

NHG 1

Cost-effectiveness Analysis of Various Colorectal Cancer Screening Strategies in Singapore

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Aim: Colorectal cancer is the most frequent cancer in Singapore. Early detection of colon polyps and cancer has been shown to be effective in reducing colorectal cancer mortality. We performed a cost-effectiveness analysis in the Singapore context to determine the optimal colorectal cancer screening strategy.

Methods: Cost-effectiveness analysis was performed by Markov Model simulation on cohort of Singapore population with average risk from 50 to 70 years old (n = 700,000 with assumed 60% compliance) using TreeAge Pro 2006 software. Comparison was made, using societal perspective, between 1) No screening; 2) Annual stool occult blood (immunochemical test); 3) Double contrast barium enema every 5 years; and 4) Colonoscopy examination every 10 years. Data sources were obtained from local healthcare data and relevant studies from PUBMED. Analysis was from societal perspective.

Results: Stool occult blood was the most cost-effective screening strategy with an Incremental cost-effectiveness (ICER) ratio of \$9850/Quality Adjusted Life Years and save 1100 colorectal cancer death compared to no screening. Colonoscopy examination every 10 years has the greatest impact in reducing mortality saving up to 2600 cancer deaths while still remaining cost effective (ICER over no screening: \$14680/QALY, ICER over stool occult blood \$24400/QALY). Cost effectiveness is most sensitive to compliance, incidence of colon polyps/cancer as well as cost of colonoscopy.

Conclusion: Colorectal cancer screening is potentially life saving in Singapore. Colonoscopy examination every 10 years is the most effective strategy and is cost-effective. Annual stool occult blood examination is cheaper but saves fewer lives. Clinical trials evaluating population compliance are needed to realise this life saving potential.

NHG 2

Does Reduction of Coenzyme Q10 With Simvastatin Treatment Play a Role in Statin-induced Hepatopathy?

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Aim: Atherosclerotic cardiovascular disease (ASCVD) causes significant morbidity and mortality. Hypercholesterolemia is a risk factor for ASCVD and HMG CoA reductase (HMGCR) inhibitors (statins) are potent cholesterol lowering agents. Statin use is limited by side-effects of myopathy, hepatopathy. Statins inhibit synthesis of mevalonate, a precursor for cholesterol and coenzyme Q10 (CoQ₁₀). The study aimed to access the: a) Effect of simvastatin on mitochondrial CoQ10 in HepG2 cells; b) If reduction of CoQ10, was associated with increased cell death and oxidative damage; and c) If supplementation of CoQ10 would limit cell death and oxidative damage

Methods: Confluent HepG2 cells were treated with simvastatin (0-10 uM). Experiments were repeated with/without Q10 supplementation. Mitochondria harvested from treated cells, Q10 measured using HPLC; HMGCR activity measured based on published methodology using radioisotopes; DNA oxidative damage by immunohistochemistry; ATP synthesis by bioluminescent assay kit; cell viability by MTT assay.

Results: Simvastatin reduced HMGCR activity by 80%. Highest dose simvastatin increased cell death 13%, compared to untreated cells ($P < 0.001$), and dose-dependently reduced total CoQ10 by 90%, ($P = 0.001$). This was associated with an increased degree of oxidative stress to nuclear DNA, as quantified by 8-OHdG staining in nucleus ($P < 0.001$). Increasing concentration of simvastatin from 1 mM to 10 mM reduced ATP synthesis by 7% to 80% respectively ($P < 0.001$). Q10 supplementation improved deleterious effects of high-dose simvastatin.

Conclusion: In HepG2 cells, simvastatin at higher concentrations is associated with a reduction in CoQ10 levels and ATP synthesis, and a moderate increase in DNA oxidative damage and cell death. Q10 supplementation during simvastatin treatment is protective in HepG2 cells.

NHG 3

Predictive Value of Simple Clinical and Laboratory Variables for Dengue Hemorrhagic Fever in Adults

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Aim: In 2004, Singapore experienced its worst dengue outbreak in 30 years, putting pressure on hospital beds and manpower. This study aimed to determine clinical and laboratory predictors of dengue haemorrhagic fever (DHF) upon first presentation to hospital.

Methods: A retrospective cohort study was conducted on laboratory-confirmed dengue patients admitted to Department of Infectious Diseases, Tan Tock Seng Hospital in 2004. Demographic, clinical, laboratory and radiological data were extracted from chart review, and dengue patients were categorised into dengue fever (DF) and DHF. To determine the likelihood that cases upon presentation would develop DHF, variables upon first presentation were compared. Multivariate analyses were conducted to determine significant variables while adjusting for confounders.

Results: There were 1973 laboratory-confirmed dengue patients – 118 (6.0%) were DHF, of which 82 (4.2%) developed DHF during hospitalisation. From the multivariate model, patients with bleeding had an odds ratio (OR) of developing DHF 237.6 times that of DF, a unit decrease in total protein (g/L) had an OR of 1.28 times, a unit increase in blood urea (mmol/L) had an OR of 1.31 times, and a unit decrease in lymphocyte proportion had an OR of 1.08 times. Using a defined cut-off, the model had a sensitivity of 97.6%, specificity of 60.2% and overall accuracy of 61.8%. Using the algorithm developed may reduce dengue admissions by 1,118 (56.7%).

Conclusion: A few easily available clinical and laboratory results may help clinicians in determining need for admission for dengue patients. This may result in cost savings while optimising care.

NHG 4**Positive Effect of the Severe Acute Respiratory Syndrome (SARS) Epidemic on Late-onset Sepsis in a Singaporean NICU****K NIDUVAJE¹, J LEE¹**¹*Department of Neonatology, National University Hospital, Singapore*

Aim: In March 2003 there was an outbreak of SARS in Singapore characterised predominantly by nosocomial transmission of the virus. We hypothesised that infection control education and measures implemented would decrease the incidence of other nosocomial infections. The aim of this study was to determine if there was a change in late-onset sepsis (LOS) rates in very-low-birthweight (VLBW) infants after the SARS epidemic.

Methods: This was a prospective study of all VLBW infants (<1500 g) admitted from July 2001 to June 2006. All episodes of blood culture proven sepsis were documented until discharge or death. LOS was defined as infection occurring >72 hours after birth. Comparison was made between 2 periods (before and after January 2003).

Results: There were 45 episodes (20.2%) of LOS in 223 VLBW infants admitted during the study period. Yearly trend showed a significant difference in the incidence of LOS between time periods 2001-2002 (31.7%) and 2003-2006 (13.5%) [RR 2.35, 95% CI 1.40 to 3.96, $P=0.002$]. Coagulase negative staphylococcus (CONS) was the most common pathogen accounting for 55.6% (25/45) of cases. Factors which could affect LOS rates remained similar between the 2 periods: proportion of ELBW and outborn infants, central line use and NICU occupancy. There were no changes to the NICU infection control protocol between the two periods.

Conclusion: The incidence of LOS among VLBW infants decreased precipitously from year 2003. We speculate that this may be due to heightened awareness of the importance of infection control and a subsequent mindset change of NICU personnel following the deadly SARS threat.

NHG 5**A Robotic Slave-Manipulator to Facilitate Natural Orifice Transluminal Endoscopic Surgery****KY HO^{1,2}, SJ PHEE⁴, BY SO³, SC CHUNG³**¹*Department of Medicine, Yong Loo Lin School of Medicine, National University of Singapore, ²Department of Gastroenterology & Hepatology, National University Hospital, Singapore, ³Department of Surgery, Yong Loo Lin School of Medicine, National University of Singapore, ⁴School of Mechanical & Aerospace Engineering, Nanyang Technological University, Singapore*

Aim: Performing natural orifice transluminal endoscopic surgery (NOTES) is challenging with current endoscopy system because of lack of maneuverability. We designed a robotic master-slave manipulator system that could surmount this constraint.

Methods: The slave manipulators come with advanced articulations equipped with nine degrees of freedom for improved control of endoscopic instruments. They are attached onto the end of the endoscope, and the entire manipulators-endoscope system can be fitted into an overtube with an internal diameter of 22 mm. Designed to be anthropomorphic to the human arms, the slave manipulators simulate natural upper limb motion. The endoscopist needs only control the two arms at the remote master console. Movements of the arms are captured by strategically placed sensors and translated into force signals by a computer console to drive the end-effectors. Actuation is by a tendon-sheath mechanism.

Results: In a preliminary evaluation of the system in a simulated endoscopic submucosal resection in a porcine stomach mounted on the Erlangen model, we showed that it is able to perform maneuvers such as tissue grasping, retraction, and cauterization in a precise and controlled manner.

Conclusion: The robotic enhanced endoscopic system, which is the first of its kind in the world, was able to reproduce precisely the upper limb movements of the operator inside the stomach, and this translated into intuitive control of the endoscopic instruments, which allowed an effortless execution of intricate maneuvers. We expect that when ready, the system would be in position to support NOTES, the next wave of surgery.

YIA 1

Validation of a Simple Nutrition Screening Tool (NUHONS) With Subjective Global Assessment (SGA) in Hospitalised Patients

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Aim: It is important to detect and treat malnutrition in hospital patients so as to improve clinical outcome and reduce hospital stay. The National University Hospital Objective Nutrition Screening (NUHONS) was developed with a simple objective scoring system to pick up important malnutrition signs or risks within 3 minutes. The aim of this study was to validate the NUHONS using an established nutritional assessment tool, Subjective Global Assessment (SGA). We also tested the sensitivity and specificity of a revised version, NUHONS 123, omitting the column "diseases with nutrition risks".

Methods: Eight-hundred and eighteen newly admitted patients aged 18 to 74 years were screened for nutritional risk using the NUHONS. Four criteria that contribute to the risk of malnutrition were assessed in NUHONS using quantitative scores. A dietitian blinded to the NUHONS scores assessed the same patients using SGA within 48 hours. Pearson's Correlation was used to investigate the relationship between NUHONS / NUHONS 123 and SGA. The sensitivity and specificity were established using the Receiver Operator Characteristics (ROC) curve.

Results: NUHONS and NUHONS 123 had good correlation with SGA ($r = -0.745$, $r = -0.768$ respectively, $P < 0.001$). The best cut-off point to identify malnourished patients for NUHONS was 5 and for NUHONS 123 was 3. At these cut-off points, NUHONS had 79% sensitivity and 91% specificity. NUHONS 123 had a sensitivity of 86% and specificity of 83%.

Conclusion: NUHONS 123 and NUHONS demonstrated good sensitivity and specificity with SGA to identify malnourished patients. NUHONS 123 can potentially be a simple tool to screen patients' nutritional status in hospitals.

YIA 2

Increased B7-1 and Toll-like Receptor-4 (TLR-4) Expression in An IL-13 Overexpression Rat Model of Minimal Change-like Nephropathy (MCN)

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Aims: Our previous studies have shown that over-expression of *IL-13* gene leads to podocyte injury with downregulation of nephrin, podocin and dystroglycan and concurrent upregulation of B7-1 in the glomeruli, inducing MCN. This could either be due to a direct effect of IL-13 signaling on the podocyte, or a consequence of IL-13-induced B7-1 danger signaling function. This study examined the relationship between upregulation of B7-1 expression and TLR-4 gene expression in the *IL-13* overexpression model of MCN.

Methods: Recombinant rat *IL-13* gene was inserted into a mammalian expression vector, pCI, and transfected into Wistar rat quadriceps by *in-vivo* electroporation weekly till sacrifice at day 72. Glomerular

gene expression of nephrin, podocin, dystroglycan, IL-13 receptor subunits, B7-1 and TLR-4 were examined using real-time PCR and expressed as an index against β -actin.

Results: While glomerular gene expression was significantly upregulated for IL-4R α , and IL-13Ra-2, and downregulated for nephrin, podocin and dystroglycan, B7-1 gene expression index (mean \pm SEM) was also upregulated in the *IL-13* transfected rats (0.011 \pm 0.001) compared to controls (0.005 \pm 0.001) ($P < 0.05$). The nephrotic rats showed strong patchy glomerular staining for B7-1 on immunofluorescence. Concurrently, glomerular gene expression of TLR-4 was significantly higher in the *IL-13* transfected rats (0.0011 \pm 0.00004) than in controls (0.0008 \pm 0.00005) ($P < 0.001$). B7-1 expression in *IL-13* transfected rats correlated significantly with serum IL-13 levels ($r = 0.57$, $P < 0.01$), as well as TLR-4 ($r = 0.50$, $P = 0.001$).

Conclusion: The strong expression of B7-1 associated with TLR-4 in the glomeruli of nephrotic rats suggests that this could be the signaling mechanism through which IL-13 induced podocyte injury occurs.

YIA 3

Using Mathematical Programming to Optimise Bed Occupancy by Smoothing Elective against Emergency Admissions

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Aim: Beds are critical resources in any hospital operations. However, many hospitals experience cycles of peaks and troughs of bed occupancy over a week due to admission and discharge patterns. The aim of this study was to optimise inpatient bed occupancy in the National University Hospital (NUH) by balancing elective admissions against emergency admissions, without changing existing operating theatre schedules.

Methods: The peaks of elective admissions often coincide with those of emergency admissions, further aggravating the bed tight situation. NUH has taken a number of initiatives to reduce the variations. One of these, based on lean concept, was to increase flow by conducting a few of each type of operations (i.e. day surgery, same day admission, and inpatient admission) each day instead of one type on the same day. We studied past operating theatre utilization and redistributed the operations to reduce overall hospital peak bed occupancy, while keeping the same operating hours for each specialty on each day. To perform the computations, we developed a mathematical model and solved it with an optimization solver ILOG CPLEX.

Results: After implementation, while total elective admissions remained constant, peak elective admissions (Monday and Tuesday) were reduced by 9% to 15%, while that on relatively lull days (Thursday and Friday) were increased by about 30%. On a daily basis, the frequency of high occupancy was reduced by 7%, despite overall admissions being increased by 9%.

Conclusion: Lean theory and mathematical models can be employed to help hospitals achieve better patient flow without increasing resources.

YIA 4

Factors Affecting Delays in Discharge of Post-stroke Patients in a Rehabilitation Centre

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Aim: To identify factors affecting delays in the discharge of post-stroke patients in a rehabilitation centre.

Methods: The setting of each patient's estimated discharge date occurs within the first week of admission. In this study, delay in discharge is deemed to have occurred when the patient exceeds this planned length of stay. A retrospective casenotes review was conducted for post-stroke patients admitted to the rehabilitation centre between 1 October 2005 and 31 December 2006 to obtain information on demographic profile, living and caregiver arrangement, functional and cognitive status, medical history, and factors delaying discharge.

Results: A total of 329 patients were studied, of whom 38% exceeded their planned length of stay. Their mean age was 62.3 years, 45.6% were female, 84.0% were Chinese, 75.2% presented with ischaemic stroke and mean Functional Independence Measure motor and cognitive sub-score at admission was 29.0 and 21.1 respectively. The mean length of stay was 42.1 ± 17.0 days and mean length of delay was 12.6 ± 13.1 days. 47.2% were discharged home with domestic helpers as caregivers. The 2 most common reasons contributing to delayed discharge were requests from patients or their families for extension of stay (51, 37.7%) and caregiver-related issues (45, 33.3%). 11.9% and 7.4% of the delays were attributable to healthcare system factors and medical complications respectively.

Conclusion: Delays in discharge were largely due to patients and their families feeling unprepared for discharge. Strong reliance on foreign domestic helpers as caregivers has resulted in delays in discharge as families await their arrival.

YIA 5

Impacts of an Ageing Population: Elderly Patients in the Emergency Department

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Aim: To provide a profile of elderly patients attending the emergency department (ED) and outline the challenges facing emergency clinicians and policy-makers to aide future decision-making.

Methods: This is single-centre prospective observational study in Tan Tock Seng Hospital's Emergency Department. Electronically-captured demographic, diagnosis, disposition and test utilisation data were supplemented by case-notes review of all presenting symptoms. To further investigate challenges facing clinicians, clinicians from the ED were invited to participate in focus groups. This qualitative information was transcribed and analysed thematically using NVivo 7 (QSR international)

Results: 11,533 patients attended the ED during a 2-month period in 2006. Of these, 24.7% were over 65 years old, and 14.1% over 75 years old. Seventy-two per cent of patients over 85 years were admitted to hospital. Seventy-five per cent had at least 1 chronic disease, and over 25% had 2 or more co-morbid conditions. Ten diagnoses accounted for 42% of elderly patients, with 10.2% diagnosed with pneumonia. Staff indicated that they had not received much formal geriatric-specific training prior to working in the ED. Of the 60 clinicians interviewed, all mentioned communication, co-morbidities and lack of sub-acute care as challenges.

Conclusion: The high proportion of elderly patients, with co-morbidities and atypical presentations attending the ED is further complicated by language barriers in taking good histories, a lack of pre-clinical geriatric emergency training and a shortage of subsidised sub-acute facilities. These factors must be considered in manpower, recruitment, training provision and the down-stream effects on inpatient numbers in existing and future EDs in Singapore.

A 1

A Prospective Study on Submaximal Bicycle Test in Patients With Coronary Heart Disease After Cardiac Rehabilitation Programme

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Aim: To ascertain the difference in submaximal bicycle test results in patients with coronary heart disease after attending the cardiac rehabilitation programme.

Methods: This is an ongoing prospective pre-post study conducted from January 2006 to June 2007. The patients attended ten 2-hour sessions of cardiac rehabilitation over a period of 4 to 6 weeks in an outpatient (hospital-based) setting. The patients had either undergone surgical management (angioplasty or coronary artery bypass graft) or medical management. The primary outcome was submaximal bicycle test. Generalised estimating equations were applied to ascertain if there was an improvement in the score. Analysed with Stata 9.0 (Stata Corp, Texas, USA), all statistical tests were conducted at 5% level of significance.

Results: The preliminary analysis involved the results of 93 patients who completed the programme. The majority were male (87.1%) and the average age was 58.7 years. There was significant improvement in the submaximal bicycle test result (baseline: 56.8 W, final: 70.3 W; $P < 0.01$). Male patients had a higher final score when compared with their female counterparts ($P: 0.04$), after adjusting for body mass index, age, educational talk attendance and type of management. Similarly, younger patients also had a higher final score ($P: 0.01$).

Conclusion: There was evidence suggesting that the rehabilitation programme was effective in improving patients' submaximal bicycle test performance.

A2

An Exploration of the Occupational Needs of the Stroke Patients and Families Attending NUH Outpatient Occupational Therapy Clinic

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Aim: Stroke often results in physical, psychological and functional limitations that impede on the lives of people and their carers lives. The objective of this evaluation study was to investigate the occupational needs of the stroke patients and their families who were attending the stroke outpatient occupational therapy clinic in NUH. The intended outcome was to modify the programme to suit their needs.

Methods: Purposive sampling of all stroke patients and their families included those who were receiving outpatient occupational therapy as of 1 September 2006 to 30 November 2006. A survey instrument that comprised both quantitative and qualitative methodology was used for data collection.

Results: Ten patients' and 9 families' questionnaires were obtained, indicating a response rate of 66.7%. Through inductive analysis of the open-ended questions, themes and categories of analysis emerged from the data. It was found that patients were most concerned about their productivity activities, leisure activities and community mobility which centred on the theme of independence. Goal setting and discharge planning emerged as the least familiar aspect of the rehabilitation process to patients and families. Their feedback indicated that limited information about the rehabilitation program was given to them by their referring physicians.

Conclusion: This study highlights the need to establish clinical guidelines to ensure that collaborative goal setting and discharge planning are negotiated early in outpatient rehabilitation, and that the specific occupational needs of the patients are addressed during the program. In addition, other programs targeting the carers' stress management were needed. Future larger studies are needed to better understand the needs of the stroke patients and their families in the tertiary rehabilitation period.

A 3

Measuring Clinical Improvement Outcomes in a Cohort of Case Managed Patients

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Aim: The brokerage model of case management introduced to the acute psychiatric wards in IMH aims at coordinating, integrating and allocating individualised quality care. This paper provides socio-demographic profile of 154 patients case managed in the acute wards from June to December 2006 and reviews clinical outcomes in terms of symptom improvement and social functioning achieved.

Methods: A survey form was designed to capture the socio-demographic profile of patients. Clinical improvement outcomes were measured using the Clinical Global Impression scale (CGI) and Global Assessment of functioning scale (GAF). The Case Managers were trained to use and administer both scales. CGI assessments were conducted on admission, discharge and 3 months later and GAF on admission and discharge. Data was analysed using SPSS.

Results: Patients were aged between 19 and 69 years (mean, 44). 48.7% were single, 39% married and 12.3% widowed/divorced. The majority (51.2%) had schizophrenia. Hospitalisation during case management intervention ranged from 2 to 176 days with an average length of stay (ALOS) of 23 days. Only 16 patients (10.4%) were readmitted within 3 months of discharge (ALOS 1.93 days). 96.8% of patients scored 4-6 on the CGI on admission. This improved to 1-3 for 99.4% of the 154 patients at discharge and 100% of 80 patients at 3 months ($P = 0.01$). Patients improved on the GAF scale with 79.2% scoring between 16-49 at admission and 74% between 70-85 at discharge.

Conclusion: The significant clinical improvements and reduced readmissions are encouraging results. Close monitoring of clinical outcomes is crucial for the viability of the service.

B 1**Development and Validation of Serum and Plasma Protein Fingerprints for Early Diagnosis for Epithelial Ovarian Cancer over a Three-year Time Period****N KOTHANDARAMAN¹, VB BAJIC², S KOH, K RAZVI³, I ARUNACHALAM¹, AND M CHOOLANI¹**¹Obstetrics and Gynaecology Department, Diagnostic Biomarker Discovery Laboratory, National University Hospital, Singapore, ²South African National Bioinformatics Institute (SANBI), University of the Western Cape, South Africa, ³Southend Hospital NHS Trust & Basildon & Thurrock University, UK

Aim: The 5-year survival of patients with late epithelial ovarian cancer (EOC) is less than 30%. We hypothesised that early EOC has a distinctive serum/plasma protein-profile signature that would distinguish it from normal individuals, and patients with benign ovarian cysts (BOC) and late EOC and if found reproducible over extended periods of time this technique would have the potential to replace conventional screening tools for EOC such as CA125 and ultrasound.

Methods: We analysed 123 plasma (13 early EOC, 34 late EOC, 41 BOC, 35 healthy controls) and 101 serum samples (7 early EOC, 18 late EOC, 41 BOC, 35 healthy controls). Hydrophobic proteins were fractionated using organic solvents on H4 protein chip and were subjected to Surface Enhanced Laser Desorption/Ionisation Mass Spectrometry. We carried out a reproducibility study for pattern based diagnosis with in an interval of 3 years and correlated its performance with conventional markers for EOC.

Results: Discriminatory proteins/peptides identified were in the range between 2-20 kDa. Using a minimal set of 21 markers all the test samples (for both plasma and serum) could be diagnosed accurately. Using the same base computing platform near 100% sensitivity and specificity was achieved in discriminating the 4 subject classes in the given time frame of three years and performed superior to CA125 and ultrasound based diagnosis.

Conclusion: Serum and plasma fingerprints could be used as a diagnostic tool for early detection of EOC with high levels of reproducibility. The system developed discriminates normals, benign lesions and early and late stage ovarian cancer with near 100% accuracy.

B 2**Oxidative-Stress Induced Genome Instability in Cells Derived From Xeroderma Pigmentosum B Patient****A PL TING¹, KAH GML¹, M PRAKASH HANDE¹**¹Department of Physiology, Yong Loo Lin School of Medicine, Singapore

Aim: Xeroderma Pigmentosa (XP) is an autosomal recessive disease resulting in segmental progeria. The condition stems from mutations of factors in the nucleotide excision repair (NER) pathway responsible for alleviating UV-induced DNA lesions. It is difficult to implicate UV damage in the totality of XP symptoms. Oxidative stress is likely an important factor. XPB is an ATP-dependent 3'→5' directed DNA-helicase involved in both NER and basal transcription.

Methods: To study the involvement of XPB in repair of oxidative DNA damage, we utilised primary fibroblasts from an individual suffering from XP with Cockayne Syndrome due to a missense mutation in XPB. After exposure to oxidative stress by Hydrogen Peroxide (H₂O₂), cells were assayed along various parameters

related to survival, genome stability and growth kinetics.

Results: Mutant cells retained higher viability and displayed cell cycle dysfunction after exposure to H₂O₂. Cytokinesis blocked micronucleus assay revealed increased genome instability induced by H₂O₂. Single cell gel electrophoresis assay showed the mutation reduced capacity to repair oxidative DNA damage. Mutant fibroblasts displayed decreased population doubling rate, increased telomere attrition rate and early emergence of senescent characteristics under chronic low dose exposure to H₂O₂. Fibroblasts from a heterozygous individual displayed intermediate traits in some assays and normal traits in others, indicating possible copy number dependence.

Conclusion: The results show deficiency of functional XPB paradoxically renders cells more sensitive to genotoxic effects of oxidative stress while reducing cytotoxicity. Our findings have implications in the mechanisms of DNA repair, mutagenesis, carcinogenesis and aging in normal physiological systems.

B 3**An Investigation of Hydrogen Sulfide Effects on Cardiac Mitochondrial Dynamics and its Underlying Mechanism****Z J WANG¹, TS TAN¹, L NING¹, KP WONG², PK MOORE¹, YZ ZHU¹**¹Cardiovascular Biology Research Group, Centre for Life Sciences, Department of Pharmacology, ²Department of Biochemistry, National University of Singapore, Singapore

Aim: Hydrogen sulfide (H₂S) is produced endogenously in mammalian, and has been suggested to function as a cardioprotective gasotransmitter under condition of myocardial ischemia/reperfusion via mitochondrial ATP-sensitive-potassium-channels (mitoK_{ATP}) opening. However, the mechanism of H₂S on regulating cardiac mitochondrial functions remains unclear. The present study was aimed to investigate the effects of H₂S on cardiac mitochondrial functions, and identify its mechanism(s).

Methods: Isolated heart mitochondria from rats were treated with sodium hydrosulfide (NaHS), a H₂S donor, at a graded dose (1-100 uM). Mitochondrial ATP biosynthesis was measured by the luciferase-luciferase reaction. The membrane potential in energised respiring mitochondria was assayed by a fluorescent probe, 5,5',6,6'-tetrachloro-1,1',3,3' tetraethylbenzimidazolcarbocyanine-iodide, and mitochondrial permeability transition (MPT) was analysed with matrix swelling assay. The flavoprotein oxidation was detected by fluorescence microscope.

Results: A dosage-dependent NaHS inhibited ATP biosynthesis, with ATP production decrease in 48%, 76% and 85%, at mitochondrial complexes I, II and IV, respectively. NaHS largely depolarised mitochondrial membrane, leading to dissipate the mitochondrial inner transmembrane potential ($\Delta\Psi_m$). NaHS reduce mitochondrial matrix swelling by attenuating the opening of MPT. In addition, using 5-hydroxydecanoate, a selective mitoK_{ATP} blocker, we found that H₂S can induce mitochondrial flavoprotein oxidation, with enhancement of mitochondrial redox state. These effects are probably mediated by the extent of K⁺ influx upon opening of the mitoK_{ATP} channel.

Conclusion: These findings suggest that the intracellular mechanisms of H₂S on cardioprotection are probably due to the activation of mitoK_{ATP} channel, which further dissipates the $\Delta\Psi_m$, resulting in mitochondrial redox changes and maintains mitochondrial volume homeostasis and integrity.

M 1

Cerebral White Matter Abnormalities and Neurocognitive Correlates in Schizophrenia With Passivity: A 3T Diffusion Tensor Imaging Study

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Aim: Passivity phenomenon is a distressing Schneiderian first rank symptom in patients with schizophrenia. Based on extant data of functional and structural cerebral changes underlying passivity, we sought to examine cerebral white matter integrity in our subjects. We hypothesised that the passivity phenomenon (P) was associated with white matter changes in cortical-subcortical regions as well as correlated with specific neurocognitive deficits compared to those without (NP) passivity phenomena.

Methods: Thirty-six subjects (11 with passivity and 25 without passivity) with schizophrenia were compared with 32 age-, gender- and handedness- matched healthy controls using diffusion tensor imaging. Neuropsychological testing of executive function, attention, spatial working memory and visuo-spatial tasks was administered. We used repeated measure analysis of variance to test for region specific differences in fractional anisotropy.

Results: Passivity phenomena in schizophrenia were associated with differential white matter changes involving the frontal cortex ($P(0.31) > NP(0.26)$, $P = 0.035$), cingulate gyrus ($P(0.11) > NP(0.03)$, $P = 0.026$), thalamus ($P(0.07) < NP(0.04)$, $P = 0.029$) and basal ganglia ($P(0.12) > NP(0.09)$, $P = 0.038$). Within patients with passivity, anisotropy in the frontal cortex correlated with age of onset of illness ($r = 0.29$, $P = 0.016$) and neurocognitive deficits related to attention ($r = 0.34$, $P = 0.02$) and executive functioning ($r = 0.33$, $P = 0.03$).

Conclusion: The findings suggested distributed involvement of cortical and subcortical regions underlying passivity and support the notion of neural network models underlying specific psychiatric symptoms such as passivity. A better understanding of symptom related white matter changes might allow earlier detection, better subtyping of illness and tracking of response to treatment over time.

M 2

Factors Predicting Predictors of Survival in Out-of-hospital Cardiac Arrest – A Multivariate Analysis

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Aim: The survival of patients with out of hospital cardiac arrest in Singapore is only 2.0%. We sought to identify factors that were associated with an increased survival for patients with out of hospital cardiac arrest in Singapore to guide future efforts to improve survival rates.

Methods: We conducted a prospective observational study in a pre-hospital setting. Patients with Out-of-Hospital Cardiac Arrest (OHCA) both conveyed by the national emergency ambulance system and by personal transport means, as well as traumatic and non traumatic causes were included. Outcomes were recorded according to the Utstein style. We then performed univariate analysis of the factors associated with survival followed by logistic regression modelling to identify factors associated with survival.

Results: From 1 October 2001 to 14 October 2004, 2428 patients were enrolled into the study. Patients were studied for patient characteristics, cardiac arrest characteristics and response characteristics. Univariate analysis found age ($P = 0.004$), witnessed arrest ($P < 0.001$), initial rhythm ($P < 0.001$), bystander CPR ($P < 0.001$), defibrillation ($P < 0.001$) to be associated with increased survival. A trend towards significance was found for scene time ($P = 0.161$), and it was included for modelling. Logistic regression analysis found only bystander CPR to be a significant factor contributing to survival. The odds ratio for survival in patients who received bystander CPR was found to be 3.60 (95% CI, 1.03 to 12.50).

Conclusion: From our data, only bystander CPR was associated with increased odds for survival. Public education for CPR is thus an important area to target to improve survival rates in Singapore.

M 3

Prevalence of Metabolic Syndrome in Ambulatory Type 2 Diabetes Mellitus Patients and its Association With Novel Biomarkers

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Aim: Metabolic syndrome (MS) is a multiplex risk factor for cardiovascular disease. Osteoprotegerin, a glycoprotein from the TNF receptor superfamily, is a decoy receptor of the receptor of activator nuclear factor kB (NF-kB) ligand (RANKL). Responsible for osteoclast activation, it is also associated with arterial calcification and stiffness. In ambulatory Type 2 diabetes mellitus patients (DM), we aimed to determine the prevalence of MS, and its association with novel biomarkers.

Methods: Cross-sectional study where patients seen in our Centre for full DM assessment from September 2004 to August 2006 were consecutively recruited. Detailed history, examination, blood/urine samples were collected. Tests included hsCRP, ICAM-1, homocysteine, osteoprotegerin.

Results: Four hundred patients; M:F 3:2; mean age and duration 55.2 years (SD, 13.9) and 9.7 years (SD, 8.4) respectively. Prevalence of MS (NCEP criteria) was 71.7%. In univariate analysis, MS patients had significantly higher HbA1c, urineACR, hsCRP, ICAM-1, and osteoprotegerin, and higher prevalence of vascular complications. Using General Linear Model, after adjusting for age, gender, patients with MS had higher osteoprotegerin (4.3 vs 3.6 pmol/L, $P < 0.05$) and ICAM-1 (446 vs 378 ng/mL, $P < 0.05$).

Conclusion: MS is common in patients with Type 2 DM. DM patients with MS are more likely to have vascular complications and hence a poorer outcome. Novel biomarkers like osteoprotegerin may help in understanding of pathogenesis of DM complications, and possibly result in discovery of new therapeutic targets in future. Osteoprotegerin may also complement existing tools for early identification of high-risk patients who may benefit from early, more aggressive management of risk factors.

N 1

The Effects of Reality Orientation Programme on the Cognitive Functioning of Geriatric Patients with Schizophrenia and Mild Cognitive Impairment in a Long-term Care Setting**BI YEAP¹, KK YONG¹, SH CHUA¹, TA GALISTAN¹, MPITCHAI¹, GH LIM¹, S ZAINON¹**¹Nursing, Institute of Mental Health/Woodbridge Hospital, Singapore

Aim: The aim of this study was to explore the effects of reality orientation therapy on the cognitive functioning of geriatric patients with chronic schizophrenia and mild cognitive impairment.

Methods: The study used a pretest-posttest randomised controlled trial design. A sample of 100 subjects with schizophrenia and mild cognitive impairment, aged 65 years and above was recruited from six long stay psycho-geriatric wards. They were randomly assigned to the experimental and the control group by the dice throwing method. The experimental group received a 30 minutes reality orientation programme, three times a week over a period of 4 months. While the control group received the usual care, which was the same as other psychogeriatric wards. The cognitive functioning of all subjects in both groups were measured pre-intervention and upon completion of the 4 months programme using the Mini-Mental State Examination (MMSE).

Results: Results revealed that there were significant differences in the total MMSE scores pre and post interventions for both groups ($P < 0.001$, Independent sample t test). The differences in the total scores for the control group were -2.1, and for the experimental group were 1.7. The MMSE scores for the experimental group indicate improved cognitive functioning in all five cognitive domains of the MMSE ($P < 0.001$), while the control group scores show slight deterioration.

Conclusion: The findings from this study implied that a short term, 30-minute reality orientation programme was effective in improving the cognitive functioning of the geriatric patients with schizophrenia and mild cognitive impairment.

N 2

Admission of Asthma Patients After Treatment at an Emergency Department Treatment Centre (EDTC) on Singapore**L PRABHAKARAN¹, CHAN SP², JANE C¹, ABISHEGANDEN J³, LIM GH⁴, TAN WL⁴**¹Nursing Service, Tan Tock Seng, Hospital, Singapore, ²Clinical Research Unit, Tan Tock Seng, Hospital, Singapore, ³Respiratory Medicine, Tan Tock Seng, Hospital, Singapore, ⁴Emergency Medicine, Tan Tock Seng, Hospital, Singapore

Aim: To identify factors associated with admission to hospital after treatment at an Emergency Department's 24-hr Treatment Centre (EDTC) for acute asthma cases. In addition, we studied the length of stay (LOS) of patients who were admitted and compared cost.

Methods: All 248 patients seen at the EDTC from January to December 2006 were included in analysis. Multivariate regression was applied to analyse need for admission within 24 hours and LOS. Statistical analysis was performed with Stata 9.0, and all statistical analyses were conducted at 5% level of significance.

Results: Of the 248 patients, 58.1% were females. The average age was 40.3 years (range, 15-83). In terms of ethnicity, 33.9% were Chinese, followed by 33.5% Malays and 26.6% Indians. 27% were

admitted within 24 hours of treatment, and the remainder were discharged home. Demographics and previous ED visits (past 40 days and 24 hours) were not significantly associated with admission within 24 hours. The average LOS for those who were admitted was 3.4 days (range, 2-9). The older patients were found to be staying longer than younger patients ($P: 0.01$). The average in-patient cost for admitted patients was \$682.1 (range, \$173-\$2783) and this was significantly higher than that of the EDTC discharged patients \$151.2 (range, \$58.7-\$626.6); $P < 0.01$). About 3% of these patients were readmitted in 4 weeks. This readmission rate was non-significantly lower than that of the discharged patients (5.5%; $P: 0.41$).

Conclusion: Demographics and previous ED visits were not significantly associated with admission within 24 hours of treatment at an EDTC. Treatment at an EDTC resulted in the safe discharge of 73% of patients, with a low readmission rate.

N 3

To Reduce the Inpatient Fall Rate by 80 % of 2006 Data**P VELUSAMY¹, J KAUR¹, N IBRAHIM¹, GC CHUA¹**¹Alexandra Hospital, Singapore

Aim: To enhance patient safety by reducing inpatient fall rate. A Clinical Practice Improvement Committee was formed in 2002 to address the issue of increasing inpatient falls. A fall risk assessment tool was implemented with a Fall Prevention Action Plan (FPAP). The situation improved but later the falls start to increase again in 2006/ 2007.

Methods: Retrospective study on hospital's fall data was done. Analysis of the data showed that the staff had insufficient knowledge on fall prevention and lacked vigilance on high risk patients. Patients also lacked awareness and were denial of their fall risk. Proposal: a) Modified Morse Fall Scale was introduced. Two risk factors from the previous tool were included. After piloting in 2 wards, the tool was implemented hospital wide. The FPAP was also reviewed and documentation was made seamless. The FPAP was error proofed with colour coding. b) High risk patients were tagged with green wrist tags and highlighted on their status at the bed information panel. c) Other practice such as frequent nursing round, shift takeover method and follow-up plan for fall incident were standardised. d) Standard Operative Procedure was reviewed and updated. Based on the literature review, staff training was enhanced and made compulsory. This includes support from the physiotherapist and occupational therapists. Fall prevention link nurses improved compliance rate. The patients were also taught on fall prevention. A pamphlet was designed to educate the patients.

Results: Results showed that the fall rates improved from 11.5 per month (total 138 for 2006) to 6 falls for May since the implementation. An improvement of 52 percent based was achieved (ongoing study).

Conclusion: Traditionally, it was assumed that training and vigilance would improve fall prevention. However, our study showed that error proofing the forms would not only facilitate seamless documentation but also assist in executing the appropriate interventions in a timely manner. Furthermore including other Healthcare Professional in the training would further enhance patient safety and effectively reduce the inpatient falls.

P 1

The Seroprevalence of Past Dengue Infection and Proportion of Undiagnosed Past Dengue Infections Among Residents in the West Coast District of Singapore

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Aim: Singapore has seen an increasing incidence of dengue, peaking at 350 cases per 100,000 in 2005 with all 4 serotypes endemic in Singapore. Lowered herd immunity brought about by effective public campaigns and vector control may account for this paradox. Undiagnosed dengue poses a problem as subsequent infection may have more dangerous complications. This study aimed to find the seroprevalence of past dengue infections and the proportion of past dengue infections which were undiagnosed, in West Coast District of Singapore.

Methods: A community based cross-sectional interviewer-administered study was conducted among Singaporeans and permanent residents in West Coast District of Singapore aged 16 year and above. Two-stage random proportionate sampling process was undertaken with a member of the household randomly sampled using Kisch Grid sampling. Saliva was then collected and tested qualitatively for salivary anti-dengue IgG using ELISA-based Panbio systems modeled for serum IgG.

Results: Of 472 randomly selected individuals, 323 samples were collected, of which 301 samples were valid and tested. Of these, 62 (20.6%; 95% CI, 16.0%-25.2%) were positive for dengue serology and only 2 reported a past diagnosis of dengue infection. Hence, the proportion of past dengue infections that was undiagnosed was 96.8% (60/62; 95% CI, 88.8%-99.6%). The prevalence rate ratio of seropositive participants aged 50 and above to those below the age of 50 was 1.96 (95% CI, 1.27-3.04).

Conclusion: 96.8% of sero-positive cases of dengue are undiagnosed. Persons above 50 years were approximately twice as likely to have had dengue previously when compared to those between 16 and 49 years.

P 2

Prevalence, Awareness, Treatment, and Control of Hypertension in Toa Payoh, Singapore

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Aim: To estimate the prevalence of hypertension, its awareness, treatment, and level of blood pressure (BP) control in Singapore.

Methods: We performed a cross-sectional, community-based study in the Toa Payoh housing estate, Singapore of a random sample of 409 participants aged ≥ 40 years. We performed three BP measurements; average of the last two was considered the BP value. Hypertension was defined as BP $\geq 140/90$ mm Hg, previous physician diagnosis or taking antihypertensive medications. Among treated hypertensives, poor BP control was defined as having a BP $\geq 140/90$ mm Hg. We calculated prevalence, odds ratios (OR) and 95% confidence intervals (CI), where appropriate.

Results: The age-standardised prevalence of hypertension was 53.8% (men: 58.0%, women: 50.8%). Among hypertensives, 72.7% were aware of their disease, 62.3% were treated, and 27.3% were previously undiagnosed. Factors positively associated with undiagnosed hypertension included: being unmarried/without spouse (OR [95% CI]: 2.29 [1.25-4.21]), current smoking (OR [95% CI]: 3.56 [1.66-7.63]), employed full-time (OR [95% CI]: 2.72 [1.46-5.06]); factors negatively associated included: presence of diabetes (OR [95% CI]: 0.16 [0.05-0.53]), or coronary artery disease (OR [95% CI]: 0.09 [0.01-0.69]). Among treated hypertensives, 49.6% had poor BP control. Factors associated with poor control included: <primary school education (OR [95% CI]: 3.60 [1.71-7.54]), unemployed/homemaker (OR [95% CI]: 2.37 [1.01-5.53]), no physical activity/exercise (OR [95% CI]: 2.12 [1.06-4.23]), and no recent GP visits (OR [95% CI]: 2.51 [1.27-5.01]).

Conclusion: Approximately half of community-dwelling adults ≥ 40 years in Toa Payoh, Singapore, have hypertension; more than one-fourth are undiagnosed. Among pharmacologically treated hypertensives, approximately half have their BP higher than currently recommended levels.

P 3

Knowledge, Attitudes and Practices of Patients Towards Traditional Chinese Medicine in Primary Care

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Aim: It is a common practice among the patients of various ethnic groups to seek traditional Chinese medicine (TCM) treatment for their aches and illnesses. It is important for the medical practitioners to appreciate its role in the holistic care of the patients.

Methods: A 1-day questionnaire survey was carried out in 3 NHG Polyclinics. A total of 310 patients participated in this survey. The survey items included their demographics statistics and their attitude and beliefs towards TCM.

Results: Forty-five per cent were males, 55% were females and 56% were Chinese. Majority belong to the 41 to 50 years old age group. Sixty-seven per cent of patients claimed that they had not taken TCM (those prescribed by TCM clinic or from Chinese medical halls dispensary) in the past 6 months. Sixty-seven per cent of them said that they informed their western doctor that they had taken or used TCM. Seventy-six per cent of them sought western doctor first for acute conditions like cough and cold, 87% consulted western doctor first for chronic conditions like diabetes and 54% considered seeing a TCM physician for their chronic conditions.

Conclusion: Majority of the patients will seek western medicine treatment first when they are unwell. They will seek TCM treatment as a second option. Most of them will inform their doctors if they do take TCM.

Q 1

A Validation Study on the Usefulness of Selected Ultrasonographic Features for the Diagnosis of Breast Tumors Among Filipino Adult Females Consulting at a Private Tertiary Hospital

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Aim: The Breast Imaging Reporting and Data System for Ultrasound (BI-RADS) of the American College of Radiology standardises the description of features of breast lesions. The aims of this study were to determine if there is an association between specific BI-RADS features and the type of breast lesion, and to propose a scoring system for differentiating benign from malignant lesions.

Methods: Records and ultrasound images of all patients with breast lesions who consulted the Breast Center from June 2004 to July 2005, and with histopathologic diagnosis were retrieved. Only 1 ultrasound machine was used, with images downloaded from the Picture Archival and Communication System. Using the BI-RADS lexicon, 30 features in each lesion were independently described by two breast radiologists who were unaware of biopsy results. If the two radiologists' descriptions of any feature differed, a third radiologist was called to review the image. Two concurring readings warranted an interpretation.

Results: Forty-eight biopsy-proven malignant and 203 benign lesions were analysed. Univariate analysis revealed ten features that were associated with the type of breast lesion ($P < 0.05$). These ten were subjected to multivariate analysis. Logistic regression revealed that irregular shape (OR = 5.362), complex echo pattern (OR = 4.501), shadowing (OR = 3.464), and presence of posterior acoustic features (OR = 2.865) were significant predictors of malignancy ($P < 0.10$). Adjusted odds ratios were used to develop a scoring system that predicts the probability of malignancy. The best cut-off that differentiates benign from malignant lesions (AUC = 0.860) is nine points (sn = 0.81, sp = 0.82).

Conclusion: BI-RADS features may objectively be used to differentiate benign from malignant breast lesions.

Q 2

Measuring Quality of Diabetes Care in NHG Polyclinics, Singapore

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Aim: To evaluate the quality of diabetes mellitus care and degree of variability among public sector polyclinics of the National Healthcare Group in Singapore.

Methods: Using data from a newly launched comprehensive and well-integrated chronic disease database management system, we were able to derive intermediate outcomes and rates of process indicators for diabetes. Diabetic patients were attributed to a base polyclinic if their previous two visits to the same clinic were within six months and they were prescribed anti-diabetic drugs. The study period of 3 months was from 1 January 2007 to 31 March 2007. Study parameters included 5 process indicators and 2 intermediate outcome indicators, based on the HEDIS Comprehensive Diabetes Care 2006.

