-01

Human Endothelial Cells Derived from Induced Pluripotent Stem Cells Enhance Perfusion in a Murine Model of Ischaemic Hindlimb

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Background & Hypothesis: Adult and embryonic stem cells offer a sustainable source of endothelial cells (ECs) for therapeutic angiogenesis. In the present study, we investigated the potential of ECs derived from human induced pluripotent stem cells (iPSCs) to promote perfusion of ischaemic tissue in a hindlimb ischaemia model.

Methods: Endothelial lineage differentiation was initiated by differentiating iPSCs in 50ng/ml BMP-4 and VEGF for 14 days. CD144-positive iPSC-ECs were isolated by flow cytometry and characterised by gene expression analysis, immunostaining and functional assays to confirm their endothelial identity. To track the iPSC-ECs in vivo, they were stably transduced with a double fusion construct encoded by the ubiquitin promoter, firefly luciferase for bioluminescence imaging (BLI) and green fluorescence protein for fluorescent detection (pUb-Fluc-GFP). iPSC-ECs were intramuscularly injected into SCID mice with hindlimb ischemia at day 0 and at day 7 post-surgery (n = 8).

Results: iPSC-ECs exhibited endothelial angiogenic behavior by forming capillary-like structures in matrigel and incorporating acetylated-LDL. They stained positive for KDR, CD31, CD144 and eNOS. BLI data showed that iPSC-ECs survived in the ischaemic limb throughout the 2 weeks of assessment. In addition, laser Doppler imaging showed that the ratio of blood perfusion was increased by iPSC-EC treatment in comparison to the saline treatment group (0.577 ± 0.118 vs 0.436 ± 0.040 , $P = 0.005$). The total number of capillaries in the iPSC-EC-treated group was greater than in the saline-treated group (1284 ± 155 vs 797 ± 206 capillaries/mm²) ($P < 0.002$)

Discussion & Conclusion: This study is a demonstration of the first step towards development of regenerative strategy using ECs derived from iPSCs to ameliorate ischaemic syndromes.

YIA-BSTR-02

Narasin, a Novel Antiviral Therapeutic Compound against Dengue Virus Infection

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Background & Hypothesis: Dengue virus (DENV) is a mosquito-borne virus that causes a spectrum of human diseases, ranging from mild dengue fever to dengue hemorrhagic fever and dengue shock syndrome in severe cases. Currently, there is no effective antiviral therapy or vaccine against DENV infection.

Methods: In order to identify potential antiviral agents against DENV, we performed high-throughput cell-based screening on highly purified natural products library. Among the screening hits, compounds which have shown to display 50% to 75% inhibition against DENV were further evaluated in the secondary assay.

Results: In this study, an ionophore narasin was then selected for further study due to its strong inhibitory profile against DENV and minimal cytotoxicity in vitro (CC50 >1000 μ M). A dosage-dependent study revealed narasin to have a 50% inhibitory concentration (IC50) of less than 1 μ M against all 4 serotypes of DENV. Time-of-addition experiments and Western blot analyses of narasin-treated, DENV2-infected Huh7 cells suggested that narasin is likely to be involved in inhibiting the post-entry stages of replication during DENV infection. Furthermore, proteomic and ultrastructural analyses showed that the antiviral mechanism of narasin could be associated primarily with the disruption of viral protein synthesis.

Discussion & Conclusion: Together, these data suggest that narasin has great potential to be further developed as an effective antiviral therapeutic compound against DENV infection.

YIA-BSTR-03

Comprehensive Analysis of the Filaggrin Gene Reveals Its Importance in Atopic Dermatitis

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Background & Hypothesis: Filaggrin is an abundant protein of the outer epidermis that is essential for formation of an effective barrier against water loss and pathogen/allergen/irritant invasion. Loss-of-function filaggrin gene (FLG) mutations lead to a deficiency in filaggrin; this has been reported to cause ichthyosis vulgaris and is also a major genetic predisposing factor for atopic dermatitis in Europe. We aim to characterise the prevalence of FLG mutations in Singaporean-Chinese and investigate its association with atopic dermatitis.

Methods: A comprehensive analysis strategy was developed to detect FLG mutations in 92 Singaporean-Chinese patients with ichthyosis vulgaris and/or atopic dermatitis. Subsequently, a cohort of 425 Singaporean-Chinese patients and 440 population controls were collected to investigate the significance of FLG mutations as genetic predisposition factors for atopic dermatitis. All atopic dermatitis patients were also examined for palmar hyperlinearity, keratosis pilaris and disease severity.

Results: A total of 22 FLG mutations, of which 14 are novel, were identified in this study; the combined null FLG genotype of 17 mutations detected in cases and controls showed strong association with atopic dermatitis ($P = 5.3 \times 10^{-9}$; OR = 3.3), palmar hyperlinearity ($P = 9.0 \times 10^{-15}$; OR = 5.8), keratosis pilaris ($P = 0.001$; OR = 4.7; all Fisher's exact test) and with increased severity of AD ($P = 0.0063$; permutation test).

Discussion & Conclusion: This is the first comprehensive report of FLG mutations as important genetic risk factors contributing to atopic dermatitis in Singapore. It also emphasised the wider spectrum of FLG mutations in Asia that is distinct from Europe.

YIA-CR-01

Does Submucosal Coblation Turbinate Reduction Have an Impact on Olfaction?

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Background & Hypothesis: Turbinate reduction is a popular treatment modality for persistent nasal blockage secondary to hypertrophic inferior turbinates. Submucosal coblation turbinate reduction (CTR) is highly effective, minimally invasive with low complication rates, and can be performed in an outpatient clinic under local anaesthesia. The aim of this study is to investigate the effects of CTR on olfaction and gustation.

Methods: A prospective observational study at an otolaryngology department of tertiary referral hospital in Singapore has been undertaken. Assessment was performed before and up to 2 months after CTR for demographic data, symptoms score using 10-point visual analogue scale (VAS), sino-nasal outcome test (SNOT22), acoustic rhinometry, Sniffin' Sticks extended smell test (TDI score) and a four basic taste solutions test.

Results: Sixteen patients were included (11 men, 5 women) with a mean age of 24 years. There was a statistically significant improvement of VAS for symptoms of nasal blockage and SNOT22 scores ($P < 0.005$) at 1 and 8 weeks after surgery. Although the mean TDI scores improved at 1 and 8 weeks, the improvement was statistically significant only after 8 weeks follow-up ($P < 0.05$). Five patients with baseline hyposmia (31.25%) showed statistically significant reduction in TDI scores ($P < 0.05$) one week after surgery, 3 of which improved significantly ($P < 0.005$) after 8 weeks. There was no permanent or significant alteration of taste in any of the subjects ($P > 0.05$).

Discussion & Conclusion: This is the first study to report the potential benefits of CTR on improvement of olfaction in patients with inferior turbinates hypertrophy.

YIA-CR-02

Cephalomedullary Nail versus Sliding Hip Screw for the Fixation of Unstable Intertrochanteric Fractures in Elderly Patients: A Comparison of Ambulatory Outcomes

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Background & Hypothesis: The objective of this study is to compare the recovery in postoperative ambulatory function of elderly patients with unstable trochanteric fractures stabilised with either a cephalomedullary nail [AO-ASIF proximal femoral nail antirotation (PFNA)] or a sliding hip screw [dynamic hip screw (DHS)].

Methods: In this prospective case-control study, 63 consecutive elderly patients without cognitive impairment and good pre-fracture ambulatory function (Parker Mobility Score of 6 or more) had trochanteric fractures type AO 31-A2 and A3. 25 patients underwent fixation with the PFNA, and 38 patients underwent fixation with the DHS. Early (6 months) and late (12 months) postoperative ambulatory function was analysed in terms of level of ambulatory independence and environmental mobility. Ambulatory independence (AIS) and environmental mobility (EMS) were scored on 5 and 3 point scales respectively.

Results: Demographics and characteristics of both groups were comparable. At 6 months, compared with the DHS group, the PFNA group demonstrated better recovery in postoperative ambulatory function in terms of Parker Mobility Score (4 vs 2, $P = 0.002$), environmental mobility ($P = 0.02$), AIS (4 vs 3, $P = 0.004$), and EMS (2 vs 1, $P = 0.007$). At 12 months, the PFNA group still demonstrated better ambulatory independence ($P = 0.01$) and AIS (5 vs 4, $P = 0.001$) compared with the DHS group. However, the difference in environmental mobility did not reach statistical significance despite a larger proportion of patients in PFNA group achieving outdoor and community ambulation.

Discussion & Conclusion: The PFNA is a better implant for the fixation of unstable trochanteric fractures in previously ambulant elderly patients, enabling good recovery of ambulatory function.

YIA-CR-03

Differences in Voice Handicap Index — 10 Scores of Patients with Dysphonia and Healthy Subjects

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Background & Hypothesis: The voice handicap index (VHI-10) measures functional, physical and emotional aspects of dysphonia. It aids diagnosis and monitoring of disease severity. This study aims to evaluate the ability of VHI-10 to distinguish between patients with dysphonia and healthy subjects.

Methods: A prospective comparative study was conducted in the tertiary otorhinolaryngology centre of a teaching hospital in Singapore. VHI-10 was administered on 59 consecutive patients diagnosed in voice clinic with dysphonia of benign aetiology and 167 healthy subjects recruited at health screening.

Results: The mean VHI-10 score in dysphonia patients was significantly higher than the healthy group, (15.2 ± 9.6 vs 6.44 ± 7.2 , $P < 0.01$). Dysphonia patients were 2.5 times as likely as healthy subjects to have VHI-10 scores greater than 10 which would indicate the presence of a voice disorder (64.4% vs 24.6%, $P < 0.01$). Significant differences between mean subscale scores of each group were seen in the physical (6.15 vs 1.86, $P < 0.01$) and emotional (3.84 vs 0.94, $P < 0.01$) subscales, but not the functional subscale (5.25 vs 3.65, $P = 0.13$).

Discussion & Conclusion: VHI-10 is able to differentiate between patients with dysphonia and healthy subjects, suggesting it may be useful as a screening tool. However, a sizeable proportion of healthy subjects reported scores that indicate a voice disorder. This could be due to the subjective nature of the questionnaire and differing voice demands, or the presence of unrecognised voice disorders in this group. Emotional and physical subscales offer greater discrimination between patients and healthy subjects than the functional subscale. Replacing some functional items with physical or emotional items may increase the value of this test.

YIA-QHSR-01

Real-Time Prediction of Waiting Time in Emergency Department Using Quantile Regression

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Background & Hypothesis: Waiting times at the emergency department (ED) patients can affect patient satisfaction and quality of care. The objective of this study is to develop and validate a real-time model to predict the waiting time in ED, using routine hospital data. The model aimed to novelly predict a range of (median-95th percentile) instead of the usual point estimation of mean waiting time.

Methods: ED visits in January 2011 were used for model development, and the model was retrospectively validated in June 2010 data and prospectively validated in April to June 2011 datasets. All data were extracted from the hospital information system. Variables extracted included the end date and time of triage, the start time of consultation, and patient acuity category (PAC). Quantile regression methods were used for model development and parameter estimation. The absolute prediction error and proportion of underestimated prediction were used for model assessment.

Results: The model performed well on the validation datasets. The underestimated proportion was about 4.3% in PAC2 and 5.8% in PAC3. The median and IQR of the absolute prediction error were 9.2 and 5.9 minutes for PAC2; and 15.7 and 9.6 minutes for PAC3.

Discussion & Conclusion: Models represented by equations for predicting waiting time at ED have been developed and integrated with the existing hospital real-time information system. The models novelly predict the range of median to 95th percentile waiting time for each patient at ED. It may be an inexpensive way to improve patient satisfaction and quality of care in ED.

YIA-QHSR-02

Prevalence of Smoking and Nicotine Dependence in Singapore

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Background & Hypothesis: Smoking is one of the leading preventable causes of death across the world and can lead to Nicotine Dependence (ND), particularly when initiated at a young age. This paper describes the prevalence of smoking and ND among the main ethnic groups (Chinese, Malay and Indian) and its sociodemographic correlates in Singapore.

Methods: The Singapore Mental Health Study is a cross sectional epidemiological study that was conducted between December 2009 and December 2010. Information on smoking status was assessed using the Composite International Diagnostic Interview (CIDI) and the Fagerstrom Test for Nicotine Dependence measured ND. Sociodemographic information was also collected.

Results: Of the 6166 participants, 16.0% were current smokers and 4.5% had ND. Results showed significant differences ($P \leq 0.0001$) in the prevalence of smoking by age, gender and ethnicity. 27% of male participants were smokers compared to 5.6% of females, while the proportion of Malays (27.9%) who smoked was significantly higher than Chinese (13.9%) and Indians (16.8%). Smoking prevalence was highest among 18 to 24 years (20.2%, $P \leq 0.0006$). Significant differences ($P \leq 0.0001$) were also identified for ND by gender and ethnicity; 7.5% of males and 1.7% of females had ND and Malays (7.1%) had a higher prevalence of ND compared to Chinese (4.1%) and Indians (4.4%). However there was no statistical difference in the prevalence of ND by age group.

Discussion & Conclusion: The results from this study highlight important differences in the prevalence of smoking and ND among different age groups, gender and ethnicity in Singapore and are important for developing future health policies and targeted preventive strategies.

YIA-QHSR-03

A Qualitative Assessment of Myopia in Students -- The Impact of Modified Ophthalmic Quality of Life Assessments

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Background & Hypothesis: Myopia is a major cause of visual impairment and morbidity in the young. Current quality of life (QOL) indices may not accurately reflect the actual status of myopes. We investigate the impact of myopia on (QOL) using modified QOL indices and compare the results with validated standard QOL questionnaires.

Methods: A prospective study of 176 myopic students. Standard and modified Visual Function-14 (VF-14) and utility values questionnaires [time trade-off (TTO) and standard gambles for death and blindness (SGD & SGB)] were administered. The modified questionnaires required participants to consider life without corrective lenses and answer the same questions as the standard questionnaires in the context of this scenario.

Results: Compared to the standard questionnaires, scores for the modified VF-14, TTO, SGB and SGD were significantly lower (VF-14: 48.7 vs 99.0, TTO: 0.80 vs 0.95, SGB: 0.93 vs 0.99, SGD: 0.95 vs 0.99, all $P \leq 0.002$). In standard questionnaires, there was no significant difference in QOL scores between mild to moderate (spherical equivalent [SE] -0.50D to -5.99D) and severe myopes (SE ≤ -6.0 D). However, severe myopes scored significantly lower than mild to moderate myopes in the modified questionnaires (VF-14: 22.5 vs 58.9, TTO: 0.73 vs 0.82, SGB: 0.88 vs 0.95, SGD: 0.92 vs 0.96, all $P < 0.05$).

Discussion & Conclusion: Compared to standard questionnaires, the modified versions used in this study are more sensitive in detecting differences in QOL among myopes, who responded according to the severity of their myopia. Lower QOL due to uncorrected myopia highlights the importance of intervention to improve vision in the young.

BP-AH-01

Genotyping of Common Beta-Thalassaemia Mutations Using Pyrosequencing

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Background & Hypothesis: Parental screening and prenatal diagnosis of thalassaemia is important as thalassaemia is the leading cause of morbidity and mortality amongst single gene disorders. Screening with isoelectric focusing and high-performance liquid chromatography can lead to false positives due to interactions between various haemoglobinopathies. While rapid molecular diagnostic methods such as gap-Polymerase Chain Reaction (gap-PCR), multiplex-PCR and multiplexligation-dependent probe amplification can detect alpha-thalassaemia deletions, dye-terminator sequencing is the only effective method to detect beta-thalassaemia mutations. We aim to develop a rapid and cost-effective method using pyrosequencing to detect common beta-thalassaemia mutations.

Methods: Seven biotinylated primer pairs and paired sequencing primers were designed using the PyroMark Assay Design software for the detection of 8 common beta-thalassaemia mutations in Singapore; -28 TATA(A > C), Cap site +1 (A > C), HbC (G > A), HbS (A > T), HbMalay/Cd19 (A > G), HbE/Cd26 (G > A), IVS1-5 (G > C/T/A), Cd41/42 (-TCTT). PCR was performed using the PyroMark PCR kit on 14 DNA samples (8 known, 6 blinded). The amplicons were bound to streptavidin-sepharose beads and sequencing primers were added in the vacuum workstation. Sequences were obtained as deoxynucleotide triphosphates were added. All sequences were validated with dye-terminator sequencing.

Results: Pyrosequencing detected the same beta-thalassaemia mutations in all 8 samples with previously confirmed mutations. Of the 6 blinded samples, 1 was genotyped as Cd41/42 (-TCTT) and there were no mutations in the remaining 5 samples. All pyrosequences were concordant with dye-terminator sequences. Dye-terminator and pyrosequencing took 16 to 18 hours and 4 to 6 hours respectively before results were released.

Discussion & Conclusion: Pyrosequencing is a rapid and cost-effective method to detect common beta-thalassaemia mutations.

BP-AH-02

Computer-Assisted CBT for Selective Mutism: Preliminary Results from a Randomised Controlled Trial in Singapore

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Background & Hypothesis: The aim of the present study was to examine the effectiveness of a 14-week web-based Cognitive Behavioral Therapy (CBT) program for children with Selective Mutism (SM) aged 6 to 12 years. We hypothesised that CBT would result in greater improvements in speech and illness severity relative to a control condition.

Methods: Twenty-one children from an outpatient child psychiatric clinic who met DSM-IV criteria for a primary diagnosis of SM participated in the study. Participants were randomly assigned to either 14 weeks of computer-assisted CBT or to a control condition (interaction with therapist while playing computer games). Parent, child, and therapist ratings were completed before and after the intervention.

Results: Significant improvements were found for the total frequency of speech from pre- to post-intervention ($F = 6.95$, $P = 0.016$, partial $\eta^2 = 0.268$) and for frequency of speaking in social settings outside of school ($F = 4.63$, $P = .0045$, partial $\eta^2 = 0.196$), but no significant differences were found between those in the CBT and control conditions. Children in the CBT group showed greater improvements in clinician-rated severity of mental illness ($F = 22.13$, $P < 0.0001$, partial $\eta^2 = 0.538$) and had higher clinician-rated improvement scores relative to those in the control group ($t(19) = -5.74$, $P < 0.0001$, mean difference = -1.9).

Discussion & Conclusion: Our results suggest that children with SM can benefit from participating in web-based CBT and from interacting with a therapist while playing games. Additional work is needed to determine optimal web-based strategies for treating children with SM.

BP-AH-03

Is Activity Restriction Essential after Canalith Repositioning Treatment for Benign Paroxysmal Positional Vertigo?

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Background & Hypothesis: The aim of the study was to determine whether activity restrictions are necessary after Canalith Repositioning Treatment (CRT) for Benign Paroxysmal Positional Vertigo (BPPV). The hypothesis was activity restrictions are not necessary post canalith repositioning technique for treatment of BPPV.

Methods: Fifty-six subjects diagnosed with posterior semicircular canal (PSC) BPPV were randomly allocated into experimental and control group post CRT. Subjects in the control group had to follow activity restrictions post CRT for 48 hours; the experimental group had no activity restrictions. Dix Hallpike test was performed to determine the presence of BPPV. In addition, self-perceived disability score using the Dizziness Handicap Inventory (DHI) was recorded before CRT and during second follow up.

Results: There was no significant difference in the success rate for CRT between the groups two weeks post treatment ($P = 0.611$). The DHI scores in both groups decreased post intervention and the change was significant ($P < 0.001$).

Discussion & Conclusion: The study suggests that activity restrictions may not be critical to the success of CRT for PSC BPPV.

BP-BSTR-01

Plasma Membrane Proteomics Identifies Biomarkers Associated with T(4;14) Multiple Myeloma

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Background & Hypothesis: Multiple myeloma (MM) is characterised by recurrent chromosomal translocations. Patients with t(4;14) have the worst prognosis. MMSET, a histone methyltransferase, is universally overexpressed in t(4;14) MM. The plasma membrane is of particular interest as a source of novel biomarkers, as it may present targets for small molecule- or antibody-based therapies. The aim of this study is to identify potential cell surface biomarkers functionally linked to MMSET overexpression.

Methods: We knocked down MMSET expression with shRNA and generated a cell line pair from KMS11, a t(4;14) MM cell line. Using stable isotope labelling by amino acids in cell culture (SILAC) followed by enrichment of plasma membrane proteins by cell surface biotinylation/avidin-affinity chromatography and analysis by GeLC-MS/MS, MMSET associated differences in plasma membrane proteins were analysed. The differential membrane proteins were verified by Western-blot (WB) and flow cytometry analysis.

Results: By SILAC-based mass spectrometry analysis, 45 cell surface proteins were identified as differentially expressed between KMS11 and KMS11/shMMSET. Four targets down regulated in KMS11/shMMSET were selected for further validation. WB and flow cytometric analysis indicated only SLAMF7 was universally overexpressed and decreased by shMMSET treatments in t(4;14) MM cell lines. Quantitative PCR (qPCR) analysis indicated shMMSET treatment resulted in significant reduction of SLAMF7 mRNA, suggesting that MMSET might regulate the transcription level of SLAMF7. ChIP followed by qPCR analysis indicated MMSET protein binding was concentrated in an upstream region (near -1,500bp) of SLAMF7 transcript start site.

Discussion & Conclusion: Our preliminary results illustrated SLAMF7 might be a novel cell surface biomarker associated with t(4;14) MM.

BP-BSTR-02

Western Blot Validation of Urinary Zinc Alpha-2 Glycoprotein in Normo-Albuminuric Diabetic Nephropathy

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Background & Hypothesis: Substantial proportion (up to 55%) of individuals with diabetic nephropathy (DN) has normal urinary albumin. These subjects, at risk for progressive renal impairment and cardiovascular disease, will not be identified by standard screening for urine albumin. Zinc alpha-2 glycoprotein (ZAG) was identified in our previous experiments using 2-dimensional fluorescence differential gel electrophoretic analysis (2D-DIGE) to be a potential biomarker. Using results obtained from previous 2D DIGE protein profiling, we validate the urinary biomarker ZAG in an independent cohort of classical DN (urinary albumin-creatinine ratio, ACR >1000mg/g and glomerular filtration rate, eGFR <60mls/min/1.73m²) and non-albuminuric DN (eGFR <60mls/min/1.73m² and ACR <30mg/g) using Western Blot Analysis.

Methods: Urine proteins (10ug/sample) were separated on SDS-12.5% polyacrylamide gels and blotted onto Hybond nitrocellulose membrane (GE Healthcare, UK). Membrane washed with 0.05% PBS-Tween and blocked with 10% non-fat milk at room temperature. Membrane were probed overnight at 4°C with primary antibody rabbit anti-Human ZAG polyclonal, 1:2000 (Abcam) followed by secondary antibody horseradish peroxidase-labeled donkey anti-rabbit IgG at room temperature. Enhanced chemiluminescence plus kit (GE Healthcare) and Typhoon Trio scanner (GE Healthcare, UK) was used to measure intensity of bands. Urinary creatinine was used as a normaliser.

Results: ZAG protein was confirmed and quantified to be 3-fold up-regulated in male and 2.6-fold up-regulated in female for non-albuminuric vs albuminuric cohort. The finding is consistent with our 2D-DIGE, suggesting this protein could be a robust bio-marker for screening of non-albuminuric DN.

Discussion & Conclusion: ZAG may be novel target urinary biomarkers useful for the screening of non-albuminuric DN.

BP-BSTR-03

Raman Endoscopy for in Vivo Diagnosis of Barrett's Oesophagus

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Background & Hypothesis: Raman spectroscopy is a vibrational analytic technique sensitive to the changes in endogenous biomolecular composition and conformations occurring in tissue. With our most recent development of integrated near-infrared (NIR) Raman spectroscopy with multimodal wide-field imaging modalities (i.e., white-light reflectance, narrow-band imaging, auto-fluorescence imaging), in vivo Raman tissue diagnosis of oesophageal and gastric dysplasia and neoplasia has been realised. This study aimed to evaluate the Raman endoscopic diagnostics of Barrett's oesophagus; an early premalignant condition in the gastroesophageal junction (GE junction).

Methods: A total of 25 in vivo sites have been measured from 21 patients during clinical endoscopy. Histopathological examination showed that 12 Raman spectra were from normal oesophageal squamous epithelium and 13 spectra were from Barrett's oesophagus. The partial least squares (PLS) discriminant analysis (DA) was employed to develop diagnostic algorithms for in vivo tissue diagnosis.

Results: High quality in vivo Raman spectra could be acquired in real-time (within 0.5 second) from the GE junction during clinical endoscopy. Significant differences in Raman spectra between normal oesophagus and Barrett's oesophagus were observed reflecting the distinct histopathology. The PLS-DA modeling on the in vivo Raman spectra achieved the diagnostic sensitivity of 84.6% and specificity of 100.0% for identifying Barrett's oesophagus from normal oesophageal tissue in vivo.

Discussion & Conclusion: This is the first study to demonstrate the utility of real-time in vivo Raman endoscopic diagnostics of Barrett's oesophagus and indicates that the technique is a powerful tool for in vivo detection of early premalignant conditions at the molecular level.

BP-CR-01

Does Obstructive Sleep Apnoea Affect Olfactory and Gustatory Functions?

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Background & Hypothesis: Obstructive Sleep Apnoea (OSA) is a prevalent condition that has a serious impact on morbidity and mortality. The underlying mechanism is increased resistance and collapse of the upper airway during sleep. Nasal obstruction is one of the risk factors. The aim of this study is to investigate the hypothesis that snoring and/or OSA may affect olfaction and gustation.

Methods: A prospective observational study at an otolaryngology department of tertiary referral hospital in Singapore has been undertaken. Subjects who underwent polysomnography because of snoring or history suggestive of OSA were evaluated regarding their smell and taste with visual analogue scale (VAS), Sniffin' Sticks extended smell battery test where results are presented as TDI scores, and a four basic taste solutions test. Demographic and biophysical data, co-morbidities, polysmonography results, TDI and taste scores were recorded and analysed using univariate and multivariate correlation analysis tests.

Results: Seventy patients were included (56 men, 14 women) with a median age of 43 years. 58.6% of subjects had severe OSA (AHI >30), 61.4% had reduced olfactory function as measured by VAS and TDI scores, and 28.6% had impaired taste function. There was a significant correlation between TDI and taste scores ($P \leq 0.001$). Subjects with lower average oxygen saturation had significantly reduced TDI scores ($P = 0.003$). There was a significant inverse correlation between nasal resistance and TDI scores ($P < 0.05$). No correlation between AHI and neither TDI nor taste scores was observed.

Discussion & Conclusion: Reduced olfactory function, but not gustatory function, may be part of the morbidity of patients with snoring and/or OSA.

BP-CR-02

A Comparative Study of UVA-1 Phototherapy Versus Betamethasone Valerate 0.1% Cream for Chronic Vesicular Hand Eczema

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Background & Hypothesis: Ultraviolet light A1 (UVA-1) phototherapy has been shown to be effective in the treatment of chronic vesicular hand eczema. The aim of study is to determine the efficacy and assess side effects of UVA-1 phototherapy in the treatment of chronic vesicular hand eczema in comparison to topical corticosteroids.

Methods: Forty-seven patients with chronic vesicular hand eczema were recruited in this prospective, randomised, open-label study comparing UVA-1 phototherapy with betamethasone valerate 0.1% cream for chronic vesicular hand eczema. Twenty-four patients were randomly assigned to UVA-1 phototherapy while 23 patients were treated with topical corticosteroids. UVA-1 phototherapy was administered 3 times a week for 6 weeks to the study patients in comparison to twice a day use of the topical corticosteroid. Degree of improvement was assessed using the Dyshidrotic Area and Severity Index (DASI). Side effects were also assessed. Both groups of patients had their DASI scored at third, sixth and twelfth weeks after initiation of treatment.

Results: Forty patients completed the study. There was a statistically significant decrease in the mean DASI scores at the third, sixth and twelfth week in both treatment groups. There was no statistically significant difference in the mean DASI scores between the 2 treatment modalities at the end of the 12th week treatment period. The patients tolerated UVA-1 treatment well except for post-phototherapy pigmentation which was seen in 18 of the 24 patients.

Discussion & Conclusion: Localised UVA-1 phototherapy is as effective as topical corticosteroids for the treatment of chronic vesicular hand eczema. Post-phototherapy pigmentation is a common side effect of UVA-1 phototherapy.

BP-CR-03

Oestrogen Receptor Status Predict for Local Recurrence Following Wide Local Excision for Breast Tumours

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Background & Hypothesis: Status of the surgical margins following wide local excision for breast cancer remains one of the strongest predictors of local recurrence. In our practice, a margin of 1mm or more is considered adequate. In this study, we aim to determine whether clinicopathological factors other than surgical margins contribute to the risk of local recurrence.

Methods: Retrospective review was performed of 548 consecutive patients who underwent wide local excision for invasive carcinoma or ductal carcinoma in situ (DCIS) from 1 January 2004 to 31 December 2008. Surgery was not routinely offered to patients with margins of 1mm or more. All patients with wide local excision received postoperative whole breast irradiation, inclusive of a boost to the tumour bed.

Results: Local recurrence developed in 20% of those with involved margins, as compared to 8.7% of those with close margins, and 5.4% of those with margins of 1mm and more. Although local recurrence was more likely with an involved or close surgical margin, this reached only borderline significance ($P = 0.05$). Oestrogen receptor (ER) status was found to be an independent predictor of local recurrence, with ER negative tumours being 3 times more likely to recur ($P < 0.01$, OR 0.30, 95% CI: 0.13 to 0.66). There was no correlation with a triple negative phenotype or other clinicopathological factors.

Discussion & Conclusion: A margin of 1mm or more appears to be adequate following wide local excision. However, ER status emerged as a stronger predictor for local recurrence and alone remained significant on multivariate analysis.

BP-NA-01

Effectiveness of Peer-Led Self-Management Programmes for Adults with Schizophrenia and Other Psychotic Disorders: A Systematic Review

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Background & Hypothesis: Peer-led self-management programmes (PLSMP) for mental illness have become widely used in the western countries. Many studies reported the benefits and effectiveness of such programmes in facilitating recovery in patients with schizophrenia or other psychotic disorders. This review aimed to synthesise the current evidence on the effectiveness of PLSMPs for adults with schizophrenia and other psychotic disorders in participants' empowerment, hopefulness, perceived recovery, self-advocacy, social support and symptom reduction.

Methods: A 3-step search strategy and search terms were formulated based on the selection criteria on population, intervention and outcome measures. Independent critical appraisals on selected studies were undertaken. Joanna Briggs Institute Comprehensive Review Management System and Meta Analysis of Statistics Assessment and Review Instrument (JBI CReMS and MASTARI) were used in data extraction and meta-analysis.

Results: A total of 9 English studies were included for meta-analysis. There are 2944 participants with a mean age of 44.3 (SD = 10.7). The synthesised evidence suggests that PLSMPs had a significant effect in improving participants' empowerment (SMD = -0.35, 95% CI, -0.60 to -0.11; $P = 0.005$), hopefulness (SMD = -0.52, 95% CI, -0.77 to -0.26; $P = 0.0001$), perceived recovery (WMD = -3.20, 95% CI, -6.01 to -0.39; $P = 0.0258$), self-advocacy (SMD = -0.56, 95% CI, -0.72 to -0.40; $P < 0.0001$), social support (SMD = -0.44, 95% CI, -0.66 to -0.21; $P = 0.0002$), and reducing symptom severity (SMD = 0.33, 95% CI: 0.17 to 0.49; $P < 0.0001$). However, most of the studies lacked randomisation, control group, follow-up assessments, measures to reduce confounders, and intention-to-treat analysis with considerable dropout rate.

Discussion & Conclusion: PLSMPs can be implemented in psychiatric service to promote patient's recovery. These programmes may help improve patients' psychosocial wellbeing and promote social integration. Future research studies need to utilise randomisation, control group, clear inclusion/exclusion criteria, follow-up assessments, and intention-to-treat analysis with multivariate statistical analysis.

BP-NA-02

The Impact of Advanced Practice Nurse in the Management of Patients With Hypertension and Dyslipidaemia in Primary Care

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Background & Hypothesis: The Advanced Practice Nurse (APN) clinic for chronic diseases was started in October 2009. The introduction of this new role has prompted the needs to evaluate the impact of care provided by the APNs.

Methods: A retrospective cohort study using medical records was carried out. Patients who had at least 2 consultations by APNs from November 2009 to May 2011 were included in this study. The main outcome measures were changes in blood pressure and low-density lipoprotein (LDL) cholesterol level.

Results: Total 264 patients were studied (the mean age 59, 53% male, 80% Chinese). The patients were co-managed amongst other healthcare professionals over 1 year. Of which 38% were managed solely by APNs. There were statistically significant improvements in LDL levels and blood pressure control. Systolic blood pressure improved from a mean of 127mmHg (95% CI: 124 to 130) to 123mmHg (95% CI: 120mmHg to 125mmHg) ($P = 0.001$) while diastolic blood pressure improved from a mean of 74mmHg (95%CI = 72mmHg to 76mmHg) to 71mmHg (95%CI = 69mmHg to 73mmHg) ($P = 0.004$). The LDL level of these patients improved from a mean of 3.2mmol/L (95% CI: 3.1mmol/L to 3.5mmol/L) to 3.0mmol/L (95%CI: 2.8mmol/L to 3.1mmol/L) ($P < 0.001$). The improvement of systolic blood pressure on patients managed solely by APNs was statistically significantly better than those patients who were co-managed ($P = 0.006$). The systolic blood pressure and diastolic blood pressure were decreased by 2.58mmHg ($P = 0.05$) and 1.39mmHg ($P = 0.067$) with every APN consult, adjusted for gender and ethnic groups.

Discussion & Conclusion: APNs provide a positive impact in the management of patients with hypertension and dyslipidaemia in primary care.

BP-NA-03

Profile of Elderly Patients with Postural Hypotension in Emergency Department

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Background & Hypothesis: To determine the prevalence, characteristics, and the likely causes of postural hypotension (PH) in elderly emergency department (ED) patients presenting with a fall, functional decline, giddiness, syncope and gastroenteritis.

Methods: This was a cross-sectional study. Patients aged 65 and above presenting to the ED during office hours with any of the above 5 were recruited. Those acutely ill, pre-morbidly non-ambulant, or intolerant of postural blood pressure (PBP) taking were excluded. PBP was taken at 1 and 3 minutes. ED evaluation, management, disposition and likely causes of PH were analysed.

Results: Of the 446 patients screened, 382 fit criteria. PH was found in 78 (20.4%) of our sampled population. Patients with PH were significantly older (78.9 vs 77.1, $P = 0.044$), more likely to demonstrate postural giddiness during PBP taking (32.1% vs 18.8%, $P = 0.013$), and more likely to report postural symptoms in the preceding 2 weeks (57.7% vs 14.8%, $P = 0.000$). Majority (88.5%) of postural drop occurred in the 1st minute; 43.6% in the 3rd minute. 30.8% and 43.6% had 1 and 2 causes respectively; 25.6% had no obvious causes found in ED. Medication (48.7%) was the biggest suspect, followed by dehydration (34.6%). Admission rates were higher amongst PH patients (66.7% vs 54.3%, $P = 0.055$).

Discussion & Conclusion: Postural hypotension is common. Advanced age, active postural giddiness, and preceding postural symptoms all suggest its presence. Majority of PH causes may be elucidated in the ED. It is important to perform PBP in above patients because PH suggests these patients are more likely to require admission.

BP-QHSR-01

Predictors of Inpatient Rehabilitation Effectiveness and Efficiency amongst Recent Stroke Survivors in Singapore

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Background & Hypothesis: Most stroke research has not investigated potential tradeoffs between rehabilitation effectiveness (REs) and rehabilitation efficiency (REy). We aim to determine independent factors of REs and REy amongst recent stroke survivors in Singapore.

Methods: We retrospectively studied all stroke patients (n = 3796) from all Singaporean rehabilitation hospitals from 1996 to 2005. We used backward mixed model linear regression (multivariate) to test the relationship between independent variables and REs and REy.

Results: Independent predictors of poorer REs and log REy were older age, Malay ethnicity, having a caregiver, ischaemic stroke, longer time to admission, and dementia. Having AIDS and having metastatic cancer were also independent predictors of poorer REs, while having hyperlipidemia was an independent predictor of better REs. REs was also lower in females [β - 2.2 (95% CI: -4.1 to -0.4)]. There were trade-offs between REs and REy with respect to length of stay (LOS) and admission Barthel's Index scores (ABI). An increase of 10 in ABI predicted an increase of 3.8% (95% CI: 3.4 to 4.2) in REs but a decrease of 0.02 (95% CI: -0.04 to -0.009) in log REy (a reduction of REy by 1.0 per 30 days). An increase in log LOS by 1 (LOS of 2.7 days) predicted an increase of 8.2% (95% CI: 6.0 to 10.4) in REs but a decrease of 0.72 (95% CI: -0.79 to -0.64) in log REy (equivalent to a reduction in REy by 2.3 per 30 days).

Discussion & Conclusion: There are trade-offs between effectiveness and efficiency during inpatient sub-acute stroke rehabilitation with respect to admission functional status and length of stay.

BP-QHSR-02

Risk Factors for Adverse Outcomes and Multidrug-Resistant Gram-Negative Bacteremia in Haematology Patients with Febrile Neutropenia in a Singaporean University Hospital

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Background & Hypothesis: Institutional febrile neutropenia (FN) management protocols were changed following findings of high prevalence of ceftazidime-resistant Gram-negative bacteremia (CR-GNB) among haematological patients with febrile neutropenia. Piperacillin/tazobactam replaced ceftazidime as the initial empirical antibiotic of choice, whereas carbapenems were prescribed upfront for patients with recent extended-spectrum beta-lactamase (ESBL)-producing Enterobacteriaceae colonisation/infection. An audit was conducted to determine the impact of these changes.

Methods: Data from all FN episodes between October 2008 and December 2010 were collected prospectively, with mid-November 2009 demarking the transition between preintervention and intervention periods. Outcomes measured included 30-day mortality post-development of FN and presence of CR-GNB.

Results: There were 427 FN episodes (200 in the preintervention period) from 225 patients. The prevalence of CR-GNB was 10.3% while 30-day mortality was 4.7%, with no difference between preintervention and intervention periods. Independent risk factors for 30-day mortality included presence of active haematological disease (OR: 6.28, $P = 0.016$), vancomycin prescription (OR: 4.79, $P = 0.005$) and older age (OR: 1.04 = 0.009). Independent factors associated with initial CR-GNB were profound neutropenia (OR 9.91, $P = 0.002$), presence of severe sepsis (OR: 3.04, $P < 0.027$) and active hematological disease (OR: 0.33, $P = 0.002$). Recent ESBL-producing Enterobacteriaceae colonisation/infection was not predictive of subsequent CR-GNB (positive predictive value = 17.3%) whereas a model based on independent risk factors had better negative predictive value (95.4%) but similarly poor positive predictive value (21.4%) despite higher sensitivity.

Discussion & Conclusion: A change in the FN protocol did not result in improved outcomes. Nonetheless, the audit highlighted that empirical carbapenem prescription was unnecessary in FN episodes without evidence of severe sepsis or septic shock, regardless of previous microbiology results.

BP-QHSR-03

Direct Medical Cost of Chronic Obstructive Pulmonary Diseases in Singapore

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Background & Hypothesis: Chronic Obstructive Pulmonary Disease (COPD) was ranked the 9th and 8th leading cause of hospital admissions and mortality respectively in 2009. Despite its negative impact on health, no study has measured the economic burden of COPD in this population. Our objective was to measure the healthcare cost related to COPD in Singapore, 2005 to 2009.

Methods: We adopted the public healthcare perspective in this study, including the cost incurred for inpatient, specialist outpatient, emergency department (ED), primary care visits and a disease management intervention. Prevalence and health services utilisation data came from the Chronic Disease Management Data-mart (CDMD) maintained by the National Healthcare Group. A weighted attribution approach was used to allocate costs to each health utilisation episode based on 2 decision rules. The costs were converted to US dollars (USD) with 2009 exchange rate (US\$1 = S\$1.45).

Results: The mean total cost attributable to COPD was approximately \$9.9 million. Inpatient admissions were the major cost driver contributing an average of \$7.2 million per year. COPD patients consumed \$1.6 million of outpatient services at the hospital-based specialist clinics. The proportion of hospitalisation costs declined from 74% in 2008 to 68% in 2009. The medical management of COPD condition reported higher mean cost than the medical management of related conditions (\$2.6 million vs \$2 million).

Discussion & Conclusion: The economic burden of COPD to the public healthcare system is substantial. The high burden attributable to COPD-related diseases further underscores the need for care strategies such as disease management programs to move beyond the current single disease paradigm.

OP-AH-01

Optimising Imaging of CT Pulmonary Angiogram

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Background & Hypothesis: Observe if CT Pulmonary Angiogram using 64-slice multi-detector CT can be performed with reduced contrast dose by increasing the injection rate.

Methods: This is a retrospective study. A total of 48 patients were included in this study (20 male, 28 female; mean age, 68.2 years). The following information was collected; volume of contrast dose, injection rate, bolus triggering level, injection duration and the scan duration. The patients were allocated into 2 groups (protocol 1 and protocol 2) based on the volume of contrast dose injected, the injection rate and the bolus triggering level. Protocol 1 is the default injection protocol (contrast dose 70ml, injection rate 3.5ml/s) and protocol 2 (contrast dose 50ml, injection rate 4.5ml/s) is the modified protocol. Enhancement was measured in the pulmonary trunk, central pulmonary arteries, lobar arteries and segmental arteries.

Results: There was a significant difference in the scan duration between the protocols. The *P* value was <0.05 , which indicate that the scan duration was significantly differing across the 2 protocols. The *P* value of pulmonary trunk, central pulmonary arteries, lobar arteries vs the protocol type was >0.05 and was therefore not significant. But the *P* value of the segmental arteries vs the protocol was <0.05 and was therefore significant. There was significant difference in the diagnostic quality between protocol 1 and protocol 2 ($P <0.05$).

Discussion & Conclusion: CT pulmonary angiogram with a 64-slice MDCT using a reduced contrast dose (50ml) and increased injection rate (4.5ml/s) will enable adequate enhancement of the pulmonary arteries.

OP-AH-02

Needs Analysis in Paediatric Oncology: Occupational Therapy Perspective

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Background & Hypothesis: Hospitals across Singapore are faced with rising demands for healthcare and limited allied health resources. It is thus crucial to identify healthcare needs for practitioners, managers and policymakers to strategically allocate resources for maximising health improvement. The health needs assessment aims to inform the allocation of scarce occupational therapy resources for maximum health benefit in the paediatric oncology service of National University Hospital. Children with cancer experience a disruption to their typical childhood occupations of self-care, productivity and play.

Methods: The assessment was conducted in an ongoing manner to profile the population, services available and relevant needs for occupational therapy services. Data was collected via semi-structured interviews with patients, families and professionals involved in providing patient care.

Results: Occupational therapy services are currently accessed only upon referral from the medical team, largely regarding splint fabrication. Needs raised for relevant services are school and home modification, aids and equipment prescriptions, participation and independence in self-care tasks, hand function, pain management, engagement and motivation.

Discussion & Conclusion: Findings highlight the need for increase in occupational therapy services provided in the paediatric oncology ward. A pilot occupational therapy program, guided by the vision of enabling children with cancer to participate in everyday childhood occupations across environments, is proposed. Future research should examine the outcome of the program.

OP-AH-03

Correlates of Self-Reported Disability in Patients with Neck Pain

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Background & Hypothesis: Neck pain is a common condition affecting 2/3 or more of the general population at one point of time during their life. The demand of healthcare attention from the patients puts a great burden on health care financial resources. However, the true risk factors and correlates of neck pain still remain unclear due to the multifactorial disease nature. Therefore, we decided to conduct a prospective cross-sectional study to examine the correlates of disability in patients with neck pain in local hospital. The neck pain management strategies may be broadened by identifying potentially modifiable determinants of neck pain.

Methods: The 103 neck pain patients recruited after medical team screening. Basic demographic data, standard neck physical examination results, Fear-Avoidance Behavior Questionnaire (FABQ) score, numerical pain score (NPS) and Neck Disability Index (NDI) score were collected. A multiple regression analysis was adopted to generate the model with NDI score as outcome and others as factors.

Results: The final model for NDI score included pain intensity, pain medication usage, positive upper limb neurotension test, scapular protraction, FABQ-Physical activity score and FABQ-Work score. Overall, these variables account for approximately 49% of variance. The standardised beta coefficient indicated that pain intensity ($B = 0.35$, $P < 0.001$) and FABQ-PA score ($B = 0.28$, $P = 0.001$) were top 2 influential variables.

Discussion & Conclusion: In this study, neck pain disability was mainly driven by pain intensity and FABQ-PA score. Both FABQ and NPS are simple and useful tools; we suggest that healthcare providers should make it a routine attempt to characterize fear-avoidance beliefs and pain intensity of the patients with neck pain.

OP-AH-04

Social Skills Groups for Mainstream Children with Autism

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Background & Hypothesis: Rising demands for social skills training have driven the new service delivery of social skills group programmes in National University Hospital's outpatient rehabilitation center. School-aged children with Autism Spectrum Disorder, ranging from 6 to 18 years old, are grouped for social skills training during the school holidays. Results from a pilot program in 2010 supported the expansion of such programs. This research aims to investigate the impact of social skills group programs conducted by paediatric occupational therapists for these children.

Methods: A pre-post test design was used for each group conducted. Five 1.5-hour sessions were attended by 3 to 5 children over a period of 2 weeks during school holidays. Handouts provided served as reinforcements of skills learnt, for both children and parents. The outcome measure was a parent questionnaire developed by therapists. Qualitative feedback from parents on the programmes was collected.

Results: There was an overall improvement in social skills. The children showed 8 to 16% improvement in self-regulation and social thinking skills. Two to 7% improvement was found in both cooperative play and group behaviour skills. Parents gave positive feedback about the duration, frequency and content of the programmes. Furthermore, booster session and sibling inclusion for the programmes were suggested.

Discussion & Conclusion: Findings supported the application of social skills group programmes in an outpatient rehabilitation setting. A continuation of future programmes should be made for children since social demands and quality of relationships increase rapidly in school-going years. Future research should examine the long-term impact of the social skills group programs.

OP-AH-05

A Study to Determine Commercial Iceboxes' Adherence to Cold Chain Temperature of 2 to 8 Degree Celsius during Dispatch of Medications

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Background & Hypothesis: Dispatch of temperature sensitive medicines, e.g. insulins, have been carried out using commercial iceboxes (Coleman®). Often, the temperatures of these medicines during dispatch are unknown. For vaccines, the failure to adhere to temperature range of 2 to 8 degree Celsius beyond their allowed duration would result in reduced potencies. Hence, this study aimed to determine whether Coleman® boxes are able to maintain during dispatch, the temperature of medicines at 2 to 8 degree Celsius.

Methods: Three iceboxes: Large Coleman® box (49cmX29cmX34cm), small Coleman® box (27cmX21cmX18cm) and SCA cool® validated box (model no.: System T1668-4) were used. The coolants used are SCA cool® gelpacks, CoolPacs® WS3020 (frozen overnight at -20 degree Celsius). Temperatures were logged every 10 minutes using temperature logger iButton® installed in the boxes. The boxes were positioned in a delivery van tracing the usual dispatch route and were opened for 30 seconds at each stop to simulate delivery situation.

Results: For 2 occasions, the temperatures in the small and large Coleman® boxes reached up to 40 and 34 degree Celsius respectively. Conversely, temperatures of the SCA cool® box averaged at 3 degree Celsius. For the big Coleman® box, doubling the number of gelpacks resulted in average temperature of 4.5 degree Celsius.

Discussion & Conclusion: The SCA cool® box was capable of adhering to temperature of 2 to 8 degree Celsius. The big Coleman® box might adhere to cold chain temperature requirements when more gelpacks were used. Results of this study gave insight to the actual temperatures of heat sensitive medicines during dispatch and offered recommendations/modifications to existing procedures of dispatch.

OP-AH-06

Development and Validation of an Expedited 10g Protein Counter (EP-10) for Dietary Protein Intake Quantification

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Background & Hypothesis: Precise protein quantification is essential in clinical dietetics, particularly in the management of renal, burns and malnourished patients. The EP-10 was developed to expedite the estimation of dietary protein for nutritional assessment and recommendation. The aim of this study was to compare the validity and efficacy of EP-10 and American Dietetic Association's "Exchange List for Meal Planning" (ADA-7g), against computerised nutrient analysis (CNA).

Methods: Protein intake of 197 food diaries kept by healthy Singaporean adults was determined thrice with: (1) EP-10, (2) ADA-7g and (3) CNA using SERVE program (Version 4.0). Two assessors performed assessments using the EP-10 and ADA-7g in a blind crossover manner, while a third assessor performed the CNA. Time taken to complete the EP-10 and ADA-7g was recorded. Linear association was determined by Pearson's correlation coefficient while agreement was evaluated using the Bland-Altman analysis.

Results: Mean difference in protein intake quantification when compared to CNA was statistically non-significant for EP-10 (1.4±15.6 g, $P = 0.154$) and statistically significant for ADA-7g (-2.2±15.6 g, $P = 0.046$). Correlation coefficient for EP-10 was slightly stronger than ADA-7g ($r = 0.948$ and $r = 0.918$ respectively, $P < 0.001$). Both EP-10 and ADA-7g had clinically acceptable agreement with CNA. The EP-10 required significantly less time for protein intake quantification than ADA-7g (mean time of 65±36 seconds vs. 111±40 seconds, $P < 0.001$).

Discussion & Conclusion: The EP-10 and ADA-7g are valid clinical tools for protein intake quantification, with EP-10 being more time efficient.

OP-AH-07

A Metabolomic Study of Watercress Consumption

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Background & Hypothesis: Cruciferous vegetables have been associated with a decreased risk in cancers due to their glucosinolate content. Metabolomics is a well-established method to characterise metabolic response to dietary intervention. This study seeks to investigate whether metabolomics can be applied to study the 24-hour evolution of the urinary metabolome after watercress, commonly-eaten crucifer consumption in 20 healthy and free-living individuals.

Methods: Gas chromatography and liquid chromatography with mass spectrometry were used as analytical technological platforms. Orthogonal Partial Least squares discriminant analysis followed by Mack Skilling's and Receiver operating character curve analyses were used to select potential metabolites. Those with both $P < 0.05$ and Area Under Curve > 0.70 were selected as marker metabolites. These metabolites are compared to chemical libraries and expected metabolites as described in the literature, for identification based on their molecular mass. Possible metabolic pathways are elicited.

Results: Significant metabolites involved in the metabolism of catecholamines, androgens, aldosterone, tryptophan, sorbitol and creatinine, and DNA damage and repair were identified. Males showed a more significant metabolic response to watercress consumption.

Discussion & Conclusion: This study has captured a global view of metabolic changes associated with watercress consumption in healthy individuals. Possible health benefits beyond cancer prevention are found. Quercetin, kaempferol and anti-oxidants in watercress may have positive effects on stress responses, cataract formation and blood pressure. However the significant metabolites may not imply a direct biological link to health benefits. The interaction between watercress intake and gender can also be explored in future studies that include a control group and larger number of subjects.

OP-AH-08

Clinical Outcomes of a Community Mental Health Programme for Youths in Singapore

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Background & Hypothesis: The Response, Early Intervention and Assessment in Community Mental Health (REACH) programme is a community-based mental health service that was piloted in 2007 and will be accessible to schools nationwide by October 2011. To evaluate the effectiveness of the REACH programme, we aimed to: 1) examine clinical improvements of students referred to REACH 6 months after initial assessment; 2) compare clinical outcomes of students referred to REACH with patients managed after admission to a child and adolescent psychiatric inpatient unit.

Methods: Data from December 2008 to July 2010 were utilised. The teacher-rated Strengths and Difficulties Questionnaire (SDQ) and the Clinical Global Impressions (CGI) scale rated by school counsellors were used for the REACH sample while the clinician-rated CGI was used for the inpatient sample.

Results: At 6-month post-treatment, results from pairwise t-tests analyses revealed that both REACH (n = 276) and inpatient groups (n = 231) demonstrated significant improvements in CGI-Severity scores ($P = 0.000$). The REACH group also showed significant improvements on all subscales ($P < 0.05$) of the SDQ. Results from chi-square analysis indicated that those who showed improvements on the CGI-Improvement item were significantly higher in the inpatient group (90.4%) than the REACH group (76.8%) ($P = 0.000$).

Discussion & Conclusion: Effectiveness of REACH was demonstrated as students referred to REACH showed improvements on indicators of severity of problem, behavioural and emotional symptoms. However, management plans in such community-based programmes may not be as efficacious in a short timeframe compared with that of an inpatient setting. Further analysis on cost effectiveness is required to clarify the efficacy and efficiency of each model.

OP-AH-09

Impact of the Interaction between Self-Efficacy, Mood, Coping Style, Attitudes Towards Injury and Pain on the Stages of Change in Individuals Undergoing Hand Therapy

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Background & Hypothesis: Research on different rehabilitation programmes shows that the role of self-efficacy in individuals has a significant influence in their health outcomes. Research has also shown that different mediators and predictors can have an influence on the level of self-efficacy in individuals during rehabilitation. Thus, it is hypothesised that predictors of mood, attitudes towards injury and the use of coping strategies will have a significant effect on the role of self-efficacy in individuals who received hand rehabilitation therapy at Tan Tock Seng Hospital after suffering from upper limb injuries.

Methods: Forty-seven patients volunteered and completed questionnaires regarding their emotional state, attitudes towards their pain that resulted from injury and the use of coping style they employed to manage the injury symptoms at different times during their recovery period. They also completed Pain Stages of Change questionnaire to determine their cognitive shift to adopt self-management approach towards pain.

Results: Overall, the levels of self-efficacy in individuals increase during the initial rehabilitation period. Regression analysis indicated that the interaction of attitudes such as fear of movement after injury and use of coping significantly predict levels of self-efficacy. Individuals reported a self-management behavioural approach towards the end of rehabilitation period.

Discussion & Conclusion: The increase in the use of coping and self-efficacy levels showed a level of improvement as individuals are engaging in coping strategies to cope with pain during hand therapy. Information provided by the therapists reduces their fears towards injury and pain as they understand more about their condition and benefits of early treatment and compliance.