Results: A total of 46,205 diabetic patients were attributed to at least one of nine polyclinics. Of these, 98% had their HbA1c tested, of whom 41% had good control (HbA1c $\leq 7\%$) and 11% had poor control (HbA1c $> 9\%$). Overall, 4 process indicators scored above 75%: HbA1c testing (98%); lipid level testing (95%); nephropathy monitoring (82%); and foot examination (77%). Eye examination scored 59%. There were inter-polyclinic variances noted for the process and outcome indicators.

Conclusion: Overall, the nine polyclinics generally fared better than HEDIS in terms of process and intermediate outcome indicators. Significant inter-polyclinic variances are observed with respect to adherence to process indicators of care for diabetes patients.

Q 3

Drug Use Evaluation of Surgical Prophylactic Antibiotics and its Adherence to Guidelines

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Aim: To study the adherence of surgical antimicrobial prophylaxis to the hospital protocol and to understand current practices of doctors regarding surgical prophylaxis.

Methods: Gastric, biliary, colonic, urologic and orthopaedic surgical procedures in November 2006 were studied. Compliance with protocol was assessed as such: prophylactic antibiotic used, dose and time from first dose to incision of antibiotic, and total duration of antibiotic prophylaxis including additional intraoperative doses and dose interval. Questionnaires were designed to survey the doctors on current practices regarding surgical antibiotic prophylaxis.

Results: A total of 80 procedures were studied. The findings revealed that 41.3% of the antibiotic choice conformed to the hospital protocol. 89.2% of the timing and 66.3% of the duration complied with the protocol. Overall, 25% of procedures met all three criteria. A random sample of 17 doctors was surveyed and all agreed that prophylactic antibiotics are to be given within 2 hours before surgical incision, which is in line with the protocol. However, disparities were found in antibiotic choice and duration when compared against the protocol.

Conclusion: Adherence to protocol on antibiotic choice and duration needs improvement. However the protocol was last updated in 2004 and thus some portions of the guideline may no longer be of clinical relevance. This may explain some deviations from the protocol. To improve the quality of surgical antibiotics prophylaxis and increase compliance rate, effort should be put into developing an updated evidence-based protocol that is acceptable to doctors, and in adequately distributing the protocol and facilitating logistics.

S 1

Results of Surgical Treatment for Adenocarcinomas of the Gastroesophageal Junction and Distal Stomach: A Prospective Analysis

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Aim: Adenocarcinoma of the esophagogastric junction (AEG) is the fastest rising malignancies in the West in the past 2 decades; data from Asian populations has only begun to emerge in the literature. The aims of our study were to review the profile and results of surgical treatment of patients presenting to a tertiary hospital in Singapore, and to compare with patients with distal gastric adenocarcinomas.

Methods: A prospective study was conducted between years 2000 and 2006. Patients with AEG and distal gastric adenocarcinoma who underwent surgery with the primary intent to cure were followed up. Various parameters, including the biodata, histological and clinical characteristics, as well as disease-free survival and overall survival were studied.

Results: There were 32 cases of AEG and 127 cases of distal gastric adenocarcinoma. AEGs showed significant predilection for males (M:F = 15.0:1) as compared with distal gastric carcinomas (1.49:1) ($P = 0.0002$). The important histopathological findings in AEG as compared with distal adenocarcinomas include advanced stage disease at presentation ($P = 0.124$), intestinal growth pattern ($P = 0.075$) and

coexisting intestinal metaplasia ($P = 0.002$). However, AEGs also tend to have similar survival compared with distal gastric adenocarcinomas at 12- ($P = 0.739$), 24- ($P = 0.669$) and 36 months ($P = 0.968$).

Conclusion: AEG is an increasingly important disease. Our data demonstrate that AEG has a strong predilection for males, late stage at presentation, intestinal growth pattern, and coexisting intestinal metaplasia. However, short-term survival of AEG appears to be similar to distal gastric adenocarcinomas.

S 2

A Detailed Analysis of Clinicopathological Characteristics and Prognostic Markers of Gastrointestinal Stromal Tumours (GISTs) in the Singapore Patient Population and Comparison of Biologic Behaviour of These Tumours With Similar Published International Audits

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Aim: Gastrointestinal stromal tumors (GISTs) are a distinct category of mesenchymal tumors which were previously classified as leiomyomas, leiomyosarcomas etc based on their appearances on routine histology. The vast majority of GISTs arise in the stomach with other common sites being small intestine, colon, rectum and oesophagus. They comprise a spectrum of relatively benign to aggressively malignant tumours. This study aims to delineate the characteristics of these tumours in our population, analyse prognostic markers especially with regard to tumour location and compare these findings as far as possible with those of similar internationally published audits.

Methods: Between 1990 and 2004, 54 patients were diagnosed with GISTs and managed by the Department of Surgery, National University Hospital, Singapore. The list of these patients was obtained from a pathological database. The case records of these patients were recalled and data fields with regard to demographic characteristics, histopathological features, surgical procedures, recurrence were recorded. Names of patients who had died as a result of these tumours were obtained from the cancer registry. The data was then analysed using SPSS Software and Statistical Analysis was performed using the Pearson Chi-square test, with statistical significance pegged at $P < 0.05$.

Results: Demographically, there was an almost equal number of males and females and the mean age of the study population was 62.55. Gastric GISTs represent the commonest tumour location and also were uniformly larger than GISTs diagnosed in other locations. Other sites included colon (commonest outside stomach), small bowel, pelvis and peritoneum. The location of GIST tumours was independent of gender. Gastric GISTs tended to exhibit a larger tumour size compared to non-gastric GISTs. Microscopically, there was no significant difference in mitotic index or the incidence of tumour necrosis between the two groups.

Conclusion: The larger tumour size in gastric GISTs suggests that gastric GISTs have a poorer prognosis compared to non-gastric GISTs. They also tend to be diagnosed late compared with tumours at other locations. Histological prognostic factors such as mitotic index and the presence of tissue necrosis do not seem to be related to tumour location. On the whole, clinicopathological characteristics of GIST tumours in our population seem to mirror published data from certain international audits.

S 3

Completeness of Surgical Evacuation of Spontaneous Supratentorial Intra Cerebral Haemorrhage Correlated With the Long-term Outcome: A Retrospective Single Tertiary Institution Study

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Aim: Treatment of primary spontaneous supratentorial intracerebral haemorrhage by evacuation is not supported by any large randomised-control trial as clinically effective. We aimed to investigate whether completeness of surgical evacuation affects long-term outcome.

Methods: This retrospective study of 24 patients with basal ganglia haematoma admitted to NUH Neurosurgery between 2002 and 2005. Inclusion criteria included patients who presented to Emergency Department with spontaneous basal ganglia haematoma who had surgical evacuation with pre- and post-surgery CT scan available and contactable by telephone administered survey. Primary outcomes were Glasgow Outcome Scale (GOS) and mortality. Telephone-administered survey was performed at least 2 years from the time of surgery.

Results: Analysis of the patients was subdivided into 2 groups based on GOS and haematoma volume. Good and bad outcomes being GOS score of 1 to 2 and GOS score of 3 to 5 respectively. Patients with large haematoma ($>$ or equal to 80 mL pre evacuation volume number) and those with small haematoma ($<$ 80 mL pre evacuation volume number) were analysed. In terms of haematoma volume, small pre-evacuation haematoma has a median change in volume of 97.63% and median change in midline shift of 63%. Those with large haematoma has a median change in volume of 99.54% and a median change in midline shift of 100%. ($P = 0.764$ for volume change and $P = 0.742$ for midline shift change). The median change in volume of the subgroup with bad outcome is 97.63% as compared to the median change of volume with good outcome of 100% ($P = 0.288$). The median change in midline shift is 63% in the bad outcome subgroup while the median change in midline shift is 100% in the good outcome subgroup ($P = 0.576$).

Conclusion: Although the results are not statistically significant with regards to completeness of hematoma evacuation improving long-term outcome, there is a trend towards better outcome with more complete evacuation.

A-P 1

Simplified Non-cultured Cellular Grafting for Treatment of Vitiligo and Chronic Leg Ulcer - The "6-Well Plate" Technique

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Aim: Cellular grafting using autologous non-cultured epidermal cells is effective in repigmenting stable vitiligo. This procedure allows treatment of vitiliginous skin manifold larger than the donor area and is significantly labour-intensive than cultured melanocyte transplantation and can be completed in an outpatient basis over a few hours. This pilot study aims to improve the cellular grafting technique by simplifying the laboratory extraction of epidermal cells, and to evaluate its effectiveness in repigmenting vitiligo and piebaldism and treating chronic leg ulcers.

Methods: Five patients were recruited; 3 with stable vitiligo, 1 with piebaldism, and 1 with chronic leg ulcer. Epidermal cells were extracted from autologous donor skin tissue using a 6-well plate. Trypsinised donor split-skin graft is washed in soybean trypsin inhibitor solution in the first well and rinsed in phosphate-buffered saline in the next 3 wells. The epidermis is then detached from the dermis and mechanically disintegrated in the 5th well, and the epidermal suspension is filtered and thickened with hyaluronic acid in the final well. The suspension is then applied directly onto CO₂-laser abraded depigmented sites in patients with vitiligo and piebaldism and onto the wound bed of the chronic leg ulcer.

Results: In patients with vitiligo and piebaldism, 50% to 80% repigmentation was achieved 3 months post-grafting. In the patient with chronic leg ulcer, good granulation of tissue was evident one week post-grafting.

Conclusion: This simplified technique reduces cell preparation time and consumable costs, and shows promising results in repigmenting vitiligo and piebaldism and in enhancing wound healing.

A-P 2

Acceptability of a Self-Administration Programme for Hospital Inpatients

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Aim: Self-administration schemes allow capable patients warded in the hospital to administer their own medications, thus minimising the hospital stay as a break in their usual out-of-hospital medication routine. In addition, the hospital stay may serve as an opportunity for patients to be educated on their medications and advised on how to improve and refine their drug therapy further. The aim of this study was to investigate patients' and nurses' acceptability of a self-administration programme in Alexandra Hospital.

Methods: Questionnaires were developed for nurses and patients after a literature review. All inpatient nurses in general wards were surveyed for their opinions. Warded patients who were conscious and mentally sound were interviewed by one interviewer. The language of interview was English; when this was not possible, patients' relatives served as translators.

Results: One hundred and sixty-eight nurses and 44 patients were interviewed. More than half of the nurses felt that serving medications is taking much of their nursing time and supported self-administration. Their main concerns in the implementation of such a programme

were medication errors and administration documentation. Nearly 75% of patients preferred for their medications to be served when warded. 59% supported self-administration but only 43% would like to participate. The greatest benefit of self-administration as perceived by both nurses and patients was patient education.

Conclusion: There appears to be poor receptivity even though patients acknowledge the potential benefits of self-administration. The hospital length-of-stay may be a significant limiting factor in the implementation and effectiveness of such a programme.

A-P 3

Comparisons of the Hand-held Retinomax, Table-mounted Auto Refractor, and Retinoscopy in Singapore Children Aged 6 to 72 Months

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Aim: To compare cycloplegic refraction measurements using the hand-held retinomax, table-mounted auto refractor, and streak retinoscopy among Singapore children aged 6 to 72 months.

Methods: The children were recruited as part of the STARS study (SRrabisumus, Amblyopia and Refractive error study in Singapore preschool children). Chinese children aged 6 to 72 months were recruited Housing Development Board (HDB) apartments in the Western, South-western and Northern parts of Singapore. Refraction was measured using the table-mounted auto refractor (Canon FK-1, Tokyo, Japan), handheld retinomax (Righton Retinomax K-PLUS 2 Japan) and Streak retinoscopy readings were performed for each eye using the Welch Allyn streak Retinoscope. The examiner was masked to both the hand-held and table-mounted auto refractor findings at least 30 minutes after the instillation of cycloplegic 1% eye drops.

Results: There were 51 preschoolers – 29 were boys and 22 girls. The mean age was 52.33 months with a range of 24 to 72 months. Informed consent was obtained from the parents and approval was obtained from the Institutional Review Board, the Singapore Eye Research Institute and the National Healthcare Group. The mean refractive errors were constructed with Bland Altman Plots and Statistical analyses were conducted using SPSS version 11.0. The mean and standard deviations of the differences between the table mounted auto refractor and handheld retinomax were 0.22 (0.48) (95% confidence interval (CI), 0.09,0.36) *P* value <0.01. The Spearman correlation coefficient of the refractive error from the table-mounted autorefractometer and hand-held retinomax was 0.96. The mean and standard deviations of the differences between the table mounted auto refractor and streak retinoscopy were -0.06 (0.51) (95% confidence interval (CI), -0.20,0.09) *P* value <0.01. The mean and standard deviations of the differences between handheld retinomax and streak retinoscopy were -0.28 (0.64) (95% confidence (CI), interval -0.46, -0.10) *P* value <0.01.

Conclusion: The hand-held retinomax readings are more myopic compared with the table-mounted autorefractometer and streak retinoscopy in very young children.

B-P 1

Cell Cycle Gene E2F5 Identified Using a Genomics and Proteomics Approach is a Novel Marker for the Malignancy Status for Epithelial Ovarian Cancer and is Elevated in Preoperative Serum

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Aim: Regulatory gene clusters play a major role in the cellular integrity, cell division and apoptosis which are essential for the release of oncoproteins into blood. If detected in serum these proteins could serve as early markers for the malignancy status of epithelial ovarian cancer (EOC).

Methods: Microarray data specific to EOC was used to identify potential genes associated with the early onset of EOC. Promoter analysis identified regulatory factors common to promoter elements of more than one gene cluster associated with the cellular integrity and apoptosis. Validations for *in silico* analysis were done using tissue microarray (TMA) and western blotting (WB) on serum.

Results: Two genes, E2F5 and AREB6 were found upregulated in EOC. *In silico* findings correlated with wet lab experiments as shown by TMA and WB studies. E2F5 expression was demonstrable by TMA in half of all EOC (29 out of 56), compared to none in normal and benign cases ($P < 0 \times 001$). In serum (144 samples) only 23.21% (13/56) of normal was E2F5 demonstrable by WB, compared with 81.25% ($P = 0 \times 0001$) of serum from patients with EOC (39/48) and 87.5% of serum from patients (14/16) with early EOC and 42.5% (17/40) of benign patients. E2F5 was found to perform better to CA125. A correlation of $cc=0.37$ ($P = 0.95$) was observed for the E2F5 expression pattern in tumour tissues and serum.

Conclusion: Our findings provide evidence that cell cycle regulatory proteins might play a significant role in EOC pathogenesis. Cell cycle protein E2F5 could represent as a promising serum marker along with CA125 in detection and monitoring of EOC.

B-P 2

Allele Specific Differential Expression of Type 2 Diabetes Candidate Gene - Adiponectin +45T>G (Rs2241766) SNP - Using 3T3-L1 Cell Line

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Aim: Adiponectin, most abundant circulating adipokines in human, powerfully modulates insulin actions. We previously reported that a common coding synonymous SNP at +45T>G (rs2241766) conferred increase risk (RR = 1.89) for type 2 diabetes (T2DM) in Chinese. To elucidate the functional significance, we tested the hypothesis that the minor allele G (though preserving the coding of synonymous amino acid) may be associated with allele specific differential efficiency in adiponectin gene expression.

Methods: DNA template from anonymised subjects with known genotype (TT & GG) was used to create two genetic constructs of adiponectin gene and transfected into two separate groups of 3T3-L1

pre-adipocytes. TaqMan[®] Real Time-PCR adiponectin gene expression assay (normalised against house-keeping gene 18S) was used to quantify the efficiency of mRNA transcription.

Results: Allele specific constructs in plasmid pcDNA3.1 was successfully generated and transfected into 3T3-L1 pre-adipocytes. Efficiency of transcription was recorded at cycle threshold (Ct) over the geometric phase of the RT-PCR melting curve. ΔCt was defined as $Ct(\text{genotype}) - Ct(18S)$. Transcription efficiency differed according to genotype was consistently observed - ΔCt for genotype TT and GG were 9.98 ± 0.18 (mean \pm SE) and 7.10 ± 0.10 respectively. Therefore, ΔCt ($Ct[GG] - Ct[TT]$) was -2.88 (95% confidence interval -2.53 to -3.23, $P = 0.001$), giving rise to a ~7-fold (derived from $2^{-\Delta Ct}$) difference in allele dependent efficiency of gene expression.

Conclusion: As a candidate gene for T2DM, adiponectin +45T>G (rs2241766) coding synonymous SNP may have functional consequence due to allele-specific differential expression.

B-P 3

The Role of PRM Protein in the Neuropathogenesis of West Nile Virus

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Aim: This study seek to elucidate the molecular basis of West Nile virus (WNV) encephalitis by discovering novel virus-host interactions between WNV precursor membrane (prM) protein and human neuronal proteins.

Methods: West Nile virus prM gene was cloned into pGBK-T7 plasmid, transformed in AH109 yeast and screened for interacting partners by mating with yeast library pretransformed with human brain cDNA library (Clontech). Positive colonies were selected using dropout plates that detect activation of histidine, adenine and α -galactosidase reporter genes. The interacting partner was sequenced and identified by BLAST analysis. To examine the transcriptomic profile of the binding partners during WNV infection, the mRNA expression in WNV-infected A172 human glioblastoma cells at 6 and 24 hours post-infection was quantified using relative qRT-PCR QuantumRNA[™] 18S internal standard kit (Ambion). The amplicons were analysed with GeneTools program (Syngene) and the expression levels of different transcripts were expressed as fold difference normalised against 18S internal control.

Results: Initial profiling has identified nine novel interacting partners of WNV prM protein. Nine identified proteins are important for neuronal cell function (LSAMP, PCDHG, CNTN3, ZNT1 and AHNAK), apoptosis (BTF1), protein synthesis (eIF4G) and intracellular trafficking (VATPASE-H). Transcriptional analysis using relative quantitative PCR also revealed that mRNA expression of LSAMP and eIF4G was differentially regulated (2 folds) in infected A172 cells.

Conclusion: This study discovered novel host targets of WNV prM protein that might explain the neuropathogenesis of WNV. Experiments are ongoing to further dissect the role of the host proteins in the development of WNV-induced neuronal manifestation.

M-P 1**NCEP Defined Metabolic Syndrome is Associated With Increased Risk for Microalbuminuria in Asians****Y SONAWANE¹, SC LIM¹, T SUBRAMANIAM¹, T GOH¹, MS WONG¹, CF SUM¹**¹Medicine, Alexandra Hospital, Singapore

Background: Microalbuminuria (KDOQI defined spot urinary albumin/creatinine ratio: Male >17 mg/g, Female >25 mg/g) is a risk factor for progressive renal impairment and cardiovascular diseases. Recent data suggested metabolic syndrome is associated with microalbuminuria in Caucasians. We hypothesise that the same exists in Asians

Methods: We studied the relationship between NCEP defined metabolic syndrome and albuminuria in 514 Asian non-diabetic healthcare workers. As recommended by the International Obesity Task Force for Asians, cut-off for waist circumference was modified i.e. male ≥ 90 cm; female ≥ 80 cm.

Results: Among the 514 subjects, 60% were Chinese (C), 23% Malays (M) and 17% Indians (I); 71% were females. The mean age (\pm SD) was 37 ± 12 year, body mass index (BMI) 23.9 ± 4.5 kg/m², waist 73 ± 17 cm, systolic blood pressure (BP) 120 ± 17 mm Hg, diastolic BP 76 ± 11 mm Hg and fasting plasma glucose (FPG) 5.1 ± 0.5 mM. Median urinary albumin/creatinine ratio (ACR) was 8.3 mg/g (5th and 95th percentile: 4 and 61 mg/g respectively). Microalbuminuria was present in 16.7% of the participants. After adjusting for age, high BP ($\geq 130/80$ mmHg) was associated with increased risk of microalbuminuria (odds ratio [OR] 2.48 [95%CI 1.54-4.00], $P < 0.001$), hypertriglyceridemia (TG > 1.7 mM) (OR 1.97 [1.11-3.46], $P = 0.02$), high FPG (FPG ≥ 6.1 mM) (OR 3.34 [1.32-8.41], $P = 0.01$). Compared to subjects with < 1 metabolic abnormalities, those who had any 2 or more metabolic abnormalities were associated with approximately 2-fold increased risk of microalbuminuria (OR 1.96 [1.18-3.17], $P < 0.01$).

Conclusion: We conclude that Asian subjects with NCEP defined metabolic syndrome are also at increased risk for microalbuminuria.

M-P 2**Attenuated Left Ventricular Vortex Formation Index in Heart Failure****LC LEE¹, YL TAN², HC TAN¹, BL CHIA¹, KK POH¹**¹Cardiac Department, National University Hospital, Singapore, ²Neurology, National Neuroscience Institute, Singapore

Aim: In clinical heart failure (HF), inefficient propagation of blood through the left ventricle (LV) may result from suboptimal vortex formation (VF) ability of the LV during early diastole. We aim to i) validate echocardiographic-derived VF index (VFI) in normal subjects and ii) examine its utility in both systolic and diastolic HF.

Methods: Echocardiography was performed in 100 normal and 155 patients admitted with HF (110, systolic and 45, isolated diastolic failure). In addition to biplane LV ejection fraction (EF) and conventional parameters, the Tei index and tissue Doppler (TD) indices were measured. VFI was obtained using: $4 \times (1 - \beta) / \Pi \times \alpha \times X \text{ LVEF}$ where β is the fraction of total transmitral diastolic stroke volume contributed by atrial contraction (assessed by time velocity integral of the mitral E and A waves) and α is the biplane end diastolic volume (EDV)^{1/3} divided by mitral annular diameter during early diastole.

Results: Mean VFI was 2.75 ± 0.7 in control subjects; reduced in

heart failure, diastolic, 2.21 ± 0.8 ; systolic, 1.24 ± 0.5 ($P < 0.001$) It correlated positively with TD early diastolic myocardial velocities (E, septal, $r = 0.58$; lateral, $r = 0.58$), inversely with LV filling pressure (E/E' septal, $r = -0.42$; lateral, $r = -0.41$) and the Tei index ($r = -0.57$, curvilinear relation) all $P < 0.001$. In comparison with age, sex and LVEF-matched controls, only VFI, but not all other echo indices, remained significantly attenuated in diastolic HF patients (2.01 ± 0.7 vs 2.74 ± 0.8 , $P = 0.005$).

Conclusion: VFI, a novel, dimensionless index, incorporating LV geometry, systolic and diastolic contributions to fluid dynamics, may be useful in heart failure management.

M-P 3**Self-Rated Health and its Related Factors: A Community-Based Study in Singapore****TM WONG¹, SH YEO¹, A RAMKUMAR¹, JLS QUAH¹, CC NIEH¹, TY WONG¹, A SHANKAR¹**¹Community Occupational and Family Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Aim: Poor self-rated health (SRH) has been shown to be a consistent predictor of morbidity and mortality in studies from developed Western countries. In this study, we determined the prevalence of SRH in Singapore and its association with various lifestyle, socio-economic factors and disease states.

Methods: We performed a community-based, cross-sectional study in the Toa Payoh housing estate, Singapore on a random sample of 409 participants aged ≥ 40 years. SRH was assessed from a standard question and categorised as poor, fair, good or excellent. Information on lifestyle, socio-economic factors and presence of disease states were collected in the questionnaire. Prevalence, prevalence rate ratios (PRR) and 95% confidence intervals (CI) were calculated.

Results: Overall, 5.1% rated their health as poor, 22.5% as fair, 53.1% as good and 19.3% as excellent. Prevalence of poor/fair SRH was found to be 27.62%. The following factors were found to be associated with poor/fair SRH: lower housing type (PRR [95% CI]: 1.64 [1.10-2.24]), absence of physical activity/exercise (PRR [95% CI]: 1.54 [1.06-2.22]), presence of coronary artery disease (PRR [95% CI]: 1.89 [1.13-3.17]), diabetes mellitus (PRR [95% CI]: 1.85 [1.18-2.91]), cancer (PRR [95% CI]: 2.15 [1.05-4.41]) and depression (PRR [95% CI]: 1.73 [1.13-2.65]).

Conclusion: Prevalence of poor SRH in Singapore, a newly industrialised Asian country, is comparable to levels in developed Western countries. We have identified several factors associated with poor SRH at the community level. SRH is an important subjective health outcome which should be incorporated more widely in clinical practice and research in Singapore.

N-P 1**Validation of Fall Risk Assessment Tools in an Acute Hospital Setting****YL LOO¹, NH ISMAIL², JY LEE¹, SP CHAN³, KK YONG¹**¹Nursing, Tan Tock Seng Hospital, Singapore, ²Geriatric Medicine, Tan Tock Seng Hospital, Singapore, ³Clinical Research Units, Tan Tock Seng Hospital, Singapore

Aim: Fall Risk Assessment Tools have been used in institutions to predict patients with high risk for inpatient fall. Our aim was to validate these tools locally to be used as part of our falls prevention programme.

Methods: We chose the Heindrich II (HFRM) and the Western

Health Fall Risk Assessment (WHeFRA) tool as these have been previously validated in an acute hospital setting and compared them against current tool used in the hospital, Tan Tock Seng Fall Risk Tool (TTSH FRT). The tools were validated prospectively in 28 wards in the hospital excluding the intensive care units. Using stratified sampling 406 patients were enrolled during the 8 weeks study period. The fallers were identified via the Electronic Hospital Occurrence Reporting System (eHOR).

Results: The subjects were between 15 and 95 years old. There were 7 fallers during the study period. The HFRM had a sensitivity of 71.43%, specificity of 70.93% and the area under the ROC was 71.0%. WHeFRA had a sensitivity of 85.71%, specificity of 82.46% and area under ROC of 83.4%. The optimal cutoff was ≥ 8 for WHeFRA and ≥ 4 for HFRM, the published cutoff was ≥ 10 and ≥ 5 respectively. The TTSH FRT had high sensitivity of 100% but show poor ability to predict fallers with specificity of only 30%.

Conclusion: Both WHeFRA and Heindrich II possess high sensitivity and specificity which are important attributes of a good screening tool.

N-P 2

Use of Time by Nurses in a Rehabilitation Centre

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Aim: The effective use of nursing time is a major determinant of the quality of care in rehabilitation facilities. The objective of this study was to explore the allocation of nursing time in a rehabilitation centre.

Methods: Non-participant observations were conducted over 6 weekdays accounting for 132 hours. Registered and enrolled nurses were observed for 66 hours with the amount of time spent on each task recorded. The study covered 3 work shifts: 7am-2.30pm, 2pm-9.30pm and 9pm-7.30am. The activities were further categorised into 5 major groups, namely time spent on direct care, indirect care, ward-related activities, documentation, and personal activities.

Results: The study found that nurses spent an average 27% of their time on direct care activities that include all nursing activities performed in the presence of patient or family, such as bathing or administering medications. They spent 28% of their time on indirect care, such as preparing equipment for procedures or communication with other providers about patient care. Documentation and ward-related activities, such as ordering supplies, accounted for 17% and 6% respectively. Enrolled nurses spent a higher proportion of their time on direct care compared to registered nurses (33% versus 21%). Personal activities not related to patient care or unit activities but including allocated meal breaks accounted for 22%.

Conclusion: Overall, nurses spent more than half of their time on patient-related care and allocate a significant amount of time on documentation.

N-P 3

Profile of Patients Attending Multidisciplinary Weight Management Clinic of a Tertiary Hospital in Singapore

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Aim: To identify the profile of patients attending multi-disciplinary weight management clinic of National University Hospital.

Methods: Patient interviews with the assistance of structured questionnaires during consultation in multi-disciplinary weight management clinic.

Results: Out of the 124 patients, 59.7% are females and 40.3% are males. Racial distributions were 46.85 Chinese, 21.8% Malays, 25% Indians and 6.5% Others. Mean age was 39.9 years, mean number of years overweight was 13.5, and mean body mass index (BMI) was 39.9. 58.9% professed of not exercising at all. As for eating habits, 70% professed to be sweet eaters and 85.7% bulk eaters but most patients are neither smokers nor drinkers (75% and 83.6%). As for co-morbidities, 28.6% are diabetics on medications, 50.4% and hypertensive, 44.4% have hyperlipidaemia, 8.9% have IHD, 50.4% have obstructive sleep apnoea, 53.8% have osteoarthritis and 28.7% have oesophageal reflux. Patients also exhibit family history of obesity, diabetes and IHD (67.8%, 49.5% and 39%). Chinese patients tended to be bulk eaters ($P = 0.019$). Male patients tended to present with hypertension ($P = 0.03$). Male patients had a strong correlation for obstructive sleep apnoea ($P = 0.01$). Female patients tended to have a more sedentary occupation ($P = 0.001$). More male patients were smokers or past smokers ($P = 0.000$). Female patients were more likely than male patients to opt for laparoscopic gastric banding for weight management ($P = 0.006$).

Conclusion: Chinese patients exhibit the cultural preference of bulk eating as compared to other races. The strong representation of male obese patients with smoking, hypertension and obstructive sleep apnoea is similar to results of international studies on the subject. Lastly, local female patients tend to be more motivated to loose weight by surgical mean than male patients.

PC-P 1

Comparison of Attitudes of Primary Care Physicians vs Mental Health Physicians in Singapore Towards At Risk Mental States (ARMS)

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Aims: To compare the attitudes of Singaporean primary care physicians vs psychiatrists/psychiatry trainees regarding the diagnosis and management of at risk mental states (ARMS)/the schizophrenia prodrome.

Methods: An anonymous survey containing a clinical vignette and questions related to the diagnosis and management of ARMS was sent out to all physicians in 1 (of 2) government primary healthcare groups as well as all registered psychiatrists and psychiatry trainees in Singapore.

Results: For the psychiatrists and primary healthcare survey there was a response rate of 62.1% (87/140) and 72.3% (107/148) respectively. For the psychiatrists 44.8% vs 43.7% diagnosed ARMS vs. psychosis respectively for the patient in the clinical vignette. Among primary care physicians the corresponding proportion was 54.2% vs 40.2%. The difference between the diagnosis choices of the two groups did not reach statistical significance. Among psychiatrists, 74.4% (29/39) of respondents who diagnosed ARMS would treat the patient with active management. Of these, 79.3% (25/29) would treat the patient with atypical antipsychotics and only 13.8% (4/29) would treat with typical antipsychotics. All primary care physicians who diagnosed ARMS would refer the patient to a psychiatrist. 64.4% of

psychiatrists felt that there was no consensus regarding the management of ARMS.

Conclusion: There is currently clinical equipoise with regards to both diagnosis and management of ARMS in Singapore. Primary care physicians may be more likely to diagnose psychosis vs ARMS when compared to psychiatrists. Most psychiatrists would manage ARMS actively. Atypical antipsychotics were most commonly used in active treatment.

PC-P 2

NHG Diagnostics Sonographers: "How we do it?"

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Aim: Introduction of qualified sonographers in National Healthcare Group Diagnostic (NHGD) Centre with remote supervision of a Radiologist – a study of its effectiveness and reliability.

Methods: The ultrasound images obtained were sent through National Healthcare Group (NHG) network to remote workstations of the Radiologist and images were stored at the National Healthcare Group Diagnostics Primary Data Centre (PDC). Request forms were scanned in the Radiology Information System together with the sonographer's preliminary results and findings. A Skype communication was also established to enable direct communication if the Radiologist has any queries. A meticulous workflow, standardised protocols, comprehensive training plan were drawn up with regular scanning sessions with the radiologists conducted every 6 months. This was to provide continuous competency assessment of the sonographer and at the same time build rapport between the Radiologist and Sonographer.

Results/Conclusion: Off site sonographers with remote supervision by a Radiologist were able to deliver the required standards. Over a period of 6 months, 4613 scans were performed at the NHGD ultrasound centres by sonographers. Ten patients were recalled by reporting radiologist for additional images to be performed at the corresponding centres. The recall rate was 0.22% and the reason given was the technically difficult nature of the scans. Radiologist recalled no patients to the NHG institutions for repeat scans. This arrangement is significant in supporting the right siting of care initiative that has been effective in reducing hospital visits by the patients who can now obtain ultrasound services at the primary healthcare level.

PC-P 3

To Increase the Percentage of Asthma Patients With Optimal Prescriptions* to 95% in 6 Months at Yishun Polyclinic

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Aim: The prevalence of asthma in Singapore is 2.2% among adults. There is considerable morbidity, preventer underuse, reliever overuse and poor patients' knowledge. Regular use of preventer medication has been shown in studies to decrease hospital admission rates by up to 80%. Asthma related mortality has also been shown to decline with preventer use. Conversely, increased use of reliever medication has

been associated with increased mortality. The Preventer:Reliever (P:R) medication ratio in prescriptions is an indicator of the standard of Asthma care. Optimal Asthma prescriptions have P:R > 1 (excluding infrequent Asthma). The percentage of Asthma patients with optimal prescriptions in Yishun Polyclinic was 82.7% in December 06. The project aimed to increase this percentage to 95% in 6 months.

Methods: A survey among patients and discussions with medical staff showed that there was a lack of knowledge among patients and medical staff. Communication was also lacking among medical staff in the management of each Asthma patient. Interventions were carried out to 1) increase patients' Asthma knowledge through care manager education for all post-nebulisation patients, 2) establish continuing Asthma education for all medical staff and 3) institute a system where the doctor, nurse and pharmacy staff attending to each patient countercheck Preventer:Reliever use and safely limit reliever medication per prescription. Weekly data was collected as each intervention was introduced over the 6 months.

Result: The percentage of optimal prescriptions increased to 92.0% in May 2007.

Conclusion: Optimisation of asthma treatment is important and can be safely achieved through targeted intervention involving patient, doctor, nurse and pharmacist.

* Optimal prescriptions refers to prescriptions with Preventer:Reliever medication ratio (P:R) of > 1.

Q-P 1

Trends of Patients With Acute Stroke in National Healthcare Group, 2000-2004

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Aim: To describe the 5-year trend of patients with acute stroke in National Healthcare Group (NHG) institutions.

Methods: Data on all patients aged 21+ years admitted with primary diagnosis of stroke (ICD9CM 430-435) to the three acute hospitals in NHG from 2000-2004 were obtained from datawarehouse. Information analysed included patient demographics (age, gender, race), comorbidities (hypertension, hyperlipidaemia, diabetes mellitus and IHD), average length of stay (ALOS), intra-hospital mortality as well as stroke reoccurrence rate. Patients were stratified by subarachnoid haemorrhage (SAH), intracerebral haemorrhage (ICH), ischaemic cerebral infarction (ICI), and transient cerebral ischaemia (TIA). One-way ANOVA and Chi-square trend analyses were applied.

Results: The mean age of patients remained stable over the study period, with highest mean age among patients with ICH. The proportion of male patients with ICI increased significantly during the period ($P = 0.014$). There was also an increasing trend in the proportion of patients with ICI with hyperlipidaemia. Decreasing trends were noted amongst patients with TIA with diabetes or hypertension, and of all stroke patients with IHD. There are no statistically significant trend in intra-hospital mortality rate during the period for all the four categories of stroke. Patients with SAH had longest ALOS, while ICI showed a significant increasing 5-year trend in ALOS ($P < 0.001$). Rehabilitation and stroke reoccurrence were significantly inversely correlated (Pearson's correlation coefficient of -0.786, $P < 0.001$).

Conclusion: The significant inverse association of rehabilitation with a stroke recurrence is positive. However, targeted interventions will be needed to curb the increasing trend amongst males with hyperlipidaemia, and to reduce mortality rates.

Q-P 2

Predictors for Readmission Within 30 Days of Discharge Among Patients Admitted With Acute Stroke in National Healthcare Group, Singapore

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Aim: To determine predictors for readmission within 30 days of discharge among patients admitted with acute ischaemic stroke (IS), haemorrhagic stroke (HS) and transient ischaemic attack (TIA) in National Healthcare Group hospitals in Singapore.

Methods: Medical records of patients discharged from 3 acute hospitals between April 2004 and March 2005 with primary diagnosis of IS, HS and TIA were randomly selected. Information collected were demographics, hospital, disciplines, department, types of stroke, place discharged to, presence of comorbidities and complications during hospital stay. Data was analysed using Statistical Package for the Social Sciences version 15.

Results: A total of 608 patients with stroke were surveyed. Of these, a total of 96 (15.8%) patients died during hospitalisation and within 30 days post-discharge. Nine (1.5%) patients were readmitted for elective investigations. Of the remaining 503 patients, 43 (8.5%) were readmitted to hospital within 30 days, comprising 24 (55.8%), 13 (30.2%) and 6 (14.0%) patients with IS, HS and TIA, respectively. Factors significantly associated with discharge within 30 days by univariate analysis were department, history of previous stroke, not given anti-coagulant prophylaxis and presence of pneumonia. However, logistic regression analysis to adjust for confounders found previous stroke, not given anti-coagulant prophylaxis and presence of pneumonia to be the independent factors that were significantly ($P < 0.05$) associated with readmission within 30 days.

Conclusion: We must be vigilant on patients with a history of previous stroke for risk of readmission. Efforts to prevent pneumonia among patients with acute stroke could also result on days avoided in readmission.

Q-P 3

Complications and Mortality among Patients with Acute Stroke at the National Healthcare Group, Singapore

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Aim: This study compares the complication and mortality rates of patients with acute ischaemic stroke (IS), haemorrhagic stroke (HS) and transient ischaemic attack (TIA) at the National Healthcare Group in Singapore.

Methods: We randomly selected medical records of patients discharged from three hospitals during April 2004 to March 2005 with primary diagnosis of IS, HS and TIA. Complications related to stroke or treatment within hospital stay, and 30-day mortality rates were compared between the types of stroke. Data was analysed using SPSS v15.

Results: There were 608 patients, 60% with IS, 26% HS and 14% TIA. IS patients were significantly older (mean age 72.2 vs 65.0 years for HS and TIA). About 42.3% of patients developed at least one

complication. Fever was most common, affecting 34.1% of IS, 47.5% HS and 15.5% TIA patients. Incidence rates of urinary tract infection (UTI) and pneumonia were significantly higher among patients with IS and HS than TIA. UTI was found in 16.9% of HS, 14.3% IS and 2.4% TIA patients; pneumonia was diagnosed in 11.0% of IS, 11.9% HS and 1.2% TIA patients. All patients with TIA, 91% with IS and 72% with HS were discharged after 3.6 days, 11.6 days and 21.8 days. The 30-day mortality rate was 9.3% for IS and 28.1% for HS. Patients who died survived 7 days on average.

Conclusion: Patients with HS had higher complication and 30-day mortality rates than those with IS and TIA. UTI and pneumonia were the most common complications affecting patients with stroke.

S-P 1

Clinical Parameters in Obstructive Sleep Apnoea: Are There Any Correlations?

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Aim: To assess the correlation between clinical symptoms and examination findings with severity of obstructive sleep apnoea (OSA).

Methods: A prospective study was conducted on patients referred to the Sleep clinic with a suspected diagnosis of OSA. Clinical examination documented the Epworth sleepiness score (ESS), body-mass index (BMI), tonsil size, modified Mallampati index (MMP), Muller's manoeuvre score and reflux finding score (RFS). All patients underwent Level 1 overnight polysomnography. Pearson's correlation coefficient test was performed to assess relationships between patient characteristics and various aspects of symptoms and signs with polysomnographic measures relating to the severity of OSA. A P value of less than 0.05 was considered statically significant.

Results: Eighty patients (14 female, 66 male) with a mean age of 42.9 years (range, 22-66) were included in the study. Mean BMI was 27.6 (range, 20-39). Correlation was found between ESS and anteroposterior pharyngeal wall collapse at level of soft palate during Muller's manoeuvre ($r = 0.3$, $P = 0.02$). BMI was significantly associated with a history of hypertension ($r = 0.3$, $P = 0.01$), MMP ($r = 0.3$, $P = 0.001$) and lateral wall collapse at level of soft palate during Muller's manoeuvre ($r = 0.4$, $P = 0.0001$). OSA severity correlated significantly with the male gender ($P = 0.02$), history of hypertension ($r = 0.5$, $P < 0.0001$), BMI ($r = 0.2$, $P = 0.03$), MMP ($r = 0.3$, $P = 0.003$) and upper airway collapse during Muller's manoeuvre.

Conclusion: Clinical findings in patients with OSA do correlate with severity of OSA and polysomnographic findings. Degree of upper airway collapse during Muller's manoeuvre correlates well with AHI severity. Accuracy in predicting presence and severity of OSA allows for greater cost-effectiveness in screening patients prior to polysomnography.

S-P 2

A Tailored Approach to Laparoscopic Spleen-Preserving Distal Pancreatectomy – Our Initial Experience

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Aim: Laparoscopic resection for small lesions of the pancreas has

recently gained popularity. We report our initial experience with a tailored approach to laparoscopic spleen-preserving distal pancreatectomy.

Methods: Three patients underwent laparoscopic spleen-preserving distal pancreatectomy over a two-month period. Surgical techniques were tailored based on the location of the lesion and patient outcomes were examined.

Results: All our patients were females, with ages ranging from 31 to 47 years. Two patients underwent surgery employing a “medial-to-lateral” approach as the lesion was in the body or proximal tail of the pancreas. The third patient had a lesion in the distal tail of the pancreas and surgery was performed using a “lateral-to-medial” technique. This latter approach prevented the excessive sacrifice of normal pancreatic tissue for such distally located lesions. The splenic artery and vein were preserved in all cases. The first 2 patients stayed in hospital for 5 days while the third patient stayed for 9 days. There was no significant difference in operative time and intra-operative blood loss.

Conclusion: Laparoscopic distal pancreatectomy with preservation of the spleen is a feasible surgical technique with acceptable outcome. We developed a tailored approach to the dissection technique based on location of the lesion. A “medial-to-lateral” approach is indicated for lesions in the body of the pancreas while a “lateral-to-medial” dissection has been shown to minimise loss of normal pancreatic tissue for lesions in the distal tail of the pancreas. We have successfully performed splenic preservation, with preservation of the splenic vessels, in both approaches.

S-P 3

Gastric Gastrointestinal Stromal Tumours – An Overview of Presentation and Management

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Aim: Gastrointestinal stromal tumour (GIST) is a term used to describe neoplasms arising from the mesenchymal tissues of the gastrointestinal tract. Two thirds of them present in the stomach and surgical resection is mainstay of treatment. A laparoscopic approach to surgical resection of gastric GIST is associated with low morbidity and short hospitalisation stay

Methods: We present our institution’s experience with Gastric GIST over a period from January 1999 to July 2006. A total of 11 cases were analysed retrospectively.

Results: The average age of our patients was 67 years. Five (45%) presented as incidental findings on computerised tomography of abdomen or routine endoscopy. Diagnosis was achieved endoscopically in majority of patients. Seven (63%) of the tumours were found on the greater curvature of the stomach. Seven (63%) of our patient had laparoscopic surgery. Mean operative time for laparoscopic surgery was 146 minutes. Average size of the tumour was 3.42 cm for resections done laparoscopically. Average length of hospital stay was 7 days for patients operated by the minimal invasive way and 12 days for patients operated by the open method. One patient had recurrent disease. There were no postoperative morbidities. There was one death (from myocardial infarct) in the series.

Conclusion: GISTs are rare tumours of the stomach and occur mainly in the older age group. Majority of them are of low malignant potential. Unlike NCCN guidelines larger tumours (>2cm) on the greater curvature are amenable to laparoscopic approach. Complete surgical excision with negative margins remains the only true means of cure.

ALH 001

Evaluating the Feasibility of Adopting Point-of-care (POC) Devices at the Anticoagulation Clinic (ACC) in Alexandra Hospital (AH)

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Aim: Frequent blood tests are required for patients on warfarin anticoagulation therapy to ensure that the International Normalised Ratio (INR) stays within the desired range. At present, INR is obtained via conventional venepuncture which tends to be invasive, painful and inconvenient. A possible way to overcome these drawbacks would be to use point-of-care (POC) devices as an alternative. POC devices may facilitate healthcare by decreasing waiting time and pain to patients. However, as promises may not translate directly into reality, there is hence a need to evaluate the feasibility of POC devices in the clinical setting in Singapore.

Methods: Blood samples were obtained from the patients for validation of the 2 POC devices, Coaguchek XS® and iStat® against the laboratory standard. In addition, a questionnaire was given to patients who participated in the study to survey their opinion on the devices.

Results: Results from the study indicated that although both devices had good correlation with the laboratory, Coaguchek XS® had better correlation (0.928 versus 0.9050). However, there is a high degree of standard deviation associated with both devices and this may limit the accuracy. In patients' assessment of the devices, although all of them were in favour of a shorter waiting time with the devices, most (73.3%) were unwilling to pay an extra charge for it.

Conclusion: The use of POC devices in AH may be limited due to poor patient response. Further validation and assessment with regard to the use of POC devices is needed before implementation in AH.

ALH 002

Impact of Pharmacists' Intervention and Counselling on Eczema Patients' Understanding and Management of Their Condition

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Aim: To assess the level of understanding that patients suffering from atopic eczema have with regard to their condition as well as their medications and to determine whether pharmacists' intervention and counselling help to improve their understanding and help to manage their eczema better.

Methods: Eighty-three patients with atopic eczema who consulted doctors at the participating polyclinics were followed up for 1 month. At the first visit, patient's knowledge and understanding on atopic eczema and medications prescribed were assessed using a scoring system. After which, a pharmacist would go through with the patient facts on atopic eczema, proper usage of their medications and other non-pharmacological therapies with the aid of a pictorial flip chart. In the subsequent follow-up, the patient's knowledge is again assessed using the same scoring system. Patients' feedback is also obtained during this visit.

Results: 88.1% of the subjects' level of understanding improved by 1 point or more (based on the scoring system) after a session with the pharmacist. About 90% of subjects understood their medications better with the highest increase of 69% in the area of dosage, while 68% had a better understanding of their condition.

Conclusion: Pharmacists have an important role in helping eczema patients manage their condition better by empowering them with

knowledge about their condition and medications as well as non-pharmacological self-care tips. Newly diagnosed eczema patients and those whose condition is not managed well will benefit significantly from a counselling session with the pharmacist.

ALH 003

Functional Independence of Patients Undergoing Abdominal Surgery in an Accelerated Carepath

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Aim: This study aims to investigate any possible patterns of physical profiles and functional recovery of the patients undergoing physiotherapy after abdominal surgery in an accelerated carepath. The effects of the presence of drips and drains, patient controlled analgesia (PCA), patient's age and length of stay on the functional recovery were also explored.

Methods: Patients who were admitted for abdominal surgery and referred to physiotherapy were included. Data were collected on the following: 1) number of days required for patients to reach independent bed mobility, transfers, standing up and walking after surgery, 2) number of days the patient had drips and/or drains, 3) number of days the patient had PCA, and 4) length of stay of the patient.

Results: Of 51 patients included in the study, 50 patients reached independence in bed mobility (mean, 2.61 days), forty-four patients in sitting to standing (3.29 days) and 39 patients in ambulation (3.70 days). It was found that 1) the number of days on PCA was moderately correlated (0.714) to the number of days patients reached functional independence (DFI), 2) the number of days on drips and/or drains was correlated to DFI (0.575) and 3) the length of stay was correlated to DFI (0.593). In addition, findings showed significant differences in the DFI and length of stay of the elderly compared to the adults.

Conclusion: The number of days required for functional independence after surgery is comparable to data from overseas. Functional independence appears to be dependent on age, the number of days the patient is on PCA or on drips and/or drains.

ALH 004

Appropriate Detection and Predictive Factors of Malnutrition

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Aim: Underlying malnutrition in hospitalised patients increases morbidity, mortality and length of stay. We aim to ensure early detection of malnutrition and appropriate referrals, and to establish factors that were most significant in predicting malnutrition.

Methods: Patients admitted to a general ward in a Singapore tertiary hospital from 13 February to 3 March 2006 were screened using the Nutrition Assessment Form (NAF). Scores of 6 and above were referred to dietitians. Dietitians assessed patients using the Subjective Global Assessment (SGA). Data were collected prospectively. Scores from the NAF were compared with the dietitian's assessment. We used the SPSS software for statistical analysis.

Results: One hundred and thirty-one patients were surveyed, 129 scored 6 and above using the NAF. Over half (54.2%) were male; the majority (77.9%) were Chinese, with an average age of 74.7 years. Using the receiver-operating curve (ROC), scores of 6 and above gave a sensitivity of 98.4% but a low specificity of 2%. Scores of 7 and above, gave better specificity (58%), slightly decreased sensitivity

(84%). Increasing the score further decreased sensitivity. Logistic regression showed that recent decrease in food intake had a 9.8-fold chance of predicting malnutrition while body mass index (BMI) had a lower impact (2.2-fold). Recent weight loss and underlying disease states had no significant impact.

Conclusion: We recommend a score of 7 and above when using the NAF to detect risk of malnutrition and refer to a dietitian appropriately. Recent decrease in food intake and BMI had the strongest association with predicting malnutrition. Recent weight loss and disease states were not significant predictive factors of malnutrition.

ALH 005

Awareness of the Relationship Between Smoking and Age-related Macular Degeneration Amongst Optometry Students in Singapore

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Aim: To assess the optometry students' behaviour, knowledge and attitudes towards smoking. The perceptions of their future role as optometrists in smoking interventions for their patients were also evaluated.

Methods: A standardised questionnaire was sent to all students (n = 141) in the 2006 optometry course offered by the Singapore Polytechnic. In general, the students' behaviours and attitudes towards smoking, and barriers regarding intervention on tobacco-using patients were assessed.

Results: A total of 147 subjects were approached for the study, of which 141 students (29.1% males and 70.9% females) with a mean age of 17.93 years (range, 16 to 23) participated in the survey. The students rated smoking to be generally harmful to health with a visual analogue mean score of 9.06 on a score range from 0 to 10. When asked if the students think blindness is related to smoking, more (60.5%) of the Yr-3 students answered yes, than the Yr-2 (38.8%) and Yr-1 (22.2%) students ($P = 0.001$). Significantly ($P < 0.0001$) more Yr-3 students (71.1%) also stated that smoking is associated with age-related macular degeneration, when compared to the Yr-1 (31.5%) and Yr-2 (28.6%) students. The majority (59.7%) of the students indicated that they were interested in attending courses on opportunistic smoking cessation counselling for the benefit of their patients.

Conclusion: Optometry students are generally aware of the harmful effects of smoking. It is both crucial and essential to educate them on tobacco-related ocular diseases to update and increase the awareness among them to better serve the community.

ALH 006

Prevalence of Malnutrition in Patients Newly Admitted to a Tertiary Hospital in Singapore

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Aim: Previous studies indicate that incidence of malnutrition in hospitals is relatively high. Malnutrition increases the risk of morbidity

and mortality. The aim of this study was to determine the prevalence of malnutrition in a tertiary hospital in Singapore.

Methods: Eight-hundred and eighteen newly admitted patients aged 18 to 74 years (mean age, 51.9 ± 15.4) were randomly selected for this study. Patients from Pediatrics, ICU and maternity wards were excluded. A single dietitian assessed the nutritional status of patients within 48 hours of admission using Mid Arm Muscle Circumference (MAMC) and 7-point scale Subjective Global Assessment (SGA). SGA scores ≤5 are classified as malnourished and ≤2 are severely malnourished. MAMC ≤25th percentile is considered malnourished whereas a value below 5th percentile is deemed severely malnourished.

Results: Twenty-two per cent of patients had both MAMC and SGA categorising them as malnourished (congruence) whereas 51% had either MAMC or SGA (or both) indicating them as malnourished. Using MAMC, 18% patients were severely malnourished, 25% were moderately malnourished and 57% patients were well nourished. SGA data reflected 4% as severely malnourished, 25% moderately malnourished and 71% patients well nourished. Using MAMC, the Oncology Department had the highest percentage of malnourished patients (72.7%), followed by Respiratory (66.7%) and Surgery (44.6%). Assessment with SGA showed the top 3 departments as Oncology (70.5%), Endocrine (48%) and Respiratory (47.2%).

Conclusion: Malnutrition was prevalent in our tertiary hospital and especially so in certain specialties. More attention should be given to increase the awareness and prevent malnutrition by early nutritional intervention for at risk patients.

ALH 007

Medication Adherence Among Patients with First-episode Psychosis: 1-year Follow-up Study

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Aim: This study examined the prevalence of medication adherence among patients with first-episode psychosis and the association between medication adherence, clinical and functioning factors over a 1-year follow-up.

Methods: Four hundred and eighteen participants with first-episode psychosis, who were consecutively admitted to the Early Psychosis Intervention Programme, Singapore, were assessed for medication adherence by case managers at 1-year follow-up. Patients' psychopathology severity, insight and social/occupational functioning were assessed by clinicians using the PANSS and the GAF scales respectively at baseline and at 1-year follow-up.

Results: In this study, 327 patients (78%) were medication adherent. They were significantly younger and had attained higher educational level than medication non-adherent patients. Compared to baseline, both medication adherent and non-adherent patients scored significantly lower on total PANSS (M = 26.82, $P < 0.01$; M = 16.18, $P < 0.01$), PANSS Positive (M = 10.86, $P < 0.01$; M = 7.85, $P = 0.001$) and PANSS General Psychopathology (M = 12.13, $P < .01$; M = 7.71, $P = 0.002$), and scored higher on GAF total (M = -32.99, $P < 0.01$; M = -27.06, $P < 0.01$), GAF-SYMP (M = -35.13, $P < 0.01$; M = -24.82, $P = 0.003$) and GAF-DISB (M = -28.37, $P < 0.01$; M = -22.06, $P = 0.001$) at 1-year follow-up. The mean PANSS Negative score was significantly reduced for medication adherent patients (M = 3.88, $P < 0.01$) but not for medication non-adherent patients over the 1-year period. At 1-year follow-up, medication adherent patients experienced significantly less PANSS positive symptoms (M = -3.37, $P = 0.001$),

greater insight ($M = -2.83$, $P = 0.005$) and better GAF-SYMP ($M = 2.79$, $P = 0.006$) than medication non-adherent patients.

Conclusion: Other treatment modalities, such as psychosocial interventions, could have influenced patients' improvement in clinical and functioning factors over the 1-year period. Such an improvement appears to be more significant among patients who are also medication adherent.

ALH 008

Prevalence and Correlates of Excessive Internet Use Among Youth in Singapore

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Aim: The explosive growth of Internet usage is expected to continue with its integral use in everyday life, accessibility and affordability. Although Internet provides tremendous information access, excessive use can lead to negative outcome with the extreme being a new compulsive activity – "Internet addiction". Our study aimed to examine the prevalence, consequences and predictors of excessive Internet use among secondary school students in Singapore.

Methods: The survey was an anonymous, self-administered 69-item questionnaire including questions pertaining to demographic data, academic performance, social support, general well being and Internet use.

Results: Of the 2735 adolescents surveyed, 1349 (49.3%) were males, 1383 (50.6%) were females and the mean age was 13.9 years (SD, 1.0). 17.1% of them reported using Internet for more than 5 hours daily (excessive use). Significantly more males reported excessive Internet use ($\chi^2 = 67.5$, $P < 0.001$) and those without rules at home are significantly more likely to be excessive users ($\chi^2 = 313.1$, $P < 0.001$). Also, significantly more of the excessive users felt that "school work suffers because of the time spent online" ($\chi^2 = 226.1$, $P < 0.001$).

Conclusion: Our study suggests that excessive Internet use is associated with academic problems and the lack of household rules regarding Internet surfing was a significant predictor of excessive use. Limitation of the study is that results are based entirely on self-report thus we recommend carrying out future studies using a locally validated instrument. Training and resources should be made so that early warning signs can be detected.

ALH 009

Clinician and Patient-rated Measures of Depression in First-episode Psychosis

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Aim: Patients with psychosis often present with depressive symptoms. Such symptoms can contribute significantly to patients' level of distress and functioning. Moreover, they can precede suicide attempts. One assessment method is the use of patient-rated depression scales. However, patient-rated scales are dependent on their insight and educational levels. Thus, clinician and patient-rated measures of depression have been found by some studies to be discrepant (Bailey et al, 1976; Rush et al, 1987; Tondo et al, 1988; Corruble et al, 1999). Our objective was to compare clinician and patient-rated measures of depression in first-episode psychosis in Singapore.

Methods: Since January 2005, 178 consecutive patients accepted into the Early Psychosis Intervention Programme (EPIP) were assessed on the Positive and Negative Syndrome Scale for Schizophrenia (PANSS) and Beck's Depressive Inventory II (BDI-II). PANSS contains a clinician-rated depression item while self-rated BDI-II assesses the intensity of depression. A hundred and one patients repeated the ratings at 3 months and 82 patients at 6 months. Spearman's partial correlations were used to examine associations between the scores, controlling for age and gender.

Results: The PANSS depression item and BDI total scores were significantly correlated at baseline ($r = 0.262$, $P = 0.001$), 3 months ($r = 0.518$, $P < 0.05$) and 6 months ($r = 0.453$, $P < 0.05$).

Conclusion: There is concordance between clinician and patient-rated measures of depression in EPIP; there is little clinician or patient bias. In addition, high concordance repeated at 3 and 6 months could be indicative of establishment of rapport between clinician and patient.

ALH 010

Comparing the Efficacy of a Non-proprietary Very Low Calorie Diet (VLCD) Preparation Versus Optifast® VLCD for Weight Loss Pre-laparoscopic Banding Surgery

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Aim: Laparoscopic adjustable gastric banding (LAGB) requires surgical access to the gastroesophageal junction, which may be compromised by the enlarged, fatty liver that is frequently encountered in the obese. Liver size appears reduced and surgical access improved following preoperative weight loss with a very low calorie diet (VLCD). The aim of this study was to compare the efficacy in weight loss of a non-proprietary (made in-house by dietitians) VLCD preparation (Alexfast) with a commercial preparation, Optifast® VLCD.

Methods: Nine patients [4 females and 5 males; average age, 34 years; average body mass index (BMI), 53.3] underwent a 2-week preoperative VLCD with Alexfast from May to December 2006 before their laparoscopic banding surgery. The weight loss was compared to the retrospective data of 8 patients (3 females and 5 males; average age, 39 years; average BMI, 57.1) on Optifast® VLCD.

Results: The amount of weight loss over 2 weeks for the Alexfast and Optifast groups was 7.33 kg (SD \pm 2.86) and 7.71 kg (SD \pm 6.08) respectively. The Alexfast patients lost 4.80% (SD \pm 1.72) of their initial body weight whereas the Optifast® patients lost 4.70% (SD \pm 2.08). The weight loss between the 2 groups was not statistically significant ($P = 0.875$).

Conclusion: This study has demonstrated that the efficacy of an in-house VLCD preparation is comparable to that of a commercial preparation, Optifast® VLCD. The use of a non-proprietary preparation may also bring potential cost savings to morbidly obese patients requiring preoperation weight loss to improve surgical access.

ALH 011

Reducing Time to Transfusion in an Acute Care Hospital

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Aim: A transfusion audit in 2006 revealed that the time taken from issuance of blood products to the start of transfusion in inpatients is unacceptably long. This can result in an increased risk of bacterial contamination especially if the temperature cannot be maintained between 1 and 10 degrees Celsius. We undertook a trial to reduce this issuance-to-transfusion time.

Methods: In October 2006, a pilot trial was undertaken in a ward where containers for all blood products requested by the trial ward were attached with timers set to alarm at 30 minutes after the issuance of the blood product. After 30 minutes, the blood products were sent back to the laboratory for appropriate storage. Subsequently, this trial was extended to 12 wards in April 2007. The median issuance-to-transfusion time for the month pre- and post-trial was compared using the Mann-Whitney test for the trial ward and for a control ward that did not receive the timer.

Results: In the pilot trial, the median issuance-to-transfusion time in the trial ward was reduced from 34 minutes to 24 minutes ($P = 0.01$) in the months of September 2006 and October 2006 respectively. Over the same period, the median issuance-to-transfusion time in a control ward stayed constant, from 36 minutes to 43 minutes respectively ($P = 0.22$).

Conclusion: The pilot trial showed that the simple use of a timer attached to the container for blood products was able to reduce the issuance-to-transfusion time of blood products. The results and conclusions from the extended trial will be presented.

ALH 012

The Relationship between Positive and Negative Syndrome Scale (PANSS) with Employment Status at Baseline, 6 Months and 1 Year Follow-up

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Aim: High unemployment rates among individuals with schizophrenia are a compelling reminder of the disabling impact of the disease. One of the main impediments to employment is the presence of symptoms. The aim of this study was to examine the association between Positive and Negative Syndrome Scale (PANSS) with employment status of patients with first-episode psychosis.

Methods: Baseline data on 773 patients accepted into the Early Psychosis Intervention Programme (EPIP) were collected. The symptom measure was obtained by clinicians through the PANSS. Employment status was categorised into (1) paid/self-employed, (2) unemployed, (3) student, (4) homemaker and (5) others. The Kruskal-Wallis test was used to examine the relationship between symptomatology with employment status. The Friedman test was used to compare the differences between the employment categories.

Results: Baseline PANSS positive symptoms did not identify any significant differences between employment status. Whereas, PANSS negative symptoms, $\chi^2(4, n = 772) = 37.541, P < 0.0001$, global psychopathology $\chi^2(4, n = 775) = 19.404, P < 0.001$, and total, $\chi^2(4, n = 766) = 24.543, P < 0.0001$ indicated significant differences between employment status at baseline. At 6 months, there were differences between PANSS positive symptoms, $\chi^2(4, n = 465) = 18.487, P < 0.001$, PANSS negative symptoms, $\chi^2(4, n = 465) = 11.856, P < 0.05$, global psychopathology $\chi^2(4, n = 465) = 10.18, P < 0.05$, and total, $\chi^2(4, n = 462) = 17.515, P < 0.002$. The Friedman test performed on (1) paid/self-employment and (2) unemployment showed significant differences across the follow-up period.

Conclusion: Severity of negative symptoms at baseline may be an indicator to poor employment outcome. There is an improvement to symptomatology across time; observed changes in positive symptoms may be due to medication response. Changes to negative symptoms may be improved through case management and psychosocial interventions.

ALH 013

Resting Oxygen Saturation as a Predictor of Exercise Desaturation in Inpatients With Respiratory Diseases

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Aim: The relationship between baseline oxygen saturation and exercise desaturation in an acute inpatient setting has not been previously examined. This study aims to assess this association in patients warded with respiratory diseases.

Methods: A prospective observational study was conducted on 80 patients admitted to Tan Tock Seng Hospital with a primary diagnosis of pulmonary pathology. Oxygen saturation was measured at baseline and continuously during a 6-minute walk test. Primary outcomes of (i) exercise desaturation to $<90\%$ and (ii) exercise desaturation of at least 4% from baseline were obtained. Secondary outcome was hospitalisation duration.

Results: Ten (37%) of 27 patients with resting oxygen saturation $\leq 95\%$ desaturated to $<90\%$ compared to 4 (7.5%) of 53 patients with resting oxygen saturation of 96% and above. Fourteen (52%) of 27 patients with resting oxygen saturation of 95% or less desaturated to 4% or more, compared to 16 (30%) of 53 patients with resting oxygen saturation of 96% and above. In a multivariate logistic regression model, given a baseline oxygen saturation $\leq 95\%$, odds ratio was 10.0 (95% CI, 2.13-47.2), $P = 0.002$ for exercise desaturation to $\text{SpO}_2 < 90\%$. Odds ratio was 3.40 (95% CI, 1.12-10.3), $P = 0.03$ for oxygen desaturation of at least 4% from baseline.

Conclusion: In an acute inpatient setting, resting oxygen saturation $\leq 95\%$ is a reasonable predictor of exercise desaturation for patients with lung diseases. These outcomes correlate closely to baseline functional status, suggesting that baseline oxygen saturation has strong clinical relevance.

ALH 014

Molecular Diagnostics in Positive Blood Cultures

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Aim: To compare identification methods of bacterial isolates from positive blood cultures: conventional biochemical methods and molecular method.

Methods: Positive blood culture bottles flagged positive by BacTAlert®3Dsystem (BioMérieux) were gram stained, followed by manual culture plating, bacterial isolates were identified by automated Vitek®2system (BioMérieux) and supplemented by biochemical tests and commercial kits. We compared these positive culture isolates with molecular commercial kits: Genotype®BCgrampositive and Genotype®BCgramnegative (Hain-LifeScience) kits for 24 gram-negative and 24 gram-positive isolates. DNA was collected from a positive blood culture, amplified and reverse hybridised. Results

were read by comparing to the provided evaluation sheet.

Results: The incidence of laboratory-confirmed bacteraemia from January to March 2007 was 11% (831/7587). The most frequent isolates were *Staphylococcus aureus* 24% (181/831), coagulase negative *Staphylococcus* (CNS) 21% (164/831), *Escherichia coli* 16% (125/831) and *Klebsiella pneumoniae* 10% (80/831). Using Genotype®BC kits, pathogens were identified within 8 hours (compared to 1-5 days using conventional method) upon receipt of positive blood culture bottles. In the study, 11/12 gram negative and 9/12 gram positive isolates that included genetically determined methicillin and vancomycin resistance were identified. Two isolates were not detected (*Acinetobacter* spp., CNS) and 2 were due to mixed pathogens growth (*Streptococcus agalactiae*-CNS mix; methicillin-resistant CNS) showed false/inconsistent reactions. More specimens are being tested.

Conclusion: The Genotype®BC molecular kits could detect blood pathogens that were species specific at 88% sensitivity. The Genotype®BC kits' limitation is the inability of antibiotic sensitivity testing on the pathogens. In conclusion, specific molecular tests provide fast identification and could be used to as an adjunct to confirm doubtful identification by conventional method.

ALH 015

Predictability of Simple Clinical Tests to Identify Shoulder Pain After Stroke

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Aim: Hemiplegic shoulder pain (HSP) adversely hinders upper limb motor recovery after stroke. The objective of this case control study was to identify simple diagnostic musculoskeletal tests that could be performed early after stroke to predict patients' likelihood of reporting early signs of HSP.

Methods: One hundred and fifty-two adult patients were recruited from three hospitals after they experienced a first episode of stroke and 30 were assigned to the experimental group when they reported moderate HSP at rest using the Numerical Rating Scale (NRS). Therapists measured the performance of combined upper limb movement including hand behind neck maneuver (HBN), passive pain free ranges of shoulder motion, three musculoskeletal tests and the strength of deltoid muscles during each patient's hospital stay.

Results: 22.2% (95% CI, 15.5-30.2) of patients reported HSP, on average one week after the onset of stroke. Positive Neer test, NRS ≥ 5 during HBN and a difference of greater than 10^0 of passive range of external rotation between shoulders had a 98% probability of predicting the presence of HSP (receiver operating curve = 0.994, sensitivity = 96.7%, specificity = 99.0%, positive predictive value = 96.7%, negative predictive value = 99.0%; $P < 0.001$).

Conclusion: Three diagnostic clinical tests can be performed during bedside evaluation to increase the likelihood of determining those who complain of HSP after an acute episode of stroke.

ALH 016

A Comparison Study of the Elecsys Prolactin Generation 1 and 2 Immunoassays and the Effects of Polyethylene Glycol Precipitation on their Respective Recoveries

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Aim: Several comparative studies have reported that the Elecsys first-generation Prolactin assay had increased recoveries specifically in macroprolactin-containing samples when compared to similar immunoassay platforms. The Generation 2 Prolactin assay launched by Hoffmann La-Roche in 2006 reports lower activity towards most forms of macroprolactin. An evaluation was conducted on both Generation 1 and Generation 2 assays to elucidate the respective recoveries of suspected macroprolactin samples, and Polyethylene Glycol treated specimens.

Methods: In a cohort of 30 patients with Prolactin (Generation 1) levels between 200 and 37244 uIU/mL, a further assessment was done for the presence of macroprolactin on both formulae by PEG precipitation. The recoveries for this evaluation indicated that the Generation 1 formula was affected by macroprolactin in 11 (37%) of the cohort compared to 5 (17%) by Generation 2 (classification criterion after Polyethylene Glycol precipitation $< 60\%$). Of the 11, only 4 of these were similarly classified by the Generation 2 formula. Furthermore, all 11 samples reported results above the reference value of 390 uIU/mL. In the Generation 2 assay, 3 of the 5 classified with macroprolactin reported within the reference range of 324 uIU/mL.

Results: Correlation studies between Generation 1 and Generation 2 yielded a value of $y = 0.877x - 93.345$, with an R value of 0.9952. When a comparison between generations was also done on Polyethylene Glycol treated serum, the correlation yielded a value of $y = 1.0198x - 40$ and an R value of 0.9974.

Conclusion: The Generation 2 assay seems to be less affected by the presence of macroprolactin but Polyethylene Glycol precipitation must still remain as recourse for implausibly high prolactin results.

ALH 017

Awareness of the Harmful Effects of Smoking and Views on Smoking Cessation Intervention Among Optometry Students in Singapore

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Aim: To assess the knowledge, attitudes and barriers towards smoking intervention on optometry students in Singapore. The perceptions of their future role as optometrists in smoking intervention for their patients were also evaluated.

Methods: A standardised 11-item questionnaire was sent to all students ($n = 141$) in the 2006 optometry course offered by Singapore Polytechnic. All data were analysed using the statistical analysis software system Stata version 9.0.

Results: A total of 147 subjects were approached for the study, of which 141 students (29.1% males and 70.9% females) with a mean

age of 17.93 years (range, 16 to 23) participated in the survey. The students rated smoking to be generally harmful to health with a visual analogue mean score of 9.06 on a score range from 0 to 10. Knowledge about the association of blindness with smoking improved significantly from year 1 to year 3 ($P = 0.001$). Similarly, the awareness of the causal role of tobacco in the development of specific ocular diseases such as age-related macular degeneration was more apparent in the year 3 students ($P < 0.0001$). The lack of skills and education materials were the main reasons that hindered their ability to effectively intervene with patients who smoke.

Conclusion: Optometry students were generally aware of the harmful effects of smoking. Study findings reflect the great receptivity of the optometry students to embrace the need of an appropriate training programme that can equip them with the necessary skills to confidently and successfully intervene with patients who smoke.

ALH 018

Improving Crisis Management for First-episode Psychotic Patients at Stabilisation Phase Could Reduce Readmission Rate

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Aim: The aim of the study was to reduce readmission rate (within 90 days of discharge from the hospital) for patients of the Early Psychosis Intervention Programme at the Institute of Mental Health by improving the crisis management delivered by the treatment team.

Methods: To improve on patients' awareness on where and who to seek help when there is a crisis, a wallet-sized crisis card was given to all patients in this study upon their discharge from the hospital. The crisis card detailed who and what number to call during office hours and after office hours. To remind the treatment team of any newly discharged patients from the wards, these patients' names were specifically written on a board in the conference room of the department. It served as a constant reminder for the Case Managers and Doctors-in-charge to work closely with their respective patients. The readmission rate and Clients' Satisfaction Rate Survey for the next 6 months were then gathered.

Results: The readmission rate was reduced by 50% within 6 months of improving crisis management. Patients also reported a higher client satisfaction rate as they are now more aware of where to seek help and what number to call during crisis. Case managers are constantly reminded to work closely with their respective patients who have just been discharged from the hospital and are in the stabilisation phase.

Conclusion: Hospitalisation could cause a lot of distress and disruption to patients' personal and study/work life. The financial burden is also a major concern to both patients and their caregivers. Hence, although the result has been encouraging, further improvement could be explored in order to further reduce the readmission rate.

ALH 019

Dementia Caregiving is Not All Pain and No Gain

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Aim: To investigate the gains experienced by family caregivers of persons with dementia.

Methods: Twelve respondents were recruited using purposive sampling from three institutions around Singapore. A qualitative design that involved semi-structured, in-depth, face-to-face interviews was adopted. The interviews were recorded, transcribed and analysed using open, axial and selective coding.

Results: All caregivers interviewed reported having gained from caregiving. The most common gain was that of "personal growth" which comprised being more patient/understanding, becoming stronger/more resilient, having increased self-awareness and being more knowledgeable. Another theme that emerged was "gains in relationships" whereby caregivers experienced an improvement in their relationship with the care recipient, with others in the family or in their ability to interact with other older persons. The third gain experienced was that of "higher-level gains" which encompassed gains in spirituality, deepened relations with God, and a more enlightened perspective in life.

Conclusion: This research proposes a fundamental shift from the conventional focus on burdens to a more holistic approach that considers how caregivers can grow and emerge stronger from the caregiving experience. This has implications in the design and delivery of services as utilising these gains as a coping resource may enable better support for caregivers. It is pertinent that professionals supporting caregivers internalise the perspective of gains so that it becomes a natural way of seeing their clients and in the process help caregivers find meaning and enrichment in their caregiving journey.

ALH 020

Dental Awareness of Staff in a Special Needs School

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Aim: To assess oral health knowledge, attitudes and practices among the staff in a local special needs school.

Methods: A 15-item self-administered questionnaire designed to assess respondent's knowledge, attitude and practices in matters of oral hygiene, caries and periodontal disease was completed by 64 staff at a special needs school.

Results: Eighty-nine per cent of the participants indicated that they had not received training in keeping oral hygiene although 92% believed mouth care was important. Ninety-two per cent of the respondents knew that poor oral hygiene was the main cause of tooth decay followed by sugar consumption and lack of tooth brushing. Only 69% opined that reducing sugar intake could prevent tooth decay and 57% said that using fluoridated toothpaste could prevent decay. 85.9% indicated that the main cause of periodontal disease was bacteria in dental plaque. Almost everyone (95%) picked swollen gums as a sign of gum disease but only 74% knew bad breath and 49% knew loose teeth were also associated with gum disease.

Conclusion: This pilot study shows that oral health knowledge and practices amongst the staff of this special needs school has room for improvement. This may or may not be indicative of the special needs school situation in the rest of Singapore. A more comprehensive study could be designed to assess this. Meanwhile, we can leverage on the positive attitude of the staff to introduce intervention in the form of oral health education and dietary advice for this school.

ALH 021

Yearly Diabetic Foot Screening and Education by Trained Nurses and Podiatry Assistants in NHG Hospitals

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Aim: Almost 700 feet from diabetic patients are amputated yearly in Singapore. Clinical practice guidelines recommend annual foot examination for all diabetic patients. Traditionally, podiatrists conduct diabetes foot screening (DFS) but the rate remained low in the National Healthcare Group (NHG) as there were few podiatrists to service the big number of patients. The NHG DFS programme aims to augment the DFS service by training nurses and podiatry assistants (PA) to perform first-tier DFS and provide foot care education in hospitals. This paper reports the experience and screening results.

Methods: A 10-day multidisciplinary training programme was organised for the nurses and PAs. The lectures and practicals focused on assessment for vasculopathy, neuropathy, infections and counselling skills on foot care. Foot screening equipment was purchased and patient education materials were produced. The DFS service started in May 2006 with 4 nurses and PAs providing first-tier foot screening and foot care education at the hospital specialist outpatient clinics. Patients were classified according to the King's Risk Classification.

Results: Since May 2006 to May 2007, DFS screened 2728 patients. Half the patients were classified as "Low Risk" foot (Stage 1); 40% as "At Risk" (Stage 2) and 10% as "High Risk" with ulcers, cellulitis or early necrosis (Stages 3 to 5) requiring referral to podiatrist, orthopaedic or vascular surgeon.

Conclusion: The DFS programme trains nurses and PAs to perform first-tier DFS and foot care education for diabetic patients and complements the podiatry service. Half the patients screened by these nurses and PAs had "high risk" foot requiring further intervention.

ALH 022

Client Satisfaction With Psychiatric Case Management Services

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Aim: This descriptive study aims at evaluating client satisfaction with the Case Management (CM) service in a psychiatric setting.

Methods: Forty-five case managed clients discharged in August 2006 from the acute general psychiatry wards and rehabilitation unit in Institute of Mental Health/Woodbridge Hospital (IMH/WH) were surveyed. The Client Satisfaction Questionnaire (CSQ8) developed at the University of California San Francisco (UCSF) by Drs Clifford Attkisson and Daniel Larsen was used. IMH/WH obtained permission to use the copyrighted document. The study received ethics approval. SPSS was used for data analysis.

Results: There was almost 3 times the number of males (n = 33) compared to females patients surveyed. Almost two-thirds (60%) were Chinese, 21 (45%) aged between 41 and 50 years and 80% were single. Seventy-five per cent were diagnosed with schizophrenia and 80% had at least one previous admission. Fifty per cent of clients rated service quality as good; 60% responded that they had received the kind of service they wanted with 100% expressing that the

programme met their needs. Sixty per cent said they would recommend CM to a friend if they required similar help. Fifty per cent were satisfied with the help they had receive and 60% said that the service did help them to deal with their problems effectively. Overall, 53% were satisfied with the service provided and 90% indicated they would seek help from the CM programme again if they needed.

Conclusion: This study contributed significantly to understanding patients needs and their satisfaction with the service. Case managers have used the information to improve and enhance the delivery of case management.

ALH 023

Collaborative Approach to Management of Hyperlipidaemia - Phase I: Retrospective Study of High-risk Patients Requiring Statins

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Aim: To evaluate the management of hyperlipidaemia.

Methods: The study focused on the high-risk group of patients and those who had been on statins for at least 6 months. Patients are considered high risk if they have 1) history of cardiovascular diseases or 2) cardiovascular risk equivalents. Patients were considered at goal if they had achieved LDL-cholesterol levels of <2.6 mmol/L. We retrospectively accessed the data of patients who were prescribed a statin from March to June 2006 and the laboratory data of these patients were evaluated from December 2005 to December 2006. Adherence to monitoring guidelines was deemed to have been met if laboratory testing was repeated within a 6-month interval.

Results: 4152 patients were prescribed a statin, with 2459 high-risk patients' data available for analysis. 1198 patients were at goal. Of those not, 112 patients were hospitalised and therefore excluded. Adherence to guidelines was only seen in 42% of those patients who were not at goal. Using Chi-square test, designation or discipline of doctors did not significantly affect the likelihood of patients being at goal or managed with adherence to guidelines.

Conclusion: Over 50% of high-risk patients were not at goal despite being prescribed statins. Closer adherence to monitoring and treatment guidelines, and a multidisciplinary collaborative team approach would offer patients a better chance of achieving lipid goals safely, and ultimately reducing cardiovascular disease.

ALH 024

MyChoice Movie Therapy – A Pilot Youth Smoking Control Programme Initiative

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Aim: Smoking is an addictive behaviour mostly picked up during adolescence. It is therefore important to mount appropriate smoking prevention education efforts among the young to encourage the adoption of a smoke-free lifestyle. As part of its youth smoking prevention programme, the Health Promotion Board (HPB) piloted a movie therapy programme – 'MyChoice' – in April 2007.

Methods: 'MyChoice' movie therapy is based on Dr Gary Solomon's Movie Therapy™ concept where appropriate movies or television programmes are used to engage youths aged 17 to 19 years and strengthen their perception that smoking is an undesirable and anti-

social habit. 'MyChoice' comprised a 45-minute interactive presentation with thought-provoking snippets from movies and a local infotainment show.

Results: Ninety-eight students (48 males, 50 females) participated in the pilot 'MyChoice' movie therapy programme. Ninety-eight per cent of the respondents found that it was an innovative way of disseminating smoking control messages. Sixty per cent of the students indicated that the programme allowed them to learn more about the harmful and addictive effects of smoking. Of those who reported having used tobacco before, 32.4% indicated that they planned to reduce the number of cigarettes smoked.

Conclusion: The pilot programme shows promising potential as a youth-centric smoking prevention initiative, which can possibly be implemented, on a wider scale.

ALH 025

Analysis of TIF1 β in Tumour Cell Lines and Sub-cloning of TIF1 β in Pacgfp1-C2 Vector

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Aim: Transcriptional intermediary factor 1 beta (TIF1 β), a gene silencer that represses mechanism of enzymatic activities and is known to interact with Nuclear receptor co-repressor (N-CoR). Misfolding of N-CoR causes Acute Promyelocytic Leukaemia (APL). We aimed to find the expression of TIF1 β in tumour cell lines, and investigate if there is any loss of function of TIF1 β in APL cells by visualising the localisation of TIF1 β in the cell.

Methods: Using primers designed for TIF1 β gene, real-time-polymerase chain reaction (RT-PCR) was performed on cell lines; NB4 (APL), HL60 (acute-myelogenous-leukaemia), MOLTA4 (acute-lymphoblastic-leukaemia), THP1 (acute-monocytic-leukaemia), K562 (chronic-myelogenous-leukaemia), A172 (glioblastoma), SK-N-AS (neuroblastoma), H1299 (non-small-cell-lung-carcinoma), H338 (bronchioalveolar carcinoma), H596 (adenosquamous carcinoma), HCC1937 [primary ductal carcinoma (mammary gland, breast)], SJSA1 [osteosarcoma; multipotential sarcoma (bone)], LNCaP-FGC [carcinoma (prostate)], TO175T (Hodgkin's lymphoma), PL-45 (ductal denocarcinoma). PCR products were checked for expression level via 1% agarose electrophoresis exposed to ultraviolet light. The sub-cloning of TIF1 β into pAcGFP1-C2 vector was done using molecular methods-digestion with EcoRI, BglII, SmaI; DNA blunting, ligation, transformation (heat shock, electroporation). Successful clone would be grown on 293T cells and immunofluorescence is used to study the interaction between promyelocytic leukaemia-retinoic acid receptor (PML-RAR) and TIF1 β in the cell for localisation.

Results: Gel electrophoresis showed the bands formed by various cell lines had the same intensity. Further results of the interaction of PML-RAR and TIF1 β in the cell are being performed.

Conclusion: No significant differences in the expression of TIF1 β in tumour cell lines were detected. Data showed that TIF1 β was expressed in similar concentration in the cell lines tested. The experiment on sub-cloning of TIF1 β is being carried out.

ALH 026

Research in Psychiatry: Mental Health Professionals' Attitude and Sociodemographic Differences

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Aim: Ethical and practical issues in psychiatric research remain a topic of debate compounding the ambiguity of new researchers. Regulatory, institutional and personal factors are often cited as main barriers to motivating psychiatric researchers. This survey of mental health professionals sought to determine their attitudes and interest in psychiatric research and study differences with respect to their characteristics.

Methods: Healthcare personnel at a psychiatric institution were invited to participate in the survey. A self-administered questionnaire was used to rate attitude towards 5 positive and 2 negative attitude statements on psychiatric research. Total score was estimated, higher score representing a more positive attitude. We investigated differences in the attitude score by respondents' sociodemographic characteristics.

Results: Total attitude score ranged from 16 to 33 (mean 24, SD 3.4). Univariate analysis showed that respondents with higher education and research experience had significantly high scores ($P < 0.01$) than those without. In addition, physicians and allied health staff exhibited a more positive attitude ($P = 0.001$) as compared to the nurses. Upon multivariate analysis only age and research experience were significantly associated, with total score increasing with age and those without research experience being more likely to have a negative attitude.

Conclusion: Results from this investigation suggest that though psychiatric research is valued by respondents on the whole, there still remain differences in their level of acceptance that vary with respect to individual traits. Identification of subpopulations more likely to have a negative attitude could help focus research promotion efforts towards their perceived barriers and misconceptions.

ALH 027

Anxiety in Mammography: A Survey of Clients in Singapore

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Aim: This study aims to identify the causes of anxiety experienced by Singaporean women during screening mammography. The study is adapted from the study conducted in Australia "Anxiety in Mammography: Mammographers' and Clients' Perspectives" (Galletta et al).

Methods: Survey questionnaires were used for data collection. Women aged 40 years and above who presented themselves at the National Healthcare Group Diagnostics (NHGD) centres for screening mammogram were asked to fill in the survey form. The study aimed to reach out to 2000 women for the survey with a target of at least 80% completed, non-void questionnaires. Collated data will provide insight into patients' perspectives and correlating with what mammographers perceived as the key causes of anxiety. This allows strategies and follow-up action that aim to decrease the level of anxiety, harnessing better cooperation, enhancing patient care and encourage higher participation rate for breast cancer screening.

Results and Conclusion: The study is still in progress and results are not available at the time of abstract preparation. The following is the summary of the Australian study. In the study, 62% of the respondents affirmed that mammogram makes them anxious, with compression as the leading cause. Forty-two per cent of clients reported that mammographers do alleviate their anxiety through effective communication. Other common causes of clients' anxiety are the mammogram result, mammography procedure, lack of individual attention to client and insensitivity to personal need during procedure.

ALH 028

Investigation on Elevated Potassium Level – Pre-analytical Variables

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Aim: Pre-analytical factors are the main source of variation in clinical chemistry laboratory. We investigated potassium measurements in blood specimens for pre-analytical variables: transport time, temperature effect, food intake and phlebotomy procedures (clenching, tourniquet, palpation).

Methods: Data on time of draw at National Healthcare Group-Diagnostics Polyclinics to time of results generated were compiled from specimens arriving at National University Hospital (NUH), Tan Tock Seng Hospital (TTSH) and Alexandra Hospital (AH). Potassium data were collated for: a) effect of storage time – 1 hr, 3 hr, 6 hr, 10 hr at temperature 4°C, 16°C, 20°C, 32°C, b) food intake-prune juice (200 mL), banana (161 g), glucose (75 g dextrose), c) effect of fist clenching, d) with tourniquet on for 1 and 5 minute(s), and e) with palpation by flicking on venepuncture site. Healthy volunteers' blood specimens were obtained at Blood Donation Centre, NUH under standard procedures. *t*-test statistics were used.

Results: Mean (range) on transport time, specimen storage-box temperature and potassium levels were: NUH – 298 minutes (110-545), 10.7°C (2.5-19.9), 4.4 mmol/L (3.3-6.0), TTSH – 320 minutes (135-664), 14.6°C (12.5-19.2), 4.2 mmol/L (2.9-6.3), and AH – 238 minutes (118-387), 10.9°C (2.9-15.9), 4.4 mmol/L (3.1-5.9) respectively. Time-temperature dependent potassium levels ranged from 3.9-5.5 mmol/L. The difference in potassium levels before and 1 hour after consumption: i) prune juice: -0.2-0.2 mmol/L (*P* = ns); ii) banana: -0.3-0.2 mmol/L (*P* = ns), and after 2 hours for iii) glucose: mean 0.3 mmol/L (-0.4-0.9; *P* < 0.001). Potassium levels difference mean (range) for clenching of fists: 0.8 mmol/L (0.3-1.3; *P* < 0.001), tourniquet 5-minutes versus 1-minute: 0.1 mmol/L (-0.2-0.0, 0.05 < *P* > 0.01) and palpation effect: -0.16 mmol/L (-0.7-0.10; *P* = ns).

Conclusion: Data showed that potassium levels increased with storage time and at extreme temperature (4°C and 32°C). Food (prune juice, banana), palpation and tourniquet up to 5 minutes had minimal effect on potassium levels. Significant potassium decreased after glucose intake (e.g., oral glucose tolerance test), and significant increased with clenching of fists for vein prominence during phlebotomy were observed. We recommend that blood specimens for potassium measurement should be fasting and be drawn without fist clenching.

ALH 029

Perceived Quality of Life in a Cohort of Case Managed Psychiatric Patients

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Aim: An important treatment goal for psychiatric health professionals is to assist patients to experience a better quality of life because of the chronicity of mental illness. This paper examines the quality of life as perceived by 58 case managed male patients. It also describes their sociodemographic and clinical profile.

Methods: The WHOQOL tool was administered to the patients upon their discharge from an acute inpatient ward from July to December 2006. Data mining of patients' scores on this tool was done and analysed with SPSS.

Results: The racial distribution amongst the 58 male patients (mean age, 38.4 years) was 70.7% Chinese, 15.5% Malays and 12.1% Indians. Eighty-one per cent had a diagnosis of schizophrenia, 17.2% schizoaffective disorder and 1.7% depression. Almost half of the patients (46.6%) rated their quality of life as poor, 27.6% as neither poor nor good and a quarter (25.9%) as good. 41.4% were fairly dissatisfied with their health, 82.8% with their sleep patterns, 96.6% with their sex life, 50% with their capacity to work and 84.5% with the support they received from friends. More than a third (39.7%) however felt their life was meaningful. About 62.1% reported occasional negative feelings such as low mood, despair and anxiety.

Conclusion: These results concur with our understanding that psychiatric patients require assistance in improving their quality of life as they struggle to cope with the long-term effects of their illness. Case managers can assist by reviewing the needs of their patients and addressing them adequately with appropriate strategies.

ALH 030

Structured Disease Management Programme for Chronic Obstructive Pulmonary Disease (COPD) Patients Improves the Quality of Life and Functional Status

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Aim: This paper reports the experience and outcome of a structured disease management programme on a group of COPD patients in TTSH, NHG. Frequent hospitalisation of COPD is common and costly. NICE (NHG Integrated Chronic Obstructive Pulmonary Disease Management Programme) aims at improving patient's outcome, reducing length of stay and readmission by using a structured Disease Management programme to manage them.

Methods: NICE comprised of a multidisciplinary team of medical personnel. Component of the programme include: optimisation of preventive medications, reinforcing medication and follow-up adherence, patient education, smoking cessation counselling. Preventive influenza and pneumococcal vaccination, 6 weeks pulmonary rehabilitation programme and self-management are encouraged. The St. George's Respiratory Questionnaire (SGRQ) is used to measure the Quality of life and effort tolerance is measured by Six Minute Walk Test (6MWT). Patient received telephonic case management support within 1 week post-hospitalisation, and at frequent intervals.

Results: Three hundred and forty-seven patients are actively enrolled in the programme. Eighty-two per cent completed both SGRQ and 6MWT at baseline and 6 month. Improvement of 4 units of SGRQ score was observed on the 6th month ($P = 0.001$). Forty-one per cent of the 347 patients completed the 6MWT at 1 year. There is no significance between baseline and 6th month. Interestingly, our results show that there is improvement ($P = 0.017$) between the 6-month and 1-year walk test.

Conclusion: Our experience shows that structured disease management programme improves the overall hospital utilisation and improves the quality of lives and functional status of the patient.

ALH 031

Measuring Clinical Improvement Outcomes in a Cohort of Case Managed Patients

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Aim: The brokerage model of case management introduced to the acute psychiatric wards in IMH aims at coordinating, integrating and allocating individualised quality care. This paper provides the sociodemographic profile of 154 patients case managed in the acute wards from June to December 2006 and reviews clinical outcomes in terms of symptom improvement and social functioning achieved.

Methods: A survey form was designed to capture the sociodemographic profile of patients. Clinical improvement outcomes were measured using the Clinical Global Impression scale (CGI) and Global Assessment of functioning scale (GAF). The case managers were trained to use and administer both scales. CGI assessments were conducted on admission, discharge and 3 months later and GAF on admission and discharge. Data was analysed using the SPSS software.

Results: Patients were aged between 19 and 69 years (mean, 44). 48.7% were single, 39% married and 12.3% widowed/divorced. The majority (51.2%) had schizophrenia. Hospitalisation during case management intervention ranged from 2 to 176 days with an average length of stay (ALOS) of 23 days. Only 16 patients (10.4%) were readmitted within 3 months of discharge (ALOS, 1.93 days). 96.8% of patients scored 4-6 on the CGI on admission. This improved to 1-3 for 99.4% of the 154 patients at discharge and 100% of 80 patients at 3 months ($P = 0.01$). Patients improved on the GAF scale with 79.2% scoring between 16-49 at admission and 74% between 70-85 at discharge.