OP-AH-10

Simvastatin, Potent and Safe in Patients with Marginal Elevations of Liver Enzymes at Baseline

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Background & Hypothesis: Simvastatin is a low-density lipoprotein cholesterol (LDL-C) lowering agent, proven to reduce risk of cardiovascular events and mortality. It inhibits mevalonate synthesis, a precursor in cholesterol and coenzyme Q10 (CoQ10) synthesis, which was found to be associated with myopathy and hepatopathy. Previously, we showed in HepG2 cells treated with simvastatin, CoQ10 supplementation reduced apoptosis, oxidative stress. We hypothesise CoQ10 may reduce the risk of hepatopathy in patients treated with simvastatin.

Methods: This was a randomised, double-blind, placebo-controlled study where 30 hypercholesterolemic patients with baseline abnormal liver function tests were enrolled and treated with simvastatin (20mg), and randomised to receive with either CoQ10 (150mg) or placebo. Muscle pain questionnaire, fasting blood were obtained at 0 and 12 weeks, to assess lipid response and markers of liver toxicity.

Results: Mean age (SD) was 49.1 (11.1), ethnic distribution Chinese 46.7%, Malay 23.3%, Indian 26.7%. Baseline alanine transaminase (ALT) was 62.4mmol/L (24.1), 1.5 times upper limit of normal. Simvastatin treatment significant lowered LDL-C 34.1% (15.3), ($P < 0.001$). There was no significant increase in ALT after simvastatin treatment. Changes of lactate to pyruvate ratio over baseline was 23.9% and 51.5% in patients treated with CoQ10 and placebo respectively ($P = 0.33$). With simvastatin treatment, 21.4% of patients in CoQ10 arm, 38.5% in the placebo arm develop muscle-ache/pain ($P = 0.42$).

Discussion & Conclusion: Although simvastatin can cause myopathy, this study demonstrates that simvastatin is still potent and safe for patients with mildly elevated ALT. Future analysis is planned using archived samples for assessment of metabolomic and microRNA profiles of these patients.

OP-AH-11

Evidence Based Psychiatry: Using the AUDIT (Alcohol Use Disorders Identification Test) to Assess and Evaluate Patients with a History of Alcohol Consumption on a Forensic Unit in a Tertiary Psychiatric Hospital

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Background & Hypothesis: Individuals accused of a crime and suspected to have a psychiatric disorder are sent by the court for a 2-week psychiatric assessment at the Institute of Mental Health. A psychiatrist assesses the accused with inputs from the multidisciplinary team. This clinical audit aims to assess and evaluate patients with a history of alcohol consumption as substance misuse disorders have been associated with violence and crime.

Methods: A retrospective descriptive clinical audit of remand patients who had a history of alcohol consumption and administered the AUDIT from February 2011 to June 2011 was done. The results were analysed using SPSS.

Results: History of alcohol consumption was elicited from 46 male patients, nil for females. There were 43.5 % Chinese, 30.4% Malays, 23.9% Indians and 2.2% Others. Sixty-five point two percent were single, 19.6% married and 15.2% divorced. 4.3% aged below 20 years, 23.9% 21 to 30 years, 28.3% 31 to 40 years, 28.3% 41 to 50 years, 13.0% 51 to 60 years and 2.2% 61 years and above. Statistical significant difference for 3 questions; feeling guilty or remorseful after drinking ($P < 0.02$), need for a drink in morning after drinking session at night ($P < 0.01$) and ability to stop drinking once started ($P < 0.01$) was recognised when comparing racial groups and alcohol use and consumption.

Discussion & Conclusion: The survey assists us to understand our patients with alcohol use better and the relationship to their crime. It also provides us information to implement an effective management plan.

OP-AH-12

Comparison of Risk of Developing Serious Adverse Events between Atypical Antipsychotic and Non-Antipsychotic Users in Persons with Dementia

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Background & Hypothesis: Atypical Antipsychotics (AAP) are associated with mortality and serious adverse events (AE). We hypothesise that the risk of developing serious AE leading to hospitalisation or death between AAP users and non-users in persons with dementia (PWD) is not significant.

Methods: Ongoing retrospective review of medical records of PWD on follow-up is being conducted in the dementia clinic (n = 104). Patients with schizophrenia or incomplete clinical data were excluded (n = 27). Chi-square test was used to compare the incidence of admission due to serious AE or death between both groups. The adjusted odds ratio of admission due to serious AE or death was computed.

Results: AAP users (n = 39) had greater exposure to sedatives or anxiolytics ($P < 0.001$), cognitive enhancers ($P = 0.004$), anticholinergics ($P = 0.05$) and were significantly older ($P = 0.02$) compared to non-users (n = 38). Twenty (51.3%) cases of hospitalisation or death were reported in the AAP users compared to 8 (21.1%) cases in non-users ($P = 0.006$). AAP users were 4 times more likely to develop serious AE leading to hospitalisation or death ($P = 0.007$). There was a higher incidence of cerebrovascular events (12.8% vs 2.0%), falls / fracture (15.4% vs 5.2%), death (10.3% vs 0%) and hospitalisation due to other reasons (18.0% vs 10.5%) in the AAP users. However, these became statistically insignificant after adjusting for confounding factors including age, dementia severity and co-morbidities.

Discussion & Conclusion: Interim analysis of this ongoing study showed that there was no statistically significant risk of developing serious AE leading to hospitalisation or death between AAP users and non-users in PWD.

OP-AH-13

The Economic Impact of Nursing Home Medication Reviews by Pharmacists

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Background & Hypothesis: Medication review by Pharmacists has been shown to improve prescribing through interventions and result in cost-savings for Nursing Home (NH) residents.

Methods: Reviews for four NHs from January 2008 to June 2010 were retrospectively reviewed. Only direct cost-saving interventions accepted by the doctors were analysed. Calculation was based on average cost-savings per year.

Results: A total of 780 residents were reviewed. Seven hundred and eighteen direct cost-saving interventions were identified. Total cost-savings for the 4 NHs amounted to S\$99,674.86. The top 4 interventions by frequency were “drug use without indication” (68%; savings of \$63,531.73), “over dose” (10%; savings of \$9431.74), “too frequently dosed” (8%; savings of \$8931.15) and “better selection of drugs which lead to cost reduction” (5%; savings of \$3430.81). Of the 131 specific medications which pharmacists intervened on, the most frequently occurring drugs were omeprazole, famotidine, ferrous gluconate, bisacodyl suppository, folic acid and ferrous fumarate. Interventions involving esomeprazole resulted in the most cost-savings (S\$14,264.79), followed by lansoprazole (S\$11,951.26), omeprazole (S\$11,107.24) and calcitonin nasal spray (S\$5786.36). The expenditure of NHs in engaging Pharmacists for review totaled S\$50,820 over the same period.

Discussion & Conclusion: This study showed that Pharmacist’s interventions in the four NHs from January 2008 to June 2010 resulted in direct medication cost-savings amounting to S\$99,674.86. Indirect cost-savings have not been included in this analysis, and if added on, would likely contribute to an increase in cost-savings. The expenditure on Pharmacist review is justified with net savings of S\$48,854.86. We recommend that NHs should consider employing Pharmacist for review service.

OP-AH-14

Evaluation of Outcomes in Patients with Distal Radius Fracture after Occupational Therapy

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Background & Hypothesis: From January 2007 to December 2009, 150 patients were randomly selected for a retrospective study to evaluate outcomes of patients with distal radius fractures to ensure the relevance and effectiveness of therapy protocol. Exclusion criteria were patients with other associated fractures, who attended less than two therapy sessions and who defaulted on therapy attendance.

Methods: Patients' age, cause of fracture and type of treatment were analysed for risk factors and predictors of outcomes. Objective measures of wrist range of motion (ROM), grip strength and role status post-injury, and subjective measure of pain were used as functional indicators. Occupational therapy comprises of both supervised mobilisation in clinic and home mobilisation. Gradual strengthening and functional training was initiated upon radiological union.

Results: Falls as cause of fracture occurs in 88% of patients analysed, with 84% patients aged above 40 years. 77% of patients were conservatively treated and 23% surgically treated with internal fixation. There is a significant increase in wrist ROM ($P < 0.001$) with matched T-test, mean wrist flexion 45.2°, wrist extension 54.3° before discharge. Increase in grip strength is also significant (mean grip strength 17kgf). Pain score also decreased significantly (mean score 1.58) 80.9% of patients returned to work, with patients attending an average of 6.6 therapy sessions over 12.4 weeks.

Discussion & Conclusion: While patients have demonstrated improved wrist motion, grip strength and decreased pain, the benefit of occupational therapy is not conclusive due to the lack of control group and the effect of natural recovery. Results also highlighted the importance of falls prevention programs.

OP-AH-15

Rapid Prenatal Diagnosis of Common Foetal Aneuploidies Using Microfluidic-Fluorescence in Situ Hybridisation

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Background & Hypothesis: Rapid molecular prenatal diagnostic methods such as fluorescence in situ hybridisation (FISH), quantitative fluorescence-PCR, multiplex-ligation-dependent probe amplification, and BACS-on-BEADS can detect common foetal aneuploidies within 24 to 48 hours. However, specific diagnosis or aneuploidy exclusion should be ideally available within the same day as foetal sampling to alleviate parental anxiety. Microfluidic technologies integrate different steps into a microchip, saving time and costs. We aim to develop a cost-effective, same-day prenatal diagnostic FISH assay using microfluidics technology.

Methods: Two milliliters of amniotic fluid (n = 30, 16 to 22 gestational weeks) were Carnoy's fixed before loading into the microchannels of a microfluidic FISH integrated nanostructured device (microFIND®). The glass slide of the microFIND® was coated with nanostructured titanium dioxide (ns-TiO₂) to facilitate the adhesion of cells. Pretreatment (<1 hour) was performed within the microchannels before hybridisation (1 hour) using 0.5µl of each probe mixture from the AneuVysion Prenatal Kit (LSI 13/21, CEP 18/X/Y). Fifty nuclei were counted by two trained analysts, and all results were validated with their respective karyotypes.

Results: Of the 30 samples, 2 cases of foetal aneuploidies (Trisomy 18, Trisomy 21) were detected, and the remaining 28 cases were normals. All signals in 50 nuclei were distinct and could be counted for each probe. Results were 100% concordant (lower 95% CI, 84.9%) with their respective karyotypes and ready to be released within 4 hours of samples receipt.

Discussion & Conclusion: Microfluidic-FISH, using 20-fold less than the recommended amount of probe is a cost-effective method to diagnose common foetal aneuploidies within the same day of foetal sampling.

OP-AH-16

Evaluation of Molecular Approaches for the Comprehensive Detection of HLA-B*27 Alleles

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Background & Hypothesis: Human Leukocyte antigen-B27 (HLA B*27) is known to be strongly associated with ankylosing spondylitis, as over 95% of patients are HLA B*27 positive. Therefore, an unequivocal detection of HLA B*27 is essential. The aim of this study was to evaluate the current sequence specific primer (SSP) method employed by our laboratory against the most recent SSP method with regard to coverage of all the known HLA-B*27 subtypes.

Methods: Literature on molecular methods for HLA-B*27 screening were reviewed. The article with the most comprehensive coverage was selected and the experiments were repeated with adjusted conditions to optimise results and validate the viability of the suggested primer in the article. Both the new primer and the primer used in our laboratory test were compared using Basic Local Alignment Search Tool (BLAST). Subtypes covered for each primer were tabulated. A series of patients sample were selected to evaluate the current in-house methods against the new method.

Results: Comparison of the 2 methods indicates that the new method is able to cover additional subtypes, such as HLA-B*27:01, HLA-B*27:12, HLA-B*27:16 and HLA-B*27:26. A total of 78 patients' samples were used to validate the new SSP cited in the paper. Both primers gave identical results.

Discussion & Conclusion: The result demonstrates that the current in-house method is sufficient to cover relevant disease-associated alleles. Though the new primers detect some newly reported subtypes, these rare subtypes are seldom observed in Asian population. The validity of the in-house primer is substantiated by the performance in external quality tests. Therefore, the current approach is adequate for laboratory diagnostic purpose.

OP-AH-17

Evaluation of the Ark Plasma Defroster®, Used in the Thawing of Fresh Frozen Plasma

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Background & Hypothesis: Fresh Frozen Plasma is best preserved at -20 degrees Celsius or lower and under normal conditions, takes the laboratory 20 minutes to defrost 2 packs of Frozen Plasma in a water bath set at 37 degrees Celsius. Under Mass Transfusion conditions where 4 packs are thawed simultaneously, the defrost time can be extremely prolonged.

Methods: The Ark-Bio plasma defroster uses microwave radiation to safely defrost Plasma, under 12 minutes. We compared basic coagulation indices by using split samples that were thawed using the microwave method and by conventional means. Both samples were then tested for Prothrombin time, International Normalisation Ratio and Activated Partial Thromboplastin time.

Results: Regression analysis gave the following results; conventional thaw versus microwave irradiation for Prothrombin Time yielded $y = 0.992x + 0.507$, $r = 0.846$, International Normalisation Ratio $y = 0.991x + 0.051$, $r = 0.844$ and activated Partial Thromboplastin Time $y = 1.028x + 0.423$, $r = 0.815$. Additionally, preliminary analysis of D-Dimer, Fibrinogen and Total Clotting Time did not show any appreciable difference between products thawed by microwave irradiation and by conventional method.

Discussion & Conclusion: The Ark Plasma Defroster® promises to be an invaluable tool in our blood transfusion process by allowing rapid and safe thawing of multiple packs of Plasma. Fresh Frozen Plasma is ready for use within half to one third of the time it traditionally takes by immersion in a water bath. This rapid defrost method can also potentially decrease wastage of such products by allowing defrosting upon demand with short lead-times.

OP-AH-18

Determining the Dietary Glycaemic Index of Chinese Adults with Type 2 Diabetes Mellitus (T2DM) in Singapore

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Background & Hypothesis: The glycaemic index (GI) of a diet is known to affect glycaemic control in individuals with Type 2 diabetes mellitus (T2DM). We aim to determine the dietary GI of Singaporean Chinese adults with T2DM and their relationships with metabolic markers.

Methods: Fasting blood samples, anthropometric measurements and 24-hour dietary recalls were obtained from Chinese adults with T2DM on insulin, oral medications or diet-control therapy. Carbohydrate-rich foods from the recalls were assigned GI values [low (≤ 55), intermediate (56 to 69) and high (≥ 70)] and their corresponding glycaemic loads (GL) computed.

Results: Preliminary results showed that the age, body mass index and HbA1c of a sub-group of participants [n = 54; 32 (59%) males] were 58.3 \pm 4.8 years (mean \pm SD), 26.6 \pm 5.1kg/m² and 7.9 \pm 1.1% respectively. Mean daily GI was 75 \pm 10 (high) and GL 112 \pm 37. The proportion of participants who had low, intermediate and high-GI diets were 4%, 28% and 68% respectively. White rice, white bread, wholemeal bread (high-GI foods) and dairy products (low-GI) were the most frequently consumed. Females had a significantly lower mean daily GI compared to males (70 \pm 8 vs 78 \pm 10; $P = 0.0028$, student's t-test), but higher HbA1c levels (8.5 \pm 1.1 vs 7.5 \pm 1.0; $P = 0.0004$). After adjusting for age, gender and medications, no significant associations were found between GI and HbA1c as well as metabolic markers, including total cholesterol, triglycerides and fasting glucose.

Discussion & Conclusion: Results indicate that this population consumes a diet high in GI. An awareness of the GI of foods can help diet therapy to be more effective. Further analysis may enhance understanding of the relationship between diet and glycaemic control.

OP-AH-19

Therapeutic Effect of Connective Tissue Manipulation on Diabetic Foot Ulcer — Pilot Study

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Background & Hypothesis: This randomised controlled trial study aimed to determine the efficacy of connective tissue manipulation (CTM) on diabetic foot ulcer (DFU) by measuring the wound surface area (WSA) and bacterial colonisation counts (BCC). Hypothesis: The WSA and BCC in CTM group are reduced post-intervention.

Methods: Twenty-six subjects with a dropout rate of 6 (10 in CTM group, 10 in control group) were recruited from physiotherapy department of Pusat Perubatan University Kebangsaan Malaysia (PPUKM) and randomised into either of the treatment groups. During 6 weeks of study, all subjects underwent the indicated DFU treatment depend on multidisciplinary health care expertise clinical rationale and subject's clinical presentation. In addition to the conventional treatment, CTM group were given CTM treatment twice per week. The DFU was analysed using acetate WSA measurement on weekly basis. The bacterial colony forming unit (CFU) of BCC were measured for pre- and post 6 weeks of treatment.

Results: CTM treatment resulted in significant ($P < 0.05$) weekly WSA changes between CTM and control group with large effect size ($\eta^2 > 0.14$) and with medium power effect (0.689). The BCC was significant decreased ($P < 0.05$) in both groups after 6 weeks of treatment. The mean reduction of CFU count post 6 weeks of intervention between CTM and control group was also statistically significant ($P < 0.05$).

Discussion & Conclusion: Treating DFU is more effective when CTM was implemented along with the conventional treatment. These data from this pilot study and effect size obtained would provide the basis for application of CTM technique on DFU to permit future controlled, randomised, prospective efficacy studies.

OP-AH-20

Evaluation of Roche Cobas B123 Point-of-Care Testing Blood Gas Analyser

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Background & Hypothesis: The key objective of point-of-care testing (POCT) is to provide rapid results that could expedite treatment decisions to improve the clinical outcomes in patients. The aim of our project was to validate the analytical performance of the Cobas b123, a new blood gas analyser launched earlier this year by Roche, before the instrument is put into service at the hospital critical care settings.

Methods: The analytical performance of the instrument was assessed for imprecision and method comparison against the central laboratory analysers. Imprecision was studied by measuring three levels of quality control (QC) material (COMBITROL PLUS B supplied by Roche) in triplicate over 5 days in accordance to CLSI EP5-A2 guidelines. The performance for pH, pCO₂, pO₂, electrolytes, ionised calcium and lactate was compared against the central laboratory blood gas analyser Roche Omni C and Abbott iSTAT using 36 patient samples while the total haemoglobin and haematocrit were compared against the central laboratory Sysmex XT1800 using 26 patient samples.

Results: Coefficient Variance of less than 4% were observed for all the study parameters indicate that the total imprecision were satisfactory. The method comparison showed good compatibility between the Cobas b123 and the comparative methods where correlation coefficients obtained were between 0.92 and 0.99 for most parameters. For sodium and ionised calcium, the correlations were acceptable with $r = 0.82$ and $r = 0.80$ respectively.

Discussion & Conclusion: The Cobasb123 showed satisfactory performance in analytical studies. The instrument is easy to use, virtually maintenance free, and the availability of automated QC and “autolock” functionality makes it ideal for POCT setting.

OP-AH-21

Comparison of RT3 Accelerometer Data between Overground and Treadmill Locomotion

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Background & Hypothesis: The RT3 accelerometer is a triaxial motion sensor which measures movement of the body in 3 different planes: antero-posterior, medio-lateral and vertical. The 3 recordings are combined by an algorithm into 1 value (the Vector Magnitude) allowing Energy Expenditure values to be calculated. Activity Calorie Counts and Total Calorie Counts were also recorded. The purpose of this study was to compare the accelerometer data of walking and running on a track and treadmill, and to investigate which had higher energy expenditure.

Methods: Twenty-four males walked and ran 550m on a 50m indoor track. Using their individual average speed from the track phase they repeated this on a treadmill one week later. The RT3 accelerometer was fitted on each subject. Energy Expenditure values for track and treadmill locomotion was then compared directly.

Results: The data collected (Vector Magnitude and Activity Calorie Count) was analysed using SPSS. Insignificant differences were found for the track and treadmill walking data [Vector Magnitude ($P = 0.27$), Activity Calorie Count ($P = 0.185$)]. Significant differences were found for the running data [Vector Magnitude ($P = 0.00$), Activity Calorie Count ($P = 0.00$)].

Discussion & Conclusion: Walking and running performed on a track uses more energy than that performed on a treadmill. For long distances or over a long period of time, these distances may have a large impact on energy expenditure. Possible explanations offered are: biomechanical differences, the treadmill belt, air resistance and measurement error.

OP-AH-22

Stroke Rehabilitation: Benefits of Carry over Programme in Subacute Care

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Background & Hypothesis: In subacute stroke rehabilitation emphasis is put on acquisition and not application of skills. This study attempts to show the effectiveness of carry over effect from ward practice.

Methods: Twenty-five subacute stroke patients were met the selection criteria and randomly assigned to control and intervention wards. Same amount of therapist time were given to the 2 groups of patients. Nursing team from the intervention ward will hand over bathing, transferring, feeding, grooming or toileting tasks to the therapy assistant to practice the new skill daily. Data were collected at baseline and week 3.

Results: From T-test, intervention group has shown significant difference after three weeks of therapy intervention from Motor Activity Log Amount Scale ($P = 0.000$), Motor Activity Log How Well ($P = 0.001$), Action Research Arm Test ($P = 0.05$), Physiotherapy Clinical Outcome Variables ($P = 0.000$), Berg Balance Scale ($P = 0.000$) and Modified Barthel Index ($P = 0.000$). However, there is no significant difference in the control group in all the areas except Modified Barthel Index ($P = 0.05$).

Discussion & Conclusion: Although both groups shows significant improvement in Modified Barthel Index (basic activity of daily living), intervention group achieved far more improvement (improved 17.32%) then control group (improved 9.8%). Focusing on the carry over practice for inpatient rehab could achieve better result from stroke arm usage, mobility, balance and activity of daily living.

OP-AH-23

Knowledge and Beliefs of Osteoporosis As Well As Lifestyle Habits among Nurses in a Community Hospital

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Background & Hypothesis: Osteoporosis is an important public health problem. Patients with osteoporosis suffer from fractures which causes morbidity and mortality. In year 2030, 1 in 5 Singaporean will be above 65 years old. Community hospitals serve elderly patients with stroke and hip fractures. It's relevant to study how knowledgeable the nurses are and how information is imparted to patients and caregiver.

Methods: A cross-sectional survey using anonymous questionnaire in Community Hospital:

1. Demographic data
2. The practice of imparting osteoporosis education to patients
3. The Osteoporosis Knowledge Test (OKT)
4. The Osteoporosis Health Beliefs Scale
5. The food frequency questionnaire (FFQ)

Results: The mean OKT was 59.1%. The subjects scored highly in health belief scores — benefits to exercise, benefits of calcium intake and health motivation. Of those who filled in FFQ, 50% had inadequate intake. Ninety-two point three percent felt staff nurses were responsible for patients' education. Fifty-four point two percent were confident in doing, but only 40.7% regularly spend time in educating the patients on osteoporosis. Fifty-seven point seven percent felt that they may spend more time on educating the patients if they are less busy or important duties and 60.9% felt patients will not change with their habits after counselling them.

Discussion & Conclusion: The nurses in intermediate long term care hospital may have insufficient knowledge on osteoporosis. Of those who filled in the FFQ, 50% had inadequate intake. Even though 92.3% felt that the staff nurse was responsible for osteoporosis education, only 40.7% regularly spend time educating their patients. Reasons could be the lack of self-efficacy in changing the patients and lack of time due to nursing duties.

OP-AH-24

Reasons of Non-Participating Youth at Longitudinal Youth-at-Risk Study (LYRIKS): Lesson Learned

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Background & Hypothesis: The Longitudinal Youth-at-Risk Study (LYRIKS) is a nation-wide observational study which is aimed at youth deemed to be at risk of developing severe mental illnesses. This paper aims to study reasons for outright refusal, decline, and screen failure among those who were approached to participate in the study.

Methods: LYRIKS has adopted face-to-face as well as indirect approaches using various media to reach out to the youth, referrals from professionals such as counsellors, doctors, teachers, etc. Responses towards LYRIKS were categorised as “outright refusal” for those who refused right from the beginning; “decline” for those who remained disinterested after presenting the study, “screen failure”, and “participant”. Reasons for decline, screen failure, and the participant’s socio-demographic profiles were collected.

Results: LYRIKS was initiated in 2009 and since then has approached 2397 youth. Of these youth, 137 (5.7%) were outright refusals, 1057 (44.1%) were declines, and 587 (24.5%) were screen failures. Three foremost reasons for not participating in the study were school/work commitment (27.5%), parental objection (11%), and stigma (7%). Six hundred and sixteen (25.7%) were successfully recruited in the study.

Discussion & Conclusion: Reasons for outright refusal, screen failure, and lack of interest must be reviewed and analysed periodically at different time points in the longitudinal study. It can be a valuable tool to fine-tuning recruitment strategies which could possibly lead to improved participation and enhance the power of the study.

OP-AH-25

Trunk Muscles Activation in Different Sitting Postures during Abdominal Hollowing Exercise

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Background & Hypothesis: Abdominal Hollowing (AH) is a common technique to strengthen the Transversus Abdominis (TrA) for improved lumbar stability after low back pain. This pilot study investigated the relationship between sitting posture and TrA activation during AH exercise.

Methods: Abdominal and back muscle activities were quantified by surface electromyography, and TrA contraction through Realtime Ultrasound. Muscle activity was evaluated in crook-lying, upright, neutral-pelvic, slouched sitting. An electrogoniometer ensured standard lumbopelvic position in all 4 positions. Electromyography data were expressed as a percentage of submaximal voluntary contraction (sMVC).

Results: TrA activation was found to be greatest in neutral sitting (46.374% of sMVC, $P = 0.275$). Performing AH in slouched sitting was most effortful with the least number of successful contractions ($P = 0.009$).

Discussion & Conclusion: Performing AH in sitting was influenced by lumbopelvic angle. The neutral-pelvic sitting is the best sitting position to activate the greatest TrA with less exertion, despite the highest activation of Erector Spinae. Rehabilitation to train AH awareness and its independent practice should be performed in neutral-pelvic posture.

OP-AH-26

Post-Analytical Rules on Platelets and Haemoglobin Level at Haematology Analyser Improve Turn-Around-Time

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Background & Hypothesis: Reviewing haematology slides is the main contributor of prolonged turn-around-time (TAT) of full-blood-count (FBC). Post-analytical rules are set at analyser (Sysmex, USA) to trigger slide review for abnormalities. Our hypothesis is adjusting platelet counts and haemoglobin levels would reduce review rate without compromising patients' safety while improving TAT, efficient use of the technologists' time and reduce cost-saving on staining processes.

Methods: This study reviewed the data on 2 parameters; platelet counts at $140 \times 10^3 \text{uL}$ and haemoglobin level at 18g/dL. We examined 18,445 FBC results from January to June 2011.

Results: Out of 20% (3689/18445) triggered slide reviews, only 712/3689 (20%) needed technologists' comments. At platelet limit $140 \times 10^3 \text{uL}$, 10% of those requiring review with suspicion of platelet clumps were false-positive. When adjusted to $80 \times 10^3 \text{uL}$, slide reviews decreased by 19%. Several studies have documented that in clinically stable patients, platelet transfusion is only required when platelet dipped below $20 \times 10^3 \text{uL}$. If haemoglobin level limit was raised to 19g/dL, the review rate decreased by 1%. This threshold is acceptable as high haemoglobin level is considered as a symptom of other diseases.

Discussion & Conclusion: The revision on platelets and haemoglobin levels limit decreased review rate by 803/3689 (22%), averaging 4 slides per day. As a technologist spends about 5 minutes per review and 15 minutes for staining, one saves up to 80 minutes a day. The lower review rate allows the technologist to attend to other matters, thus improving efficiency in haematology processes, better patient management and TAT.

OP-AH-27

A Systematic Review of Adapted Cognitive-Behavioural Therapy for Religious Individuals with Severe Mental Illness

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Background & Hypothesis: Cognitive-behavioural therapy (CBT) is an evidence-based intervention for schizophrenia. However, mental health clinicians should be cognisant of the population that was used to validate the intervention and assess the acceptability of this intervention to a target group that is culturally different. We seek to review empirical studies of CBT adapted for religious individuals with serious mental illness (SMI) to determine the extent to which this intervention can be considered an empirically supported treatment.

Methods: A search for relevant published empirical studies was performed. Studies included in this review were randomised controlled trials comparing the effectiveness of standard CBT to religiously modified CBT for the treatment of SMI.

Results: The search produced 2 studies that met the inclusion criteria. One study found that a modified version of CBT that incorporated religious content was associated with better post treatment outcomes compared to standard CBT for the treatment of depression in religious participants. The study also noted a low dropout rate amongst the participants. Another study found that psychotherapy employing CBT techniques that incorporated religious and cultural content was associated with faster remission of symptoms in religious participants than in non-religious participants with generalised anxiety disorder.

Discussion & Conclusion: The reviewed studies showed that modifying CBT to be more consonant with the religious beliefs of individuals with SMI could enhance the effectiveness of standard CBT. However, religiously modified CBT cannot be considered a well-established psychological intervention for the treatment of schizophrenia in religious individuals per the criteria delineated by the American Psychological Association. Implications for practice are discussed.

OP-AH-28

Outcomes of HIV Patients Receiving Antiretroviral Medications through Medifund

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Background & Hypothesis: Since February 2010, Medifund has been approved to cover the cost of antiretroviral (ARV) medications. We reviewed the outcome of human immunodeficiency virus (HIV) patients receiving ARV medications through Medifund.

Methods: Patients who obtained ARV medications through Medifund at Communicable Disease Centre (CDC) from February to October 2010 were identified from pharmacy records. Their adherence and clinical outcome were assessed based on prescription refills and results of HIV viral load test with at least 6 months of follow up.

Results: A total of 235 patients obtained ARV drugs through Medifund from February to October 2010. HIV viral load test was performed for 143 (61%) patients prior to Medifund assistance. Of these, 85 (59%) patients had viral load 1000 copies/ml. After 6 months into Medifund assistance, 164 (70%) patients had HIV viral load test performed. Among them, 148 (90%) had viral load 1000 copies/ml were identified non-adherent based on their frequency of prescription refills. Of these, 3 died and 2 had depression.

Discussion & Conclusion: Financial assistance such as Medifund is vital to ensure patient's adherence and thus treatment success. However, other contributing factors such as psychiatric co-morbidities, poor psychosocial support remain as obstacles to adherence. Addressing these issues is essential to ensure patient's adherence.

OP-AH-29

A Survey of Social Support and Risk for Postnatal Depression in Women

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Background & Hypothesis: We conducted a follow-up survey to a pilot survey on the prevalence of postnatal depression conducted at Jurong Polyclinic in 2010. Past literature has shown that presence of social support is vital in reducing risk of postnatal depression. Therefore, in the current survey, we have focused on the social support available for postnatal women.

Methods: Women between 1 to 4 months postnatally following up at Jurong Polyclinic were administered the validated Edinburgh Postnatal Depression Scale (EPDS) preceding a survey on demographic information, including questions detailing the support they had postnatally. Participants with an EPDS score of 10 and above were offered psychiatric assessment. All participants were psycho-educated and given relevant contacts for referral if necessary.

Results: Out of 101 postnatal women interviewed, 14% had an EPDS score of 10 and above, indicating possible high distress. 5% had no support, 88% had 1 or 2 support persons and 7% had 3 or more support persons. From the support indicated, mothers accounted for 34%, mothers-in-law, 21%, husbands, 16%, domestic helpers, 11%, confinement ladies, 9% and other relatives, 8%.

Discussion & Conclusion: Compared to 2010, indication of husband's support increased by 12% while percentage of women at high risk for postnatal depression reduced by 9%. As shown in past literature, this increase in partner support could be one of the factors causing postnatal women to fare better this year. Future studies should be done to determine the causal relationship between the factors. Policy makers could extend upon these results to review family-friendly initiatives to include support persons for postnatal women.

OP-AH-30

Reduction of Prescription Drug Abuse in Psychiatric Outpatients

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Background & Hypothesis: Prescription drug abuse is the intentional misuse of a medication outside of the normally accepted standards of use. It can cause long-term dependence and adverse effects. While most people take their prescription medications responsibly, prescription drug abuse is becoming an increasingly serious public health problem. Prescription drug abuse of sedative-hypnotics (benzodiazepines, zolpidem, zopiclone) and anti-cholinergic agents (benzhexol, benztropine) is identified as a drug-related problem in psychiatric outpatients. The pharmacist-run Medication Management Clinic (MMC) in Community Wellness Centre (CWC) seeks to reduce this drug-related problem among its psychiatric outpatients.

Methods: From June 2009 to May 2011, CWC outpatients identified with prescription drug abuse of sedative-hypnotics and anti-cholinergic agents were referred to MMC by psychiatrists, medical officers, and MDT members for psycho-education and dosage reduction. Sedative-hypnotic abuse and anti-cholinergic agent abuse were managed using IMH Benzodiazepines Reduction Protocol and IMH Benzhexol Reduction Protocol respectively. Clinical outcome was measured by prescription drug abuse resolution rate. Economic outcome was measured by estimated patients' annual medication cost-savings (AMCS) due to resolution of prescription drug abuse.

Results: MMC managed 1319 prescription drug abuse outpatients (32% sedative-hypnotics and 68% anti-cholinergic agents) with overall resolution rate of 49% and average AMCS of SGD28.92 per patient. For sedative-hypnotic abuse, 41% was resolved and 31% was partially resolved. Average AMCS was SGD25.56 per patient. For anti-cholinergic agent abuse, 53% was resolved and 28% was partially resolved. Average AMCS was SGD30.53 per patient.

Discussion & Conclusion: Pharmacist-run MMC in CWC produced positive clinical and economic outcomes in the reduction of prescription drug abuse in psychiatric outpatients.

OP-AH-31

To Reduce Specimen Rejection Rate at Alexandra Hospital

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Background & Hypothesis: The objective of the project is to reduce the specimen rejection rate at Alexandra Hospital (AH). During the transition period of taking over AH by the new Jurong Health Service team, a surge in specimen rejection rate to >2% was observed across all departments. The benchmark for acceptable specimen rejection rate is set at <1%. The Laboratory Medicine identified the problem and the immediate need for interventions.

Methods: 1. Diagnostic phase: Evidence from laboratory statistical analysis showed a rising trend of specimen rejection rate above the benchmark. A team with the key members who represent all parts of the process was formed. Regular meetings and brainstorming sessions were conducted to map processes, evaluate root causes and ascertain potential solutions. 2. Intervention phase: A Plan-Do-Study-Action (PDSA) cycle was carried out: a) Problem: Hospital staff was not aware of the increasing specimen rejection rate. Intervention: Submission of Electronic-Hospital-Occurrence-Report (eHOR) to alert hospital staff. b) Problem: Incorrect sequence of draw and wrong tube type. Intervention: New hire orientation to include correct blood taking techniques. c) Problem: Hospital staff not aware of specimen rejection criteria. Intervention: Rejected specimen is returned to requesting unit with form that highlights the reason for rejection. d) Problem: Mismatched specimen. Intervention: Implement second tier check. e) Problem: Ward staff lack of phlebotomy skill. Intervention: Extend the phlebotomist service hours.

Results: We managed to achieve the specimen rejection rate <1.0% after 6 months of interventions, and the rate was sustained at <1% ever since.

Discussion & Conclusion: Specimen rejection rate should be kept as low as possible to ensure patient safety is not compromised.

OP-AH-32

The Effect of Vestibular Stimulation on Eye-Hand Coordination and Postural Control in Healthy Controls and Elite Basketball Players

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Background & Hypothesis: Swift body pivoting during a basketball game stimulates the vestibular system and its effect on eye-hand coordination (EHC) and postural control (PC) remains unknown in elite athletes. The objective of this study is to compare EHC and PC before and after vestibular stimulation (VS) in both basketball players and healthy adults.

Methods: Fifteen elite basketball players and 17 healthy controls (all male, age 19-25 years) were recruited. Subjects performed a finger-pointing-task towards a moving visual target in standing, before and after whole head-and-body-rotation at 150degree/sec for 30 seconds seated on a rotational chair. Outcome measures for EHC included touch accuracy, reaction and movement time while PC included time to stabilisation in both mediolateral (ML) and anteroposterior (AP) directions.

Results: Players and controls demonstrated no significant changes in EHC. However, controls demonstrated significant increase for time to stabilisation in both the ML (8266.1±1113.1ms versus 6015.9±1230.4ms; $P < 0.0001$) and AP directions (7850.0±1237.1ms versus 6603.7±1064.2ms; $P = 0.004$). Comparisons between 2 groups revealed significant difference ($P = 0.009$) in the percentage change for reaction time between controls (8.1 ± 29.3%) and players (-23.3±30.2%; $P = 0.008$). Furthermore, players had a significantly shorter time to stabilisation in both the ML (43.3±38.3% versus 0.4±47.1%; $P = 0.009$) and AP (21.5±25.6% versus 3.9±24.4%; $P = 0.038$) directions.

Discussion & Conclusion: Basketball players had shorter reaction time in EHC and faster regain of stability in PC compared to controls. These data suggest that basketball training may lead to better balance in situations where there is high dependence on proprioceptive input and better performance in EHC task after VS.

OP-BSTR-01

Elevation of Haptoglobin Gene Expression in Patients with First-Episode Psychosis

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Background & Hypothesis: Haptoglobin (Hp) is an acute phase protein with a reported role in neuroprotection. Increased protein expression has been reported in serum, plasma and CSF of patients with first-episode psychosis (FEP). However, there is no previous report of Hp gene expression upregulation. Thus, we aim to study gene expression of Hp in drug naïve patients suffering from FEP, and investigate its relationship with disease duration.

Methods: Twenty-six drug naïve patients diagnosed with their first psychotic episode, and 26 healthy controls were recruited. Ribonucleic acid (RNA) was extracted from whole blood and Hp gene expression was detected via real-time reverse transcription polymerase chain reaction (RT-PCR) using commercially available primers.

Results: Of the 26 patients recruited, 17 had schizophrenia, 7 schizophreniform disorder, 1 schizoaffective disorder and 1 delusional disorder. A significant increase in Hp expression was found in patients with a fold change of 1.48 ($P = 0.016$). We observed that patients with schizophreniform disorder had higher Hp expression compared to schizophrenia. However, this trend was not statistically significant, likely because of the small sample size.

Discussion & Conclusion: Our findings are concordant with literature on Hp protein expression in psychosis. An interestingly higher Hp expression observed in schizophreniform disorder, an illness similar to schizophrenia but characterised with a shorter duration and a better prognosis suggests that Hp expression is increased acutely early in the course of illness as a form of immune response. However, further investigations with larger samples at different points of the illness are warranted to confirm and elucidate the roles of Hp in psychosis.

OP-BSTR-02

Subcutaneous Lymphatics — A Detailed Account of the Anterior Abdominal Wall Tissue Lymphatic Network

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Background & Hypothesis: To evaluate the localisation and distribution of initial (or capillary) and collecting lymphatic vessels in the anterior abdominal wall. Initial lymphatic vessels are blind-ended vessels converging into larger collecting vessels.

Methods: We obtained 4 anterior abdominal wall tissue specimens from post lipectomy and post rectus abdominis myocutaneous flap reconstruction patients. Thick (40mm) longitudinal serial cryosections were prepared for immunohistochemistry. We utilised 3 immunohistochemical markers in this study, which were LYVE-1 (lymphatic vessel endothelial hyaluronan receptor), SMA (smooth muscle actin), and DAPI (4',6-Diamidino-2-phenylindole). Stainings were analysed using an automated imaging system with a fluorescence microscope (FL) and a confocal microscope (CF).

Results: Lymphatic channels were successfully identified using all 3 markers. As expected, LYVE-1 was expressed by both initial (or capillary) and collecting vessels but not blood vessels. Blood vessel and collecting lymphatic vessels were covered by smooth muscle cells identified by SMA. The initial lymphatic vessels were found mainly in the dermis but the collecting lymphatic vessels were more abundant in the subcutaneous tissues (Fig 1 & 2), particularly within the Scarpa's fascia. They were always found within the connective tissue separating the fat sections, closely associated with blood vessels. Moreover, collecting lymphatic vessels were of larger calibre in the Scarpa's fascia (Fig 2) compared to the Camper's fascia (Fig 1).

Discussion & Conclusion: These results provide us with basic scientific knowledge on the lymphatic framework of the anterior abdominal wall. We hope to be able to transplant anterior abdominal wall fascia and subcutaneous tissue containing healthy lymphatics, to diseased parts to promote drainage of lymphatic fluids.

OP-BSTR-03

Functional Hand Proportion is Approximated by the Fibonacci Series

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Background & Hypothesis: The debatable relationship of functional human hand proportion with the Fibonacci series (0, 1,1,2,3...) has remained a scientific enigma short of clinical interest. The difficulty in proving this relationship lies in defining what constitutes true "functional" proportion. Our study re-evaluates this relationship with respect to functional lengths of the human phalanges, using palmar and digital flexion creases as surrogates for the functional axes of rotation of hand joints.

Methods: Standardised photocopies of palmar views of both hands in full digital extension and abduction were obtained from 100 healthy Chinese male volunteers. The functional axes were represented by the distal digital crease (distal interphalangeal joint, DIPJ), proximal digital crease (proximal interphalangeal joint, PIPJ), and the midpoint between the palmar digital and transverse palmar creases (metacarpophalangeal joint, MCPJ). The ratio of DIPJ-Fingertip:PIPJ-DIPJ:MCPJ-PIPJ (p₃:p₂:p₁) was measured by two independent observers and represented as standard deviation about the mean, and compared to the theoretical ratio of 1:1:2. Paired students' t-tests were used for right-left comparisons. A two-tailed $P < 0.05$ was taken to be statistically significant.

Results: For the 2nd to 5th digits, the p₂:p₃ ratios were 0.97±0.09, 1.10±0.10, 1.04±0.12 and 0.80±0.08 respectively; whilst the p₁:p₂ ratios were 1.91±0.17, 1.98±0.14, 1.89±0.16 and 2.09±0.24 respectively. When the data was analysed together for all digits, it showed an approximate p₃:p₂:p₁ ratio of 1:0.98:2.01. Lateral asymmetry was demonstrated for the combined p₂:p₃ ratio (right = 0.97±0.08, left = 0.99±0.07; $P = 0.0011$) but not the p₁:p₂ ratio (right = 1.97±0.15, left = 1.96±0.13; $P = 0.16$).

Discussion & Conclusion: Our results suggest that functional human hand proportion, defined by flexion creases, is approximated by the Fibonacci series.

OP-BSTR-04

Ribosomal S6 Kinase 2 (Rsk2) Mediates DNA Damage Response & DNA Repair Efficiency in Associating with Neurodegeneration

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Background & Hypothesis: Coffin–Lowry syndrome (CLS) is an X-linked genetic disorder associated with cognitive impairment. The mutated gene encoding the Rsk2 is responsible for CLS. Rsk2 (Ribosomal S6 Kinase 2) is a serine/threonine kinase acting in the MAPK/ERK pathway. Neurodegeneration in the central nervous system (CNS) are linked to defects in learning and memory. It is believed that cognitive defect in CLS might be associated with neurodegeneration, which involve deoxyribonucleic acid (DNA) damage induced apoptosis or the defects in DNA repair. However the detail understanding of Rsk2 roles in this process is not well understood.

Methods: Here, we engaged molecular & cell biology, biochemistry, as well as neural stem cell biology to provide the evidence that Rsk2 involves in DNA damage response and DNA repair pathway.

Results: We observed DNA damage activated Rsk2 at Ser227 and Thr577 through ATM (ataxia-telangiectasia, mutated — a sensor of DNA damage) and its relationship with ATM during DNA damage. Rsk2 deficiency in both mouse embryonic fibroblast (MEFs) and CLS patient's fibroblast cells resulted in defects in the activation of p53, and an alteration in p53-controlled cell cycle checkpoints at G2M phase, as well as H2AX association with foci formation in DNA repair process. Interestingly, we have also shown that Rsk2 co-localised with nestin at SVZ from E14.5 mice brain, and are activated by DNA damage in neural stem cells.

Discussion & Conclusion: This may indicate the potential role of Rsk2 in mediating neurogenesis in responses to DNA damage. Taken together, our findings demonstrate the Rsk2 deficiency in DNA damage response and DNA repair process may underlie the cognitive dysfunction observed in CLS.

OP-BSTR-05

Epidermal and Dermal Innervations in Keloids

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Background & Hypothesis: Itch in keloids is common but the mechanism is unknown. We aim to examine whether innervation of keloids in the epidermis and dermis is different from healthy skin. Secondly, we aim to determine if there is a difference in innervation between the central and peripheral regions of keloids and if any difference correlated with pain and itch sensory scores.

Methods: Keloid specimens from 13 patients who underwent excision and healthy skin from 9 age- and site-matched controls were collected. The itchy and painful regions of keloids were marked out before excision was performed. Peripheral and central biopsies were performed on the excised keloids. The keloidal and control specimens were stained with Protein gene peptide 9.5, a pan-neuronal marker, to immunolocalise nerve fibres in the epidermis and dermis. Confocal microscopy and a bespoke image analysis algorithm were subsequently used to analyse the images.

Results: A trend towards a lower epidermal nerve fibre density was found in keloids compared to controls ($P = 0.11$) and this difference was greater when itchy keloids were compared to controls ($P = 0.069$). No difference in nerve fibre density was observed in the papillary dermis and no difference in nerve distribution was found between keloids and controls. There were also no differences in nerve fibre density and distribution between central and peripheral regions of the keloids.

Discussion & Conclusion: A trend towards a lower epidermal nerve density was observed in keloids and this is more pronounced in keloids which are itchy.

OP-BSTR-06

Investigating the Association between the Filaggrin Gene and Atopic Dermatitis

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Background & Hypothesis: Atopic dermatitis (AD) is the most common skin disorder among children and teenagers. Recent studies reveal a close association with mutations in the skin barrier gene, filaggrin (FLG). In this study, we examined 3 mutations R501X, 2282del4 and S2231X to determine if they are related to eczema susceptibility in our local population.

Methods: A total of 50 volunteers from the Singapore Polytechnic and Raffles Girls Secondary School were recruited for this study. Of these 8 (16%) had AD and 42 (84%) were normal. All participants have obtained parental consent for contributing their buccal cells for DNA analysis. These cells were collected and PCR amplification of the filaggrin gene was performed covering these 3 null mutations. Restriction Fragment Length Polymorphism (RFLP) analyses and DNA sequencing were performed to screen for the presence of these mutations.

Results: Our results show that 2 of the null mutations, R501X and 2282del4 were absent in all subjects using RFLP and DNA sequencing analyses. Our findings are consistent with previous studies, showing these mutations to be absent in mainland Chinese and Japanese subjects but present in European populations. However, the presence of a novel mutation S2231X mutation seems widespread in all our subjects. This mutation warrants further study as it has never been reported before.

Discussion & Conclusion: Although many studies have focused on the FLG gene our understanding of the genetic basis of AD is still growing. Two common mutations R501X and 2282del4 may be ethnically specific for the European community and rarely found in Asians. A novel mutation S2231X may warrant further study.

OP-BSTR-07

Role of MicroRNAs in Fatty Liver Lipid Accumulation

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Background & Hypothesis: Non-alcoholic fatty liver disease is a common liver disorder ranging from hepatic steatosis to steatohepatitis, a result of accumulation of hepatic fat. MicroRNAs (miRNAs) are endogenous non-coding RNAs involved in the process of silencing gene expression. In this study, we sought to understand the role of miRNAs in lipid metabolism and liver steatosis.

Methods: C57BL mice were given fatty chow for 16 weeks while control animals were given normal rodent chow. The livers were then harvested, and changes in miRNA expression in the liver of the fatty mice compared to the control mice were determined by real-time PCR. Targets of the differentially expressed miRNAs were examined with western blots. These miRNAs were also transfected into human liver derived cell lines HepG2 and HuH7 to determine their effects on the levels of lipid content in the cells using Nile Red staining of the lipid droplets.

Results: miR-10a, miR-21, miR-34a, and miR-132 were among the list of up-regulated miRNAs in the liver of fatty mice, and there is a corresponding down-regulation of their targets SIRT1 and PPAR α . miR-27a and miR-27b were down-regulated, with a corresponding up-regulation of the target PPAR γ . In HepG2 and HuH7 cells, the inhibition of miR-21 resulted in a decrease in the lipid content.

Discussion & Conclusion: These results suggest that the accumulation of fats in the liver over time caused the differential expression of miRNAs that contributed to the regulation of the expression of SIRT1, PPAR α and PPAR γ and these in turn further affect lipid metabolism and promote lipid accumulation.

OP-BSTR-08

HLA Risk Associations with Drug Allergies in Singapore

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Background & Hypothesis: Carbamazepine (CBZ), phenytoin (PHT) and allopurinol, are known to cause cutaneous adverse drug reactions that can develop into Stevens-Johnson syndrome (SJS) or toxic epidermal necrolysis (TEN). In this study we examined patients who were prescribed these drugs, and determined whether the HLA profile of these patients is associated with the development of drug allergy.

Methods: Patients (CBZ=16; PHT=7; allopurinol=8) and drug-tolerant controls (CBZ=21; PHT=17; allopurinol=8) were recruited from Tan Tock Seng Hospital and the National Neuroscience Institute with approval from relevant ethics review boards. Sequence-based typing was performed for the HLA class I loci using primers for exons 2-4; a similar method was used for the sequencing of HLA-DRB1. P-values, odds ratios (OR) and 95% confidence intervals were calculated using Fisher's exact test.

Results: Sixty-eight point eight percent of CBZ-induced SJS cases carried the B*15:02 allele (p-value=0.009; OR=7.04; 95% CI, 1.3-40.9). B*15:02 was observed in both Chinese and Malay patients. Interestingly, 1 patient who presented with CBZ-induced TEN was heterozygous for 2 B15 variant alleles: B*15:13 and B*15:21. More than half (57.1%) of PHT-SJS patients carried B*15:02, but it was present in only 17.6% of controls (not significant). For patients with allopurinol-induced ADRs, that presented with either SJS or DHS phenotypes, B*58:01 was present in 100% of Chinese cases [p-value (SJS) = 0.007; p-value (DHS) = 0.015].

Discussion & Conclusion: The ADRs we reported here were all associated with HLA-B gene: B*15:02 with CBZ- and PHT-induced SJS, and B*58:01 with allopurinol-induced SJS/DHS. However, our results suggest that the association between B*15:02 and CBZ- and PHT-induced reactions may be weaker than previously reported.

OP-BSTR-09

Molecular Mechanisms of Action and Potential Biomarkers of Growth Inhibition of Dasatinib (BMS-354825) on Hepatocellular Carcinoma Cells

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Background & Hypothesis: Molecular targeted therapy has emerged as a promising treatment of Hepatocellular carcinoma (HCC). One potential target is the Src family Kinase (SFK). C-Src, a non-receptor tyrosine kinase is a critical link of multiple signal pathways that regulate proliferation, invasion, survival, metastasis, and angiogenesis. In this study, we evaluated the effects of a novel SFK inhibitor, dasatinib (BMS-354825), on SFK/FAK/p130CAS, PI3K/PTEN/AKT/mTOR, Ras/Raf/MAPK and Stats pathways on 9 HCC cell lines.

Methods: Growth inhibition was assessed by MTS assay. EGFR, Src and downstream proteins FAK, AKT, MAPK42/44, Stat3 expressions were measured by western blot. Cell adhesion, migration and invasion were performed with and without dasatinib treatment.

Results: The IC₅₀ of 9 cell lines ranged from 0.7 μ M~14.2 μ M. The susceptibility to dasatinib was significantly associated with high expression of Src, low expression of EGFR and low percentage of activated Src (p-Src) in total Src (t-Src). There was good correlation of the sensitivity to dasatinib and the inhibition level of p-Src, p-FAK576/577 and p-AKT. No inhibition was found on Stat3 and MAPK42/44 in all cell lines. The inhibition of cell adhesion, migration and invasion were correlated with p-FAK inhibition.

Discussion & Conclusion: Dasatinib inhibits the proliferation, adhesion, migration and invasion of HCC cells in vitro via inhibiting of c-Src and affecting SFK/FAK and PI3K/PTEN/AKT, but not Ras/Raf/MEK/ERK and JAK/Stat pathways. T-Src, EGFR and p-Src may be useful biomarkers to select HCC patients for dasatinib treatment.

OP-BSTR-10

In Vitro Growth Inhibition of Chemotherapy and Molecular Targeted Agents in Hepatocellular Carcinoma

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Background & Hypothesis: Hepatocellular carcinoma (HCC) is one of the most common and challenging malignant disease. The prognosis is poor in patients with advanced disease. Although sorafenib prolonged survival in these patients, improvement remains modest. We used doxorubicin and sorafenib as controls and screened 8 new agents including ixabepilone, gefitinib, cetuximab, brivanib, dasatinib, sunitinib, BMS-690514 and BMS-536924 against 9 HCC cell lines and evaluated their interactions.

Methods: We evaluated growth inhibitions of 10 drugs against 9 HCC cell lines. Single agent activity was tested by MTS assay. Combination studies were done in both resistant and sensitive cells to determine the combination index (CI).

Results: The IC₅₀ of each agent varied widely amongst 9 cell lines. Ixabepilone was more potent than doxorubicin. HT-17 cells were more sensitive to gefitinib and cetuximab than the other 8 cell lines. BMS-536924 showed good efficacy on all three α -fetoprotein (AFP)-producing cell lines (HepG2, Hep3B, Huh-7). Three cell lines showed moderate sensitivity to dasatinib. Dasatinib demonstrated most frequent and strongest synergism with ixabepilone, gefitinib, brivanib, BMS-690514 or BMS-536924.

Discussion & Conclusion: Ixabepilone, sorafenib, brivanib, dasatinib and BMS-536924 are active against HCC cell lines. The heterogeneity of sensitivity of each cell line emphasises the need for individualised treatment. The sensitivity to BMS-536924 is closely associated with AFP production. AFP may be a biomarker predicting response to IGF-1R inhibitor in HCC patients. Additional studies are warranted. The synergism between dasatinib and other agents also provides future research directions to understand drug resistance and improve outcome.

OP-CR-01

Smoking and Obesity as Risk Factors for Metabolic Syndrome in Patients with Schizophrenia

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Background & Hypothesis: Schizophrenia is associated with increased risk of metabolic syndrome (MS). This could be the result of lifestyle, antipsychotic medications or shared genetic predisposition. This study aims to establish the prevalence of MS in the local population of schizophrenia patients at the Institute of Mental Health (IMH), and evaluate potential risk factors such as smoking and obesity.