Conclusion: The significant clinical improvements and reduced readmissions are encouraging results. Close monitoring of clinical outcomes is crucial for the viability of the service.

ALH 032

Assessment of the Impacts of Pharmacist Interventions on Improving General Knowledge, Medication Knowledge, and Quality of Life of Ambulatory Paediatric Asthma Patients in National University Hospital

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Aim: Inadequate control of asthma is a significant cause of distress to patients, leading to their poor quality of life (QOL). This can be attributable to the lack of general knowledge (GK) towards the disease and anti-asthmatic medication knowledge (MK). Studies have shown that pharmacist interventions could improve asthma management. The aim of this study was to assess the impacts of

pharmacist interventions on improving GK, MK, and QOL of ambulatory paediatric asthma patients in National University Hospital (NUH).

Methods: A prospective survey was carried out at NUH paediatric outpatient pharmacy while patients were waiting for their prescriptions to be processed. Informed consents were obtained, after which the subjects were given a GK+MK assessment and Paediatric Asthma Quality of Life Questionnaire (PAQLQ) [covering symptoms control (SC), activity limitation (AL), emotional function (EF) and overall QOL (OQ)]. Completed questionnaires were collected during medication dispensing and evaluated. Correction of misconceptions and further counselling were then given by pharmacists. The same surveys were conducted over the phone after 1 month, to assess patients' knowledge retention and its effects on QOL.

Results: Nine patients were recruited from November 2006 to January 2007. At baseline, their mean GK+MK score was 71.9%. After 1 month, their GK+MK scores increased significantly (mean, +11.9%; $P = 0.031$). Patients' average SC and EF rose by 9.5% and 10.1% to 81.1% ($P = 0.108$) and 84.8% ($P = 0.161$) respectively. Their AL improved from 76.2% to 80.0% ($P = 0.483$) and OQ from 74.6% to 81.9% ($P = 0.207$).

Conclusion: Pharmacist interventions improved the GK and MK of asthma patients significantly. Nonetheless, their QOL did not increase significantly in this study, probably due to small sample size.

ALH 033

The Effectiveness of a Formulated Fruit Laxative as a Substitution to Oral Pharmaceutical Laxatives in the Management of Chronic Constipation Among the Elderly

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Aim: To formulate a natural fruit laxative and assess its effectiveness in promoting regular bowel movements as a substitution to pharmaceutical counterparts.

Methods: A total of 190 residents (>50 years) with chronic constipation were recruited from 4 institutional homes. Selection criteria include at least one of the following symptoms (defaecation frequency <3 times per week, hard stool, feeling of incomplete evacuation, or requiring regular commercial laxatives). Participants were given a formulated fruit laxative daily for 28 days in replacement of their usual oral pharmaceutical laxatives. The effectiveness of the fruit laxative was measured by participants' average bowel motion intervals, and stool consistencies using Bristol stool scale. Data were collected 1 week pre-study (baseline) when participants remained on oral pharmaceutical laxative, followed by the 4-week fruit laxative period (replacement).

Results: One hundred and sixty-one out of 190 participants completed the study. The average interval between defaecations during the replacement period was 1.78 days (95% CI, 0.78-2.79), which was not significantly different from the baseline period of 2.07 days (95% CI, 0.48-3.67; $P = 0.60$). Differences were observed in stool consistencies after fruit laxative was introduced ($P < 0.05$, χ^2 test). There was an increase in the proportion of normal stool consistency category (Bristol scale 3, 4 and 5) during the replacement period (76.9% versus 71.2%), whereas the proportion of loose stool category (Bristol scale 6 and 7) decreased by 5% (13.5% versus 18.5%). No differences were observed in the hard stool category (Bristol scale 1 and 2).

Conclusion: Our results demonstrated that the use of fruit laxative is

as effective as oral pharmaceutical laxatives in treating chronic constipation among elderly. In addition, the fruit laxative appeared to reduce the occurrence of loose stools in comparison to the pharmaceutical counterpart.

ALH 035

Effectiveness of an Inpatient Anticoagulation Service for Warfarin Initiation and Titration

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Aim: During initiation of warfarin, to reduce the time to therapeutic range to >80% within 5 days and to achieve <10% of international normalised ratio (INR) more than 4 during titration.

Methods: Baseline data were collected from 1 January to 31 March 2006. The inpatient anticoagulation service was set up from 1 April 2006, and data collected till 31 March 2007. Patients were referred for initiation and titration of warfarin under the general medicine, general surgery and orthopaedic departments. The pharmacist-run service recommended the daily warfarin dose, next INR check, discharge dose and anticoagulation clinic appointment date. Patient details affecting anticoagulation therapy were documented and transferred to outpatient anticoagulation clinic.

Results: Over the 1 year period, the service managed 144 patients for initiation of warfarin. The percentage of INR achieving therapeutic range within 5 days was increased from 38% to 88%. INR of more than 4 during titration was reduced from 25% to 2%, and subtherapeutic INR on discharge without low-molecular weight heparin (LMWH) in patients who have had a thromboembolic event were reduced from 13% to 0%. The average time to therapeutic INR was reduced from 6.5 to 3.8 days and average length of stay after initiation of warfarin from 10.7 to 6.9 days.

Conclusion: The inpatient anticoagulation service in TTSH was effective in achieving a reduction in time to therapeutic INR, supratherapeutic INR during titration, discharge on subtherapeutic INR without LMWH and length of stay for patients newly started on warfarin.

ALH 036

Neurocognition in First-episode and Established Schizophrenia

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Aim: Research has been divided on whether schizophrenia is neurodevelopmental or neuroprogressive in nature. Some studies have found that neuropsychological deficits present in first-episode schizophrenia remain stable over time. However, antipsychotics have shown to ameliorate structural brain changes due to the illness and patients with chronic schizophrenia have shown significant neurocognitive improvement with antipsychotics. The objective of the study was to compare the neurocognitive performance of patients with first-episode and established schizophrenia in a local context.

Methods: Seventy-four patients (35 with first-episode and 39 with established schizophrenia) were recruited into the study. Informed consent was obtained and a neurocognitive battery tapping domains of executive functioning, attention and spatial ability were administered. Patients were also assessed for their psychopathology.

Results: First-episode patients were significantly younger than patients with established schizophrenia ($t = -5.077, P < 0.05$). However, no

significant differences were found in terms of psychopathology and gender composition. Linear regression analyses were conducted, with neurocognitive results as the dependent variable, and age, gender, psychopathology and patient grouping (first episode versus established schizophrenia) as independent variables. No significant results were obtained.

Conclusion: The lack of significant results could be due to the small sample size. However, it could also suggest that schizophrenia is a neurodevelopmental disorder in which cognitive deficits are present even before symptom manifestation. This emphasises the need to understand and intervene at the prodromal phase of the illness.

ALH 037

Cytoscrabe-cell Block Technique: A Useful Method in the Cytological Diagnosis of a Case of Lymphoma

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Introduction: Thick smears and poorly-differentiated tumour cells are challenges faced in cytological diagnosis. Retrieving cellular material from a Papanicolaou stained slide by a scraping method (cytoscrabe) is a previously-described technique that can make available a cell-block for further study. In this report, the details of the technique will be revisited. This method was used in conjunction with cell-block immunocytochemistry to enable a diagnosis of high-grade non-Hodgkin lymphoma (NHL).

Clinical Picture: A 68-year-old lady presented with a large right-sided neck mass for which a fine needle aspiration was performed. The smears showed malignant-appearing cells, some isolated but mostly in thick groups. A diagnosis of a malignant neoplasm, lymphoma versus carcinoma, was provisionally given. The cell-block obtained after the cytoscrabe yielded good material and immunocytochemistry showed tumour cells that were Cytokeratin (AE1/3) negative and CD20 positive, thus permitting a diagnosis of high grade NHL, consistent with diffuse large B-cell lymphoma, to be made.

Discussion: This case reaffirms the use of this cytoscrabe-cell block-immunocytochemistry technique to provide additional helpful information. To the best of our knowledge, this is also the first reported case of lymphoma where the cytological diagnosis was aided by the use of this technique.

ALH 038

Gender Differences in Managing Schizophrenia in the Primary Health Care

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Aim: Local data show that general practitioners (GPs) are often the first point of contact for patients with schizophrenia. Management of patients with schizophrenia is also increasingly becoming community based therefore the role of GPs in managing these patients is considerable. The aims of the survey were to identify the difficulties GPs perceived in providing mental health care to patients with schizophrenia.

Methods: A self-administered questionnaire was distributed to the GPs in Singapore. Sociodemographic data and opinions on managing

patients with schizophrenia were collected. Four hundred and twenty-four responses were received.

Results: 63.9% of the respondents were males and 36.1% were females. Significantly more male GPs felt that they have sufficient knowledge to manage someone with schizophrenia ($\chi^2 = 8.18$; $P < 0.005$). They did not perceive a lack of psychiatric medication in their clinic ($\chi^2 = 4.7$; $P < 0.05$) and they felt comfortable prescribing hypnotics ($\chi^2 = 9.0$; $P < 0.005$) or antipsychotics ($\chi^2 = 4.6$; $P < 0.05$) to patients on a regular basis. Significantly more male GPs felt that patients with schizophrenia need more consultation time ($\chi^2 = 4.2$; $P < 0.05$) and female GPs felt that other patients would not avoid the clinic if they were seeing patients with schizophrenia ($\chi^2 = 4.3$; $P < 0.05$).

Conclusion: The results highlighted the gender differences in the attitudes of GPs towards patients with schizophrenia. Appropriate education and development of relevant support services, taking into the consideration the gender differences, should be provided to enable better continuity of care between primary care and psychiatric services.

ALH 039

Pilot Study of Exercise Programme for Chronic Low Back Pain Based on Cognitive Behavioural Principles

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Aim: The exercise programme studied is designed to encourage patients to use their spine normally through graded exercises. Cognitive-behavioural principles are applied in this programme. This is the back to fitness programme that has been tested in several randomised controlled trials in the United Kingdom (Frost et al, 1995; Klaber Moffett et al, 1999; UKBEAM team, 2004). In the National University Hospital, qualified physiotherapists conduct this programme for patients with low back pain lasting beyond 3 months. The aim of this study was to find out about the short-term effectiveness of this exercise programme for chronic low back pain patients.

Methods: Patients enrolled in this 8-week programme were those that experience persisting low back pain, which did not resolve with medication and conventional physiotherapy. The modified Oswestry disability index was used to assess disability. The fear avoidance beliefs questionnaire was used to assess patient's fear of physical activity and work. Pain intensity was assessed using the visual analogue scale 0-10. The outcomes were measured before and immediately after the 8-week programme.

Results: Eight patients completed the programme. Comparing results at the end of programme with pre-programme, the Oswestry disability index showed a reduction by an average of 6 points. Fear avoidance beliefs about physical activity and work decreased by 4 and 4.9 points respectively. Pain score reduced by 0.8.

Conclusion: From the preliminary results, a graded exercise programme based on cognitive-behavioural principles seem to decrease disability, reduce fear-avoidance beliefs about physical activity and work even though the pain score remains unchanged. Further study with bigger sample size is required.

ALH 040

A New and Simple Way to Fit Prefabricated Complete Dentures in a Single Clinical Session

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Aim: To introduce a method of fitting prefabricated complete dentures in a single clinical session.

Methods: Patients who were edentulous in one or both jaws were screened to select persons who had the closest fit to a few sets of prefabricated complete dentures. Three patients who did not have a current set of complete dentures were finally selected for this trial. All had worn dentures before. The fitting surface of the prefabricated denture was relined with autopolymerising polymethylmethacrylate (acrylic resin). This ensured a good fit to the mouth of the patient. The relining procedure was followed by 'resurfacing' the biting or occlusal surfaces with a white acrylic resin to match the 'bite' in the opposing jaw. The whole process took about 30 to 45 minutes.

Results: The patient who had an upper complete denture fitted to his lower natural teeth was very satisfied. One of them who was completely edentulous was fitted with an upper denture to function against his lower gums and the third was fitted with just a lower complete denture. We were not successful in fitting both upper and lower prefabricated dentures for the same patient even though he was completely toothless.

Conclusion: This new method of denture fabrication may be a solution to the cost and time barriers involved in the provision of dentures for institutionalised geriatric patients. The technique requires further refinement to make it clinically feasible.

ALH 041

Influence of Posture on the Range of Axial Rotation and Coupled Lateral Flexion of the Thoracic Spine

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Aim: This study examined the influence of posture on the range of axial rotation of the thoracic spine and the associated range and direction of the coupled lateral flexion movement.

Methods: The ranges of thoracic axial rotation and coupled lateral flexion were measured in 52 asymptomatic subjects (aged, 18 to 43 years) using an optical motion analysis system. Axial rotation was initiated from neutral sitting posture and from end-range thoracic flexion and extension position in random order to determine the influence of posture on the primary and coupled motion of the thoracic spine. Repeated measures analysis of variance was performed to test the difference in the ranges in primary and coupling movement between the 3 spinal postures.

Results: There was a significant decrease in the range of thoracic rotation in flexion compared with the neutral and extended postures ($P < 0.001$). The mean range of coupled lateral flexion was 8.9% of the axial rotation range in the neutral posture and increased to 14.3% and 23.2% in the extended and flexed postures, respectively. An ipsilateral pattern was more common in the flexed posture, whereas a contralateral pattern was more common in the neutral and extended postures.

Conclusion: The ranges and patterns of coupled motion of the thorax appear to be strongly influenced by the posture from which the movement is initiated. This has important implications in relation to the interpretation of clinical tests of thoracic motion and in consideration of mechanisms of development of thoracic pain disorders.

ALH 042

The Difference in Shoulder Strength and Range of Motion Between Elite Female Waterpolo Players and Controls

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Aim: To evaluate range of motion and Isokinetic strength in elite female waterpolo players compared to a comparable control group.

Methods: Fourteen elite female waterpolo players and 14 comparable controls participated in this study. Active and passive shoulder range of motion (ROM) was measured using a digital inclinometer. Isokinetic concentric and eccentric shoulder internal rotation (IR) and external rotation (ER) strength was tested (KinCom dynamometer) in an upright sitting position at 30°/s and 150°/s.

Results: There was a deficit in active and passive IR ROM in the throwing arm of the waterpolo group (group x side: $P \leq 0.026$) whereas ROM in the non-throwing arm was comparable to the control group (group: $P \geq 0.417$) who had no difference between sides. There was a trend towards gain in active ER ROM in the throwing arm of the waterpolo group compared to control group (group x side: $P = 0.108$). Although there was a trend for controls to have more ER in their dominant arm, the difference was only significant in passive ER ($P = 0.001$). Waterpolo players were stronger than the controls (group: $P \leq 0.048$). Measured at 30°/s, waterpolo players throwing arm had a lower functional ratio than the controls ($P = 0.002$), without side-to-side differences in either group (sides: $P \geq 0.02$).

Conclusion: Elite female waterpolo players have a deficit in shoulder IR ROM and a trend to gain in ER ROM compared to a control group. They also exhibit a lower functional strength ratio bilaterally compared to controls. This has not been reported in other overhead throwing sports.

ALH 043

A Survey on the Consumption of Hi-fibre Foods Among Healthcare Professionals

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Aim: There is no known survey conducted before to study the consumption of hi-fibre foods among healthcare professionals population in Singapore. The aim of this survey was to study the frequency of hi-fibre foods consumption among healthcare professionals.

Methods: A copy of 2-page semi-quantitative Food Frequency Questionnaire (FFQ) was distributed to all the staff working in

National Healthcare Group (NHG) institutions over a 3-month period to fill up on voluntary basis. Data entry was done for each category and univariate analysis was performed using Pearson Chi-square or Fisher's exact test.

Results: A total of 1905 voluntary participants responded to this survey and the overall response rate of this survey was 37.0%. Most participants reported that they always (at least once daily) consume fruits (65.4%), vegetables (79.7%) and hi-fibre bread products (38.4%); but seldom (less than 2 times monthly) consume hi-fibre cereals products (39.6%), unprocessed rice (44.2%); and legumes and lentils (46.3%). There was significantly higher proportion of healthcare staff who always consume vegetables ($P = 0.007$) and legumes and lentils ($P < 0.001$) compared to non-healthcare staff; but less so for fruits ($P = 0.033$). There was no statistically significant relationship in terms of consumption of other hi-fibre food groups between healthcare and non-healthcare staff.

Conclusion: Healthcare staff consume more hi-fibre foods than non-healthcare staff. The awareness for healthy eating practice to include hi-fibre foods as part of daily diet should be increased through ongoing health education.

ALH 044

Assessing Medication Error and Adverse Drug Event Rates in Paediatric Inpatient

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Aim: Medication errors and adverse drug events are associated with severe consequences especially in paediatric inpatients. This study attempts to provide data on epidemiology of errors and adverse drug events (ADEs) in a local paediatric inpatient setting. To determine rates of medication errors and ADEs. To determine and analyse the epidemiology of medication errors. To identify and suggest improvements in the current workflow to reduce medication errors.

Methods: Prospective study of patients admitted into 2 paediatric inpatient general wards (private/subsidised) observing for medication errors and ADEs over 27 days in December 2006. Medication errors were classified according to National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) index.

Results: A total of 2654 medication orders were reviewed. Thirty-six medication errors (1.4%) and 2 ADEs (0.075%) were observed. There were no statistical differences in the error rates, type of errors between the private and subsidised wards. Majority of errors were made at stage of ordering (92%), most commonly involved oral route (54%), antibiotics (34%) and omission of route (39%). Most medication errors did not reach patients (error index B, 67%), and even if reached, did not cause harm (error index C, 22% and D, 33% respectively). Computer-based medication order/record system and full time ward-based clinical pharmacist could potentially prevent up to 97% and 78% of medication errors respectively.

Conclusion: Medication error rates were still significant in local setting, interventional methods are available to reduce error rates.

ALH 046**An Evaluation of the Satisfaction and Comfort of Uniform Shoes Among Healthcare Workers in the National Healthcare Group – A Pilot Study****AL ANG¹, YJ LEW², PS GOH², MF CHAN², KL KOH³, TS INDRAJAYA⁴, LK LIM⁴, CHEN HONG⁴, KS TAN⁴, HS ONG⁵, SB TAN⁶, YS TAN⁶**¹Singapore Footcare Centre, Singapore, ²National Healthcare Group Polyclinics, Singapore, ³Alexandra Hospital, Singapore, ⁴Institute of Mental Health, Singapore, ⁵National University Hospital, Singapore, ⁶Tan Tock Seng Hospital, Singapore**Aim:** The aim of this investigation was to assess the satisfaction of uniform shoes and evaluate the preferences of healthcare workers on their prescribed footwear.**Methods:** A questionnaire consisting of 11 questions was sent out to the nursing representatives of 5 National Healthcare Group (NHG) institutions and the results collated using Excel MS Office.**Results:** A total of 291 healthcare workers (nurses/healthcare attendants) took part in the survey with 49.1% of those surveyed reported to be suffering from some form of foot pain. 44.3% of the respondents thought that their foot pain was due to inappropriate wearing of uniform shoes over the years and 69.76% of them reported that their current uniform shoes were uncomfortable. When asked to rate what was most important in a nursing shoe, comfort was rated first, followed by durability, choice of materials (e.g., leather instead of PVC, ease of wearing i.e., choice of straps or laces as fasteners) and lastly style and appearance.**Conclusion:** In view that almost half of those surveyed reported foot pain, and an even greater percentage stating that their current uniform shoes are uncomfortable, there could be a likely correlation between foot pain and uniform shoes. This research can be used as a pilot study to further evaluate the probability of inappropriate footwear leading to foot pain.**ALH 047****Rapid and Sensitive Quantification and Pharmacokinetic Study of PXD101 in Human Plasma by LC-MSMS****LZ WANG^{1,2}, SC WAN¹, R LIM¹, SC LEE¹, WP YONG¹, BC GOH^{1,2}, HS LEE¹**¹Department of Haematology & Oncology, National University Hospital, Singapore, ²Department of Pharmacology, National University of Singapore, Singapore**Aim:** Develop a sensitive LC-tandem MS method to establish a platform for clinical trial of PXD101 (Belinostat), which is a potent HDAC inhibitor against battery of cancers.**Methods:** A solid-phase extraction was used for sample preparation. An optimised chromatographic separation between PXD101 and internal standard, oxamflatin, was achieved using a Luna 3 µm C18 column (50 x 3 mm). Detection was done by positive ion electrospray on a Sciex API 2000 triple quadrupole mass spectrometer. WinNonlin 5.2 software was used for pharmacokinetic analysis.**Results:** This rapid and sensitive analytical method was well validated with good precision and accuracy as well as wide linearity (2 to 2000 ng/mL) according to FDA Bioanalytical Guidelines. It provides a useful platform for clinician scientists to accurately evaluate pharmacokinetic disposition of PXD101 and individualise cancer chemotherapy. Pharmacokinetic modeling analysis showed that the disposition profile of PXD101 in Asian patients can be fitted well using 2-compartmental model with a weighting of 1/Y*Y. AIC criteria is equal to -59.9. PXD101 was metabolised fast (0.27h) and eliminated slowly (5.41 hours).**Conclusion:** In summary, a highly sensitive LC-MSMS method was well validated and its application has been demonstrated in a Phase I clinical trial. The sensitivity of this analytical method is much higher than our previous HPLC method. Hence, this research work plays a key role to precisely describe the elimination phase of PXD101.**ALH 048****Psychiatry Research Training and Change in Perspectives of Trainees Towards Psychiatry Research****JA VAINGANKAR¹, K SIM², SA CHONG³**¹Research Unit, Institute of Mental Health and Woodbridge Hospital, Singapore, ²Department of General Psychiatry, Institute of Mental Health and Woodbridge Hospital, Singapore, ³Early Psychosis Intervention Programme, Institute of Mental Health and Woodbridge Hospital, Singapore**Aim:** Attracting new investigators in psychiatric research necessitates provision of adequate training for these aspiring researchers. A structured psychiatry research training programme for psychiatry trainees was initiated at the Institute of Mental Health (IMH) in 2006. This survey seeks to evaluate the usefulness of this training programme in terms of changes in the attitudes of the trainees (both basic and advanced trainees) towards psychiatric research before and after undergoing the training programme. We hypothesised that there would be an increase in the level of interest, confidence, interest and knowledge following the training programme.**Methods:** A questionnaire survey was conducted on psychiatry trainees in areas of their confidence, interest and knowledge about psychiatric research before and after the training programme.**Results:** Overall, psychiatry trainees were more confident (44.4% from 16%) and interested (70.4% from 60.0%) in taking up research after the training series compared to that before the training. The trainees also felt better equipped with the knowledge (29.6% from 12.0%) about psychiatry research following the training. Following the training, more advanced trainees indicated that they had sufficient knowledge about research compared to the basic trainees (18.2% versus 7.1%, $P < 0.05$).**Conclusion:** The results suggest positive response of trainees towards the psychiatry research training programme. Further efforts are required to improve the programme in order to cater to the needs of these budding researchers in psychiatry.

ALH 049

Comparison of Refractions using Hand-held and Table-mounted Auto Refractors, and Retinoscopy in Singapore Preschool Children

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Aim: To compare cycloplegic refraction measurements using the hand-held retinomax, table-mounted auto refractor and streak retinoscopy among Singapore children aged 6 to 72 months.

Methods: Fifty-one children aged 6 to 72 months recruited as part of the STARS study (STrabismus, Amblyopia and Refractive error study in Singapore preschool children) underwent cycloplegic refraction using the hand-held retinomax (Righton Retinomax K-PLUS 2 Japan), table-mounted auto refractor (Canon FK-1, Tokyo, Japan) and streak retinoscopy (Welch Allyn) for each eye. The examiner was masked to both the hand-held and table-mounted auto refractor findings. The refractions were performed at least 30 minutes after the instillation of 1% cyclopentolate hydrochloride eye drops. The mean refractive errors were constructed with Bland Altman plots and statistical analyses were conducted using SPSS version 11.0.

Results: There were 29 boys and 22 girls. Their mean age was 52.3 months (range, 24 to 72). The mean and standard deviations of the differences between the table mounted auto refractor and handheld retinomax were 0.22 (0.48) [95% confidence interval (CI), 0.09, 0.36; $P < 0.01$] The Spearman correlation coefficient of the refractive error from the table-mounted autorefraction and hand-held retinomax was 0.96. The mean and standard deviations of the differences between the table mounted auto refractor and streak retinoscopy were -0.06 (0.51) (95% CI, -0.20, 0.09; $P < 0.01$). The mean and standard deviations of the differences between handheld retinomax and streak retinoscopy were -0.28(0.64) (95% CI, -0.46, -0.10; $P < 0.01$).

Conclusion: The hand-held retinomax readings are more myopic compared with the table-mounted autorefractor and streak retinoscopy in young Singapore children.

ALH 050

Social Demographic and Ethnic Profile of First-episode Psychosis Patients

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Aim: Several epidemiological studies have found a high incidence of psychosis among migrant and ethnic minority groups. Singapore being a multicultural society has in recent years seen a rise in the migration numbers. The estimated net migration rate was 7.98 migrant(s)/1000 population. This paper aims to examine the sociodemographic profile of patients and its association to the ethnic backgrounds.

Methods: A total of 1018 patients who were consecutively screened and accepted into the Early Psychosis Intervention Programme (EPIP) were included in this study. Demographic data collected

include marital status, educational level, accommodation, employment status and monthly salary.

Results: From the data collected, there was a significant difference between the educational level and race, ($\chi^2 = 55.735$, $P < 0.01$, $n = 849$). Analysis of the ethnic groups, shows a greater proportion of Chinese to have received education. Amongst the Chinese group ($n = 647$), 36% received secondary, 28% tertiary, 14% primary, 9% pre-university and 9% vocational institute education. In comparison, Malays ($n = 126$) had 47% with secondary education, 16% vocational institute, 17% primary and 11% tertiary education. For Indians ($n = 55$), 36% secondary, 31% tertiary, 11% primary 9%, pre-university and 9% vocational institute education. For Others ($n = 21$), 38% secondary, 19% tertiary, 14% primary and 14% no education. There were no significant differences observed between ethnicity with marital status, accommodation, employment status and monthly salary drawn.

Conclusion: Educational differences in patients and families may affect individuals' receptiveness in seeking treatment early. Assimilation of migrants into the society is paramount. Outreach programmes developed should target at secondary school settings and vocational institutes.

ALH 051

A Study on Vulvar Lichen Sclerosis

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Introduction: Lichen sclerosis (LS) of the genitalia, a premalignant problem, is seen at the dermatology and gynaecology clinics.

Methods: A retrospective study is taken at the National Skin Centre (NSC) from 2003 to 2006 to determine characteristics of vulval LS, its associations, treatment and associated cancers. There were 15 patients who had vulval localization; 8 biopsied. Data included age, ethnicity, duration, symptom, signs, site and extent, hypopigmentation, excoriation, bleeding, sclerosis and atrophy.

Results: Age: post menopausal, above 50 years; duration: average 3 years. Thirteen Chinese, 2 Indians and no Malays. All had pruritis. Eight out of 15 noticed the white discolouration. Site: clitoris, labia minora, introitus, 2/8, perianal area. 14/15 were hypopigmented, 4/15 showed the figure of 8 hypopigmentation. Excoriation/bleeding: 2/15 sclerosis/induration: 4/15, of clitoris, labia minora and introitus. Atrophy: 3/15. Association: cystocoele/ uv prolapse. Treatment: topical steroids/ tacrolimus, 5/15 referred to gynaecologists, 7/15 informed of premalignant risk. No vulval cancers. The data were compared against that from the (Vulval) clinic at KKWCH from 2002 to 2005 of 24 patients; histology confirmed. Average age: 55 years. Twenty-three were Chinese and 1 Malay. Diagnosis made earlier, 1 year – 22 had pruritis and 2 asymptomatic. Many showed active disease 10/22 with excoriations, ecchymosis. Localisation: vulva, 1: perianal. Hypopigmentation/disfigurement of labia minora 13/24. Treatment: clobetasol cream. No cancer. In the local experience of SCC vulva, 16% were associated with LS. The small number and late diagnosis relate to 2 factors – the Asian culture, being embarrassed over genitalia. Itch and hypopigmentation are unfortunately soft signs, not bothering the patient. Physicians may not recognise signs of LS. A gynaecological/colposcopic examination is needed with documentation informing the low risk of cancer.

ALH 052**The KOVA Urine Microscopy Experience at Primary Healthcare Centre**AH TOH¹, J LIM², S PORMENTO³, S SADIE SAGCAL³¹National Healthcare Group-Diagnostics (NHGD) HQ, Singapore, ²NHG Diagnostics, Ang Mo Kio Polyclinic, Singapore, ³NHG Diagnostics, Choa Chu Kang Polyclinic, Singapore**Aim:** Urine analysis is performed as a screening test for urinary tract infections at NHGD laboratories. We aim to determine the healthcare indices [white blood cells (WBCs) and micro-organisms] on KOVA urine microscopy at NHG Diagnostics Choa Chu Kang laboratory.**Methods:** This is a retrospective study from January to May 2007 on urine microscopy on the KOVA (Hycor Biomedical Inc) using slide 10 grid counting chamber for formed elements (WBCs, micro-organisms) estimation. Well-mixed uncentrifuged urine specimen was charged into the counting chamber. The number of WBCs and micro-organisms per specimen was recorded.**Results:** Based on the 398 urines with formed elements, 68/398 (17.1%) were males and 330/398 (82.9%) were females. Further truncation of data showed 32/68 (47.1%) males and 48/330 (14.5%) females had WBC within reference range (0-6 cells/uL). In this cohort of "normal" urine, 7/32 (21.9%) in males and 22/48 (45.8%) in females showed the presence of micro-organisms. In WBC >7 cells/uL, 36/68 (52.9%) in males and in females 259/330 (78.5%) had micro-organisms. In a check with urine culture request, 7/15 (46.7%) male specimens have positive micro-organism growth. These positive samples had WBC 90-2000 cells/uL.**Conclusion:** Formed elements (micro-organisms) from KOVA microscopy are present in "normal" as well as urine >7 cells/uL. Female urine specimens showed a predominance of formed elements. Presence of micro-organisms in 7/15 (46.7%) as confirmed by urine culture showed high WBC counts. This concludes that the KOVA could be used as a screening tool and WBC is a good gauge for detection of urinary tract infection.**ALH 053****Comparison of BD GeneOhm Methicillin-resistant *Staphylococcus aureus* (MRSA) and MRSA Select Agar in Detection of MRSA**D CHIANG¹, C CHOW¹¹Department of Laboratory Medicine, National University Hospital, Singapore**Aim:** To compare a real-time polymerase chain reaction (RT-PCR) kit, BD GeneOhm methicillin-resistant *Staphylococcus aureus* (MRSA) (BD, USA), against conventional growth-based MRSA Select agar (Bio-Rad, France) for detection of MRSA from clinical specimens.**Methods:** Surveillance swabs from patients were collected and washed in 0.5 mL of sterile normal saline. A portion of the saline was then inoculated onto MRSA Select agar and the agar was incubated in ambient air, 36°C for up to 2 days. Readings were done at 24 and 48 hours, looking for mauve-coloured colonies (presumptively MRSA), which were then confirmed by convention tests for *Staphylococcus aureus*. A swab was introduced into the remainder of saline suspension and transferred to the sample buffer for vortexing and centrifugation. The sediment was then lysed and heat-treated at 85°C for inhibitor removal. Sample was added to mastermix solution and ran on a Smartcycler (Cepheid, USA). Total process time for GeneOhm test was approximately 2 hours.**Results:** A total of 39 clinical specimens and 3 ATCC controls were tested. GeneOhm RT-PCR detected MRSA in 54% of specimens, similar to the reference MRSA Select agar method. Both methods missed detecting MRSA in 2 specimens-GeneOhm's missed detections were positive by MRSA Select, and vice versa for MRSA Select's missed detections. Kappa value of 0.79 indicates good agreement between the 2 tests.**Conclusion:** BD GeneOhm MRSA test offers a rapid method for direct MRSA detection from clinical specimens, comparable to conventional culture detection methods.**ALH 054****Feasibility of a Multi-gene Variant System to Guide Selection of Colorectal Chemotherapy Regimens**WQ LI^{1,2}, YH TAN², YK ONG³, R SOO¹, R SOONG^{2,4}¹Department of Haematology Oncology, National University Hospital, Singapore, ²Oncology Research Institute, National University of Singapore, Singapore, ³Department of Medical Oncology, National Cancer Centre, Singapore, ⁴Department of Pathology, National University of Singapore, Singapore**Aim:** A number of gene variants have been consistently associated with different treatment-related outcomes to various chemotherapeutic agents used to treat colorectal cancer (CRC). Until now, however, these variants have often been analysed alone, or in gene variant panels according to drug. The practical utility of these variants in combination is still unclear. The aim of this study was to evaluate the feasibility of a multi-gene variant system to help select colorectal cancer chemotherapy regimens.**Methods:** Ten candidate genotypes, selected based on their association with drug pharmacology, were determined by pyrosequencing in more than 100 cases of CRC patients receiving chemotherapy. Associations between the different genotypes and toxicity, and each other, were examined by chi-square analysis.**Results:** Our preliminary analysis shows fluoropyrimidine toxicity to be more frequent in cases carrying wildtype TMYS (-100) and TYMS (-58) genotypes. MTHFR+677:C>T variants tended ($P = 0.18$) to have higher rates of fluoropyrimidine toxicity. Oxaliplatin toxicity was significantly associated with wildtype ERCC1+118 genotype ($P = 0.02$) and XRCC1+399:G>A variants ($P = 0.02$).**Conclusion:** Our preliminary results show that individual gene variant can predict fluoropyrimidine and oxaliplatin toxicity, suggesting a multi-gene variant system could be feasible in aiding the selection of colorectal cancer chemotherapy regimen. Further extension of this study is currently on going.**ALH 055****Comparing the Psychopathology and Functioning of Chinese, Malay and Indian Patients With First-episode Psychosis**C LIM¹, LY POON¹, S VERMA¹¹Early Psychosis Intervention Programme, Institute of Mental Health/Woodbridge Hospital, Singapore**Aim:** Studies have consistently found an elevated risk of schizophrenia and other psychotic disorders among minorities. This study aims to compare the psychopathology and functioning of first-episode psychosis patients at first presentation to the Early Psychosis Intervention Programme (EPIP) based on their ethnicity.**Methods:** The Positive and Negative Syndrome Scale (PANSS) and the Global Assessment of Functioning (GAF) are administered to all

patients admitted into EPIP at baseline to assess the severity of symptoms, and functioning and disability respectively. Comparative analyses of PANSS and GAF baseline scores were performed using ANOVA, and independent sample t-tests were used to analyse ethnic differences in baseline scores.

Results: The analysis involved 883 first-episode psychosis patients: 14.7% were Malays and 6.3% were Indians. At baseline, the mean PANSS and GAF scores were significantly different between the ethnic groups. Malay patients scored significantly higher than their Chinese and Indian counterparts respectively on the PANSS positive, negative, general psychopathology, and total subscales; and significantly lower on the GAF total, symptom, and disability subscales. Chinese and Indian patients did not differ significantly in their baseline scores.

Conclusion: Preliminary findings suggest that the baseline symptomatology and functioning of first-episode psychosis patients may vary depending on ethnicity. Controlling for possible confounders e.g. age, gender, educational level, duration of untreated psychosis, and family history of mental illness may explain the above findings.

ALH 056

Polyclinic Specimen Delivery Time to Hospital Laboratories

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Aim: TTSH receives whole blood specimens from Ang Mo Kio, Hougang and Toa Payoh Polyclinics for centrifugation and testing. The blood tube manufacturer suggests that specimens be centrifuged within 2 hours of collection to ensure analyte stability. This study assesses the time difference between specimen collection and arrival at TTSH.

Methods: Data regarding specimen registration time at the polyclinics and arrival time at TTSH were extracted from the laboratory information system for polyclinic specimen received at TTSH between 26 February 2007 and 3 March 2007. Records were sorted by the 3 daily delivery batches and by polyclinic. Since specimen registration often precedes collection at the polyclinics, a 30- (for the first batch) and 60-minute (subsequent batches) delay time from registration-collection was subtracted from the registration-arrival times to give collection-arrival times. Data were analysed using MS Excel and the proportions of specimens exceeding 120 minutes collection-arrival time were calculated.

Results: Data were extracted for 2604 specimens. Overall, 72.1% of specimens exceeded 2 hours from collection to arrival at TTSH. The percentage was higher for the second and third batches (83.8% and 94.3%) compared to the first batch (10.8%). As expected given the delivery route of AMK-Hougang-TP-TTSH, the percentage exceeding 2 hours for AMK (87.2%) was greater than Hougang (74.9%) followed by Toa Payoh (44.3%).

Conclusion: A significant proportion of specimens will exceed the recommended 2 hours time interval from specimen collection to centrifugation. Potential solutions include more frequent delivery, specimen centrifugation at polyclinic before dispatch, change of pickup time and/or delivery route.

ALH 057

Identifying Neuromotor Control Strategies That Regulate Stability After Anterior Shoulder Instability.

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Aim: Recurrences of dislocation after traumatic anterior shoulder instability (ASI) commonly occur during overhead activities. The objective of this clinical study was to identify strategies that patients adopt to re-establish glenohumeral stability in the different phases and planes of overhead arm elevation.

Methods: Nineteen preoperative patients with ASI and 25 age-matched asymptomatic subjects had electromyography electrodes placed on 7 shoulder muscles as they performed arm elevation in the sagittal and coronal planes.

Results: Times of all muscle onsets were similar in both planes of elevation among patients and subjects, but different between groups ($P < 0.001$). Patients recruited the rotator cuff muscles early and delayed the onset of ipsilateral upper trapezius compared with subjects ($P < 0.001$). Strong alliances existed between the onsets of infraspinatus and supraspinatus (sagittal: $r = 0.720$; coronal: $r = 0.756$) and ipsilateral upper trapezius and infraspinatus (sagittal: $r = -0.760$, coronal: $r = -0.818$). The peak activations of all 7 muscles occurred in the mid-range of elevation among patients. Their magnitude of infraspinatus was 6 times higher (sagittal: $t = -8.6428$, coronal: $t = -54.1578$) but the magnitude of supraspinatus was lower (sagittal: $t = 36.2507$, coronal: $t = 35.9350$).

Conclusion: The temporal and magnitude characteristics of shoulder muscles recruitment during both planes of arm elevation were similar. Patients with ASI adopted a "stability before mobility" neuromotor control strategy to initiate elevation and a "stability at all cost" strategy to maintain concavity compression in the mid-to-150° of arm elevation.

ALH 058

Innovative Driving Assessment for Re-licensing of Older Taxi Drivers

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Aim: To describe the programme, evaluate the outcome of drivers and to investigate for any relationships between the Off Road screening tests (visual perception, sustained attention, motor coordination) and driving outcome (pass/fail).

Methods: Retrospective study of all 70 years old taxi drivers referred for the driving assessment between June and December 2006 ($n = 303$). Descriptive analysis was used for the demographic and driving profile of the drivers. Quantitative analysis of the data between Off Road screening tests and driving outcome ($n = 268$) was done with logistic regression model. The model adjusted for age group, driving experience, Colour Trails Test 2, Motor Free Visual Perceptual Test and Rapid Walk Test.

Results: All taxi drivers were male. Boredom (85%) and financial income (15%) were reasons for continued driving. The pass rate was high: 86% for the initial test, 97% for next retest. On road errors in the failed cohort were vehicle positioning (34%), reaction time and physical control of the vehicle (33%), planning and judgement

(19%), observation (9%) and speed control (5%). Significant relationships existed between Colour Trails Test 2 (divided and sustained attention, visual processing) and years of driving experience with driving outcome.

Conclusion: Drivers who were in the severely impaired range in the Trails Test 2 were more likely to fail the On Road test [odds ratio (OR), 0.23; 95% confidence interval (CI), 0.05-0.98; $P = 0.047$]. On the other hand, drivers with longer driving experience were likely to pass (OR, 1.05; 95% CI, 1.01-1.10; $P = 0.014$). The innovative programme is effective in screening out unsafe older drivers for relicensing.

ALH 059

Effectiveness of Ultrasonic Assisted Wound (UAW) Treatment for the Management of Diabetic Lower Limb Wounds

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Aim: Ultrasonic-assisted wound (UAW) treatment consists of a low-frequency ultrasound that creates a cavitations effect (micro gas bubble) in the tissue. This mechanical rinsing effect gently flushed out fibrin deposits and bacteria and the acidic wound environment is neutralised. The aim was to evaluate the effectiveness of UAW treatment as a supplementary treatment for the management of slow healing diabetic lower limb wound.

Methods: Patients were identified by the investigators from an inpatient and outpatient setting. Wounds were selected based on clinical evaluation of the wound condition. Treatments were done in the clinic or at bedside along with local sharp debridement and dressings. Wound healing progress was assessed during outpatient follow-up.

Results: Fifteen patients with type 2 diabetes were recruited from an inpatient and outpatient setting. The average age was 62 years and the male (7) to female (8) ratio was 1:1. After treatment 6 wounds healed and 3 showed significant improvement. Two did not show any improvement, 2 required further surgical intervention and 2 were lost to follow-up.

Conclusion: UAW was found to be a useful tool to supplement existing treatments but it cannot replace sharp debridement for management of chronic wounds. It failed to remove necrotic and fibrous tissue. However, UAW did prove very useful to clear possible biofilms that form in the chronic wound bed and can be recommended for wound bed preparation before skin grafts and in wounds that are infected with antibiotic resistant organisms.

ALH 060

Evaluation of Roche Cobas B221 Blood Gas Analyser

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Aim: The Roche Cobas b221 blood gas analyser offers blood gas, co-oximetry and electrolyte analysis on whole blood, serum, dialysate and pleural fluid samples. This study compared the performance of the Roche Cobas b221 with our existing Roche AVL Omni 6 system.

Methods: Three levels of quality control material were analysed manually for 20 days. Inter-instrument comparison was performed using anonymised body fluid, dialysate and blood gas samples on the Cobas b221 and AVL Omni systems. Linearity was assessed using CAP materials.

Results: Imprecision studies (%CV) of the Cobas b221/ AVL Omni were: pO₂ <7%/ <21%; pCO₂ <2.0%/ <2.3%; pH 0.1%/ 0.1%; K <0.8%/ 5.2%; Na <0.6%/ 2.2%; Cl, COHb and MetHb <1%/ <3%. Duplicate analysis on the b221 and Omni 6 was performed on 30 blood gas samples. Good correlation was observed between the 2 analysers with r² values for pH, pO₂ and pCO₂ of 0.991, 0.996 and 0.992 respectively. Linearity met manufacturer's claims.

Conclusion: The Roche Cobas b221 blood gas analyser is a user-friendly instrument with good imprecision and analytical range. It compares well with the AVL Omni 6 system and is the first blood gas analyser to gain FDA clearance for pleural fluid analysis. The analyser requires minimal maintenance and uses less reagent than the existing AVL Omni, saving technologist time while offering faster testing.

ALH 061

Lithium Measurement on SynchronLX20pro

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Aim: Lithium is widely used to treat manic-depressive psychosis. Monitoring of lithium concentration is essential in therapeutic adjustment and toxicity avoidance. We investigated the impact of the SynchronLX20PRO (Beckman Coulter, USA) on the lithium measurements using the spectrophotometric method (wet chemistry) and compared it to colourimetric dry reagent measurement on the Vitros250 (Johnson & Johnson, USA).

Methods: Thirty blinded specimens were measured for lithium concentration on both Synchron-LX20PRO and Vitros250. Three levels of controls were run daily (Synchron QC-lot no:M511371,M511372,M511373). Turnaround time (TAT) was defined as time of test captured electronically in the Laboratory Information System until report was generated. TAT data on lithium measured on Synchron-LX20PRO (January to May 2007) were compared to Vitros (January to May 2006). Staffing remained since January 2006.

Results: The linear regression data were Synchron-LX20PRO = 0.95Vitros-0.01, r² = 0.98. The intra-day precision for QC level 1, 2 and 3 was 2.4%, 0.9%, 1.0% respectively. And inter-day precision for QC level 1, 2 and 3 was 4.0%, 3.2%, 3.1% respectively. The verified linearity on Synchron-LX20PRO was 0-2 mmol/L (analytical range, 0.1-2.0 mmol/L). Under daily routine workflow, 91% lithium measurements achieved a 2-hour TAT on the Synchron-LX20PRO when compared to 80% on Vitro250.

Conclusion: The 2-hour TAT statistics showed an improvement of 11% of lithium testing on LX20PRO against Vitros250. Lithium measurement on the Synchron-LX20PRO was linear, precise and its ease of use has enabled timely management of patient care by the physicians.

ALH 062**Altered Molecular Signals in the Periodontal Ligament Might Trigger Teeth Loss Seen in Delayed****TK MAHESHWARI¹, A JUDE JOSPEH ANTONIORAJ¹, H YANG², G YIP³, TT PHAN⁴, SL VARAWAN¹**¹Dentistry, National University of Singapore, Singapore, ²Bioinformatics Institute, A*Star, Singapore, ³Yong Loo Lin, School of Medicine, National University of Singapore, Singapore, ⁴Surgery, National University Hospital, Singapore

Aim: Periodontal ligament (PDL) plays a critical role in the biological response initiated towards healing process in replanted tooth. Using high-density oligonucleotide arrays, this study aimed to profile the molecular signatures of periodontal ligament delayed replanted teeth in a canine model.

Methods: One hundred and fifty-seven roots from 12 dogs were extracted simulating avulsion injury. Seventy-nine roots were immediately (Imm) replanted, while 78 roots were replanted after 60-minute dry time (Del). At day0 (20-Imm, 20-Del), day1 (19-Imm, 17-Del), day3 (22-Imm, 23-Del) and day7 (18-Imm, 18-Del),

the teeth were extracted. RNA was isolated from the individual samples. Biotin-labeled cRNA was synthesised from the qualified RNA samples and hybridised into 24 canine GeneChips with 3 biological replicates. Candidate genes were further verified using qRT-PCR.

Results: In temporal comparison, 9945 genes were differentially regulated in the Imm group and 3424 genes in the Del group in PDL. Conditional comparison (Imm vs Del) showed 2197 differentially expressed genes. Apoptotic gene PSEN1, MCL1 and BCL2 showed upregulation, they trigger erroneous cell death Cell adhesion molecule *ICAM-1* expression was retarded in the delayed group PDL, DSG1 and DSG3 show downregulation, they retain water in tissue. *PTHLH* showed an up regulation in the early observation period, it triggers resorption. *TGF- β 1* and Cell cycle regulation molecule *PPP2CA* was down regulated in the delayed group PDL

Conclusion: This study provides insight into molecular phenomena underlying PDL healing following delayed replantation which facilitates establishment of a baseline paradigm for optimizing replantation strategies and tissue engineering concepts.

BAS 001

Apoptosis-inducing Abilities of *Helicobacter pylori* And Its γ -Glutamyl Transpeptidase Isogenic Mutants

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Aim: The association of *Helicobacter pylori* and various gastroduodenal diseases has been well established. γ -glutamyl transpeptidase (GGT) has been proposed as one of the virulence factors of *H. pylori*, having been reported to be an important colonising and apoptosis-inducing factor. GGT is a 60 kDa heterodimer comprising a large and a small subunit and is present in all *H. pylori* strains. This study examined the effects of the individual subunits of GGT in inducing apoptosis in host cells using various GGT isogenic mutants.

Methods: Standard *H. pylori* strain 88-3887 was used in this study and 3 different isogenic mutants of *H. pylori* were constructed to characterise the individual subunits. The first was an isogenic mutant lacking the full-length GGT gene while the second and third lacked the sequences coding for the large and small subunits of GGT, respectively. A comparative study was carried out by infecting AGS cells in vitro with wild type *H. pylori* and the various mutants. The extent of apoptosis induction by the different mutants was determined by flow cytometry analysis.

Results: The apoptosis-inducing activity of all 3 mutants was significantly lower compared to the parental strain. Among the 3 mutants, there was no significant difference observed in their apoptosis-inducing activities.

Conclusion: This study shows that both the large and small subunits of GGT are required to work cooperatively in inducing apoptosis in AGS cells. Further characterisation of both subunits of GGT is currently being done to gain a better understanding of their roles in the pathogenesis of *H. pylori*.

BAS 002

Cross-talk of HER-2/Neu Signaling With Cell Apoptosis: Activation of HER-2/Neu Enhances the Phosphorylation of Cell Death Proteins in Breast Cancer

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Aim: HER-2/*neu*, a member of the epidermal growth factor receptor (EGFR/ErbB) family, is over-expressed in 20% to 30% of human breast cancer. In our previous antibody array study, we had demonstrated the role of HER-2/*neu* signaling in mediating the phosphor- and dephosphorylation of the key modulators in cell proliferation, cell apoptosis and cell cycle (manuscript in preparation). In this study, we aim to further establish the enhanced phosphorylation of cell death proteins (Bim, ARC, FADD and RAIDD) by heregulin (HRG)-mediated HER-2/*neu* signaling.

Methods: The HER-2/*neu* positive breast cancer cell line, BT474, was treated with HRG for 30 minutes. The phosphorylation levels of cell apoptosis modulators from both control and treated samples were examined by 2-Dimensional (2D) immunoblotting, immunoprecipitation and Western blotting.

Results: Our study showed that phosphorylation of Bim was highly stimulated and a new hyperphosphorylated Bim isoform was observed

by 2-D immunoblot in the HRG-treated BT474 cells. The enhanced phosphorylation of death domain-containing proteins FADD, RAIDD and ARC was also observed in the HRG-treated cells.

Conclusion: Our results indicated that HER-2/*neu* signaling plays a key role in attenuating or deactivating the cell apoptosis signals by phosphorylating the cell death modulators. The cross-talk of these 2 signaling pathways is an essential step in promoting cell survival and aggressive tumour progression.

BAS 003

Dissecting Her-2/Neu-mediated Tyrosine-phosphorylated Proteomes in Breast Cancer

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Aim: HER-2/*neu* plays an essential role in tumorigenesis and metastasis by modulating multiple signaling networks. Activation of HER-2/*neu* signaling in breast cancer causes detrimental effects and unfavorable clinical outcomes in the patients. Therefore, understanding the tyrosine phosphorylation profiles of the multi-signaling transduction modulators will be useful in elucidating the molecular basis of tumorigenesis and metastasis and developing novel therapeutic targets for cancer treatment. The aims of this study were to identify the HER-2/*neu*-mediated tyrosine-phosphorylated proteins using signal transduction antibody array, and assess their correlations with HER-2/*neu* levels in a panel of clinical specimens.

Methods: Signal transduction antibody array and anti-phosphotyrosine antibody were used to identify the differentially expressed tyrosine-phosphorylated proteins in HER-2/*neu* positive and negative tumours. Western blotting and immunohistochemistry (IHC) were used to validate the differential expression.

Results: The antibody array analysis showed that HER-2/*neu* regulated the phosphorylation of multiple proteins involved in transcriptional activity, immune response, cell cycle, cell adhesion and apoptosis. Eleven of the 175 phosphoproteins detectable showed >2-fold increased expression in HER-2/*neu* positive tumours. Of these highly expressed phosphoproteins, the levels of serum response factor (p-SPF) and protein phosphatase 2A (p-PP2A) were further assessed by IHC. The p-SRF and p-PP2A were highly expressed in 16 of 25 HER-2/*neu* positive tumours (vs 10 of 32 negative tumours, $P = 0.017$) and 15 of 25 positive tumours (vs 9 of 32 negative tumours, $P = 0.043$), respectively.

Conclusion: This study highlights the regulatory role of HER-2/*neu* in phosphorylation of key modulators, and provides an insight into the complex network of inter-signaling pathway in HER-2/*neu*-driven tumorigenesis.

BAS 004

Expression Analysis of Peroxisome Proliferator-activated Receptors (PPARs), Hypoxia-inducible Factor (HIF) and Fasting-induced Adipose Factor (FIAF) in Squamous Cell Carcinoma (SCC)

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Aim: To examine the expression of peroxisome proliferator-activated

receptors (PPARs), hypoxia-inducible factor (HIF) and fasting-induced adipose factor (FIAF) in squamous cell carcinoma and its precursor lesions.

Methods: Twenty archival paraffin-embedded biopsy specimens selected from histopathology files of National Skin Centre, Singapore were used for the analysis. These were 10 cases of invasive squamous cell carcinoma (SCC) and paired peritumoral normal skin specimens. Total RNA was extracted and reversed transcribed to cDNA. The expression of each gene, namely PPAR-alpha, PPAR-beta/delta, PPAR-gamma, HIF-1 alpha and FIAF was quantified by real-time PCR (QRT-PCR) and normalised to beta-actin expression. Gene expression between tumour and peritumoral samples was analysed for statistical significance using Mann-Whitney test.

Results: The fold change of tumour versus peritumoral samples for FIAF, HIF, PPAR-alpha, PPAR-beta/delta and PPAR-gamma expressions were 4.95, 1.84, 0.43, 0.46 and 0.76, respectively. FIAF was upregulated ($P = 0.0185$, <0.05) in all the tumour samples. The expression of PPAR-beta/delta was lower in tumour tissue by 2.2-fold ($P = 0.0288$). Although 40% of all tumour samples showed slightly higher expression of HIF ($P = 0.8534$), and 50% showed reduced PPAR-alpha and PPAR-gamma expression, these did not reach statistical significance ($P = 0.1230$ and 0.3930 respectively).

Conclusion: We have demonstrated in this study the novel finding of upregulation of FIAF in squamous cell carcinoma. This result mirrors that of elevated FIAF expression that has been reported in lung, breast, colon, ovarian and prostate cancers. Further investigations in this area are needed as FIAF might be an important biomarker for early prognostication of skin cancers.

BAS 005

Effects of mTOR Inhibitor Rapamycin on Growth and Apoptosis of Oesophageal Squamous Cell Carcinoma Cells In vitro and In vivo

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Aim: To detect the roles of the mTOR/p70S6K signaling pathway in oesophageal squamous cell carcinoma (ESCC) and the sensitivity of ESCC to a mTOR inhibitor rapamycin in vivo and in vitro.

Methods: In the present study, mTOR/p70S6K signaling pathways in the ESCC cells treated with rapamycin were respectively investigated using immunocytochemistry, Western blots and reverse transcription polymerase chain reaction. The effects of rapamycin on cell cycle and apoptosis were detected by Flow cytometry. Furthermore, we investigated the inhibitory effects of rapamycin on transplantable tumour growth in nude mice.

Results: The results of in vitro experiments showed that rapamycin rapidly inhibited mRNA and protein expressions of mTOR and the phosphorylation of its major downstream effectors, p70S6K 4EBP1 in ESCC cells. Besides, rapamycin arrested cells in the G0/G1 phase of cell cycle, induced apoptosis of ESCC cells and inhibited the proliferation of ESCC cells. Furthermore, results of rapamycin on transplantable tumour growth in nude mice revealed that rapamycin could effectively inhibit the growth of transplantable tumour and induce apoptosis of tumour cells.

Conclusion: The findings presented here identify that the mTOR/p70S6K pathway is constitutively activated and effectively inhibited by rapamycin in ESCC cells. It may find a potential target for ESCC therapy.

BAS 006

The Involvement of Corticotrophin-Releasing Factor (CRF) Receptor 1 in the Anxiogenic Action of CCK4 in C57BL/6J Mice Tested in the Elevated Plus Maze

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Corticotrophin-releasing factor (CRF) is a neuropeptide associated with the modulation of anxiety and stress, appetite regulation, as well as central reward processing. Similar to CRF, cholecystokinin (CCK) is another neurotransmitter found in high abundance throughout the CNS, with a variety of biological actions including feeding and satiety, pain perception and psychiatric illnesses such as schizophrenia and anxiety disorders. Thus, it is of importance to determine whether interactions exist between these two neuropeptides. For this reason, the present study was designed to examine the function of CRF1 receptor in the action of CCK4, a CCK2 receptor agonist, in C57BL/6J mice tested in the elevated plus maze (EPM). It was found that acute and chronic CCK4 treatment for 10 days increased the anxiety behavior in animals in EPM, accompanied by the increase of CRF1 receptor expression in mRNA level in cortex and hypothalamus detected by real time RT-PCR and protein level in hypothalamus determined by western blotting. The acute pretreatment of NBI 27914, a CRF1 receptor antagonist, could not block the anxiogenic effect of CCK4. However, the chronic co-injection of NBI 27914 with CCK4 for 10 days could partially reverse the action exerted by CCK4. These results suggested that the anxiogenic effect of CCK4 in EPM may require the involvement of CRF1 receptor.

BAS 007

Elastin Microfibril Interface-located Protein-1 Gene (Emilin1) is Associated With Human Primary Hypertension

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Aim: We developed rapid genotyping assays for elastin microfibril interface-located protein-1 gene (Emilin1) polymorphisms, to use the assays for linkage disequilibrium analysis of primary hypertension.

Methods: We studied 651 non-obese ethnic Chinese adults without dysglycaemia. The 485 hypertensive cases and 166 controls had mean blood pressures of 156/96 mm Hg and 114/68 mm Hg respectively. We scanned for single nucleotide polymorphisms (SNPs) in Emilin1 using high-resolution melt-curve profiling (HRM), and PCR-RFLP (-restriction fragment length polymorphism). Genotyping was performed using new labeled and unlabelled probe melting-curve techniques. We tested pair-wise linkage disequilibrium between SNPs, and association between haplotypes and hypertension, using the programs PHASE and CLUMP.

Results: No variants in exons 3 and 4 of Emilin1 were detected by HRM. Nor were 4 earlier reported coding SNPs, specifically tested by RFLP, detected. However, we found 3 SNPs in intron 1 and 5 (IVS1-61A>G, IVS1-457A>G, and IVS5-369C>G). These SNPs were in strong pair-wise linkage disequilibrium ($D' > 0.95$). IVS1-61A>G genotypes ($\chi^2 = 8.33$, $P = 0.012$) and IVS5-369C>G genotypes ($\chi^2 = 6.28$, $P = 0.02$) showed significant association with disease. Allele A of IVS1-61A>G (odds ratio, 1.60; 95%CI, 1.12-2.29; $P = 0.009$) and allele C of IVS5-369C>G (odds ratio,

1.52; 95%CI, 1.06-2.17; $P = 0.021$) were high-risk alleles in the dominant model. Using the Zclump statistic, we found a significant haplotypic association between cases and the controls (empirical P value = 0.0064).

Conclusion: In this linkage disequilibrium study in Chinese cases and controls, we detected a significant association between hypertension and intronic SNPs of the Emilin1 gene. We have first evidence in humans implicating Emilin1 as a candidate gene for primary hypertension.

BAS 008

Gene Variants and Toxicity Indications of Chemotherapy Drugs in Singaporean Colorectal Cancer Patients

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Aim: Studies showed that X-ray Cross-Complementation Group1 (XRCC1) repairs DNA breaks and Glutathione S-Transferase P1 (GSTP1) conjugates glutathione to toxic compounds to increase water solubility and facilitates excretion. The chemotherapy drug 5-fluorouracil (5-FU) binds thymidylate synthase that inhibit DNA repair/synthesis. Our project was to assess the prevalence of these gene variants in Singaporean colorectal cancer patients and their relationship with clinical toxicity of 5-FU.

Methods: Blood specimens were obtained with consent from clinically diagnosed 49 colorectal cancer patients on chemotherapy involving 5-FU. Clinical history on the drug usage and toxicity grade (0-4) with 0 for no effect and 4 for maximum toxicity for each patient was compiled. DNA extracted using TRI REAGENT® (MRC, USA), and its product quantity was checked on Applied Biosystems 7900HT Fast Real-Time PCR System (Roche, Germany), followed by polymerase chain reaction (PCR) on the Eppendorf® Mastercycler® ep Systems (Eppendorf, Germany) using primers for GSTP1 and XRCC1. PCR product purity was assessed using HDA-GT12™ (eGENE, USA) and pyrosequenced on PSQ™96MA System (Biotage, Sweden).

Results: Forty-nine patients were genotyped for GSTP1 and XRCC1 gene variants. 24/49 (49%) were GSTP1 codon105: AA homozygous wildtype; 23/49 (47%) heterozygous (GA); and 2/49 (4%) homozygous mutant (GG). Clinical toxicity (Grade 3-4) to 5-FU was present in 7/24 (29%) of homozygous wildtype (AA), 9/23 (39%) heterozygous (GA) and 1/2 (50%) homozygous mutant (GG). In the same cohort, 29/49 (59%) were XRCC1 codon399: GG homozygous wildtype; 16/49 (33%) heterozygous (GA); and 4/49 (8%) homozygous mutant (AA). Clinical toxicity (Grade 3-4) to 5-FU was present in 10/29 (34%) of homozygous wildtype (GG), 5/16 (31%) heterozygous (GA) and 2/4 (50%) homozygous mutant (AA).

Conclusion: Preliminary data showed variable responses to 5-FU by different genotypes of GSTP1 and XRCC1. This phenomenon could contribute to clinical toxicity experienced by patients on combined drugs regimens.

BAS 009

Investigation of Scutellarin as a Novel Chemosensitisation Agent for Drug-evoked Colon Cancer Cell Apoptosis

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We have recently reported that resveratrol (200 μ M, 24 hours) evokes apoptosis of the HCT116 colon cancer cells through caspase-6 activation and lamin A cleavage (*Proteomics*, 2006). In the present study using the experimental model, we investigated apoptosis sensitization activities of scutellarin, a natural compound from Chinese herbs under clinical trials for vascular protection. We found that scutellarin (100 μ M) promoted resveratrol-elicited caspase-6 activation, lamin A cleavage and apoptosis in the cancer cells wild type for p53 (p53+/+). The sensitization effects were not detected in p53 knockout (p53-/-) cells. At the sensitizing dose, scutellarin alone did not cause caspase-6 activation or cell death. Extending these findings further, the apoptosis enhancing effect of scutellarin was evaluated on 5-fluorouracil, a current first-line chemotherapeutic agent for colon cancer, on the same cell-line models. In parallel to the mechanism of apoptosis induction by resveratrol, 5-fluorouracil (500nM, 24h) evoked apoptosis through caspase-6 activation and lamin A cleavage. Similarly, scutellarin enhanced 5-fluorouracil-elicited caspase-6 activation, lamin A cleavage and apoptosis in the cancer cells wild type for p53 by almost 2-fold but not in p53 knockout cells. Taken together, the data imply that scutellarin sensitized resveratrol and 5-fluorouracil-evoked apoptosis of the colon cancer cells by promoting resveratrol-triggered death signalling (i.e., caspase-6 activation), in a p53-dependent manner. We have, for the first time, documented the chemosensitization activity of scutellarin. Our results would benefit the pharmacological development of scutellarin as a chemosensitising agent in 5-fluorouracil-based colon cancer chemotherapy.

BAS 010

Reduction of Atherosclerosis and Coronary Events By Niacin – Possible Mechanisms as Seen in In vitro Studies in HUVEC

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Aim: Niacin has multifarious lipoprotein and anti-atherothrombosis effects that improve endothelial function, reduce inflammation, increase plaque stability, and diminish thrombosis. Plasminogen activator inhibitor type1 (PAI-1), the primary physiological inhibitor of endogenous plasminogen activators, is a potential factor in atherogenesis and in coronary thrombosis. Endothelium mediated adhesion, recruitment and migration of leukocytes through vascular surfaces is an essential process in atherothrombosis. We aimed to study the effect of niacin on PAI-1 expression using endothelial cell culture and its effect on cell mediated adhesion of monocytes.

Methods: HUVEC cells were cultured in EGM-2 growth medium till 90% confluent. After serum starvation, cells were exposed to EGM-2 SFM containing niacin (0 to 10 mM). TGF- β , shown to mediate increased PAI-1 expression, was added 10 ng/mL directly to cell media. Cell lysate and conditioned media were collected for measurement of PAI-1 by ELISA. Endothelial cell adhesion with monocyte was performed with 0, 1, 3 niacin, optimised to flowcytometry and analysed.

Results: Niacin attenuated the increased PAI-1 synthesis induced by mediators by 21%, 41% and 62% in media conditioned with 2 mM, 3 mM and 10 mM niacin respectively ($P < 0.0001$). The suppression was 49%, 54% and 57% for cell lysate ($P < 0.0001$). Niacin affected cell adhesion by 24%, 16% and 13% with 0 mM, 1 mM and 3 mM ($P < 0.01$).

Conclusion: We have observed attenuation of PAI-1 expression by niacin in vitro, and also reduction of endothelial cell mediated adhesion with monocyte. Further studies to confirm the mechanisms of these findings, could explain the long-term benefits of niacin seen in prevention atherosclerotic disease and atherothrombotic events.

BAS 011

Determination of Ethnic Differences in Fatty Acid Composition in Breast Milk of Singapore Women With Gas Chromatography Mass Spectrometry

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Aim: Breast milk fatty acids play important role of in the growth and development of infants. We aimed to develop and validate a robust Gas Chromatography Mass Spectrometry (GC-MS) method for determination of relative and absolute concentration of fatty acids in breast milks of 3 groups of Singapore women.

Methods: Breast milk samples (100 μ L) with deuterium substituted (d_{33}) Heptadecanoic acid (50 μ L) were treated with 2 mL of methanol-acetyl chloride mixture (20:1 v/v) and then the reaction was stopped by the addition of 5 mL of 6% K_2CO_3 . To this mixture, 0.4 mL of hexane was added. After vortexing, the upper layer containing fatty acid methyl esters (FAMES) were extracted. Agilent Gas chromatograph (6870N) equipped with a Mass spectrometer (5975) and an automatic liquid sampler (ALS) system with a split mode were used for the analysis of sample.

Results: Both n-6 (arachidonic acid, eicosatrienoic acid, eicosadienoic acid, linoleic acid) and n-3 (docosahexaenoic acid, alpha linolenic acid, eicosapentanoic acid) methyl esters were completely separated and determined in 54 minutes. The FAMES were identified by the specific MS profiles and retention times. Our preliminary results generated from 153 samples showed there is no significant difference in the fatty acid composition in breast milk among Chinese, Indian and Malay women.

Conclusion: GCMS analysis provides robust method for determination of FAMES in breast milk. There is no significant difference in the concentration of FAMES in breast milk among the 3 different ethnic groups in Singapore: Chinese, Indians and Malays.

BAS 012

Development of a Pigmented Organotypic Skin Model

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Aim: To reconstruct an in vitro 3-dimensional human organotypic skin culture model containing melanocytes, cultured in a chemically-defined serum free medium.

Methods: Epidermal tissues were harvested from healthy donor skin retrieved from cosmetic surgery after informed consent has been obtained. Primary cultures of keratinocytes and melanocytes were established. Keratinocytes were cultured using keratinocyte serum-free medium and melanocytes using melanocyte growth medium. The epidermal cells were expanded in cultures and seeded at different ratios on a collagen/fibroblast matrix using a chemically-defined serum free medium. These organotypic cultures were then transferred to an air-liquid interface to allow epidermal differentiation.

Results: We report our success in reconstructing an in vitro 3-dimensional human organotypic skin culture model containing melanocytes, cultured in a chemically-defined serum free medium. The method supports reconstructed human skin culture comprises of keratinocytes, fibroblasts and melanocytes. Ultrastructural studies of this organotypic culture showed a well-differentiated stratum corneum and the existence of melanin granules. Immunofluorescence staining exhibited all the markers of epidermal differentiation. Changes in the pigmentation during cultivation were also observed.

Conclusion: This pigmented organotypic skin model serves as a useful tool to study the modulators of melanogenesis and melanosome transfer, as well as the effectiveness of novel skin bleaching creams.

BAS 013

Screening of Genetically Modified Food in Singapore

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Aim: Recently, the genetically modified organisms (GMO) in Roundup Ready™ soy, Mazimizer™ Bt-176 corn, Bt-11 corn, YieldGard Mon810 corn and StarLink™ corn have been tested in Singapore by the Agri-food Veterinary Authority (AVA). However, the other foods, including potatoes, tomatoes and cabbages, have not been analysed yet. In this project, we aim to screen for GMO in soya beans, tomatoes, potatoes, maize and cabbages, in order to identify GMO foods in the local market.

Methods: Genomic DNA from tested foods was extracted using InstaGene™ Matrix (Bio-Rad) according to the provided protocol. Polymerase chain reaction (PCR) was performed with the GMO primer and photo system II primer supplied in the GMO Investigator Kit (Bio-Rad) and PCR products were visualized by DNA gel electrophoresis. The quality of extracted DNA was evaluated based on the PCR product from photo system II primer. Positive control amplified together with samples in each PCR was used to detect the presence of GMO.

Results: We have screened the GMO from soya beans imported from Canada, Hong Kong and USA, tomatoes from Holland, Thailand, Malaysia and USA, and potatoes from Holland, Australia and USA. Positive control in each PCR was successfully amplified. However, GMO was not identified in all the tested foods.

Conclusion: The PCR detection method is sensitive to detect the presence of GMO. The present data suggested that none of the tested foods in local market is genetically modified.

BAS 014

Identification and Characterisation of Trisomy Specific Maternal Serum Proteins Facilitating Early Diagnosis of Fetal Aneuploidy during Early Second Trimester

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Aim: The aim of this study was to develop a non-invasive technique for the diagnosis for fetal aneuploidy using maternal serum proteins. We hypothesised that mothers carrying trisomy (T) fetuses have unique protein fingerprints in their blood and produce new proteins in response to the abnormal fetus.

Methods: Maternal serum samples (total: 108); normal (85); T13 (6), T18 (8) and T21 (9), with positive triple test were used for this study. Protein fingerprints were generated using Surface Enhanced Laser Desorption and Ionization/Time of Flight Mass Spectrometry technique. Using an in-house algorithm, peak features were selected. Maternal serum proteins unique to fetal trisomies were identified using gel electrophoresis and Tandem MALDI-TOF-MS/MS approach and validated using western blotting studies.

Results: Protein spectral features unique to each trisomy conditions, T13 (5), T18 (12) and T21 (8) were identified, along with hCG and AFP, which could discriminate normal samples from the three trisomy conditions with near 100% sensitivity and specificity. Unique proteins in blood from patients carrying fetuses with trisomies were identified. Proteins identified belong to specific groups associated with (a) amyloidosis, (b) immune tolerance, (c) cell division, (d) proteinase inhibitors, (e) proteases, (f) amniotic fluid proteins, (g) acute phase reactant proteins and (h) proteins for neuromuscular development. The above proteins, when used as a panel of markers, were found to successfully distinguish normals from trisomy cases without misdiagnosis.

Conclusion: Maternal free circulating serum proteins and serum proteomic patterns as identified in this study could be successfully used for non-invasive detection of fetal trisomies.

BAS 015

Genes Associated With Metastasis in Human Colon Cancer Cells

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Aim: Metastasis is the leading cause of death among colorectal cancer patients. An understanding of the underlying mechanisms may help to identify potential metastasis markers that can serve as prognostication tools.

Methods: To identify genes associated with colon cancer metastasis, a poorly metastatic human colon cancer HCT116 cell line was serially transplanted into nude mice. Metastatic liver tumours were harvested to obtain cell-lines whose metastatic ability was confirmed by in vivo and in vitro invasion assays. In all, 7 metastatic variants were obtained and gene expression profiles of the variants were compared against parental HCT116 cell-line by microarray analysis

Results: Novel candidate genes that have not been associated with metastasis before were selected from the microarray analysis to be

characterised. One of these genes is palladin, an actin-associated phosphoprotein. Palladin was downregulated in mRNA and protein levels in the most invasive variant. Downregulation of palladin was observed in immunohistochemical studies on liver metastases compared to matched primary colon tumours. Also, several up-regulated genes were identified in the metastatic variants: Bmp4, Sox9 and Jag1. Cross-talk between these genes and the ERK pathway were studied; inhibition of the pathway resulted in down-regulation of Sox9 and Jag1 in the metastatic variant. Knockdown of Bmp4 resulted in reduction of invasiveness.

Conclusion: Loss of palladin expression is associated with metastasis of colon cancer cells; suggesting that it could be a metastasis suppressor. Increased expression of Bmp4, Sox9 and Jag1 could lead to enhanced motility and invasion of metastatic cells. This panel of genes could serve as prognostic markers for metastasis.

BAS 016

Enhancement of Ex vivo Umbilical Cord Blood Expansion by Co-culturing With Mesenchymal Stem Cell is via an Anti-apoptotic Mechanism

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Aim: Mesenchymal stem cell (MSC) co-culture system has been shown to enhance *ex vivo* expansion of stem and progenitor cells in umbilical cord blood (UCB). We hypothesise this enhancement effect is due to regulation of apoptosis and cell-cycling activities.

Methods: CD34-selected or non-selected UCB cells were co-cultured with MSC under serum-free conditions. CD45⁺ and CD34⁺ cells were detected by flow-cytometry. Progenitor function was determined by colony forming unit assay. Non-viable and early apoptotic cell detection was based on 7-Amino-ActinomycinD/Annexin-V staining. Cell cycle analysis was based on propidium iodide staining.

Results: UCB cells incubating with MSC for 9 days resulted in >10-fold expansion in total and progenitor cells, which was enhanced by 2- to 5-fold compared to cytokines-only cultures. Over 90% of the proliferative activities were contributed by the CD34-selected cells. Progenitor cells expanded rapidly only during the first 7 days of co-culturing but declined afterwards. The enhancement on UCB expansion was maximized when the MSC layer was in direct contact with the UCB cells. UCB cells co-cultured with MSC resulted in 2- to 4-fold lower apoptotic cell fraction, and UCB cell-cycling activities were not affected.

Conclusion: MSC co-culture appears to enhance *ex vivo* UCB expansion through contact-dependent mechanism by decreasing the apoptotic fraction but not by increasing the proliferative activities of CD34-selected cells during the first 7 days. Identification and manipulation of the factors that are responsible for this anti-apoptotic effect could lead to defined substitutes for MSC and improved technologies for expansion of suboptimal UCB for transplantation.

BAS 017

Passive Protection Against Lethal Enterovirus 71 Infection in Newborn Mice by Neutralising Antibodies Elicited by a Synthetic Peptide

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Aim: Enterovirus 71 infections could lead to high mortalities and

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neither vaccine nor therapeutic treatment is available. We investigated vaccination with a synthetic peptide SP70 representing a neutralising linear VP1 epitope of EV71 strain 41 (subgenogroup B4) and passive transfer of mouse anti-SP70 antibodies to protect suckling Balb/c mice against EV71 infectivity.

Methods: Adult Balb/c mice were intraperitoneally immunised with SP70 or heat-inactivated EV71 strain 41 and antisera were collected 2 weeks after the final booster. For passive protection study, 1-day-old suckling mice born to naive dams were injected intraperitoneally with EV71 (1000 TCID₅₀ per mouse), followed by heat-treated mice hyperimmune sera 24 hours later. Suckling mice from control groups were either given naive sera or not given any antisera at all. Mice were monitored for body weight gain/loss and the occurrence of mortality until 3 weeks post-infection.

Results: When the mouse anti-SP70 antisera with a neutralising antibody titre of 1:32 was passively administered to 1-day-old suckling mice which have been challenged with a lethal EV71 dose of 1000 TCID₅₀ per mouse, EV71-neutralising anti-SP70 antibodies were able to confer up to 80% *in vivo* protection. Histological examination and real-time polymerase chain reaction assays revealed viral infiltration in small intestines of EV71-infected mice. Interestingly, anti-SP70 antibodies play a major role in the inhibition of EV71 replication *in vivo* and significantly reduced the viral titer.

Conclusion: EV71-neutralising antibodies elicited by the synthetic peptide SP70 were able to confer good *in vivo* passive protection against homologous and heterologous EV71 strains in suckling Balb/c mice.

BAS 018

Do Pr55 and Cap-D3/G Maintain Chromosome Stability in Cells?

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Aim: Chromosome instability (CIN) is commonly found in cancer. PR55 and CAP-D3/G are involved in chromosome segregation during mitosis and may play a role in maintaining chromosome stability. The first aim is to correlate the mutation rate and gene expression of PR55 and CAP-D3 with CIN status in cancer cell lines. The next aim is to observe chromosome dynamics when PR55 and CAP-D3/G are downregulated.

Methods: Genomic DNA extracted from cancer cell lines were screened for mutations by polymerase chain reactions (PCR) and sequencing. Gene expression of PR55 was assessed by real time PCR and western blot. Short interfering RNAs were used to knockdown PR55 and CAP-D3/G in synchronised cells stably expressing GFP-tagged histone. The cells were analysed by microscopy and flow cytometry.

Results: Three non-synonymous and 1 synonymous mutation were found in HEAT motifs of CAP-D3 after examining 16 cancer cell lines. One mutation in exon 10 and its 3' untranslated region in PR55 were also discovered. Real time PCR and western blot revealed that altered levels of PR55 could be correlated with CIN levels. In CAP-D3/G knockdowns, the chromosomes appeared fuzzy and less compact during metaphase and a lower percentage of mitotic cells were observed.

Conclusion: Mutations occurred in HEAT motifs of CAP-D3 change its protein conformation and affect chromosome segregation. PR55 may contribute to chromosome stability as cancer lines showed

altered expression levels as compared to control lines. Yet, how PR55 and CAP-D3/G affect cell cycle progression needs further investigation.

BAS 019

West Nile Virus Adaptation to an Immuno-competent Mouse

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Aim: There is yet no immuno-competent mouse model for West Nile virus (WNV). The objective was to attempt to establish such a model that could improve drug testing and vaccine development.

Methods: A WNV strain used in the laboratory was passaged through a series of suckling Balb/C mice brain and mosquito C6/36 cell line. The same batch of virus was also subjected to repeated passaging through only mouse brains. Virus from the 10 passages were injected into adult Balb/C mice to check for morbidity and mortality. In addition, the virus genome was sequenced to link the pathophysiological infection results to a genomic explanation.

Results: It was found that the virus titres remained relatively steady throughout the passaging period in the mouse-C6/36 regime but some changes were noted. There was an increased in plaque size and decreased time in inducing cytopathic effects in C6/36 cells. This happened noticeably around the 7th to 8th passage. The virus passaged only in mice saw a virus drop in titres at late passages and took longer periods to cause mortality in the mice. The 2 alternative formats of passaging had altered the virus nature differently. Experiments are ongoing to test the tenth passaged virus from both formats at different virus concentrations to study the mice morbidity and mortality levels. Concurrently, full viral genome sequencing has begun to map the differences between the original virus strain and the 2 differently passaged viruses.

Conclusion: The results provide an understanding of virus adaptation in a mammalian and mosquito model.

BAS 020

Helicobacter pylori Induces the Disruption of Host Cell Signaling Pathways Resulting in the "Hummingbird" Phenotype

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Aim: *Helicobacter pylori* infects half the world's population and is associated with a spectrum of gastric maladies. Cell lines infected with *H. pylori* have shown that the translocation of cytotoxin-associated gene A antigen (CagA) alone into host cells can cause them to become elongated, resembling a hummingbird beak appearance. This phenomenon has been reported to correlate with pathogenesis but the host's signaling mechanisms exploited by *H. pylori* to result in the "hummingbird" phenotype are poorly understood. This study aims to investigate the contribution of two major intracellular signaling pathways, namely the MAP kinases and phosphoinositide 3-kinase (PI3K) and the effect of CagA expression in causing this phenotype.

Methods: Infection studies with *H. pylori*:AGS cells at 100:1 and transfection studies with 30 µg of pSP65SRα-cagA into 10⁵ AGS cells were carried out to check for CagA expression and the formation of the "hummingbird" phenotype. Inhibitor studies on the respective

signaling pathways were performed using Western blot to elucidate the pathways involved in the induction of the “hummingbird” phenotype. Confocal microscopy was used to localise CagA in host cells after translocation.

Results: The study shows that both PI3K and MAP kinases (ERK, p38 and JNK) pathways were activated in *H. pylori*-infected and CagA-transfected AGS cells. Interestingly, using specific chemical inhibitors, ERK activity but not that of p38, JNK and PI3K, was found to be required for the induction of the “hummingbird” phenotype.

Conclusion: This study indicates that CagA can modulate intracellular signaling, in particularly the ERK pathway of host cells to mediate *H. pylori* pathogenesis.

BAS 021

Characterisation of Host Cell Protein Interacting With Dengue-2 Virus Non-structural 1 (NS1) Protein

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Aim: The objective of this study was to characterize the dengue virus-host cell interactions between dengue-2 virus non-structural 1 (NS1) protein and host cell proteins.

Methods: A yeast 2-hybrid library screen was initially performed using a pre-transformed human cDNA library to identify the potential host proteins, which interact with dengue-2 virus NS1 protein. These potential interactions were then validated in mammalian cells using reciprocal co-immunoprecipitation assays. Lastly, to demonstrate the authenticity of these interactions in a cellular context, immunofluorescent microscopy was carried out to ensure that both the NS1 protein and its identified host interacting partners can co-localise within the same cellular compartment.

Results: From the yeast library screen, the human signal transducer and activator of transcription 3β (STAT3β) were identified as a potential interacting partner for dengue-2 virus NS1 protein. STAT3β protein was also found to co-precipitate with NS1 protein and vice versa, verifying the interaction observed in the yeast two-hybrid system. Lastly, STAT3β protein was observed to co-localise with NS1 protein in the cytoplasm using immunofluorescent microscopy. The interacting domains between the two proteins are being identified using truncated constructs of either of the proteins. Disruption of these sites could reduce the pathogenicity of the infection.

Conclusion: Since STAT3 is known to be an acute-phase response factor with anti-inflammatory and anti-apoptotic effects, this virus-host protein interaction may play important roles in dengue virus replication and pathogenesis.

BAS 022

Calpain is an Important Co-factor in Successful West Nile Virus (WNV) Entry

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Aim: The objective of this study was to elucidate the role of calpain, the Ca²⁺ requiring enzyme, in mediating WNV entry into the cells.

Methods: Calpain activity was measured in WNV-infected Vero, C6/36, HEK293 and A172 cells. The importance of calpain in influencing actin polymerisation and WNV replication was analysed using calpain inhibitors. Quantitative live confocal microscopy will

be employed to differentiate levels of actin filament bundling in different cell lines during WNV infection with or without calpain inhibitor. These experiments will subsequently be extended to mouse model.

Results: Enhanced calpain activity was observed in WNV-infected cells compared to the mock-infected cells from as early as 2 min post-infection. Cells pre-treated with calpain inhibitor showed 2.5 log units reduction in WNV yield. Biochemical studies confirmed that calpain influenced actin polymerization during entry, and thus establishes this molecule as an important cofactor for virus penetration. Further evidence supporting this claim will be visualised from ongoing microscopy work involving the immuno-labelling of actin filaments. We hypothesise that since calpain plays a pivotal role in virus entry, suppressing it would lower virus infectivity which would be seen in a reduced F-actin signal. Mice intracranially injected with WNV would experience high mortality rates but subjects provided with calpain inhibitor would increase the survival curve; mirroring the results from the cell-based experiments.

Conclusion: Understanding this calpain pathway, in addition to broadening our knowledge on WNV entry pathway, would also pave the path towards the development of calpain inhibitor-based antiviral drugs.

BAS 023

A Study of Antiplatelet and Anticoagulant Activities in Plants Commonly Found in Singapore

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Aim: From the traditional uses of medicinal plants growing in Singapore, we hypothesise that 4 such plants, namely, *Ardisia elliptica*, *Melastoma malabathricum*, *Thuja orientalis* and *Vernonia cinerea* may have potential antiplatelet and anticoagulant properties. The aim was to screen extracts of the selected plants for antiplatelet and anticoagulant properties.

Methods: Each plant was extracted using hexane, 70% methanol and water by Soxhlet extraction. All crude extracts obtained were assayed for their 1) antiplatelet activity on rabbit's blood using a whole blood aggregometer (Chronolog Corporation, Havertown, PA) and 2) anticoagulant activity using an Automated Blood Coagulation Analyzer CA-500 Series (Sysmex, Kobe, Japan). A bioassay-guided fractionation on the crude 70% methanol extract of *A. elliptica* was subsequently performed using liquid-liquid extraction and column chromatography in an attempt to isolate the bioactive components.

Results: Different solvent extracts of the plants were found to vary in the observed activities. In particular, both *A. elliptica* crude 70% methanol and water extracts significantly inhibited platelet aggregation and plasma coagulation. Bioassay-guided fractionation of the 70% methanol extract showed that fractions possessing strong inhibition of platelet aggregation had high abundance of 2 components, which were found to be more potent than aspirin in inhibiting platelet aggregation. Fractions with high anticoagulant activity were also obtained.

Conclusion: Promising antiplatelet and anticoagulant activities have been detected in the extracts of 4 medicinal plants. Further work needs to be carried out to elucidate the bioactive components and the potential mechanisms of action. Useful lead compounds from plants may be further developed into novel antiplatelet or anticoagulant drugs.

BAS 024**Lactobacillus Species – Cytotoxic Activity to Cancer Cells****SR CAI¹, R MAHENDRAN¹, BH BAY², YK LEE³**¹Department of Surgery, National University of Singapore, Singapore,²Department of Anatomy, National University of Singapore, Singapore,³Department of Microbiology, National University of Singapore, Singapore

Aim: The study aimed to assess the ability of *Lactobacillus* species to cause a cytotoxic effect on tumour cells and optimise conditions for faster killing.

Methods: Four commonly consumed *Lactobacillus* species (*Lactobacillus bulgaricus*, *Lactobacillus acidophilus*, *Lactobacillus casei* strain Shirota and *Lactobacillus rhamnosus GG*) were grown in deMan Rogosa Sharpe broth and harvested at late log phase to be co-cultured with a human bladder cancer cell-line (MGH) for 2 to 24 hours in the presence of membrane inserts at various pH. Viability of the cells was assayed with MTS assay. Statistical analyses were carried out using the one-way Anova with SPSS software. $P < 0.05$ was considered statistically significant.

Results: Gradual lowering of pH from pH 7.2 to 6.6 corresponds to gradual increase in cytotoxic effect of *Lactobacillus*. At pH 6.8, significant killing was observed within 2 hours. Killing effect of *Lactobacillus* is not contact dependent, as the bacteria do not need contact with the MGH cells to exude cytotoxic effect. All 4 *Lactobacillus* species tested showed comparable ability to induce cytotoxic effect on the bladder cancer cell-line. An acidic environment enhanced *Lactobacilli*'s ability to kill tumour cells in vitro and within as short a time as 2 hours. This coupled with the fact that the killing is contact independent greatly enhances its clinical applications.

Conclusion: Commonly consumed *Lactobacillus* species under the right conditions can trigger death in tumour cells as quickly as 2 hours. This may spell less detrimental potential therapeutic options for cancers.

BAS 025**Evaluation of the Antioxidant Activity of *Scutellaria baicalensis* in Streptozotocin-induced Diabetic Wistar Rats****YY WAISUNDARA¹, A HSU², DJ HUANG¹, BKH TAN²**¹Food Science & Technology Programme, Department of Chemistry, National University of Singapore, Singapore, ²Department of Pharmacology, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Aim: Oxidative stress is the root cause of diabetic complications. Current diabetes treatments such as metformin do not show an effect in reducing diabetes-induced oxidative stress. Herbs such as *Scutellaria baicalensis* used in the Traditional Chinese Medicinal treatment of diabetes are known for their potent antioxidant activity. Thus, the objective of this study was to assess in vivo the effect of *S. baicalensis* on diabetic oxidative stress and when it was used in combination with metformin.

Methods: Diabetes was induced in Wistar rats by intraperitoneal injection of streptozotocin (STZ) (65 mg/kg). The diabetic rats underwent the following treatments for 30 days (n = 6): 1) metformin (500 mg/kg) 2) *S. baicalensis* ethanolic extract (400 mg/kg) 3) metformin (500 mg/kg) + *S. baicalensis* ethanolic extract (400 mg/kg). Diabetic and non-diabetic controls were also used in the experiment. Antioxidant enzyme activities, lipid peroxide levels and other biomarkers relevant to the pathology of diabetes were quantified at the end of the study.

Results: Rats treated with *S. baicalensis* and metformin + *S. baicalensis*

had elevated Superoxide Dismutase, Catalase, Glutathione Peroxidase and Glutathione-(S)-Transferase activities as compared with the diabetic ($P < 0.05$) and metformin-treated ($P < 0.05$) groups. Plasma and hepatic lipid peroxide concentrations of these groups showed noteworthy reductions. The combined treatment had also resulted in elevated plasma and pancreatic insulin levels and reduced plasma and hepatic triglycerides and total cholesterol.

Conclusion: *S. baicalensis* had improved the antioxidant status of the diabetic Wistar rats. The herb-induced antioxidant activity had resulted in reduction in oxidative stress levels during the metformin treatment.

BAS 026**Infant's Intestinal *Enterococcus faecalis* Suppress Inflammatory Responses in Human Intestinal Cell Lines****SG WANG¹, YK LEE¹**¹Department of Microbiology, National University of Singapore, Singapore

Intestinal epithelial cells (IECs) are critically involved in the maintenance of the intestinal immune homeostasis by regulating the mucosal immune responses upon a variety of stimuli, including lactic acid bacteria (LAB). However, the influence of LAB on the development and regulation of intestinal immunity in IECs is unclear. Methods. In our study, LABs were isolated from 3 days to 3 months old infants. Together with LABs isolated from fermented milk and obtained from culture collections, their ability to modulate inflammatory reaction in human intestinal cell lines (Caco-2, HT-29 and HCT116) was investigated using ELISA method. UV killed bacteria and sonicated bacteria were also applied to find out the possible effector molecules on the bacteria. Carbohydrate oxidation and protein digestion were further used to analyze the molecules' components. Results. It was found that *Enterococcus faecalis* is the main immune modulator among the LABs by downregulation of IL-8 secretion and upregulation of TGF- β . Experiments on sonicated bacteria and carbohydrates oxidation showed that carbohydrates on bacterial cell surface are involved in both its adhesion to intestinal cells and regulation of inflammatory responses in the host. Conclusion. These data provide a case for the modulation of intestinal mucosal immunity in which specific strains of *E. faecalis* have uniquely evolved to maintain colonic homeostasis and regulate inflammation responses. The inhibition of IL-8 protein secretion by *E. faecalis* might explain the increased incidence of allergy in infants deprived of *E. faecalis* in the intestine. Therefore, this study might open a potent therapeutic window for allergy.

BAS 027**The Antioxidant and Anti-hyperglycaemic Effects of *Rehmanniae Glutinosa* in Streptozotocin-induced Diabetic Wistar Rats****YY WAISUNDARA¹, MQ HUANG¹, A HSU², DJ HUANG¹, BKH TAN²**¹Food Science & Technology Programme, Department of Chemistry, National University of Singapore, Singapore, ²Department of Pharmacology, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Aim: *Rehmanniae glutinosa* is used in Traditional Chinese Medicinal recipes for the treatment of diabetes complications. The objective of this study was to characterise in vivo the anti-hyperglycaemic and antioxidant effects of this herb.