Methods: After sample size calculation, 100 consecutive patients with schizophrenia and 300 community controls were recruited. A fasting sample of blood was collected for lipid and glucose measurements. Blood pressure, waist circumference, weight, height, smoking, medical and medication history was obtained. MS status was assessed according to American Heart Association/National Heart, Lung and Blood Institute (AHA/NHLBI) guidelines using Asian cut-offs for waist circumference.

Results: Patients had significantly higher fasting blood glucose, triglycerides, and lower high-density lipoprotein (HDL). There was a larger proportion of smokers and higher body mass index (BMI) in the patient group. The prevalence of MS in patients and controls was 48% and 18.7% respectively. Patients who smoke were at higher risk of developing MS (OR 3.1), with suggestion of dose-dependent trend. BMI was also associated with increased risk of MS in patients. Class of antipsychotic was not a risk factor for MS in patients.

Discussion & Conclusion: This study revealed that local patients with schizophrenia have a 2.6 times increased risk of MS. Smoking and obesity were significant risk factors in patients, with a dose-dependent trend and should be studied further as they are modifiable risk factors. The lack of antipsychotic effect could be a limitation of the case-control study design.

OP-CR-02

Facial Cosmetic Procedure Survey among 239 Singapore Medical Students

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Background & Hypothesis: Cosmetic procedures have become increasingly popular in recent years due to media coverage and advances in medicine. Through this survey, we seek to explore medical students' views and knowledge on cosmetic procedures, and the associated potential risks.

Methods: Cross-sectional questionnaire survey of a random sample of Year 2 to Year 5 medical students from Yong Loo Lin School of Medicine Singapore was conducted in the Year of 2011.

Results: There are 239 respondents (female to male ratio 1.10, median year of study M3). 88% are Chinese, followed by Indians (8%), Malays (3%), and others (1%). Ninety-eight percent are Singaporeans. Seven students (3%) admitted to undergoing previous cosmetic procedures. Twenty-four percent approve fellow students having cosmetic procedures, while 33% had no opinion. Among those who have never had cosmetic procedures, 14% would/may consider cosmetic procedures now, while 44% would/ may in the future. Thirty-two percent would feel embarrassed if their immediate family knew about them having cosmetic procedures, 51% if their close friends knew, and 73% if anyone outside family and close friends knew. Nineteen body parts are in their wish list of change, with the skin-related cosmetic improvement most desirable (13.0%), followed by the nose (10.9%), abdomen (10.0%) and the eyes (9.6%). Thirty-six percent of students are not aware of any associated risks.

Discussion & Conclusion: Cosmetic procedures are becoming increasingly accepted. Shockingly, 36% of medical students are not aware of any associated risks, which highlight the loophole that our current medical education may be lagging behind societal trends.

OP-CR-03

Porokeratosis in Singapore: An Asian Perspective

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Background & Hypothesis: Porokeratosis is a rare keratinisation disorder of the skin characterised by a cornoid lamella. We wanted to review its associations with immunosuppression and phototherapy, as well as the risks of malignancy progression.

Methods: This is a retrospective review on all cases of porokeratosis seen at the National Skin Centre, Singapore, from 2000 to 2010.

Results: There were a total of 94 patients. Sixty-three percent of patients had confirmatory clinical and histological findings. The mean age was 51.6 years. The majority of patients were Chinese (89%). Male to female ratio was 1.4:1. There were 4 main clinical variants, namely classical porokeratosis of Mibelli (56%), disseminated superficial actinic porokeratosis (DSAP) (18%), disseminated superficial porokeratosis (DSP) (11%) and linear porokeratosis (13%). The most common areas affected were the extremities (70%). Phototherapy induced porokeratosis was seen in 3 of our patients. Association with immunosuppression from chronic disease or renal transplant was seen in 8 of our patients. Progression of porokeratosis to squamous cell carcinoma and Bowen's disease is rare, and has been noted in 3 of our patients. The most common treatment was cryotherapy (32%). Sixteen percent of patients had good response defined as cleared or almost cleared of lesions.

Discussion & Conclusion: The most common presentation would be asymptomatic lesions of porokeratosis of Mibelli over the extremities, in middle-aged males. No particular immunosuppressive drug was implicated. Our patients had ultraviolet A and B induced porokeratosis. Progression of porokeratosis to malignancy arises in the disseminated variants, with a possible correlation with age.

OP-CR-04

Vestibular Dysfunction: Prevalence, Risk Factors and Association with Presbycusis in the Singapore Elderly Population

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Background & Hypothesis: Amongst the elderly, little is known about the risk factors contributing to vestibular dysfunction (VD), nor is there strong evidence to support an association between VD and presbycusis. The aim of this study is to determine the prevalence of VD amongst the Singapore elderly, its association with presbycusis and age, and other associated risk factors.

Methods: A cross-sectional study was undertaken in a tertiary Otorhinolaryngology institute and in the community. All consecutive healthy adults aged 40 and above who could walk and stand independently, and participants of the institution's community presbycusis screening programme, were invited to participate. The main outcome measures consisted of demographic data, otological assessment including pure-tone audiometry, and vestibular assessment with modified Clinical Test of Sensory Interaction on Balance.

Results: Prevalence of VD and presbycusis in our study population of 216 subjects (92% Chinese) are 30.1% and 55.6% respectively (median age 60; range 40 to 86). Adjusted odds of VD increases significantly by 6.2% with every year of life ($P = 0.05$). Tinnitus ($n = 54$) and non-specific dizziness ($n = 68$), vertigo ($n = 33$) and history of fall ($n = 22$) also do not affect the odds of VD ($P > 0.05$).

Discussion & Conclusion: VD is independently associated with increased age and presbycusis. The benefits of additional screening of elderly with presbycusis for VD warrants further research.

OP-CR-05

The Risk of Falls among Elderly with Asymptomatic Vestibular Dysfunction

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Background & Hypothesis: The risk of falls in elderly asymptomatic for vestibular dysfunction (VD) has not been determined. This study aims to estimate fall risk of this group.

Methods: This is a cross-sectional study of 100 consecutive healthy adults aged 40 and above who participated in our institution's community presbycusis screening program. The outcome measures consisted of demographic data, past medical history, pure-tone audiometry, vestibular assessment with modified Clinical Test of Sensory Interaction on Balance, and fall risk assessment by Berg's Balance Scale (BBS).

Results: The prevalence of VD in our study is 27%. In subjects without presbycusis (55%), dizziness (77%), vertigo (89%), or tinnitus (89%), the odds of BBS score less than 54 is 14.6, 4.26, 3.64 and 3.87 times higher respectively if VD is present ($P < 0.05$). These odds are 5.02 higher among those without falls (79%), 4.99 if never hospitalised for a fall (89%), and 5.35 in those without falls affecting mobility for at least 3 days (82%; $P < 0.05$). Without dizziness, vertigo, tinnitus, history of falls and presbycusis combined (29%), the odds are 28 times higher if VD is present ($P < 0.05$); age was found not to be a confounder. Among the various comorbidities (e.g. diabetes, hypertension, high cholesterol, heart disease and smoking history), presence of VD does not predict fall.

Discussion & Conclusion: The presence of VD without otological or vestibular symptoms increases the risk of fall in healthy adults aged 40 or above. The implications of this on falls amongst the elderly require further studies to elucidate.

OP-CR-06

MRSA Carriage among Hospitalised Chronic Haemodialysis Patients

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Background & Hypothesis: To determine the prevalence rate of Methicillin-resistant Staphylococcus Aureus (MRSA) carriage among hospitalised chronic haemodialysis patients, and the associated risk factors.

Methods: Single centre, retrospective study from January to June 2011 on consecutive chronic haemodialysis patients who were admitted. Nasal MRSA screen using PCR method was done routinely for all hospitalised patients. MRSA carriage was indicated by a positive nasal swab. Analyses were done to compare the patients with positive and negative MRSA status.

Results: There were 114 chronic haemodialysis patients with 169 admissions. MRSA prevalence rate was 15.8%. Fifty-nine point six percent of patients were Chinese, 60.5% male and 75.4% had diabetes. Mean age was 60.4±11.1 years and dialysis duration was 4.6±4.4 years. MRSA carriers had more frequent hospital admissions (2.4 ±1.7 vs 1.3±0.7, *P* <0.05), recent hospitalisation within the last 3 months (25.8% vs 3.8%, *P* <0.01), and used permcath as compared to arteriovenous fistula (AVF)/arteriovenous graft (AVG) (27% vs 10.4%, *P* <0.05). They also have more comorbidities such as diabetes (19.8% vs 3.6%, *P* <0.05) and ischaemic heart disease (22.4% vs 8.9%, *P* <0.05). There were no differences in age, dialysis duration, haemoglobin and serum albumin levels.

Discussion & Conclusion: Prevalence of MRSA carriage is significant among chronic haemodialysis patients especially those with multiple comorbidities. MRSA carriers have higher hospitalisation rates and perhaps adverse clinical outcomes. Moreover, as chronic haemodialysis patients will return to community satellite dialysis centers after discharge, the importance of hand hygiene among healthcare workers should be emphasised. Limitations of the study include cross sectional data and lack of information on antibiotic use.

OP-CR-07

Undercarboxylated Osteocalcin is Associated with Hyperinsulinemia and Elevated in Metabolic Syndrome in Middle Aged Asian Population

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Background & Hypothesis: Studies in animal models show that insulin production and osteocalcin decarboxylation form a feed-forward loop regulating energy metabolism. The current study aims to study the changes of circulating undercarboxylated osteocalcin (UC-OCN) in metabolic syndrome and its association with markers of metabolic phenotype.

Methods: In this cross sectional study, 166 middle aged subjects were recruited. Among them, 59 met the criteria of metabolic syndrome and 107 subjects were control. Circulating UC-OCN was measured and its association with body mass index, fasting plasma glucose, insulin, homeostasis model assessment-insulin resistance (HOMA-IR), total cholesterol, high-density lipoprotein cholesterol (HDL-cholesterol), low-density lipoprotein cholesterol (LDL-cholesterol), triglycerides, apolipoprotein A-I (apoA-I), apolipoprotein B (apoB), adiponectin, high sensitive C-reactive protein (hsCRP) was estimated after adjusting potential confounders.

Results: Circulating UC-OCN was increased from 6.1±4.8ng/ml in healthy control to 7.9±6.2ng/ml in subjects with metabolic syndrome ($P < 0.05$). After dividing participants into tertile by UC-OCN, we found that insulin, triglyceride and total cholesterol showed significant difference in 3 groups. Further analysis by linear regression revealed that only insulin and triglyceride were positively associated with UC-OCN after multiple adjustment of age, body mass index (BMI), total cholesterol, HDL-cholesterol, LDL-cholesterol, apoA-I, apoB, adiponectin and hsCRP ($\beta = 0.261$ $P = 0.004$ for insulin and $\beta = 0.334$ $P = 0.025$ for triglyceride).

Discussion & Conclusion: Circulating undercarboxylated osteocalcin is elevated in subjects with metabolic syndrome and it is positively correlated with plasma insulin. These results suggest that the feed-forward loop between decarboxylation of osteocalcin in the bone and insulin production in pancreas beta cells may also exist in human. Further studies are needed to elucidate the pathophysiological significance of higher undercarboxylated osteocalcin in metabolic syndrome.

OP-CR-08

The Prevalence of Microalbuminuria and Macroalbuminuria in Diabetic Patients in a Primary Care Setting in Singapore

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Background & Hypothesis: Microalbuminuria is an early sign of kidney damage and an independent risk factor for cardiovascular disease in patients with diabetes. The prevalence of microalbuminuria in Singapore has been reported to be between 36% and 48.5%. However, the prevalence of microalbuminuria in these studies was determined with one urine sample using the qualitative urine test. We hypothesised that the methods used in these studies overestimated the prevalence of microalbuminuria in diabetic patients in Singapore. The aim of this study was to determine the prevalence of microalbuminuria using the criteria of 2 positive quantitative urine albumin creatinine ratio (ACR) tests.

Methods: We conducted a cross-sectional study on patients with type 2 diabetes (T2DM). The serum and urine biochemistry of all T2DM patients who had their routine annual screening tests done at Clementi Polyclinic from 1 August 2010 to 31 October 2010 were reviewed. Those with type 1 diabetes, pyuria, haematuria or known proteinuria prior to diagnosis of diabetes were excluded. These patients were followed up to a maximum of 4 months. Patients were diagnosed to have albuminuria if they had 2 positive ACR tests within this time frame.

Results: A total of 786 patients met the inclusion criteria for study. The prevalence of microalbuminuria and macroalbuminuria in the study population were 14.2% and 5.7% respectively.

Discussion & Conclusion: Approximately two-thirds of T2DM patients with coexisting hypertension were on angiotensin converting enzyme inhibitors or angiotensin receptor blockers prior to the study. This may account for the significantly lower prevalence of albuminuria noted in the study.

OP-CR-09

Factors Associated with the Care Burden Experienced by Caregivers of Older Patients

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Background & Hypothesis: Caregiver burden experienced by caregivers of older adults is expected to increase with the aging population. The aim of this study is to determine the factors associated with caregiver burden.

Methods: A cross-sectional study of caregivers of patients referred to an outpatient geriatric clinic. Demographic information, medical history, functional and psychosocial status of patients were recorded. The relationship between the caregivers and the patients was also recorded. Caregiver burden was assessed using the short-form of the Zarit Burden Inventory (ZBI).

Results: Two hundred and forty caregivers were included in the study. Sixty-eight point three percent were female. Nineteen point six percent of the caregivers were spouses, 55.8% were children, 4.2% were other relatives and 20.4% were domestic helpers. Mean ZBI score was 16.15. Spousal caregivers had the highest ZBI score (mean 18.04), followed by relatives (mean 16.70), children (mean 16.56), and domestic helpers (mean 13.14). Using multivariate analysis, factors that were significantly associated with higher ZBI scores were male gender ($\beta = -2.98$, 95% CI: -5.43 to -0.53), patients who were independent in feeding ($\beta = 3.81$, 95% CI 0.76 to 6.87), patients who were dependent in grocery shopping ($\beta = -2.56$, 95% CI: -4.51 to -0.62), patients with behaviour issue ($\beta = 3.07$, 95% CI: -0.66 to 5.48) and caregiver's relationship with patient ($\beta = -1.61$, 95% CI: -2.72 to -0.51).

Discussion & Conclusion: Patient factors that are associated with higher burden of care include male gender, independence in feeding, dependence in grocery shopping and presence of behavioural issues. Familial relationship between caregivers and patients was also associated with higher care burden.

OP-CR-10

Progression of Ankle Brachial Index in Patients with Diabetes

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Background & Hypothesis: Guidelines recommend regular foot screening in patients with diabetes. The method and frequency of assessing for peripheral arterial disease (PAD) is however unspecified. We explored progression of the Ankle Brachial Index (ABI) over time in an effort to provide evidence that may guide decisions on frequency of ABI monitoring in patients with diabetes.

Methods: This is a consecutive series of 82 patients with diabetes who each had two points of ABI measurement. The mean follow up time was 27.6 months. Patients were eligible for the study if they had no foot complications, and the first ABI reading was >0.9 but ≤ 1.3 . Biochemical investigations within 6 months of each ABI measurement, and past medical history were noted.

Results: Forty-six patients (56%) had a decline in the follow-up ABI, with 17 having a significant decline (decrease in ABI of >0.1), including 5 deteriorating to second ABI of ≤ 0.9 , consistent with the diagnosis of PAD. Patients with significant ABI deterioration had higher baseline haemoglobin A1c (HbA1c), serum creatinine, retinopathy and current low-density lipoprotein (LDL) cholesterol. Following multivariate analysis, baseline creatinine, retinopathy and current LDL remained significant independent predictors of ABI decline.

Discussion & Conclusion: Our results suggest that within two years, 20% of patients with normal ABI would have had a significant decline in ABI while 5% would have developed PAD. Annual ABI screening may thus be required for 'high risk' patients with poor glycaemic control, higher serum creatinine and retinopathy. Aggressive LDL cholesterol lowering is also likely to be beneficial in reducing ABI decline.

OP-CR-11

Is 24-Hour Urinary Metabolic Evaluation in Urolithiasis Useful in the Singapore Context?

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Background & Hypothesis: The role of 24-hour urinary metabolic evaluation in urolithiasis in Singapore had not been well studied. In the first large-scale study of its kind in Singapore, we investigated the prevalence of 5 metabolic disorders diagnosed through a single 24-hour urine sample in a selected group of patients at risk of recurrent stone formation.

Methods: A total of 103 patients completed 24-hour urine collection while on a random diet. The collection was made before any medical therapy which could change the urinary milieu. Urinary concentrations of calcium, oxalate, citrate, uric acid, creatinine, sodium, magnesium, phosphate and potassium were measured. A spot urine pH was measured at recruitment. The prevalence of low urine volume, hypocitraturia, hyperuricosuria, hyperoxaluria and hypercalciuria were calculated. The study was approved by institutional review board and funded by the National Kidney Foundation Research Grant.

Results: The commonest disorder, other than low urine volume, was hypocitraturia, which was found in 56% of patients. The prevalence of low urine volume, hyperuricosuria, hyperoxaluria and hypercalciuria were 72%, 17%, 9% and 8% respectively. At least 1 of the 5 disorders could be detected in 96% of patients. Even if low urine volume was excluded, 71% of patients still had at least one of other 4 metabolic disorders detected.

Discussion & Conclusion: This study clearly established the usefulness of 24-hour urinary metabolic evaluation in up to 96% of patients at risk of recurrent stone formation. In addition, we found that unlike results from Western studies, hypocitraturia was more common than hypercalciuria in this group of patients.

OP-CR-12

Comparison of Magnetic Resonance Imaging with Clinical Examination in Predicting Nodal Involvement in Thyroid Carcinoma

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Background & Hypothesis: Magnetic Resonance Imaging (MRI) is commonly used to predict nodal involvement in thyroid carcinoma as it is presumed to be of greater accuracy than clinical examination alone. However, the exact accuracy of MRI compared to that of clinical examination has not been investigated in any recent study.

Methods: Twenty patients with pre-operative MRI imaging and histologically-proven cervical lymph node metastases from thyroid carcinoma (13 papillary, 3 anaplastic, 4 medullary) were included in the study. All patients were examined by an otolaryngologist of consultant grade and above before imaging was done. Positive criteria on imaging included node with size larger than 1cm, round shape, similar signal as the tumor, irregular margins, central necrosis and the presence of a fatty hilum. The data was further refined to correlate the exact anatomical level of the nodes involved on clinical examination and MRI with that of the pathological specimen.

Results: In the detection of central nodes, the sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy of MRI were 29.4%, 100%, 100%, 36.8% and 50% respectively, while that of clinical examination were 0%, 100%, 0%, 29.2% and 29.2% respectively. As for the detection of lateral nodes, sensitivity, specificity, PPV, NPV and accuracy of MRI were 59.6%, 50.0%, 66.0%, 43.2% and 56.0% respectively, while that of clinical examination were 36.5%, 75.0%, 70.3%, 42.1% and 51.2% respectively.

Discussion & Conclusion: MRI is a useful adjunct for the detection of central nodes. However, the accuracy of clinical examination is comparable to that of MRI in the detection of lateral nodes.

OP-CR-13

Itemised or Prose Radiology Reports?: A Survey of Hospital Clinicians and Radiologists' Preferences

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Background & Hypothesis: To determine clinicians' and radiologist's preferences regarding the format of the radiology report and contents.

Methods: Questionnaires were sent out to all clinicians from various departments and radiologists practicing within Khoo Teck Puat Hospital, Singapore. The participants were invited to rank a variety of hypothetical ultrasound and computed tomography scan reports according to their level of satisfaction and provided reasons for their choices. Demographic information regarding the participants was obtained in the questionnaire.

Results: A total of 30 radiologists and 92 clinicians responded. Seventy-five percent of clinicians vs 50% of radiologists were satisfied with the itemised report for an abnormal ultrasound scan ($P < 0.05$). Eighty percent of radiologists vs 58% of clinicians were satisfied with the prose report for an abnormal ultrasound scan ($P < 0.05$). In general, most radiologists still preferred the prose reporting style, citing familiarity with this style of reporting. Most clinicians preferred itemised radiology reports as they felt that these reports were clearer and easier to comprehend.

Discussion & Conclusion: Itemised reports are more popular with referring clinicians due to their clarity. Prose reports foster a lack of standardisation of content among different radiologists. A shift in paradigm to itemised reporting will make for faster, more consistent radiology reports that facilitate complete documentation of information and measurements. Changing the way radiology reports are structured requires adaptation among radiologists. Improved training in reporting during the radiology residency is de rigueur to familiarise radiologists with a new style of reporting

OP-CR-14

Association between Anxiety, Type A Personality, and Treatment Outcome of Dysphonia Due to Benign Causes

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Background & Hypothesis: Dysphonia may be linked to psychosocial factors such as anxiety and personality type. The aim of this study is to determine whether these factors affect the treatment outcome of benign dysphonia.

Methods: This is a prospective case series of 37 patients diagnosed with benign causes of dysphonia in a tertiary otolaryngology centre voice clinic over a 3 month period. Demographic data, the Voice Handicap Index (VHI), Reflux Symptom Index (RSI), Clinical Anxiety Scale (CAS) and Bortner's Personality Scale were recorded at presentation. The VHI and RSI were repeated at follow-up.

Results: Overall, 29 (78.4%) patients were diagnosed with reflux laryngitis dysphonia, 6 (16.2%) with muscle tension dysphonia, and 2 (5.4%) with post-viral laryngitis. Eighteen patients reported complete recovery, consistent with their post-treatment VHI, and they had significantly less anxiety than those who did not recover ($P = 0.023$). Complete recovery was not associated with personality type ($P = 0.46$). Compared to other personality types, "strong" type A was linked to a lower pre-treatment VHI ($P = 0.046$), improved less on treatment ($P = 0.039$), but showed no difference in post-treatment VHI ($P = 0.45$). Greater anxiety was associated with both a higher VHI as well as RSI before and after treatment (both $P = 0.05$).

Discussion & Conclusion: This the first study to show that psychosomatic factors may affect treatment outcome in patients with dysphonia due to benign causes. The benefit of adjunctive psycho-cognitive measures warrants further investigation.

OP-CR-15

A Retrospective Study on The Use of Courtenay-Yorke Clamp in Arresting Secondary Post-Tonsillectomy Bleed

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Background & Hypothesis: A 4-year retrospective study was undertaken to determine the efficacy of using the outpatient Courtenay-Yorke tonsil haemorrhage clamp in arresting secondary post-tonsillectomy haemorrhage.

Methods: A case controlled comparative study from January 2007 to January 2011 on patients with secondary post-tonsillectomy haemorrhage at a tertiary otolaryngology centre. The efficacy of the clamp for haemostasis was evaluated in this study, and compared against those managed with our standard conservative protocol.

Results: Fifty-seven patients with secondary post-tonsillectomy haemorrhage were identified. The Yorke clamp was used on 12 random patients to arrest the post-tonsillectomy haemorrhage after failure of conservative protocol. Eight (67%) of these patients had their bleeding successfully arrested. The remaining 4 failed to stop bleeding and subsequently underwent general anaesthesia for arrest of haemorrhage. No other complications have been associated with Yorke clamp. Amongst the 45 who did not have Yorke clamping, n = 11 (24%) returned to theatre for arrest of haemorrhage after failure of conservative management.

Discussion & Conclusion: The Courtenay-Yorke tonsil haemorrhage clamp is a safe and effective mean of arresting post-tonsillectomy haemorrhage and can significantly reduce the incidence of a secondary return to theatre for control of haemorrhage. Our data suggests that by using Yorke clamp in the remaining 11 patients who returned to theatre following failure of conservative management, a further 7 (66%) return of theatre episodes could have been avoided, reducing return theatre rate of 40% to 14% amongst those with secondary post tonsillectomy bleeding.

OP-CR-16

Recent Trends of Adult Acute Epiglottitis in Singapore

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Background & Hypothesis: To examine whether the current clinical presentations, management and treatment outcomes of adult acute epiglottitis in Singapore has changed compared to 1 and 2 decades ago.

Methods: A retrospective study was undertaken in all adult patients admitted to a tertiary teaching hospital otorhinolaryngology department (year 2006 to 2010) with acute epiglottitis.

Results: A total of 78 patients were identified. The mean age was 54.5 years (interquartile range 38.8 to 63.0 years). Male to female ratio was 2.2:1. The duration of symptoms before hospital presentation was 2.2 days. Two-thirds of patients presented without prior healthcare visit. The most common symptoms presented were sore throat (80.8%), odynophagia (62.8%) and fever (50.0%). Twenty-four point four percent presented with stridor. All patients were administered intravenous antibiotics and steroids (89.7% received Augmentin). Fifty-three point eight percent required admission to High Dependency Unit. Seven (9.0%) patients were intubated (mean duration 4.1 days). Five (6.4%) patients required temporary tracheotomy. Mean hospitalisation duration was 4 days. The treatment outcome was generally good. One case of mortality (1.3%) due to pneumonia was reported. One case resulted in hypoxic encephalopathy. The most common co-morbidities were hypertension (38.5%) and diabetes (32.1%). Ten (12.8%) patients had pre-existing epiglottic cysts. Eleven (14.1%) cases had previous history of radiotherapy for nasopharyngeal carcinoma (n = 5), laryngeal carcinoma (n = 4), olfactory neuroblastoma (n = 1) and lung cancer (n = 1). Smoking did not seem to play a major part here.

Discussion & Conclusion: Adult patients presented to the hospital with acute epiglottitis continue to have low mortality and morbidity rates. Interesting however, patient demographics, clinical presentations, treatment modalities, and complications have changed significantly over the last 2 decades.

OP-CR-17

Head and Neck Cancer among Adult Acute Epiglottitis in Singapore

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Background & Hypothesis: To examine the incidence, clinical presentations, management and treatment outcomes of adults with history of head and neck cancer with or without radiotherapy presenting with acute epiglottitis in Singapore.

Methods: A retrospective study was undertaken in all adult patients admitted to a tertiary teaching hospital otorhinolaryngology department (year 2006 to 2010) with acute epiglottitis and history of head and neck cancer, compared against those without cancer.

Results: A total of 78 patients with acute epiglottitis were identified. Eleven (14.1%) cases had a previous history of radiotherapy for nasopharyngeal carcinoma (n = 8), laryngeal carcinoma (n = 1), olfactory neuroblastoma (n = 1) and lung cancer (n = 1). The mean age was 54.5 (interquartile range: 38.8-63.0). Two (18.2%) of the patients with previous radiotherapy had multiple recurrences of acute epiglottitis. The common symptoms presented in cancer patients with previous exposure to radiotherapy were sore throat (81.8%), voice change (63.6%) and odynophagia (54.5%). This is slightly different compared to the common symptoms in non-cancer patients (sore throat 80.6%, odynophagia 64.2% and fever 53.7%). Between the 2 groups, there are no significant differences in gender ratio, duration of symptoms before hospital presentation, duration of hospital stay, airway intubation rate and treatment outcome.

Discussion & Conclusion: The outcome of patients with history of head and neck cancer presented with acute epiglottitis did not show significant difference compared to patients without cancer.

OP-CR-18

Ophthalmic Complications of Dengue Fever - A Systematic Review

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Background & Hypothesis: In recent years there has been a spurt of publications on the ophthalmic complications of dengue fever. We aim to review the ocular manifestations, utility of relevant diagnostic tests, management, prognosis and sequelae of dengue-related ocular complications.

Methods: A comprehensive literature search was conducted on Medline, PubMed and Google scholar databases. Only articles published in the English language were considered and key data from each full article was extracted and evaluated. Articles such as preliminary reports were excluded.

Results: Our search yielded 28 articles. A total of 685 patients with a mean age of 33.4 years (range, 14 to 73 years) were included for our review. Ophthalmic complications were usually seen in young adults who often present at the nadir of thrombocytopenia. Blurring of vision was the most common presenting symptom and seen in 116/355 eyes (32.7%) and 99/210 patients (47.1%). Ocular findings were mostly seen in the posterior segment manifesting as retinal haemorrhages, oedema, uveitis and cotton wool spots. Patients with severe visual loss and/or bilateral involvement were treated with systemic steroids and/or immunoglobulins. Prognosis of dengue-related ophthalmic complications is favourable; almost all patients had normal or showed improvement in visual acuity and complete resolution of dengue ophthalmic complications was noted in almost all cases.

Discussion & Conclusion: Our review found that despite good prognosis, ophthalmologists and physicians should be aware and vigilant as isolated reports cases of dengue ophthalmic complication with poor visual acuity refractory to treatment has been reported. The pathological process of dengue ophthalmic complications is complex and clinical manifestations varied.

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OP-CR-19

An Observational Study of Oxygen Use In A University Hospital Respiratory Ward

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Background & Hypothesis: Oxygen is commonly prescribed in hypoxia. We hypothesise that active titration of oxygen delivery based on predetermined targets of routine peripheral pulse saturation results in more patients achieving ideal targets.

Methods: One hundred and forty-three consecutive patients admitted into the Respiratory ward over a 5-month period were prospectively followed-up inpatient. Saturation of peripheral oxygen (SpO₂) measurements and the corresponding set level of supplemental oxygen were routinely recorded once daily without interference with the managing team's plans.

Results: Sixty-five point seven three percent of patients had a SpO₂ range set on admission and 49.65% achieved prescribed range on admission day. Only 24.48% of set range was appropriate based on British Thoracic Society guidelines. Fifty-eight point seven six percent of patient-day readings [chronic obstructive pulmonary disease (COPD) 25.19% and non-COPD 68.89%] were within the appropriate SpO₂ range. For COPD patients, 67.94% of patient-day readings revealed excessive supplemental oxygen and 6.87% were inadequate. For non-COPD, 31.33% of readings revealed inadequate supplementation. No COPD patients and 47.71% of non-COPD patients achieved full compliance (within range for all days) to an appropriately-set range.

Discussion & Conclusion: There may be a poor understanding of the importance of setting and achieving accurate SpO₂ ranges. The knowledge of recommended guidelines for oxygen therapy may be deficient. COPD patients more commonly received excessive than insufficient oxygen. This runs contrary to expectations where COPD patients should tend to receive inadequate oxygen due to concerns over hypoxic drive. We conclude that compliance to prescribed SpO₂ targets is poor and these targets may have been inaccurately prescribed. We suggest an intervention with intensive education, and active titration by staff to improve oxygen therapy.

OP-CR-20

Chromoendoscopy Guided Confocal Endomicroscopy Improves Diagnostic Yield for Gastric Intestinal Metaplasia Compared to White-Light Endoscopy

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Background & Hypothesis: The detection of gastric intestinal metaplasia (GIM) and neoplasia may be difficult. Confocal laser endomicroscopy (CLE) allows in vivo histological diagnosis. We aim to determine whether chromoendoscopy guided CLE with optical biopsy and targeted tissue biopsy improves the diagnostic yield for GIM and neoplasia.

Methods: This was a prospective randomised study in a tertiary-care academic centre. Patients included were Chinese aged above 50 years, who satisfied 1 or more of the following criteria: a history of dyspepsia including bloating, epigastric discomfort or early satiety of at least 4 weeks or more; a family history of gastric cancer; or a medical condition for which gastroscopy is indicated. Patients were randomised into CLE arm or white-light endoscopy (WLE) arm.

Results: CLE-targeted biopsy (CLE-TB) increased the diagnostic yield per patient for GIM and neoplasia compared to WLE-targeted biopsy (WLE-TB) (94.3% vs 42.1%, $P < 0.001$). CLE-TB increased the diagnostic yield per biopsy for GIM and neoplasia compared to WLE-TB (94.4% vs 50.0%, $P = 0.006$). Gastric neoplasia and GIM were missed in 76.2% of patients with WLE-TB and in 37.0% of patients with CLE-TB ($P = 0.007$). WLE-TB missed significantly more gastric neoplasia and GIM compared to CLE-TB (83.0% vs 29.8%, $P < 0.001$) per biopsy. The miss rate for moderate-to-severe GIM and neoplasia for WLE-TB was significantly higher per biopsy compared to CLE-TB (82.1% vs 3.4%, $P < 0.001$).

Discussion & Conclusion: CLE-TB significantly improved the diagnostic yield for GIM compared to WLE-TB. CLE can be a useful tool for endoscopic surveillance in patients at high-risk of gastric cancer.

OP-CR-21

The Multiplex Role of A Medical Student: Complexities of Learning in The Clinical Environment

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Background & Hypothesis: Clinical rotations are an important part of a medical student's education. During these rotations, medical students are expected to exhibit behaviours that meet the expectations of the healthcare workers they interact in the complex clinical environment. Yet, such expectations are rarely articulated, let alone studied. In this study, we elicit the perspectives of healthcare workers on the roles medical students should play in the clinical setting.

Methods: We conducted semi-structured in-depth interviews with doctors (n = 12) and nurses (n = 8) from Tan Tock Seng Hospital who were directly involved in teaching or interacted regularly with medical students. The interviews were recorded, transcribed, and qualitatively analysed for unifying themes.

Results: Doctors and nurses alike expected students to show attitudes of professionalism and patient-centeredness, although the expected behaviours differed. Nurses expected students to be accountable to ward staff, often expressing disapproval when students acted without regard to ward team. In contrast, doctors expected students to be self-governing in achieving their learning objectives, such as participating in patient care, but recognised that the unstructured nature of their learning environment can produce unexpected challenges.

Discussion & Conclusion: The results showed that the clinical environment was complex for the medical student because the roles others expected of them, the roles they thought they should enact, and the actual roles they were allowed to enact were dissimilar. Roles confer legitimacy and authority, but also demand accountability. Clarifying and acknowledging the varying and sometimes contradictory expectations might help the medical student learn in a more congruent environment.

OP-CR-22

Is Hashimoto's Thyroiditis a Risk Factor for Papillary Thyroid Cancer? A Retrospective Study of Consecutive Cases in a Singapore Tertiary Referral Centre

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Background & Hypothesis: The association between Hashimoto's thyroiditis and papillary thyroid carcinoma (PTC) remains controversial. The objective of this study was to determine the prevalence of pre-existing Hashimoto's thyroiditis in patients with PTC in a tertiary referral centre in Singapore.

Methods: A retrospective review of consecutive cases of papillary thyroid carcinoma treated at Tan Tock Seng Hospital since January 2005 was performed. A systematic review of the literature was also performed.

Results: One hundred and thirteen cases of papillary thyroid carcinoma were identified. There were 5 (4.4%) cases of established Hashimoto's thyroiditis and a further 16 cases of patients with chronic lymphocytic thyroiditis, therefore 21 (18.6%) cases associated with pre-existing inflammation. There was no relationship between preoperative TSH level and maximum diameter of the tumour or PTC stage.

Discussion & Conclusion: The prevalence of Hashimoto's thyroiditis was low in our series, however the rate of pre-existing chronic inflammation in PTC was similar to published data. We suggest that the follow-up of patients with Hashimoto's thyroiditis for subsequent cancer development is unnecessary in our population, but that the hypothesis that preceding chronic inflammation of the thyroid is a cause of subsequent carcinogenesis is plausible.

OP-CR-23

Use of Topical Anaesthetic Solution for Dressing in Patients Presenting with Abrasions: A Randomised Clinical Trial

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Background & Hypothesis: The treatment of abrasions and minor wounds makes up a significant proportion of the workload in the Emergency Department. Abrasions are extremely painful, both in their immediate affect and management. Finding a way to cost-effectively reduce this pain would enhance the experience of the patient and make the experience more humane. The objective of this study is to evaluate the efficacy of topical application of lidocaine in the reduction of pain during and after abrasion irrigation.

Methods: This was a prospective, randomised clinical trial including 80 patients with abrasions, treated at the Emergency Department of Tan Tock Seng Hospital. Patients were randomly assigned into two groups, 1% lidocaine and normal saline. The pain scores, before, during, immediately after and 30 minutes after wound irrigation and dressing, were measured using a 100mm 10 point visual analogue scale.

Results: The baseline demographic data were comparable between the 2 groups. The mean reduction in pain score at 30 minutes after wound irrigation in the lidocaine treated group was 3.7 (vs 2.5 in the normal saline group). This was statistically significant ($P = 0.038$; 95% CI: -2.4 to -0.069). There were no reported or observed adverse effects in the lidocaine treated group.

Discussion & Conclusion: When compared to the control (normal saline), the use of topical 1% lidocaine solution significantly reduced pain at 30 minutes after wound irrigation, without resulting in any adverse effects. Our data suggests that 1% lidocaine solution is an effective topical anaesthetic agent for dressing in patients with abrasions.

OP-CR-24

Use of Proton Pump Inhibitors (PPI) in Hospitalised Patients: Appropriate or Overuse

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Background & Hypothesis: Proton pump inhibitors (PPI) are one of the most commonly prescribed medications in the hospital setting and account for a significant cost to health care. There are growing concerns that the use of PPI may be inappropriate in many instances and do not conform to evidence based indications. The purpose of this point prevalence study was to investigate the frequency, indications and appropriateness of PPI use in hospitalised patients on a randomly chosen day.

Methods: The total number of inpatients on a particular day was obtained (1025). The numerator was the number of inpatients on any form of PPI on the same day (478). The indications for maintaining the patients on PPI were obtained from the electronic medical records. The list of accepted or evidence-based indications for PPI use was adapted from the Food and Drug Administration (FDA) approved list and these were cross-referenced with the indications documented or appreciated from the medical records.

Results: Forty-six point six of inpatients on the chosen study date were using PPI. Out of the 478 patients on PPI, less than 50% fulfilled criteria for FDA approved indications.

Discussion & Conclusion: Less than half of the total PPI usage amongst hospitalised patients has evidence-based indications to support their use. Overuse of PPI have a negative impact on health care cost and may lead to certain adverse effects. Steps to curb inappropriate PPI use should address a few factors including indications to initiate PPI, reassessing need for ongoing use while in hospital or upon discharging patients and upon outpatient reviews.

OP-CR-25

Genome-Wide Supported Zinc Finger Protein 804A (ZNF804A) Risk Variant and Impact on Cortico-Limbic White Matter Integrity in Schizophrenia

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Background & Hypothesis: Recent genome wide association and meta-analytic studies have supported ZNF804A as a robust genome wide supported susceptibility gene for schizophrenia. In view of the possible involvement of ZNF804A gene in early neurodevelopment and cellular processes including oligodendrocyte proliferation and differentiation, we examined the effect of ZNF804A on brain white matter integrity in patients with schizophrenia. Based on extant data, we hypothesise that ZNF804A risk variant rs1344706 is associated with lower fractional anisotropy (FA) in brain regions within cortico-limbic circuitry, namely frontal, parietal, medial temporal lobes, and cingulate gyri.

Methods: Blood samples from 200 Chinese participants (125 schizophrenia patients and 75 healthy controls) were genotyped, a subset of 153 participants underwent structural magnetic resonance imaging and diffusion tensor imaging.

Results: There are significant effects of diagnosis (left cingulate gyrus, $P = 0.003$) and diagnosis-genotype interactions (left parietal lobe, $P = 0.007$; right parietal lobe, $P = 0.009$; right medial temporal lobe, $P = 0.004$; left cingulate gyrus, $P = 0.005$). Specifically, patients with schizophrenia who are risk T homozygotes have lower FA in bilateral parietal lobes, and left cingulate gyrus compared with non risk G carriers. Compared with healthy controls, patients with schizophrenia and are risk T homozygotes have decreased FA in bilateral parietal lobes, left cingulate gyrus and right medial temporal lobe.

Discussion & Conclusion: ZNF804A risk variant influences white matter integrity involving cortico-limbic brain regions in schizophrenia. Future work is needed to shed light on other ZNF804A related neural mechanisms conferring susceptibility towards schizophrenia, and highlight interventions that target key pathophysiological pathways, including therapies that limit disruptions of brain white matter integrity in schizophrenia.

OP-CR-26

Elucidating Regionally Precise Brain White Matter Disruptions of Fornix and Cingulum and Their Relationship with Clinical Symptomatology in Schizophrenia

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Background & Hypothesis: Limbic circuitry disruptions have been implicated in the psychopathology and cognitive deficits of schizophrenia but to date, efforts to examine these regionally precise white matter disruptions along the entire limbic white matter bundles (cingulum and fornix) have been sparse. Based on current data, we hypothesise that regionally-specific abnormalities of the fornix and cingulum are correlated with more severe psychotic symptoms in schizophrenia.

Methods: We determined the fractional anisotropy (FA), radial diffusivity (RD), and axial diffusivity (AD) profiles along the entire fornix and cingulum using a fiber tracking technique and brain mapping algorithm, the large deformation diffeomorphic metric mapping, on the diffusion tensor imaging scans of 33 patients with schizophrenia and 31 age-, gender-, and handedness-matched healthy controls.

Results: We found that patients with schizophrenia showed reductions in FA and increases in RD within bilateral fornix, and increases in RD in left anterior cingulum. In addition, the tract based analyses revealed precise loci of these white matter abnormalities, which are FA reductions and RD increases in the left fornix region further from the hippocampus and in the rostral portion of the left anterior cingulum. In patients with schizophrenia, decreased FA in the left fornix and increased AD in the right cingulum correlated with greater severity of psychotic symptoms.

Discussion & Conclusion: Anomalies of these white matter bundles contribute towards the neural basis of clinical symptomatology in schizophrenia. These and other precise disruptions of limbic-cortical integrity in schizophrenia may potentially serve as cerebral biomarkers for illness onset, progression and response to treatment.

OP-CR-27

Experience with Varenicline (Champix®)

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Background & Hypothesis: Randomised controlled trials have shown that Varenicline is efficacious as a smoking cessation aid. This study aims to evaluate the use of Varenicline in Tan Tock Seng Hospital (TTSH), its efficacy and side effects.

Methods: A retrospective study was conducted on all subjects prescribed with Varenicline in TTSH from June 2008 to May 2010. Case notes were reviewed to determine the prescribing patterns of Varenicline. Subjects were then interviewed about their smoking status and tolerability towards Varenicline. The outcomes measured were subjects' past smoking history, dose appropriateness of Varenicline, follow up visit after initiating therapy, quit rates at 3 and 6 months and occurrence of side effects.

Results: There were 44 subjects who were analysed. Majority of them were male (n = 34, 77.3%), aged 35 to 64 years old (n = 32, 72.7%), and Chinese (n = 30, 68.2%). Majority of them have smoked for 11 to 30 years (n = 24, 54.5%) and 0 to 20 cigarettes/day (n = 33, 75%). The quit rates at 3 months and 6 months were 31.8% (n = 14) and 20.5% (n = 9) respectively. Ten (22.7%) subjects were not prescribed recommended starting doses and 15 (34.1%) subjects did not stop smoking 1 week after starting Varenicline. About half (n = 24, 54.5%) were not followed-up after treatment commenced. The main reasons for discontinuing therapy were because Varenicline was too expensive, obtaining a prescription was troublesome, Varenicline was ineffective or the subjects experienced severe side effects. The most common side effects reported were agitation (11.4%), fatigue (6.8%), nausea (6.8%), abdominal pain/flatulence (6.8%) and insomnia (4.6%).

Discussion & Conclusion: Strategies to increase the appropriate prescribing and counselling of Varenicline among healthcare professionals should be implemented to ensure the safe and effective use of this medication.

OP-CR-28

Management and Outcome of Nasal Fractures — Tan Tock Seng Experience of 548 Patients

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Background & Hypothesis: To determine the clinical demographics, treatment and outcome in these patients.

Methods: This is a retrospective study of 547 patients with closed nasal bone fractures treated at Tan Tock Seng Hospital from 2006 to 2011. Patient demographics, treatment, and injury outcomes were reviewed.

Results: The most common age group was the third decade of life (25.1%; median = 41; range = 15-98) while the majority were Chinese (60.7%). Males were more common than females (3.76:1). The most common aetiology was fall (31.6%), of which 69.9% were due to accidents, 18.5% due to existing medical conditions and 11.6% due to alcohol. Other aetiologies included violent assaults (25.8%), road traffic accidents (22.5%), sport injuries (9.0%), and dizziness (1.3%). Twenty-six point five percent of patients suffered concurrent facial bone injuries. 69.5% did not have an associated deviated nasal septum. 27.1% of patients required simple nasal fracture manipulation while 6.0% required septorhinoplasty.

Discussion & Conclusion: Long-term collection of patient data regarding closed nasal fractures and concomitant facial injuries are important in the recognition of demographic risk factors, provision of better patient advice, evaluation of existing preventive measures, as well as provision of better management.

OP-CR-29

A Minimally Invasive Technique in the Treatment of Submacular Haemorrhage Using Tissue Plasminogen Activator and Pneumatic Displacement

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Background & Hypothesis: Submacular haemorrhage is a sight-threatening complication in retinal diseases. Surgical management carries a high risk of complications. This study aims to evaluate the safety and efficacy of a minimally invasive technique to treat submacular haemorrhage using tissue plasminogen activator (tPA) and pneumatic displacement.

Methods: A cohort study of all patients presenting with submacular haemorrhage over a 10-year period. Intravitreal injection of 0.05ml tPA was performed, followed by pneumatic displacement using 0.3ml perfluoropropane gas. Risk factors for long-term success and visual outcomes were assessed using multivariate analysis.

Results: Of 63 consecutive patients, single-treatment success was achieved in 89.3%, with displacement of submacular blood in 66.1% and dispersion in 23.2%. Polypoidal choroidal vasculopathy (PCV) was diagnosed in 36 patients (60.0%), while age-related macular degeneration was seen in 23 (35.0%). Following treatment, 47 patients (78.3%) had stable or improved visual acuity (VA), with 35 (58.3%) gaining ≥ 2 lines of vision. Good visual outcomes (final VA $\geq 6/12$) were achieved in 69%: 45.9% of patients who had clinical displacement, 23.1% with dispersion and none in those without displacement or dispersion. Good long-term visual outcomes were associated with age ≤ 65 years ($P = 0.001$). Displacement rates were higher in those with PCV ($P = 0.05$) and in the absence of rebleed ($P = 0.026$). Failure of displacement was associated with poor visual outcome ($P < 0.01$). There were no serious adverse events encountered over 10 years.

Discussion & Conclusion: tPA and pneumatic displacement of submacular haemorrhage is minimally invasive, efficacious and safe. Good visual improvement can be achieved, especially in younger patients and those with successful displacement.

OP-CR-30

New Insights into Diabetic Retinopathy — Risk Factors for Prevalence, Incidence and Progression in Asians

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Background & Hypothesis: Diabetic retinopathy (DR) is a leading cause of blindness. There are few studies on its risk factors in Asian populations and none on its rate of progression. We evaluate the risk factors associated with the prevalence, incidence and rate of progression of DR.

Methods: A cohort study of 250 consecutive patients with diabetes mellitus, examined annually by trained ophthalmologists over a 5-year period. Multivariate logistic regression analysis was performed on the demographic and clinical risk factors.

Results: The prevalence of DR at baseline was 54.2%. On multivariate analysis, risk factors were age (OR 0.92, 95% CI: 0.90 to 0.95, $P < 0.001$) and DM duration (OR: 1.05, 95% CI: 1.01 to 1.08, $P = 0.005$). The 5-year incidence was 35.8%, with 11.9% developing moderate or severe non-proliferative DR (NPDR). Risk factors included DM duration (OR: 1.05, $P = 0.008$), age (OR: 0.92, $P < 0.001$) and treatment type (OR 1.4, $P = 0.015$). Progression time between stages of DR shortened with increasing severity — normal to mild NPDR: 3.7 years; mild to moderate NPDR: 2.9 years; moderate to severe NPDR: 1.4 years. Stratifying by age, the youngest cohort (<60 years) progressed at the fastest rate compared to older cohorts [2.8 years vs 3.6 (60 to 69 years) vs 4.2 (≥ 70 years)]. The presence of macular oedema at baseline was a significant risk for the incidence and progression of DR.

Discussion & Conclusion: The rate of progression of DR has not previously been described. DR progression accelerates with increasing severity, and is fastest in younger patients with a longer duration of disease. Younger age and duration of DM are important risk factors for both prevalence and incidence.

OP-CR-31

The Decision Making Experience of Clients Affected by Their Spouse's Affair

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Background & Hypothesis: In retrospective of literature and clinical experiences, clients are often confounded by many issues requiring decision-making; including whether to stay or leave the marriage in the light of their spouse's affair. There is also a dearth of research on the decision-making experience of clients upon discovering their spouse's affair. To contribute to research findings, this qualitative study seeks to understand the decision-making process of clients affected by their spouse's affair.

Methods: Interpretative Phenomenological Analysis as developed by Jonathan Smith was selected as a qualitative research methodology. This methodology allows the researcher to draw themes and focus on understanding the meaning attributed to issues involving decision-making in relation to spouse's affair. One male and 3 female participants were interviewed in this study.

Results: Five master themes emerged:

1. Issues needing decision on spouse's affair
2. Ambivalence
3. Factors affecting decision to maintain or dissolve marriage upon discovery of spouse's affair
4. Systemic impact of decision to maintain or dissolve marriage on other decisions
5. Expectation of help in decision-making of spouse's affair

Discussion & Conclusion: The decision to maintain or dissolve the marriage is a common issue needing careful consideration. Factors impacting the decision are children, personal beliefs, influence of family of origin and culture. All participants experience ambivalence in making their decision. Participants sought counselling in an attempt to save their marriage and to process their thoughts and emotions in making decision.

OP-CR-32

Interpersonal Violence: A 10-Year Profile of Admissions to a Major Trauma Centre in Singapore

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Background & Hypothesis: To characterise trauma caused by interpersonal violence.

Methods: A retrospective study of patients who presented to the Tan Tock Seng Hospital Emergency Department from 01 January 2001 to 31 December 2010 with injuries caused by interpersonal violence was performed. Data was obtained from the Trauma Registry, case notes and electronic records for descriptive analysis.

Results: In total, 444 patients were admitted (99.1% males; 9.9% females). Average age was 36.6 years (range: 14 to 83). Majority were Chinese (53.4%) and Singaporeans (77.3%). Number of cases increased from 10/year to 96/year in the first 8 years, and decreased in the last 2 years (55 in 2010). Time of injury was predominantly 0000 to 0559 (72.3%). Interpersonal violence mostly occurred in public spaces (88.7%). Injury cause was mainly sharp objects (48.6%), which caused least severe injuries and second lowest mortality. There was only 1 case of firearms-related injuries, which caused the highest morbi-mortality. Average Glasgow Coma Scale (GCS) was 13.5 (range: 3 to 15); 49 patients (11.0%) had severe brain injuries (GCS 3 to 8). Average ISS was 13.5 (range: 1-75); 155 patients (34.9%) had major trauma [injury severity score (ISS) >15]. Apart from 6 patients who died immediately in the Emergency Department, the remaining patients were admitted. Overall mortality was 4.50%.

Discussion & Conclusion: Males and those between 20 to 49 years old were affected the most. Indians, Malays and minority ethnicities were disproportionately affected compared to Chinese. Females disproportionately experienced violence at homes compared to males. Injuries severity was frequently moderate to severe, though overall mortality was low. It is hoped that these data will prompt research to further characterise interpersonal violence and formulate preventive strategies.

OP-CR-33

Automation of Data Acquisition in Clinical Research with Microsoft Excel® and Visual Basic for Applications (VBA)

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Background & Hypothesis: Compare utility of automated data collection using Excel®/VBA versus paper-based methods

Methods: A customised menu-driven electronic interface with data fields identical to the hardcopy datasheet was generated with Excel®/VBA, and applied to a 12-month study evaluating post-reconstruction breast sensitivity as a proof of concept. Its versatility, efficiency, user-friendliness, costs, security, set-up time, requisite programming knowledge, and reliance on technical support were compared against that of paper-based methods.

Results: Database development was quick and easy. No difficulties were encountered during use. The database was encrypted. It allowed addition, storage, retrieval and modification of data using Identification Card numbers. Previously added data was only modifiable when unlocked to prevent accidental changes when new data was added during follow-ups.

Advantages of Excel®/VBA:

1. Versatility: study-specific functions can be added to augment native Excel® capabilities
2. Efficiency: elimination of interim hardcopy data collection before transferring to computer; reduction of error and environmental waste
3. Minimal end-user training required
4. No need for expensive proprietary solutions
5. Security
6. Database transferability via Internet/open-source/mobile platforms, eliminating geographical/time limits

Concerns:

1. Programming knowledge and technical support required
2. Static VBA code may not work with newer Excel® versions
3. Potential for data loss in sudden computer shut downs or security breaches

Discussion & Conclusion: Research protocols involving large sample sizes, complex data sets, and repetitive manipulation of individual patient data which require consistency will benefit from the use of Excel®/VBA. Prerequisites of using Excel®/VBA also need to be met. Excel®/VBA is a more powerful platform for data acquisition than hardcopy data collection.

OP-CR-34

Recurrent Diverticular Bleed: When Should Surgery Be Offered?

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Background & Hypothesis: Managing recurrent colonic diverticular bleed has no consensus due to varying recurrent bleed rates and different management philosophies. We aim to establish recurrent bleed rates and review surgical and conservative management outcomes of patients who developed 2nd episode of bleed to determine if surgery should be even offered at 2nd bleed.

Methods: A retrospective cohort study, identifying patients with first episode of colonic diverticular bleed over a 5-year period was performed. Variables collected included demographics, comorbidities, blood and colonic investigations, diverticular location, operative management and morbidity and mortality outcomes.

Results: Three hundred eighty-four patients had 1st episode of bleed during our study period. Forty-five patients developed 2nd bleed, giving 2nd bleed rate of 11.7%. Recurrent diverticular bleed was managed either conservatively or with surgery, Univariate analysis between both arms did not show any difference. There was no mortality in either management arm and no elective surgical morbidity. There was a 3rd bleed rate of 45.9% and a 66.7% emergency surgical morbidity rate at 3rd bleed.

Discussion & Conclusion: Limited retrospective cohort studies have different rates of 2nd bleed rates, 20 to 38%. Third bleed rates are as high as 50%. Most of them advocate conservative management and a lack of elective surgical morbidity or mortality data exists. Based on our favourable low 2nd bleed and higher 3rd bleed rate (11.7% vs 45.9%), no mortality nor morbidity from elective surgical management at 2nd bleed and a 66.7% emergency surgical morbidity rate at the 3rd bleed, elective surgery should be offered to patients after 2nd bleed.