Methods: An ethanolic extract of *R. glutinosa* ethanolic was prepared and the constituents were analysed by high performance liquid chromatography (HPLC)-mass spectrometry (MS). Diabetes was

induced in Wistar rats using 65 mg/kg STZ. The diabetic rats were divided into the following groups (n = 6) and received the respective treatments for 30 days: 1) metformin (500 mg/kg), 2) *R. glutinosa* (200 mg/kg), 3) diabetic control. A non-diabetic control group was also used in the study. Plasma insulin and glucose levels, antioxidant enzyme activities and other relevant biomarkers were measured.

Results: Catalpol and acteoside were identified in the extract as well as a few sugars. The herbal extract had reduced plasma glucose levels as compared with the diabetic control ($P < 0.05$). The percentage reduction in plasma glucose level was nevertheless not in par with the metformin-treated group which had the highest overall reduction. However, a noteworthy reduction in plasma C-reactive protein (CRP) in the herb-treated group was observed as compared with the diabetic controls ($P < 0.05$) and the metformin-treated group ($P < 0.05$). Increased glutathione peroxidase and glutathione transferase activities were also observed in the herb-treated group.

Conclusion: *R. glutinosa* was seen to be an efficient antioxidant and anti-inflammatory agent. This may be due to the presence of catalpol in the herb. However, its anti-hyperglycaemic activity was not as comparable with that of metformin.

BAS 028

Characterisation of West Nile Virus Capsid Protein Interaction With Viral RNA

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Aim: The process of assembly of the West Nile (WN) virus, a prototype of the flaviviruses, presents itself as an attractive anti-viral target. This involves the oligomerisation of the capsid (C) protein and the packaging of the viral RNA. The RNA binding properties of the C protein is poorly understood. This study aims to characterise the C-RNA interaction.

Methods: Co-localisation study was performed by transfecting *in vitro* transcribed WN virus RNA and C protein clones into baby hamster kidney (BHK) and visualised under fluorescence microscopy. RNA binding properties of the C protein were further investigated with a Northwestern Blot assay and a RNA pull-down assay. Synthesized C protein peptides were used to map out the RNA binding regions on the C protein. In addition, C protein immunopurified from BHK cells were used to investigate the effect of phosphorylation of the C protein on its RNA binding properties.

Results: RNA and C protein have failed to show co-localisation in BHK cells by immuno-fluorescence but interactions were observed at the molecular level. It showed that the first 465 and last 693 nucleotides of the WN virus RNA had specific affinity for the full length C protein. In addition, the amino- and carboxy terminal of the C protein were shown to bind to the virus RNA. Phosphorylation of the C protein attenuated its binding efficiency to viral RNA.

Conclusion: Understanding how the C protein interacts with the RNA and how phosphorylation might play a role in the nucleocapsid assembly could help develop anti-viral strategies aimed at disrupting viral assembly.

BAS 029

The Importance of Interferon Regulatory Factors (IRFs) in West Nile Virus (WNV) Infection

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Aim: The aim of this study was to profile the differential expression of various IRFs during the time course of West Nile Virus (WNV) infection in astrocytes.

Methods: DNA microarray analysis was performed on WNV-infected A172 cells. The results were analysed and genes were clustered according to their known or predicted functions.

Results: Preliminary DNA microarray analysis of WNV-infected A172 cells revealed that IRF2 was significantly differentially regulated during the early hours of infection. Activation of IRF2 in particular, leads to attenuation of type I IFN responses. Upregulation of IRF2 in WNV-infected A172 cells, thus suggested a likely pathway leading to clinically observed encephalitis. It is probable that WNV allay expression of certain IRFs during the early hours to establish initial infection. Subsequent overzealous reprisal by the host may give rise to abnormal levels of IRFs and interferons. This can give rise to a cytokine storm, invariably causing adverse inflammation in the brain manifested as encephalitis. Experiments are being performed to profile the dynamic expression of IRFs during the time course of WNV infection. Confirmation of the expression levels of the 9 different IRFs would then be detected and quantitated via reverse-transcription PCR.

Conclusion: Obtaining a coherent and complete picture of the roles of IRFs during WNV infection can enhance our knowledge of the events leading to encephalitis in certain WNV-infected patients. This knowledge may assist in providing support care for patients especially those with immuno-compromised status.

BAS 030

The Significance of Nuclear Phase in Flavivirus Replication

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Aim: Flavivirus capsid (C) protein was detected in the nucleus during infection although the exact role of this nuclear localisation still remains elusive. The aim of this study was to identify and re-examine the region influencing this nuclear localisation in West Nile and Dengue viruses (WNV and DENV) and its biological significances.

Methods: A series of truncated C proteins were expressed as GFP-tagged fusion proteins and their ability to enter the nucleus in transfected cells was studied via immuno-fluorescence microscopy. Mutagenesis studies were performed to further characterise the amino acids mediating the nuclear localisation. The interaction of C protein with transporting molecules was studied through co-immunoprecipitation. In addition, biological significances of NLS motif were investigated through deletion analysis of WNV and DENV full-length infectious clones.

Results: Immunofluorescence studies confirmed the nuclear phase of WNV and DENV C proteins. Mutation analysis performed on WNV infectious clone revealed that the deletion of NLS motif completely abolished nuclear transport of C protein and viable virus production. Similar experiments performed on DENV C protein confirmed the importance of two functional NLS motifs for effective nuclear localisation. It was shown for the first time that WNV and DENV C protein interacted with importin- to enter the nucleus.

Conclusion: This study demonstrated that the nuclear localisation of C protein plays a key role in influencing flavivirus replication. Insights obtained from this work thus formed the foundations for future translational studies aimed at unleashing the therapeutic potential targeting the viral life cycle.

BAS 031

Expansion of Criteria for Liver Transplantation in Hepatocellular Carcinoma

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Aim: Hepatocellular carcinoma (HCC) is a major public health concern in Singapore and the incidence is increasing. Liver transplantation is the gold standard treatment for selected cases of HCC. At National University Hospital, we followed the widely accepted and validated Milan's criteria for liver transplantation. Recently, we have expanded the criteria for liver transplantation in HCC. The study aimed to discuss the expanded criteria from various centres globally and our new expanded criteria.

Methods: At the National University Hospital, we do cadaveric and living-related liver transplantation for selected patients with HCC. Our results of liver transplantation in HCC are comparable to the international literature and hence we decided to expand the criteria for patient selection. The International Liver Transplant Registry formed in 1992 maintains a database from 57 liver transplant centres from 4 continents. The Registry concluded that the current Milan's criteria may be too restrictive and may be expanded. Based on the current available world literature and the International registry database, we decided to expand the selection criteria for liver transplantation in patients with HCC. Now, at the National University Hospital, we will be offering liver transplantation to patients having single tumour up to 6 cm in diameter or 2 to 4 tumours each up to 5 cm in greatest dimension.

Results: We have now been able to consider HCC patients for liver transplant work up who were initially rejected based on the old criteria.

Conclusion: More patients will now be eligible for consideration of liver transplant work up based on the new expanded criteria.

BAS 032

Microarray Transcriptional Profiling of Methicillin-resistant *Staphylococcus aureus* in Response to Clindamycin

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Aim: Nosocomial infections of methicillin-resistant *Staphylococcus aureus* (MRSA) are a common healthcare facility problem. These MRSA are often resistant to all clinically available beta-lactam

antibiotics. However, older antimicrobial agents such as clindamycin are still efficacious for the treatment of staphylococcal infections. This study aimed to look at the expression profile of an hospital acquired *S. aureus* isolate in response to clindamycin, a protein synthesis inhibitor.

Methods: *S. aureus* cultures were treated with clindamycin (1X MIC) for 60 min whilst controls were grown in the same conditions without antimicrobial agent. The RNA for transcriptional profiling was extracted from both drug-treated and drug-free controls, reverse transcribed and labeled. The cDNA samples were then hybridised to Affymetrix's *S. aureus* GeneChips®. For analysis of gene expression data, commercial software Spotfire DecisionSite for Functional Genomics was utilised.

Results: There were 768 differentially expressed genes: 417 genes were down-regulated and 351 genes were up-regulated. A significant number of genes that were involved in translation, posttranslational processes as well as DNA replication were up-regulated. On the other hand, the expression of regulatory factors and virulence factors were reduced.

Conclusion: The data provides an overview to the transcriptional changes taking place in response to antibacterial challenge.

BAS 033

Detection and Characterisation of Plasmid-mediated Quinolone Resistance Gene *Qnr* in Clinical Isolates of *Klebsiella pneumoniae*

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Aim: Plasmid-mediated quinolone resistance gene, *qnr*, confers low-level quinolone resistance to their bacterial hosts. In this study, we examined the prevalence and genetically characterised *qnr* determinants from hospital isolates of *Klebsiella pneumoniae*.

Methods: One hundred and seventeen ciprofloxacin resistant *K. pneumoniae* isolates obtained from the NUH microbiology laboratory were screened by PCR for the presence of *qnrA* and *qnrB*. Southern hybridisation was also used to confirm the presence of *qnrB*-bearing plasmids. The genetic environment surrounding the *qnrB* genes was determined by sequencing.

Results: None of the *K. pneumoniae* isolates screened were positive for *qnrA*. The presence of *qnrB* was however detected in 8 (6.8%) of the 117 isolates, with direct sequencing of PCR products confirming their identity. With the exception of one isolate, all the *qnrB* positive isolates could transfer quinolone resistance to the ciprofloxacin sensitive recipient *Escherichia coli* J53, raising the MIC of ciprofloxacin in the transconjugants 32-fold relative to *E. coli* J53. Southern hybridisations demonstrated that *qnrB* were located on large plasmids ranging in size from about 100 kb to >165 kb. Genetic analyses of *qnrB* genes showed that they were in novel and polymorphic genetic backgrounds, associated with insertion sequences and *sulI*-type integrons.

Conclusion: The study reveals a low occurrence of *qnr* in *K. pneumoniae* isolates, with *qnrB* being the dominant *qnr* variant. Studying their genetic organisation adds to the limited knowledge available for *qnrB* genes and suggests that the movement of *qnrB* amongst the *Enterobacteriaceae* is facilitated by mobile genetic elements.

BAS 034**Development of a Multiplex Polymerase Chain Reaction Based on the Internal Transcribed Spacer of the 16S-23S rRNA Gene for the Identification of Non-tuberculous Mycobacteria****LM NG¹, RTP LIN¹, JWP TEO¹**¹Department of Laboratory Medicine, National University Hospital, Singapore

Aim: The increasing number of infections caused by non-tuberculous mycobacteria (NTM) makes it clinically important to identify mycobacteria at the species level. The aim of this study was to evaluate the feasibility of a multiplex polymerase chain reaction (PCR) assay that targets at the internal transcribed spacer (ITS) for the identification of NTM.

Methods: The ITS is the spacer sequence between the 16S ribosomal ribonucleic acid (rRNA) and 23S rRNA genes which shows considerable variation between species and is therefore potentially suitable for differentiating species of mycobacteria. Species-specific primers for the mycobacteria species *M. tuberculosis* complex, *M. avium* complex, *M. abscessus*, *M. goodii*, and *M. xenopi* were designed based on polymorphic regions identified by multiple sequence alignment of the ITS sequences. A multiplex PCR system containing all 5 pairs of species-specific primers in each reaction was developed and tested against cultures of the test species.

Results: Reactions containing single mycobacteria species generated unique amplicons of the expected sizes which allowed individual species to be identified. No cross-reactivity between species was observed. In addition, all 5 species could be detected simultaneously in a single reaction.

Conclusion: Our result suggests the applicability of this approach in the identification of NTM at the species level. This assay can be further developed to provide a rapid and accurate diagnosis of mycobacteriosis for successful clinical management.

BAS 035**Whole Genome Sequencing of Influenza A Viruses****K WOO^{1,2}, HP LIM^{1,2}, SC LIN¹, YL TAY¹, LM NG², RTP LIN², JWP TEO²**¹School of Life Sciences and Chemical Technology, Ngee Ann Polytechnic, Singapore, ²Department of Laboratory Medicine, National University Hospital, Singapore

Aim: The genome of the influenza A virus comprises 8 segments of single-stranded negative-sense ribonucleic acid (RNA). The aim of this project is to evaluate a reverse transcription-polymerase chain reaction (RT-PCR) and sequencing approach to obtain full-length complementary deoxyribonucleic acid (cDNA) sequences of each gene segment.

Methods: For each isolate, viral RNA extracted from infected cell culture was reverse transcribed into cDNA using a single primer that recognises the first 12 nucleotides of all 8 RNA segments. This is followed by PCR using gene-specific primers, which target conserved nucleotide sequences flanking each gene, allowing individual genes to be amplified. Each purified gene amplicon was cloned and sequenced. Sequence data were analyzed by Basic Local Alignment Search Tool (BLAST) to confirm gene identities.

Results: Using this approach, we have successfully obtained full-length nucleotide sequences of individual gene segments of influenza A virus isolates.

Conclusion: This project is applicable in the detection and subtype identification of influenza A virus from clinical specimens during influenza outbreaks.

BAS 036**CSE Expression and its Catalysing Activity in Rat Model of Myocardial Ischaemia-Reperfusion****YL FU¹, PK MOORE¹, YZ ZHU¹**¹NUS Cardiovascular Biology Research Group and Department of Pharmacology, National University of Singapore, Singapore

Aim: The aim of this study was to investigate the time course of CSE mRNA expression and CSE activity in rat heart muscle after an ischemia-reperfusion (I/R). Cystathionine gamma-lyase (CSE) is a key enzyme in the trans-sulfuration pathway, which uses L-cysteine to produce hydrogen sulfide (H₂S). H₂S/CSE has been shown to play an important role in cardiovascular system.

Methods: Male Wistar rats were subjected to 30 minutes of ischaemia by occluding left coronary anterior descending artery, and then euthanised after 0, 2, 6, 12, 24, 48, 72, 144 and 240 h of reperfusion. The CSE mRNA and catalysing activity of left and right ventricular muscle were analysed.

Results: Our study demonstrated that the expression of CSE mRNA and its catalysing activity were down-regulated from induction of reperfusion and slowly unregulated to maximum level about 48 to 72 hours, and then restored to normal level. The changes of CSE mRNA and its catalysing activity in left ventricle were more significant than those in right ventricle. The exact role of H₂S in reperfusion injury is under further investigation by applying CSE inhibitor.

Conclusion: These results indicated that up- and down-regulation of expression of CSE mRNA and catalysing activity could be one of the important mechanisms for myocardial ischaemic reperfusion injury.

BAS 037**DNA Replication Stress Induces Filamentous Growth in *Saccharomyces cerevisiae* Protein Phosphatase 2A Mutant****XG LIU¹, FM YEONG¹**¹Department of Biochemistry, National University of Singapore, Singapore

Aim: Protein Phosphatase 2A (PP2A) is an important Serine/Threonine phosphatase. It is highly conserved across species with many roles in cellular processes. We aim to study the role of PP2A in DNA replication using a genetically tractable model organism, *Saccharomyces cerevisiae*.

Methods: Yeast strains are cultured using standard culture techniques. To generate deletion strains, one-step polymerase chain reaction followed by heat-shock transformation of yeast cells are performed. To treat cells with DNA replication stress, we applied 200 mM hydroxyurea to our cultures. Nomarski and fluorescence microscopic examination was then carried out to characterize the defects in the PP2A deletion mutants.

Results: We found that deletion of the regulatory subunit of PP2A such as *CDC55* led to the induction of filamentous growth in the mutant upon treatment with hydroxyurea, indicating that the differentiation programme is deregulated from the DNA replication checkpoint-induced delay. Furthermore, microscopic examination of septin-GFP and myosin-GFP revealed that these cytokinesis apparatus are laid down along the filaments despite the block in the cell division cycle.

Conclusion: The filamentous growth of *S. cerevisiae* can potentially be used as a model for mammalian cell differentiation upon exposure to DNA replication stress. This is useful as it has been shown that certain cancer cells can return to their former differentiation programs when they are treated with DNA synthesis inhibitors such as hydroxyurea at sub-lethal concentrations.

BAS 038**Automatic Determination of Steroid Sex Hormones in Plasma by Liquid Chromatography Mass Spectrometry via Online Extraction and Derivatisation****XC WANG**^{1,2}, **WK NG**^{1,2}, **YH GONG**^{1,3}¹Department of Obstetrics & Gynaecology, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, ²Department of Chemistry and ³Tropical Marine Science Institute, National University of Singapore, Singapore**Aim:** It is important to quickly and accurately determine the concentration level of steroid sex hormones for a lot of blood samples in clinic everyday. The main aim of this project was to develop and apply a novel automatic online extraction and derivatisation device in LCMS/MS to simultaneously determine steroid sex hormones by direct injection of a small volume of plasma samples.**Methods:** A home-built online extraction and derivatisation device with two controlling valves has been developed and used to automatically extract steroid hormones, e.g., progesterone (PG), estrone (E1), etc., following by automatic derivatisation using dansyl chloride. After the online extraction and automatic derivatisation, the steroid hormones are then separated in LC column and finally eluted into a tandem mass spectrometric detector.**Results:** The results showed that the method was linear over the range of 10 to 80 ug/mL for progesterone. The range of precision for intra- and interday assays were 0.1% to 8.3% and 0.1% to 4.8% respectively. The presence of dansyl estrone was determined by selected reaction monitoring SRM 504 ---->171, using d4-E1 as internal standard.**Conclusion:** We have successfully developed and applied a novel online extraction and derivatisation device with 2 controlling valves for automatic determination of PG and E1 by direct injection of plasma samples. However, both the device and the analytical method need to be further optimised to improve the detection and quantitation limit for routine analysis of steroid hormones in clinic.**BAS 039****Mystery of Bacterial Translocation – Unravelling the Perplexity****V SHELAT**¹, **G PANDYA**²¹Department of Surgery, ²Department of Medicine, National University Hospital, Singapore**Aim:** To review and summarise the current knowledge about the gut mucosal barrier and its dysfunction in disease state with reference to bacterial translocation.**Methods:** A literature search from Pubmed, Medline, Ovid, science direct, net library, Proquest, MD consult and up-to-date was done. All the articles relevant to bacterial translocation were identified with search terms ‘bacterial translocation’, ‘sepsis’, ‘gut mucosal barrier’, ‘mucosal barrier dysfunction’ and ‘multiple organ dysfunction’.**Results:** Gut is the largest immune organ and serves as a motor of organ dysfunction in a critically ill patient. Ingress of viable bacteria and their antigens can occur by transcellular or paracellular routes. The ‘three hit model’ and ‘gut lymph theory’ are 2 common hypotheses for supporting gut origin of sepsis. Intestinal obstruction, jaundice, inflammatory bowel disease, malignancy, cirrhosis, cardiac failure, acute pancreatitis, immunosuppression, total parenteral nutrition, aneurysm repair, cardiopulmonary bypass, emergency surgery, bowel transplantation and gastric colonisation with micro organisms are the identified causes for bacterial translocation. Identification of bacteria in mesenteric lymph nodes is a direct evidence of bacterial translocation. There is no randomised controlled trial to study bacterial

translocation and its prevention in humans. Enteral nutrition, glutamine supplementation, selective decontamination of digestive tract, probiotics, immuno nutrition, exogenous immunoglobulin A, granulocyte colony stimulating factor etc are the factors that can modify bacterial translocation.

Conclusion: Our understanding of the complex functions of gut as ecological barrier, mechanical barrier and immune barrier is preliminary and research focusing this aspect has a high chance of improving the outcomes in critically ill patients.**BAS 040****Antibacterial Properties in Spices****YP PEH**¹⁻³, **QJ YAP**¹⁻³, **J LEE**³, **K KAUR**³, **SK ONG**¹, **SK SETHI**^{1,4}¹Laboratory Medicine, National University Hospital, Singapore, ²School of Life Sciences and Chemical Technology, Ngee Ann Polytechnic, Singapore, ³Genecet Biotechnologies Pte Ltd, Singapore, ⁴Yong Loo Lin School of Medicine, National University of Singapore, Singapore**Aim:** Studies have shown that spices are natural food preservatives due to the phytochemicals (secondary metabolites) that exhibit antibacterial properties. We aimed to investigate 7 common spices used in Asia, and also to determine the optimal concentrations required to effectively demonstrate antibacterial properties in 3 food-borne pathogens.**Methods:** The following experiments were performed: a) Phase I-Extraction of essential metabolites from the 7 spices-garlic, onion, turmeric, ginger, black pepper, cinnamon and cloves using 50% (w/w) acetone, ethanol and distilled water solvent extraction methods, b) Phase II-Extracted metabolites were incubated with *Escherichia coli*, *Staphylococcus aureus* and *Bacillus cereus* at 37°C for 18 hours, and followed by plating on nutrient agar incubation at 37°C for 24 hours, and c) Phase III-Positive antibacterial extracts were tested for minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC).**Results:** In phase I, garlic, cloves and cinnamon metabolites were best extracted using acetone as extraction by distilled water and ethanol showed bacterial growth. Black pepper, turmeric, ginger and onion extractions are still in progress. In phase II, the respective cultures of garlic, cloves and cinnamon indicated *Escherichia coli* and *Staphylococcus aureus* had insignificant growth (<5 colonies), while *Bacillus cereus* showed heavy growth. Phase III is still in progress.**Conclusion:** Preliminary studies showed that garlic, cloves and cinnamon exhibited antibacterial properties against *Escherichia coli* and *Staphylococcus aureus*, with no inhibition on *Bacillus cereus*. In addition, distilled water and ethanol are not feasible solvents for essential metabolites extraction for garlic cloves and cinnamon. Further investigations are needed.**BAS 041****A Profile Study on the Roles of H₂S in Vascular Smooth Muscle Cells – A Novel Mediator of Cholesterol Synthesis****WH WONG**¹, **HS NAI**¹, **ZJ WANG**¹, **PK MOORE**¹, **YZ ZHU**¹¹Cardiovascular Biology Research Group and Department of Pharmacology, National University of Singapore, Singapore**Aim:** Growing evidence suggests that hydrogen sulfide (H₂S), an endogenous gasotransmitter, plays a number of important roles in the cardiovascular system, including the regulation of cell proliferation, membrane hyperpolarisation, vascular relaxation and apoptosis. The

aim of this study was to identify further potential functions of H₂S in vascular smooth muscle cells (VSMC).

Methods: High-throughput gene expression profiling was performed using Affymetrix oligonucleotide assay which encompasses over 31,000 rat transcription probes. Triplicate mRNA samples to be labeled for hybridization to arrays were prepared from rat VSMC. Genes which showed 2-fold or greater change were further validated by qRT-PCR.

Results: Sixty-five genes showed 2-fold or greater change in gene expression (40 genes up-regulated and 25 genes down-regulated) in rat VSMC subjected to 50 μM sodium hydrosulfide (NaHS), a H₂S donor. Of those genes with known biological functions, several could be categorised into the following classes: gene products involved in sterol/steroid biosynthesis; protein biosynthesis; antioxidant functions; immune response; apoptosis; transcription regulation; metabolism; cell cycle/differentiation; extracellular matrix organisation; protein folding and signal transduction. The results suggest that a subset of independent genes is responsible for cholesterol synthesis, including insulin induced gene 1 (Insig 1), 3-hydroxy-3-methylglutaryl Coenzyme A synthase 1 (Hmgcs 1), dehydrocholesterol reductase 7 (Dhcr 7) and NAD(P)H dehydrogenase, quinone 1 (Nqo 1), etc.

Conclusion: This pioneer study could evaluate the possible effects of H₂S on the expression alterations of cholesterol synthesis at the genomic level and may lead to the identification of potentially important candidate transcripts for future studies.

BAS 042

The Important Role of *Helicobacter pylori* Biofilm

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Aim: *Helicobacter pylori* is a gram-negative bacterium strongly associated with various gastroduodenal diseases and gastric adenocarcinoma. To date, the precise mode and route of transmission remain elusive. Recent reports on detecting *H. pylori* DNA from biofilms in water suggest that biofilms may serve as a survival strategy for the bacteria in the extragastric environments, leading to its transmission. The study aimed to characterise *H. pylori* biofilm and visualise the biofilm pattern of different *H. pylori* strains.

Methods: The biofilm formation and exopolysaccharides were analysed using crystal violet and ruthenium red stains, respectively. The biofilm of 3 different *H. pylori* strains were examined using scanning electron microscopy (SEM) and confocal laser scanning microscopy (CLSM). In vitro study of the biofilm adherence to the gastric cell line, AGS was examined under SEM and viability of the bacteria analysed using BacLight viability kit.

Results: SEM revealed structural differences in biofilm formation between different *H. pylori* strains studied and the adherence of *H. pylori* within the biofilm formed. Increasing amount of film-like structures, which was postulated to be the exopolysaccharides, were observed as the cultures aged. Interestingly, viable bacteria were present within these biofilms. Similarly, CLSM demonstrated an increasing amount of exopolysaccharides as stained by calcofluor in prolonged cultures. A stack of Z-series sections were performed and showed that the biofilm formation was not uniform.

Conclusion: In summary, the results infer that *H. pylori* biofilm could be a strategy that enhances the survival of the bacterium in the extragastric environment, presenting the possibility of its transmission and infectivity.

BAS 043

Ubiquitin Proteasomal System: A New Hypothesis in Pterygium Pathogenesis

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Aim: Pterygium is an ocular surface disease with uncertain aetiology. The ubiquitin proteasome system is the primary method of protein degradation in cells. The role of the ubiquitin-proteasome system was examined in the pathogenesis of pterygium.

Methods: Global gene expression in pterygium was evaluated by an Affymetrix Gene chip microarray technique, using samples from 9 primary pterygium and 4 un-involved conjunctivae as controls. Known biological information was incorporated into gene expression data using Pathway Studio. Protein expression was investigated by immunofluorescent staining.

Results: Sixteen genes in the ubiquitin-proteasomal system were found to be differentially regulated in pterygium ($P < 0.05$). Pathway analysis suggested a central role for the following ubiquitin pathway molecules whose transcript levels were differentially regulated: UBE1L, UBE2B, UBE2C, UBE2N, UBE2I and UBE4B. These factors were known to be regulated by a network of extracellular signals. Extracellular factors implicated include IL1, IGF1, EGF, IFNA1, IFNB1 and TNF, whereas membrane receptors EGFR and IL2RG were also involved. Signaling molecules implicated include the RhoA and NF-κB, and cell cycling associated entities cyclin D1 and Mdm2. Tissue expression of UBE2E showed presence of this protein in the nuclei of all layers of pterygium epithelium, but predominantly in the superficial layers of the un-involved conjunctival epithelium.

Conclusion: Aberrant protein degradation in conjunctiva tissue may result in pterygium formation. The signal transduction in this novel hypothesis is consistent with increased fibroblastic and possibly epithelial proliferation in pterygium. Known inhibitors of this pathway may be considered for treatment of pterygium.

BAS 044

Induction of Allergic Airway Inflammation by House Dust Mite Allergen Specific Th2 Cells in Mice

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Aim: It is known that allergic inflammatory diseases such as asthma are Th2 cells- mediated, however, the pivotal roles of allergen-specific Th2 cells in the induction of allergic lung inflammation have not been fully elucidated. The aim was to elucidate the immunopathological roles of allergen-specific-Th2 cells in allergic airway inflammation.

Methods: Mice were epicutaneously sensitised with a major dust mite allergen, Blot 5 and a well-characterised Blot -5 specific-Th2 cell line was subsequently established from the splenocytes of the sensitised mice. The immunopathological roles of the cell line were assessed *in vivo* by adoptive cell transfer approach. Naïve mice received Blot 5 specific-Th2 cells intravenously followed by intranasal challenge with Blot 5. The responses of recipient mice were analysed by immunological and histochemical methods.

Results: A long-term TCRVβ3⁺ Blot 5 specific Th2 cell line producing

high levels of IL-4, IL-5, IL-13 and IL-10 but not IFN- γ was established. These CD44^{high}CD62L⁻ Th2 cells showed up-regulation of CTLA-4, ICOS, OX40, 4-1BB, CD27 but not CD40L upon stimulating with Blot 5. After intranasal challenge with Blot 5, Th2 cells recipient mice developed Blot 5-specific IgG1 and IgE, airways eosinophilia and mucus production of the Goblet cells. In addition to the donor Th2 cells, the cellular infiltrate consisted of CD4⁺, CD8⁺ T cells and NK cells of the recipient mice. Such cellular inflammation could be suppressed by dexamethasone intervention. The pathological results were not observed in the PBS challenged recipient mice.

Conclusion: Blot 5-specific Th2 cells played a central pathological role in mediating allergic airway inflammatory responses resembling those seen in humans. This animal model is particularly useful for screening of novel therapeutics for asthma and allergy.

BAS 045

Connexin 26 is the Leading Cause of Idiopathic Sensorineural Deafness in Singapore; A Novel Dominant Mutation I30V

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Aim: The study aimed to determine the prevalence and audiometric profile of connexin 26, connexin 30 and A1555G sensorineural hearing loss (SNHL) in Singapore. Hearing loss (HL) is the leading congenital disease, and a silent epidemic. Connexin 26 mutation is

the leading cause of idiopathic SNHL worldwide, but has not been characterised in Singapore.

Methods: Prospective translational study of 96 affected deaf and 99 hearing control patients. Genetic testing was performed and audiometric and clinical data documented.

Results: Connexin 26: Prevalence of deafness causing mutations was 38.5% (74/192) in affecteds and 12.6% (25/198) in controls. V37I the leading deafness causing mutation 76.7% (76/99). High prevalence of polymorphisms V27I/ E114G not known to cause deafness, 38.4% (76/198) in controls, and 27.6% (53/192) in affected. V27I/E114G/V37I showed to be pathological 100% in 6 affecteds. No 35delG deafness common to West, China and Japan. Connexin 26 HL is usually recessive, but a novel dominant mutation I30V was found documented worldwide in a family. Mutations found in sudden hearing loss subject to be 56.3% (9/16). Connexin 30 & A1555G: No mutations found. Audiometric profile: Among connexin 26 (V37I) HL subjects, 70.5% (12/17) mild HL, 29.4% (5/17) moderate HL, 5.8% (1/17) severe-profound HL. Our missense V37I HL is mild-moderate, unlike nonsense 35delG and 235delC profound HL of other ethnicity. Connexin 26 HL was usually bilateral, symmetric with early onset and flat audiograms. The I30V mutation however, related to late onset progressive severe HL.

Conclusion: The prevalence among HL subjects for connexin 26 was 38.5% (74/192). Singapore's mutations differ from the West, China and Japan. A novel dominant mutation I30V was found. V27I/ E114G/V37I showed to be pathological. Further studies of V27I/ E114G pathology are warranted.

MP 001

The Association of Adrenomedullin Receptor Gene Promoter Haplotype with Elevated Plasma Adrenomedullin Protein Concentration and Nephropathy Secondary to Type 2 Diabetes

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Aim: Epidemiological data suggest that diabetic nephropathy (DN) is strongly influenced by genetic determinants. However, the susceptibility genes remain elusive. Adrenomedullin (ADM) is an important vasoactive factor in the pathogenesis of DN. We previously reported that plasma ADM is elevated in DN. The clearance of ADM is receptor (i.e. ADM-receptor [ADMR]) dependent. Therefore, we tested the hypothesis that ADMR is a candidate gene for DN.

Methods: ADMR gene in 30 Chinese subjects was re-sequenced to uncover all common SNPs (minor allele frequency [MAF] ≥5%). Genetic association study for DN was performed in a large case-control group of Singaporean Chinese with diabetes (n = 600, enriched with extremes of DN phenotypes).

Results: A common 5' promoter SNP -32 C>T (rs2279373, MAF = 0.258) of ADMR conferred a reduced susceptibility to DN (OR 0.71 [95% CI 0.55-0.91], P = 0.007). Interaction between rs2279373 and DN status was observed – allele T was associated with elevated plasma ADM concentrations in a dominant fashion (0.95 ± 0.63 nM vs. 0.71 ± 0.35, P = 0.038) only among renal impaired individuals. Moreover, rs2279373 (located at transcription factor Sp1 binding site) is in perfect linkage disequilibrium (r² = 1.0) with 2 other novel promoter SNPs (-244 C>T and -120 G>T which are potential binding sites for transcription factors PAX6 and ETS1 respectively). Therefore, 2 haplotypes exist in the 5' promoter region of ADMR (CGC & TTT, estimated minor haplotype frequency = 0.14). The haplotype is likely to be functional.

Conclusion: Potentially functional promoter haplotype of ADMR is associated with elevated plasma adrenomedullin protein concentration and DN among Chinese.

MP 002

Blood Pressure and Chronic Kidney Disease in a Malay Population in Singapore

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Aim: This study aimed to examine the relationship between blood pressure (BP) and chronic kidney disease (CKD) in Singapore.

Methods: We analysed data from a population-based sample of 3104 adults of Malay ethnicity aged 40 to 80 years in Singapore. The main outcome-of-interest was CKD (n = 660), defined as an estimated glomerular filtration rate <60 mL/min/1.73 m² from serum creatinine. We analysed BP as: 1) categories as per the Seventh Report of the Joint National Committee (JNC 7) on Prevention, Detection, Evaluation, and Treatment of High BP, and 2) systolic and diastolic

BP quartiles. We calculated multivariable-adjusted odds ratios (OR) and 95% confidence intervals (CI) of the association between BP and CKD.

Results: The prevalence of CKD was 21.3%. We observed a strong, dose-dependent association between JNC7 BP categories and CKD. Compared to participants with normal BP (BP <120/80 mm Hg), the OR (95% CI) of CKD was 1.85 (0.95-3.62) for pre-hypertension (BP 120-139/80-89 mm Hg), 2.95 (1.55-5.64) for stage 1 hypertension (BP 140-159/90-99mm Hg) and 4.96 (2.63-9.37) for stage 2 hypertension (BP ≥160/100 mm Hg); P-trend <0.0001. Similarly, compared to the lowest quartile of systolic and diastolic BP, the OR (95% CI) of CKD was 1.89 (1.40-2.54) for the highest quartile of systolic BP (BP ≥160 mm Hg) and 1.55 (1.18-2.03) for the highest quartile of diastolic BP (BP >100 mm Hg).

Conclusion: Higher BP levels are positively associated with CKD among Malay adults in Singapore. This finding extends the previously reported similar associations in Western populations to Singaporeans and emphasises the need to control BP in order to reduce the burden of kidney disease.

MP 003

A Novel Mutation in TRPC6 is Associated with Autosomal Dominant Focal Segmental Glomerulosclerosis (AD FSGS)

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Aim: Transient receptor potential cation channel 6 (TRPC6) is a glomerular slit-diaphragm associated channel required for normal renal function. Mutations in this protein have been reported to cosegregate with AD FSGS. This study aimed to examine TRPC6 mutations in a family with AD FSGS.

Methods: A Chinese family displaying FSGS in an autosomal dominant pattern of inheritance was studied. This three-generation family comprised 8 members, 3 of whom had haematuria and proteinuria at ages 8, 15 and 17 years respectively. The proband and his mother progressed to end-stage renal failure at 9 and 18 years from onset respectively. Using genomic DNA, all 13 exons and exon-intron boundaries of the TRPC6 gene were screened by direct sequencing. The sequences were compared against those of 96 Chinese cord-blood controls and 29 Chinese patients with sporadic nephrotic syndrome.

Results: A missense mutation encoding for an amino-acid substitution (tryptophan for arginine) was found in 4 members, namely the above-mentioned and a younger sibling with no haematuria or proteinuria. This mutation, which occurs in an evolutionarily conserved residue in the cytoplasmic N-terminus of TRPC6, was not found in any of the 96 cord-blood controls or public SNP databases. It was also not present in any of the 29 patients with sporadic nephrotic syndrome.

Conclusion: We report a novel TRPC6 mutation associated with AD FSGS. The youngest sibling with the mutation could be pre-symptomatic. Further characterisation of this protein will help elucidate the pathways by which aberrant TRPC6 function lead to proteinuria, as well as future therapeutic strategies.

MP 004

Clinical Predictors of Stent Thrombosis in the "Real World" Drug-Eluting Stent Era

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Background: Drug-eluting stents (DES) are effective in reducing restenosis and the need for repeat revascularisation procedures in patients who undergo percutaneous coronary intervention (PCI). There is, however, an increased concern about the safety of DES with regard to stent thrombosis (ST). We examined the incidence of stent thrombosis among patients who received DES and determined the clinical predictors.

Methods: All patients who underwent PCI in our centre were prospectively enrolled in a cardiovascular database. All cases of ST defined by 2006 Academic Research Consortium (ARC) hierarchical classification as definite and probable, from August 2002 to August 2006, were reviewed and analysed. The clinical, angiographic and procedural characteristics of patients who developed ST were compared with those who did not.

Results: The study population comprised 1580 patients who received DES implantation. Twenty-five cases of ST were identified. The cumulative incidence of ST was 1.5%: acute stent thrombosis 0.2%, subacute stent thrombosis 0.9%, late stent thrombosis 0.2% and very late stent thrombosis 0.2%. Mortality and myocardial infarction occurred in 16% and 84 % of patients respectively as a consequence of ST. The following variables were found to be predictive of ST: Shock (16% vs 0.1%, $P < 0.0005$), ACS as initial presentation (84% vs 36.7%, $P = < 0.0005$), EF $< 50\%$ (76% vs 45.6%, $P = 0.003$), Multivessel disease (56% vs 46.6%, $P = 0.001$), Thrombus-laden lesion (36% vs 6.7%, $P = < 0.0005$), Type B2 or C lesion (100% vs 84%, $P = 0.03$), Baseline TIMI 0 flow (64% vs 12.3%, $P = < 0.0005$) and mean number of stents/lesion (1.4 +/- 0.48 vs 1.1 +/- 0.49, $P = 0.001$).

Conclusion: The incidence of DES ST in our registry did not differ significantly from those reported in a meta-analysis of randomised controlled trials. Clinical and angiographic characteristics such as cardiogenic shock, ACS as initial presentation, multivessel coronary artery disease, higher number of stents per lesion and pre-intervention TIMI 0 flow were identified as independent predictors of ST.

MP 005

A Chronic Disease Management Approach to Osteoporosis is Effective in Improving Patients' Acceptance of and Adherence to Treatment

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Aim: This paper aimed to assess the effectiveness of the chronic disease management approach in improving patients' acceptance of and adherence to osteoporosis treatment.

Methods: The HSDP programme for osteoporosis was a chronic disease management programme that was conducted by trained care coordinators who recruited patients who have prior fragility fractures. They were educated on healthy lifestyle advice to prevent further accelerated bone loss, provided with calcium and vitamin D, given

bisphosphonate therapy (Risedronate or Alendronate) and assessed for appropriate falls-risk reduction strategies. Patients were also monitored by telephonic or face-to-face interview every 3 to 6 months for adherence to therapy.

Results: Prior to the start of the programme, an audit of 442 consecutive admitted patients with fragility hip fracture was done. Only 16.0% of patients were on appropriate osteoporosis treatment after their fractures and the proportion dropped to 3.8% after 2 years. A repeat audit of 1130 patients was conducted from January 2004 to January 2005, after the implementation of the programme, of which 508 (44.9%) patients agreed to start on osteoporosis treatment. The therapy adherence rate up to 2 years later was 71.2%. Therefore, there was an 8-fold increase in the number of patients who received appropriate osteoporosis therapy with the implementation of the programme.

Conclusion: The deployment of osteoporosis care coordinators within the hospital to proactively enrol patients who have recently suffered a fragility fracture is effective in improving the acceptance and adherence rate of therapy

MP 006

Risk Factors and Clinical Outcomes for Contrast Induced Nephropathy Post Percutaneous Coronary Intervention in Patients with Normal Baseline Renal Function

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Aim: Contrast induced nephropathy (CIN) is an important complication post percutaneous coronary intervention (PCI). We examined the risk factors for developing CIN in patients with normal renal function so that prophylactic measures may be undertaken.

Methods: A cohort of 5086 patients with normal baseline renal function (defined as serum creatinine, Cr < 1.5 mg/dL) who did not receive prophylactic treatment while undergoing PCI between May 1996 and March 2007 in our centre was enrolled. We examine the occurrence of CIN (defined as $> 25\%$ increase from baseline Cr within 48 hours post PCI) and aim to identify the clinical predictors.

Results: CIN occurred in 7.3% of patients. The mean age was 57.5 years, 78.7% were men and 34.6% were diabetics. Clinical predictors for CIN were age (OR 6.4, 95% CI: 0.1-13.3, $P = 0.042$), female gender (OR 2.0, 95% CI: 1.5-2.7, $P = 0.001$), lower left ventricular ejection fraction (LVEF)(OR 1.02, 95% CI: 1.01-1.04, $P = 0.01$), anaemia with hemoglobin < 11 mg/dL (OR 1.5, 95% CI: 1.01-2.4, $P = 0.044$) and systolic hypotension with blood pressure < 100 mm Hg on admission (OR 1.5, 95% CI: 1.01-2.2, $P = 0.004$). While there was no increase in the incidence of CIN among diabetics and non-diabetics (8.2% vs. 6.8%, $P = 0.18$), those who are on insulin therapy are at the highest risk compared with diabetics on diet control and oral hypoglycemic drugs (18.9% vs. 3.6% vs. 6.8%, $P = 0.001$). There was no significant difference between patients who underwent primary vs. elective PCI (7.0% vs. 6.6%, $P = 0.75$). Patients who developed CIN had a higher mortality rate at 1-month (14.5% vs. 1.1%, $P < 0.001$) and 6-months (17.8% vs. 2.2%, $P < 0.001$).

Conclusion: Patients with normal renal function undergoing PCI are at risk of developing CIN with resultant higher mortality. Age, female, insulin-dependent diabetes, hypotension, anemia and low LVEF are predictors of CIN. Such patients should be considered for prophylactic therapy.

MP 007

Subsyndromal Depression in Old Age: Clinical Significance and Impact in a Multiethnic Community Sample Of Elderly Singaporeans

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Aim: This cross-sectional study examined the clinical significance and impact of subsyndromal depression in a sample of an elderly population living in the community.

Methods: Data were analysed from a population survey (the Singapore National Mental Health Survey of the Elderly). There were a total of 1092 respondents from a nationally representative multi-ethnic (Chinese, Malay and Indian) stratified random sample of older adults aged 60 and above. Subjects were examined for depression using the Geriatric Mental State Examination (GMS), with diagnostic confidence levels of 3 to 5 indicating a DSM-IV diagnosis of case level or syndromal depression and 1 to 2 indicating subcase or subsyndromal depression. Other variables included sociodemographic characteristics, psychiatric and medical comorbidities, MMSE, health awareness, health and functional status.

Results: The prevalence of syndromal depression and that of subsyndromal depression, when weighted to reflect that of the Singapore population, are 3.7% and 9.4% respectively. Subjects with subsyndromal depression were more likely to have poor socioeconomic status, cognitive impairment, anxiety and measures of poor mental, physical and functional status compared to non-cases and were similar to or worse than syndromal cases. In multivariate analyses controlling for age, gender, ethnicity, education and several other sociodemographic factors, both subsyndromal and syndromal depression cases were significantly associated with more medical comorbidities, diagnoses of comorbid dementia and anxiety, lower MMSE score, self-reported mental health problem, functional disability and poor health status.

Conclusion: In this Asian population, subsyndromal depression had the same clinical significance and health impact as syndromal depression, similar to findings in the West.

MP 008

Can Patients with Significant Renal Artery Stenosis Who Had Renal Angioplasty be Monitored Post Procedure in General Ward or Day Care Instead of High Dependency Unit?

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Aim: Renal angioplasty has been increasingly used to treat significant renal artery stenosis (RAS). In Tan Tock Seng Hospital, such patients are routinely admitted to the high dependency unit (HDU) post procedure for monitoring. We reviewed the complications of such patients post angioplasty and whether they can be monitored in general wards (GW) instead of in the HDU.

Methods: Patients with RAS >50% who underwent angioplasty from January 1999 to September 2006 were reviewed retrospectively. Post procedure complications and deaths were recorded.

Results: There were 35 patients with significant RAS who underwent angioplasty. Thirty were monitored in the HDU. Five were monitored in GW because there was no HDU bed available. Patients in GW were

monitored half hourly for 6 hours, followed by hourly for 24 hours. No immediate complication or death was recorded in our series.

Conclusion: It is safe and cost-effective to monitor patients with significant RAS post angioplasty in GW.

MP 009

Ultrasound Assisted Thrombolysis in Acute Ischaemic Stroke: A Preliminary Experience in Singapore

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Aim: Intravenously-administered tissue plasminogen activator (IV-TPA) induces thrombolysis and remains the only FDA-approved therapy for acute ischaemic stroke. IV-TPA thrombolysis has been approved recently in Singapore for acute stroke. Continuous exposure of clot to 2-MHz pulsed-wave transcranial Doppler (TCD) ultrasound during IV-TPA infusion is known to augment thrombolysis. We aimed to determine the feasibility, safety and efficacy of ultrasound-assisted thrombolysis in acute ischaemic stroke in Singapore.

Methods: Consecutive patients with acute ischaemic stroke due to intracranial arterial-occlusions were treated with standard IV-tPA and continuously monitored with 2-MHz TCD according to the CLOTBUST-trial protocol. Arterial recanalisation was determined with the Thrombolysis in Brain Ischemia (TIBI) flow-grading system. The safety and efficacy of ultrasound-assisted thrombolysis were assessed by rates of symptomatic intracranial hemorrhage (sICH) and functional recovery at 1-month, respectively.