OP-CR-35

Can Venous Blood Gas Replace Arterial Blood Gas as a Marker of Shock and a Predictor Of Survival in Trauma?

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Background & Hypothesis: Base excess has established as marker of shock and predictor of survival in trauma. Venous Base Excess (VBE) may be more reflective of tissue perfusion, easily obtainable, avoid additional time for arterial puncture and its morbidity. We aim to determine if VBE replaces Arterial Base Excess (ABE) in acute trauma patients at 0 hours presentation and establish if VBE is predictive of survival beyond 24 hours after presentation.

Methods: Review of prospectively collected data of 394 trauma patients over a 17 month period was undertaken. Variables collected included physiological parameters, injury severity score (ISS), mortality at 24 hours and at 1 week.

Results: There were 260 ABE and 134 VBE performed. When stratified by shock index (SI) and ISS, proportions between both the ABE and VBE group were not statistically different ($P > 0.05$). There was no statistical difference between the mean VBE and ABE when the $SI > 1$ ($P = 0.961$). When stratified by $ISS \leq 15$ or $ISS \geq 16$, there was no statistical difference between mean ABE and mean VBE. There was a mortality rate of 5.6%. No statistical analysis was performed in the mortality group between both arms due to small sample size. However, a greater level of acidosis in VBE vs ABE within mortality group (Mean BE -12.40 ± 0.57 vs -5.98 ± 5.03) was noted.

Discussion & Conclusion: VBE can replace ABE in patients with severe shock ($SI > 1$) regardless of severity of injury at 0 hours. However, it is not conclusive to predict for mortality beyond 24 hours.

OP-CR-36

The Deep Inferior Epigastric Perforator (DIEP) and Pedicled Transverse Rectus Abdominis Myocutaneous (TRAM) in Breast Reconstruction: Morbidity and Cost Issues

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Background & Hypothesis: In light of rising health costs, it is perhaps pertinent to compare the complication rates as well monetary costs incurred between these 2 popular options of reconstruction. Our current hypothesis is that the DIEP offers better end results than the TRAM with regard to the mentioned areas.

Methods: The records of women who underwent immediate reconstruction with either TRAM flaps (2003 to 2006) or DIEP flaps (1999 to 2006) by a single surgeon were reviewed. Only patients with unilateral mastectomy immediate reconstruction were considered, with the exclusion of patients with bilateral mastectomy, delayed reconstruction, bilateral breast reconstruction and subsequent post-reconstructive modifications, to ensure that flap choice was the only variable. 40 patients with TRAM reconstruction and 40 patients with DIEP reconstruction were accrued.

Results: Complications arising from pedicled TRAM include flap failure (2.5%), fat necrosis (15%), abdominal hernia requiring repair (2.5%) and minor complications (27.5%); complications arising from DIEP include total flap loss (5%), partial flap loss (5%), fat necrosis (5%) and minor complications (17.5%). The mean hospital stay was 8.2 days (range: 3 to 18) for TRAM reconstruction and 7.7 (range: 5 to 12) for DIEP reconstruction. In our hospital, DIEP reconstruction shows a higher average total cost, costing \$2820 more than TRAM reconstruction (DIEP: \$11,072.06 compared to TRAM: \$8252.05). Only cost differences were significant.

Discussion & Conclusion: In our experience, neither showed an obvious benefit over the other with regards to the components compared. The pedicled TRAM remains a highly reliable reconstructive technique despite better aesthetic outcome and less donor site morbidity of the DIEP reconstruction.

OP-CR-37

Evaluating Ultrasonographic Assessment of the Inferior Vena Cava as a Novel Method of Assessing Early Shock and Adequacy of Fluid Resuscitation in Trauma Patients: A Prospective Pilot Study

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Background & Hypothesis: Identifying early shock and assessing adequacy of fluid resuscitation to institute prompt treatment in trauma improves morbidity and mortality outcomes. Many clinical and serological measurements have been investigated both to identify shock and guide fluid resuscitation. We aim to evaluate Ultrasonographic Assessment of the Inferior Vena Cava (US IVC) to replace other markers in this regard.

Methods: Prospective US IVC measurements were performed on trauma patients presenting at 0 hours and 24 hours over a 3-month period. Other variables collected included, patient demographics, physiological and serological parameters and trauma injury profiles.

Results: We collected data for 22 patients. None of our patients were in shock. Nine patients had a Shock Index (SI) <1 (Early Shock). Twelve patients had SI <0.72 (Non-shock). There was no statistical difference between mean base excess and lactate between both groups, $P = 0.78$ and 0.76 respectively. Although, there was also no statistical difference between the mean US IVC size between the early shock vs non shock, this was approaching statistical significance, $P = 0.076$. There was no statistical difference between Mean US IVC size, base excess and lactate difference at 0 and 24 hours.

Discussion & Conclusion: There is a promising role of US IVC as a tool for assessing early shock in trauma at presentation. Larger sample size in an established prospective study may yield promising results. There is no role for its use in assessing adequacy of fluid resuscitation for early shock vs non-shock at 24 hours. However, serial measurement at shorter intervals may be evaluated.

OP-CR-38

A Prospective, Multi-Center Study on the Characteristic Features of Polypoidal Choroidal Vasculopathy on Fluorescein Angiography Imaging

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Background & Hypothesis: Polypoidal choroidal vasculopathy (PCV) and age-related macular degeneration (AMD) share many common clinical features, but the diseases have different visual prognoses and are believed to be distinct clinical entities. We aimed to determine the predictive value of features seen on fluorescein (FA) and indocyanine green (ICGA) angiography in the diagnosis of PCV.

Methods: A prospective, multi-center, randomised, controlled study of 78 patients with PCV and AMD. All patients underwent dilated fundal examination, FA and ICGA using standardised protocols. The angiogram images were reviewed by 2 consultant ophthalmologists using standardised diagnostic algorithms. Predictive features for PCV were analysed using multiple logistic regression and classification and regression trees (CART) analysis.

Results: The presence of a nodular hyperfluorescent area on FA, which corresponded to the clinical location of the polyp, was highly predictive of PCV (80.0% vs 16.7%, $P < 0.001$). Blockage of fluorescence on FA occurred more frequently in PCV (61.7% vs 16.7%, $P = 0.001$). Occult choroidal neovascularisation was seen more commonly in PCV (90.0% vs 73.3%) while classic CNV was less frequent (5.0% vs 22.2%). The mean area of classic CNV was significantly smaller in PCV (0.09 vs 0.65mm², $P = 0.005$). Using logistic regression analysis, the most predictive features for PCV were nodular hyperfluorescence ($P = 0.001$) and blocked fluorescence ($P = 0.018$).

Discussion & Conclusion: Fluorescein angiography identified several distinguishing features which are highly predictive of PCV compared to AMD. This knowledge is important in ensuring uniform diagnostic criteria in the evaluation of PCV, and to raise the index of suspicion for additional investigations when patients manifest with these FA features.

OP-CR-39

A Novel Classification of Peripheral Clinical and Autofluorescence Findings in Age-Related Macular Degeneration

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Background & Hypothesis: Peripheral abnormalities in colour and autofluorescence (AF) images of retinal diseases have not previously been described. We characterize the patterns of colour and AF peripheral abnormalities in wet and dry age-related macular degeneration (AMD).

Methods: In a prospective study of 100 consecutive AMD patients, widefield 200-degree colour and fundus autofluorescence (FAF) images were obtained by the Optos 200Tx Ultra-Widefield device using a standardised protocol. Images were graded independently by two masked graders. Colour and AF abnormalities were correlated with the type and severity of AMD.

Results: Of 200 eyes, peripheral AF abnormalities were evident in 157 (78.5%), with several distinct AF patterns identified: granular (52.0%), mottled (40.5%), and nummular (20.5%). A 90% concordance of AF patterns was observed between both eyes. Mottled decreased AF was more common in wet compared to dry AMD (37.2% vs 22.8%, $P = 0.042$). Colour photograph abnormalities were detected in 82% of patients with 85% concordance. Clinical findings included: peripheral drusen (38.5%), retinal pigment epithelium depigmentation (22.5%), reticular pigmentation (14.0%), and cobblestone degeneration (7.0%). There was a high correlation between specific clinical and AF findings: granular with drusen ($P < 0.001$), mottled with both depigmentation ($P < 0.001$) and reticular pigmentation ($P = 0.001$).

Discussion & Conclusion: Using a new widefield imaging technology, several distinct patterns of previously unknown peripheral AF abnormalities have been identified and classified. Widefield AF is a sensitive modality for monitoring of AMD, with the AF abnormalities correlating strongly with specific clinical features of AMD. The high concordance between eyes suggests a genetic basis to these abnormalities, which may serve as markers for prognosis of the disease.

OP-CR-40

Does Breastfeeding Have Benefits in the First Year of Infant Life? An Observational Study in Singapore

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Background & Hypothesis: The benefits of breastfeeding have been widely researched in the world but not in the local context. Establishing the benefits of breastfeeding can reaffirm the decision of local mothers to breastfeed. In this study, we aim to show if breastfeeding has significant positive effects on the health outcomes in infants up to the first year of life.

Methods: We observed 450 pairs of mothers and infants who delivered in a local tertiary hospital institution. Detailed observations of infant feeding and episodes of illness were made at 2 weeks, 6 weeks, 3 months, 6 months and 12 months. Primary outcomes measured were episodes of fever, cold and flu, diarrhea and any other symptoms that the infant may have experienced.

Results: Infants who were partially breastfed were 3.5 times as likely to develop fever at 12 months follow up ($P < 0.05$; 95% CI: 1.14 to 10.8) than infants who were exclusively breastfed. There were no other significant differences in the incidences of fever, cold/flu and diarrhoea between the groups of infants who were exclusively breastfed, partially breastfed or not breastfed at all, for less than 12 months.

Discussion & Conclusion: Our results seem to suggest that the positive effects of breastfeeding on health outcomes in infants are only seen from 12 months onwards. It does not appear to significantly improve their health outcomes if effected for less than 12 months.

OP-CR-41

Filaggrin Mutations Increase Recurrent Skin Infections in Atopic Dermatitis

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Background & Hypothesis: Loss-of-function filaggrin (FLG) mutations are a significant risk factor for atopic dermatitis (AD). We hypothesised that the AD patients with filaggrin mutations have an increased risk of recurrent skin infections due to an impaired skin barrier.

Methods: This was a retrospective cohort study of AD patients seen at the National Skin Centre between January 2008 and December 2009. All patients were genotyped for 22 FLG-null mutations and their medical records were reviewed for episodes of skin infections in the preceding year.

Results: Two hundred and twenty-eight Singaporean Chinese AD patients and their records were recruited and analysed. Patients with FLG-null mutations had increased skin infection in the past 1 year. Their median episodes of infection were 5 compared to 1 in those without FLG mutations ($P < 0.0001$), among those with infection. After adjusting for age, gender, age of AD onset, AD severity and use of oral steroids, FLG mutation(s) increased the risk of more than 4 episodes of skin infection requiring antibiotics in the preceding year by about 7 times (OR: 6.74; 95% CI: 2.29 to 19.79). The significant association was not modified by oral steroid use. Those with mild or moderate AD disease had even stronger risk (OR: 22.46; 95% CI: 2.76 to 182.52).

Discussion & Conclusion: The novel finding was that FLG loss-of-function mutations significantly increased the susceptibility of AD patients to recurrent bacterial skin infection. This suggests that FLG plays an important role in the epidermal antimicrobial barrier and maintaining the acid mantle of the skin.

OP-CR-42

The Rise of Aminotransferase Following Hepatotoxicity from Paracetamol Overdose

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Background & Hypothesis: We studied the rate of aminotransferase elevation from hepatotoxicity due to paracetamol overdose.

Methods: A retrospective review of case records was performed, consisting of patients who presented from 1 January 2006 to 31 August 2009 for paracetamol overdose and treated with IV N-Acetylcysteine. Patient data was accrued from computerised and hard-copy clinical data, laboratory database of all paracetamol assays and administrative data of patients with a discharge diagnosis of paracetamol overdose. Patients with incomplete data from unknown toxicity, unknown treatment and those who left before 24 hours against medical advice were excluded. Hepatotoxicity was defined as alanine aminotransferase (ALT) or aspartate aminotransferase (AST) levels of 1000U/L or higher.

Results: Among 188 patients in the retrospective cohort, 8 developed hepatotoxicity. ALT began to rise at 14.5 hours after overdose at an overall rate of $0.67t^{1.87}$ ($R^2 0.68$), (t is the time in hours after overdose). AST begin to rise after 9 hours post-ingestion at the rate of $0.73t^{1.81}$ ($R^2 0.51$). Significant elevation of greater than 100U/L was delayed by as much as 27 hours for ALT and 32 hours for AST on some patients.

Discussion & Conclusion: Aminotransferase levels begin to rise early and exponentially when hepatotoxicity sets in, but significant elevations in the early stages may be delayed in some patients.

OP-CR-43

Outcomes of Osteomesh (Polycaprolactone) Implants in Orbital Floor Reconstruction

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Background & Hypothesis: Treatment of orbital floor fractures and defects is often a complex issue. Repair of these injuries essentially aims to restore the continuity of the orbital floor and to provide an adequate support to the orbital content. Various alloplastic materials are used in orbital wall reconstruction. This study investigated the outcome of patients treated with osteomesh (polycaprolactone) sheet implants in the reconstruction of orbital floor fractures.

Methods: Twenty-nine patients with orbital blow-out fractures were admitted to Tan Tock Seng Hospital from January 2009 to December 2010. Motor vehicle collision, assault, and falls constituted the majority of injury mechanisms. Osteomesh was used to repair the defects of orbital floor and to correct diplopia and enophthalmous in 11 patients. The clinical results of diplopia, enophthalmous, hypoglobus (vertical dystopia), visual acuity, and infection rates were analysed preoperatively and postoperatively.

Results: The mean defect size was 2.2cm². Post operative complications after osteomesh were documented. None of the patients needed removal of the implants during the follow-up and none had decreased visual acuity. Three out of 4 patients (75%) had resolution of preoperative diplopia. Four patients (36.4%) had persistent enophthalmous after osteomesh insertion. No patients had dystopia. There was no reported implant infection requiring antibiotics or implant removal. There were no eye complications associated with osteomesh insertion.

Discussion & Conclusion: Polycaprolactone sheet implant is a reliable material for reconstruction of the orbital blow-out fractures and restoration of the orbital volume. It is safe to use, easy to contour, with a low risk of implant infection.

OP-CR-44

AZT Associated Anaemia at a Tertiary HIV Referral Centre in Singapore

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Background & Hypothesis: First line antiretroviral therapy (ART) recommended by international guidelines no longer includes Zidovudine (AZT). However, AZT-containing regimens continued to be used at Communicable Disease Centre – Tan Tock Seng Hospital (CDC-TTSH) as newer agents were either unaffordable or unavailable.

Methods: Approximately 50% of all HIV patients who had their first consultation at the CDC between January 2006 and December 2010 were randomly selected and those started on an AZT-containing regimen were analysed. Events leading to discontinuation of regimen were evaluated. A Cox regression model was constructed to identify predictors for development of AZT-associated anaemia.

Results: Two hundred and two patients were selected for analysis. The majority were Chinese males (77.2%). Mean age at presentation was 42.8 years (range 18.2 to 82.4 years). Mean CD4 at the start of ART was 179.5cells/ μ l, and 67.3% were severely immunocompromised. Thirty-nine (19.3%) patients discontinued AZT within the study period. Independent risks for development of severe anaemia (WHO grade 2 and above) were age (OR: 10.5 per 10 years increased age, 95% CI: 10.0 to 11.0, $P = 0.049$) and female gender (compared to male gender OR: 6.8, 95% CI: 1.1 to 42.7, $P = 0.040$). Independent risks for worsening of anaemia by WHO grade of 1 or more were age (OR: 10.4 per 10 years increased age, 95% CI: 10.0 to 10.8, $P = 0.037$) and severe immune suppression (OR: 5.2, 95% CI: 1.4 to 18.6, $P = 0.012$).

Discussion & Conclusion: Older patients and those with severe immune suppression are at increased risk for development of AZT-associated anemia. Recommended first-line ART should be used for these patients when possible.

OP-CR-45

Trauma Trends in Singapore — Its Impact on Future Trauma Programmes

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Background & Hypothesis: A good understanding of local trauma epidemiology is the cornerstone to the management of trauma patients and to a successful trauma programme. Tan Tock Seng Hospital embarked on a formal multidisciplinary trauma programme in 2005. Through this study, we hope to delineate significant trends in our trauma population and target future trauma programmes.

Methods: A retrospective review was conducted on all trauma patients admitted to TTSH from 01 January 2005 to 31 December 2009. Data was obtained from the hospital's trauma registry, Emergency Department/clinical records and post mortem reports. Patients who had incomplete records were excluded. Demographics, mechanism of injury, injury severity score (ISS), patterns of injury, mortality rates and outcomes were collected. Data analysis was performed with SPSS version 13.

Results: There were 5720 trauma patients in the study. Sixty-nine point three percent were males. Majority of the mechanism of injury was attributed to falls (49.2%). The median age of patients was 47 years, with 26.3% classified as elderly (>65 years) There was a steady increase in the number of elderly admitted, from 173 in 2005 to 466 in 2009. The number of admissions rose from 833 in 2005 to 1441 in 2009. The overall mortality rate was 9%. The mortality rate decreased significantly from 13% in 2005 to 6.8% in 2009 ($P = 0.000$)

Discussion & Conclusion: The yearly increase in the number of elderly trauma patients reflects our aging population and our developed country status. Future trauma initiatives should focus on the elderly. A multidisciplinary trauma management system has resulted in a decrease in overall mortality rate.

OP-CR-46

A Novel Prospective Randomised Clinical Trial Comparing Manual Sutureless Small Incision Cataract Surgery and Phacoemulsification

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Background & Hypothesis: Cataract is the most common cause of treatable blindness. Standard phacoemulsification cataract surgery achieves excellent visual outcomes, but requires expensive equipment and consumables. A faster, cost-effective method of surgery would utilise limited healthcare resources more efficiently. We aimed to compare the safety and efficacy of manual sutureless small incision cataract surgery with phacoemulsification.

Methods: A prospective, randomised, controlled, interventional surgical trial involving 270 consecutive patients with advanced cataracts undergoing manual sutureless small incision (Group 1, 137 patients) or phacoemulsification (Group 2, 133 patients) cataract surgery. Immediate and long-term visual outcomes were assessed 1 day and 6 weeks postoperatively and risk factors were analysed using multivariate analysis.

Results: The demographics, preoperative visual acuity and cataract grades of both groups were comparable. Group 1 experienced faster visual recovery on postoperative day 1 (best-corrected visual acuity 6/18 or better – 82.4% vs 57.9%, $P < 0.001$), which correlated with lower rates of corneal edema (10.2% vs 18.7%, $P = 0.047$). Final visual outcomes were comparable, with good visual acuity in 115 patients (98.2%) in Group 1 and 112 patients (99.1%) in Group 2 ($P = 0.594$). Surgical time was significantly faster in Group 1 (8.8 minutes vs 12.2 minutes, $P < 0.001$). There were no sight-threatening complications in both groups.

Discussion & Conclusion: Manual sutureless small incision cataract surgery is safe and reliable, and can be performed at lower cost and in a significantly shorter time compared to phacoemulsification. It achieves faster visual recovery, and excellent final visual outcomes with low complication rates. This method utilizes resources efficiently in high surgical volume settings while maintaining low cost and safety.

OP-CR-47

A Prospective Study on a Novel Adjustment of Spectral Domain Optical Coherence Tomography Segmentation to Achieve Comparability with Time Domain Optical Coherence Tomography

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Background & Hypothesis: Retinal thickness and volume, assessed using Optical Coherence Tomography (OCT), are important parameters for monitoring ocular diseases and are important outcome measures in clinical trials. Currently, both time-domain (TD) and the newer spectral-domain OCT (SD-OCT) machines are used, but report different values for the same parameter measured, hence making the machines incomparable. We aim to describe a novel method to adjust the output of SD-OCT to enable comparison with TD-OCT parameters.

Methods: In a prospective clinical study, SD-OCT and TD-OCT were sequentially performed on 184 eyes of 92 healthy individuals. Central retinal thickness (CRT), central point thickness (CPT) and 1mm volume were compared between the 2 machines. The segmentation lines were manually adjusted by trained operators using a standardised protocol and the parameters compared again. The reliability of the results was assessed using Bland-Altman plots and intraclass correlation.

Results: Pre-adjustment mean CRTs of SD-OCT and TD-OCT were significantly different (266.6 μ m vs 192.2 μ m, $P < 0.001$). After adjustment, the mean CRT for SD-OCT reduced to 196.0 μ m, with the difference between SD-OCT and TD-OCT measurements decreasing significantly from 74.4 μ m to 3.8 μ m ($P < 0.001$). Similar results were obtained for central 1mm volumes and CPT. The adjustment procedure was reliable, with good inter- and intra-operator repeatability (intraclass correlation 0.99 for both).

Discussion & Conclusion: We have described a novel method to achieve comparable retinal parameters using different OCT technologies. Retinal parameters are adjusted to a clinically insignificant level. This technique is valuable in multi-centre clinical trials or clinical practice where results need to be compared between different OCT machines in different hospitals.

OP-CR-48

The Relationship Between Major Depressive Disorder and Asthma Comorbidity: A National Health Survey

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Background & Hypothesis: Depression among asthma patients is not uncommon and is likely to be associated with poorer quality of life. We present here an analysis of a national wide epidemiological study of the mental and physical health conditions of the adult resident population in Singapore — focusing on the rate of major depressive disorder (MDD) among respondents with asthma, the effect on quality of life, and the rate of untreated depression.

Methods: Sample of population survey was taken from the Singapore Mental Health Study which represents Singapore adult population. Six thousand six hundred and sixteen subjects were recruited and reflect a response rate of 75.9%. World Mental Health (WMH) Composite International Diagnostic Interview (CIDI) was used to establish the prevalence of MDD. The presence of chronic conditions including asthma was recorded by self-report. The EQ-5D index and EQ-5D VAS scores were used to measure the health-related quality of life.

Results: Eight point nine percent of the adult population had asthma. The prevalence of MDD among people with asthma was 8.2% higher than the general population. Subjects with asthma with MDD had lower mean EQ-5D index and EQ-5D scores than those without MDD (0.81 vs 0.96, $P < 0.001$ and 70.9 vs 81.88, $P = 0.03$ respectively). The majority of those with depression (64.8%) were not treated for the mental disorder.

Discussion & Conclusion: Adults with asthma are about 1.4 times more likely to suffer from depression and have lower quality of life. These findings indicate a need for screening and treatment of depression among patients with asthma.

OP-CR-49

A Multi-Centre, Placebo-Controlled, Double-Blinded, Randomised Study on the Effects of Intracameral Lignocaine on Pain and Fear During Cataract Surgery

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Background & Hypothesis: Cataract surgery is performed under local anaesthesia and the procedure may be both painful and frightening to patients. We aimed to evaluate the effect of supplemental intracameral lignocaine on pain and fear experienced during phacoemulsification.

Methods: In a multi-centre placebo-controlled, double-blinded, randomised study, 506 consecutive patients undergoing cataract surgery (phacoemulsification) under topical anaesthesia were randomised to receive supplemental intracameral injection of either 0.5ml 1% lignocaine or balanced salt solution (BSS). Postoperative assessments were performed by a trained interviewer using a standardised questionnaire and visual analogue scales for pain and fear. Multiple logistic regression was performed to assess risk factors for pain and fear.

Results: Both groups were comparable in demographics and duration of surgery. Intracameral lignocaine significantly reduced the proportion of patients experiencing pain (45.1% vs 53.7%, multivariate OR: 0.68, 95% CI: 0.47 to 0.97, $P = 0.034$), the median pain score ($P = 0.039$) and the mean grade of fear (2.7 vs 4.6, $P = 0.032$) compared to the placebo group. Sixty nine point seven percent of the lignocaine group experienced minimal pain compared to 57.6% of the placebo group ($P = 0.005$). Risk factors for pain included females (OR: 1.56, 95% CI: 1.09 to 2.24, $P = 0.016$) and non-Chinese (OR: 2.13, 95% CI: 1.25 to 3.64, $P = 0.005$). Pain and fear scores were well correlated ($P = 0.004$) and younger age was a significant risk factor for fear (OR 0.93, $P < 0.001$)

Discussion & Conclusion: A supplemental injection of intracameral lignocaine during cataract surgery significantly reduces pain and fear experienced by patients. This intervention helps control discomfort and anxiety during surgery, increasing patients' satisfaction with cataract surgery and improving safety

OP-CR-50

The Value of Spectral Analysis of Bowel Sounds in Intestinal Obstruction Using an Electronic Stethoscope

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Background & Hypothesis: Bowel sounds have been poorly studied and understood. It is hypothesised that obstructed small or large bowel produces certain characteristic sounds that can be objectively assessed using an electronic stethoscope in order to support the clinical diagnosis of bowel obstruction.

Methods: The 3M™ Littmann® Model 4100 electronic stethoscope was used. Subjects were patients admitted to hospital with a diagnosis of possible intestinal obstruction. Six 8-second recordings of bowel sounds were taken from each patient. The recordings were analysed using the supplied software for sound duration, sound-to-sound interval, dominant frequency and peak frequency.

Results: A total of 71 patients were studied. Forty had acute bowel obstruction, 11 had subacute bowel obstruction and 20 had no bowel obstruction. There was no significant difference in sound duration, sound-to-sound interval, dominant frequency and peak frequency when comparisons were made between patients with acute obstruction, subacute obstruction and no obstruction. In patients with acute large bowel obstruction, the sound duration was significantly longer and the dominant frequency significantly higher when compared to patients with acute small bowel obstruction. No significant difference was seen between acute large bowel obstruction and large bowel pseudo-obstruction. For patients with small bowel obstruction, the sound-to-sound interval was significantly longer in patients whom subsequently underwent operation when compared with patients treated non-operatively.

Discussion & Conclusion: Generally, bowel sounds have been non-specific for making a diagnosis of bowel obstruction. However, in patients with acute large bowel obstruction, the sound duration was significantly longer and sound frequency significantly higher when compared to patients with acute small bowel obstruction.

OP-CR-51

CD4 and Age at Initial Presentation to Human Immunodeficiency Virus (HIV) Care and Treatment in Singapore, 2008 to 2010

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Background & Hypothesis: As of end 2010, the cumulative total of HIV cases in Singapore is 4845. The proportion of newly diagnosed HIV patients aged ≥ 50 years old is between 27 to 30% which is higher compared to other countries. Our study compared the CD4 count at presentation between younger and older patients presenting to care from 2008 to 2010. We hypothesised that older HIV individuals present with more advanced HIV infection compared to younger HIV individuals.

Methods: We assessed CD4 count at initial presentation among ≥ 50 -year-olds from 2008 to 2010 and compared to < 50 -year-olds. The study was approved by the National Healthcare Group Domain Specific Review Boards (NHG DSRB).

Results: A total of 914 newly diagnosed HIV patients presented at CDC from 2008 to 2010. Data is available for 884 (88%) patients. The proportion of patients ≥ 50 years old is 23%. The median CD4 count (cells/ml) at presentation by age group is 371 (< 20 yrs old), 333 (20 to 29 yrs old), 249 (30 to 39 yrs old), 171 (40 to 49 yrs old), 126 (50 to 59 yrs old), and 124 (> 60 yrs old). The median CD4 count was significantly lower in the ≥ 50 years old compared to < 50 years old from 2008 to 2010. The proportion of patients who had a CD4 > 200 among patients ≥ 50 -years old was lower compared to < 50 years old.

Discussion & Conclusion: Compared to younger HIV individuals, older HIV individuals are diagnosed later in the disease. Older individuals may have comorbid conditions that may complicate treatment decisions. HIV screening by health providers may help detect HIV infection earlier.

OP-CR-52

An Interesting Case of Intestinal Pseudo-Obstruction in a Human Immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) patient Secondary to Strongyloides Stercoralis Enteritis

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Background & Hypothesis: Strongyloidiasis is a chronic intestinal infection caused by the nematode *Strongyloides stercoralis* and is estimated to affect 30 to 100 million people worldwide. It is widespread in tropical and subtropical countries. Hyperinfection has been described in immunocompromised patients. A rare complication is intestinal pseudo-obstruction which may present as surgical emergency.

Methods: Literature review of the reported cases of Strongyloidiasis. Review of the case notes of the patient.

Results: A 54-year-old Chinese man, newly diagnosed with HIV, presented with symptoms of intestinal obstruction. He had no previous history of abdominal surgery and underwent exploratory laparotomy after failure of conservative treatment. There was no mechanical obstruction found intraoperatively. Small bowel was dilated to the level of mid jejunum. Intraoperative gastroscopy revealed severe duodenitis and histology showed strongyloidiasis. He was treated with multiple courses of ivermectin and the ileus resolved after 1 month of conservative management. Unfortunately the patient developed pneumonia and passed away 1 month later.

Discussion & Conclusion: In immunocompromised patients, strongyloidiasis remains an important pathogen causing disease. Early diagnosis and prompt treatment of this potentially fatal disease can reduce the morbidity and mortality. The clinical suspicion of strongyloidiasis causing paralytic ileus should be considered in immunocompromised patients with no other risk factors for intestinal obstruction. It is however, uncommon in HIV/AIDS, with this case being the first of its kind to be reported. Endoscopy and duodenal biopsy or duodenal aspiration should be considered prior to surgery which has its own incident morbidity and mortality.

OP-CR-53

Serum Vitamin D, B12 and Folate Levels and Allergic Rhinitis in Adult Patients

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Background & Hypothesis: Existing studies in children have shown links between Vitamin D (VitD), B12 (VitB12), folate and the development of allergic rhinitis (AR) and atopic diseases. This study aims to investigate the relationship between VitD, VitB12 and folate levels and severity of AR in adults.

Methods: A prospective cross-sectional study was conducted on 40 consecutive adult patients with laboratory and clinical diagnosis of AR seen in the rhinology clinic of the tertiary otorhinolaryngology centre in a teaching hospital in Singapore. Patient characteristics, rhinoconjunctivitis quality of life (RQLQ) score, serum total Immunoglobulin E (IgE), 25-OH VitD3, VitB12 and folate levels were collected. Relationships between vitamin levels and AR severity measures were analysed.

Results: With 27 males and 13 females, age range 17 to 50 years, 95% of subjects were found to have VitD deficiency (<20µg/L), and all the remaining 5% had VitD insufficiency (21-30µg/L). Serum folate and VitB12 were normal in all the subjects. No statistically significant correlation was found between RQLQ score and serum VitD (Rsquared = 0.031, $P > 0.05$), VitB12 (Rsquared = 0.006, $P > 0.05$) or folate (Rsquared = 0.011, $P > 0.05$). No significant correlation was found between total IgE and VitD (Rsquared = 0.007, $P > 0.05$), VitB12 (Rsquared = 0.008, $P > 0.05$) or folate (Rsquared = 0.010, $P > 0.05$) levels either.

Discussion & Conclusion: These results show no acute relationship between the severity of AR, and serum VitD, VitB12 and folate levels. Despite Singapore's sunny climate, an unusually high prevalence of VitD deficiency was found in our AR patients when compared to healthy population screen data from a previous study which was conducted in our hospital. Further studies are required to determine if a causal relationship exists between VitD deficiency and adult AR.

OP-CR-54

Low-Dose Aspirin Desensitisation in Patients with Acute Coronary Syndromes

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Background & Hypothesis: Patients with acute coronary syndromes (ACS) or who have undergone percutaneous coronary intervention (PCI) with stent insertion but have aspirin or non-steroidal anti-inflammatory drug (NSAID) hypersensitivity are often denied the use of the antiplatelet of choice, aspirin, which may result in a higher risk of secondary atherosclerotic events.

Methods: Forty-two consecutive patients with aspirin, NSAID or paracetamol urticaria or angioedema who had ACS and/or PCI underwent low-dose aspirin desensitisation without premedication using a rapid protocol. Aspirin was started at 1mg with incremental doses administered every 30 minutes to a cumulative dose of 100mg by 3 hours. Patients who developed reactions at 100mg of aspirin were continued on 50mg daily (od) with gradual increment to 50 mg bid or 100mg od.

Results: The mean age was 54.5±9.31 years with 85.7% male. The index reaction was to aspirin in 83.3%, NSAIDS in 11.9% and paracetamol in 4.7%. Seven (16.7%) patients had reactions to multiple drugs. The reaction was angioedema (50%) or urticaria (50%). None had respiratory or anaphylactoid reactions, a history of chronic rhinosinusitis/nasal polyposis, chronic persistent asthma, or chronic urticaria. Desensitisation was successful in 37 patients with aspirin continued for 13±6.2 (range 4 to 27) months. Desensitisation failed in 3 patients due to refractory urticaria (n = 2) and worsening asthma (n = 1). Two patients defaulted follow-up. There were no severe systemic reactions using this protocol.

Discussion & Conclusion: Aspirin desensitisation using a rapid protocol is safe and effective in patients with ACS and/or PCI.

OP-CR-55

Endoscopic Radiofrequency Ablation of Unresectable Malignant Obstructive Jaundice

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Background & Hypothesis: Patients with malignant obstructive jaundice have poor prognosis. Relief of jaundice is the primary goal of palliation. Endoscopically placed self-expandable metal stent (SEMS) is standard of care. However, 50% of SEMS get blocked within 6 to 8 months.

Methods: At Asian Institute of Gastroenterology, India, the HabibTM EndoHPB was used to carry out radiofrequency ablation (RFA) during endoscopic retrograde cholangiopancreatography (ERCP) in 15 patients with unresectable cholangiocarcinoma. One illustrative case with figures and videos is hereby presented.

Results: A 58-year-old gentleman presented with 4 week history of painless jaundice. Liver function tests suggested an obstructive picture. Computed Tomography (CT) scan revealed a mid common bile duct (CBD) stricture and 1.2cm node at porta hepatis. The patient refused surgery. After an informed consent, ERCP was carried out which confirmed a mid CBD stricture. Cholangioscopy using the mother and baby system showed an irregular lesion with circuitous vessels suggestive of malignancy. The HabibTM EndoHPB was placed at the site of the stricture. RFA was carried out using the Rita Medical Inc. 1500 RF generator at 10W for 2 minutes. Repeat cholangioscopy showed excellent charring of the tumour and an 11F baby scope could be negotiated across the stricture. An 8 cm SEMS was then placed across the stricture.

Discussion & Conclusion: All 15 patients suffered no procedure related complications and had patent metal stents at 3 months. We conclude that endoscopic RFA using the HabibTM EndoHPB is a safe and effective means of palliation of unresectable cholangiocarcinoma and may help in improvement of SEMS patency. Further randomised controlled trials are needed.

OP-CR-56

Comparison of Endoscopic Retrograde Cholangiopancreatography (ERCP) Outcome in 2 Regional Hospitals in Singapore and Vietnam

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Background & Hypothesis: To analyse and compare the ERCP outcome in Singapore and Vietnam hospitals.

Methods: ERCP data in 2010, including patient profile, indications, imaging, procedure details, complications and outcome were input into an audit database. Analyses of the separate and combined data were carried out using Stata statistical software.

Results: One thousand ERCP and 300 ERCP data from Vietnam and Singapore were obtained. Overall successful bile duct cannulation was 89.3%. Sensitivity of MRCP is superior to Computed Tomography (CT) and ultrasound imaging (96.6% vs 88% vs 69.8%) though its specificity is low at 41.6%. Fifty-four point one percent Vietnamese patients had choledocholithiasis, 9.7% biliary strictures and 3.7% ampullary mass. Successful bile duct cannulation was achieved in 91.2% of Singapore patients if the procedures were carried out by dedicated endoscopists. Sixty-one percent were choledocholithiasis, 2.3% ampullary masses. Complications include pancreatitis (3.33%), bleeding (3.6%), perforation (0.67%), acute coronary event (0.33%) and arrhythmia (0.33%). Endoscopic ultrasound (EUS) (service available only at the Singapore hospital then) showed an impressive 100% sensitivity and a comparatively higher specificity of 66.67% (CI: 39.99% to 93.34%) (superior to MRCP).

Discussion & Conclusion: Despite the economic differences in both countries, the success rate is comparable, though slightly higher in Singapore when dedicated endoscopists perform the procedure. The high patient volume load at Vietnam hospital probably contributes to their fairly impressive success rate. Complications are within internationally acceptable range. Ultrasound imaging is easily available but associated with low negative predictive value and sensitivity. EUS is superior to all imaging in terms of sensitivity but it is costly and requires expertise and training.

OP-CR-57

Ambulatory Breast Cancer Surgery is Safe and Feasible in an Asian Population

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Background & Hypothesis: Ambulatory breast cancer surgery is safe and feasible, and more cost-efficient. While widely accepted in the West, many in Asia remain hesitant as it is often believed that a patient receives ideal care and thus recovers best while in hospital. In our service, the majority of breast cancer surgery has been performed as ambulatory procedures since 2004. In this study, we review the results and outcomes.

Methods: We reviewed a total of 1877 surgeries performed in 1745 patients from 1 March 2004 to 31 December 2010.

Results: In the first year of implementation (2004), 48.5% of surgeries were performed as ambulatory procedures. By the third year, ambulatory surgeries made up 73.8% of all procedures and now account for 75.4% of all procedures performed in our unit. Elderly patients, those with significant comorbidities, or who have poor family support are managed as inpatients, as are those undergoing immediate breast reconstruction. Seventy-four patients (5.6%) who were planned as ambulatory procedures were managed inpatient postoperatively. Closer monitoring because of intraoperative events, wound bleeding, postoperative giddiness and nausea were the common reasons; median inpatient stay was 1.5 days. In the 30-day period following discharge, 52 patients (3.9%) who had undergone ambulatory surgery were readmitted because of postoperative complications, compared to 30 patients (5.4%) from the inpatient group.

Discussion & Conclusion: Careful patient selection, and a comprehensive set-up combining clinicians, specialist breast care nurses and coordinators, have been instrumental in making ambulatory surgery a well accepted concept for our local patients.

OP-CR-58

Low-Dose Chloroquine is Associated with Modest Favourable Effects on Lipoprotein Metabolism

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Background & Hypothesis: Chloroquine is an antimalarial and immunomodulating drug. Daily doses of chloroquine and hydroxychloroquine reduced insulin resistance and improved lipid metabolism. We hypothesised that weekly chloroquine could also be effective for treating metabolic syndrome (MetS).

Methods: We recruited 1516 healthy volunteers for a randomised placebo-controlled clinical trial of chloroquine to prevent influenza (CHIP Study). Half were administered chloroquine base 300mg (chloroquine phosphate 500mg) daily for 7 days, followed by 300mg weekly for 10 more weeks. The other half were on matching placebo. We obtained fasted plasma samples from a subset. Samples were assayed for total cholesterol (CHOL), High-Density Lipoprotein-cholesterol (HDL-C), triglycerides (TG), insulin and glucose. Low-Density Lipoprotein-cholesterol (LDL-C) was calculated using the Friedewald equation. Homeostatic model assessment insulin resistance (HOMA-IR) and beta-cell function (HOMA-B) were evaluated using the HOMA2 calculator.

Results: Two hundred and seventy-seven volunteers with fasting samples were recruited, 134 on chloroquine. One hundred and eighty-two were male, mean age was 27.8 years and body mass index was 23. kg/m². After 12 weeks, TG in the chloroquine group was 11% lower relative to placebo group (95% CI -20% to 0%, $P = 0.047$). The CHOL:HDL-C ratio was 7% lower (95% CI: -11% to -1%, $P = 0.013$). There was a trend towards lower (-5%) LDL-C (95% CI: -11% to +1%, $P = 0.075$). There were no significant differences in HDL-C, insulin, glucose and HOMA indices between chloroquine and placebo.

Discussion & Conclusion: Chloroquine given weekly had modest effects on lowering TG, CHOL:HDL-C and LDL-C. This cheap and safe treatment should be investigated further for efficacy in ameliorating MetS and mitigating cardiovascular risk.

OP-CR-59

Distress Levels amongst Psychiatric Patients with Cancer

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Background & Hypothesis: A broad range of psychiatric complications are associated with a cancer diagnosis. There is however little research amongst the mentally ill who have cancer. Psychiatric patients may need more support and counselling. Recent work suggests that mental illness may compromise cancer care.

Methods: The validated Distress Thermometer, a visual analogue scale was used to assess emotional difficulties amongst a group of long-stay mentally ill patients with a concomitant cancer diagnosis. The Concerns Checklist was used to determine patients' concerns in the physical, social and emotional dimensions.

Results: Nineteen surgical oncology patients were assessed (7 males, 12 females, average age 65.5). The predominant psychiatric diagnosis was Schizophrenia. Cancer sites were as follows: colorectal (7), liver (1), lungs (2), prostate (2), breast (6) and skin (1). Eighteen had successful surgical interventions; none needed palliative care at the point of assessment. Distress levels ranged from 0 to 7 on the analogue scale; mainly physical concerns, such as sleep difficulties, were reported on the Concerns Checklist. However patients' unstable mental state contributed to difficulties in using the Distress Thermometer.

Discussion & Conclusion: The NCCN recommends the use of the Distress Thermometer as a screening tool to establish the level of distress in cancer patients. Our findings indicate that Distress is a real problem for chronically ill psychiatric patients with cancer. However the Distress Thermometer may not be the most effective screening tool for psychiatric patients with unstable mental state. More appropriate evaluations are required to determine their emotional needs for provision of psychological care.

OP-CR-60

Increasing Prevalence of Barrett's Oesophagus — Real or Apparent?

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Background & Hypothesis: The prevalence of Barrett's Oesophagus (BE) has increased over the past few decades, but the reasons for such trends remained largely unexplored. This retrospective study aims to discern whether BE is genuinely on the increase in the Singaporean population.

Methods: The data of patients who underwent oesophagogastroduodenoscopy (EGD) at NUH between 2006 and 2010 were screened, and new endoscopically suspicious BE cases were corroborated with histopathologic diagnoses to obtain the annual incidence of BE. Differences in the patient cohorts over the years were analysed in terms of age, race and gender. Endoscopists who detected the BE cases were identified and ranked according to the total number of BE cases they detected.

Results: Of 29,447 patients who underwent EGD from 2006 to 2010, 44 were diagnosed with BE. The incidence of BE increased from 0.092% (5/5462) in 2006 to 0.166% (10/6032) in 2010. No significant differences were found in the BE versus non-BE patient cohorts over the years in terms of race (Chinese, $P = 0.902$; Malay, $P = 0.241$; Indian, $P = 0.162$; Others, $P = 0.520$), gender (female, $P = 0.078$; male, $P = 0.745$) or age (mean = $P = 0.922$). The 5 most experienced endoscopists who had an average of 12 years experience in performing EGD detected 20/44 cases with a diagnosis rate 2.9 times higher than that of the other 15 endoscopists.

Discussion & Conclusion: Incidence of BE increased from 2006 to 2010. The increase is probably not genuine and could be attributed to endoscopist factors such as having greater awareness of the disease condition and increased experience as an endoscopist.

OP-CR-61

Case Study: Lateral Intercostal Artery Perforator Flap for Breast Reconstruction

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Background & Hypothesis: Breast carcinoma is the commonest carcinoma diagnosed in women in Singapore. Breast conservation surgery may result in cosmetic deformity in patients' with small volume breast necessitating a mastectomy. We present a case of breast conservation with replacement of the defect with a fasciocutaneous perforator flap named as a lateral intercostal artery perforator (LICAP) flap. This technique has not been published in Asia to our knowledge.

Methods: We describe a case study with the use of the LICAP flap for breast reconstruction post lumpectomy for breast carcinoma and its operative technique.

Results: Nil

Discussion & Conclusion: Use of LICAP flaps for breast reconstruction is rare in our region. It is a valuable technique for immediate breast reconstruction post lumpectomy which results in excellent cosmetic outcome without oncological compromise.

OP-CR-62

Vestibular Dysfunction in Patients with Systemic Lupus Erythematosus

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Background & Hypothesis: Patients with systemic lupus erythematosus (SLE) are more likely to be affected by sensorineural hearing disorder, yet vestibular dysfunction (VD) among these patients has not been studied. This study investigates the prevalence of vestibular dysfunction and sensorineural hearing loss in patients with SLE, in particular their relationship to disease severity.

Methods: A randomised sample of SLE patients (International Diagnostic Criteria, American College of Rheumatology, 1997) was enrolled into the study, with a healthy control group matched for age and sex. SLE severity was determined using the System Lupus Damage Index Score (SLDIS), vestibular dysfunction using the Modified Romberg Test of Standing Balance (MRTSB), fall risk using the Berg's Balance Scale (BBS), and hearing assessment using pure-tone audiometry.

Results: Forty-five SLE patients (all women; mean age 45.7 years, range 26 to 63) and 55 healthy subjects (all women; mean age 42.3 years, range 20 to 63) were recruited. Prevalence of VD and sensorineural hearing loss among the SLE subjects are 35.6%(n = 16) and 33.3%(n = 15), and among the controls, 9.1% (n = 5) and 5.5% (n = 3) respectively. Between these 2 groups there is significant statistical difference in the prevalence for VD ($P = 0.01$) & hearing loss ($P < 0.001$). SLE subjects who failed the MRTSB had a higher mean SLDIS than those who passed although insignificant (score = 1.9 vs 1.2; $P = 0.21$). Linear regression shows no correlation between MRTSB and SLDIS. Patients from both groups showed a low fall risk, not statistically significant ($P = 0.12$).

Discussion & Conclusion: The current results further support that the disease process of SLE affects the entire vestibular-cochlear system, the clinical significance of which warrants further research.

OP-CR-63

Morphology and White Matter Integrity of the Corpus Callosum in Schizophrenia: A Combined MRI and DTI Study

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Background & Hypothesis: The corpus callosum (CC) serves as the primary pathway for brain interhemispheric communication. Despite observed abnormalities of CC in schizophrenia, there is a paucity of studies comparing CC differences between early onset and chronic schizophrenia. Based on sparse available findings, we hypothesised that structural and white matter abnormalities of the CC are found in schizophrenia in that lower CC area, volume and fractional anisotropy are found and the direction of findings being worse in chronic schizophrenia followed by first episode cases and healthy controls (HC).

Methods: Using combined Magnetic Resonance Imaging and Diffusion Tensor Imaging, we investigated the overall size (area, volume) and microstructural abnormalities (mean fractional anisotropy, FA) of the CC and its 5 constituent segments within 120 patients with schizophrenia (52 chronic and 68 first episode schizophrenia) and compared with 76 age- and sex-matched HC.

Results: We found that both the area and volume of the CC were significantly reduced in patients relative to HC, with chronic patients demonstrating the smallest areas and volumes, followed by first-episode patients and HC. No significant FA differences were observed between the comparison groups. There were no significant differences in CC size between the sexes, nor was the interaction between sex and diagnosis significant.

Discussion & Conclusion: Our findings further support the neurodegenerative hypothesis of schizophrenia in that brain structural abnormalities worsen with illness progression and may explain the various interhemispheric transfer deficits seen in schizophrenia. The results suggest that the CC is neither sexually dimorphic in HC nor in schizophrenia patients.

OP-CR-64

Types of Congenital Heart Disease in Down's Syndrome in Singapore

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Background & Hypothesis: In the largest study of its kind in the region, we describe the distribution of different types of congenital heart defects in Down's Syndrome patients in Singapore.

Methods: Echocardiogram records of 588 Down's Syndrome patients from 1996 to 2010 were reviewed for inclusion into the study. These patients were from the 2 largest tertiary paediatric hospitals in Singapore. Diagnosis of Down's Syndrome was made by karyotyping. Patients diagnosed with Down's Syndrome were referred to a cardiologist. Congenital heart defects were detected by 2D-echocardiography and cardiologist review. Variables extracted for analysis were demographics (age, race, gender) and congenital heart defects identified on echocardiogram.

Results: Our study shows ventricular septal defect to be the commonest congenital heart defect. This is followed by patent ductus arteriosus, secundum atrial septal defect, and atrioventricular septal defect. Tetralogy of Fallot associated with complete atrioventricular septal defect is more common in Down's Syndrome patients.

Discussion & Conclusion: Ventricular septal defect, not atrioventricular septal defect, is the commonest congenital heart defect in Singapore. Our percentage of atrioventricular septal defect contrasts starkly to many Western studies where atrioventricular septal defect is well recognised as the commonest lesion in Down's Syndrome. Conversely, our results are similar to several Asian studies. Results for coarctation of the aorta are also much lower compared to similar studies. Tetralogy of Fallot in association with atrioventricular septal defect is seen at higher percentages in Down's Syndrome patients. These findings provide a useful baseline for future research into cardiac health and management of Down's Syndrome in the region.

OP-CR-65

Who is The Good Medical Student? A Qualitative Study

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Background & Hypothesis: Clinical rotations are an important part of a medical student's education. During these rotations, medical students are expected to exhibit behaviours that meet the expectations of the healthcare workers they interact in the complex clinical environment. Yet, such expectations are rarely articulated, let alone studied. In this study, we elicit the perspectives of healthcare workers on the roles medical students should play in the clinical setting.

Methods: We conducted semi-structured in-depth interviews with doctors (n=12) and nurses (n=8) from Tan Tock Seng Hospital who were directly involved in teaching or interacted regularly with medical students. The interviews were recorded, transcribed, and qualitatively analysed for unifying themes.

Results: Doctors and nurses alike expected students to show attitudes of professionalism and patient-centeredness, although the expected behaviours differed. Nurses expected students to be accountable to ward staff, often expressing disapproval when students acted without regard to ward team. In contrast, doctors expected students to be self-governing in achieving their learning objectives, such as participating in patient care, but recognised that the unstructured nature of their learning environment can produce unexpected challenges.

Discussion & Conclusion: The results showed that the clinical environment was complex for the medical student because the roles others expected of them, the roles they thought they should enact, and the actual roles they were allowed to enact were dissimilar. Roles confer legitimacy and authority, but also demand accountability. Clarifying and acknowledging the varying and sometimes contradictory expectations might help the medical student learn in a more congruent environment.

OP-CR-66

Cerebral Venous Thrombosis: Review of the Imaging Findings with Illustrative Case Series

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Background & Hypothesis: Cerebral venous thrombosis (CVT) is an uncommon condition with an estimated annual incidence of between 2 and 7 cases per million in the general population. The myriad causes and broad spectrum of clinical manifestations making diagnosis difficult. As imaging plays a vital role in primary diagnosis, the aim of this review is to highlight the various imaging modalities, key imaging findings and potential pitfalls in the diagnosis of CVT using illustrative cases.

Methods: Review of clinical records and all diagnostic imaging of patients who had Magnetic Resonance Venography (MRV) done in our institution between June 2010 and June 2011 was performed.

Results: Five cases of CVT were identified. Of the 4 acute/subacute cases, 2 had local causes (trauma and ipsilateral skull base osteomyelitis) while the other 2 suffered from hypercoagulable state from Protein C deficiency. The 5th case had chronic thrombosis with features of recanalisation. Our review provides a spectrum of cases with varying imaging findings, etiologies, and chronicity, utilizing a range of diagnostic modalities. Further cases with variant anatomy illustrating mimics of CVT are also included.

Discussion & Conclusion: As the clinical presentation of CVT is nonspecific, awareness of the various imaging modalities and features is crucial for rapid and accurate diagnosis. Timely and appropriate therapy can significantly curtail the risk of complications including intracranial stroke or death. The treatment options for CVT include intravenous heparin or intradural thrombolysis.

OP-CR-67

Teaching The Neurophobic Doctor – Geeks to Consider GIK

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Background & Hypothesis: “Neurophobia” is a fear of clinical neurology. Defining neurophobia as having low confidence and perceived difficulty of neurology, we previously showed that 47.5% of Singapore Year 4 medical students were neurophobic. Risk factors in undergraduates were female gender, lack of clinical teaching by a neurologist, low knowledge and interest scores. This study sought to determine neurophobia prevalence and risk factors in medical doctors.

Methods: We conducted a cross-sectional survey of junior doctors in the Division of Medicine, Tan Tock Seng Hospital, assessing self-reported levels of interest, knowledge, confidence and difficulty in neurology, compared to 7 other medical specialties. Doctors with low confidence and difficulty scores were deemed neurophobic. To assess risk factors for neurophobia, doctors were asked about their undergraduate and postgraduate exposure to neurology.

Results: The response rate was 73.2%. Neurophobia prevalence was 36.6%, more than all other medical specialties except rheumatology. Multivariate analysis revealed 2 independently associated risk factors for neurophobia: low knowledge scores (OR 2.7, 95% CI 1.2 to 6.2) and low interest scores (OR 3.0, 95% CI 1.3 to 6.9). The association between female gender and neurophobia was of borderline significance ($P = 0.08$).

Discussion & Conclusion: Neurophobia remains prevalent in doctors, though less so compared to medical students. Two independent risk factors are common in both groups: low knowledge and low interest scores. Female gender may be considered a shared risk factor. Neurologists are often stereotyped as brainy but forgetful “geeks”; neurology teachers planning postgraduate neurology curriculum may consider the mnemonic GIK (Gender, Interest, Knowledge) to remember what risk factors to mitigate.

OP-CR-68

Neurophobia in Medical Students – The What, Who, Why and How

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Background & Hypothesis: “Neurophobia” is a fear of clinical neurology. Though data from US and UK studies show that many have perceived difficulty in managing neurology cases, there is no operating definition of neurophobia. We sought to (1) create an operating definition of the disease and (2) determine the prevalence and educational risk factors amongst Singaporean medical students.

Methods: We conducted a cross-sectional survey of Year 4 medical students (AY 2010/2011) in Yong Loo Lin School of Medicine, National University of Singapore, assessing their self-reported level of interest, knowledge, confidence and difficulty in the field of clinical neurology compared to 7 other medical specialties. To assess associated factors for neurophobia, students were asked about their exposure to pre-clinical neuroscience teaching and clinical neurology.

Results: The response rate was 63.4% (158/249). Defining neurophobia cases as those with a low combined score in confidence and difficulty, the prevalence was 47.5% which was more common than other medical specialties. Multivariate analysis revealed that female gender (OR 3.0, 95% CI 1.3 to 6.7), lack of clinical teaching by a neurologist (OR 2.8, 95% CI 1.2 to 6.6), low knowledge scores (OR 10.1, 95% CI 4.5 to 22.8) and low interest scores (OR 2.5, 95% CI 1.0 to 6.2) increased the risk of neurophobia. This model explains 41.1% of the variance in neurophobia.

Discussion & Conclusion: Neurophobia is common in 4th year medical undergraduates. Four independent risk factors were found; three are potentially modifiable. Revamping the undergraduate curriculum and pedagogy, with an aim to improve knowledge and interest in neurology may mitigate neurophobia.

OP-CR-69

Open Reduction and Internal Fixation of Displaced Intra-Articular Calcaneal Fractures with Norian SRS Bone Cement: Surgical Technique, Clinical and Radiographical Results

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Background & Hypothesis: Calcaneal fractures pose a challenge to the trauma surgeon and there is currently very little consensus on the best surgical treatment. This is a prospective study to evaluate the surgical outcomes of displaced intra-articular calcaneal fractures with a novel technique utilizing Norian SRS bone cement.

Methods: Nine patients were enrolled from a level 1 trauma centre over one year period from February 2010 to January 2011. Pre- and post-operative radiographic imaging was obtained to determine the fracture configuration and monitor Bohler's angles, Gissane's angles and talo-calcaneal angles. Sanders' classification was used to describe the fracture configuration and only type II and III calcaneal fractures were recruited. Patients were evaluated over a period of at least 6 months after surgery. Full weight bearing status was commenced at 6 weeks post-operatively. Functional status was assessed using The American Orthopaedic Foot & Ankle Society (AOFAS) Ankle and Hindfoot scale, and Visual Analogue Scale (VAS).

Results: We have found no statistical significance ($P > 0.05$) between intra-operative angles (Bohler's, Gissane's and Talo-calcaneal angles) and their corresponding angles on subsequent follow-ups. Stiffness was the commonest complaint (67%). No other significant complications were experienced. The mean AOFAS and VAS scores were 73.6 and 4.1 respectively. Multivariate analysis concluded that patients under workman compensation had lower AOFAS score by 27 (95% CI: -46.2 to -7.82, $P < 0.01$) and higher VAS score by 3.83 (95% CI: 1.31 to 6.36, $P = 0.01$).

Discussion & Conclusion: The technique described is an excellent cost-effective option for the management of displaced intra-articular calcaneal fractures.

OP-CR-70

Impact of Patient Demographics on Mortality in Severe Sepsis in an Asian Intensive Care Unit

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Background & Hypothesis: The impact of patient demographics on the outcomes of severe sepsis in the Asian population has not been widely researched. The aim of this study is to evaluate the effect of age, sex, and race on mortality in similar patients in a Singaporean intensive care unit (ICU).

Methods: Prospective cohort study of all patients admitted to the medical ICU of a tertiary hospital for severe sepsis between 2004 and 2009. We collected data on demographics, comorbidities, source of sepsis, Acute Physiology and Chronic Health Evaluation (APACHE) II score, Sequential Organ Failure Assessment (SOFA) score, need for mechanical ventilation, and outcomes. We performed multivariable logistic regression analysis on the above factors to determine the independent predictors of hospital mortality.

Results: We enrolled 846 patients (age 60.3±17.3 years, 63.8% males). The proportion of Chinese, Malay, Indian, and other races were 59.0%, 21.9%, 12.4%, and 6.7% respectively. Hospital mortality was 41.7%. On logistic regression analysis, the independent predictors of mortality were: age (OR: 1.25 per 10 years, 95% CI: 1.12 to 1.40) and sex (OR 1.43 for males, 95% CI 1.01 to 2.03), as well as the APACHE II score, thrombocytopenia, renal and liver failure.

Discussion & Conclusion: Increased age and the male sex are independently associated with increased mortality in severe sepsis in our Asian population. Further studies are required to establish the link between sex and survival.

OP-CR-71

Functional Outcomes after Operative Treatment of Tibial Plateau Fractures

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Background & Hypothesis: Tibial plateau fractures are common but outcomes of its surgical treatment are not well-documented. This study aims to evaluate functional outcomes of operatively treated tibial plateau fractures.

Methods: This is a retrospective study conducted at Tan Tock Seng Hospital. Between January 2008 and December 2009, 41 patients with tibial plateau fractures were operatively treated. Follow up data for 31 patients was obtained 19 to 42 months post-surgery. Injury mechanism, type of surgery and associated injuries were documented. Pre-operative and post-operative radiographs were reviewed to confirm Schatzker type and adequacy of reduction. All 31 patients were assessed using the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and Short-Form 36 health survey. Data regarding return to work and sports was collected. Functional scores were analysed with respect to fracture type and adequacy of joint reduction.

Results: The average age of the patients at the time of injury was 50 years. There were 10 female and 21 male patients. Twenty-one patients had Schatzker I to III fractures, and 10 had Schatzker IV to VI. The average WOMAC score for patients with Schatzker I to III fractures was 6.3 out of a maximum score of 96, significantly lower than patients with Schatzker IV to VI, whose average score was 18.4. 71% of patients reported partial to full return to work, while 65% of patients did not return to sports.

Discussion & Conclusion: The functional outcome of operatively treated tibial plateau fractures is satisfactory. High impact injury (Schatzker IV to VI) and polytrauma is associated with poorer functional outcome.

OP-CR-72

Review of Triage Patient's Acuity Category (PAC) in the Emergency Department (ED)

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Background & Hypothesis: Aims: The aim of this study was to review the current nursing triage practice and to refine Computerised Decision Support System (CDSS) algorithm. Background: CDSS was developed to predict patient acuity at triage in ED. Validation of the CDSS on retrospective data revealed a total of 382 cases which were under-triaged (from PAC1 to PAC2) when compared to actual PAC status in clinical records. These cases were reanalysed to ascertain the reasons for under-triaging.

Methods: The cases were divided into 5 samples. They were distributed to 5 ED nurses who were blinded to the actual triage PAC status. Each sample was reviewed by 2 nurses and the responses tabulated. Cases with inconsistent PAC assignment were given to the Senior Nurse Clinician for final review (gold standard).

Results: Of the 372 cases, there was a discrepancy between the nurses' PAC assignment and the actual PAC assignment in 45% of the cases. The discrepancies encompassed 43 chief complaints. The commonest chief complaints were chest pain (16.9%), fever (10.8%), falls (9.6%) and cough (9.0%). The factors affecting the audit nurses' prioritisation were patient's vital signs (82.1%), chief complaint (70.6%) and whether the patient had received immediate treatment (28.9%).

Discussion & Conclusion: In view of the significant inconsistent triage PAC between the nurses, the current triage training program would need to be reviewed to place greater emphasis on chest pain, fever, fall and cough complaints. This information also helped in refining CDSS algorithm to enhance its validity.

OP-CR-73

Prostate Cancer Detection – Predictive Outcome of Serum Prostate-Specific Antigen (PSA) levels and Digital Rectal Examination (DRE)

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Background & Hypothesis: To evaluate efficacy of digital rectal examination (DRE) in enhancing predictive value of serum prostate-specific antigen (PSA) in prostate cancer detection; Hence, to determine the necessity of a biopsy or a repeat biopsy if prior negative biopsy results from initial predicted outcome. Serum PSA cut-off >4.0ng/ml according to Western standards is the current indication for prostate cancer detection in local population. However, the cut-off lacks specificity leading to unnecessary biopsies; and missing diagnoses of those with PSA levels below the cut-off.

Methods: A retrospective study was conducted from 2001 to 2010, reviewing 1000 selected patients (35 to 75 years old) presenting with lower urinary tract symptoms and abnormal PSA with a minimum follow-up of 12 months. A subsequent transrectal biopsy was offered if there were any abnormal PSA or DRE findings. All subjects whose biopsy samples were negative for prostate cancer were followed up at the clinic and counseled on the need for repeat biopsies based on PSA trends and DRE findings.

Results: Predictive outcome was analysed according to PSA ranges: 4 to 10ng/ml, 10 to 20ng/ml and >20ng/ml. PPV of prostate cancer on subsequent TRUS prostate biopsies was 17%, 30% (11% detected on ≥ 2 biopsies) and 56% (5% detected on ≥ 2 biopsies) respectively. Abnormal DRE was detected in <1%, 8% and 11% respectively.

Discussion & Conclusion: A higher PSA cut-off than conventional levels is required to predict prostate cancer reliably in local population. PPV guides identification of patients who require repeated biopsies. Accuracy of DRE and PSA could be underestimated due to the numbers who refused examination or biopsy.

OP-CR-74

High Wavenumber Raman Spectroscopy for In Vivo Detection of Invasive Carcinoma of the Cervix

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Background & Hypothesis: Cancer is an abnormal and uncontrolled cell growth that can invade and eventually destroy the surrounding healthy tissues. The incidence of breast, endometrial, ovary, and cervical cancer plays a prominent role in overall female cancers. Cervical cancer is the second and seventh most common malignancy among women in developing and developed countries, respectively. Cervical cytology methods (e.g. Pap smear) are not able to provide high detection sensitivity and specificity concurrently. Colposcopy yields a high sensitivity (~96%) but a low specificity (~48%) for cervical precancer/cancer examination, leading to unnecessary biopsies. Histopathological diagnosis is subjective, invasive and impractical for screening patients who may have multiple suspicious lesions. Raman spectroscopy is an alternative non-invasive diagnostic technique to optically probe the biochemical structures of cervical tissue and its alterations associated with malignant transformation. The objective of this study is to utilize high wavenumber (HW) Raman spectroscopy for in vivo diagnosis of invasive carcinoma of the cervix.

Methods: Principal components analysis (PCA) and linear discriminant analysis (LDA) are utilised to extract the significant diagnostic information associated with Raman signals of malignant cervix. A rapid-acquisition, near-infrared Raman spectroscopy was developed to acquire a total of 288 HW spectra from the recruited 21 patients with Pap smear abnormalities of cervix.

Results: The developed PCA-LDA model yielded a diagnostic sensitivity and specificity of 94% and 97.5% for the detection of invasive carcinoma of the cervix.

Discussion & Conclusion: This study demonstrates that the HW Raman spectroscopy in conjunction with PCA-LDA technique has the potential for the non-invasive, in vivo diagnosis of cervical cancer.

OP-CR-75

Mastectomy Remains Popular Among Women with Breast Cancer

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Background & Hypothesis: Breast conserving surgery (BCS) appears to have found the balance between oncological safety and cosmesis. BCS would thus be expected to become increasingly among women with early breast cancer, particularly in the era where tumours are being detected at an earlier stage. In this study, we aim to review the rates of BCS in our institution.

Methods: Retrospective review was performed of 2249 patients who underwent surgery for invasive breast cancer or DCIS from 1 January 2001 to 31 December 2010.

Results: Over the 10-year period, less than 50% of the patients received BCS. The rate of mastectomy did not decrease significantly over the years. In the recent 2 years, there appeared to a gradual increase in the numbers of mastectomy performed together with immediate breast reconstruction. Median tumour size was between 19mm to 22mm over the 10 years. Even among those who underwent mastectomy, median tumour size was small (20 to 30mm). More than 50% of women suitable for BCS opted for mastectomy instead, most often because they were keen to avoid radiotherapy and because they deemed mastectomy as a more complete cure. Patients undergoing BCS tended to be younger and had smaller tumours. Those who underwent mastectomy were more likely to have node-positive tumours, high grade and hormone unresponsive tumours ($P < 0.05$). Local recurrence rates were similar between the 2 groups.

Discussion & Conclusion: Despite increasing subspecialisation and the implementation of a national breast cancer screening program, mastectomy still remains the preferred surgical option for many.

OP-CR-76

Ethnic Differences in Energy Expenditure among Overweight and Obese Singaporean Chinese, Malay and Indian Men

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Background & Hypothesis: The National Health Survey in 2004 showed that Malays (19.1%) have higher prevalence of obesity compared to Indians (13.4%) and Chinese (4.2%). Lower resting energy expenditure (REE) may be a contributory factor. Hence, REE and diet-induced thermogenesis (DIT) were evaluated for ethnic differences.

Methods: This was a cross-sectional study of 135 healthy Singaporean Chinese (n = 48), Malay (n = 47) and Indian (n = 40) men, aged 21 to 40 years with body mass index (BMI) of 23.0 to 30.0 kg/m². REE was measured using indirect calorimetry and body composition was assessed by dual energy X-ray absorptiometry.

Results: Absolute DIT was lower in Indians compared to Chinese by 99±40 kcal/day (*P* <0.05). After adjustment for age, height, relative sitting height, fat free mass (FFM) and fat mass (FM), Indians had lower REE than Chinese by 114±34 kcal/day (*P* <0.01). No significant difference in REE and DIT was observed between Chinese and Malays. Indians also had 0.82±0.17 kg more limb FFM (*P* <0.001) and 0.48±0.16 kg less trunk FFM (*P* ≤0.05) than Chinese, after adjustment for age, height, total FFM and FM. When trunk FFM was substituted for total FFM in the model, the ethnic difference in REE decreased but remained significant.

Discussion & Conclusion: Lower REE and DIT in Indians compared to Chinese may contribute to higher rates of obesity in the former. Lower REE in Indians was only partially explained by lower mass of metabolically active organs (main contributor of trunk FFM) and higher mass of skeletal muscle. Higher energy intake may be a greater risk factor than reduced REE for overweight/obesity in Malays.

OP-CR-77

The Feasibility and Yield of Outpatient Hysteroscopy

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Background & Hypothesis: Outpatient hysteroscopy and endometrial biopsy are now replacing inpatient dilation and curettage as the procedure of choice for the investigation of abnormal uterine bleeding. The purpose of our study was to assess the feasibility of diagnostic and therapeutic outpatient hysteroscopic procedures at the National University Hospital. Method

Methods: We conducted a prospective observational study of 426 patients and a 10-point visual analogue score (VAS) was used to determine the pain score during hysteroscopy – at entry into the external opening of the cervix (os), while negotiating the internal cervical os, while inside the uterus and during procedures, for example, the Pipelle sampling, IUCD removal or polypectomy. All nulliparous patients, those who had never delivered vaginally or any patient with an obviously tight cervical os were given 400 micrograms oral misoprostol, 3 hours before the procedure.

Results: Thirteen out of 426 procedures were unsuccessful and 11 were incomplete. Failure of hysteroscopy was significantly more common in nulliparous and menopausal patients. Nulliparity also increased chances of an incomplete procedure. Patients who took pre-procedure misoprostol were less likely to have incomplete or failed procedure compared to those who did not. Patients described most pain during Pipelle sampling, followed by the negotiation through the internal os. Multiparous patients had a lower VAS score, but menopausal status and previous vaginal deliveries were not significantly correlated to the VAS.

Discussion & Conclusion: Outpatient hysteroscopy is an important tool to investigate abnormal uterine bleeding. The use of misoprostol eliminates the use of analgesia. It is a feasible, reliable and acceptable method, with very low morbidity.

OP-NA-01

Perception of Hand Hygiene Practices amongst the Healthcare Providers in National Skin Centre

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Background & Hypothesis: Hand hygiene practice (HHP) is one of the interventions for infection control. To identify the factors influencing adherence to HHP among the healthcare providers (HCP).

Methods: The study was conducted in conjunction with annual health screening for employees at the centre. The self-administered questionnaires were designed based on 5 themes on factors that influence the HHP. Participants were asked on the top 3 reasons that influenced their decisions on non-adherence for HHP

Results: One hundred and seventy-five HCP responded to the surveys. Sixteen percent of doctors, 19% of nurses, 24% of allied health, 20% of clinic operations, and 21% of others. The top 3 themes perceived by HCP were personal, process and facilities in the centre. Forty percent reported on the personal theme: 15% due to busy schedules, 14% due to dryness of hand on use of washing agents, 11% due to forgetfulness. Twenty-four percent reported on the process theme: 18% due to lack of manpower, 5% due to lack of administrative sanction for HHP, 1% for interference by patient interaction. Seventeen percent reported on the facilities theme: 9% due to sink not constructed near workstation, 9% due to lack of HH agent and paper towels. 12% reported on perception theme: 7% thinks wearing gloves are good enough, 4% think it is low risk to acquire infection. Only 4% reported on lack of education.

Discussion & Conclusion: Tight manpower, busy work schedules and concerns of dryness of hands were the main concerns that influence good HHP that perceived by HCP. Addressing the concerns might improve the adherence of HHP amongst HCP.

OP-NA-02

Implementation of Continuous Quality Improvement Process to Reduce Peritonitis Rate in Peritoneal Dialysis Program

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Background & Hypothesis: Peritonitis is associated with morbidity and mortality in chronic peritoneal dialysis (PD) patients. Various measures have been done to improve patients and techniques survival on PD. Objective of the study is to assess the effectiveness of CQI in reducing peritonitis rate.

Methods: Single-centre, prospective study of incidence PD patients from July 2007 to June 2011. CQI was initiated in early 2010. Peritonitis rate was compared before and after the implementation of CQI. The CQI process looked into various factors include patient selection, training and retraining, clinical review and multidisciplinary participation.

Results: A total of 43 patients started PD over 4 years. The patients who have been trained before and after implementation of CQI were 33 and 10 respectively. There were 62.8% male, 55.8% Chinese and 83.7% diabetic patients. Mean age was 61.0 ± 12.6 years. Majority were on automated peritoneal dialysis treatment (67.4%). Mean duration on PD was 21.8 ± 12.7 months among active PD patients till June 2011. There was significant reduction in peritonitis rate after implementation of CQI (51.5% vs 10.0%, $P < 0.05$).

Discussion & Conclusion: Implementation of CQI has shown to reduce peritonitis rate. Follow up studies will be done to improve clinical care in PD patients.

OP-NA-03

Factors Influencing the Practice of Hand Hygiene amongst Healthcare Workers in The National Skin Centre, Singapore

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Background & Hypothesis: To identify the barriers to adherence of good hand hygiene practices (HHP) amongst healthcare providers (HCP) in the National Skin Centre (NSC).

Methods: The survey was carried out by the Infection Control Team (ICT) during the annual staff health screening day. A chart designed in the shape of a hand depicted 5 main themes (Facility, Personal, Process, Education and Perception) concerning HHP placed at the top of each finger. Each theme had a number of factors explaining reasons for poor HHP. HCP were asked to place a sticker each on the fingers representing their choice for the 3 top reasons influencing their poor compliance to HHP.

Results: One hundred and sixty-five HCP responded, comprising 48% of doctors, 66% of nurses, 57% of allied health staff, 38% of ancillary staff and 82% of administrative staff in NSC. The most common factors identified by HCP were: - rushing for time - busy schedules - irritation and dryness caused by the HH agent - forgetfulness - inconvenient location of sinks.

Discussion & Conclusion: The top 3 barriers to HHP by NSC staff were, in decreasing order, the need to rush in between work processes, personal busy schedules and concern of hand dryness from using the HH agent. Understanding the factors that influence good HHP will help the ICT to implement measures to promote better HHP amongst HCP in NSC.

OP-NA-04

Nurse-Led Initiative to Reduce Urinary-Catheter Days

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Background & Hypothesis: The evidence-based bundle for patients with urinary catheters include: a) bladder scanning for appropriate catheterisation, b) aseptic insertion, c) care and maintenance and d) early removal of urinary catheters. This effort involved developing a “Nurse-led Off-Catheter” algorithm to empower nurses to review and remove unnecessary urinary catheters.

Methods: “Nurse-led Catheter Removal” algorithm: female patients only. We developed the “Early Urinary Catheter Removal” algorithm for daily review. The algorithm was reviewed and approved by senior clinicians. It was piloted in 2 wards among female patients for 1 month. Early catheter review and removal was incorporated into the daily nursing Patient Care Record. We use catheter days as proxy to determine protocol effectiveness and collected pre- and post-implementation data to determine improvement patient catheter days.

Results: The post-implementation results showed a significant shift of long catheter duration towards a shorter period, i.e., a 21% increase from 27% to 48% with 1 to 5 catheter days. Before the algorithm was implemented, 22% of patients had 6 to 10 catheter days. After the implementation, there was a 10% reduction in the number of patients with 6 to 10 catheter days.

Discussion & Conclusion: Besides bladder scanning to avoid unnecessary catheterisation, reducing catheter days is a recognised evidence-based major step towards reducing catheter-associated urinary tract infection (CAUTI) rates. The algorithm not only enlarged nurses’ scope of practice, it has proven its effectiveness in reducing urinary catheter days for the patients, thereby the risk of catheter-related UTIs.

OP-NA-05

Elderly Patients in Emergency Department with Postural Hypotension: Who Requires Admission?

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Background & Hypothesis: Postural hypotension (PH) is not uncommon in elderly patients presenting to the emergency department (ED). However, there is paucity in the literature to aid us in the disposition of these patients. Objectives: To identify variables that may help us predict the need for admission in ED elders found to have PH.

Methods: This was a subgroup analysis of a cross sectional study involving elderly ED patients presenting during office hours with fall, functional decline, giddiness, syncope, or gastroenteritis. We compared PH patients who were admitted vs. those discharged, looking at the following variables: age, gender, degree of postural blood pressure (PBP) drop, presence of reflex tachycardia, number of causes found, history of/ presenting with falls, recent history of giddiness/syncope/lower limb weakness, and the reproducibility of PH.

Results: Seventy-eight of 382 patients (20.4%) had PH, of which 52 (66.7%) were admitted. Univariate analysis found the following to be significantly more common amongst admitted PH patients: median age (80 vs 76; $P = 0.042$), increasing number of causes of PH ($P = 0.029$), a history of giddiness in the preceding 2 weeks (81.5% vs 18.5%; $P = 0.048$) and giddiness during PBP check (84% vs 16%; $P = 0.038$).

Discussion & Conclusion: When managing elderly ED patients with PH, it is important to ask recent symptoms of PH, as well as actively identify likely causes. Advanced age, more than 1 cause, a recent history of giddiness and experiencing giddiness during PBP check may be predictors for need for admission.

OP-QHSR-01

Sociodemographic and Clinical Profile of All Patients Admitted to Community Hospitals in Singapore from 1996 to 2005: A Descriptive Study

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Background & Hypothesis: Little data is available on community hospital admissions in Singapore. We examined differences between community hospitals and trends with time in sociodemographic characteristics and functional status of patients admitted into Singaporean community hospitals from 1996 to 2005.

Methods: Data was obtained from all community hospitals existent in Singapore from 1996 to 2005. Nineteen thousand three hundred and sixty patient records were examined. Chi-square test was used for categorical variables by type of community hospitals; and for trends of categorical variables by year of admission, test for linear by linear association was used. For continuous variables, analysis of variance (ANOVA) was used for trends by community hospital and by year of admission.

Results: Mean age of patients increased from 72.8 to 74.8 years from 1996 to 2005. Admissions were mainly for rehabilitation (88.0%). There were significant sociodemographic differences and differences in caregiver availability between admissions to the various community hospitals, and heavy dependence on maids as primary caregivers (32.7% of patients in 2005). Over 10 years, mean length of stay for all patients was 28.1 days (CI: 26.3 to 29.2), while time to rehabilitation was 19.9 days (CI: 18.6 to 21.2) and admission and discharge BI were reported as 46.52 units (SD: 25.51) and 60.16 units (SD: 28.02). Seventy-three point five percent of patients were discharged to home.

Discussion & Conclusion: The profile of patients admitted between community hospitals is significantly different. From 1996 to 2005, the age of patients admitted increased, dependence on maids as caregivers increased and length of stay decreased. Discharge Barthel Index (BI) was consistently higher than admission BI over the 10 year period, suggesting that Singaporean community hospitals have generally been successful in rehabilitation to some extent.

OP-QHSR-02

Smoking and Health-Related Behaviours in a Low-Income Population in Singapore

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Background & Hypothesis: Smoking rates are rising in Singapore. Smoking is associated with low socioeconomic status (SES) but predictors of smoking within low SES are understudied.

Methods: The study population involved all residents ≥ 40 years in 2 lower income housing precincts in Singapore. From 2009 to 2011, we collected baseline information on smoking, other health-related behaviours (e.g. drinking, exercise, obesity, health screening utilisation). Individual measures of SES included: education, employment, household income. Area measures of SES included rental vs non-rental public housing neighbourhoods. Chi-square and multilevel logistic regression identified associations of current smoking in this population. Cut-off for statistical significance was $P < 0.05$.

Results: Participation was 77.2% (1081/1400). At baseline, 23.1% (250/1081) were current smokers while 6.3% (68/1081) were ex-smokers; compared with national estimates of 13.6% for current smokers. In this low income population, higher household income was associated with current smoking but inversely associated with heavy smoking (≥ 20 pack-years). Area SES was not significantly associated with smoking. Sociodemographic factors associated with smoking included younger age, male gender, Chinese ethnicity, needing social help, alcohol consumption, not going for regular blood pressure/fecal occult blood screening, and having ischaemic heart disease and hypertension. Sociodemographic factors associated with smoking > 20 pack-years included older age, male gender, Malay ethnicity, needing social help and alcohol consumption.

Discussion & Conclusion: Smoking rates in low SES Singaporeans are high and associated with individual measures of SES, as well as non-participation in health screening and alcohol consumption. More needs to be done to promote smoking cessation and healthy lifestyles amongst those of lower SES, particularly amongst males and minority ethnicities.

OP-QHSR-03

Is Blood Thicker Than Water? Caregivers and Their Impact on Inpatient Rehabilitation Efficiency and Effectiveness amongst Recent Stroke Survivors

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Background & Hypothesis: There is little data on impact of caregiver availability, number and identity on stroke rehabilitation outcomes. We examined the impact of caregiver factors on rehabilitation effectiveness (REs) and rehabilitation efficiency (REy) among subacute stroke survivors admitted to Singaporean community hospitals.

Methods: Data was obtained from all Singaporean community hospitals from 1996 to 2005. 3796 patients fulfilled inclusion criteria. Admission and discharge Shah-modified Barthel Indices were used to calculate REy and REs. Mixed logistic regression identified independent predictors of caregiver availability and identity, mixed Poisson modelling identified independent predictors of caregiver number; mixed linear regression identified the predictors of REy and REs.

Results: Among stroke rehabilitation inpatients, 95.8% (3640/3796) had caregivers and 94.2% (3429/3640) of them provided physical care (termed primary caregivers). Of those with primary caregivers, 41.2% depended on live-in hired help called foreign domestic workers (FDWs), 27.6% on spouses and 21.6% on first-degree relatives. Independent factors associated with caregiver availability and number included: age >70 years, female, being married, higher socioeconomic status, and being religious (all $P < 0.05$). Having non-child non-parent relatives ($\hat{\alpha} = -3.71$, 95% CI: -7.28 to -0.14, $P = 0.042$) and FDWs ($\hat{\alpha} = -5.74$, 95% CI: -8.21 to -3.27, $P < 0.001$) as primary caregiver were associated with lower REs, compared to spouse; while having FDWs as primary caregiver was associated with lower LnREy ($\hat{\alpha} = -0.100$, 95% CI: 0.190 to -0.008, $P = 0.033$), compared to spouse.

Discussion & Conclusion: There is high dependence on FDWs as caregivers for stroke patients in Singapore. Stroke REs declined with decreased relatedness between caregiver and patient, and REy was poorer in patients with FDW as caregivers.

OP-QHSR-04

To Standardise Teaching of Developmental Assessment in Polyclinics

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Background & Hypothesis: Majority of the newly joined Medical Officers Posting Exercise (MOPEX) doctors in the 6 months rotation to the polyclinics did not have paediatrics trainings prior to primary care attachment. Different polyclinics vary its training programme according to each clinic manpower situation, workload and available timings.

Methods: The following structured programme was proposed to be completed by end of first month of new posting:

1. Electronic paediatric multiple choice questions.
2. One Lunch time session to teach how to perform scheduled Developmental Assessment (DA) and the use of respective electronic medical templates.
3. One case discussion session to discuss on abnormal DA.
4. One day observation in Developmental Assessment clinic to see the role of the nurse and doctor in developmental assessment.
5. One week clinic rotation to attend to well child cases in the assigned DA room after the first month. The doctor will be assigned only to see the DA cases daily for that week. This is done so that the doctor can perform the DA daily more intensively rather than assigned to run the clinic randomly.
6. Printed hard copies of guidelines for doctors on what to do at each scheduled visit and the identification of red flags for referral. It should also be available as soft copy.

Results: NA

Discussion & Conclusion: This structured programme should be able to standardise the teaching of developmental assessment across all 9 polyclinics in National Healthcare Group Polyclinics.

OP-QHSR-05

Cardiovascular Health Screening Participation at Baseline and Postintervention in a Singaporean Low Income Community — A Quasi-Experimental Study

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Background & Hypothesis: Not all segments of society might have equal access to health screening. We examined cardiovascular screening amongst the lower income and the impact of a 3-month intervention on screening.

Methods: The study population involved residents aged ≥ 40 years in 2 precincts comprising owner-occupied (higher income) and rental flats (lower income) in Taman Jurong and Macpherson. From 2009 to 2011, we collected information on whether residents had gone for regular hypertension, diabetes and hyperlipidemia screening. Residents not being screened regularly were then offered free and convenient blood pressure (BP), fasting blood glucose and lipid screening over 3 months. Multilevel logistic regression identified factors associated with regular screening (baseline); likelihood-ratio and Cox regression analysis identified predictors of screening postintervention.

Results: Participation was 77.2% (1081/1400). At baseline, in the lower income community, 41.7%, 38.8%, and 30.8% had gone for regular hypertension, diabetes and dyslipidemia screening, respectively; while in the higher income community, 54.1%, 59.6%, and 50.2% had gone for the 3 screenings respectively. All differences were significant ($P < 0.001$). Factors associated with regular screening in the lower income included: married, history of hypertension/diabetes/hyperlipidemia, not smoking. Postintervention, screening rose significantly ($P < 0.001$) in both communities. Staying in a lower income community (adjusted relative risk (aRR) = 0.61, CI: 0.37 to 0.99, $P = 0.048$) and having hypertension (aRR = 0.45, CI: 0.18 to 0.98, $P = 0.049$) was associated with lower take-up of free blood tests; whereas Chinese ethnicity (aRR = 1.84, CI: 1.00 to 3.43, $P = 0.050$) and employment associated with higher take-up (aRR = 1.57, CI: 1.03 to 2.60, $P = 0.040$).

Discussion & Conclusion: Cardiovascular health screening participation was poor in the low income. Employed and higher incomes were more likely to go for free and convenient screening; such interventions should be mainly reserved for the lower income.

OP-QHSR-06

A Multicomponent Delirium Management Program Improves Functional Outcomes in Hospitalised Older Persons

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Background & Hypothesis: Delirium is associated with poor survival and functional outcomes following acute hospitalisation. Geriatric Monitoring Unit (GMU) models after the Delirium Room with adoption of core interventions from Hospital Elder Life Program and use of evening bright light therapy. This study aims to examine if the GMU program improved outcomes in delirious elderly patients compared to usual care

Methods: Patients with delirium in the Geriatric department admitted 1 month prior to implementation (pre-GMU, n = 47) were compared with GMU subjects (recruited over 6-months, n = 66), for baseline demographics, Charlson's comorbidity and severity of illness index (SII). Outcomes assessed include duration of delirium, length of stay (LOS), functional status [modified Barthel Index (MBI) on admission/discharge], falls, physical injuries, pressure ulcer and nosocomial infection rates.

Results: GMU patients demonstrated significant male preponderance, while trended to have lower Charlson (2.3 vs 3.6), SII score (2.0 vs 2.2) and preexisting dementia rates (68.2% vs 72.3%). They had significantly shorter delirium duration and LOS compared to the pre-GMU cohort (7.3 vs 15.1, 17.7 vs 21.9 respectively). Importantly, GMU patients improved significantly more functionally compared to their pre-GMU counterparts (mean MBI change = 20 + 17.3 vs 7.5 + 11.2 respectively). Fall rates were similar in both groups but significantly lower incidence of pressure ulcer occurrence (1.5% vs 61.7%) and nosocomial infections (3.0 vs 23.4%) were observed in GMU patients.

Discussion & Conclusion: Preliminary data indicates that by adhering to geriatric principles and addressing patient safety concerns, a multicomponent delirium management program could improve clinical outcomes including shorter delirium duration, improved functional gains and decreased complications of immobility.

OP-QHSR-07

Opinion and Knowledge of Antenatal Clinic Staff about Breastfeeding

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Background & Hypothesis: Step 3 of the “10 steps of successful breastfeeding” for maternity units that are Baby-Friendly [World Health Organisation/United Nations Children’s Fund [(WHO/UNICEF)] is provision of universal breastfeeding education to pregnant women. It is important to assess opinion and knowledge of clinic staff who provide antenatal breastfeeding education.

Methods: Sixty-seven antenatal clinic staff in National University Hospital completed a survey on infant feeding before a formal 3-hour training on breastfeeding and the Baby-Friendly Hospital Initiative.

Results: Response rate was 100% for 5 “opinion” questions, 83 to 100% for 9 “knowledge” questions. Thirty-nine percent of staff had more than 5 years of clinical experience, 24% had less than 5 years, while 25% were non-clinical staff. Half the respondents had personal experience with breastfeeding or supporting breastfeeding, 37% of the cohort felt it was a positive experience. All but one participant felt breastfeeding was important in modern life. Half of the participants had not attended any breastfeeding education and 62% were not confident in assisting a mother to breastfeed. There were knowledge gaps: 75% incorrectly answered reasons for supplemental feeds, 62% were not aware of the WHO International code of marketing of breast milk substitutes, 57% wrongly identified contraindications for breastfeeding. Forty-one percent acknowledged there was insufficient breastfeeding education to pregnant women, 57% felt that antenatal staff required more breastfeeding education.

Discussion & Conclusion: Amongst antenatal clinic staff, a significant proportion felt that breastfeeding was important, yet did not have adequate knowledge to guide pregnant women. Regular breastfeeding education for antenatal staff is needed for maternity units in Singapore.

OP-QHSR-08

Colorectal, Cervical and Breast Cancer Screening in an Urban Low Income Setting — a Mixed Methods Study

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Background & Hypothesis: Not all segments of society might have equal access to cancer screening. We determined screening take-up for colorectal, cervical and breast cancer screening amongst lower income Singaporeans.

Methods: The study population involved all residents aged ≥ 40 years in 2 precincts comprising owner-occupied housing (higher income) and rental flats (lower income) in Singapore. From 2009 to 2011, we collected baseline information on whether residents had regular cancer screening. Multilevel logistic regression identified predictors of regular screening. Qualitative reasons for not going for regular cancer screening were thematically analysed.

Results: Participation was 77.2% (1081/1400). In the lower-income community, 7.7% (33/427) had gone for regular FOBT; while 20.4% (44/216) had gone for Pap smear and 15.1% (94/623) had gone for mammogram at the recommended frequency. In the higher-income community, 16.6% (66/397), 41.9% (93/222) and 15.9% (48/302) had gone for the 3 screenings respectively. While screening rates were significantly higher ($P < 0.001$) in the high-income community for FOBT and Pap smear, differences were insignificant for mammogram uptake ($P = 0.654$). At baseline, amongst residents living in the lower-income community, site (Taman Jurong vs Macpherson) was significantly associated with uptake of both Pap smear (OR: 2.67, CI: 1.34 to 5.30, $P = 0.008$) and mammogram (OR: 3.58, CI: 1.88 to 6.83, $P < 0.001$), while higher educational status ($P = 0.022$) and higher household income ($P = 0.005$) were also associated with increased uptake of Pap smear. “Not necessary as healthy/not at risk”, “never heard about screening” and “too busy” were common reasons for irregular cancer screening in both communities.

Discussion & Conclusion: Colorectal and cervical cancer screening rates are poorer in the lower income. More needs to be done to increase uptake.

OP-QHSR-09

Individual and Neighbourhood Social Factors of Hypertension Management in a Low Socioeconomic Status Population: A Case-Control Study in Singapore

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Background & Hypothesis: Factors affecting hypertension management amongst lower socioeconomic status (SES) Singaporeans are unknown. We determined hypertension awareness, treatment, and control; as well as regular blood pressure (BP) screening and monitoring, in a multi-ethnic urban low SES Asian community; comparing against a higher SES community in the same location.

Methods: We studied a neighbourhood of 3 blocks of rented public flats (lower SES community) and 3 adjacent blocks of owner-occupied flats (higher SES community) in Taman Jurong, Singapore. Blood pressure was measured; demographic details and reasons for irregular BP screening, monitoring and treatment were collected from 2009 to 2010. Logistic regression determined predictors of hypertension management and reasons for suboptimal management were qualitatively analysed.

Results: Participation was 90.0% (359/400) for the rental flat community and 70.2% (351/500) for owner-occupied flats. Prevalence, awareness, treatment and control in the low SES community was 63.9% (228/357), 61.8% (141/228), 69.5% (98/141) and 43.9% (43/98); in the neighbouring community it was 65.0% (228/351), 83.3% (190/228), 85.3% (162/190) and 66.0% (107/162), respectively. Both individual SES (e.g. employment, needing financial aid) and neighbourhood SES (rental vs owner-occupied public housing) independently associated with prevalence, awareness, treatment and control, as well as regular screening and monitoring (all $P < 0.05$). In the low SES neighbourhood, awareness was higher amongst diabetics and dyslipidemics; treatment less likely amongst those needing financial aid; control less likely in the employed. Cost of screening and treatment was the most frequently cited barrier amongst the low SES.

Discussion & Conclusion: Both living in a low SES neighbourhood and low individual SES are associated with poor hypertension management amongst Singaporeans, and interventions should be targeted at both levels.

OP-QHSR-10

Derivation and Validation of a Risk Index to Predict All-Cause Mortality in Type 2 Diabetes Mellitus

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Background & Hypothesis: The study aims to develop a risk index to predict all cause mortality for a cohort of Type 2 Diabetes Mellitus (T2DM) patients seen at primary care clinics in Singapore.

Methods: In a retrospective cohort study, 28 patient-level variables were extracted from an automated clinical and administrative registry (CMDR) for T2DM who had at least 2 visits to the same National Healthcare Group Polyclinic in 2007. Demographic characteristics, inpatient and outpatient diagnoses, laboratory results, and prescription, were included. Mortality data were provided by the Ministry of Health. We used a split-sample design to derive and validate an index to predict the risk of death within 2 years of the index attendance. The C-statistic was used to assess model discrimination.

Results: Out of the 59,747 patients in the study, 2,977 (5%) patients died during the 2-year follow up. Age (“A”); diabetes-related complications (Diabetes Complication Severity Index) (“C”); and cancer history (“C”) were found to independently predict all-cause mortality (from which the mnemonic “ACC” was derived). The ACC risk index ranged from 0 to 23 with expected risk of mortality of 0.3% to 86.9%. The discriminatory accuracy of the ACC risk index for the validation data is excellent (C statistic 0.83, 95% CI: 0.82 to 0.84).

Discussion & Conclusion: A simple risk index for all-cause mortality was successfully developed, and validated using routinely collected registry data. The risk index can be used to stratify T2 DM patients into varying risk of mortality. Further external validation of the risk index is needed before using it in a clinical setting.

OP-QHSR-11

Stratifying Healthcare Costs Using the Diabetes Complication Severity Index

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Background & Hypothesis: We aim to determine whether healthcare costs for patients diagnosed with Type 2 Diabetes Mellitus (T2DM) are associated with the severity of diabetes complications as measured by the Diabetes Complications Severity Index (DCSI).

Methods: Retrospective cohort analysis was performed on a 2007 primary care cohort of T2DM patients. The DCSI is a 13-point scale, which comprises 7 categories of complications and their severity levels. Healthcare cost data from 2008 and 2009 were used as primary outcome. Inpatient and outpatient cost incurred for services consumed by patients within the provider network were included. Generalised linear model with log link and gamma distribution was used to predict healthcare costs.

Results: Of the 59,767 T2DM patients, 2977 (5.0%) deaths occurred and 1336 (2.2%) were lost to follow up. Healthcare cost was strongly associated with increase in DCSI score. Compared to patients without complications, those with more complications (higher DCSI score) had an increased risk of higher healthcare costs. Risk ratio (RR) increased from 1.25 (95%CI 1.19 to 1.32) for DCSI = 1 to 1.61 (1.51 to 1.72) for DCSI = 2; 2.10 (1.91 to 2.31) for DCSI = 3; 2.52 (2.21 to 2.87) for DCSI = 4 and 3.62 (3.09 to 4.25) for DCSI \geq 5. As a continuous score, a 1-point increase in the DCSI was associated with a cost increase of 27% (95%CI: 1.25 to 1.29).

Discussion & Conclusion: The DCSI score is a useful tool for predicting direct healthcare costs. The DCSI can be used to triage high-risk patients for more focused secondary prevention interventions at primary care level, in a bid to lower overall healthcare costs.

OP-QHSR-12

Enhancing Discharge Care Planning and Outpatient Attendance with Case Management Interventions

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Background & Hypothesis: Care coordination and continuity of care is important for patients with psychiatric disabilities to prevent illness relapses and readmissions. Therefore Case Managers (CM) ensure that patients are given an appointment date at our hospital's clinic if they are not referred to private psychiatrists, discharged to general hospitals or repatriated home upon their discharge. This paper translates the discharge destinations and follow-up attendance compliance for patients with Schizophrenia and Delusional Disorders, from the acute wards of a tertiary psychiatric hospital.

Methods: Data mining of patients who were discharged from March 2010 to May 2011 was done and the results analysed with Microsoft Excel program

Results: Three thousand four hundred and twenty patients were discharged out of whom 3390 (99%) were given a follow-up appointment at our hospital clinic. Case Managers monitored each patient for 3 months with telephonic case management, supportive counselling and psycho education. Seven thousand three hundred and twelve outpatients were case managed. Five thousand eight hundred and twenty-five (79.7%) patients came on their actual appointment date and 566 (7.7%) came within 2 weeks of their appointment. 548 (7.5%) of patients were either readmitted or had requested to be followed-up by their private doctors. Only 373 (5.1%) of patients completely defaulted treatment and their consultants were consulted for action.

Discussion & Conclusion: Patients with Schizophrenia and Delusional Disorders require close monitoring and follow-up as the illness is associated with violence and aggression. Therefore enhancing discharge care planning and the monitoring of outpatients' compliance to treatment is important.

OP-QHSR-13

Understanding Specialist Outpatient Clinics Workload with a Systems Framework

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Background & Hypothesis: Specialist Outpatient Clinics (SOC) plays a vital role in providing timely access to specialist consultation, electives surgery, and even inpatient admission. However, demands and flows of SOC can be complex due to multiple factors interacting over time. It thus creates difficulty to project demand and resources needed.

Methods: A system dynamics model was created to map the SOC patient flow. It was a systems map embedded with differential equations. The flow included First Visit (FV) referral which could be from primary care, A&E, inpatient discharge and cross SOC discipline referral. FV patients might be given Repeat visits (RV) with given timer/counter unit (TCU) interval and number of times before been discharged from the system. “No-show” policy was modelled in both demand (reschedule) and supply (overbooking) planning. Capacity was modelled in terms of slot availability.

Results: Scenarios were created to study the impact of various changes on top of changes in exogenous demand, such as RV interval and discharge rate, overbooking policy, and capacity allocation between FV and RV. The outputs include patient volume, appointment wait time, FV to RV ratio etc.

Discussion & Conclusion: The visual mapping and model computation provided better clarity and insights into the factors at play. For instance, the mapping showed that currently tracked “RV to FV” ratio was a “supply” rather than “demand” indicator. Also, increasing the RV TCU interval for an acute specialty would only provide short term respite for an under-resourced clinic. This model could be extended to the entire hospital patient flow.

OP-QHSR-14

Impact of Different Discharge Patterns on Bed Occupancy Rate and Bed Waiting Time: A Simulation Approach

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Background & Hypothesis: Beds are one of the most critical resources in any hospitals. How to manage beds efficiently is an important indicator of the efficiency of healthcare system. Bed management is challenging to many healthcare service providers. Shortage of beds not only causes crisis inside the inpatient department, it also significantly impacts the functionality of other departments, e.g., over-crowded emergency department due to long awaited admissions, waste of operating theatre slots due to surgery cancellation. On the other hand, more than enough beds cause a waste of hospital resource and pose additional financial burden upon the hospital.

Methods: This study quantifies the effect of discharge pattern on bed management. Two performance indicators are considered: bed occupancy rate and bed waiting time. A Discrete Event Simulation (DES) model is constructed to study the relationship between discharge pattern and the 2 performance indicators in 2 stages: firstly, the model is used to evaluate the existing discharge pattern. Secondly, various alternative discharge patterns are proposed and tested in the same context.

Results: Two types of alternative discharge patterns are studied: the first type shifts the original discharge pattern forward while the distribution keeps the same. The second type applies different distributions. Simulation results show that the alternative discharge patterns of both types effectively reduce the bed occupancy rate and bed waiting time. Additionally, discharge patterns with different distributions are more effective in smoothing the fluctuation of bed occupancy rate.

Discussion & Conclusion: DES helps the healthcare service providers describe the current situation, and simulate the what-if scenarios for future planning.

OP-QHSR-15

Assess the Accuracy of Nursing Gut Feel as a Prediction Tool for Admission at Triage

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Background & Hypothesis: Attendances to Emergency Department (ED) continue to rise across Singapore. This increase, accompanied by shortage of inpatient beds has often resulted in departmental congestion and protracted ED to ward waiting time. Early recognition of inpatient bed requirements might be helpful in expediting the admission process through ED, improving turnaround time and improve patients' satisfaction through faster admission. With this in mind, we asked whether ED triage nurses could predict patients' in-hospital admission with sufficient accuracy to facilitate hospital bed management. The hypothesis is to assess the accuracy of nursing gut feel as a prediction tool for admission at triage.

Methods: A prospective observational study was conducted between 22 January 2011 and 30 June 2011. Triage nurses were asked to document, at the end of the triage process, whether they thought a patient would require admission, be discharged or equivocal. Patients' characteristics and disposition status were collected from the Emergency Department's real time electronic medical record system. Triage nurses' predictions of admission were compared with patients' actual disposition status.

Results: Seventy-four thousand six hundred and thirty-one patients attended the ED during our study period, of which, 23,027 were admitted for further management. Triage nurses correctly identified 4052 of 13,361 cases (sensitivity 30.3%, 95% CI 29.6 to 31.1). Of those who were discharged, 31,237 were accurately diagnosed by triage nurses (specificity 96%, 95% CI: 95.8 to 96.2).

Discussion & Conclusion: Nurses were more accurate at predicting discharge than admission. Lacking in sensitivity, triage nurses' predictions may have limited potential to expedite the admission process.

OP-QHSR-16

Casemix by the Days of the Week at the Emergency Department (ED)

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Background & Hypothesis: To determine if there is a difference in casemix of attendance cross different days of the week in ED. The information is important in resource planning for capacity and manpower in the hospital. It also serves as a starting point to study the reasons behind such trends.

Methods: Retrospective data of ED attendance from 1 August 2010 to 31 July 2011 were analysed. The variables collected include diagnosis description, day of the week, the number of ED attendance and the disposition (admitted or discharged). Admission rate was calculated. Attendances by day and diagnosis description were compared using chi square statistics. Trends by diagnosis description of the highest and lowest admission days were compared.

Results: The highest and lowest cumulative attendance days were Mondays and Fridays respectively. By absolute numbers, the highest and lowest cumulative admission days were Mondays and Sundays respectively. Trauma to the extremities and diseases of the musculoskeletal system were consistently ranked highest in terms of number of attendance. Sundays and Fridays have the highest degree of difference in casemix ($\chi^2 = 406.980$, $P < 0.01$), whilst Wednesdays and Thursdays has the lowest degree of difference in casemix ($\chi^2 = 52.068$, $P < 0.01$). Respiratory infections were the predominant diagnosis on Sundays where the admission numbers were lowest (compared to Mondays which had the highest admission numbers).

Discussion & Conclusion: Higher number of attendance did not correlate with higher number of admissions. The higher number of ED attendance on Sundays was mainly contributed by higher number of patients presenting with respiratory infections. Further studies are needed to ascertain the reasons behind such trends.

OP-QHSR-17

Implementation of a Proactive Nutrition Clinical Practice Increases the Proportion of Mechanically Ventilated Patients Achieving Enteral Nutrition Targets in the Adult Neuro-Intensive Care Unit (NICU)

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Background & Hypothesis: The delivery of enteral nutrition (EN) is often late and inadequate despite evidence that enteral feeding reduces mortality and morbidity in critically ill patients. Early EN averts the risks of gut atrophy, systemic infections, prolonged intubation and ICU stay, and may also improve neurologic outcome in head-injured patients. A review of the baseline mean incidence of underfeeding in intubated neuro-ICU patients in TTSH is 86% from October to November 2010.

Methods: Using Clinical Practice Improvement Programme (CPIP) methodology, a multidisciplinary team of doctors, nurses and ICU dietician created a cause and effect (fish-bone) diagram to identify the root causes. The Pareto chart revealed the major causes as:

1. Excessive peri-procedural fasting for surgery and diagnostic scans
2. High gastric residual volumes
3. Delayed initiation or not stepping up to goal rate of enteral feeding
4. Excessive fasting prior to and post-extubation

Interventions adhering to Plan-Do-Study-Act principles were implemented: electronic nutrition charting, adopting MOH best practice guidelines for cut-off values for high gastric residual volumes, ICU dietician review for all new intubated admissions, protocol standardisation and dissemination and the use of electronic nutrition advisory alerts.

Results: An absolute reduction in the incidence of underfeeding from 86% to 38% (i.e. reduction of almost 50% at the last month of the CPIP project).

Discussion & Conclusion: We need to recognize of importance of nutritional care as critical to patient-centric ICU outcomes. Application of present & firm evidence to direct patient care (transfer to practice), standardisation/optimisation of processes, leveraging on IT to facilitate best practices, and multidisciplinary collaboration can help to improve patients' nutritional therapy.

OP-QHSR-18

Impact of Medisave Liberalisation on Healthcare Cost of Patients with Type 2 Diabetes Mellitus

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Background & Hypothesis: In October 2006, Medisave was liberalised to allow withdrawals for outpatient treatment of diabetes. This was to encourage evidence-based secondary prevention in order to improve health outcomes, and reduce healthcare costs downstream. We aim to examine the impact of this policy liberalisation on the annual healthcare cost of patients diagnosed with Type 2 Diabetes Mellitus (T2DM).

Methods: Longitudinal analysis of annual healthcare cost between 11,101 Medisave enrolees and 21,206 non-enrolees was conducted. Healthcare costs comprised inpatient, day surgery, specialist outpatient, emergency room, and polyclinic services provided within the National Healthcare Group (NHG). We adopted a difference-in-difference strategy to address unobserved intervening factors, and the generalised estimating equation approach for modelling repeated measures of healthcare cost between 2006 and 2009. Baseline differences in socio-demographics, insulin use, disease severity, and comorbid conditions were adjusted for. Data were extracted from the NHG diabetes registry.

Results: Medisave enrolees were younger (60.9, 63.2years old; $P < 0.001$), a higher proportion were males (48.4%, 44%; $P < 0.001$), had at least one diabetes-related complication (32.5%, 23.7%; $P < 0.001$), were hypertensive (88.2%, 77.2%, $P < 0.001$), and were on insulin therapy (10.7%, 6%; $P < 0.001$). Before the policy change, enrolees incurred higher annual cost than non-enrolees by S\$57. After adjusting for baseline differences, relative to changes in the annual healthcare costs of non-enrolees, we found statistically significant reductions of S\$121, S\$130 and S\$188 per enrolee in the first, second, and third year after policy implementation.

Discussion & Conclusion: These results suggest that Medisave for outpatient use may have an impact on reducing the annual healthcare costs in T2DM patients.

OP-QHSR-19

Maximizing Emergency Outpatient Scheduled Appointments at a Tertiary Psychiatric Hospital with Case Management Interventions

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Background & Hypothesis: High non-attendance rate at hospital outpatient clinics prevent the efficient use of outpatient facilities. Literature has shown that first appointments are more frequently missed than ongoing treatment appointments. The implementation of case management (CM) services at the Emergency Department (ED) in April 2010 was prompted by the high rate (>50%) of default appointments after ED visit. This paper highlights the results of CM interventions to reduce default rates.

Methods: Data mining on Emergency visits and outpatient visits were done from April 2010 to June 2011 and the results analysed with Microsoft Excel Program.

Results: Review appointments were given in ED by the Doctor. The CM conducted an assessment, discussed treatment plans and the appointment schedule. She highlighted the importance of the review and reminded patients to contact her if they required cancelling or rescheduling their appointments. Four thousand four hundred and ninety-three patients were seen at the ED, of whom 1851 (41%) were given review appointments. Nine hundred and eighty-three (53%) attended their review appointments, 53 (0.02%) were admitted prior to their appointment, 253 (13.8%) phoned to cancel their appointment but 562 (30.4%) defaulted their first review. This is however a >20% reduction in treatment default since the implementation of case management service. Of the 30.4% defaults, 21% indicated that their problems had resolved.

Discussion & Conclusion: The therapeutic relationship that the CM establishes with a client at the ED inclines patients to inform the clinic if they wish to cancel or reschedule their appointment. This prevents wastage of resources and promotes earlier appointment time for patients.

OP-QHSR-20

Application of Tensor Decompositions for Missing Data Handling in Medical Questionnaires

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Background & Hypothesis: Missing data in medical questionnaire may lead to biased parameter estimates and inflated errors. Some level of missing data is common and unavoidable. We present an innovative collaborative filtering technique to complete missing data in medical questionnaires.

Methods: The proposed missing data technique is based on canonical tensor decomposition (CANDECOMP) and parallel factor decomposition (PARAFAC). The technique is enhanced for improved results improving the missing value prediction by subtracting the column averages before decomposition, and adding them back afterwards. To illustrate and assess the proposed algorithms and standard missing value methods, we analysed the SLEQOL questionnaire completed by patients from TTSH and hospitals in China and Vietnam. We generated test datasets by randomly removing data entries from questionnaires, with different proportions of missing values (10%, 20%, 30%). We applied our standard and the proposed missing data algorithms, and evaluated them through measures such as root mean square error (RMSE), bias, and variance.