Results: Five consecutive patients (mean age 58 years, 3 men and 2 of Chinese ethnicity) were included. The mean time elapsed between symptom onset and presentation to emergency room was 98 minutes (range, 50 to 135) while the mean-time interval between symptom onset and IV-TPA bolus was 144 minutes (range, 125 to 180). Partial or complete recanalisation with reduction in the stroke severity was noted in 4 out of the 5 patients during IV-TPA infusion (mean change in NIHSS = 4 points; range, 2-8 points). None of our patients developed sICH while 4 patients demonstrated good functional outcome after 1 month.

Conclusion: Our preliminary study demonstrates the feasibility, safety and efficacy of ultrasound-assisted thrombolysis in acute ischaemic stroke in Singapore. Continuous TCD-monitoring during IV-TPA infusion provides real-time information, enhances thrombolysis and improves functional outcomes in acute ischaemic stroke.

MP 010

Determinants of Fear of Falling in a Cohort of Community-Dwelling Older Adults of Asian Descent

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Aim: The aim of this study was to ascertain the determinants of a fear of falling in a cohort of community-dwelling older adults of Asian descent.

Methods: This was a prospective, observational cohort study of 834 participants aged 55 years or older, recruited as part of an ongoing study examining the health status and aging process in community-

dwelling older adults (Singapore Longitudinal Aging Study). The occurrence of falls and reports of fear of falling as determined by the revised Falls Efficacy Scale (rFES) over a 1-year period were recorded.

Results: The mean age of the study cohort was 65.0 years. 12.4% of the study participants had at least one fall and 3.8% reported some degree of fear of falling (defined as average rFES score <10) during the 1-year follow-up period. On bivariate analysis, factors that were found to have a statistically significant association with fear of falling included increasing age, falls, baseline fear of falling, history of arthritis and poorer gait and balance scores. On multivariate analysis, factors that were significantly associated with fear of falling included baseline fear of falling (OR, 14.41; 95% CI, 5.57-37.25), falls (OR, 10.08; 95% CI, 4.28-23.74) and a history of arthritis (OR, 2.66; 95% CI, 1.01-7.00).

Conclusion: In our cohort of community-dwelling older adults, individuals who had an underlying fear of falling were more likely to continue to experience some degree of fear of falling over the next 1 year. Falls and a history of arthritis were independent predictors of a fear of falling.

MP 011

Metabolic Effects of Regional Citrate Anticoagulation in Continuous Renal Replacement Therapy

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Background: Regional citrate anticoagulation is an alternative to heparin for patients requiring continuous renal replacement therapy. However, there are associated adverse metabolic effects like metabolic alkalosis, hypernatremia, calcium abnormalities and citrate lock with decreased ionised to total calcium ratio. This study aimed to evaluate the incidence of such complications in our intensive care unit (ICU).

Methods: We retrospectively studied 29 consecutive patients who received 51 continuous venovenous hemofiltration CVVH sessions using the PRISMA system (Gambro, USA) in the Medical ICU. Hemosol B0 (Hospal, Italy), a calcium-containing commercial preparation, was used as the replacement fluid. ACD-A (Anticoagulant Citrate Dextrose Formula A; Baxter, USA) infusion rate was adjusted to maintain post-filter venous ionised calcium levels between 0.20 and 0.40 mmol/L. Calcium chloride was infused via a central line to maintain systemic ionised calcium levels between 0.90 and 1.00 mmol/L. Blood flow rate was between 150 and 180 ml/hr and the replacement solution was infused at 2-3 L/h.

Results: The patients' average age was 51.4 +/- 8.6 years. There were 16 females and 13 males. Twenty-five patients had sepsis precipitating acute renal failure (86.2%), 15 patients had pre-existing renal failure (51.7%) and 13 patients had co-existing cardiac failure (44.8%). 10 CVVH sessions were excluded from analysis because of inadequate filter life (<24 hours). The average filter life was 43.4 +/- 7.1 hours. Metabolic alkalosis (pH >7.45 and base excess > +3) developed in 17 dialysis sessions (41.5%). The mean time to development of alkalosis was 22.7 +/- 5.7 hours. None developed hypernatremia (Na >150), hypercalcaemia (iCa >1.40), or citrate lock. One patient developed mild hypocalcaemia (iCa <0.90). The incidence of lactic acidosis was comparable in those who developed metabolic alkalosis (8 out of 17; 47.1%) and those who did not (14 out of 30; 46.7%).

Conclusion: For our protocol of regional citrate anticoagulation in combination with a commercially prepared calcium-containing replacement fluid (Hemosol B0[®]), metabolic alkalosis occurred in a significant proportion of patients. Calcium abnormalities were prevented effectively by our replacement protocol.

MP 012

Executive Function Predicts Instrumental and Basic Activities of Daily Living Better than Episodic Memory in Vascular Dementia and Alzheimer's Disease

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Aim: Whereas executive dysfunction has been shown to occur early and predict activities of daily living (ADL) in vascular dementia (VaD), it is unclear whether a similar association exists in an amnesia-predominant dementia like Alzheimer's disease (AD). We hypothesized that there would be a differential impact of cognitive factors (episodic memory versus executive function) on ADL in VaD versus AD.

Methods: We studied 219 newly diagnosed dementia patients (116 AD and 103 VaD; mean age 74.0 ± 8.0; 66% female; 83.5% Chinese) attending a memory clinic over a 5-year period. We compared the association of delayed memory (DM) versus animal category fluency (CF) on Lawton instrumental and Barthel basic ADL by using multiple regression analysis (adjusted for focal neurological deficit, Geriatric Depression Scale, age, education and gender) in the overall and mild (68 AD and 48 VaD) groups.

Results: Despite comparable Chinese Mini-Mental State Examination scores, VaD performed better in DM (1.1 vs 0.5, $P < 0.05$), and poorer in CF, Lawton and Barthel ADL (CF: 5.0 vs 6.6; Lawton: 2.4 vs 3.3; Barthel: 16.7 vs 18.6, all $P < 0.05$). In the multivariate analysis, CF predicted instrumental and basic ADL in both AD and VaD. Amongst mild patients, CF predicted instrumental and basic ADL only in VaD. Unexpectedly, for both overall and mild groups, there was no association in AD between DM and ADL.

Conclusion: In AD and VaD, executive function plays a more important role than episodic memory in predicting ADL, highlighting the need for reliable screening tools of executive function in dementia assessment.

MP 013

Bone Mineral Density (BMD) Using Calcaneal Broadband Ultrasound Attenuation (BUA) and Dual X-ray Absorptiometry (DEXA) among Asian Children at Risk of Osteoporosis

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Aim: Previous studies have demonstrated that calcaneal BUA reflects BMD measured by DEXA in healthy children. This study aimed to determine the usefulness of BUA in the assessment of bone strength compared to DEXA, in children at risk of developing osteoporosis.

Methods: Children with glomerulonephritis and bronchial asthma who were on chronic oral and inhaled steroid therapy for at least 6 months, as well as those with chronic renal failure, seen at the

Children's Medical Institute were recruited for DEXA and contact ultrasound bone analyser (CUBA) scans. The BMD and z-scores of the lumbar spine, hip, total body and calcaneum were correlated with CUBA BUA and z-scores using Pearson's correlation coefficient.

Results: Eighty-seven children, mean age 10 ± 3 years (range, 5 to 16) and mean duration of illness of 6 ± 3 years, were studied. BUA strongly correlated with BMD of lumbar spine, hip, total body and calcaneum ($r = 0.60, 0.631, 0.602, 0.60$ $P < 0.001$) respectively. However, after correcting for age and sex (z-scores) using standards based on Caucasian children, there was a poorer correlation between BUA calcaneum z-scores and BMD z-scores for lumbar spine, hip, total body and calcaneum.

Conclusion: BUA is a reliable means to assess bone strength in children with chronic diseases on prolonged steroid therapy, as it correlates well with BMD of the lumbar spine, hip, total body and calcaneum. However, there is a need to derive the z-scores based on healthy Asian children in order to re-examine the correlation between BUA and BMD in children at risk of osteoporosis.

MP 014

Treatment Outcome of Proliferative Lupus Nephritis in Children: Comparison of Mycophenolate (MMF) Versus Cyclophosphamide/Azathioprine Protocol

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Aim: Proliferative lupus nephritis (LN) is associated with poor renal outcome in children. This study compared the outcome of children with proliferative LN (WHO class III/IV) using a new protocol comprising pulse intravenous methylprednisolone, MMF +/- cyclosporine, with standard prednisolone and cyclophosphamide/azathioprine.

Methods: Twenty-three children with proliferative LN (age range at diagnosis 3.7-18.6 years), followed up for 6.9 ± 4.5 (range 1.3-21.0) years, were retrospectively studied. Group I ($n = 11$) received prednisolone with cyclophosphamide and/or azathioprine. Group II ($n = 12$) received the combined MMF protocol with MMF dose of $1200 \text{ mg/m}^2/\text{day}$. Poor outcome was defined as death or chronic renal failure. Survival analysis was performed using the log-rank test. The effect of treatment on growth at last follow-up was assessed using the height standard deviation score (HtSDS). Differences between groups were analysed using the Mann-Whitney and Fisher's exact test.

Results: At last follow-up, significantly more Group I compared to Group II patients had higher serological activity as defined by low serum complement C3 (50% vs 0% respectively, $P = 0.014$). Moreover, 8-year actuarial survival was higher in Group II (100%) compared to Group I (61%). All Group II patients achieved complete remission of proteinuria compared to Group I (0.01 ± 0.06 vs $0.79 \pm 1.0 \text{ g/d/1.73m}^2$ respectively, $P = 0.002$). Group II patients also had lower HtSDS on long-term follow-up compared to Group I (-0.26 ± 1.05 vs -1.96 ± 1.73 respectively, $P = 0.025$).

Conclusion: Combination immunosuppressive protocol involving MMF +/- cyclosporine resulted in better renal outcome in children with proliferative LN without compromising growth. This regimen allowed steroid tapering to alternate day dosing without increasing lupus activity.

MP 015

Paediatric Brain Tumours: The National University Hospital Experience (1995 to 2006)

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Aim: Approximately 120 cases of childhood cancer are diagnosed per year in Singapore. Paediatric brain tumours are the second most common cause after leukemia. Prognosis continues to be extremely poor across the world. We attempted to investigate the incidence, treatment modalities used and the outcome of all paediatric brain tumour patients at our institution.

Methods: A comprehensive list of patients with brain tumours treated at the National University Hospital, Singapore between July 1995 and December 2006 was generated. The detailed medical records of all the patients were reviewed.

Results: Forty-two patients with brain tumours were diagnosed during the study period. Three patients were excluded as they were lost to follow-up and details were not available. Median age was 6.7 years (range, 0.5 to 18.9) and median follow-up was 1.7 years (range, 0 to 11.6). Male and females were equally distributed. 28 (67%) of the patients were of Chinese ethnicity. According to histology: medulloblastoma was most common at 21 patients, astrocytoma = 7, PNET = 4, pontine glioma = 2, ependymoma = 2, GBM = 1, other = 5. At the time of analysis, 26 patients were alive with no evidence of disease (ANED) and 16 were dead of disease (DOD). The 2- and 5-year event-free and overall survival rates for the entire cohort were 68% and 50% respectively. For 21 patients with medulloblastoma, overall survival was 50%. Those under 3 years of age with medulloblastoma fared worse with a 5-year overall survival rate of 20%.

Conclusion: Children diagnosed with a brain tumour continue to do poorly. A collaborative effort amongst paediatric oncologists and multi-disciplinary team providers caring for these children in Singapore is urgently needed.

MP 016

Clinical Outcomes of Patients Presenting with Chronic Diarrhoea to a Tertiary Hospital

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Aim: Chronic diarrhoea, defined as 3 or more loose motions a day for over 1-month duration, necessitates further investigation with endoscopy and colonic biopsies. Non-specific colitis and non-specific changes are frequent histological diagnoses obtained from colonic biopsy in patients with chronic diarrhoea. However, the outcomes of patients with these histological diagnoses have not been adequately studied. We aimed to evaluate the prognosis of patients presenting with chronic diarrhoea and histological findings of non-specific colitis or non-specific changes in a tertiary hospital.

Methods: Retrospective data were collected on all patients presenting with chronic diarrhoea who consented to colonoscopy and colonic biopsies from March 2003 to June 2006 in a tertiary Singapore adult hospital. Prior to colonoscopy, all patients underwent thyroid function tests and stool cultures. Colonoscopy was performed if both tests revealed normal results. A single gastroenterologist performed all the

colonoscopies. Patients with gross endoscopic findings of polyps, malignancy and severe inflammation and/or microscopic diagnosis of mitotic lesions, inflammatory bowel disease and microscopic colitis were excluded. Follow up was from the time of colonoscopy to the resolution of the diarrhoea.

Results: A total of 119 patients with chronic diarrhoea who underwent colonoscopy and colonic biopsies were included in the study. Four patients (3.0%) were diagnosed with malignancy, 12 (9.0%) had inflammatory bowel disease, 9 (6.7%) had benign adenomas, 3 (2.2%) had microscopic colitis, 1 (0.7%) had a parasitic infection and 6 had other diagnoses. Of the remaining patients, 26 (19.4%) were diagnosed with non-specific colitis via colonic biopsies, 29 (21.6%) were diagnosed with non-specific changes and 29 (21.9%) had normal colonic biopsies. A comparison of the characteristics between the 3 groups of non-specific colitis, non-specific changes and normal colonic biopsies showed no significant difference in the composition of patients. Patients underwent a mean follow up of 8 months (1-43 months). Outcome analysis between the same 3 groups showed no difference in resolution of diarrhoea.

Conclusion: Non-specific colitis and non-specific changes are frequently made histological diagnoses in patients with chronic diarrhoea who undergo colonoscopy and biopsies. We found that resolution of diarrhoea in these patients mirrors those with normal histological findings. Consequently, we feel that such patients can be reassured and given clinical follow up.

MP 017

Outcome of Blood Pressure and Renal Function in Patients with Renal Artery Stenosis after Stenting in the Singapore Population

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Aim: This study aimed to study the response of systolic and diastolic blood pressure (BP) and renal function after renal artery stenting at 3 months, 6 months, 1 year and last follow-up.

Methods: Renal artery stenosis (RAS) patients with significant stenosis who underwent angioplasty with stenting from January 1999 to September 2006 were analysed. The BP and serum creatinine were recorded at baseline, at 3 months, 6 months, 1 year and last follow-up. Generalised estimating equations were applied to analyse the changes in BP and serum creatinine over time. Analysed with Stata 9.0 (Stat Corp, Texas, USA), all statistical tests were conducted at 5% level of significance.

Results: There were a total of 32 patients; 21 Chinese, 6 Malays and 5 Indians with 18 males and 14 females. The mean age was 69.4 years with mean follow-up of 1.8 years. Statistically significant improvement was noted between the baseline BP when compared at 3 months, 6 months, 1 year and at last follow-up. Serum creatinine did not show improvement in these patients but showed deterioration at 1 year and last follow-up. However, in the diabetic group, there was marked deterioration in serum creatinine. In the non-diabetic group, there was stabilisation of serum creatinine with improvement at 1 year.

Conclusion: Significant improvement in BP occurs in RAS patients post stenting. In patients without diabetes, the renal function remains stable or improves but in diabetes patients especially with proteinuria, there is marked deterioration in renal function post-stenting.

MP 018

Comparison of 6-Month Clinical Outcomes of Four Second Generation Drug-Eluting Stents in Complex Coronary Stenoses

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Aim: Recent improvements have been made to the clinical performance of coronary drug eluting stents (DES). The comparative clinical outcomes of the 4 new generation DES, namely sirolimus-eluting Cypher Select, paclitaxel-eluting Taxus Liberte, zotarolimus-eluting Endeavor and everolimus-eluting Xience stents, are largely unreported. We compared the clinical efficacy and safety of these stents in an unselected population who underwent percutaneous coronary intervention (PCI) for complex coronary lesions.

Methods: This is a prospective follow up study of all patients who underwent PCI between September 2003 and March 2007 in our institution. 778 patients (222 Cypher, 338 Taxus, 183 Endeavor and 35 Xience) whose coronary artery lesions were treated with the newer generation DES were enrolled. The end points were major adverse cardiac events (MACE) defined as a composite of death, myocardial infarction and target vessel revascularisation as well as late stent thrombosis.

Results: Baseline demographics were comparable among the 4 groups (median age 58 years; 77.5% men; 42.7% diabetic). The mean stent lengths were 24.9 mm, 24.6 mm, 21.7 mm and 23.1 mm in the Cypher, Taxus, Endeavor and Xience groups respectively. The majority (86.5%) of the treated lesions were ACC/AHA type B2 or C. Primary PCI was performed in 2.6% of patients. At 6-month follow up, MACE were 2.3% vs 0.9% vs 3.3% vs 2.9% ($P = 0.263$) and late stent thrombosis were 0.5% vs 0% vs 0.5% vs 0% ($P = 0.597$) in the Cypher, Taxus, Endeavor and Xience groups respectively.

Conclusion: The use of 4 newer generation DES in complex lesions was associated with comparable favourable results at 6 month follow up. Late stent thrombosis remains a low event occurrence.

MP 019

Case Series of Intravenous Subutex-Dormicum Abuse Infective Endocarditis

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Aim: Subutex (buprenorphine) had been used for heroin detoxification from 2002 to 2006. There were more than 4000 patients registered for Subutex treatment. Dormicum (Midazolam) is a potent benzodiazepine sedative. We report a series of infective endocarditis (IE) secondary to intravenous (IV) abuse of Subutex and Dormicum.

Methods: This is a case series report of "Subutex-Dormicum" IE. Data was collected from 2 hospitals from 2004 to 2006.

Results: We identified 28 cases (26 men, median age 35, 68% Malay; 18% Indian; 11% Chinese, 3% Eurasian) of IE in Subutex-Dormicum abusers. Subutex and Dormicum tablets were crushed into fine granules and mixed with water before being injected into peripheral blood vessels. Complications were observed in these patients: 86% had tricuspid valve IE, 36% mitral valve IE and 28% mixed valve IE. Thirty-six per cent were hepatitis B positive, 71% hepatitis C positive and 7% HIV positive. Seventy-nine per cent developed pulmonary abscesses, 28% brain abscesses, 32% renal abscesses and 14% spinal

abscesses. Seventy-five per cent had disseminated intravascular coagulation and septic shock. Thirty-six per cent had limb gangrene out of which 7% underwent limb surgery. Thirty-six per cent required heart valve excision or replacement. Fifty-four per cent were re-admitted for relapse and 14% died from complications within 1 year. The median hospitalisation was 47 days. Median intensive unit stay was 4 days. The mean hospitalisation bill was \$33,000. More than half of the patients were found to continue abusing drugs during hospitalisation. Dysfunctional family and social backgrounds were present in all patients.

Conclusion: Collaboration between multiple specialties with good social and psychological support was essential in the treatment of such patients.

MP 020

Public Access Defibrillation in Singapore: What is the Geographic-Time Distribution of Cardiac Arrests in Singapore? (Pads Phase I)

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Aim: This study aimed to describe the geographic epidemiology of prehospital cardiac arrests in Singapore and assess the potential for deployment of a Public Access Defibrillation programme.

Methods: We conducted an observational prospective study looking at the geographic location of pre-hospital cardiac arrest in Singapore. Included were all patients with non-traumatic Out-of-Hospital Cardiac Arrest (OHCA) conveyed by the national emergency ambulance service. Patient characteristics, cardiac arrest circumstances, Emergency Medical Service (EMS) response and outcomes were recorded according to the Utstein style. Location of cardiac arrests was spot-mapped using Geographic Information Systems (GIS) technology.

Results: From 1 October 2001 to 14 October 2004, 2428 patients were enrolled. The mean age for arrests was 60.6 years, with 68.0% male. Sixty-seven point eight per cent of arrests occurred in residences, with 54.5% bystander witnessed and another 10.5% EMS witnessed. Mean EMS response time was 9.6 mins with 21.7% receiving prehospital defibrillation. Cardiac arrest occurrence was highest in the suburban town centres in the Eastern and Southern part of the country. More arrests occurred during the day (1368 between 0700h to 1859h) than at night (1040 between 1900h to 0659h). The categories with the highest frequencies of occurrence included residential areas, in vehicles, in healthcare facilities, along roads, in shopping areas and in offices/industrial areas.

Conclusion: We found a definite geographical distribution pattern of cardiac arrest. This has implications for targeted CPR training, AED placement and ambulance deployment. These results may enable us to derive the most cost-effective AED deployment strategy by type and geography of location.

MP 021

New Dialysis Adequacy Targets Do Not Affect Cardiac Parameters in Paediatric Patients on Automated Peritoneal Dialysis (APD)

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Aim: Dialysis adequacy measured as Kt/Vurea is defined as the minimum dialysis dose below which there is significant morbidity and mortality. The 2006 National Kidney Foundation K/DOQI guidelines have lowered the peritoneal dialysis adequacy standard of Kt/Vurea from 2.1 to 1.7 in adult patients. This study was done to determine the number of patients who were able to achieve the dialysis adequacy targets and the correlation with cardiac status as measured by left ventricular mass index (LVMI), fractional shortening (FS) and ejection fraction (EF).

Methods: All patients undergoing APD at the Shaw-NKF Children's Kidney Centre, National University Hospital were retrospectively studied. Dialysis adequacy was measured by weekly KT/Vurea and creatinine clearance (CCr). Two-dimensional echocardiography was performed to measure FS, EF and LVMI.

Results: Forty-two patients, median age of onset 16.9 (3.33-26.67) years, with a median duration of dialysis of 2.7 (0.3-9.5) years, were included. Fifty per cent had Left ventricular hypertrophy (LVH), defined as LVMI > 38.6 gm^{2.7}, while 23.81% had cardiac dysfunction defined by FS < 30% and/or EF < 55%. Mean Kt/Vurea in this cohort was 1.9 ± 0.48, with 78.6% and 38.1% achieving Kt/Vurea above 1.7 and 2.1 respectively. There was no significant correlation between FS, EF and LVMI with Kt/Vurea.

Conclusion: Our data showed that a large majority of paediatric patients were able to achieve the new Kt/Vurea target of 1.7, and that lowering the target from 2.1 to 1.7 did not appear to result in a worsening of cardiac parameters.

MP 022

Factors of Stress for Families of Children with Autism. Considerations for Service Development.

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Aim: This study aimed to identify factors of stress for families of autistic children in order to develop better intervention and support programmes.

Methods: Thirty-three mothers with autistic children aged 2-12 years filled in the Parenting Stress Index, which is a validated and normalised questionnaire for identifying stress factors in parent-child systems. Their responses were computed into Parent and Child Domain stress scores with respective sub-domains. An Independent Student's T-test was used to ascertain associations between high Parent or Child Domain stress scores with their respective sub-domains, as well as high total stress scores with demographic data. Fisher's exact test was used to look for associations between "Highly significant stress" (>85th percentile) Parent and Child Domain scores.

Results: High Child Domain stress scores were associated with poor adaptability and parental reinforcement, hyperactivity and demanding

behaviour. High Parent Domain stress scores were associated with issues of competence, isolation, health, role restriction, depression and spousal support. Increasing paternal and child ages and a longer time from diagnosis were also linked to greater stress. Interestingly, a “highly significant stress” Parent Domain score was not associated with a “highly significant stress” Child Domain score ($P > 0.05$). Lastly, for current members of parent support groups, information provided was sufficient for 83.3%, but very useful for only 55.6%.

Conclusion: Poor parenting skills are not necessarily associated with caring for a “stressful” child. Parents with newly diagnosed autistic children and those with longer-term issues should thus be taught practical strategies to deal with child behaviours and ways to increase perceptions of competence and autonomy.

MP 023

An Epidemiological Study of *Staphylococcus aureus* Colonised in Patients with Atopic Dermatitis and their Close Contacts

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Aim: *Staphylococcus aureus* (*S. aureus*) colonisation in atopic dermatitis (AD) patients is a well-established pathogenic factor in the mechanism of disease flares. However, the significance and role of *S. aureus* colonisation in the close contacts of AD patients has not been well studied. The hypothesis of our study was that the close contacts of AD patients may serve as an important reservoir of *S. aureus* that contribute to disease flares in these patients.

Methods: Moderate to severe AD patients with objective SCORAD >15 whose ages were between 2 and 21 years old were recruited into the study. Close contacts of AD patients were defined as persons who live and spend a significant amount of time (>12 hours) with the index case. Swabs for *S. aureus* were taken from the anterior nares and worst affected skin area of the index cases whereas only nasal swabs were taken from the close contacts.

Results: A total of 34 index cases were recruited. 18 (52.9%) had severe objective SCORAD scores and 16 (47.1%) had moderate scores. Fifty-five close contacts of the index cases were recruited. Twenty-five out of the 55 had positive nasal cultures (45.45%). Only 5 out of the 56 (8.9%) of all the positive nasal cultures were sensitive to ampicillin or penicillin. Six out of 56 (10.7%) were resistant to fusidic acid or tetracycline. No methicillin-resistant *S. aureus* (MRSA) was isolated. Each index case had an average number of 1.6 contacts with positive *S. aureus* cultures. The average number of close contacts for cases with severe scores was 1.8 whereas the average number for those with moderate scores was 1.4.

Conclusion: This study showed that there were more close contacts affected per index case in the severe group as compared with the moderate group. No MRSA strains were isolated.

MP 024

Non-cytotoxic Drug-induced Agranulocytosis – A Retrospective Study of Common Drugs and Patient Profile

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Aim: This study aimed to identify common drugs other than chemotherapeutic agents that cause severe neutropenic fever leading to hospitalisation and to study the prognostic factors, pattern of

infection, antibiotic and granulocyte colony stimulating factor (G-CSF) use in these patients.

Methods: This study was a monocentric review of patients admitted to Tan Tock Seng Hospital with a diagnosis of neutropenic fever from January 2001 to December 2006. Data were collected from 22 patients with drug induced agranulocytosis who fulfilled the International Agranulocytosis and Aplastic-Anemia Study group criteria.

Results: Drugs causing agranulocytosis included antithyroid drugs (n = 10), ticlopidine (n = 9), anticonvulsants (n = 2) and antibiotics (n = 1) used for a mean duration of 4.6, 9.2, 4.8 and 3.7 weeks respectively prior to admission. The mean age was 50 years (range, 17 to 76). The main clinical features included isolated fever (36%), sore throat (40%), pneumonia (16%), urinary tract infection (4.5%), skin rash (4.5%) and pneumonia with septicemic shock (4.5%). The mean absolute neutrophil count was $92.5 \times 10^6/\text{mL}$. All patients were treated with broad spectrum antibiotics, although none of the patients had bacteraemia. G-CSF was used in 17 (77%) patients with an average of 4.2 doses and a mean recovery of neutrophil counts within 5.2 days compared to 6.8 days in the 5 (23%) patients who did not receive G-CSF. Outcome was favourable in all patients except for 1 who died of nosocomial infection. No particular risk factor was identified to be associated with an increased risk for drug-induced agranulocytosis.

Conclusion: Antithyroid drugs and ticlopidine are still the most common drugs that cause drug-induced agranulocytosis. The data suggests that despite the severity of the initial clinical picture, appropriate management with broad-spectrum antibiotic and colony-stimulating factors results in speedy recovery and prevents complications.

MP 025

A Retrospective Study of the Outcomes of Second Trimester Pregnancy Termination using Vaginal Misoprostol

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Aim: Misoprostol (Prostaglandin analogue) is the main method used for induction of abortion in the second trimester of pregnancy. The aim of this study was to assess the clinical outcomes and complications in women undergoing medical termination of pregnancy using a vaginally administered misoprostol regimen.

Methods: One hundred and two consecutive women admitted to National University Hospital from 1 September 2005 to 31 August 2006 for medical termination with a gestation age between 12 + 0 and 23 + 6 weeks of gestation were reviewed. Patients' characteristics, procedure outcomes and its complications were analysed.

Results: Eighty per cent of the patients aborted within the first course of misoprostol, which was comparable to other studies. The median initiation-to-abortion interval was about 12 hours. It was noted that 27.3% of the patients required evacuation of the uterus to complete the abortion. There was no significant difference in treatment outcomes when taking maternal characteristics (e.g., parity, race, marital status) into consideration. The younger age group (< 35 years old) who were at an earlier gestation age (12 to 15 + 6 weeks) tended to require evacuation of the uterus to complete the abortion. There appeared to be a longer initiation-abortion interval in those with fetal abnormalities. There was a high incidence of minor side effects, e.g. fever, pain and diarrhoea in this misoprostol-only regimen. However, major complications, e.g. blood transfusion or re-admission were rare.

Conclusion: Vaginally administered misoprostol regimen is a cost-effective and safe method for mid-trimester pregnancy termination. However, much can be done to reduce the abortion interval, rate of evacuation of the uterus and the incidence of minor effects, and thus improve patients' satisfaction.

MP 026

Audit of Blood Culture Management and Efficacy of a Blood Culture Notification and Advisory Service at Tan Tock Seng Hospital, Singapore

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Aim: We audited blood culture management at our hospital to determine the adequacy of empiric antibiotic and subsequent culture-guided antibiotic that can be improved by daily blood culture service.

Methods: In phase 1, we prospectively audited all positive blood cultures over 1 month to determine how often positive Gram stains and blood cultures were noted within 48 hours, the adequacy of empiric antibiotic for actual bacteria isolated and the change in empiric antibiotic guided by blood culture results. After the Medical Board approved blood culture service, in phase 2 we prospectively reviewed patients' medical notes, computer records, medication and vital sign charts to recommend culture-guided antibiotic for positive blood cultures within 48 hours.

Results: Initial audit showed Gram stains were noted in 33% and blood culture results 49% within 48 hours. Empiric antibiotics were active against actual bacteria in 67% and modified after blood culture results in 40%. Mortality was 43% when empiric antibiotic was inactive vs 18% when active against actual bacteria ($P = 0.05$). After 7 weeks of blood culture service, empiric antibiotic needed changing in 94.5% (escalation to active antibiotic 47.6% and de-escalation to narrow-spectrum active antibiotic 52.4%). Compliance with advice was 82.4% (92% complied with advice for escalation vs 73% for de-escalation, $P = 0.003$) and sustained over time. Mortality was not statistically different when narrow-spectrum active antibiotic was chosen (3.5% vs 9.5% continuing broad-spectrum empiric antibiotic, $P = 0.29$).

Conclusion: Current blood culture management can be improved by daily blood culture service. Narrow-spectrum active antibiotic after blood culture results is safe and effective.

MP 027

Clinical Predictors of Rapid Progression of Incidental Coronary Artery Lesions

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Aim: Factors leading to the rapid progression of incidental coronary artery lesions are uncertain. This study aimed to identify factors predicting rapid lesion progression in proximal segments of the

major coronary arteries.

Methods: This was a retrospective cohort study evaluating patients undergoing 2 consecutive angiograms within a 6 month period from 2001 to 2005. Patients with in-stent restenosis were excluded. Quantitative coronary angiogram of the proximal coronary artery segments was performed at the initial and follow up angiogram. Progression of lesion was defined as worsening of stenosis >5% from the initial angiogram.

Results: Four hundred and thirty-one patients had 2 angiograms within 6 months, of which 246 were related to in-stent restenosis and therefore excluded from analysis. Of the remaining 185 patients, multivariate analysis showed lesion stenosis, lesion length, existing vessel disease and prior intervention to the left circumflex artery as significant predictors of lesion progression. Mean lesion stenosis and lesion length in the progression group is significantly greater ($24.5 \pm 16.9\%$ vs $19.8 \pm 27.6\%$; 7.7 ± 3.6 mm vs 4.2 ± 5.9 mm at initial procedure, $P < 0.001$). Patients with existing multi-vessel disease were more likely to suffer rapid progression (adjusted odds ratio, 6.00 [95% CI, 2.01 to 17.92] for 3 vessels, $P < 0.001$). Subgroup analysis in the progression group showed >10% stenosis progression in patients with LDL level >2.6 mmol/L. None of the traditional risk factors were observed, such as diabetes, hypertension, hypercholesterolemia, smoking or age-influenced lesion progression.

Conclusion: Greater coronary artery disease burden (existing vessel disease, increased lesion stenosis and lesion length at initial angiogram) and prior intervention to the left coronary artery confer a significantly higher risk for rapid clinical plaque progression.

MP 028

Utility of Nesiritide in Acute Decompensated Heart Failure

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Aim: Natriuretic peptides released in heart failure can be interpreted as an attempt by the heart to rescue itself. However in acute, decompensated episodes, the failing heart may be unable to maintain sufficiently high levels of these compensatory hormones. This raises the possibility of therapeutic opportunities for exogenous natriuretic peptides. We studied the effects of nesiritide infusion in an Asian population who presented with acute heart failure.

Methods: Seventeen patients who were admitted with acute decompensated heart failure (ADHF) were included. Patients who were in cardiogenic shock or had a systolic blood pressure (BP) of less than 90 mm Hg were excluded. Nesiritide was given as a bolus of 2 µg/kg followed by an infusion of 0.01 µg/kg/min for 24 hours. The outcome measures were change in heart rate, BP, serum creatinine level and response to treatment defined as symptomatic relief plus diuresis of at least 1litre in 24 hours.

Results: The mean duration of nesiritide therapy was 23.1 hours. The median LVEF was 20%. The mean baseline BNP level was 2794 ug/dL. The mean BP change was + 17.3 mm Hg and the mean HR change was + 9 beats/min. The baseline mean creatinine level was 147.7 mmol/l and it rose to 176.3 mmol/L post-infusion. The mean creatinine level at discharge was 157.4 mmol/L. The mean diuresis volume was

1676 mL over 24 hours. The mean duration of hospitalisation was 11.9 days. Thirteen patients were considered responders and there were 3 non-responders, of which 1 died.

Conclusion: Nesiritide was associated with hemodynamic and symptomatic improvement in patients with ADHF. Although there was worsening of renal function initially, it was reversible.

MP 030

Hyperacute Reduction and Absence of Subsequent Elevation in Circulating Endothelial Progenitor Cells during Percutaneous Coronary Intervention in Diabetics

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Aim: Endothelial progenitor cell (EPC) levels and functions are attenuated in diabetic patients. This may explain the poorer outcome of diabetics undergoing percutaneous coronary intervention (PCI). We aimed to study the dynamic changes in circulating EPC levels in these patients.

Methods: The blood of 9 diabetics with stable coronary artery disease who underwent elective PCI was obtained at 0, 1, 4 and 24 hours after PCI. FACS analysis was performed to quantitate CD34+/KDR+ and CD34+ EPCs. Patients with recent acute coronary syndrome (<3 months) were excluded.

Results: At baseline, mean CD34+ and CD34+/KDR+ cells were $462 \pm 851/1 \times 10^6$ and $14 \pm 16/1 \times 10^6$ cells respectively. Decreases in circulating EPC were detected in 8 out of the 9 patients between 1 and 4 hrs post PCI. Maximum decrease of CD34+ and CD34+/KDR+ cells were $45.5 \pm 18\%$ and $58.7 \pm 37\%$. It did not correlate with ischaemic time during PCI or baseline CCS angina class. At 24 hrs, EPC levels returned to baseline but were not elevated. One patient with no significant decrease in EPC level at 1 and 4 hrs had raised CKMB.

Conclusion: We found a transient dip in circulating EPCs early during PCI. This suggests incorporation of EPCs into the sites of vascular denudation. In the setting of myocardial injury, more EPCs may be mobilised from the bone marrow into the circulation and

abolish the hyperacute reduction in circulating levels. The absence of EPC elevation at 24 hrs, post-PCI in diabetes may be associated with the known poorer outcome of these patients.

MP 031

Risk Factors of Myocardial Infarction in Young Population in Singapore

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Aim: This study aimed to examine the risk factors of young adults (age <45 years) who have acute myocardial infarction (MI) compared to older patients.

Methods: This is a cohort study of all patients admitted to the National University Hospital for acute ST elevation MI who have undergone primary percutaneous coronary intervention between May 2001 and July 2006.

Results: One hundred and forty-one (13.4%) out of 1049 patients with MI were young. There were significantly more men (89.4% vs 71.3%, $P < 0.001$) in the young MI group with a median age of 41 (26-45) years. There were higher numbers of Indians (22.7%) compared with the national demography. Larger proportions of young MI patients were Malays and Indians compared to Chinese (19.2% vs 18.9% vs 10.8%; $P = 0.002$). Multiple comparisons between Chinese and Malay ($P = 0.007$) and Chinese and Indian ($P = 0.004$) patients confirmed the differences in racial distribution of young MI. In the young MI cohort, 80% had single vessel disease while 16.4% had double vessel disease. The distribution was similar to the older group. The 4 traditional risk factors comparing the young and older groups were: smoking (69.5% vs 43.3%; $P < 0.0001$), hypercholesterolemia (69.5% vs 76.8%; $P = 0.072$), hypertension (47.5% vs 68.6%; $P < 0.0001$) and diabetes (28.4% vs 38.5%; $P = 0.024$). The number of smokers was significantly higher in the young MI group whereas diabetes and hypertension were more prevalent in the older MI group.

Conclusion: The principal risk factors of the young MI are modifiable. Prevention is of primary importance. Education to emphasise on personal responsibility in disease prevention has a role in reducing young MI.

MP 032

Outcomes of Tenckhoff Catheter Insertions in Children with End-Stage Renal Disease on Chronic Peritoneal Dialysis

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Aim: Chronic peritoneal dialysis is the preferred dialysis modality in children, despite the prevalence of catheter-related complications. This study was aimed at examining the outcomes of Tenckhoff catheter insertions in children with end-stage renal disease (ESRD) seen at the Shaw-NKF Children's Kidney Centre, The Children's Medical Institute, National University Hospital, over the past 2 decades.

Methods: A retrospective review of all Tenckhoff catheter insertions performed in 78 paediatric patients with ESRD (median age at diagnosis at end-stage renal failure of 12.2 years, range 0.07 to 20 years) between December 1985 and May 2007 was conducted. Kaplan-Meier survival analysis was done using the log-rank test. Poor outcome was defined as catheter failure and removal. Events studied included exit site infection, peritonitis, tunnel infection, catheter leak, catheter blockage, catheter migration, hernia, pleuro-peritoneal leak, bleeding and membrane failure.

Results: A total of 124 Tenckhoff catheter insertions were performed in 291 patient-years. An average of 1.6 Tenckhoff catheters were inserted per patient with a mean of 2.1 events per catheter. Sixty (48.4%) catheters were removed because of catheter failure due to peritonitis (46.7%), exit site infection (20%), obstruction (15%), catheter leak (8.3%), membrane failure (6.7%) and tunnel infection (3.3%). The median catheter survival was 50.2 months. Survival analysis showed that the median survival time of catheters was significantly lower in those with peritonitis (48.7 months, 95% CI 9.6, 56.4) compared to those without peritonitis (63.7 months, 95% CI 28.0, 99.5) ($P = 0.03$).

Conclusion: Peritonitis was the most common Tenckhoff catheter complication, resulting in catheter failure and removal.

MP 033

Comparison of Urine Dipstix Test Versus Microscopy for Detection of Haematuria and Leucocyturia in Patients with Estimated Glomerular Filtration Rate (eGFR) Greater Than 90 ml/min

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Background: The National Kidney Foundation defines stage 1 chronic kidney disease (CKD) as eGFR >90 ml/min with blood, urine or imaging abnormalities. During health screening, dipstix and/or microscopy are used to detect haematuria and leucocyturia. Because screening programs usually use dipstix testing, a poor diagnostic performance may fail to detect CKD; conversely, over-diagnosis may result in excessive utilisation of health resources and patient distress. Assuming microscopy is the gold standard for detection, we determined the diagnostic performance of dipstix testing, and hypothesised that the tests were not different.

Methods: The laboratory computer database contained data on age, gender, race, serum creatinine and urine dipstix and microscopy results from 2983 patients who underwent screening from January

2005 to December 2006. Of these, 830 had eGFR >90 ml/min and simultaneous urine tests. Their urine tests were compared with Chi-square and Fisher's exact tests. The sensitivity and specificity of the dipstix test was determined.

Results: Preliminary analysis by Chi-square test showed that the urine dipstix result is related to the urine microscopy result. The sensitivity and specificity of urine dipstix in detecting haematuria are 88.4% and 75.8% respectively. The sensitivity and specificity of urine dipstix in detecting leucocyturia are 80.3% and 92.5% respectively. Of the 234 patients with positive urine dipstix for haematuria, 188 had negative results on urine microscopy. Of 103 patients with urine dipstix positive for leucocyturia, 58 had negative urine microscopy results.

Conclusion: Urine dipstix testing can be used for screening stage 1 CKD.

MP 034

Methylene Blue Injection Reduces Pain After Lateral Anal Sphincterotomy

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Aim: Intradermal methylene blue has been used successfully in pruritus ani. The mechanism is likely the destruction of dermal nerve endings. We report a new method in achieving postoperative pain relief using intradermal methylene blue injection to the perianal region after lateral anal sphincterotomy.

Methods: Consecutive patients undergoing lateral anal sphincterotomy between July 2004 and January 2006 were studied prospectively. All were performed under local anaesthesia. Four ml 1% methylene blue and 16 ml 1% lignocaine was injected into the perianal skin and intersphincteric space. Patients were asked to fill in a pain chart with a visual analog scale of 0 to 10.

Results: There were 24 patients studied during this period. The median pain scores were under 2.5 for the first 4 days and were 0 from the 5th postoperative day. Nineteen out of 24 wounds had healed by 2 weeks post sphincterotomy. There were no perianal complications.

Conclusion: Intradermal injection of methylene blue together with local anesthetic gives good postoperative pain control with minimal complications.

MP 035

Lymphocytic Thrombophilic Vasculitis. A Newly Described Medium-sized Vessel Arteritis of the Skin

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Aim: This study aimed to assess the clinical and histological features of a distinct form of lymphocyte-mediated endovasculitis involving small arteries of the skin.

Methods: Case records of 5 patients presenting with livedo racemosa of the limbs and histological specimens exhibiting thrombophilia associated with a lymphocytic medium-sized vessel arteritis were retrieved from the archival files and slides of the Skin and Cancer Foundation Australia.

Results: All were young, adult females with livedo racemosa over the

lower limbs, and less frequently the upper limbs. In all biopsies, infiltration of the muscular vessel wall by inflammatory cells, affecting arterioles of the dermo-subcutaneous junction and/or superficial subcutis were present. Mononuclear cells predominated, while neutrophils and eosinophils were scant. Inflammation was confined to the vicinity of the vessel and the immediate surrounding panniculus. A concentric fibrin ring involving the entire periphery of the lumina of affected vessels was present in all cases. Nuclear dust was seen. Laboratory investigations revealed 4 patients with antiphospholipid antibodies detected in their serum. One patient had a heterozygous mutation of the Factor V Leiden gene.

Conclusion: The observed histology is distinctive. Laboratory findings may reveal abnormalities in thrombophilia screen in some patients, and particularly, raised antiphospholipid antibodies. We have termed this arteritis “lymphocytic thrombophilic vasculitis”, to reflect the histological features that appear to combine lymphocytic vascular inflammation with the signs of endovasculitis seen in thrombophilic states. Distinguishing features of this condition to other vasculitides and vasculopathies such as polyarteritis nodosa, livedoid vasculitis and antiphospholipid syndrome are discussed.

MP 036

Clinical Profile of Vitiligo in Singapore

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Aim: The aim of this study was to evaluate the epidemiology, clinical features and treatment response in vitiligo patients.

Methods: We retrospectively reviewed records of all newly diagnosed vitiligo patients at the National Skin Centre (NSC) seen from January to June 2005.

Results: Two hundred and eighty-two out of 36,173 new referrals were diagnosed with vitiligo between January and June 2005, accounting for 0.78% of the new referrals seen. The ethnic distribution was 61.7% Chinese, 9.6% Malays, 17.0% Indians and 11.7% other races. The male to female ratio was approximately 1:1. The median age at onset was 31 years and the majority of patients were between 11 and 60 years of age, accounting for approximately 79% of the patients. Vitiligo vulgaris was the most common clinical type, followed by focal, segmental, acrofacial, mucosal and universalis vulgaris in order of frequency. A co-existing autoimmune condition was recorded for 7.1% of the patients, the most common of which were thyroid disease and alopecia areata. Seven point eight per cent of the patients had a family history of vitiligo. The 3 most common first line treatments were topical corticosteroids (70.2%), topical tacrolimus (11.0%) and phototherapy (9.2%). The clinical subtype of vitiligo significantly affected the initial type of treatment ($P < 0.01$). Ethnicity, duration of disease and disease stability were not predictive of treatment response to narrow-band UVB phototherapy or excimer laser.

Conclusion: Vitiligo accounted for 0.78% of the new referrals seen at NSC from January to June 2005 and is most common amongst Indians in Singapore. However, it is not clear whether this is due to more darker-skinned persons seeking treatment as a result of increased contrast of colour change.

MP 037

Comparison of Buccal and Saliva DNA Call Rates using the Illumina Infinium HumanHap 550K in Whole Genome Association Studies of Myopia in Singapore Children

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Aim: This study aimed to compare call rates for unamplified buccal DNA, amplified buccal DNA and saliva DNA using the Illumina Infinium HumanHap 550K chip in 13 children.

Methods: Cotton swabs were used to scrape both cheeks, while saliva DNA was collected using the Oragene vial kit in the Singapore Cohort Study of the Risk Factors for Myopia (SCORM). Unamplified buccal DNA had diluted concentrations and were concentrated to a volume of 50 uL using the Millipore Micron YM-100 Centrifugal Filter Units. Whole genome amplifications were done on unamplified buccal DNA samples to produce amplified DNA samples by using GE Healthcare GenomiPhi DNA Amplification Kits. Concentrations of the samples were measured using Nanodrop and Picogreen. The Illumina Infinium platform and HumanHap550k chips were used to analyse the 23 DNA samples.