Results: For the scenario with 10% missing data RMSE with tensor based method was 1.074, while mean substitution (MS), weighted K-nearest neighbours' imputation (KNN) and iterative local least square (ILLS) techniques have RMSE 1.32, 1.25, and 1.15 respectively. Similarly, for 30% missing values RMSE with tensor based method was 1.11, and for MS, KNN and ILLS have RMSE 1.32, 1.26 and, 1.20 respectively. With the enhanced technique we have RMSE 0.979 and 1.062 respectively for 10% and 30% missing values.

Discussion & Conclusion: Our results demonstrate that the tensor decomposition based methods provide significant improvement on popular existing methods and overcome their limitations.

OP-QHSR-21

Outcomes and Cost Evaluation of Cardiac Rehabilitation for Patients With Chronic Heart Failure

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Background & Hypothesis: Cardiac rehabilitation, comprising lifestyle risk factor modification, education and exercise training was associated with improved functional abilities and survival for chronic heart failure patients (CHF). The aims of this study were to evaluate outcomes and costs of cardiac rehabilitation for CHF.

Methods: Medical records of CHF were retrospectively reviewed up to 1 year after being referred to cardiac rehabilitation (between 1 January 2006 to 30 April 2008) to identify their healthcare resources utilisation, included hospitalisation, outpatient visits, medication used, laboratory tests and procedures done. Patients who had attended the full 24 sessions were categorised as cardiac rehabilitation group (CR) and those who did not attend at least 12 sessions were served as the control, non cardiac rehabilitation group (NCR). This study was only evaluated direct costs and analysed from the healthcare provider's perspective.

Results: A total of 106 patients were analysed (CR = 66; NCR = 40). There was no significant difference between 2 groups of patients' mean age, gender, body mass index, baseline ejection fraction and comorbidities. Percentage of patients readmitted to hospital for the CR was 15% as compared to the NCR 35% ($P = 0.016$). Median total length of stay (LOS) for the CR group was also significantly shorter than the NCR, 5 versus 7 days ($P = 0.014$). There was no significant difference in the mortality rate at one year ($P = 0.78$). Total mean cost for the CR was SGD6285 per annum versus the NCR SGD9244 ($P = 0.52$).

Discussion & Conclusion: Completing a full cardiac rehabilitation programme is associated with lower percentage of readmission, shorter LOS and costs spent on healthcare resources.

OP-QHSR-22

A Structured Program to Improve Patient Satisfaction and Reduce Fear during Cataract Surgery — A Randomised Controlled Study on the Efficacy of Preoperative Counselling

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Background & Hypothesis: Cataract surgery is performed under local anaesthesia, where patients remain aware of intraoperative events. Since patients are unfamiliar with the procedure, up to 19% may be frightened during surgery, which affects patient cooperation and may result in adverse surgical outcomes. We aimed to determine the efficacy of a structured program using preoperative patient counseling on reducing fear and improving patient satisfaction.

Methods: In a prospective, randomised controlled trial, 851 consecutive patients undergoing cataract surgery (phacoemulsification) under topical anaesthesia were randomised to receive either additional preoperative counselling or no counselling. A trained interviewer assessed patients postoperatively on their intraoperative experiences and satisfaction. The factors affecting fear and patient satisfaction were assessed using multiple logistic regression.

Results: Both groups were comparable in terms of demographics and duration of surgery. In the counselled group, fewer patients experienced fear compared to the non-counselled group (4.5% vs 10.6%, $P < 0.001$), and reported that counselling prevented fear (38.2% vs 27.3%, $P = 0.002$)

Discussion & Conclusion: In this study, we have shown that a structured counseling program for patients before cataract surgery significantly reduces fear and leads to greater satisfaction for patients. This can improve patient cooperation during surgery, leading to fewer complications and complaints. Preoperative counselling can similarly be considered for other surgical procedures.

OP-QHSR-23

The Conception and Design of a Patient Information Board in an Emergency Department

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Background & Hypothesis: A significant amount of ED staffs' time is spent on answering queries regarding patients' status, location, and waiting time. Here we describe the conception and design of a Patient Information Board (PIB) in the ED to provide NOK with the above information.

Methods: This was a co, clerical stafflaborative between ED clinicians, our EDweb vendor, NHG IT and HSOR teams. Three rounds of surveys were performed on clinicians, patients and NOK to determine its eventual appearance. Five UAT phases were needed to refine the PIB's functionality.

Results: The final PIB had 3 components: data, hardware, and waiting time. Data: The PIB's data is drawn from the ED's electronic medical system (EDweb). 'Status' is based on the patient's virtual flow through EDweb. 'Location' is set by ED staff, but superseded by RFID location. Orders (X-ray, laboratory tests, etc) display a 'clock' icon when 'pending', and a 'tick' when results have been noted or orders have been performed. Hardware: The PIB consists of three wall-mounted 42" LCDs, each displaying 11 records, and is readable at 3 metres. The page flip time, announcement blinking duration and data refresh time are all configurable. Waiting Time Calculation: The PIB provides the estimated time before a patient sees a doctor. Its calculation is based on historical and current data, as well as triage acuity and patient load.

Discussion & Conclusion: The public has become increasingly IT-savvy. We expect them to feel empowered — rather than daunted — by the live and accurate information provided by the PIB.

PP-AH-01

Process Evaluation of Recruitment for a Clinical Drug Trial

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Background & Hypothesis: Recruitment is integral for the conduct of clinical trials and is one of its most challenging aspects. The objective was to evaluate recruitment and retention in a 10-week randomised placebo-controlled trial of a neurocognition enhancing agent among patients with schizophrenia.

Methods: As part of the Neuroscience Translational Clinical Research, a single-site clinical trial was conducted on patients with schizophrenia at the Institute of Mental Health. Main recruitment strategies included committed research staff “on the ground” at the clinic to identify potential participants, regular project meetings for early identification and resolution of problems, regular communication with clinicians and clinic staff to create awareness and to get their assistance.

Results: Four hundred and thirty-three patients were approached, of which 310 (71.6%) agreed to participate. Of these, 143 (46.1%) met basic eligibility for a screening visit. There were 23 (16.1%) screen failures due to abnormalities in electrocardiography (n = 10, 43.5%) or laboratory tests (n = 6, 26.1%), and 7 (30.4%) were withdrawn due to non-compliance to study medication. The remaining 120 patients were randomised. Of these, 105 completed all scheduled visits, while there were 15 (12.5%) withdrawals. Reasons for withdrawal were adverse reaction to study medication (n = 5, 33.3%), non-compliance to study protocol (n = 5, 33.3%), exacerbated symptoms (n = 3, 20%), and others (n = 2, 13.4%).

Discussion & Conclusion: Recruitment plans and strategies must be an integral part of the conduction of any clinical trial. Low number of patient withdrawals reflects the detailed retention plan and the important role the coordinators played in keeping patients engaged, as well as the importance of integrating research into routine clinic practice.

PP-AH-02

Warfarin Therapy: An Evaluation of Safety Profile on the Frequency of International Normalised Ration (INR) Monitoring

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Background & Hypothesis: For stable patients on warfarin therapy, the United States CHEST guidelines and the Singapore Ministry of Health (MOH) guidelines suggest INR monitoring intervals of 4 weeks and 4 to 8 weeks respectively. Frequent monitoring improves INR control but it can be costly. Less frequent monitoring may be feasible for certain patients. The primary objective was to evaluate the safety of warfarin therapy monitored at different INR monitoring intervals. The secondary objective was to determine the correlation between patient characteristics and INR control.

Methods: A retrospective, longitudinal cohort study was conducted in the pharmacist-managed anticoagulation clinic at Tan Tock Seng Hospital. All patients ≥ 21 years old who received care between August 2000 and July 2010 and who had ≥ 30 days of warfarin therapy were reviewed. The prevalence of out-of-range INR readings and minor adverse effects at different INR monitoring intervals were compared to evaluate safety of warfarin therapy. Patient characteristics associated with good INR control were identified using regression analysis.

Results: Records of 2001 patients with a total of 27,960 visits were analysed. The incidence of out-of-range INR readings for the monitoring intervals of ≤ 4 weeks, 4 to 8 weeks and > 8 weeks were 46.1%, 41.6% and 42.1% respectively ($P < 0.001$). Only female gender was found to have a statistically significant association with good INR control ($P < 0.05$).

Discussion & Conclusion: An INR monitoring interval of 4 to 8 weeks was found to be optimal. Females were more likely to have good INR control. Our findings may be helpful for developing more individualised treatments to improve warfarin therapy outcomes.

PP-AH-03

Analysis of Prepacking Reworks at Tan Tock Seng Hospital (TTSH) Level 2 Satellite Outpatient Pharmacy

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Background & Hypothesis: Prepacking is a service provided by TTSH Level 2 Pharmacy, where medications in electronic prescriptions are prepared prior to patients' arrival. Prepacking aims to achieve patients' waiting time of 15 minutes or less. However, patients may not collect all medications that were pre-packed, resulting in reworks. Reworks involve reordering, repacking, and rechecking of previously prepacked medications. The need for reworks ironically increases patients' waiting time and reduces efficiency in the pharmacy.

Methods: Details of prepacked baskets that required reworking were collected from June to November 2010. Reasons and their percentages of reworks were analysed using the pharmacy prescriptions processing system (iPharm).

Results: Over the 6 month period, 5% (520 cases) required reworking. Sixty-four percent of reworks were inevitable due to pharmacy interventions, reduction of patient's balance medications and doctors' amendments after prepacking. This study focused on the remaining 36% of reworks caused by factors that could be investigated for improvements to reduce the incidence of reworks. Out of this, 33% rejected full supply of new medications. Thirty-one percent refused a common list of items. Twelve percent preferred payment via Medisave and collecting longer durations of chronic medications. Another 9% was caused by uncertain Medifund status. Remaining reasons were also identified.

Discussion & Conclusion: Data generated was analysed to fine-tune the prepacking criteria to reduce future incidence of reworks. Changes to the prepacking criteria were proposed under this study. After the study, a revised set of criteria with new guidelines was drawn and implemented in February 2011. Effectiveness of the new criteria can be tested in future project.

PP-AH-04

Pre-Order Fast Track Service at Tan Tock Seng Hospital Basement 2 Outpatient Pharmacy

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Background & Hypothesis: The pre-order fast track (POFT) prescription refill service is a value-added service aimed to shorten patients' waiting time and improve overall patients' satisfaction. Patients who intend to collect the balance/refill of their prescribed medication with no changes in dose and frequency from previous collection history can call in to order their medication in advance, minimizing the need to queue and wait at the outpatient pharmacy (OP).

Methods: Eligible patients who called up the hotline between September and December 2010 were automatically recruited. Service utilisation, no-show rates, turn-around time, prescription type, patients' medical discipline, number of items, use of third-party payer and trend of patients' collection time were studied. To assess patients' satisfaction on POFT service and solicit areas for improvement, phone and written surveys were carried out.

Results: Generally, there was an upward trend in the service utilisation, with a 35.7% growth registered at the end of the fourth month compared to the first. 88% of patients felt that they have benefitted from the POFT service and rated it as good or excellent. Of note, the majority of patients would most like to see a dedicated collection counter at OP as the main area for improvement.

Discussion & Conclusion: The results from this project foresee the sustainability of the POFT service. A shortcoming was the small sample size due to the limited timeframe and a lack of awareness on this service due to scarcity in publicity. This is expected to improve with the introduction of more publicity in the form of information leaflets and posters.

PP-AH-05

Genetic Study in a Singaporean Patient with Erythropoietic Protoporphyrin

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Background & Hypothesis: Erythropoietic protoporphyria (EPP) is a genetic rare disorder of heme biosynthesis due to reduced activity of the enzyme ferrochelatase (FECH). Accumulation of protoporphyrin (PP) in the skin leads to cutaneous photosensitivity that clinically manifests as burning pain and pruritus following a period of sun exposure. We report a case of EPP in a 21-year-old male who had acute episodes of painful photosensitivity since 11 years old of age. He presented with painful swelling of his hands following sun exposure. Clinical examination showed marked oedematous swelling of his hands. His blood investigations revealed a marked increase in his PP level. Both his parents are asymptomatic and there is no family history of the disorder. We hypothesise that the patient may carry mutations in FECH gene that are responsible for the disease to arise.

Methods: Genetic analysis employing Polymerase Chain Reaction (PCR) and sequencing analysis was performed on the patient's DNA to screen mutation.

Results: Heterozygous mutations of c.G163T and hypomorphic allele IVS3-48T >C in FECH gene were identified in patient's Deoxyribonucleic Acid (DNA).

Discussion & Conclusion: This report describes the first Singaporean patient with EPP characterised at the molecular level, and highlights the presence of susceptibility factor hypomorphic allele IVS3-48T >C in the Singaporean population.

PP-AH-06

The Correlation Study of CD133+ Cells and the Clonogenic Potential

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Background & Hypothesis: The major determinant for successful umbilical cord blood (UCB) transplantation is the total nucleated cell (TNC) dose as it had shown to correlate significantly with haematopoietic progenitor cells (HPC). CD34+ cell dose is not commonly used due to lack of standardisation of assessment method. Furthermore, CD133+/CD34- cells in UCB has been found to transplant successfully in mice model with the generation of CD133+/CD34+ cells. The present study is undertaken to evaluate the potential of using CD133+ cells as predictive indicator of transplant outcome.

Methods: Flow cytometry is used to identify and quantify the cells using MACSQuant Analyzer. The analysis of the CD34+ and CD133+ cells is done based on ISHAGE gating strategy. Colony-forming unit (CFU) assay is performed to determine the clonogenic potential of the UCB.

Results: UCB samples (n = 18) were used for the study, with an average of 44.4 (Range: 2.5 to 143, ± 32.14), $16.05 \times 10^3/\text{ul}$ (Range: 0.416 to 63.525; ± 19.46) and $29.94 \times 10^3/\text{ul}$ (Range: 0.648 to 97.8, ± 2.55) for CFU count, absolute CD34+ and absolute CD133+ cells, respectively. A significant correlation is observed between CD34+ and CD 133+ cells with its clonogenic potential with a coefficient of correlation of 0.5366 ($P = 0.0217$) and 0.8098 ($P \leq 0.0001$) respectively.

Discussion & Conclusion: Better correlation between CD133+ cells and the clonogenic potential of UCB than CD34+ cells is observed in this study therefore suggesting there are other CD133+ cell populations contributing to the clonogenic potential of UCB. CD133+ marker can potentially be used as an alternative marker to detect HPC in UCB.

PP-AH-07

Detection of KRAS and BRAF Mutations in Colorectal Cancer — A Preliminary Comparison of a Commercial Real-Time PCR Kit Versus PCR-Direct Sequencing

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Background & Hypothesis: KRAS and BRAF gene mutations have been found to be useful in the diagnosis and prognosis of colorectal cancer. Therefore, it is ideal to have reliable methods to determine the mutational status of these genes. We did a comparison study between a commercial real-time PCR method and PCR-direct sequencing. This is to ascertain the efficiency of this real-time PCR method and determine if it is comparable to PCR-direct sequencing, which is the “gold standard”.

Methods: Thirty-six formalin-fixed paraffin-embedded tissue samples from colorectal carcinoma patients seen at National University Hospital were tested. Two separate PCR reactions were performed to amplify regions of the KRAS gene (codons 12 and 13) and the BRAF gene, which covers the V600E mutation. PCR-direct sequencing was done to screen for these mutations. The same samples were analysed using the KRAS/BRAF Mutation Analysis Kit (Entrogen, Inc.) on the ABI7500 Fast Real-Time PCR system and results were compared.

Results: Using PCR-direct sequencing, KRAS mutations were detected in 14 (39%) of the 36 samples. These mutations include 7 cases of Gly12Asp (GGT > GAT), 4 cases of Gly12Val (GGT > GTT), 2 cases of Gly12Cys (GGT > TGT), 1 case of Gly12Ala (GGT > GCT) and 1 case of Gly13Asp (GGC > GAC). The same mutations were found using the commercial kit.

Discussion & Conclusion: Despite the limited sample size, similar results were obtained using 2 different methods. Both methods displayed good sensitivity, specificity and accuracy. The commercial kit proved to have advantages with respect to cost, time and labour, and could be a good alternative to PCR-direct sequencing.

PP-AH-08

Quality Control of Bottles Used in Diagnostic Bacteriology in National University Hospital (NUH)

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Background & Hypothesis: Quality and quantity of patient's specimens are essential during diagnostic testing in microbiology. Good quality containers are crucial in preserving sample integrity during transport to the lab and also for lab tests. This is a baseline quality study of specimen containers used in diagnostic bacteriology. Different tests were designed according to usage and/or manufacturer's claim of sterility, leak-proofness, tensile strength/durability, autoclavability and ability to withstand mechanical force and corrosiveness.

Methods: Ten different types of bottles were tested, usage ranging from transport to lab and in-lab testing. They were, the universal white cap (WC), boric red cap (RC), 50ml/14ml centrifuge tube (CT), 5ml Yellow cap (YC), OT red cap (OT), Mucous extractor bottle (M), Stool bottle (S) and glass bottle (G) 25ml and O-ring bottle (O).

Results: Results were tabulated according to transport usage and lab usage. Eight types of bottles scored a pass rate of $\geq 80\%$, the mucous extractor bottle and the boric red cap had an approximate score rate of $\geq 60\%$.

Discussion & Conclusion: In conclusion, the result of this quality control study has proven to be a good assessment for bottle quality and also an effective form of feedback to the Material Management Department to obtain better quality bottles.

PP-AH-09

Characterisation of Plasmids Bearing the New Delhi Metallo-Beta-Lactamase 1 Gene

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Background & Hypothesis: Emergence of New Delhi metallo-beta-lactamase producing (blaNDM-1) Enterobacteriaceae has created global concern. Treatment is difficult as it is carbapenem-resistant and multiply drug resistant. Plasmids carrying blaNDM-1 are easily transmissible, we had characterised the plasmids of 2 hospital strains, *Klebsiella pneumoniae* (isolate 509) and *Enterobacter cloacae* (isolate 241) carrying blaNDM-1.

Methods: Isolates were Polymerase Chain Reaction (PCR) screened using primers targeting blaNDM-1. Presence of a metallo β -lactamase was confirmed using MBL Etest strip (Biomerieux) and antibiotic susceptibility patterns determined using Etest strips. Multi Locus Sequence Typing (MLST) was carried out to determine the strain types. Plasmid transferability was determined by conjugation studies. Pulse Field Gel Electrophoresis (PFGE) and S1 nuclease digestion was used to size the blaNDM-1 plasmid.

Results: Isolate 509 was of sequence type ST237 whilst 241 was not typed. Transconjugation showed blaNDM-1 was transmissible minimum inhibitory concentration (MIC) results for clinical isolates and transconjugants demonstrated high-level of resistances towards carbapenems ($>32\mu\text{g/ml}$), cephalosporins ($>256\mu\text{g/ml}$) and aminoglycosides ($>64\mu\text{g/ml}$), tetracycline ($>256\mu\text{g/ml}$) and quinolones ($>32\mu\text{g/ml}$). However, they were sensitive to polypeptides colistin ($<4\mu\text{g/ml}$) and polymyxin B ($<3\mu\text{g/ml}$). PCR amplification of various bla genes indicated that 241 and 509 carried TEM-1, SHV-1 and CTX-M-15. These determinants (TEM-1 and SHV-1) were also transferable to their transconjugants. High-level resistance to aminoglycosides produced by 16S ribosomal ribonucleic acid (rRNA) methylases (rmtC and armA) was found in clinical isolates and its transconjugant.

Discussion & Conclusion: PFGE-S1 nuclease digestion demonstrated that 509 and its transconjugant had plasmid bands of around 48.5 and 97kb; whilst isolate 241 and its transconjugant showed similar profiles around 23.1kb.

PP-AH-10

Technical Evaluation and Productivity Assessment of the New Integrated Analyser Cobas® 8000

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Background & Hypothesis: Cobas® 8000 is a random access, fully automated analyser that provides qualitative and quantitative in vitro determinations of clinical chemistry and immunoassay analysis. Our objective was to evaluate the technical aspects and productivity of the analyser.

Methods: We reviewed the performance of 10 renal function parameters – Alkaline phosphatase, Chloride, Creatinine, Potassium, Sodium, Calcium, Carbon Dioxide, Phosphorus, Urea and Uric Acid — and 3 cardiac function parameters — Creatine Kinase, Creatine phosphokinase MB, Troponin T. The evaluation was based on total imprecision (%CV), correlation and linearity studies. Excess anonymised samples from patients in National University Hospital were used.

Results: From the results we obtained, the %CV of the renal assays was between 0.3 to 2.5, and 1.31 to 9.4 for the cardiac assays. The correlation coefficients were between 0.972 to 0.999 for the renal assays and 0.774 to 0.982 for the cardiac assays. The % recovery of the renal and cardiac assays in the linearity studies range from 92.5% to 109.0% and 85.8% to 105.2%, respectively. The functional sensitivity of Troponin T was lower than 0.008µg/L.

Discussion & Conclusion: In conclusion, the Cobas® 8000 is a flexible analyser that is capable of producing accurate and precise results. Its robust system offers an effective solution for medium- to high-volume laboratories.

PP-AH-11

Technical Evaluation of aPTT, PT, D-dimer, Fibrinogen and Thrombin Time Measurement on StagoSTA Compact Analyser

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Background & Hypothesis: We evaluated the measurement of activated-partial-thromboplastin time (aPTT), Prothrombin time (PT), D-dimer, Fibrinogen, and Thrombin-time (TT) on a multi-parameter automated haemostasis analyzer, StagoSTA Compact (DiagnosticaStago, France).

Methods: Intra- and inter-precision studies used Stago quality controls: a) aPTT and PT used Coag Normal/Coag Pathological; b) D-Dimer used Liatest Norma/LiatestPathologica; c) Fibrinogen used Coag Normal, pooled normal and high citrated plasma; and d) TT used pooled normal and abnormal unfractionated heparin-spiked citrated plasma. Carryover investigation was performed using normal pooled aPTT plasma sample alternating with spiked unfractionated heparin pooled plasma. Linearity was determined for Fibrinogen and D-Dimer tests. Correlation studies on aPTT, PT and D-Dimer tests were compared to our current coagulation analyser (Sysmex640, USA).

Results: The intraday (n = 21) and interday precision (n = 45) results of all tests ranged 1.0 to 4.9%CV except high level TT (15.7% CV) and D-Dimer achieved <0.1 SD well within Stago's limits. Carryover test using normal aPTT sample run showed no time prolongation after running alternating with heparin spiked specimen. Linearity data on Fibrinogen: $y = 1.10x - 0.32$ ($R^2 = 0.999$) and D-Dimer: $y = 1.09x - 0.011$ ($R^2 = 0.998$). The correlation data for aPTT: $y = 1.93x - 18.63$, $r = 0.97$ (n = 39); PT: $y = 0.73x + 0.30$, $r = 0.97$ (n = 41) and D-Dimer: $y = 0.65x + 0.13$, $r = 1.05$; n = 26.

Discussion & Conclusion: The high pooled Fibrinogen did not achieve Stago's limit as specimen was obtained from another institution and specimen quality was unknown. From comparison study, a negative bias was observed in aPTT test because of the different reagent used in the Stago analyser and Reference Range will be determined pending DSRB application. Technically, the StagoSTA Compact analyser is reliable, precise and easy to operate in our clinical laboratory.

PP-AH-12

Perceived Failure in Receiving Helpful Treatment after Seeking Professional Help

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Background & Hypothesis: Increase in mental health awareness has resulted in reduced prejudice towards mental health disorders and more willingness to seek professional help. However, studies on self-reported helpfulness of the received treatment(s) are limited. This study aimed to estimate the number of professional(s) people visited before perceiving receiving of helpful treatment for Major Depression Disorder (MDD), Bipolar Disorder (BD) and General Anxiety Disorder (GAD).

Methods: The data was collected as part of the Singapore Mental Health Study — a cross-sectional epidemiological survey, which used the World Mental Health — Composite International Diagnostic Interview (WMH-CIDI) to establish diagnoses and professional services sought by the respondents. WMH-CIDI defined “professional” as a wide range of professionals including medical doctors, psychologists, counsellors, spiritual advisors, herbalists, acupuncturists, and other healers. A total of 6616 people participated in the study of which 139 respondents had MDD, BD or GAD or a combination of these, and had sought some professional help in their lifetime for these illnesses.

Results: A majority 80.6% of respondents (n = 112) had MDD while 10.8% (n = 15) and 33.1% (n = 46) had BD and GAD, respectively. Among the respondents, 61.7% with MDD (n = 66) and 46.7% with GAD (n = 21) perceived receiving helpful treatment from the first professional they approached. However, only 30.8% of respondents (n = 4) with BD perceived receiving helpful treatment from the first professional.

Discussion & Conclusion: While more than half of those with MDD perceived receiving helpful treatment after talking to the first professional, over 50% of people with BD and GAD talked to 2 or more professionals before perceiving the treatment as helpful.

PP-AH-13

Association of Age, Gender and Ethnicity with Survey Response in Singapore Mental Health Study

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Background & Hypothesis: The Singapore Mental Health Study was a nation-wide epidemiological study conducted to establish the rates of important mental disorders in Singapore. This paper describes the association between survey response and sociodemographic variables like age, gender and ethnicity.

Methods: Respondents aged 18 years and above, who were Singapore citizens and permanent residents of Chinese, Malay, Indian and Other ethnicities were included in this study. A disproportionate stratified sampling was used and information on age, gender and ethnicity were requested from all respondents who gave written informed consent to the study. Chi-Square tests were used to study the association between ethnicity, gender and age groups with the survey response.

Results: Among 13,500 residents approached, 9116(67.5%) respondents were successfully screened, of which 6648 (72.9%) participants completed the study. Of the participants who completed the study, Malays constituted the largest ethnic group (35.8%), and respondents between 35 to 49 years (35.8%) formed the largest age group. Slightly more females completed the study than males (50.1%). Of the eligible non-responders, majority were Chinese (39.5%), and were aged between 35 to 49 years (37.7%). More males (52.1%) did not consent to the survey than females. Refusals accounted for 40.7% of the eligible non-responses and majority of such respondents were Chinese (52.7%), aged between 35 to 49 years (40.7%).

Discussion & Conclusion: Of the 3 ethnic groups, Chinese are more likely to refuse to participate in the survey. Further research should try to explore this reluctance as this would have importance for the successful implementation and the validity of future community surveys. More information can be collected from non-responders to reduce bias and increase representativeness in sample selection.

PP-AH-14

Spiritual and Religious Healer's Role in Mental Healthcare in Singapore

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Background & Hypothesis: Little information is available on the extent to which spiritual and religious healers are involved in providing help for mental health problems. This paper examines the role of religious advisors in the help seeking for mental health problems in Singapore.

Methods: Data from the Singapore Mental Health Study (2009 to 2010) were used to examine the utilisation of services provided by religious advisors for mental health problems. Chi-square tests were used to assess the association of help seeking from religious healers with various sociodemographic variables and diagnoses of mental disorders.

Results: Of the 6618 individuals who completed the survey, 101 individuals reported having ever consulted spiritual or religious healers for emotional problems. The mean (SD) age was 38.8 (11.3) years old (range 19 to 66), most fell into the age group of 35 to 49 years old (44.6%). There were 58 (57.4%) women and 43 (42.6%) men, most were Chinese (38, 37.6%), followed by Indian (33, 32.7%), Malay (22, 21.8%), and other ethnicity (8, 7.9%). Majority (93, 92.1) had some symptoms of mental illness as reported in the screening questions but only 59 met the criteria of at least one lifetime DSM-IV diagnosis. For about half (28, 47.5%) of these 59 individuals, religious healers were the only professionals they had consulted.

Discussion & Conclusion: Relatively substantial proportion of individuals reported seeking help from religious advisors for mental health problems. More research is needed to determine the effectiveness and the safety of such treatments and the possibility of educating and including spiritual and religious leaders within the referral system or providing some complementary care.

PP-AH-15

Eliciting Sociodemographic and Diagnostic Characterisation of Discharged Female Geriatric Patients and Their Adherence to Outpatient Appointments with Case Management Interventions

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Background & Hypothesis: It is pertinent that discharged patients are adherent with their treatment as this minimises the risk of relapses and readmission to hospital. This paper elicits the sociodemographic and diagnostic characterisation of discharged female geriatric patients and their adherence to outpatient appointments with case management (CM) intervention.

Methods: Data mining of patients discharged from a geriatric ward from January 2010 to December 2010 was done. The results analysed using Microsoft Excel programme.

Results: There were 214 patients discharged with: 45% diagnosed with Dementia, 27% Schizophrenia, 13% Depression, 5% Delusional Disorder. Sociodemographics data revealed 176 (82.5%) Chinese, 23 (11%) Malay, 14 (6%), Indian and 1 (0.5%) others. They were aged below 65 years, 3 (1%), between 65 to 84 years 171 (80%), and above 85 years, 41 (19%). Twenty-five (12%) were discharged to general hospitals to treat their medical conditions, 18 (8.5%) requested private psychiatrists follow-ups and 171 (79.5%) were given out-patient appointments follow-up. The CM contacted these patients and families within 2 days of discharge. Of these, 141 (82.5%) attended their first follow-up appointment but 13 (7.5%) were readmitted before their first follow-up and 17 (10%) patients defaulted. Six (35%) of the 17 came within 2 weeks of their defaults upon further CM interventions. The total compliance with follow-up was 93.6%.

Discussion & Conclusion: Literature reports that about 36% of psychiatric patients default follow-up. Therefore interventions such as telephonic CM are important especially if patients are elderly and suffer a psychiatric debility like Dementia.

PP-AH-16

A Profile Study on Male Patients Remanded for Psychiatric Assessment for Violent Offences Against Their Family

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Background & Hypothesis: A number of family members experience being victims of violent offences by their mentally ill member. There is limited literature in Singapore on such a phenomenon.

Methods: Information was gathered from a clinical audit done on case sheets of 533 male patients remanded in 2008 in the Institute of Mental Health (IMH) for psychiatric evaluation. Cases were selected where family members were victims of violent offences. Data was elicited on demographic and clinical characteristics, types of relationships and types of charges by the offenders. Historical data of prior imprisonment, psychiatric remands in IMH and reported non-compliance to treatment were collected. SPSS was used in the data analysis.

Results: Forty-nine cases were selected. Parents and spouses were the main victims. Fifty-three percent were unemployed. Forty-seven percent were financially dependent on their family and 83.6 percent stayed with their family. Majority of the charges involved breaches of Personal Protection Orders (38%). Fifty-one percent had an Axis 1 diagnosis and 59.2% involved a substance-related diagnosis while 14.3% had a dual diagnosis. It was found that 59.2% had prior imprisonment while 38.8% were previously remanded in IMH. Almost half of the cases were reported non-compliant to treatment.

Discussion & Conclusion: Management of risk towards family members requires close supervision of the offenders' compliance to treatment. There is a need to provide support to family members who are victims of violent offending by mentally ill persons. The availability and adequacy of community care and support for offenders and their victims will be discussed.

PP-AH-17

Collaborative Care for Improving the Clinical Outcomes of Patients with Psychiatric Conditions

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Background & Hypothesis: Collaborative care by the multidisciplinary team (MDT) is important in the recovery process of patients on a psychiatric unit. A member of the MDT is the case manager (CM) who advocates for patients, conducts psychoeducation, provides supportive counselling, does crisis interventions and linkages to essential services and outpatient telephonic case management. This paper reviews the collaborative care outcomes of patients admitted to 4 acute general psychiatry wards.

Methods: Data mining of patients admitted from April 2011 to June 2011 was done and results analysed using Microsoft Excel programme.

Results: One hundred and fifteen patients were admitted, 30% males and 70% females. The majority admitted for illness relapse relating to non-compliance and treatment default. Sixty-two percent had Schizophrenia, 10% Situational Disorder, 8% Bipolar Disorder, 6% Depression, 9% Intellectual Disability, 5% Alcohol and Substance Dependence. CM interventions included 110 psychoeducation, 133 counselling sessions, 40 family education sessions and 52 linkage services. On admission, the mean Global Assessment score for patients was 55.8 and 77.2 upon discharge. Their mean Clinical Global Impressions score on admission was 3.5 and on discharge 2.2. This indicated significant clinical improvements on discharge. All patients were contacted by the CM within 2 days of their discharge and 3 days before their first clinic appointment. Seventy-six percent came for their follow-up, 11% defaulted and 13% were readmitted before their first appointment.

Discussion & Conclusion: Collaborative care is important for patients' recovery and the CM has an essential role in providing and ensuring continuity of care from the inpatient to outpatient setting.

PP-AH-18

Improving the Care of Diabetic Patients Who Are on Insulin Therapy

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Background & Hypothesis: Since 2002, several projects were done to improve control of diabetic patients. In this project, we focused diabetic patients on insulin treatment aiming to reduce glycated haemoglobin (HbA1c) >9% from 41% to 20% within 6 months in Jurong Polyclinic.

Methods: A survey among patients on insulin therapy was conducted. The identified factors were: patients lack knowledge on meal planning, insulin titration and importance of HBGM, doctors rostered to different rooms daily, inadequate training of doctors in insulin therapy. Proposed interventions were: educate patients to match insulin to meals, teach self-titration of insulin, empower patients with HBGM and loan glucometers, roster doctors to fixed rooms, standardise insulin treatment, train doctors on carbohydrate counting and meal profiling. HbA1c was measured in 1000 patients on insulin and follow-up over 6 months to calculate the percentage of DM patients with HbA1c >9%.

Results: There was no obvious improvement in reduction of HbA1c. Secondary successes are:
1) Standardised insulin algorithm was well-received and incorporated into consultation rooms.
2) Patients were more confident after learning about matching meals with insulin and HGBM.

Discussion & Conclusion: Achieving good diabetic control in diabetes mellitus (DM) patients on insulin therapy involves a complex interplay among patients and healthcare workers. Increasing awareness of staff by regular updates, training course and sharing of best practices can be done to breach the different standard of care among doctors. The study period was too short to observe significant change; continuation to monitor HbA1c trends with longer time can be achieved.

PP-AH-19

Exhaled Nitric Oxide Measurements and Airway Hyperresponsiveness

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Background & Hypothesis: Fractional exhaled nitric oxide (FeNO) is a non-invasive and reproducible marker of airway inflammation. It can guide inhaled corticosteroid use in asthma and chronic cough. Using bronchial challenge tests as gold standard for airway hyperresponsiveness (AHR), FeNO has high sensitivity and specificity in Caucasians. Asians and females may have different physiologic FeNO values and correlation is scarce. We examine the relationship between FeNO levels and AHR as determined by conventional methacholine challenge test (MCT) in local patients.

Methods: Consecutive patients who underwent MCT and FeNO level measurements were retrieved from our database. Forty-five patients had FeNO levels measured using the NIOXMINO® analyser. Statistical analysis was performed with SPSS for Windows, version 12.0.1 with *P* value <0.05 as statistically significant.

Results: Non-parametric Mann Whitney U test showed no statistically significant difference in FeNO levels between MCT positive (n = 11) and negative patients (n = 34), *P* = 0.061. Analysing gender differences, we detected a significant elevation of FeNO levels in females (n = 21) who had positive vs negative MCT (*P* = 0.022). No difference was detected among males (n = 24). To predict AHR, using recommended FeNO value of 20ppb as cut-off, sensitivity 63.6%, specificity 73.5%, positive predictive value 43.8% and negative predictive value 86.2% were found.

Discussion & Conclusion: Our study showed that FeNO levels were significantly elevated in females with MCT proven AHR. We did not otherwise detect any correlation between FeNO levels and MCT results overall. A low FeNO level of <20ppb may be useful to predict a negative MCT and help rule out AHR in non-asthmatics who are unable to undergo MCT.

PP-AH-20

Construct Validity of the English, Chinese and Malay Versions of the Fagerstrom Test for Nicotine Dependence in Multiracial Community Sample in Singapore

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Background & Hypothesis: The Fagerstrom Test for Nicotine Dependence (FTND) is a widely used instrument to measure nicotine dependence for adult cigarette smokers. However, little is known about the reliability and factor structure of the FTND in a multiracial community sample in Singapore. This study was conducted to provide evidence of construct validity of the 3 language versions of the FTND.

Methods: A cross-sectional household survey of the adult resident population in Singapore was conducted between December 2009 and December 2010. Confirmatory factor analyses were performed to test 3 a priori hypothesised factor structure models: a single-factor, 2 correlated factors for morning smoking and daytime smoking and 2 correlated factors with 1-item cross-loading. Reliability was determined using coefficient of construct reliability.

Results: Overall, the results confirm that single-factor model fit the data well than other hypothesised models with χ^2 statistic of 19.902 ($df = 9, P = 0.0260$). The goodness of fit indices further confirmed the single model (RMSEA = 0.029, CFI = 0.969, and TLI = 0.948). The FTND showed good coefficient of construct reliability (coefficient = 0.73). Similar fit statistics were obtained for all the 3 versions of the instrument.

Discussion & Conclusion: These findings provide evidence that 3 versions of FTND are reliable and valid for population based studies in Singapore.

PP-AH-21

Does Exhaled Nitric Oxide Predict Bronchodilator Response?

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Background & Hypothesis: Fractional exhaled nitric oxide (FeNO) is a convenient, non-invasive tool to measure airway inflammation. It has recognised use in asthma where traditionally, bronchodilator response (BDR) is tested during spirometry as a diagnostic standard. We aim to determine the utility of FeNO compared to bronchodilator testing in diagnosis of non-specific respiratory symptoms.

Methods: We analysed consecutive patients who had bronchodilator testing and FeNO levels measured for non-specific respiratory symptoms. FeNO levels were measured using the NIOXMINO® analyser. A significant BDR was defined as greater than 200mls and 12% increase in FEV1 after administering 400mcg of inhaled salbutamol. Statistical analysis was performed with SPSS for Windows, version 12.0.1 with *P* value of <0.05 as statistically significant.

Results: One hundred and two patients (age 13 to 79 years, 66 males) were included in this study. Twenty patients with positive BDR had significantly higher mean FeNO value of 47.8 vs 27.3ppb in those negative BDR, *P* = 0.014. However, this was not statistically significant in females (*P* = 0.306) but was significant in males (*P* = 0.022) if stratified by gender. By using FeNO >20 ppb as cut-off to predict BDR positive, FeNO has sensitivity 70%, specificity 50%, positive predicted value 25.5% and negative predicted value 87.2%.

Discussion & Conclusion: This study demonstrates that patients with positive BDR had significantly higher FeNO values, especially males. FeNO is not sensitive or specific enough to replace bronchodilator testing. Nevertheless, it may be able to rule out positive BDR in our study sample of patients with non-specific respiratory symptoms, thus possibly aiding in excluding asthma.

PP-AH-22

Correlation between Gait Speed and Cognitive Measures in Patients with Mild Cognitive Impairment: A Pilot Experience

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Background & Hypothesis: Dysfunction of frontal-subcortical mediated processes has been found to involve gait and cognitive functions such as executive function and attention. This pilot study aims to study the relationship between cognitive measures and gait speed during single and dual task walking in individuals with mild cognitive impairment (MCI).

Methods: We included individuals with MCI who had no background of other central nervous system or systemic disorders that could contribute to cognitive impairment. Gait speed was measured using an 8m walkway, under single and dual task conditions: (i) naming animals, (ii) counting backwards from 100. Correlation of Cognitive Mini-Mental State Examination (CMMSE) and gait speed was examined using the Spearman rank correlation coefficient.

Results: Ten participants with MCI (40% female, mean age 69.8) were recruited. They had a mean CDR sum of boxes score and CMMSE of 0.75 ± 0.42 and 25.2 ± 2.74 respectively. The participants achieved a mean walking speed (single task) of 1.51 ± 0.29 m/sec. During dual tasking, their speed became significantly slower at 1.09 ± 0.25 m/sec (naming animals) and 1.06 ± 0.31 m/sec (counting backwards). A good correlation was found between CMMSE and both mean single task walking speed (Correlation 0.804, $P = 0.01$) as well as mean dual task (naming animals) walking speed (Correlation 0.681, $P = 0.05$).

Discussion & Conclusion: In older adults with MCI, mean walking speed significantly reduced when a cognitive task was added to walking, indicative of the presence of frontal-subcortical dysfunction. Lower CMMSE scores were found to be associated with slower gait speed under both single and dual task conditions.

PP-AH-23

Pharmacist Outreach Programme: Home Medication Review for Discharged Patients

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Background & Hypothesis: After discharge from hospital, elderly patients may experience transition issues such as having drug-related problems (DRPs). Hence, the Aged Care Transition (ACTION) Team from the Agency for Integrated Care started the Pharmacist Outreach Programme to help detect and resolve DRPs.

Methods: Patients were recruited by Care Coordinators from the ACTION team during their Tan Tock Seng Hospital inpatient stay and referred to the pharmacist. The pharmacist does a home visit to review the medications and detect DRPs based on a list modified from the DRP list in the pharmaceutical care model developed by Hepler and Strand (1990).

Results: Home visits were conducted for 47 patients from October 2010 to April 2011. A total of 432 chronic medications were reviewed, mean number of chronic drugs per patient was 9.2, and median number of chronic drugs per patient was 9. A total of 301 DRPs were identified, the top 3 significant ones being drug use without indication (28.9%), failure to receive drug/adherence (18.9%) and overdosage/duplication (9.3%). Mean number of DRPs per patient is 6.4 DRPs. Of the 301 DRPs, 217 (72.1%) were addressed by the pharmacist, while the pharmacist required consult with the primary physician via phone calls and letters for 57 (18.9%) DRPs. A total of 274 (91.0%) DRPs could be addressed.

Discussion & Conclusion: Pharmacist intervention is beneficial as more than 50% of DRPs can be addressed by a pharmacist. Pharmacist home visits allow a realistic view of how patients handle their medications at home, allowing easier detection of DRPs.

PP-AH-24

Evaluation of Prospective Preference Approach (PPA) Study – A Recruitment Strategy for Clinical Trials

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Background & Hypothesis: To examine whether patients who indicated willingness to participate in a clinical trial during a Prospective Preference Approach (PPA) study, took part in the actual clinical trial subsequently.

Methods: Participants were recruited from the Institute of Mental Health (IMH) for a study examining patient understanding and preferences for participation in a clinical trial using a PPA (n = 190) which is a strategy for recruiting participants for a future trial. Subjects indicating their interest and willingness to be contacted for the actual clinical trial were subsequently approached when the clinical trial was initiated for participation.

Results: Of the 133 (70%) PPA participants who had expressed an initial interest in taking part in the actual clinical trial, 34 (25.6%) were successfully recontacted and approached for the clinical trial. Twenty-two (16.5%) were successfully enrolled into the actual drug trial, however 12 (9.0%) were not recruited into the clinical trial for various reasons. Six (10.5%) of those who previously did not express any interest to take part in the actual drug trial changed their mind and participated in the clinical trial.

Discussion & Conclusion: Only 22 (16.5%) of the participants who expressed their willing to participate in the clinical trial and for recontact actually took part in the clinical trial. Factors contributing to the low numbers include the delay between the PPA study and the initiation of the actual clinical trial; the varying interests and commitments of participants at different points of time as evidenced by the small number of participants who participated in the trial after the initial refusal.

PP-AH-25

Effects of Positions on Muscle Activity of the Lower Fibres of the Trapezius: A Pilot Study

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Background & Hypothesis: When evaluating the performance after injury, body position is known to influence the pattern and intensity muscles. It is unknown which position is best to facilitate the optimal activation of trapezius muscle. This pilot study determined the optimal position for muscles to facilitate scapular excursion.

Methods: Twelve asymptomatic subjects (aged 18 to 29) participated in this study. Surface electromyography were placed on the upper trapezius (UT), middle trapezius (MT), lower trapezius (LT), and serratus anterior (SA) muscles on their dominant hand. Data of each muscle's activation were collected as subjects performed maximal contractions in prone, sitting and standing.

Results: LT showed significant differences in activation between body positions (sitting and standing: $Z = -3.315$ $P = 0.001$; prone and standing: $Z = -2.252$ and $P = 0.024$). LT activation was lowest in standing. No significant results were noted for the other muscles. Positive correlations were found between the LT and SA in all 3 positions ($r = 0.442$ to 0.641 , $P = 0.000$) and between LT and UT activation in sitting ($r = 0.333$, $P = 0.047$).

Discussion & Conclusion: Higher LT muscle activity in sitting and prone, postulated that acute shoulder injury retraining is most efficacious in these 2 positions. The choice of either of the position would depend on patient's preference and comfort. Moreover, synergistic training of LT and SA would facilitate scapular stabilisers.

PP-AH-26

A Critical Review of the Role of Occupational Therapists with Families of Children with Attention Deficit Hyperactivity Disorder (ADHD)

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Background & Hypothesis: Attention deficit/hyperactivity disorder (ADHD) is a common neurobiological childhood disorder that affects many families (Helitzer et al, 2002; Holowenko, 1999). Occupational therapists are involved by helping parents manage daily living tasks with their children (Case-Smith, 2005; Lougher, 2001). Yet, the roles they play are not clearly defined. Increasing number of studies are looking at the role of occupational therapist in families of children with ADHD (Olson and Esdaile, 2004; Heizer et al., 2002). However, no studies presently had critically appraised and collated these relevant findings. Therefore, the aim of this paper is to identify and critically appraise literature regarding the role of occupational therapists with families of children with ADHD and provide recommendations for practice and research.

Methods: Search of 11 electronic databases was supplemented by manual search to yield 13 articles which conformed to specified inclusion and exclusion criteria, all of which were published post 2000. Critical appraisal tools were used to determine methodological quality.

Results: Evaluation of the findings from 13 studies suggests that there is a role for occupational therapists with such families. They include providing family focus interventions, supporting and educating the family. However, these findings were difficult to generalise due to the studies' methodological limitations such as small sample sizes.

Discussion & Conclusion: There is a role for occupational therapists with families of children with ADHD via family focus interventions, family support and educating the family. These roles help families cope better with their child's behaviour and daily engagement in occupations. Better quality studies on occupational therapists' involvement with such families are recommended for the profession practice.

PP-AH-27

Organizing a Supportive Counseling, Psychoeducation, Networking and Linkage Case Management Service for Patients on Psychiatric Outpatient Treatment to Improve Clinical Outcomes

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Background & Hypothesis: Patients require information and education about their illness and treatment so that they are able to monitor their symptoms, perform relapse prevention drills and improve their self care so as to avoid relapse of their illness and possible readmission. This paper highlights a program that a case manager (CM) organised in the outpatient clinic to improve clinical outcomes

Methods: A CM program was planned, discussed and implemented with the clinic consultant. Data mining of patients' CM from February 2008 to July 2011 was done and the results analysed with Microsoft Excel Program.

Results: A total of 537 patients were CM. Demographically, there were fairly equal distributions of male and females with the majority of patients of Chinese race (82%), single marital status (51.9%) and age range between 31 years and 50 years (51.4%). Less than fifty percent of the patients had a diagnosis of Schizophrenia. One thousand six hundred and twenty-five psychoeducation sessions, tailored to meet the patients' educational level and language comprehension, were conducted. All patients were monthly contacted through telephonic case management to remind them of medication compliance and outpatient appointments. Social networking amongst patients was also promoted. Only 23 (4.2%) experienced a relapse of their illness and were readmitted to hospital

Discussion & Conclusion: The program increased patients' knowledge and insight into their illness provided them with emotional and psychological support and enabled them to cope more effectively in the community.

PP-AH-28

Integrated Renal Optimisation Management (I-ROM) Clinic Approach and Patient Empowerment in Blood Pressure Control

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Background & Hypothesis: Integrated Renal Optimisation (I-ROM) clinic consists of nephrologist, renal nurse educator (RNE), dietitian, pharmacist and medical social worker with the purpose to optimize the care in chronic kidney disease (CKD) patients. The objective of study was to assess the proportion of patient performing home blood pressure monitoring (HBPM) after counselled by RNE and blood pressure improvement.

Methods: This was single-centre, prospective study from August 2010 to April 2011 involving stage 1 to 4 CKD patients. The patients were taught HBPM using basic model of electronic device during first visit. Home blood pressure recording were done by patients or caregivers. The patients had interval review done by RNE at 6th week and medication titration would be done if necessary. Follow up IROM visit at 12th week was done to assess the HBPM and blood pressure control.

Results: Total number of patients enrolled was 76; 43.4% male and 77.6% Chinese. Mean age was 64.3±10.3 years. The comorbidities were hypertension 97.4%, diabetes mellitus 69.7%, hyperlipidemia 85.5%, ischaemic heart disease 14.5% and stroke 21.1%. During initial visit, 23.7% of patient had HBPM. After the intervention, the proportion of HBPM had increased to 61.8%. More patients were empowered to do HBPM after I-ROM clinic ($P < 0.00$). On follow up visit, 47.3% of patient showed improvement in blood pressure control. Default rate was 9.2%.

Discussion & Conclusion: Through multidisciplinary intervention and counselling by RNE, CKD patients can be empowered in self care. This study illustrated that the patients can be taught on HBPM and the importance of blood pressure control.

PP-AH-29

A Study to Investigate the Walking Speed of Elderly Adults With Relation to Pedestrian Crossings

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Background & Hypothesis: The objective was to investigate the walking speed of elderly adults and to establish if it allows the safe clearance of pedestrian crossings.

Methods: Fifty-two community dwelling adults over the age of 65 years were recruited from 4 day care centres in Kilkenny, Ireland. The walking speed was measured using the 10 metre Walk Test. Twenty pedestrian crossings were identified within a 1km radius of the day care centres. The distance of each crossing was measured from curb to curb using a trundle wheel. A stop watch was used to time the interval of the green and amber light signals. The data was analysed using Microsoft's Excel Software and SPSS.

Results: The mean walking speed of the participants was $0.82 \pm 0.27 \text{ ms}^{-1}$. The mean speed for safe clearance of the crossings investigated was 0.6 ms^{-1} . The participants would not have been able to safely cross 30% of the pedestrian crossings investigated. There was a significant difference between the walking speed of men ($0.93 \pm 0.29 \text{ ms}^{-1}$) and women ($0.75 \pm 0.24 \text{ ms}^{-1}$) ($P = 0.026$). Forty-nine participants (94.23%) had a walking speed less than 1.2 ms^{-1} , the recommended minimum walking speed at pedestrian crossings.

Discussion & Conclusion: A substantial number of elderly adults are unable to cross the road given the current time permitted. Future studies should further investigate this concept using more locations. The findings are relevant clinically and should have a bearing on the physiotherapy profession with regards to the rehabilitation of elderly community dwelling adults.

PP-AH-30

A Technical Evaluation of Roche Vitamin D Total Assay

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Background & Hypothesis: We validated a new test Cobas Vitamin D total assay (Roche Diagnostics, Germany).

Methods: Vitamin D assay was measured using electrochemiluminescence immunoassay on Cobas-e601. Intra- and inter-day precision studies were evaluated by 2 levels of quality controls (PC Controls Varia, Roche) on both measuring cells. Limit of Quantitation (LoQ) was determined by running 5 samples of low Vitamin D pooled sera that were aliquoted and stored at 4 degree C to run over 4 days. Linearity was evaluated using dilution of high and low pooled sera. Diluent was run 5 times for Limit of Blank (LoB). Interference of hemoglobin and lipid determined by spiking pooled patient sera at Roche's claim levels. Anonymised specimens from another institution were used in method comparison study.

Results: Intra-day precision (n = 4) for 2 levels were 4.0% and 1.9% (measuring cell-1), 2.0% and 1.8% (measuring cell-2) on Cobas e601. The inter-day precision Level 1 Vitamin D (range 16.06 to 25.14ng/mL; n = 6) and Level 2 Vitamin D (30.24 to 45.36ng/mL; n = 6) were 4.5% and 1.8% respectively (within Roche's limits). The LoQ (at CV = 10%) was 10.00ng/mL (Roche's claim: 9.00ng/mL). The linearity evaluation (range 3 to 70 ng/mL) yielded a R² = 1.00. LoB was 3.00 ng/mL (Roche's claim = 2.00ng/mL. Haemoglobin at 1.4 g/dL interfered positively with Vitamin D measurement (Roche's claim: >2g/dL) while triglycerides interfered negatively at 2.6mmol/L (Roche's claim: >10mmol/L). Method comparison linearity data $y=1.054x + 0.35$; R² = 0.96; n = 12).

Discussion & Conclusion: The limitation of the assay is the 1-week calibration stability. Technically, Roche Vitamin D total assay is accurate, precise and easy to run.

PP-AH-31

The Midterm Effectiveness of Extracorporeal Shockwave Therapy in the Management of Chronic Calcific Shoulder Tendinitis

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Background & Hypothesis: Calcified rotator cuff tendinitis is a common cause of chronic shoulder pain that leads to significant pain and functional limitations. Extracorporeal shockwave therapy (ESWT) is an alternative to surgery when conservative treatments such as non-steroidal anti-inflammatory drugs, steroidal injections, and physiotherapy fail to relieve symptoms. It is hypothesised that ESWT is effective in the midterm for reducing pain and improving function for patients with chronic calcific tendinitis and that a dose-response relationship exists in the treatment parameters for effectiveness.

Methods: Articles were electronically searched from the Cochrane Controlled Trials Register, MEDLINE, CINAHL, PUBMED, EMBASE, SPORTSDiscus and PEDro using a comprehensive search strategy. Studies were included if they were randomised controlled trials testing the midterm effectiveness of ESWT for chronic calcific tendonitis. Methodologic quality was assessed by PEDro (total score = 10). The strength of the evidence was reported using the National Health and Medical Research Council body of evidence framework.

Results: Six of the 9 included studies scored 7 or more for methodological quality. All studies had follow-up periods of at least 6 months. Common methodological flaws were insufficient blinding of clinicians and assessors. There was consistent evidence of midterm effectiveness of ESWT in reducing pain and improving shoulder function for patients with chronic calcified tendinitis.

Discussion & Conclusion: Due to variable treatment parameters (e.g. dosage), this review was unable to provide clear guidance of the dose-effect of the long-term effectiveness of ESWT. Studies of better methodological design using standardised treatment protocols and longer follow-up studies are required.

PP-AH-32

Mental Health Literacy of Singapore School Counsellors: A Preliminary Study

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Background & Hypothesis: As research shows that early identification and treatment of mental health conditions (MHC) can improve their prognosis, school counsellors in Singapore have been trained to look out for and support MHC in students under the National Mental Health Blueprint REACH project. Our study assessed whether the mental health literacy (knowledge on identifying and managing MHC) of school counsellors from Singapore's south zone schools improved after approximately a year with REACH.

Methods: School counsellors (n = 39) were asked to 1) identify disorders in students using information presented in vignettes (Identify-MHC), 2) rate their knowledge of the identified condition (Knowledge-MHC), and 3) rate their confidence in managing the condition (Confidence-MHC).

Results: Results indicated that school counsellors showed significant improvement in general, in Identify-MHC and in self-reported Knowledge-MHC. However, no improvement in Confidence-MHC was found.

Discussion & Conclusion: While both Identify-MHC and Knowledge-MHC showed improvement, the association between their improvements was not significant possibly because respondents may be more modest in their subjective self-reports of improvement, as Knowledge-MHC's improvement was smaller. Self-report modesty may also partly explain the lack of significant improvement in Confidence-MHC. Unexpectedly, the number of trainings did not predict improvement in Identify-MHC and Knowledge-MHC, suggesting that the improvements may be due to factors not considered in this study, e.g., experience and knowledge gained through use of REACH and its helpline, self-study, and peer discussions. Our study highlighted that although school counsellors' knowledge and ability to identify MHC in students increased over time, more needs to be done to empower school counsellors in managing MHC in students.

PP-BSTR-01

Relationship of Osteoprotegerin with Age, Insulin Resistance, High-Sensitivity C-Reactive Protein (HsCRP) and Cholesterol Levels in Newly Diagnosed Type 2 Diabetes

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Background & Hypothesis: Osteoprotegerin (OPG) is a secreted member of tumour necrosis factor receptor superfamily. Increased levels of OPG have been associated with endothelial dysfunction and arterial calcifications in type 2 diabetes (T2D). Most studies include patients with different duration of diabetes and medications. Association of OPG with impaired fasting glucose and newly diagnosed T2D, before initiation of medications is unknown. We hypothesise that in newly diagnosed T2D individuals, OPG is associated with insulin resistance and hyperinsulinemia.

Methods: Adults, with newly diagnosed diabetes, before initiation of medications, aged 18 to 70 years, seen in our institution for Health Screening from January 2009 to January 2011 were recruited. Anthropometric data, fasting glucose and lipids were measured. Serum OPG was measured by ELISA.

Results: We enrolled a total of 89 volunteers. Mean age (SD) was 46.13 (11.12) years, 59.8% males, BMI 27.02 (5.72) kg/m², SBP 129.4 (14.1)mmHg, DBP 81.4 (10.2)mmHg, glucose 6.88 (2.81)mmol/l, Total cholesterol (TC) 5.51 (1.17)mmol/l, high-density lipoprotein (HDL) 1.28 (0.41)mmol/l, low-density lipoprotein (LDL) 3.57 (0.99)mmol/l, Triglycerides 1.75 (1.23)mmol/l. Ethnic distribution: Chinese (59.8%), Malays (19.6%), Indians (19.6%). Using bivariate correlation analysis, age ($r = 0.328$, $P = 0.002$), TC ($r = -0.23$, $P = 0.053$), HsCRP ($r = 0.304$ $P = 0.055$) were significantly correlated with OPG. Fasting insulin ($r = -0.92$, $P = 0.406$), HOMA-IR ($r = -0.049$ $P = 662$) were not statistically significant. After adjusting for homeostatis model assessment – insulin resistance (HOMA-IR) and HsCRP, age (Beta = 0.29, $P = 0.008$), TC (Beta = -0.243, $P = 0.041$) remained significantly associated with OPG.

Discussion & Conclusion: OPG is independently associated with age and TC. Despite reports showing an association between OPG and insulin resistance, we did not find the same relationship, suggesting OPG may not have a major role in early T2D. Further research is needed to understand the inverse association with cholesterol.

PP-BSTR-02

Adiponectin Induces HDL in HepG2 Cells

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Background & Hypothesis: Adiponectin and high-density lipoproteins (HDL) are important mediators of risk for cardiovascular disease. The positive association between plasma adiponectin and HDL has been found in non-diabetic and diabetic individuals, independent of body mass index (BMI), body fat distribution and insulin sensitivity. We recently found women with low HDL to have reduced adiponectin levels, suggesting potential direct link between adiponectin and HDL metabolism. We hypothesise that there is a direct causality between HDL and adiponectin expression and explore this using cell culture model.

Methods: 3T3-L1 mouse adipocytes and HepG2 cells were used in this investigation. Prior to assay, 3T3-L1 cells were differentiated according to adipocytes differentiation protocol. Differentiated 3T3-L1 and HepG2 cells were incubated for 24 hours in DMEM containing 0.5% FBS with different concentrations of isolated human HDL (Sigma-Aldrich) and recombinant human adiponectin (R&D Systems) respectively. Adiponectin in cell lysates was measured by enzyme-linked immunosorbent assays (ELISA) (Millipore). ApoA1 mRNA expression was analysed by real-time quantitative Polymerase Chain Reaction (qPCR).

Results: Differentiated 3T3-L1 cells were treated with 20, 50 and 100µg/ml of isolated human HDL. 3T3-L1 adiponectin was significantly increased by 11.53% (±7.07%), 41.42% (±8.25%) and 39.59% (±14.92%) respectively compared to control ($P < 0.001$). HepG2 cells were treated with 1, 2, 5, 10 and 30µg/ml of recombinant human adiponectin. There was no significant difference in ApoA1 mRNA expression compared to control.

Discussion & Conclusion: Our study showed that HDL increases levels of adiponectin in vitro. Further studies are needed to understand the mechanism by which HDL raises adiponectin and to explore its clinical significance.

PP-BSTR-03

Better Nutritional Knowledge Does Not Translate to Healthier Diets in Overweight Singapore Chinese Men

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Background & Hypothesis: Data on the nutritional knowledge of overweight Singaporean Chinese and its association with reported dietary intake is limited. We hypothesise that individuals with better nutritional knowledge would have a healthier diet e.g. lower fat, higher fat, etc compared to those with poorer nutritional knowledge.

Methods: Healthy overweight Chinese adult males with >24 % body fat and body mass index of ≥ 23 to 30kg/m² were recruited into the Singapore Adult Metabolism Study (SAMS). Three sets of 24-hour recalls and a well-validated self-administered general nutrition questionnaire, adapted for the local population, were administered to each subject.

Results: Preliminary analysis (n = 39; mean \pm SD age = 33.2 \pm 5.5; BMI = 27.7 \pm 1.3kg/m²) revealed that those with higher nutritional knowledge scores consumed greater levels of vitamin C ($P = 0.0013$; Pearson correlation). Their main dietary source of vitamin C was from vitamin supplements. No association was seen between nutritional knowledge scores and fat, protein, carbohydrates, sugar and fibre intakes among the subjects. The education level (secondary vs tertiary category) and the percentage body fat of the subjects were also not found to be correlated with nutritional knowledge scores. Data analysis is ongoing and more results are expected by November 2011.

Discussion & Conclusion: Our results indicate that in overweight Singapore Chinese, better nutritional knowledge do not necessary translate to one having a healthier diet. More health conscious subjects may rely on dietary supplements as a means to 'improve' their diets, but may not necessarily modify the key components (macronutrients) in their diets. This has major implications on health outcomes and should be addressed.

PP-BSTR-04

Association of Natriuretic Peptide Precursor A (NPPA) and Its Receptor System with Diabetic Nephropathy Secondary to Type 2 Diabetes among Singaporean Chinese

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Background & Hypothesis: Diabetic nephropathy (DN) is the leading cause of end-stage renal disease worldwide. Several vasoactive factors have become critical target of therapeutic interventions. Natriuretic Precursor Peptide A (NPPA) and its receptor system are pivotal molecules in vascular biology and renal physiology. Preliminary data from our group suggest that plasma pro-atrial natriuretic peptide (pro-ANP) concentration is elevated in DN. Functional genetic variants in NPPA have been reported to be associated with hypertension and cardiovascular morbidities. Therefore, we hypothesise that NPPA and its receptor system are likely biological candidate genes for DN.

Methods: A panel of 14 haplotype tag single nucleotide polymorphisms (SNPs) for NPPA and its receptor gene region were interrogated in 480 case-control pairs of Chinese subjects with long standing type 2 diabetes (>10years) discordant for nephropathy using Illumina BeadXpress Veracode multiplex genotyping assays. Cases (n = 510) are defined on the basis of spot urinary albumin:creatinine ratio (ACR) >1000mg/g or serum creatinine >112µM. Controls (n = 450) had ACR <30mg/g and serum creatinine <112µM.

Results: Cases and controls were similar in distribution for gender, age, duration of diabetes and HbA1c levels. Single locus and haplotype analysis did not reveal any significant association ($P < 0.05$) between SNPs found within NPPA and its receptor gene region with type 2 diabetic nephropathy (T2DN). In addition, quantitative trait locus (QTL) analysis did not show association of SNPs within NPPA and its receptor gene region with mid-region plasma pro-ANP concentrations.

Discussion & Conclusion: Our preliminary data demonstrates that there is no significance association of NPPA and its receptor system with T2DN among Singaporean Chinese.

PP-BSTR-05

2D:4D Finger Digit Ratio and Performance for Spatial and Social Cognitive Reaction Timed Tasks

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Background & Hypothesis: Sexual dimorphism in a number of cognitive domains has been attributed to hormonal factors (Baron-Cohen, 2003; Kimura, 2000). The current study aims to explore the spatial and social cognitive patterns arose from the effects of 2D:4D finger digit ratio.

Methods: 1. Second and fourth finger digit lengths were measured using vernier calipers. 2. Spatial task: This computer timed task is identical to the experiment Kosslyn and colleagues' (1989) used to explore hemispheric specialisation for 2 types of spatial tasks. 3. Social task: The participants were required to respond as fast and as accurately as possible in determining whether the facial emotions flashed on the computer screen for 150ms is the one they were looking for.

Results: Spatial categorisation task: A main effect for the visual field was found indicating a left hemispheric (LH) advantage. Spatial coordinate task: A main effect for the visual field was found indicating a right hemispheric (RH) advantage. Social cognitive task: For the 'angry' female facial emotion, no main effects were found on the basis of reaction time but there was a significant interaction between visual field and 2D:4D ratio group.

Discussion & Conclusion: While left and right hemispheric dominance was observed for the spatial task, 2D:4D finger digit ratio was not involved in the performance of both tasks. However, 2D:4D finger digit ratio was associated with performance of the social cognitive task. As a whole, the results suggest that the 2D:4D finger digit ratio is associated with social cognition but not predictive of performance on spatial cognitive tasks.

PP-BSTR-06

Loss of Protein Folding Gene Expression: A Novel Oncogenic Mechanism

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Background & Hypothesis: Tumour Necrosis Factor Receptor Associated Protein 1 (TRAP1) has been identified as a molecular chaperone of the tumour suppressor Retinoblastoma (Rb) and facilitates its regulation of G1/S transition. Loss of TRAP1 may therefore represent a novel oncogenic pathway where inactivation of a tumour suppressor gene occurs as a result of the loss of its chaperone. We therefore aim to evaluate the role of TRAP1 in breast tumour progression.

Methods: TRAP1 expression was evaluated in a series of breast tumours using immunohistochemistry. Effects of altering TRAP1 expression on the S phase fraction were evaluated using flow cytometry. TRAP1 localisation was examined using immunofluorescence and cellular fractionation. Experiments were conducted in normoxia as well as in hypoxia (0.1% oxygen).

Results: In breast tumours, nuclear TRAP1 expression positively correlated with Rb expression ($P < 0.0001$). TRAP1 loss correlated with poor prognostic factors and shorter disease-free survival ($P = 0.01$). TRAP1 silencing attenuated Rb-E2F1 interaction in hypoxia and inhibited hypoxia-induced G1 arrest. The converse was observed following restoration of TRAP1 expression in TRAP1-deficient MDA231 breast carcinoma cells. TRAP1 translocated into the nucleus following hypoxic stress. Inhibition of this nuclear translocation attenuated TRAP1 interaction with Rb, and consequently Rb interaction with E2F1.

Discussion & Conclusion: TRAP1 appears to modulate tumour behaviour by regulating cell cycle progression in hypoxia. TRAP1 loss was associated poor prognostic factors and a poorer clinical outcome in breast carcinoma, suggesting that TRAP1 may have a significant role in the evolution of a more aggressive phenotype.

PP-BSTR-07

Adiponectin Gene Polymorphisms and Type 2 Diabetes among Singaporean Chinese Adults

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Background & Hypothesis: Adiponectin is the most abundant circulating adipokines in human that regulates insulin actions. Association of adiponectin gene variations with type 2 diabetes (T2DM) has been reported in several ethnicities. We studied six common adiponectin single nucleotide polymorphisms (SNPs) in Singaporean Chinese adults. Follow-up functional genetic experiments were conducted using primary culture of human subcutaneous and omental adipose tissues.

Methods: In a case-control study (n = 588), genotyping of 6 common adiponectin haplotype tagging SNPs [-3964A > G (rs822396), +45T > G (rs2241766), 276C > A (rs1501299), 973G > A (rs3774262), 4551G > C (rs1063539), 5852G > A (rs6444175)] were performed using Taqman genotyping assay. Allele dependent differential efficiency of mRNA expression was assayed using SYBR green quantitative real time PCR. *P* <0.05 was considered statistically significant.

Results: Distributions of genotypes for all SNPs among controls were consistent with Hardy-Weinberg Equilibrium. Single locus, genotyped-based analysis suggested borderline significant (*P* = 0.07) association between an exon-2 coding-synonymous +45T > G (rs2241766) and T2DM. We demonstrated that the relative mRNA expression of adiponectin gene was ~80% lower among carriers of minor G allele in human subcutaneous adipose tissue (n = 43, *P* <0.001). This observation was replicated (~50% reduction in mRNA expression among G allele carriers) in an independent sample of human omental adipose tissue (n = 52, *P* <0.005).

Discussion & Conclusion: The coding synonymous +45T > G SNP may be associated with type 2 diabetes among Singaporean Chinese adult. Functional experiments in both human subcutaneous and omental adipose tissue suggested that polymorphisms in +45T > G may be associated with differential allelic expression.

PP-BSTR-08

Protein Expression of Inflammatory and Angiogenic Markers in Subcutaneous and Visceral Preadipocytes

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Background & Hypothesis: Obesity is a recognised risk factor for metabolic disorders like insulin resistance and Type 2 diabetes. It is closely associated with adipose tissue hyperplasia and hypertrophy, triggering angiogenesis and chronic low-grade inflammation. Studies have shown that macrophage infiltration of visceral fat may contribute to systemic inflammation and increased angiogenesis. However, whether visceral adiposity is more pro-inflammatory or pro-angiogenic than subcutaneous adipose tissue is unknown. Preliminary studies using RT2Profiler™ and StellarRay™ qPCR have shown differential angiogenic and inflammatory cytokine gene expression between human visceral and subcutaneous preadipocytes. We aim to validate the involvement of these genes using a customised membrane based antibody array to detect the corresponding candidate peptides suggested by our prior gene expression arrays.

Methods: Protein was extracted from human visceral and subcutaneous preadipocytes isolated from adipose tissue. A membrane-based antibody array was performed to compare the protein expression level between subcutaneous and visceral preadipocytes. The relative expression of protein was determined by densitometry and normalised to a positive control.

Results: In line with the gene profiling from prior genetic array, we demonstrated an increased protein expression of tumor necrosis factor- alpha (TNF- α), leptin, chemokine ligand 11 (CCL11) and C-X-C motif chemokine 10 (CXCL10) ($P < 0.05$) in the visceral preadipocytes. However IL-5 and IL-8 ($P < 0.05$) showed contradicting gene and protein expression. This suggests possible posttranslational modification affecting the efficiency of protein regulation.

Discussion & Conclusion: Our results have shown a differential expression of angiogenesis and inflammatory genes between subcutaneous and visceral preadipocytes. These genes could contribute to the pro-inflammatory and metabolic detrimental property of visceral adipose tissue and be a novel target for pharmacological intervention.

PP-BSTR-09

Familial Associations in Mechanical Pain Sensitivity and Chronic Low Back Pain

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Background & Hypothesis: The literature suggests a familial association with pressure pain threshold (PPT) and chronic low back pain (CLBP). This study investigated the familial association with PPT, and whether the familial presence of CLBP influences the PPTs of family members.

Methods: Participants (n = 229) of the Joondalup Spinal Health Study (JSHS) in Western Australia were divided into 3 family groups: CLBP, non-chronic low back pain (non-CLBP) and no low back pain (no LBP). PPT was measured at 3 test sites using an electronic pressure algometer.

Results: There were no significant correlations in PPT between parents or between children at all test sites. Significant correlations were found between father-son and mother-daughter pairs at all test sites ($0.36 < 0.51$), as well as between mothers and sons at 2 test sites ($0.37 < 0.63$). Linear mixed effects model analysis showed significant differences in PPT when comparing genders ($P < 0.05$), CLBP to no LBP groups ($P = 0.01$), and lateral calcaneum to L4/5 and head of fibula test sites (both $P < 0.01$). One-way ANOVA between family groups at each test site showed no significant differences in PPT ($0.08 < 0.09$). However, independent t-tests between family groups at each test site showed a significant difference between CLBP and no LBP groups at all test sites ($0.03 < 0.05$). No significant differences were found between the CLBP and non-CLBP, and non-CLBP and no LBP groups.

Discussion & Conclusion: These findings suggest gender specific associations with PPT, and the presence of chronic low back pain (CLBP) in the family was found to be associated with increased mechanical pain sensitivity in other family members.

PP-CR-01

Oral Aphthosis: A Decade of Experience from a Tertiary Dermatological Centre

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Background & Hypothesis: Oral aphthosis is the most common oral ulcerative condition with significant impact on quality of life. This study describes the characteristics of oral aphthosis seen at a tertiary dermatological centre in Singapore, with emphasis on evaluating underlying systemic diseases especially Behcet's disease and nutritional deficiencies.

Methods: This is a retrospective medical records review over a 10-year period between June 2000 and June 2010. Patients were identified using the search terms "oral ulcers", "aphthous ulcers", "oral aphthosis", and "Behcet's disease. Patients with Behcet's disease without oral ulcers, pemphigus vulgaris, lichen planus and herpes simplex were excluded. The remaining patients were evaluated with regards to demographics, characteristics of oral ulcers, associated systemic diseases and nutritional deficiencies, diagnostic tests, treatment response and follow up duration.

Results: One hundred and seventy-five patients were included in this study. One hundred and one patients had recurrent aphthosis; 77 with simple aphthosis and 24 with complex aphthosis. After evaluation, 14 patients fulfilled the International Study Criteria (ISG) for Behcet's disease with the majority (85.7%, n = 12) having complex aphthosis. Two patients were found with low levels of vitamin B12. Mean follow up duration was between 1 to 6 months, with the therapeutic ladder ranging from topical and oral corticosteroids to colchicine and/or dapsone.

Discussion & Conclusion: Recurrent oral aphthosis although common, is a niche condition. This study highlights that a more definitive management and therapeutic algorithm is needed for more holistic management of future patients. The follow-up period was sub-optimal. We recommend a longer follow-up period, particularly for complex aphthosis patients to monitor for progression to Behcet's disease.

PP-CR-02

A Retrospective Review of the Factors Associated with Short-Term Response to Therapy in Patients with Newly Diagnosed Bullous Pemphigoid

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Background & Hypothesis: The aim of this study is to compare the clinical characteristics, serological profile and therapeutic modalities of bullous pemphigoid patients who achieve clinical remission within 6 months of commencement of therapy and those who do not.

Methods: All patients diagnosed with pemphigoid who attended the National Skin Centre clinic from June 2009 to December 2010 were included in the study.

Results: Ninety patients were included. Sixty-eight patients (76%) achieved clinical remission within 6 months of commencement of therapy (Group A) and 22 patients (24%) achieved clinical remission after 6 months (Group B). The mean time to disease remission was 100 days in Group A and 275 days in Group B. Two patients (3%) in Group A had mucosal involvement and 4 patients (18%) in Group B had mucosal involvement. This is statistically significant (chi-square test $P < 0.05$ and logistic regression $P < 0.05$). Twenty out of 23 patients who had BP180 enzyme-linked immunosorbent assays (ELISA) in Group A had positive results (mean titre 67U/ml). Eight out of 10 patients who had BP180 ELISA in Group B had positive results (mean titre 122U/ml). Of the 11 patients who had BP230 ELISA in Group A, 6 had positive results (mean titre 34U/ml). Of the 4 patients who had BP230 ELISA in Group B, none had positive results (mean 0.6U/ml). There is no statistically significance between the titre of BP180 and BP230 ELISA and treatment response.

Discussion & Conclusion: Our study suggests that mucosal involvement is associated with prolonged duration of treatment beyond 6 months.

PP-CR-03

Hidradenitis Suppurativa in Teenagers

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Background & Hypothesis: Hidradenitis suppurativa is a chronic inflammatory debilitating condition affecting apocrine gland bearing skin, which is more common in adults. It is easily recognised as a late sign in the follicular occlusion tetrad. A major complication is scarring. However, symptoms may have begun as early as teenage years. We present the early signs of hidradenitis suppurativa in teenagers, with an aim to early diagnosis and treatment.

Methods: A review was done on cases of 4 teenagers with hidradenitis suppurativa. The following factors were analysed: age of onset of symptoms, presentation of the condition, associated dermatological conditions, and delay in time to diagnosis.

Results: A surprising fact was the delay in diagnosis of this condition of 1 to 5 years. In 3 out of 4 patients, hidradenitis suppurativa was not the primary complaint. They were incidental findings brought to the attention of the doctor much later during the consultation. The condition was missed in 1 patient till much later. One patient presented with acne vulgaris.

Discussion & Conclusion: Hidradenitis suppurativa is not commonly recognised early in teenagers. Possible reasons may include embarrassment to seeking medical attention or the misconception that this is due to poor hygiene on their part. These complaints are brought up much later, on follow up for other dermatological conditions when they feel safe and comfortable in the doctor-patient relationship. Physicians need to be aware of the early signs especially when teenagers present with severe acne, and treat them to prevent the debilitating chronic nature and complication of severe scarring.

PP-CR-04

Comparative Study of Total Knee Replacement Patients with and without Patellar Resurfacing in Asian Context

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Background & Hypothesis: No consensus exists on whether patella should be resurfaced during total knee replacement, especially so in the Asian population. This study aims to study the difference in clinical outcomes and radiographic findings between patellar resurfaced and non patellar resurfaced patients in total knee replacement in Asian population. It was also intended to study the association between anterior knee pain and patellar tilt or displacement postoperatively.

Methods: Seventy patients who underwent total knee replacement in 2003 were included in the studies. These patients were followed up to a mean period of 7 years. Clinical outcomes were assessed from Oxford Knee Score, Knee Society Score, Western Ontario and McMaster Universities Arthritis Index (WOMAC), International Knee Documentation Committee (IKDC) Score, presence of anterior knee pain and daily functions. Immediate postoperative and latest radiographs were also assessed.

Results: The resurfaced group showed better results in all clinical scores used in our study, with Knee Society functional score being statistically significant ($P < 0.05$). This result was consistent with better stair climbing and less patellar displacement in the resurfaced group, that were also statistically significant ($P < 0.05$). However, no association was established between anterior knee pain and patellar tilt or displacement.

Discussion & Conclusion: The authors found better clinical and radiographic outcomes among patients who underwent patellar resurfacing than those who did not, and concluded that routine patellar resurfacing during total knee replacement will improve the postoperative outcomes and functions in the Asian population.

PP-CR-05

Asymptomatic, Transient Hypogammaglobulinaemia Following Carbamazepine and Lamotrigine Therapy for Trigeminal Neuralgia

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Background & Hypothesis: Hypogammaglobulinaemia is reported with and without drug hypersensitivity reactions to anti-epileptics. Usually transient, it can last several years after drug withdrawal. Some have recurrent infections while others are asymptomatic. There are several reports with carbamazepine but only 2 with lamotrigine.

Methods: A lady was referred in December 2007 for progressive fall in globulin [26g/L (NR 19-39g/L) in July 07 to 18g/L by November 07]. She was on irbesartan, simvastatin and carbamazepine (200mg BD since 2006 for trigeminal neuralgia). She had no history of recurrent infections. Examination was normal. Immunoglobulin G (IgG) 5.4 (8.5 to 19.5g/L), immunoglobulin A (IgA) 0.5 (1.4 to 4.5g/L), immunoglobulin M (IgM) <0.3 (0.4 to 2.8g/L) with no significant antibody rise after tetanus toxoid vaccination (pre: 0.05IU/mL; post: 0.07IU/mL) but response to S. Pneumoniae vaccination was good. CD3+ T cells, CD19+ B cells, CD56+ NK cells, and CD4 to CD8 ratio were normal.

Results: Carbamazepine was stopped in April 08 (IgG 4.8g/L). IgM normalised a month later but IgG and IgA remained low with slow rise. In November 08, she again had panhypogammaglobulinaemia: IgG 6.4 g/L, IgA <0.4g/L, IgM <0.3g/L. She had lamotrigine, gabapentin, and baclofen the past month. Lamotrigine was stopped and within a month, IgM normalised, then IgG (by September 09). IgA remained low (May 2011 1.2g/L). She is free of infections.

Discussion & Conclusion: This is the first report of panhypogammaglobulinaemia associated with both carbamazepine and lamotrigine. The mechanism is not known. B cells may be low or absent and B cell response to tetanus toxoid and pneumococcal antigens variable.

PP-CR-06

Urethral Chlamydia Trachomatis Infection in Men Attending a Sexually Transmitted Infection Clinic: Clinical Characteristics, Urethral Smear Sensitivity and Treatment

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Background & Hypothesis: Chlamydia trachomatis (CT) is both the commonest infection diagnosed at the Department of STI Control (DSC) Clinic and main etiological cause of Non-Gonococcal Urethritis in Singapore. While confirmation of CT Nucleic Acid Amplification Tests (NAATs) may require a turn-around time of up to 5 days, treatment is best instituted at the primary visit to reduce loss to follow-up. Study aims: 1) To determine the clinical characteristics and management of male urethral CT infection seen at the DSC clinic 2) To assess the sensitivity of the urethral smear as a point of care test

Methods: A retrospective case record review of all male patients with a positive urethral CT NAAT (Roche Amplicor) seen at the DSC Clinic from 1 January to 31 December 2007 was done. Patients with concurrent gonococcal infection were excluded from the study. Statistical analysis was done with SPSS.

Results: (n = 656) 64.6% were Singaporeans, with a mean age of 31.6 years. Ninety-four point nine percent were heterosexual. Symptoms and clinical findings: whilst 75.3% were symptomatic only 28.3 % had urethral discharge on examination. Urethral Smear (n = 583) 88.0% had a positive smear (>5 leucocytes/high-powered field) Sensitivity in asymptomatic patients: 77.8% Sensitivity in symptomatic patients: 90.0% Treatment 73.6% were treated with doxycycline, and 23.2% with azithromycin.

Discussion & Conclusion: Most male urethral CT infections seen at the DSC were young Singaporean heterosexuals. Doxycycline remained the drug of choice for treatment. The sensitivity of the urethral smears in CT was high. However asymptomatic patients were more likely to have a negative smear compared to symptomatic patients ($P = 0.002$).

PP-CR-07

Safety and Efficacy of Isotretinoin in Acne

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Background & Hypothesis: Oral isotretinoin is effective for severe or persistent acne vulgaris but concerns remain regarding its adverse effects, especially that of teratogenicity.

Methods: We conducted a 5-year retrospective study on all patients treated with isotretinoin at the National Skin Centre from March 2004. Data was collected on patient demographics, acne severity, isotretinoin dose, duration, adverse effects and outcome.

Results: The study included 2255 patients, with a mean age of 22.5 years, male:female ratio of 2.5:1 and 82.3% being Chinese. The mean duration of acne was 4.2 years. The mean starting dose of isotretinoin was 0.4mg/kg and on average, patients received 7.8 months of treatment at a mean dose of 0.5mg/kg. Mean total cumulative dose was 95.6mg/kg. Majority (93.9%, n = 2109) achieved complete remission or significant improvement. A higher cumulative dose and longer duration of therapy were independent, significant predictors for complete remission. Thirty-eight (2.2%) and 24 patients (2.7%) had elevated alanine and aspartate aminotransferases (mean of 3.4x and 1.3x upper limit of normal respectively). The only significant predictive factor was a history of viral hepatitis. There were 194 (12.1%) and 80 (4.8%) patients who had abnormal serum low-density lipoprotein (≥ 4.0 mmol/l) and triglycerides (≥ 2.3 mmol/l) respectively. Older age and increased weight were significant predictors for both. There were no documented pregnancies among female patients. Isotretinoin was generally well-tolerated, with 6.4% (n = 145) discontinuing due to side effects.

Discussion & Conclusion: This study reaffirms the overall safety and efficacy of oral isotretinoin in Asian patients with acne vulgaris, even at lower mean daily doses.

PP-CR-08

Platelet Function Assay

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Background & Hypothesis: Platelets play a major role in the pathogenesis of ischaemic vascular diseases. Monitoring of anti-platelet drugs in patients with cardio- and cerebrovascular diseases requires reliable platelet function tests. The objective of the project is to establish localised reference ranges for the point of care platelet function tests using 4 different agonists on the Multiplate machine. Multiplate is a new device from Dynabyte that measures whole blood platelet aggregation, without centrifugation. The machine's principle is impedance aggregation.

Methods: By liaising with the NUH blood donor centre, 58 blood donor samples in Lithium Heparin tubes and 20 blood donor samples in Hirudin tubes were analysed on the Multiplate analyzer which tests for platelet function. Adenosine diphosphate (ADP), arachidonic acid (ASPI), collagen (COL) and thrombin receptor activating peptide (TRAP), serve as agonists to activate platelet aggregation.

Results: Results from the donor sample were used to derive the reference ranges for the local population. The results we obtained are as follows, ADP (Heparin) reference range = (51.7 to 131.7A.U.), ASPI (Heparin) reference range = (63.2 to 139.8A.U.), COL (Heparin) reference range = (55.4 to 122.5A.U.) and TRAP (Heparin) reference range = (83.5 to 153.3A.U.). Comparing with the reference range given by the manufacturer, ADP (Heparin) reference range = (55 to 117A.U.), ASPI (Heparin) reference range = (79 to 141A.U.), COL (Heparin) reference range = (61 to 108A.U.) and TRAP (Heparin) reference range = (92 to 151A.U.).

Discussion & Conclusion: The reference ranges established with local samples differs slightly from manufacturer issued reference ranges. This reaffirms that the work is necessary to introduce the Multiplate for clinical use.

PP-CR-09

The AD8 Informant Interview: Influence of Cultural Bias on Reliability and Diagnostic Performance in Early Cognitive Impairment

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Background & Hypothesis: The AD8 brief informant interview has good discriminatory ability in detecting early stages of dementia. We aim to ascertain the reliability and diagnostic performance of the AD8 in early cognitive impairment (ECI) compared with culturally adapted versions in a memory clinic sample of predominantly Chinese ethnicity.

Methods: We evaluated 339 patient-informant dyads, comprising 53 cognitively intact and 286 ECI subjects [40 mild cognitive impairment (MCI); 246 early dementia (Clinical Dementia Rating 0.5 to 1.0)]. Using clinical judgment, reliability tests and factor analysis, we derive 2 modified 7-item versions: i) AD7-A: single item on planning, organisation and problem solving replacing 2 other items on executive function; and ii) AD7-B: as per AD7-A, but substituting item on disorientation to time with disorientation to place. We compared the reliability and receiving operating characteristic (ROC) curve-derived sensitivity, specificity and AUC between AD8 and modified versions.

Results: Despite being briefer than the AD8, the 7-item modified versions displayed higher reliability (Cronbach's alpha: AD8 0.82, AD7-A 0.84, AD7-B 0.84) and comparably good diagnostic performance in ECI (AUC: AD8 0.93, AD7-A 0.93, AD7-B 0.94). When analysed by subgroups, there was no difference in diagnostic performance in early dementia (AUC = 0.96 for all 3 versions). However, in MCI, both modified versions had superior reliability (Cronbach's alpha: AD8 0.72, AD7-A 0.76, AD7-B 0.76) and diagnostic performance (AUC: AD8 0.74, AD7-A 0.78, AD7-B 0.81).

Discussion & Conclusion: Certain items in the AD8 informant interview are susceptible to cultural bias. The resultant impact on its reliability and diagnostic performance, especially in MCI, can be mitigated by modification of affected items.

PP-CR-10

The “Real” Difference: The Impact of Patient Contact on Teaching Geriatric Assessment Skills

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Background & Hypothesis: Aging simulation workshops have been employed successfully to teach geriatric assessment skills (GAS) to junior medical students. It is unclear whether the learning experience is diluted by the use of simulation at the expense of contact with “real life” elderly patients.

Methods: We studied 48 2nd-year students who attended simulation workshops using student actors who role-play the scenarios, followed by bedside GAS teaching with elderly patients. Mixed-methods approach using a before and after exposure design was undertaken with collection of quantitative (7-point Likert scale) and qualitative (thematic analysis of questionnaire) data.

Results: After exposure to real patients, students reported improved confidence in assessment of activities of daily living (ADL), administering the Abbreviated Mental Test (AMT) and postural blood pressure measurement, but not history taking. This occurred despite the increase in perception that it was more difficult to perform all four GAS in real patients (Pre: 4.6 to 4.8 vs Post: 5.5 to 5.8, all $P < 0.01$). Three learning themes emerged: 1) Bridging the divide between simulated and real world; 2) Satisfaction of learning GAS from elderly patients; 3) Challenges to learning (language, cognitive and physical factors when assessing real elderly patients). Among the 4 GAS, more students rated postural blood pressure measurement (48.7%) and communication (33.3%) as the most challenging compared with ADL assessment (17.9%) or AMT (5.1%).

Discussion & Conclusion: Contact with elderly patients can leverage upon the foundation built from aging simulation workshops by providing students with a realistic and satisfying environment to improve confidence in GAS and to appreciate practical difficulties in the assessment.

PP-CR-11

Deep Brain Stimulation Surgery in Patients with Parkinson's Disease

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Background & Hypothesis: Levodopa remains the gold standard treatment for patients with idiopathic Parkinson's disease (PD). Most often it is complicated by motor fluctuations accompanied by dyskinesias. When PD patients are refractory to pharmacotherapy, deep brain stimulation (DBS) surgery is now a therapeutic option of treatment. Objective: Effects of DBS on PD: a retrospective study on motor scores, quality of life (QoL), depression and mini-mental state examination (MMSE).

Methods: All PD patients undergoing DBS surgery underwent off/on medications evaluations. At 1 month postsurgery, patients were evaluated in the various states of off stimulator/off medications, on stimulator/off medications, and on stimulation/on medication after optimal DBS programming. One year postoperative evaluation was performed. MMSE, PD Questionnaire (PDQ-39) and Beck's Depression Index (BDI) were administered pre-/postoperatively.

Results: A total of 32 PD patients underwent bilateral DBS subthalamic nucleus (STN) surgery. Their mean motor scores off medications were 43.58 ± 14.18 and 20.09 ± 12.78 during on medications pre-operatively. Post-DBS programming, their off stimulator/off medication motor scores were 40.49 ± 15.06 and 23.06 ± 10.73 when they were on stimulator/off medication. Mean motor scores at 1 year post DBS surgery were 22.52 ± 12.61 (on stimulator/on medications, $P = 0.82$). Mean preoperative PDQ-39SI score was 41.05 ± 17.28 , which improved to 32.00 ± 16.33 postoperatively ($P = 0.08$) Mean preoperative BDI scores was 19.38 ± 10.32 and 9.89 ± 7.23 postoperatively ($P = 0.3$). Preoperative mean MMSE score was 26.38 ± 2.83 , and 25.22 ± 3.86 postoperatively ($P = 0.3$).

Discussion & Conclusion: There was a significant improvement in motor scores that remained stable at 1 year postoperatively. QoL scores also improved.

PP-CR-12

Exhaled Nitric Oxide in Singaporean Patients with Chronic Obstructive Pulmonary Disease

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Background & Hypothesis: Fractional exhaled nitric oxide (FeNO) is increasingly used in management of asthma. Other obstructive lung diseases like chronic obstructive pulmonary disease (COPD) show conflicting correlation in reports. FeNO levels may be influenced by various factors including ethnicity, steroid use and exacerbations. FeNO in Asian COPD patients have not been extensively studied. To determine FeNO levels in a sample of Singaporean COPD patients and its comparisons with age, body mass index (BMI), smoking, lung function, inhaled corticosteroids use and exacerbations.

Methods: A prospective study of FeNO levels measured in stable outpatient COPD patients. Demographics, clinical and pulmonary function characteristics were collected. A prescription for short course oral steroids 6 months preceding and post FeNO measurement, confirmed with clinical history, was recorded as an exacerbation.

Results: We studied single FeNO readings in 41 COPD patients: 33 Chinese, 7 Malays, 1 Eurasian. Mean (\pm SD) post-bronchodilator forced expiratory volume in 1 second (FEV1) was $59.8\pm 21.8\%$ predicted. Mean FeNO level was 24.6 ± 17.8 ppb. Age, BMI, lung function measures, inhaled corticosteroids and exacerbations did not significantly affect FeNO. FeNO levels in current smokers tended to be lower than ex-smokers, 21.0 ± 13.2 vs 26.4 ± 19.7 ppb, $P = 0.362$. Those with predominant cough tended to have lower FeNO level, 20.1 ± 11.0 ppb vs 30.2 ± 22.9 ppb, $P = 0.07$.

Discussion & Conclusion: FeNO is mildly increased in Singaporean COPD patients compared to reported studies. Perceived relationships between FeNO levels and exacerbations, lung function and inhaled corticosteroids were not seen in our study. Further studies in local COPD patients are required before its clinical utility can be determined.

PP-CR-13

Ensuring Data-Entry Accuracy Using Readily Available Applications

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Background & Hypothesis: Double data-entry is used for transcribing data from paper-based questionnaires into electronic databases. It can identify key punch errors efficiently as compared to single entry. Commercial applications developed specifically for this task are often more expensive and require trained personnel. We used SAS program and MS Access for this. We present a simple alternative method for researchers where MS Access- which is comparatively inexpensive and more readily available, can perform data verification in absence of more sophisticated tools.

Methods: We used a paper-based questionnaire for developing a new instrument. Responses were entered into 2 independent datasets. PROC COMPARE function in SAS checked for differences between these datasets. Entry discrepancies were output into an Excel file. Discrepancies were then verified and corrected. We also used a simple program in MS Access that performed field-by-field checks across the 2 datasets.

Results: At least 1 data-entry error was found in 85% of the records. This represented 0.5% of the total number of fields entered. A mis-entry for a preceding question resulted in errors in all subsequent fields. Data-entry points where most mistakes occurred were identified and changes were made to the electronic data capture portal. A routine and random check of 5% of records produced 100% accuracy. Double data-entry using MS Access yielded the same results as those output from the SAS program.

Discussion & Conclusion: Double data-entry ensures accurate transcription of data from questionnaires into a database. It is possible to achieve good data accuracy rate by implementing double data-entry techniques without purchasing complex commercial applications.

PP-CR-14

Pregnancy Outcomes in an Asian Cohort of Adults with Juvenile Onset Systemic Lupus Erythematosus

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Background & Hypothesis: There is little published information on fertility and pregnancy outcomes in adults with juvenile onset Systemic Lupus Erythematosus (JOSLE).

Methods: Ninety-three female JOSLE patients (age of onset ≤ 16 years, ACR 1997 Classification Criteria) from the Tan Tock Seng Hospital (TTSH) Systemic Lupus Erythematosus (SLE) Registry were identified.

Results: The median age of onset JOSLE was 14 years (interquartile range, IQR 12 to 16). The median disease duration was 16 years (IQR 12 to 22). Chinese made up 78.5% and Malays 15.1%. The median number of pregnancies was 1 (IQR 1 to 3) and median number of live births 1 (IQR 1 to 2). There were a total of 41 pregnancies (range 1 to 5) among 21 patients. Of these, 25 (61.0%) pregnancies were successfully delivered. Six pregnancies were terminated due to non-medical reasons. Ten pregnancy losses occurred among 6 patients. All spontaneous abortions occurred within the first trimester, and were associated with a history of positive anti-cardiolipin antibody (ACA) immunoglobulin G (IgG) (80%), ACA immunoglobulin M (IgM) (60%), lupus anticoagulant (LAC) (50%) and unplanned pregnancy complicated by active lupus nephritis (28.6%). Although 11/21 (52.4%) patients were anti-Ro positive, there were no cases of neonatal lupus or congenital heart block. None of the babies developed congenital abnormalities. Patients who had been pregnant were more likely to be anti-Ro positive ($P = 0.028$) and less likely to have received intravenous cyclophosphamide ($P = 0.04$). There was no statistically significant difference between ACA, LAC, anti-Ro positivity in those with and without fetal losses.

Discussion & Conclusion: Pregnancies were uncomplicated and successful in 61%. Obstetric Antiphospholipid Syndrome, unplanned pregnancies, and active lupus nephritis were the main reasons for pregnancy loss.

PP-CR-15

Drug Free Clinical Remission among Adults with Juvenile Onset Systemic Lupus Erythematosus

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Background & Hypothesis: To describe the characteristics and outcomes of clinically quiescent juvenile onset Systemic Lupus Erythematosus (JOSLE) patients from the Tan Tock Seng Hospital (TTSH) Lupus Registry who had stopped medications for ≥ 1 year.

Methods: Patients with JOSLE (age of onset ≤ 16 years, ACR 1997 Classification Criteria) who were clinically quiescent and had stopped immunosuppressive medications for ≥ 1 year at the last study visit were identified.

Results: Eleven (10.5%) of 105 JOSLE patients fulfilled the study criteria. Nine (81.8%) were females. Median age of disease onset was 14 years (interquartile range, IQR 13 to 16) and median disease duration 23 years (IQR 19 to 30). There was no statistically significant difference in the number of ACR criteria ($P = 0.18$) and types of disease manifestations between those with and without therapy. At the last study visit, the median drug-free duration was 6.6 years (IQR 2.8 to 13.8). Seven (60%) patients had remained drug free for ≥ 5 consecutive years. Median SLEDAI was 0 (IQR 0 to 1.5) among whom 6 scored 0 (no activity) and 5 scored 1 to 2 (mild activity). Median Systemic Lupus International Collaborative Clinics/American College of Rheumatology (SLICC/ACR) damage index was 0 (IQR 0 to 1) with SLICC/ACR ≥ 1 in 6/11 (54.5%). Drug-free patients had longer disease duration ($P = 0.008$), were older at the last visit ($P = 0.006$), anti-Ro ($P = 0.05$) and anti-La ($P = 0.006$) negative; and used less hydroxychloroquine/chloroquine ($P = 0.00$). However, median age of disease onset ($P = 0.79$) and SLICC/ACR ($P = 0.52$) were similar.

Discussion & Conclusion: In our JOSLE cohort, 10% of patients remained clinically quiescent and drug-free for ≥ 1 year. Drug-free patients had longer disease duration, were older, anti-Ro/La negative, and used less hydroxychloroquine/chloroquine.

PP-CR-16

SpyGlass Cholangioscopy: A Preliminary Clinical Experience in Singapore

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Background & Hypothesis: The SpyGlass Direct Visualisation System (Boston Scientific) is a semi-disposable endoscopy system which only requires a single operator for direct visualisation and therapy of the pancreaticobiliary system. We hereby present our preliminary clinical experience with the SpyGlass system in Tan Tock Seng Hospital, Singapore.

Methods: The data was collected from June 2010 till April 2011 retrospectively. Outcomes were assessed from patient records and endoscopy reports.

Results: Twelve procedures were carried out in 8 patients. All procedures were carried out under sedation except 1 which was done under general anaesthesia. Three out of 12 procedures (25%) were performed for diagnostic purposes: biopsy (n = 1) and visualisation of suspicious masses (n = 2). Nine out of 12 procedures (75%) were performed for therapeutic purposes: Holmium:Yag laser lithotripsy (n = 7) and dilatation (n = 2). Ten of the 12 procedures involved the biliary tract, while 2 were used for dilatation of near complete anastomotic stenosis in the colon. The single targeted biopsy under direct visualisation was successful. We achieved at least partial biliary stone fragmentation in the 7 cases of Holmium laser lithotripsy procedures. (3 complete and 4 partial fragmentation) The colonic dilation procedures were successful with the colonoscope passing through the stenosis post dilatation. No complications were observed in all cases.

Discussion & Conclusion: Our limited experience shows the SpyGglass system is safe and ideal for challenging diagnostic and therapeutic procedures when conventional methods have failed. It provides physicians an alternative with greater precision in diagnosis and therapy. Larger prospective studies would be required to ascertain the cost effectiveness of the SpyGlass system.

PP-CR-17

Clinical Outcomes of Patients with Viscosupplementation Post Arthroscopic Microfracture

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Background & Hypothesis: Several studies were done on the outcomes of routine viscosupplementation following arthroscopic debridement of the osteoarthritic knee. There were however no published clinical studies that investigated the outcomes of viscosupplementation following microfracture in arthroscopic debridement. This study aims to study the clinical outcomes of patients treated with viscosupplementation post arthroscopic microfracture.

Methods: The list of arthroscopic microfractures that were done by a single senior surgeon from 31 May 2010 to 31 May 2011 was retrieved from hospital computer system. Clinical outcomes were assessed from pain level, patient satisfaction, Oxford Knee Score, Western Ontario and McMaster Universities Arthritis Index (WOMAC) and International Knee Documentation Committee Score (IKDC).

Results: Four viscosupplemented patients were matched to 4 non-viscosupplemented patients following arthroscopic microfracture. The viscosupplemented group showed superior outcomes in patient satisfaction, Oxford Knee score, WOMAC score and IKDC score. The mean Oxford Knee score, WOMAC score and IKDC score were 33.5, 72.1 and 43.7 respectively for the viscosupplemented group compared to 31.8, 69.9 and 40.2 respectively for the non viscosupplemented group.

Discussion & Conclusion: The result is not statistically significant due to the small study sample. It is however clinically significant since there were improvements in all 3 clinical scores and patient satisfaction. Coupled with low risk on the patients, surgeons should consider viscosupplementation after arthroscopic microfracture as a routine procedure.

PP-CR-18

Epidemiology of Childhood Psoriasis: Experience within a Multi-Ethnic Asian population

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Background & Hypothesis: Few epidemiological studies exist on childhood psoriasis, and these show population-specific characteristics. We aimed to elucidate the epidemiology of childhood psoriasis in our multiethnic Asian population, and to compare this to present data.

Methods: A retrospective cross-sectional analysis was performed for 315 patients under 16 years of age diagnosed with psoriasis during 8 consecutive years.

Results: There were 183 females and 132 males, with 46% Chinese, 26.4% Malay, 19.4% Indian and 8.6% patients of other ethnicities. The mean age at onset was 7.7 years. The scalp was the most common site involved (65%), followed by nails (38%). Chronic plaque psoriasis was the most frequent subtype (54.3%). Guttate psoriasis occurred in 1.6%. There was a predilection for isolated nail psoriasis in Chinese patients ($P = 0.001$). Seventeen point one percent had a positive family history; this was not associated with a younger age at onset. Hyperlipidaemia was detected in 2 of 6 patients who were screened.

Discussion & Conclusion: In our Asian population, there is a predominance of female gender, chronic plaque subtype and scalp involvement. The incidence is higher in the Indian subgroup when compared to local population proportions. Asian children have a later onset of disease than their Caucasian counterparts. Isolated nail disease was significantly higher in Chinese. A positive family history did not predict an earlier disease onset. The presence of metabolic comorbidities in childhood psoriasis belies a role for screening.

PP-CR-19

Liver Metastasis from Breast Cancer: Is Resection Feasible?

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Background & Hypothesis: Liver metastasis occurs in 6 to 25% of patients with metastatic breast cancer and is associated with poor survival. Improvements in surgical techniques and peri-operative care, and advances in liver imaging, have made resection of liver metastasis a viable option in selected cases. We aim therefore to determine the feasibility of resection of liver metastasis from a breast primary.

Methods: Retrospective review was performed of 131 patients with liver metastasis secondary to breast cancer from 1 January 2002 to 31 December 2009. Suitability for liver resection was assessed based on current standards, including number of liver lesions, albumin levels, liver reserve, fitness for surgery and response to chemotherapy.

Results: In 88% of patients (115 of 131), disseminated disease was present, most commonly in the lungs as well. Only 16 patients had no evidence of extra-hepatic disease, but only 2 were deemed suitable for liver resection. One was a 30-year-old lady with 3 lesions in a single segment which had remained stable after primary chemotherapy. She underwent mastectomy and auxiliary clearance and liver resection at the same setting. The other was a 70-year-old lady, with 3 lesions in 2 adjacent segments; she was however, not keen for surgery. Of the other 14 patients, 9 had diffuse liver metastasis which did not respond to chemotherapy and 5 had poor liver reserves.

Discussion & Conclusion: Liver metastasis from a breast primary is often irresectable because of concomitant extrahepatic disease or diffuse liver involvement. Systemic therapy remains the mainstay of treatment.

PP-CR-20

Laparoscopic Management of Foreign Body Ingestion: A Single-Centre Experience

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Background & Hypothesis: Foreign Body (FB) ingestion remains a common clinical problem managed in a general surgical department. Location, nature, size and presence of complications determine the management of FB ingestion. Laparoscopic surgical management may present as a novel and safe way of management of FB ingestion especially when complicated.

Methods: We present a case series of 4 patients with complicated FB ingestion who were managed laparoscopically between January 2009 and December 2010 (2 years).

Results: All were fish bone perforations of the stomach with 2 concomitant hepatic abscesses. One patient was in septic shock. One patient failed prior attempted endoscopic removal. All underwent laparoscopic removal of the FB with no conversions to open surgery. Mean operative time was 71.3 minutes (55 to 85 minutes). Average postoperative length of stay was 4 days (2 days to 7 days). There was no morbidity or mortality in our study. Mean follow up was 139 days (21 to 206 days).

Discussion & Conclusion: In a separate audit of FB ingestion to our centre, 20% were fish bones and 76% of FB ingestion was managed endoscopically or operatively. 22.2% of FB ingestions were managed operatively with 30% of these patients having failed earlier endoscopic removal. Laparoscopic management of FB ingestion with its relative short operative time and short postoperative length of stay has a role to play as a novel, simple and safe alternative operative technique for patients who present with complicated FB ingestion or have failed endoscopic removal of FB.

PP-CR-21

Antibiotic Usage in the Management of Midface Fractures: Experience of an Asian Institution

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Background & Hypothesis: Craniomaxillofacial trauma is a common presentation to the emergency room. In the management of midface fractures antibiotic usage is important, however controversy lies in the duration of usage. We reviewed the use of postoperative intravenous (IV) antibiotics and its outcomes.

Methods: We retrospectively reviewed 133 patients who were admitted from January 2009 to June 2010 for facial fractures. Ethical board approval was successfully obtained.

Results: There were 99 patients with midface fractures. Forty-three patients underwent Open Reduction and Internal Fixation (ORIF) for their facial fractures; antibiotics were given to all patients as per Surgical Site Infection (SSI) protocol. The mean duration of intravenous (IV) antibiotics usage was 2.9 days (range: 1 to 14 days) and the median length of stay (LOS) was 5 days (mean 12.5; range 1 to 87). Those with simple fractures had an average of 1.5 days of antibiotics and LOS of 4.8 days while those with multiple fractures had 2.9 days and 12.2 days respectively. Patients with surgery done through existing lacerations had IV antibiotics for an average of 5.6 days. Two patients had postoperative wound infections. Our average duration of follow-up is 126 days.

Discussion & Conclusion: The duration of IV antibiotics are not influenced by the length of stay, injury severity score (ISS), presence of comorbidities or the type of implants used, but more likely the complexity of the fractures. The infection risk was not related to the time interval between initial injury and surgery.

PP-CR-22

Tuberculosis Screening with the Interferon-gamma Release Assay at A Tertiary Dermatology Centre

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Background & Hypothesis: The T-Spot.TB is an interferon-gamma release assay (IGRA) which is increasingly used in dermatology as a screen for latent tuberculosis (TB) before initiation of biologics and for confirming diagnosis of tuberculids. This study aims to explore its concordance with tuberculin skin tests (TST) and eventual diagnosis of latent TB.

Methods: We retrospectively reviewed all patients in National Skin Centre (NSC) who had T-Spot.TB testing done between 2008 and 2010. We looked at the dermatological diagnosis, results of T-Spot.TB, TST, chest radiograph findings, tuberculosis status and treatment of TB.

Results: Fifty-one TB T spot tests performed during the study period. Thirty-one tests were for psoriasis patients with the intention of initiating biologics; 8 were for patients with suspected tuberculids, erythema nodosum and TBVC; 3 tests were screens for latent TB in hospital staff; 9 were performed for other reasons. There were a total of 14 positive T-Spot.TB results for which 12 received antituberculous therapy. All patients with erythema induratum had a positive test result. Six patients' T-Spot.TB tests were borderline, indeterminate or could not be interpreted due to insufficient lymphocyte yield.

Discussion & Conclusion: Our study shows the utility of T-Spot.TB test in various conditions seen in dermatology clinics in a local setting. We suggest that the T-spot test can supplant the tuberculin skin test in screening latent TB for psoriasis patients for whom biologics are intended and in erythema induratum. The high incidence of borderline and indeterminate results should not be ignored. This should be taken into account when interpreting the IGRA especially if patients are on immunosuppressive therapy.

PP-CR-23

Prevalence of Vitamin D Deficiency in Hip Fracture Patients: The Tan Tock Seng Hospital Experience

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Background & Hypothesis: Vitamin D deficiency is common in older adults in Western countries. There is a paucity of local data on vitamin D deficiency prevalence amongst hip fracture patients. This study aims to ascertain vitamin D deficiency prevalence and risk factors associated with vitamin D deficiency in hospitalised hip fracture patients.

Methods: We prospectively studied 485 hip fracture patients admitted to Orthopaedic department (1 September 2009 to 31 August 2010). Non-fragility fractures (patients <60 years and those with high-impact injuries) were excluded. Data on patient demographics, comorbidities, functional status and serum vitamin D levels were collected. Vitamin D deficiency was defined by Holick classification (Normal ≥ 30 ; insufficient 20 to 29.9; deficient <20 ng/ml). Statistical analysis was performed using univariate and multivariate analyses.

Results: Vitamin D levels were available for 412 patients. Vitamin D deficiency was present in 57.5% (n = 237) with 19.7% (n = 81) patients being severely vitamin D deficient (<12 ng/ml). Prevalence of vitamin D insufficiency was 142 (34.5%) with only 33 (8%) having normal vitamin D levels. Univariate analyses showed Malay race (OR = 7.7), homebound state (OR = 2.05), bathing assistance (OR = 2.22) and dressing assistance (OR 2.37) were associated with vitamin D deficiency ($P < 0.05$). However, only ethnicity and homebound patients were significant in the multivariate model.

Discussion & Conclusion: Vitamin D deficiency and insufficiency is common amongst hip fracture patients locally. Vitamin D deficiency was associated with being homebound and ethnicity. This initial work warrants further study into ethnic Vitamin D variations and causal interrelationship between function (homebound state) and Vitamin D deficiency state on fragility fractures.

PP-CR-24

Prevalence of Malnutrition in Chronic Haemodialysis Patients: A Reevaluation 10 Years Later

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Background & Hypothesis: Malnutrition is prevalent in patients on chronic dialysis and leads to adverse outcomes. The purpose of this study is to compare the nutrition status of chronic haemodialysis patients at an outpatient dialysis centre in year 2001 and 2011 to determine the change in malnutrition prevalence.

Methods: In the year 2001, the nutrition status of 60 patients was assessed using Subjective Global Assessment (SGA) and serum albumin levels. Renal Nutrition Support Programme involving a dedicated renal dietitian was started in the centre the same year. Ten years later, we evaluated the same measurements for 62 patients in the centre. Fisher's Exact Test and independent t-test were carried out to determine the changes in nutritional status and albumin levels respectively, between year 2001 and 2011.

Results: The mean age of the patients was 58.1±11.8 years old in 2001 and 63.5±11.4 years old in 2011 ($P = 0.011$). The prevalence of malnutrition using SGA decreased from 47% (year 2001) to 31% (year 2011) ($P = 0.07$). The mean albumin levels improved significantly from 33.8±5.0g/L to 37.8±3.7g/L ($P < 0.001$).

Discussion & Conclusion: These findings indicate that the nutrition status has improved since the start of Renal Nutrition Support Programme. We believe that a clinical team with a nutritional focus coupled with concerted intervention by renal dietitians made an improvement in the nutrition status of chronic haemodialysis patients.

PP-CR-25

Thalassaemia Screening on Patients with Mean Corpuscular Volume of More Than 80fl is Not Clinically Significant

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Background & Hypothesis: Thalassaemia screening has an established role in the antenatal screening in many countries, including Singapore, where the carrier rate of thalassaemia is higher. This test is increasingly performed in non-obstetric patients, particularly for the investigation of varying degrees of anaemia. The benefit of this screening in the latter population is largely undefined, especially for those with red cell mean corpuscular volume (MCV) of more than 80fL.

Methods: Results for clinical samples sent for thalassaemia screening to Department of Laboratory Medicine, Tan Tock Seng Hospital, between May 2005 and May 2007, were retrieved from the Laboratory Information System and analysed together with demographic data as well as other available laboratory results.

Results: A total of 3318 samples were available for analysis. Two-thirds of the samples were from female patients. Median age of patients screened was 48 years (male 52 years, female 46 years). More than 80% of the samples screened had MCVs of 80fL or less. Detection rates for thalassaemia /haemoglobin (Hb) variants were 49.2% and 7.1% for samples with MCV less or more than 80fL, respectively. Majority (96.8%) of positive samples had MCVs 80fL or less. The commonest types of haemoglobin disorder detected included alpha thalassaemia trait, beta thalassaemia trait, haemoglobin E (HbE) trait and haemoglobin H (HbH) disease, with >90% of these potentially clinically significant conditions were detected in samples with MCVs 80fL or less.

Discussion & Conclusion: Screening for thalassaemia and other haemoglobinopathies in samples with MCVs greater than 80fL has a low yield and is unlikely to provide additional information on the causes of anaemia.

PP-CR-26

Sociodemographic Profile and Non-Standard Drug Use among Patients from the Tan Tock Seng Hospital (TTSH) Rheumatoid Arthritis and Systemic Lupus Erythematosus Registries

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Background & Hypothesis: The relationship between sociodemographic profile, non-standard drug (NSD) use and disease outcomes among patients with rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE) has not been studied locally.

Methods: Patient sociodemographic characteristics, use of NSD in those who had failed or developed adverse reactions to standard drugs, and disease outcomes from the TTSH RA and TTSH SLE Registries were compared.

Results: Among 1153 RA patients, mean age at diagnosis was 47.5±13.3 years, 84.1% female; 76.6% Chinese and 12.1% Indian. Among 1013 SLE patients, mean age at diagnosis was 31.2±12.2 years, 91.2% were female; 80.6% Chinese and 12.0% Malay. Highest education level attained was secondary and below in 84.3% of RA and 68.3% of SLE patients. Median household income was below SGD3000 in 68.1% of RA patients and 74.2% of SLE patients. RA patients were predominantly homemakers (40.6%) or service industry workers (17.4%); SLE patients predominantly homemakers (27.8%), clerical (18.1%) or service industry workers (12.1%). NSD use among RA patients comprised leflunomide (9.7%), cyclosporine (2.5%) and biologics (1.1%); among SLE patients comprised mycophenolate mofetil (11.0%), cyclosporine (7.4%) and rituximab (2.4%) respectively. At the last study visit, 27.1% of RA patients still had moderate to high disease activity (DAS criteria); whilst 23.3% of SLE patients had moderate to very high disease activity (SLEDAI).

Discussion & Conclusion: Socioeconomic profiles of SLE and RA patients appear to be similar. This may impact their ability to afford NSD, patient-physician concordance in agreeing on treatment targets, and achievement of disease remission.

PP-CR-27

Health Literacy and Knowledge of Chronic Disease

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Background & Hypothesis: Health literacy refers to the ability to obtain, process and understand basic information and services needed to make appropriate health decisions. Low health literacy has been reported to be a barrier to chronic disease prevention and management. This study investigates the relationship between health literacy and knowledge of 3 common chronic diseases among primary care patients.

Methods: We conducted an interviewer-administered survey to measure the health literacy and knowledge of 3 common chronic diseases (asthma, diabetes and hypertension) among adult English-speaking patients at 3 polyclinics. Health literacy was assessed using the local adaptation of the Short-Test of Functional Literacy in Adults (S-TOFHLA Singapore). Chronic disease knowledge was assessed by questions on symptoms and management of the 3 chronic diseases. Bivariate and multivariate analyses were performed to examine the relationship between knowledge scores and sociodemographic factors, presence of chronic disease in self and family members and health literacy.

Results: Response rate was 65%. Of the 302 respondents, 45.8% had a chronic disease and 79.7% had family members with chronic disease. Respondents' knowledge test scores were positively correlated with health literacy scores ($r = 0.20$, $P < 0.001$) and age ($r = 0.23$, $P < 0.001$). On multivariate analysis, age and health literacy scores were significant predictors of high knowledge score but not gender, housing type, educational level nor presence of chronic disease in self or family members.

Discussion & Conclusion: Health literacy is associated with knowledge of chronic diseases. Chronic disease health education and health promotion programmes for patients and caregivers should address health literacy barriers that may reduce the impact of these programmes.

PP-CR-28

Stigma and Health Seeking in Patients with Depression

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Background & Hypothesis: Researchers have been exploring the reasons why some people with depression seek help while others do not. The Modified Explanatory Model Interview Catalogue (eMIC) has been developed to elicit illness-related perceptions, beliefs, and practices in this study. The aim is to investigate and compare the stigma beliefs correlates with choice of health seeking methods in patients with depression.

Methods: Fifty patients were approached and 40 patients with depression were identified using Mini-International Neuropsychiatric Interview (MINI) in Institute of Mental Health (IMH). Modified eMIC was subsequently administered to explore the nature of stigmatizing beliefs about depression and help-seeking. The Montgomery-Åsberg Depression Rating Scale (MADRS) was used to measure the severity of depression.

Results: There were 25 (62.5%) males and 15 (37.5%) females. The mean age of the cohort was 35.5±9.9 years (range 21 to 61) and the mean duration of depressed symptoms was 21.4 weeks. Patients reported high levels of stigma (mean stigma score, 22.1±6.3; range 0 to 36). Main help-seeking methods used by depressed patient with high levels of stigma include mental health professionals (80%), friends/relatives (65%), self care (60%), specialists (55%) and praying (50%). Patients with high stigma scores tended to be more depressed (mean MADRS score, 26±7.7; range 0 to 36).

Discussion & Conclusion: Despite to the high level of stigma, the results shown that majority of patients in the study used mental health professionals and lay help for treatment of their symptoms.

PP-CR-29

Totally Laparoscopic Proximal Gastrectomy with Intracorporeal End to Side Oesophagostomy: a Case Report

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Background & Hypothesis: Traditionally, total gastrectomy has been the standard procedure for proximal gastric cancers. However, optimal extent of gastric resection in these patients is controversial. Advocates of total gastrectomy argue that it allows for better surgical margins and lymphadenectomy while proponents of proximal gastrectomy suggest that it achieves similar survival rates with physiologic and nutritional advantages. We describe a case of totally laparoscopic proximal gastrectomy in a patient with early stage gastric cancer located in cardia.

Methods: A 79-year-old lady with a history of Helicobacter pylori-associated gastritis presented with dyspepsia. She underwent oesophagogastroduodenoscopy which revealed a small ulcer with irregular margins at the cardia. Biopsies of the ulcer were taken which later revealed areas of high grade dysplasia with a focus of irregular glands suspicious for stromal invasion. Staging Computed Tomography scan showed no metastatic disease or intraabdominal lymphadenopathy. She underwent laparoscopic proximal gastrectomy with end to side oesophagostomy.

Results: Her postoperative recovery was excellent, with minimal analgesic requirements and no reflux symptoms. She progressed to normal diet on postoperative day 7 and was discharged well. Histology showed a well differentiated adenocarcinoma with subserosal involvement (T3) There was no lymph nodes involvement (0/21) and margins were adequate.

Discussion & Conclusion: Laparoscopic proximal gastrectomy can be performed safely for early stage cancers in the proximal 1/3 of the stomach without compromising cure rate. It allows better preservation of the physiologic function of the stomach and thus potentially less complications and morbidity from hormonal and nutritional deficiencies.

PP-CR-30

Laparoscopic Excision of a Brunners Gland Hamartoma of the Duodenum: Report of a Case and Literature Review

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Background & Hypothesis: Brunners gland adenoma is a nodular hyperplasia of the normal Brunners gland with an unusual admixture of normal tissues. It accounts for 10% of benign tumours of the duodenum and is better designated as a hamartoma rather than a true neoplasm. It is very rare, with only slightly over 150 cases reported so far in world literature. This is the third reported case to be resected laparoscopically.

Methods: Endoscopy for anaemia in a 71-year-old Chinese male showed a submucosal mass in the first part of the duodenum. Endoscopic ultrasound showed a large submucosal mass arising from the superior wall of the first part of the duodenum. Fine-needle aspiration (FNA) showed spindle and epithelioid cells with no features suggestive of a malignant or neuroendocrine tumour. CT imaging showed a well-circumscribed polypoid mass in the first part of the duodenum. An elective laparoscopic resection of the tumour was performed.

Results: The resected tumour showed lobules of hyperplastic Brunners glands with gastric mucosal glands, oxyntic cells and cyst formation. There was no evidence of cancer. He was discharged well on the 5th postoperative day.

Discussion & Conclusion: The aetiology of Brunners gland hamartoma is obscure. The presentation can be either incidental or symptomatic due to bleeding or obstruction. A preoperative histological diagnosis is usually not possible and the conditions that can mimic it are a duodenal GIST, neuroendocrine tumour or rarely adenocarcinoma. It has no malignant potential. Endoscopic polypectomy is the first choice for small adenomas while laparoscopic wedge resection can be performed for larger cases.

PP-CR-31

Case Series of Thoracoscopic-Laparoscopic McKeown Oesophagectomy in Prone Position

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Background & Hypothesis: Thoracoscopic-laparoscopic McKeown oesophagectomy involves thoracoscopic mobilisation of the intra-thoracic oesophagus, laparoscopic gastric tube creation and cervical anastomosis. We performed our cases with the patient in prone position for the thoracoscopic portion.

Methods: We report 3 cases of thoracoscopic-laparoscopic McKeown oesophagectomy performed successfully in our hospital. Patient A and C were mid-oesophageal cancers while Patient B involved a massive mid-lower gastrointestinal stromal tumour (GIST).

Results: Contrast study did not reveal any anastomotic leak with free flow of contrast into small bowel for patients A and B on postoperative day (POD) 7 and 5 respectively. They were commenced on feeds and progressed to diet before discharging on POD 8 and 6 respectively. Patient C developed myocardial ischaemia managed conservatively in ICU by cardiovascular medicine. An anastomotic leak was suspected when there was a small amount of discharge seen from the neck wound. It was opened up and a collection bag placed over it. Patient C was commenced on parenteral nutrition. Contrast study done on POD 19 did not reveal any leak, he was discharged well on POD 24.

Discussion & Conclusion: Thoracoscopic-laparoscopic McKeown oesophagectomy has its advantages over open oesophagectomy. Placing the patient in prone position allows blood to pool posteriorly where it would not obscure the view of operation. Also with the liver falling away, the entire hiatus can be clearly seen for easy mobilisation of the oesophagus. Having the anastomosis in the neck compared to thoracic anastomosis avoid the dreaded and potentially fatal complication of mediastinitis, as shown in patient C.

PP-CR-32

Rare Case of Late Onset Afferent Loop Syndrome Post Gastrectomy

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Background & Hypothesis: Afferent loop syndrome is a rare complication after Bilroth 2 gastrectomy, late onset has only been described in 3 case reports. We report an 80-year-old lady who was admitted to our department for late onset afferent loop syndrome 20 years after partial gastrectomy for stomach cancer.

Methods: Mdm A was admitted for symptoms of nausea and vomiting, abdominal distension of 4 days duration. CT scan showed a grossly distended duodenal loop. Despite conservative management, patient continued to vomit and had a persistent high output from her nasogastric tube. Oesophagogastroduodenoscopy revealed distended afferent loop and a collapsed efferent loop.

Results: Patient and family were counseled for surgical correction of the afferent loop via laparoscopy. Initial plan was to convert the bilroth 2 reconstruction to a roux-en-Y type. However intra-operative there were dense adhesions in that area, decision was made to perform a laparoscopic jejuno-jejunostomy (Omega loop). Mdm A's symptoms settled postoperative and was discharged well.

Discussion & Conclusion: Late onset afferent loop syndrome is a rare entity, to date only 3 cases have been described in literature. One case associated with a large duodenal stone, the other a duodenal phytobezoar. The last case patient passed away despite emergency surgical conversion to roux-en-Y type. Our case did not have any additional duodenal pathology unlike those described in the literature. One needs to have a high index of suspicion when patient is admitted with symptoms of intestinal obstruction that had previous gastrectomy. Computed Tomography (CT) is the investigation of choice and surgery would be the first choice of treatment.

PP-CR-33

The Effectiveness and Safety of Recombinant Insulin Analogues when Switching from Human Insulins in Primary Care Patients with Diabetes Mellitus: NovoMix® Arm

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Background & Hypothesis: Human insulin in the Novolet pen form was discontinued. Novolet patients had to be switched to newer, recombinant insulin analogues. This study investigated the effectiveness of biphasic insulin aspart 30 / 70 (NovoMix30®) in providing glycaemic control, its safety and its effect on body weight when switched from human premixed insulin.

Methods: This was a retrospective, time-series study. Patients 21 years or older, seeking diabetes treatment at National Healthcare Group polyclinics, previously receiving human premixed insulin for at least 3 months before being switched to NovoMix30® were eligible. Data was collected at 5 intervals: 6 and 3 months before switching (preperiod 1 and 2), at point of switching (index) and 3 and 6 months after switching (postperiod 1 and 2). Glycosylated haemoglobin (HbA1c) and fasting blood glucose (FBG) were collected for primary measures analysis. Change in body weight, hypoglycaemia incidences were collected for secondary measures analysis.

Results: There was a non-significant improvement in HbA1c from index to postperiod 1 ($P = 0.318$) and index to postperiod 2 ($P = 0.689$). FBG showed a non-significant deterioration over 6 months ($P = 0.262$). Gender ($P = 0.576$, $P = 0.583$), comorbidities ($P = 0.680$, $P = 0.386$), and concurrent use of oral anti-diabetic agents ($P = 0.320$, $P = 0.821$) had no effect on HbA1c. The incidence of hypoglycaemia was similar before and after switching. A non-significant reduction in body weight ($P = 0.898$, $P = 0.492$) was shown after switching, with a greater reduction at postperiod 2.

Discussion & Conclusion: NovoMix30® was shown to be as effective as human insulin in controlling HbA1c and FBG. Different patient factors did not have an effect on the efficacy of NovoMix30®.

PP-CR-34

Formal Training in the Endoscopic Recognition of Barrett's Oesophagus (BE) Improves Detection Rate and Increases Diagnostic Yield

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Background & Hypothesis: Preliminary studies conducted by the Asian Barrett's Consortium (ABC) suggested the lack of proper training to recognize the columnar-lined Barrett's segment at endoscopy as the cause of widespread underreporting of BE in Asia. We therefore aim to find out if formal training in the endoscopic recognition of BE improves its detection and diagnostic yield.

Methods: From March to July 2011, endoscopic and histopathologic diagnosis of BE in consecutive patients who underwent upper endoscopy at National University Hospital, Singapore, were evaluated. Histopathologic diagnoses were based on the presence of specialised intestinal metaplasia with goblet cells in biopsy from suspected Barrett's segment. The diagnostic yield by endoscopists trained in the recognition of BE was compared to those untrained.

Results: Totally 1800 patients underwent upper endoscopy performed by 8 endoscopists trained by the ABC in the recognition of Barrett's segment and 20 untrained endoscopists. In all, endoscopic suspicion of 42 (2.3%) BE cases was reported, and 16 patients (0.89%) were histopathologically confirmed with BE. Trained endoscopists performed endoscopy on 658 patients (36.5%) and found 27 (1.5%) endoscopically suspicious BE, 11 of whom (40.7%) were later confirmed to have BE by histopathology. The diagnostic yield (1.67%; 11/658) for BE is 3.8 times higher than that obtained by untrained endoscopists (0.44%; 5/1142) ($P = 0.016$).

Discussion & Conclusion: Formal training in the recognition of Barrett's segment at endoscopy improves endoscopists' detection of BE and leads to higher diagnostic yield. This training could potentially resolve the current underreporting of BE in Asia, and is necessary to study the prevalence of BE in the region.

PP-CR-35

Mandible Fractures: An Asian Institution's Review of Management and Maxillomandibular Fixation

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Background & Hypothesis: Mandibular fracture is a common presentation to the emergency following trauma. However there exists a variety of management when it comes to maxillomandibular fixation, either following internal rigid fixation or conservative management. We discuss our institution's outcomes following mandibular fractures and cases which had maxillomandibular fixation.

Methods: Retrospective review of facial fractures admitted to Tan Tock Seng Hospital from January 2009 to June 2010. Of the 135 patients admitted to our care, 34 patients had mandibular fractures.

Results: The patient's average age was 36.6 years. Five patients presented delayed to our clinic whilst the remaining 29 were acute admissions. All but 8 patients were operated on. All patients underwent surgery within 2 days of admission except for 9 patients. Of the 20 patients who had maxillomandibular fixation, 12 were with arch bars while 8 were with intermaxillary screws. 1 patient developed a sinus tract. Six patients complained of mental nerve numbness more than 1 month from surgery (5 of those had preoperative numbness). Postoperatively; 3 patients had suboptimal mouth opening, one could no longer fit his dentures and 2 had malocclusion.

Discussion & Conclusion: We found that anatomical reduction and fixation greatly reduces the complication of malocclusion. Non-fixation of condylar or subcondylar fractures, with the aid of maxillomandibular fixation, did not lead to significant malocclusion. The duration before removal of the arch bars as compared to the intermaxillary screws were longer, however this is statistically not significant. However prolonged maxillomandibular fixation did lead to some degree of ankylosis and suboptimal mouth opening.

PP-NA-01

Burden of Care Experienced by Caregivers of Older Patients

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Background & Hypothesis: Caregiver burden is defined as the strain or load borne by a person who cares for an elderly, chronically ill or disabled person. The aim of this study was to evaluate the burden of care experienced by caregivers of a cohort of older patients.

Methods: Cross-sectional study of caregivers of patients was newly referred to an outpatient geriatric clinic from November 2008 to November 2010. Caregiver burden was assessed using the short-form Zarit Burden Interview (ZBI). Higher scores indicate higher degree of burden. Descriptive analyses were used to determine the prevalence and nature of caregiver burden.

Results: Two hundred and forty participants were included in the study. Sixty-eight point three percent of the participants were female. Nineteen point six percent of the participants were spouses, 55.8% were children, 4.2% were relatives and 20.4% were domestic helpers. Ninety-eight percent of the participants reported some degree of caregiver burden. The mean ZBI score was 16.15 (range 0 to 43). The participants reported higher degree of stress in the guilt component of ZBI, namely in questions asking if they should be doing more for the patient and if they could do a better job caring for the patient, compared to other questions.

Discussion & Conclusion: In this population of caregivers of older patients, there is a high prevalence of caregiver burden. The caregivers were more prone to feel guilt that they were not doing enough for the patient and they should do a better job caring for the patient.

PP-NA-02

Disposition Status of Asthma Patients after Treatment at Emergency Department at a Tertiary Hospital in Singapore

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Background & Hypothesis: This study was done to evaluate the current care delivery practice for asthmatics seen at emergency department (ED) and proposes possible strategies for improvement.

Methods: A retrospective chart review of all treated and discharged patients who were diagnosed with asthma, was conducted between 1 January 2008 and 31 December 2008.

Results: One thousand three hundred and three patients treated and discharged from the ED were included. The mean age of the study population was 36.2 (± 16.2) years, 52.3% were male and 47.7% were female. Majority (48.3%) of the patients were treated and discharged with no follow-up. Of those that were given follow-up appointments, 220 (16.9%) were referred to polyclinics (OPD) and 41 (3.1%) to general practitioners (GP). Ninety-six (7.4%) patients had a relapse within 30 days of discharge from the ED. The median number of days to relapse was 9 days (IQR 3 to 19 days). Three hundred and twenty-three (24.7%) patients reattended ED within the 1 year follow-up period. Of these, 252 (19.3%) reattended ≤ 2 times and 71 (5.4%) reattended ≥ 3 times. Within the follow-up period, 113 (8.7%) patients required admission for further management.

Discussion & Conclusion: There is a need to address the gaps in the system and we propose possible strategies to improve asthma care for patients seeking treatment at the ED.

PP-NA-03

A Pilot Study to Evaluate Outcome of Asthma Patients' Right Sighted from an Institution to Primary Care Provider (PCP)

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Background & Hypothesis: To evaluate the outcome of asthma patients' right sighted to PCP.

Methods: The study population was asthmatics referred to PCP by the Right-Siting Officer (RSO) from April 2009 to December 2009. We studied health care utilisation and actual follow-up to PCP over a year.

Results: One hundred and fifty-six patients referred to PCP were analysed. The mean age of the study population was 44.9 (SD = 17) years. The multivariate analysis showed Malay has higher number of post ED visits by 0.24 unit as compared to Chinese (95% CI: 0.026 to 0.45, $P = 0.028$) and male had higher number of ED visits by 0.26 units (95% CI: 0.05 to 0.48%, $P = 0.016$). Malay subjects had lower odds of attending follow-up at 6 months with PCP by 0.36 units (95% CI: 0.14 to 0.89, $P = 0.027$) as compared to Chinese, but it was not statistically significant at 12 months ($P = 0.08$). 'Other race' had lowered odds of attending follow-up at 12 months ($P = 0.04$). Patients on Seretide inhaler had 8.07 times higher odds of attending follow-up at 12 months ($P = 0.05$) compared to patients on Becotide inhaler. The asthma control test (ACT) showed for every increase in unit of score resulted in 0.0031 decrease in post ED visits.

Discussion & Conclusion: The study showed a poorer outcome among ethnic minorities, (Malay, other race) were more likely to default PCP follow-up, while patients on combination therapy were less likely. The ACT score was useful in predicting asthma outcome/relapse. This study highlights the important role of a RSO.

PP-NA-04

Role of Parkinson's Disease Nurse Clinician in Managing Parkinson's Disease Patients

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Background & Hypothesis: Parkinson's disease (PD) is a chronic progressive neurodegenerative disorder affecting 3 in 1000 people age 50 and above in Singapore. The number of people with PD is expected to rise as Singapore is an aging population. To provide and facilitate good clinical and comprehensive care to these patients, the first PD nurse was appointed on 1 November 2001.

Methods: An important role of the PD nurse is in providing ongoing comprehensive patient education and assessments to the PD patients. She organises and facilitates the PD support groups meetings with activities to help them express and verbalise their feelings. She supports PD patients undergoing deep brain stimulation surgery through their journey from evaluations, education, postoperative stimulator programming and management. A 1-time anonymous survey forms were given to PD patients to evaluate the educational sessions with the PD nurse.

Results: Forty-nine to 61% (n = 114) of the newly diagnosed PD patients strongly agreed they have a better understanding of PD, its symptoms, prescribed medications and side effects. Forty-five to 55% of the repeat-visit patients strongly agreed they have a better understanding of the disease progression and both groups have benefited from the educational and counseling sessions and the PD nurse is their confidant. Patients had learnt to take responsibilities in managing their conditions.

Discussion & Conclusion: Comprehensive patient education is a critical requirement for PD patients to manage their disease successfully and make informed decisions regarding medical care and post operatively stimulator management. The success of the PD nurse leads to the appointment of an advanced practice registered nurse (APN).

PP-NA-05

Effect of Liaison Nurse on Unplanned Returns to a Medical Intensive Care Unit

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Background & Hypothesis: Patients readmitted within the same hospitalisation (“returns”) to Medical Intensive Care Unit (MICU) may have poor outcomes. A successful discharge addresses risks associated with transition from MICU to general wards. Patients with unplanned returns may have unappreciated signs of clinical deterioration or lapses in continuity of care during transition. Liaison Nurse (LN) was introduced in April 2010 to review MICU patients who were transferred to ward, to detect early deterioration and complications and to liaise continuing care. We evaluated the effect of LN on average monthly unplanned MICU returns.

Methods: MICU admission data from June 2009 to June 2011 were collected. ‘Unplanned’ included cardiopulmonary arrests or sudden deterioration prior to any ward interventions by MICU or Medical Emergency Team. Surgical ICU or emergency department transfers were excluded. We used SPSS for Windows version 18, and comparison by t-test with $P < 0.05$ as significant.

Results: One hundred and twenty-four unplanned returns (66 pre-LN, 58 post-LN) occurred during the period, when there were 689 unplanned MICU admissions. LN reviewed 628 cases. Average monthly number (%) of unplanned returns over all unplanned MICU admissions significantly decreased from 6.6 (24.2%) to 3.9 (14.2%), $P < 0.003$. Average monthly % of unplanned returns over total MICU admissions also reduced, 4.8% vs 3.0%, $P < 0.012$. As expected, average monthly % of unplanned admissions over total MICU admissions was unchanged, $P = 0.938$.

Discussion & Conclusion: LN reviews contributed to a decrease in unplanned returns to MICU. The LN is useful in early identification and intervention of patients who deteriorate after MICU discharge, as well as smoothening gaps in care and management.

PP-NA-06

Patients' Preferences on Nursing Care: Gender of Nurses on Procedures and Perceptions towards Nursing Care in a Sexually Transmitted Infection Control (STI) Clinic in Singapore

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Background & Hypothesis: The study aims to explore patients' preferences for nurses' gender and to determine patients' attitude towards nursing care in a STI clinic.

Methods: Patients seeking treatment at an STI clinic from 23 March to 21 April 11 were recruited for the study. Study participants were asked to complete a self-administered anonymous questionnaire. The data collected included participants' demographics, preference for nurses' gender during triaging and procedures, and participants' attitude towards key attributes in nursing care. Nurse triaging and procedures include history taking, physical examination and treatment of the genitalia, and procedures such as venepuncture and intramuscular injections.

Results: Four hundred and eighty-eight patients (Male: 435, 89%; Female: 53, 11%) participated in the survey. Sixty-two percent of the participants were single. The mean age was 31 years old. The racial composition of the participants was 68% Chinese, 12% Malay, 10% Indian and 10% other races. The participants came from all walks of life. The majority of the participants was local residents and had received tertiary/high school education. Sixty-six percent of the participants reported no preferences for nurses' gender for nursing procedures. Ninety-six percent of female participants preferred nurses of the same gender as compared to 54% of male participants for physical examination and treatment of the genitalia. The majority of participants perceived effective communication, nursing skill and knowledge as the 3 most important attributes in the delivery of nursing care.

Discussion & Conclusion: It is important that healthcare providers continue to seek to understand patients' preferences and perceptions to provide the optimal level of care for patients with STI.

PP-NA-07

Improving the Diabetes Education Outreach for the Patients With Newly Diagnosed Diabetes

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Background & Hypothesis: Lifestyle modification is fundamental to improving outcomes and preventing complications in patients with diabetes. At Hougang Polyclinic, the Care Managers observed that some of the patients with diabetes for many years only received diabetes education for the first time. The 2-month pre-CPIP (clinical practice improvement project) data revealed only 33.3 to 50% of newly diagnosed diabetes received diabetes education. Patients who do not receive early diabetes education may not have an understanding of the disease or disease process. They will not be able to make lifestyle changes to achieve a better control and prevent the early complications. Some of the patients have sub-optimal glucose control when they receive the first diabetes education. The aim of this clinical practice improvement project is to ensure all Hougang Polyclinic newly diagnosed diabetes patients receive the diabetes education.

Methods: The Pre-CPIP workflow and root cause analysis were used to study the reasons of non-referral for diabetes education. A new work process was implemented and PDCA cycles were used to test the work process.

Results: After the intervention, there was 97% to 100% newly diagnosed diabetes received the diabetes education. Seventy-five percent of the patient who had their second glycated haemoglobin (HbA1c) done, maintained and or achieved a better control. Ninety percent of the patients with increased HbA1c were within the optimal control target.

Discussion & Conclusion: Through this CPIP, well-coordinated care was delivered for patients with newly diagnosed diabetes. The team also followed-up on the patients who have missed the diabetes education, to ensure they receive the education on the subsequent doctor's visit.

PP-QHSR-01

Measures of Socioeconomic Status in Singapore

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Background & Hypothesis: Socioeconomic measures (both areal as well as individual) have been shown to be associated with mortality and morbidity of a number of diseases worldwide. The aim of our study was to create Singapore's very own socioeconomic disadvantage index (SEDI), as well as an index of socioeconomic advantage (SAI).

Methods: We obtained socioeconomic data from the most recent Singapore census done in 2010. Variables included housing type, highest educational level, literacy level, occupational categories, industries employed in, personal and household income. We used Principal Component Analysis (PCA) to create the SEDI index. A structured and iterative process was used to identify and include influential variables in the final index. We standardised (SEDI and SAI to have a mean of 100 and SD of 10) and mapped the index to provide ease of interpretation.

Results: From an initial list of 23 variables from the census, we narrowed the list to a final list of 13 variables, including proportion living in 3-room HDB and below, household income less than S\$4000, personal income less than S\$2500 and proportion with primary level of education and below. The towns with top 3 scores in terms of SEDI were Outram (120.1), followed by Rochor (111.0) and Downtown Core (110.4). Towns with top 3 SAI scores were Tanglin (126.7), River Valley (123.7) and Newton (123.5).

Discussion & Conclusion: We have successfully created a socioeconomic disadvantage index and socioeconomic advantage index for Singapore. These indices and the associated health data will allow researchers to better understand the association between socioeconomic status and health.

PP-QHSR-02

Improving Surgical Safety in Operating Theatre

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Background & Hypothesis: World Health Organisation established the Safe Surgery Saves Lives programme to harness political commitment and clinical will to address important safety issues, which have been compiled into “WHO Surgical Safety Checklist”. Implementation of the Checklist has been demonstrably associated with improvements in compliance to basic standards of care. Tan Tock Seng Hospital (TTSH) Operating Theatre (OT) has established work processes and checklist to ensure safe practices are carried out, however there was no 100% compliance. The Singapore Ministry of Health granted a Healthcare Quality Improvement Funding to TTSH (OT) to implement the WHO’s Checklist from August 09 to July 11 for surgical safety.

Methods: Plan-Do-Study-Act (PDSA) cycle approach was taken as the planning and implementing tool. Multiple PDSA cycles were conducted for continuous improvements in the 3-perioperative phases.

Results: Clinical guidelines, process flow and safety checklist were revised accordingly, and there was significant improvements in all areas measured. However the project aim of 100% compliance rate is yet to be achieved in certain areas because of human factors in documentation. Currently the team is working on an electronic documentation with force-in functions to ensure eventual full compliance with the recommended practices.

Discussion & Conclusion: The understanding of surgical safety factors is of paramount importance. Communications of the safety factors, implementation measures, sustaining the changes with the cooperation of the entire surgical team are key success factors. Management support, continuous motivation and education of surgical team members are crucial. Continuous monitoring and evaluation of compliance is important for ongoing improvement.

PP-QHSR-03

A Collaborative Approach to Improve the Safe Use of High-Alert Medications

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Background & Hypothesis: Improvement collaborative, mostly modelled after the Institute for Healthcare Improvement (IHI) Breakthrough Series, are widely used to rapidly improve a targeted area of healthcare. The National Healthcare Group (NHG) adopted this collaborative approach with the aim to achieve breakthrough improvement for safe use of High-Alert Medications (HAM) in our local settings. HAM are drugs that bear a heightened risk of causing significant patient harm when they are used in error.

Methods: A shared-learning mechanism was facilitated through the collaborative. Six institutions, namely Institute of Mental Health (IMH), Khoo Teck Puat Hospital (KTPH), National Healthcare Group Polyclinics (NHGP), National Skin Centre (NSC), National University Hospital (NUH) and Tan Tock Seng Hospital (TTSH), participated in the collaborative. Representatives of each institution formed workgroups within their institutions to drive the improvement efforts based on Plan-Do-Study-Act (PDSA) cycles. Tracking of improvement work was adapted from the IHI's Trigger Tools methodology.

Results: A localised HAM list was developed through local adverse drug events (ADE) reports, literature review, online survey and expert opinion. Change packages comprising evidence-based practices and innovations for handling HAM and improving patient safety culture were developed for 10 HAM drugs/drug classes. Key changes to PREVENT, DETECT, and MITIGATE harm from the use of HAM were implemented.

Discussion & Conclusion: The collaborative has provided a platform for institutions to share innovations, results, and challenges, and to learn from one another. Factors that were keys to the success of this initiative include involvement of multidisciplinary stakeholders and experts, strategic leadership support, establishment of the localised HAM list and sustaining activities such as meetings and learning sessions.

PP-QHSR-04

Cross-Sectional Study of Difference of Burden between Relatives of People with Chronic Mental and Physical Illnesses

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Background & Hypothesis: Burden of care among relatives of people with chronic mental illnesses differs from those having a relative with physical illness. While burden of mental illnesses has been extensively studied, very few studies have compared differences in the burden of mental versus physical illnesses.

Methods: A cross-sectional survey among adult Singapore residents of age 18 years and above assessed the prevalence of mental disorders. Information was collected on chronic illnesses (both mental and physical) among close relatives and this included the perceived care burden, the amount of time spent on performing physical tasks for the ill relative, providing care and emotional support, and financial cost, embarrassment and worry experienced by the respondents. Three hundred and seven respondents having at least 1 relative with mental illness and 1853 with physically ill relative were included. Multivariate analysis was conducted after adjusting for sociodemographic characteristics.

Results: Compared with respondents who had a relative with physical illness, respondents with a mentally ill relative were more likely to experience greater perceived burden of care (OR: 1.68, CI: 1.07 to 2.45, $P = 0.024$), embarrassment (OR: 4.04, CI: 1.45 to 11.23, $P = 0.007$), and worry (OR: 1.94, CI: 1.18 to 3.18, $P = 0.009$), but were less likely to perform physical tasks (OR: 0.48, CI: 0.26 to 0.88, $P = 0.017$). On the other hand, respondents with a relative having physical illness were 1.94 times (CI: 1.14 to 3.81, $P = 0.017$) more likely to carry out physical tasks. No significant differences were found across groups for time spent on care and support and financial costs.

Discussion & Conclusion: Chronic mental illnesses exert significant emotional burden on the caregivers while physical illnesses result in physical strain. Our findings have implications for the development of specific family interventions in the management of chronic illnesses.

PP-QHSR-05

To Measure Post Void Residual Urine Within an Hour after Voiding for All Patients on Diaper in Ward 7B and 7D from July 2010 to February 2011

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Background & Hypothesis: Post void residual urine is the amount of urine remained in the bladder immediately after void. Post void residual urine of >100ml poses a higher risk of urine infection (Tam, Wong & Yip, 2006; Truzzi, Almeida, Nunes & Sadi, 2008). We noticed an increase in the number of incontinent patients having high post void residual urine. The problem arises because the post void residual urine was not measured immediately post void due to the fact that the nurses were unable to determine the exact time of void as patient uses diaper. This gives rise to an inaccurate high post void residual urine volume that leads to unnecessary catheterisation which will also lead to urine infection.

Methods: Using the CPIP methodology, we formed a team to brainstorm, plan, do, study and implement measures. The Cause and Effect Diagram and the Pareto chart enable us to prioritise areas to address. Our interventions were: 1. Staff education to all grades of nurses 2. Introduce enuresis alarm to be placed on the diaper for patient who needed to check post void residual urine. The alarm will sound when wet and thus prompted the nurses to perform bladder scan. 3. Standardise documentation for continuity of care

Results: Since the implementation of the enuresis alarm and the commitment of both the leaders and staff, we are able to achieve better result than the original set goal.

Discussion & Conclusion: Staff's attitude, commitment and role modeling had contributed to the success of this project. It has also enhanced patient's hospitalisation experience

PP-QHSR-06

A Descriptive Study of Persons with Psychiatric Conditions Undergoing the Mandatory Treatment Order program

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Background & Hypothesis: The Mandatory Treatment Order (MTO) program, which became effective in January 2011, aims to reduce the unnecessary incarceration of persons with mental illness as it determines that there is a substantial link between their alleged offense and their abnormal mental state. The courts refer patients for psychiatric assessment suitability for MTO. Once on the program, the patients are followed up closely by a Case Manager for a maximum of 2 years to ensure they comply with treatment and not reoffend.

Methods: The psychiatrist conducts assessment with inputs from the multidisciplinary team to explore patients' suitability for MTO. Data mining of patients on the program from January 2011 to June 2011 was done and the results processed using Microsoft Excel.

Results: Forty-four patients were referred from the courts (26 inpatients and 18 outpatients) out of whom 64% was found suitable for MTO. Demographic profile indicated that there were 75% male and 25% female; with the majority (36%) aged 41 to 50 years. Forty-seven percent had a diagnosis of schizophrenia and 25% depression. Marital status, 57 % single and 39% married. Sixty percent were unemployed. There were 0 defaults and reoffending in the 6 months period although 2 patients sought consultation at the hospital emergency department for social and behavioral related issues.

Discussion & Conclusion: This initial positive clinical outcomes of patients placed on the MTO are encouraging and provides the team with further direction for the MTO program.

PP-QHSR-07

The Role of Intrinsic Motivation in Enhancing Self-Efficacy and Quality of Life in a Group of Low Vision Patient Participating in a Self-Management Programme

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Background & Hypothesis: Self-management programmes were previously found to decrease health problems, enhance quality of life and increase independence (Bodenheimer, Lorig, Holman, & Grumbach, 2002; Lorig et al., 1999). However, there is no evidence in the literature that examined the influence of the participants' intrinsic motivation on the outcomes of such programs. This study examined the relationship of intrinsic motivation to enhance self-efficacy and quality of life among a group of participants in a pilot low vision self-management program.

Methods: A single group pre- and post-test design was employed. Self-efficacy was evaluated using the General Self-Efficacy Scale (GSS), a 10-item scale developed by Jerusalem and Schwarzer (1992). Quality of life was assessed through the Low Vision Quality of Life Questionnaire (LVQoL) (Wolffsohn & Cochrane, 2000). Intrinsic motivation was measured using the Intrinsic Motivation Inventory which contains 22 items based on the 4 underlying dimensions of intrinsic motivation: interest-enjoyment (6 items), perceived choice (6 items), perceived competence (5 items) and pressure-tension (5 items) (McAuley, 1989; McAuley, Courneya, & Lettunich, 1991).

Results: The bivariate Pearson's product-moment correlation coefficient (r) revealed a positive relationship between the female participants' perceived choice and perceived competence, 2 underlying dimensions of the intrinsic motivation inventory. In addition, a positive correlation was observed between the younger participants' perceived competence and the change in their quality of life.

Discussion & Conclusion: The findings provide evidence that it is important to consider the participants' intrinsic motivation for self-management programs to be effective in delivering its objectives albeit further research is necessary to establish this claim.

PP-QHSR-08

Implementation of Influenza Vaccination for Hospitalised Patients with COPD Exacerbation at Time of Discharge

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Background & Hypothesis: Annual influenza vaccination is recommended by Chronic Obstructive Pulmonary Disease (COPD) management guidelines. It has been shown to reduce exacerbations and hospitalisation. In Tan Tock Seng Hospital (TTSH), the influenza vaccination take-up rate noted in patients who were admitted was less than 10%. We carried out a clinical practice improvement project with the aim of ensuring that patients admitted for COPD exacerbation received their vaccination on discharge.

Methods: The project was carried out from November 2010 to May 2011. From discussions, the team members considered all the possible reasons preventing vaccination from being carried out before arriving at the most likely reasons at which we directed our intervention. We developed a strategy to 1) advocate to junior doctors the importance of influenza vaccination, 2) education of patients and 3) track vaccination status of patients on admission.

Results: Following a series of discussions, which included sharing of data and evidence, with the relevant healthcare professionals, there was a significant increase in influenza vaccination in COPD patients at the time of discharge. The tracking system also allowed us to monitor vaccination status of our patients and highlight patients who require vaccination. Over 80% of patients with COPD have received their influenza vaccination at the time of discharge.

Discussion & Conclusion: The success of the project has resulted in influenza vaccination being incorporated into the Clinical Pathway for inpatient management of COPD exacerbation.

PP-QHSR-09

Readmission in Patients with Chronic Obstructive Pulmonary Disease (COPD) in Tan Tock Seng Hospital

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Background & Hypothesis: Chronic Obstructive Pulmonary Disease (COPD) is a chronic lung disease characterised by progressive and irreversible airflow limitation resulting in impairment of lung function and worsening symptoms over time. It was the 9th most common reason for hospitalisation in Singapore in 2009.

Methods: At the Tan Tock Seng Hospital (TTSH), a retrospective study on COPD admissions in 2010 was done. There were a total of 1424 admissions. Of the 654 patients who required hospitalisation, 245 (37.5%) were admitted more than once. One hundred and thirty-eight (21.1%) patients were readmitted within 30 days. COPD is the most common condition accounting for readmission at TTSH. Overall, COPD patients utilised 6604 bed days; the average length of stay was 4.6 days. The overall mortality rate for COPD was 1.9%.

Results: The profile of patients who had readmissions included the following:

1. Male (88%)
2. Elderly (75% aged 65 yrs and above)
3. Advanced disease (FEV1 <50% in 65%)

Although most patients were already on optimal pharmacological treatment, and managed according to clinical pathway in hospital, issues such as staying alone, lack of caregiver and poor coping skills often led to them seeking care at the emergency department.

Discussion & Conclusion: Interventions introduced to reduce readmission included telephonic management, home visits and enrolment into a post acute home care programme to improve the post discharge support of the patient in the community.

PP-QHSR-10

Systematic Review of the Diagnostic Accuracy of the Single, Two and Three Field Digital Retinal Photography for Screening Diabetic Retinopathy

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Background & Hypothesis: Regular eye examinations are important for early detection of diabetic retinopathy. Screening methods include ophthalmoscopy and retinal photography. Digital retinal photography (DRP) is being increasingly adopted as it allows tracking of disease progression. The gold standard is to photograph 7 visual fields, in practice, however, single, 2- or 3- fields are used, to reduce cost and time. A systematic review was performed to compare the effectiveness of the single, 2- and 3- field DRP screening for diabetic retinopathy.

Methods: Databases including Medline, Embase and CINAHL were searched from 1985 to 2008. Studies that used 7-field stereoscopic fundus photography (7SF) or indirect ophthalmoscopy as the reference standard were included. Study appraisal and data extraction were performed by 2 reviewers.

Results: Twenty-two primary studies met the review criteria. Fifteen studies used a single field, 5 applied 2-field and 7 applied 3-field. There was great heterogeneity among the studies. Using 7SF as a reference standard, the sensitivity (for detecting any retinopathy) of the single, 2 and 3 fields ranged from: 66% to 87%, 86% to 98% and 66% to 98%. For indirect ophthalmoscopy, sensitivity ranged from 38% to 100%, 83% to 97% and 90% to 97%. The corresponding specificity for 7SF was 45% to 96%, 78% to 95%, 72% to 86%; for indirect ophthalmoscopy was 47% to 100%, 79% to 100%, 90% to 98%. Five studies comparing more than 1 field type had a general trend of higher sensitivity and lower specificity with increasing number of fields.

Discussion & Conclusion: The review findings are limited by the heterogeneity between studies and the number of studies comparing more than 1 screening type. Evidence for the optimal number of screening fields is not conclusive.

PP-QHSR-11

Examining Specialty Differences in Inpatient Diabetes Patient Characteristics and Management in a Tertiary Hospital

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Background & Hypothesis: Approximately 30% of admissions to Tan Tock Seng Hospital are diabetes-related. Evidence suggests that the provision of a dedicated diabetes team can improve several aspects of inpatient diabetes care. This is a preliminary study to examine the patient characteristics and differences in glycaemic management between surgical and medical disciplines; in aim to direct healthcare resources in improving diabetes care and outcomes.

Methods: Data for patients admitted in March 2011 to a typical surgical and medical ward were collected for demographics, comorbidities, presence of diabetes, recent glycosylated haemoglobin (HbA1c) (<2 months), and capillary blood glucose values (CBG). We defined “at risk” diabetes patients as HbA1c >10%, CBG >16mmol/l or <4mmol/l. Ideal range of CBG was taken as 6 to 12mmol/L.

Results: Two hundred patients were examined (90 surgical vs 110 medical). Similar proportions of admissions in each ward had comorbidity of diabetes (46.7% vs 46.4%). A greater percentage of surgical patients were classified to be “at risk” (50.0% vs 27.5%, $P < 0.05$). The average HbA1c of diabetic patients was higher for the surgical ward (8.5% vs 7.4%, $P < 0.05$). Patients not achieving target CBG were significant for both disciplines (85.7% and 57.1%).

Discussion & Conclusion: This study suggests that surgical wards in our hospital have a larger percentage of diabetic patients “at risk” with greater dysglycaemia compared to the medical wards. The allocation of limited resources such as a dedicated inpatient diabetes care team should first be directed to surgical disciplines.

PP-QHSR-12

Women Seeking Prenatal Care in Polyclinics

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Background & Hypothesis: A study was done to determine the profile of the women seeking prenatal care in polyclinics.

Methods: A 2-week study was conducted in 1999 at all polyclinics. A questionnaire was filled up for each antenatal patient seen during the period.

Results: There were 580 patients, of which 39.3% (228) were Chinese, 45.9% (266) were Malays, 9.8% (57) were Indians while 5.1% (29) were other races. The majority [41.2% (239)] were from 25 to <30 years age-group, followed by 30 to <35 years age-group [28.6% (166)], 20 to <25 years age-group [17.6% (102)], 35-years-and-above age-group [7.1% (41)] and <20-years age-group [5.5% (32)]. Most lived in 4- or 5-room subsidised flats [56.4% (327)]. The rest were in 2- or 3-room subsidised flats [35.5% (206)], 1-room subsidised/rental flats [3.6% (21)], unsubsidised flats [1.9% (11)] and private housing [1.4% (8)]. There were 33.6% (195) Primigravidae, 32.9% (191) with 1 child, 20.3% (118) with 2 children, 9.8% (57) with 3 children, 2.6% (15) with 4 children and 0.7% (4) with 5 children. Average haemoglobin (g/dl) at first visit was 12.18 for Chinese, 11.83 for Malays, 11.81 for Indians and 11.93 for others. Average haemoglobin (g/dl) was 12.08 for primips, 11.94 for those with 1 child, 12.04 for those with 2 children, 11.92 for those with 3 children and 11.07 for those with 4 children. Average gestation at first visit was 12.3 weeks.

Discussion & Conclusion: Antenatal patient at polyclinic was likely to: be 25 to <30 years old, live in 4- or 5-room subsidised flat, be a primigravidae or have one child. Another study could be repeated for health services planning purposes to see if the profile has changed.

PP-QHSR-13

Pattern of Rheumatic Diseases Seen in an Outpatient Rheumatology Centre — Is Right-Siting to Primary Care Possible?

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Background & Hypothesis: Information on the pattern of rheumatic diseases seen in the local rheumatology specialist outpatient clinic (SOC) is important for planning specialist manpower norms and right-siting of care.

Methods: A cross-sectional investigation was carried out in patients with rheumatological diagnosis during the study period 1 January 2008 and 31 December 2008. Data were obtained from the Clinician Computerised Order Entry (CCOE) system.

Results: Among 38,027 outpatient attendances, majority of patients were female (76.1%), Chinese (77.6%), and within the 45 to 65 year age group (48.7%). Elderly (age >65 years) comprised 20.3%. Inflammatory arthritides (IA, 40.3%) and connective tissue diseases (CTD, 37.9%) were the most common conditions managed. Among IA, rheumatoid arthritis (RA, 67.3%), psoriatic arthritis (16.2%) and ankylosing spondylitis (7.6%), undifferentiated spondyloarthritis (3.0%) and undifferentiated inflammatory arthritis (2.8%) were the most common. Among CTD, systemic lupus erythematosus (SLE, 71.4%), Sjogren's syndrome (12.7%), systemic sclerosis (4.5%) and antiphospholipid syndrome (4.0%) were the most common. Gout comprised 4.3%, osteoarthritis 4.3% and osteoporosis 4.1% of all SOC attendances. Idiopathic inflammatory myopathies comprised 1.4%, dermatomyositis (72.8%) being the most common. Systemic vasculitides comprised 1.1% with undifferentiated systemic vasculitis (32.3%), Churg-Strauss syndrome (30.3%), and Henoch-Schonlein purpura (25.5%) being most common.

Discussion & Conclusion: IA and CTD comprised 78.2% of SOC attendances in contrast to gout, osteoarthritis and osteoporosis which comprised 12.7%. Uncomplicated gout, osteoarthritis and osteoporosis can potentially be managed in primary care, freeing up SOC resources and specialists' time to focus on managing IA and CTD.

PP-QHSR14

Patient Satisfaction on Venepuncture Service

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Background & Hypothesis: To assess the patient satisfaction on the venepuncture service at the National Skin Centre (NSC).

Methods: The patient satisfaction on venepuncture service survey was carried out using questionnaires from 1 April 2011 to 29 April 2011 at the Subsidised Clinic, Private Clinic and Sexually Transmitted Infection Control (STI) Clinic. The data collected included the participants' demographic, pre and post procedure fear score, expected waiting time at peak hours, number of prick(s), perception of the nurse's skill in venepuncture, types of discomfort experience after venepuncture, and participants' overall experience in venepuncture service. The data collected was analysed using Microsoft Excel.

Results: One hundred and two participated in the survey. The mean age of the participants was 37. Sixty-two percent were male and 38 % were female, and in term of ethnicity, 62% were Chinese, 13% were Malay, 17 % were Indian, and 6% were from other races. Two percent of the questionnaires had incomplete data. Ninety-four percent required only 1 attempt for a successful venepuncture. Majority of the participants experienced fear and pain on venepuncture. The mean waiting time of participants' willingness to wait at peak hours was 20 minutes. Six percent of participants reported discomfort on the next day with signs of bruises, aching, rash and mild numbness. Forty-eight percent of staff were graded by participants with excellent skills in venepuncture. The Subsidised Clinic received the highest satisfaction score in venepuncture service.

Discussion & Conclusion: The study provides a snapshot of the venepuncture service at the outpatient clinics and allows healthcare providers to seek continuous improvement to meet the patients' expectation.

PP-QHSR-15

Burn-out in Hospital Registrars

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Background & Hypothesis: Burn-out is a significant issue faced by doctors and is key theme in the study of doctors' well being. Burn-out is defined as emotional exhaustion, cynicism and inefficacy. It impacts on career attrition and patient care related outcomes. Studies have found that approximately 40 to 60% of doctors suffer from burnout. It is hypothesised that the prevalence of burn-out in our local setting is similar to that found internationally. We also postulate that burn-out is linked to high work demands and lesser work experience in the Singapore health system.

Methods: An anonymous survey was distributed to the Registrars working in the different hospital divisions. The survey comprised (i) general demographics (ii) Maslach Burnout Inventory (Human Services Survey).

Results: The survey is ongoing. Twenty doctors have responded to the survey thus far. Burn-out scores will be calculated for the 3 parts of the Maslach Burnout Inventory, (i) Emotional Exhaustion (ii) Depersonalisation and (iii) Personal Accomplishment.

Discussion & Conclusion: The data collected will allow us to gain knowledge on the well-being of doctors. It will help identify modifiable factors that are associated with burnout. We aim to utilise the knowledge gleaned as stepping stones for the development of doctors' support programmes in the hospital.

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