Results: There were 10 boys and 3 girls, 7 Chinese, 2 Malays and 4 Indians with a mean age of 8 (range 7 to 9). The mean call rates for unamplified buccal DNA ($n = 13$), saliva DNA ($n = 5$) and amplified buccal DNA ($n = 5$) were 99.80%, 99.29%, and 98.81% respectively. Three unamplified buccal samples concentrations less than the minimum requirement of 50 ng/uL for the Infinium platform had call rates of 99.69%, 99.69% and 99.65%. Two out of the 3 unamplified buccal samples (lower than minimum concentration) with call rates of 99.69% had their saliva samples tested as well. The results of the saliva call rates were 99.87% and 99.9%. The concordance showed results of 99.99768% and 99.99857% respectively.

Conclusion: The call rates using the Infinium HumanHap 550K chip with unamplified buccal DNA samples were slightly higher compared to saliva and amplified buccal DNA samples. Buccal samples that had lower than the optimal requirement of concentration proved to provide good call rates as well.

MP 038

Reactive Eccrine Syringofibroadenomatosis Associated with Venous Stasis and Chronic Plaque Psoriasis

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Introduction: Eccrine syringofibroadenoma (ESFA) is a rare benign tumour with differentiation towards the acrosyringium. There are 5 subtypes, one of which is known to occur in reaction to inflammatory and neoplastic dermatoses.

Clinical Picture: We describe a patient who presented with 2 nodules over his right shin of 10 years' duration against a background of chronic plaque psoriasis and venous stasis. Histology of a nodule showed features of ESFA and venous stasis changes. A diagnosis of

reactive eccrine syringofibroadenomatosis secondary to venous stasis and chronic plaque psoriasis was made on clinical correlation.

Treatment: Excision of the lesions was offered but the patient refused.

Outcome: ESFA is a histological entity with greatly varied clinical manifestations. The 5 subtypes of ESFA should not be considered a homogenous condition. Multiple ESFA associated with ectodermal dysplasia and multiple ESFA without cutaneous features appear hamartomatous, unilateral linear ESFA is nevoid, and solitary ESFA appears neoplastic. Reactive ESFA likely represents a hyperplastic to hamartomatous process.

Conclusion: Reactive ESFA is not a neoplasm and may be more appropriately known as reactive eccrine syringofibroadenomatosis. The risk of malignancy is low in reactive ESFA and monitoring instead of excision is a reasonable option.

MP 039

Glutamatergic Abnormalities of the Thalamus in Schizophrenia: A Systematic Review

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Aim: The thalamus, a key information processing centre in facilitating sensory discrimination and cognitive processes, has been implicated in schizophrenia which is supported by neuroimaging studies documenting structural and functional thalamic abnormalities. Glutamatergic abnormalities, in particular, have been examined since glutamate is one of the main neurotransmitters found in the thalamus. We reviewed the existing literature (1978 till 2007) on post-mortem and *in vivo* studies of the various components of the glutamatergic neurotransmission as well as studies of the glutamate receptor genes within the thalamus in schizophrenia.

Methods: The literature search was done using multiple databases including Scopus, Web of Science, EBSCO host, PubMed and ScienceDirect. Keywords used include 'glutamate', 'thalamus', 'schizophrenia', 'abnormalities' and 'glutamatergic'. Further searches were made using the bibliographies in the main journals and related papers were obtained.

Results: The extant data suggest that abnormalities of the glutamate receptors as well as other molecules involved in glutamatergic neurotransmission (glutamate transporters and associated proteins, N-methyl D-aspartate receptor-associated intracellular signaling proteins, and glutamatergic enzymes) are involved within the thalamus in schizophrenia.

Conclusion: There is a cogent need for more rapid replication of findings from post mortem and genetic studies as well as the promotion of multiple component or multimodality assessment of glutamatergic anomalies in the thalamus in order to allow for a better appreciation of disruptions in molecular networks in schizophrenia. These and future findings may represent potential novel targets for antipsychotic drugs to ameliorate the symptoms of schizophrenia.

MP 040

Neonatal Mortality Audit over a 16-Year Period

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Aim: Neonatal mortality audit is an important quality improvement tool. Unusual trends in preventable causes like birth asphyxia will alert the clinician to look for underlying factors.

Methods: Mortality rates were reviewed in the Department of Neonatology over 16 years (1991 - 2006). Data was obtained from the Department's mortality records. Mortality rates were expressed as deaths/1000 discharges.

Results: There were 155 deaths among 47,522 discharges over 16 years, giving an aggregate mortality rate of 3.6 per 1000 discharges. Yearly rates ranged from 1.3 to 6.9. Rates since 1999 have been below the aggregate of 3.6. Fifty-three per cent of deaths occurred <7 days of life, 28% between 7 and 28 days and 8% >28 days (range 32 days-14 months). Eighty-two per cent of deaths were among inborn infants. Seventy-eight per cent of deaths occurred in preterm infants. The causes were extreme prematurity (54%), congenital anomalies (13%) and infection (11%). Deaths due to infection and congenital anomalies in preterm infants have decreased over the years. Among term infants, major causes were congenital anomalies (35%), asphyxia (20%), pulmonary (15%), cardiac (12%) and infection (9%). Deaths due to asphyxia have decreased from 0.9 to 0.4 and those due to infection have decreased from 0.7 to 0.4. Deaths due to congenital anomalies ranged from 0.8-1.2.

Conclusion: Yearly mortality rates ranged from 1.3 to 6.9. Mortality rates since 1999 have been below the aggregate mortality of 3.6. These values are below those reported by other centres. Deaths due to asphyxia and infection have shown a decreasing trend over the years.

MP 041

Six-year Survival Rate among Schizophrenic Patients with Tardive Dyskinesia

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Aim: Tardive dyskinesia (TD) is a severe and potentially irreversible movement disorder that affects patients receiving long-term antipsychotics. Previous studies have suggested increased mortality among patients with TD but the evidence is still scanty. In 2000, a study conducted among inpatients in Woodbridge Hospital established a 39.3% prevalence rate for TD. This is a follow-up study of this population to determine the main outcome of mortality.

Methods: Information on survival status of the patients who were part of the original study, as of December 2006, was traced from the hospital's nauticus system and the Registry of Births and Deaths. Cross-tabulation was performed to show the correlation between survival and mortality among patients with and without TD.

Results: Of the 499 patients (77% males and 23% females) who were part of the original cohort, there were 63 deaths (66.6% had TD). Of the 436 survivors, 42% had TD. The mortality rates between those

with and without TD were statistically significant ($\chi^2 = 13.6$, $P < 0.005$). On performing binary logistic regression with the mortality as a dependent variable, age ($P < 0.005$, OR = 1.08), gender ($P < 0.05$, OR = 2.1) and a diagnosis of TD ($P < 0.05$, OR = 1.9) remained significant predictors.

Conclusion: The results showed that there is an increase in mortality among patients with TD. The limitation of this study is that serial TD assessments were subsequently done; hence, later development of TD was not established. On the other hand, the number of censored cases was minimal as these patients were long-stay residents in the hospital and the medical records were easily accessible.

MP 042

Prurigo Pigmentosa: A Report of 2 Cases Which Responded to Minocycline

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Aim: Prurigo pigmentosa is a peculiar pruriginous dermatosis of unknown etiology. It was first described in 1971 and is most commonly seen among young Japanese females. To date, only about 40 non-Japanese cases have been reported. We wanted to highlight some of its clinical features, histological patterns and treatment options.

Methods: We report 2 cases, a male Chinese and a female Chinese aged 16 years and 21 years respectively, who had a pruritic rash with the characteristic appearance and supportive histopathology of prurigo pigmentosa.

Results: They were successfully treated with minocycline.

Conclusion: Prurigo pigmentosa is a relatively new condition which is often misdiagnosed. We believe that with better knowledge of this disease, it will be recognised more commonly. Prurigo pigmentosa is typified by recurrent eruptions of pruritic erythematous macules and papules, which leaves reticulated hyperpigmentation upon resolution. Histological changes parallel the pace at which clinical features develop and have very different findings at each stage of the disease. Follow up of the patient as well as clinicopathological correlation is required to confirm the diagnosis.

MP 043

Incremental Value of Heart-Type Fatty Acid-Binding Protein, Myoglobin, Troponin T and Electrocardiogram in Rapid Bedside Diagnosis of Acute Coronary Syndrome in Chest Pain Patients Presenting to the Emergency Department

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Aim: The aim of this study was to evaluate the incremental value of bedside methods i.e. qualitative heart-type fatty acid binding protein (CardioDetect[®]), quantitative myoglobin (Cardiac M[®]), quantitative troponin T (Cardiac T[®]), electrocardiograms (ECGs), and laboratory creatine kinase-MB (CK-MB) mass in diagnosing acute myocardial infarction (AMI) or unstable angina pectoris (UAP) in chest pain patients presenting to the emergency department (ED).

Methods: Eligible patients whose last episode of chest pain occurred

within 9 hours (excluding the STEMIs, muscular disease, renal failure and shock patients) had a first ECG, blood samples tested using CardioDetect[®], Cardiac M[®] and Cardiac T[®] and sent for laboratory assay of CK-MB mass. If all tests were normal, the entire panel was repeated at 90 minutes. The study protocol ended and patient hospitalised when any of the tests were positive. Discharge diagnoses of AMI and UAP were made by attending cardiologists who were not study investigators, based on standard clinical, ECG and biochemical criteria.

Results: Of 774 patients recruited, 97 (12.5%) had AMI and 119 (15.3%) UAP. A combination of the 4 biochemical markers with ECGs had a sensitivity of 92.8% (95% CI, 87.6-98.0) and negative predictive value (NPV) of 98.5% (95% CI, 97.4-99.6) for diagnosing AMI. In contrast, the sensitivity for ACS was only 71.2% (95% CI, 64.6-77.7) and the NPV was 87.9% (95% CI, 84.8-91.0). There were 9 (1.42%) in-hospital mortalities but they were not one of the 6 cases not initially diagnosed as AMI in the ED.

Conclusion: The above strategy is useful in ruling out AMI within 90 minutes.

MP 044

Mycobacterium Haemophilum Soft Tissue and Joint Infection in Connective Tissue Disease

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Introduction: To date, there have been 100 reports of *Mycobacterium haemophilum* infection worldwide. While most occurrences were reported in the setting of HIV, transplants and children, a handful of cases have been reported in patients with rheumatological conditions. The majority of infections involved cutaneous sites and soft tissue. The incidence of *Mycobacterium haemophilum* infection in this patient group has risen in recent years, due to more potent immunosuppressive therapy and advancement in culture and isolation techniques.

Clinical Picture: We report 2 cases of *Mycobacterium haemophilum* musculoskeletal infection. The first case involved a prosthetic elbow joint in a 67-year-old female with rheumatoid arthritis (RA). The infection ran a fluctuating and unremitting course, from initial cellulitis of her foot to metatarsal osteomyelitis, cutaneous lesions, elbow abscess, and septic arthritis of her prosthetic elbow joint. Management included removal of the infected prosthesis and prolonged combination antibiotics. Her immunosuppression was modulated in view of the infection. The second case involved the bursa over the lateral malleolus of the left ankle joint in a 44-year-old male with active polymyositis. Poor compliance with his immunosuppressant medications resulted in persistently active myositis. Bursal aspiration revealed *Mycobacterium haemophilum*. Despite combination antibiotics, he succumbed to severe pneumonia and respiratory failure.

Conclusion: *Mycobacterium haemophilum* infection is exceedingly rare. A high index of suspicion is necessary. We wish to highlight this organism as a potential cause of indolent joint pain and cutaneous lesions in the setting of negative cultures. As the medical literature and clinical experience in managing *Mycobacterium haemophilum* is limited, prolonged treatment with anti-mycobacterial agents for up to 2 years is recommended.

MP 045

Granular Cell Tumours – A Case Series of 9 Patients

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Introduction: Granular cell tumours are uncommon benign lesions with a predilection for the head and neck region.

Clinical Picture and Treatment Outcome: We report 9 cases of this rare tumour seen at the National Skin Centre, Singapore between 1996 and 2006. Five patients were female and 4 were male. Patient ages were between 15 and 66 years, with a mean of 37.1 years. All 9 patients presented with an asymptomatic painless mass varying from a 1 year to 10 years duration, with a mean duration of 4 years. 6 of the patients were Chinese and 3 were Indian. Five tumours were in the head and neck, 3 were in the groin or genital regions and 1 was in the limb. One of the patients had 2 synchronous tumours present in the scrotum and this is the second case of such an occurrence in the literature. The tumours ranged in size from 0.3 cm (in the scrotum) to 2.5 cm (in the neck). On examination, none of the lesions had any features of malignancy. The pre-operative diagnosis was dermatofibroma in 3 patients, epidermal cyst in 5 patients and axonal tumour in 1 case. Excision biopsy was performed for all patients.

Conclusion: In view of the risk of recurrence and the low risk of malignant transformation, we recommend that patients should be followed up regularly.

MP 046

Clinical Spectrum of Stress-induced Cardiomyopathy – Takotsubo and “Inverted Takotsubo” Cardiomyopathy: A Case Series

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Aim: Stress-induced cardiomyopathy or Takotsubo cardiomyopathy is an uncommon disorder whose etiology and pathophysiology has not been fully evaluated. Our study examined the clinical characteristics and outcomes of patients with stress-induced cardiomyopathy. We also identified a variant with an “inverted Takotsubo” pattern.

Methods: We identified 10 cases of stress-induced cardiomyopathy admitted to the National University Hospital from 2001 to 2006. All cases exhibited reversible left ventricular dysfunction, characterised by apical and mid-ventricular abnormalities, resulting either in the classical “apical ballooning” appearance or an “inverted Takotsubo” pattern. Coronary angiography excluded coronary artery stenoses as a cause of cardiomyopathy. Patients’ demographics, clinical presentations, electrocardiographic characteristics, laboratory data and clinical outcomes were studied.

Results: Six of the 10 cases were female and 7 had ST-segment elevations. Nine cases had elevated cardiac enzymes and none had angiographically significant coronary stenosis. Creatine kinase levels ranged from 136 to 13 000 U/L. One patient had an “inverted Takotsubo” pattern with mid-ventricular ballooning. Four patients reported acute emotional stressors prior to admission, 2 had ongoing sepsis and 2 had subarachnoid haemorrhages. One patient had severe gastro-esophageal reflux and 1 had no known precipitating cause. Of the 3 deaths, 1 was attributed to subarachnoid haemorrhage, 1 to nosocomial pneumonia and 1 to hepatobiliary sepsis.

Conclusion: Stress-induced cardiomyopathy is a clinical spectrum which can present with a “Takotsubo” or “inverted Takotsubo”

pattern. Etiologies may vary but cases are all preceded by severe emotional or physiological stressors. This suggests a common pathophysiology of excessive sympathetic stimulation as a cause of the transient cardiomyopathy.

MP 047

Workshop on Infant Cardio Pulmonary Resuscitation (CPR) Increased Parents’ Knowledge and Confidence

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Aim: An infant CPR workshop based on the 2005 Guidelines on Paediatric Basic Life Support was conducted for parents of prematurely born babies during a parent support group meeting. We studied how these parents’ pre-existing knowledge of CPR increased following this workshop.

Methods: The workshop was a 1.5-hour lecture and practical session. A 15-statement questionnaire with the choices true, false or do-not-know was completed by participants at workshop registration. Statements tested on their knowledge of emergency medical services, sequences for infant CPR and choking. When the workshop ended, participants again completed this questionnaire and rated their satisfaction about this workshop and confidence in performing infant CPR.

Results: Twenty-four parents attended with 22 sets of completed questionnaires. Overall, correctly answered statements rose from 61.5% to 90.6% post-workshop. Prior to the workshop, 72.7% participants knew 999 was the incorrect number to activate emergency medical services. Knowledge about CPR was low: correct responses ranged from 4.5% (adequate depth of chest compression) to 77.2% (correct indications for chest compressions). Following the workshop, correct responses rose to above 85% excepting two statements: correct location for chest compression (68.2%) and adequate depth of chest compressions (45.5%). Parents rated the workshop good to excellent. Sixteen of 24 parents were confident in performing CPR and first aid for choking after attending this workshop.

Conclusion: Pre-existing knowledge of infant CPR was average in parents of prematurely born babies attending a parent support group meeting. These parents’ knowledge of and confidence in performing CPR increased substantially after this workshop.

MP 048

Osteosarcoma in Paediatric and Young Adult Patients in Singapore: A South East Asian Experience

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Aim: We attempted to investigate the incidence, treatment modalities used and outcome of osteosarcoma (OS) patients treated at the 2 major paediatric oncology hospitals in Singapore.

Methods: A comprehensive list of patients with OS treated at the National University Hospital and KK Women’s and Children’s Hospital, Singapore between April 1980 and May 2006 was generated. During the study interval, patients received neoadjuvant chemotherapy followed by definitive surgery consisting of either limb-salvage or

amputation followed by adjuvant chemotherapy. Chemotherapy was as per the European Osteosarcoma InterGroup (EOI) and as per the Memorial Sloan-Kettering Cancer Center's (MSKCC) T12 protocols. Treatment of subsequent relapses consisted of various combinations of methotrexate, ifosfamide, etoposide, other and / or surgery.

Results: Of the 49 patients with OS, 30% presented with metastatic OS. The median age of diagnosis of OS was 12.4 years. For the cohort, the 2 and 5-year overall survival rates were 71% and 55% respectively. The 2-year overall survival rate was 73% for patients who were treated as per the MSKCC protocol. At last follow-up, median 4.3 years (range, 0.3 to 21.6), 25 were alive with no evidence of disease and 16 were dead of disease.

Conclusion: Survival from OS in Singapore appears to be improving. The rarity and complexity of OS makes it crucial for patients to seek a centralised multi-disciplinary musculoskeletal oncology team involving surgeons and paediatric oncologists dedicated to the care of these young patients with the intent to cure.

MP 049

A Case of Atypical Fibroxanthoma-like Melanoma with Touton-like Giant Cells, and the Utility of a Panel of Immunohistochemical Stains Including Procollagen 1

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Aim: Malignant melanoma can display wide variations in morphology, and is a potential pitfall even to the most experienced pathologists. We present a case of malignant melanoma with pleomorphic, spindled and epithelioid cells resembling an atypical fibroxanthoma.

Methods: An excision biopsy from an 88-year-old Caucasian female presenting with an amelanotic lesion 1 cm in diameter over the left forearm was seen at the Skin and Cancer Foundation, Sydney, Australia. The histology slides were reviewed.

Results: Histologically, the lesion was a well-circumscribed, superficial dermal nodule associated with an epidermal collarette. There was marked solar elastosis. Tumour cells showed marked pleomorphism, associated with multinucleate giant cells, and large, bizarre cells with giant nuclei and hyperchromatism. Atypical "monster cells" and Touton-like giant cells were present. Mitotic figures were numerous. There was no melanin pigment seen. The overlying and immediate adjacent epidermis was devoid of melanoma cells. At one edge of the specimen, away from the dermal tumour, was a strip of epidermis showing lentiginous proliferation of atypical melanocytes, associated with pagetoid epidermal spread. All tumour cells, including the Touton-like giant cells, stained positively with S-100, HMB45 and Melan-A, and were negative for procollagen 1 and MNF116.

Conclusion: We discuss the pitfalls encountered in diagnosing atypical fibroxanthoma-like melanomas, as well as some of the currently available positive stains for atypical fibroxanthomas and their utility in the differential diagnoses of this condition.

MP 050

Vitiligo as a Reaction to Topical Treatment with Diphenylprone

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Introduction: Diphenylprone (DCP) is a universal contact sensitizer used to treat dermatological conditions resulting from an altered immunological state, namely extensive alopecia areata and resistant viral warts. Common protocols involve initial sensitisation, followed by weekly applications of DCP to the affected area, starting from the concentration that produces an erythematous reaction during patch testing. Common adverse effects are local eczema with blistering, regional lymphadenopathy and contact urticaria. Rarer adverse effects include an erythema multiforme-like reaction, hyperpigmentation, hypopigmentation, leucoderma and vitiligo.

Clinical Picture, Outcome and Conclusion: We report 4 patients with DCP-induced vitiligo occurring at multiple sites. These patients received DCP therapy for the common diagnosis of alopecia areata. Upon diagnosis of the complication, 3 of the patients were started on phototherapy, which induced follicular repigmentation in the majority of lesions, but not complete regression.

MP 051

Trichodysplasia Spinulosa in a Non-immunosuppressed Patient with Chronic Lymphocytic Leukaemia in Remission

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Aim: Trichodysplasia spinulosa is a recently described entity presenting as hyperkeratotic follicular papules and spicules distributed predominantly on the face, ears and proximal limbs in immunosuppressed individuals. Most reported cases have been in organ transplant recipients on immunosuppressive therapy. We report a 70-year-old Caucasian male with chronic lymphocytic leukaemia who developed the lesions of trichodysplasia spinulosa 2 months after cessation of chemotherapy.

Methods: Histological slides from a hyperkeratotic forehead lesion were reviewed. We also describe a painless pull-test where spicules can be easily plucked and assessed microscopically for inner root sheath keratinisation in a clinic setting.

Results: Histological features characteristic to this condition include dilated and enlarged hair follicles, hyperplastic hair bulbs, hyperplasia of inner root sheath cells with numerous large, eosinophilic, trichohyaline granules and hypercornification.

Conclusion: Although our patient was in remission for chronic lymphocytic leukaemia, lesions were slowly progressing despite cessation of chemotherapy. We postulate that immunosuppression from chemotherapy allowed the causative folliculotropic viruses to be activated and proliferate. However, these viruses may persist despite the withdrawal of immunosuppression, due to the intrinsic immunocompromised state of his chronic lymphocytic leukaemia.

MP 052

The Association Between Serum Cardiac Troponin I and Creatinine

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Aim: Little attention has been paid to possible troponin elevation associated with higher creatinine concentrations within the population reference interval. This study examines troponin elevation in non-ACS (acute coronary syndrome) patients with respect to creatinine concentration, sex and age.

Methods: Laboratory records on negative (cTnI <0.5 µg/L, Beckman-Coulter AccuTnI) singleton samples on non-cardiology, non-intensive care patients with simultaneous creatinine measurement between January and June 2006 were examined to assess the relationship between creatinine, cTnI, sex and age.

Results: For women/men, the percentages with cTnI concentrations exceeding 0.06 µg/L and average cTnI (µg/L) concentrations rose with steps of creatinine <50, 51-75, 76-100, 101-125, 126-150, 151-200, 201-250 and >251 µmol/L from 9/6%; 0.032/0.027 to 11/11%; 0.031/0.033; 14/11%; 0.041/0.033; 22/16%; 0.047/0.041, 30/27%; 0.062/0.056, 37/31%; 0.069/0.059, 34/41%; 0.081/0.091 and 41/43%, 0.083/0.079 respectively. Serum creatinine was positively associated with cTnI (*P* <0.001) independent of patient age or sex for both creatinine concentrations within the reference intervals and all creatinine results.

Conclusion: Higher troponin concentrations are seen with increasing serum creatinine concentrations unexplained by age or sex, even within the reference interval. This finding suggests that creatinine concentration is another factor that should be considered when defining the reference population for cardiac troponin.

MP 053

Spontaneous Bier's Spots

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Introduction: Bier's spots are asymptomatic pale macules on a background that may be erythematous and/or cyanosed.

Clinical Picture: A 24-year-old Chinese man presented with asymptomatic spontaneously occurring pale macules mainly over his limbs for 8 years. The macules blanched on pressure and were accentuated when his limbs were in a dependent position. A clinical diagnosis of spontaneous Bier's spots was made.

Treatment: Bier's spots may be a physiological or pathological manifestation. Bier's spots have been associated with cryoglobulinaemia, scleroderma renal crises and aortic malformations. For the patient, no further investigations were recommended as the pale spots have been present for 8 years, he has been systemically well and the physical examination was normal.

Outcome: In patients without underlying diseases, Bier's spots are areas of skin that appear pale in contrast to surrounding hyperaemia and cyanosis that occur in venous pooling. Evidence is conflicting as to whether there is vasoconstriction in these pale macules.

Conclusion: Bier's spots can be diagnosed clinically and have to be differentiated from constitutive speckled vascular mottling and naevus anaemicus which are other causes of anaemic macules. A clinician should enquire and examine for features of thrombophilia,

vasculopathy, and aortic constrictions when a patient presents with Bier's spots.

MP 054

Mononeuritis Multiplex- A Rare Presentation of Cutaneous Large B-Cell Lymphoma of the Leg

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Introduction: We report a rare case of primary B-cell lymphoma of the leg presenting with mononeuropathy multiplex.

Clinical Picture: A 79-year-old Chinese lady had been investigated by the neurology service for progressive painful asymmetrical mononeuropathy multiplex of unknown cause. Previous investigations to exclude a vasculitic or autoimmune cause were negative. An incidental finding of skin lesions on the left lower limb prompted a referral to the dermatologist. Cutaneous examination revealed dusky indurated erythematous plaques on the left leg and an indurated plum coloured dermal plaque in the right breast. A skin biopsy from the nodular area on the right breast showed a dense and diffuse infiltrate of atypical cells with large, hyperchromatic nuclei seen spanning the entire dermis. Immunohistochemistry staining showed that the atypical lymphocytes were CD20+, CD79a+, Bcl-2+ and Mum-1+. A diagnosis of diffuse large B-cell lymphoma, leg type involving the breast and leg, with extracutaneous involvement was made. The mechanism of the mononeuropathy multiplex was unclear. The likely causes were a paraneoplastic phenomenon or direct lymphomatous invasion. Within 3 months of initial presentation, the lesions on the left lower limb progressed with more infiltrative plaques.

Treatment: Following discussion at a family conference, it was decided that she should have palliative chemotherapy treatment with etoposide.

Outcome: The patient died 2 months later at a hospice.

Conclusion: This case highlights the importance of a full systemic and cutaneous examination in patients presenting with progressive, painful peripheral neuropathy.

MP 055

Disseminated Candidiasis in a Patient with Acute Myeloid Leukaemia, Post Consolidation Chemotherapy

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Introduction: Disseminated candida infection is a rare but serious complication in patients with acute leukaemia, after treatment with chemotherapy protocols.

Clinical Picture: We describe a patient with acute myeloid leukaemia, who presented with prolonged pyrexia post chemotherapy and was subsequently found to have extensive disseminated candidiasis involving not only her wrist joint, but also her liver, spleen and kidneys.

Treatment and Outcome: She was treated with a protracted course of antifungal therapy. She subsequently underwent chemotherapy followed by an autologous transplant for her acute leukaemia, while still undergoing concurrent antifungal therapy. She remains well post

transplantation. Repeat computed tomographic scans have demonstrated significant improvement in the candidiasis-related lesions in her liver and spleen.

Conclusion: Disseminated candidiasis should be considered in patients with acute leukaemias and prolonged pyrexia post chemotherapy. Patients with this condition will need protracted antifungal therapy. A review of the literature suggests that chemotherapy should not be interrupted or delayed in order to treat hepatosplenic candidiasis.

MP 056

Retinoblastoma: The Experience at National University Hospital, Singapore

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Introduction: The Singapore Childhood Cancer Registry noted 21 cases of retinoblastoma diagnosed in Singapore between the years of 1997 and 2005.

Methods: A retrospective chart review was performed on the charts of 20 patients who were diagnosed with retinoblastoma between the years 1997 and 2006 at the National University Hospital, Singapore.

Results: The median age at diagnosis was 1.4 years (range, 0.1 to 5.9) with a median follow-up of 2.1 years, ranging from 0.1 to 9.5 years. The median time from presenting signs to the time of diagnosis was 0.4 years (range, 0 to 2.8). Common presenting signs of retinoblastoma were identified, the most common of which were leukocoria (75%), squinting (20%), poor vision (15%), strabismus (5%) and unknown (10%). Of the 20 patients, 7 were from Singapore whilst other 13 patients were from the surrounding countries (Malaysia = 4, Indonesia = 3, Brunei = 3, Sri Lanka = 2, Vietnam = 1). Eight patients had bilateral disease at the time of diagnosis, 9 had unilateral disease and the status was unknown in 3 patients. Enucleation was performed in 18 of the 20 patients. Radiation therapy was given in 2 patients in the year 2001 (bilateral) and 2003 (unilateral disease). At the time of analysis, 11 patients were alive with no evidence of disease, 7 were alive with disease and 2 were lost to follow-up.

Conclusion: Retinoblastoma is a very rare disease. In our limited and short experience, the importance of collaboration, raising awareness and education of primary health care providers and parents are suggested.

MP 057

Sleep Problems in Children Seen in a Psychiatric Setting

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Aim: This study aimed to estimate the prevalence of sleep problems in children and adolescents attending psychiatric services.

Methods: Parents/guardians of new patients seen at the child guidance clinic were asked to complete a questionnaire upon their consent to study participation. Socio-demographic data and frequency of sleep problems were assessed. Medical records were surveyed for the psychiatric diagnosis.

Results: Four hundred and ninety parents/guardians consented to participation and completed the questionnaires. Sixty-seven point eight per cent of the children were boys and 32.2% were girls. The

racial distribution was as follows: 79.8% Chinese, 9.6% Malays, 5.9% Indians and 4.7% belonged to other ethnic groups. The mean age (SD) of the children was 10.1 (3.6) years with a range from 2 to 19 years. Sleep problems: 62.2% (95% CI 57.8-66.6%) of the children suffered from at least one problem. Girls were significantly more likely to suffer from sleep problems ($X^2 = 8.5, P < 0.005$). Sleep talking was the most prevalent problem (33.3%) followed by bruxism (24.7%). Sleep paralysis and sleep walking were less common. Significant gender differences were noted for nightmares and nocturnal enuresis. Girls experienced the former more significantly ($X^2 = 12.01, P < 0.005$) and boys the latter ($X^2 = 10.5, P < 0.005$). Eighteen per cent of the children had 2 sleep problems and 22.2% of the children had 3 or more problems.

Conclusion: This is one of the first studies to describe the prevalence of problems in children attending a psychiatric clinic. Sixty-two point two per cent of the children suffered from at least 1 sleep disturbance, while 40.2% suffered from more than 1 sleep disturbance concurrently.

MP 058

Spontaneous Adult *Escherichia coli* Meningitis

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Introduction: *Escherichia coli* meningitis has rarely been reported in adult patients. Moreover it is very rare in an adult patient without diabetes mellitus or neurosurgical shunts. In adult patients, even with treatment it carries a high mortality, ranging from 27% to 90% and mortality without treatment is 100%.

Clinical Picture: We describe a 78-year-old lady who presented with altered mental state and neck stiffness. Her cerebrospinal fluid analysis was consistent with bacterial meningitis and she had *Escherichia coli* bacteraemia. She was treated aggressively with meningitic doses of ceftriaxone 2 gm twice a day for 2 weeks. She also developed non-ST elevation myocardial infarction on day 3 of admission. She was started on aspirin, low molecular weight heparin and monitored on telemetry for 3 days. She remained in hospital for 2 weeks and was discharged well.

Conclusion: *Escherichia coli* meningitis carries a high mortality rate. *Escherichia coli* may also cause meningitis in adult patients without diabetes mellitus or neurosurgical shunts. Early diagnosis and treatment is key to a good outcome as mortality without treatment is 100%.

MP 059

Randomised Clinical Trial Comparing Ligasure Haemorrhoidectomy to Diathermy Haemorrhoidectomy

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Aim: Conventional diathermy excision haemorrhoidectomy remains a very popular modality of treatment for 3rd and 4th degree haemorrhoids due to its cost effectiveness. Ligasure Vessel Sealing Device is an alternative technique employed to perform haemorrhoidectomy. Some Western studies have shown the benefits of using Ligasure over diathermy in terms of operative time, post-operative pain and wound healing. This study aimed to assess the effectiveness of the Ligasure Vessel Sealing Device compared to conventional diathermy haemorrhoidectomy.

Methods: A prospective clinical trial was conducted. Fresh cases of haemorrhoids requiring haemorrhoidectomy were randomised to either Ligasure haemorrhoidectomy or conventional diathermy haemorrhoidectomy. The surgical technique and postoperative care was standardised.

Results: The primary outcome measure was the wound healing rate. Secondary outcome measures were postoperative pain assessed through a pain diary and analgesia use, occurrence of complications and operative time and blood loss. These results will be presented in our preliminary report.

MP 060

Non-Hodgkin's Lymphoma (NHL) of the Bone in Young Patients: Memorial Sloan-Kettering Cancer Center Experience

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Aim: Paediatric non-Hodgkin's lymphoma (NHL) arising in the bone (NHL-Bone) is less well characterised compared to that of adults. This study's objective was to report our recent experience on young patients with primary localised and disseminated NHL-Bone.

Methods: A retrospective chart review of all patients with NHL treated at the Department of Pediatrics at Memorial Sloan-Kettering Cancer Center between May 1985 and November 1999 revealed 13 patients.

Results: Primary disease involved: humerus (4 patients), femur (3), ischium/ilium (3), tibia (2) and mandible (1). Six patients presented at Stage I, 3 at Stage III, and 4 at Stage IV. Histologic classification revealed 8 patients with large cell lymphoma, 1 lymphoblastic lymphoma, 1 small noncleaved cell lymphoma (SNCCCL), 2 small cell lymphoma and 1 diffuse mixed cell lymphoma. The median age at diagnosis was 14.8 years and median follow-up was 6.4 years. At last follow-up, all 13 patients were alive. Patients were treated on various protocols: LSA2L2 (3), LSA4 (3), LSA5 (2), COMP (3), CHOP (1) and BFM (1). Four (31%) patients relapsed within 1.5 to 6.4 years. One patient with SNCCCL of mandible, treated on COMP, developed secondary acute myelodysplastic leukaemia (s-AML) at 3.7 years after diagnosis of primary. The 5-year EFS rate was 76.0% + 12.0% (se).

Conclusion: In our study, the 5- and 7-year overall survival in NHL-bone in young patients is excellent in both localised and disseminated disease with combination chemotherapy without radiation. However, further research in characterisation and histology directed therapy of NHL-Bone in children and young adults is needed.

MP 061

Intramuscular Metastasis as an Initial Manifestation of Lung Cancer

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Introduction: The skeletal muscle is an uncommon site of haematogenous metastasis of carcinomas. We report here a rare case of adenocarcinoma of the lung with multiple intramuscular metastases as a presenting feature.

Clinical Picture: Our patient was an 81-year-old male admitted with urinary tract infection. He was incidentally found to have a mass in the left iliac fossa and another mass in the right posterior thigh. Chest X-ray revealed infiltrates in the right upper zone. His serum calcium level was raised (2.78 mmol/L). Computed tomographic scan of the thorax revealed a speculated mass in the right upper lobe with enlarged mediastinal and hilar lymph nodes. Computed tomographic scan of the abdomen and pelvis revealed multiple intramuscular masses in the abdominal wall, bilateral gluteal masses, right erector spinae muscle and right adductor muscle. The typical appearance on computed tomographic scan was a rim-enhancing intramuscular lesion with central hypoattenuation. The computed tomographic scan guided biopsy from the right lung mass and the right gluteal mass showed features of moderately differentiated adenocarcinoma.

Treatment: The patient was referred to medical oncology who recommended chemotherapy.

Outcome: The patient is currently undergoing chemotherapy with a favourable response.

Conclusion: We should keep in mind that intramuscular metastases may rarely be an initial manifestation of lung cancer when we encounter a patient with an undiagnosed intramuscular mass.

MP 062

Disseminated Intravascular Coagulation Complicating Urothelial Malignancy

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Introduction: Disseminated intravascular coagulation (DIC) complicates up to 7% of malignancies, the commonest solid organ association being adenocarcinomas such as pancreatic, breast and prostate cancer. Transitional cell carcinoma has rarely been reported to be associated with DIC.

Clinical Picture: We report a 55-year-old Chinese male diagnosed with transitional cell carcinoma with vertebral metastasis, who presented with severe anemia (Hb 2.6 g/dL) and thrombocytopenia (platelet count 33000/mL). Peripheral blood film showed severe hemolysis and the coagulation parameters were deranged (PT 43 seconds, APTT 74.3 seconds). Fibrinogen levels were low (less than 0.3 mg/dL) and D-dimer levels were increased (more than 10). The patient did not have any features of sepsis as he was afebrile and had normal white cell count, CRP levels, urine microscopy and chest radiograph. Urine and blood cultures did not grow any organisms and dengue serology was negative.

Treatment: The patient was treated aggressively with transfusion of packed cells, platelets, intravenous vitamin K and fresh frozen plasma.

Outcome: Despite aggressive treatment, the coagulation abnormalities were resistant to correction and the patient continued to deteriorate until he died of a cardiac arrest.

Conclusion: Transitional cells can also express tissue factor responsible for DIC. The expression of tissue factor and therefore the presence of DIC usually indicate that the patient has advanced metastatic disease and a very poor prognosis.

MP 063

Prevalence and Risk Factors of Occult Lower Extremity Deep Venous Thrombosis in Asian Neurorehabilitation Admissions

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Aim: This study aimed to determine the prevalence and risk factors of asymptomatic deep venous thrombosis (DVT) among neurorehabilitation admissions with acute stroke and traumatic and acquired brain injury (BI).

Methods: This study was a prospective single centre sequential case series of 642 Asian consecutive neurorehabilitation admissions with mean of <26 days post event. There were 377 male patients and 265 female, with a mean age of 58.9 years. Diagnostic categories consisted of ischaemic stroke (51.4%), haemorrhagic stroke (25.7%), subarachnoid haemorrhage (15.1%), traumatic BI (6.2%) and acquired BI (1.6%). Admission screening protocols included quantitative D-dimer assay (DDA) within 24-48 hours of rehabilitation admission and hemiplegic lower extremity venous duplex ultrasonography (VDU) was performed if the D-dimer level was elevated (≥ 0.5 ug/mL).

Results: DDA was elevated in 41.3% (265) of patients and VDU was performed in all of these patients except 17 (2.6%) due to agitation or early discharge. The prevalence of DVT in this cohort was 3.27% (11), including 11 proximal and 10 distal limb DVTs. DDA correlated well with the presence of DVT ($P < 0.02$) and was elevated in all 21 cases with DVT. Two (9.5%) patients had clinical pulmonary embolism. DDA had high sensitivity (1.0) and low specificity (0.02) in predicting DVT using VDU. There was a trend towards patients with cardiac failure having an increased tendency towards asymptomatic DVT ($P = 0.05$).

Conclusion: An admission protocol of routine DDA and selective VDU screening revealed occult lower limb DVT in 3.27% of 642 neurorehabilitation inpatient admissions. There were no clinical or functional predictors of DVT for this cohort. These results do not add support for routine VDU as a screening tool for DVT during acute neurorehabilitation.

MP 064

Determinants of Health-Related Quality of Life in a Cohort of Community-Dwelling Older Adults of Asian Descent

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Aim: This study aimed to ascertain the determinants of health-related quality of life (HRQoL) in a cohort of community-dwelling older adults of Asian descent.

Methods: This was a cross-sectional observation study of 840 subjects in a longitudinal cohort study examining health status and the aging process in a multi-ethnic Asian population (Singapore Longitudinal Aging Study). Variables studied include demographic features, medical history, social set-up, history of falls and HRQoL as determined by the EQ-5D, with utility values derived using the York tariff. All subjects underwent a comprehensive physical examination and an evaluation that included assessment of cognition, mood and functional status.

Results: The mean age of the study cohort was 65.0 years. Thirty-

four point three per cent were male and 65.7% were female. Fifty-two point four per cent suffered from less than 2 chronic ailments while 47.6% suffered from 2 or more chronic diseases. Forty point four per cent of our study subjects expressed concerns over the ability to pay for healthcare expenditure (financial concerns). Bivariate analysis of possible determinants of HRQoL showed that HRQoL was significantly associated with: gender, number of chronic ailments, history of arthritis, history of mental illness, visual contrast sensitivity and financial concerns. Multiple regression using forward selection resulted in a model that included the following predictors: gender (coefficient -0.022, 95% confidence interval [C.I.] -0.007, -0.038), financial concerns (coefficient -0.017, 95% CI -0.002, -0.032), mental illness (coefficient -0.060, 95% CI -0.001, -0.119) and arthritis (coefficient -0.058, 95% CI -0.036, -0.080).

Conclusion: In our cohort of community-dwelling older adults, gender, concerns over healthcare expenditure, mental illness and arthritis were significant predictors of HRQoL as measured by the EQ5D.

MP 065

The Sacking of a House Officer: What are the Views of New House Officers?

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Aim: This study aimed to determine the views of new house officers (HOs) on professionalism following the dismissal in January 2007 of a Tan Tock Seng Hospital HO who was caught videotaping nurses in the restroom.

Methods: An anonymous self-administered questionnaire was administered during new NHG HO orientation in February and April 2007. Using a Likert scale (1 = strongly disagree to 5 = strongly agree), HOs were asked to rank statements regarding the teaching of professionalism, role model-clinician, dismissal and Singapore Medical Council (SMC) registration of the sacked HO. Participation was voluntary.

Results: All 11 foreign graduates (FG) and 84 out of 95 (88%) NUS graduates responded: 58 were male and 37 female with a mean age of 23.5 years. All FG HOs agreed that professionalism was well taught in medical school but only 53 out of 84 (63.1%) NUS HOs thought so. Most (10 out of 11, 90.9%) FG HOs but only 57 out of 84 (67.9%) NUS HOs agreed they had adequate role model-clinicians exemplifying professionalism. While the majority of HOs (83 out of 95, 87.3%) agreed that the sacked HO's behaviour was not pardonable regardless of circumstances, 78 out of 95 (82.1%) HOs agreed with the dismissal but only half (48 out of 95, 50.5%) agreed that SMC should not register the sacked HO. Interestingly 7 out of 95 (7.4%) HOs indicated that the sacked HO's behaviour was pardonable and 6 out of 95 (6.3%) disagreed with dismissal.

Conclusion: Only 2/3 of NUS HOs felt that professionalism was well taught and that they had adequate role models. NUS should review this aspect of medical education. The majority of HOs agreed with the dismissal but only half felt the misdemeanor was serious enough for SMC not to register the sacked HO.

MP 067

Ischaemic Entero-Colitis Mimicking Colonic Malignancy in a Patient with Paroxysmal Nocturnal Hemoglobinuria

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Introduction: Paroxysmal nocturnal hemoglobinuria (PNH) is a rare disorder characterised by intra-vascular hemolysis, thrombotic episodes and possible association with bone marrow hypoplasia. Ischaemic colitis is an uncommon complication that may occur as a result of thrombosis occurring in the abdominal venous system.

Clinical Picture: We describe a case of a patient with PNH, with associated aplastic anaemia, who presented with persistent diarrhoea and fresh per rectal bleeding. Colonoscopy revealed multiple polypoidal lesions with overlying blood clots and necrotic tissue, suspicious of an underlying colonic malignancy. However, subsequent biopsy results revealed ischaemic enterocolitis, with underlying vascular thrombosis noted.

Treatment and Outcome: The patient was treated conservatively and the per-rectal bleeding subsequently improved with blood product (platelets) support. His aplastic anaemia was treated with anti-thymocyte globulin, but he subsequently succumbed to multi-resistance *Acinetobacter Baumannii* septicemia during the course of his treatment.

Conclusion: Ischaemic colitis is a rare complication, which should be considered in patients with PNH presenting with per rectal bleeding. This may sometimes mimic a colonic malignancy on colonoscopy findings.

MP 068

Infective Endocarditis of a Repaired Sinus of Valsalva Aneurysm

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Introduction: Sinus of valsalva aneurysms (SVA) are rare anomalies usually caused by congenital defects in the wall of the aortic root. They are thin-walled, tubular out-pouchings with an entirely intra-cardiac course, and may rupture, thereby creating an aorto-cardiac fistula. Definitive treatment requires surgical repair, which is usually successful and carries a good long-term prognosis.

Clinical Picture: We report a 32-year-old male who presented with infective endocarditis of a non-coronary cusp SVA 12 years after surgical repair. Blood culture grew *abiotrophia defectiva*, which was sensitive to vancomycin. The patient rapidly deteriorated as the endocarditis was soon complicated by the rupture of the SVA into the right atrium (RA), resulting in a fistula between the aorta and the right atrium, with aortic and tricuspid incompetence. The fistula had the appearance of a “wind sock” on the TEE.

Treatment: The patient was treated with intravenous vancomycin and was referred urgently to the cardiothoracic surgeon for definitive management. Repair of the ruptured SVA and closure of the aorto-atrial fistula, together with aortic valve replacement, tricuspid valve replacement and patent foramen ovale closure, was performed.

Outcome: Despite emergency repair of the ruptured SVA and closure of the aorto-atrial fistula, the patient deteriorated and expired.

Conclusion: This case illustrates that SVAs may be at risk of re-rupture despite surgical repair. It is therefore prudent to suggest continued and close long-term follow-up of all patients with SVA repair.

MP 069

Haemodynamic Changes in Morbidly Obese Patients During Surgery for Laparoscopic Gastric Banding

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Aim: Obesity can result in increased cardiac output and eccentric hypertrophy of the left ventricles leading to left ventricular failure. Laparoscopic surgery also has an impact on the cardiovascular system from factors like intraabdominal pressure, reverse Trendelenburg position and hypercarbia. Few studies have examined the combined effects of obesity and laparoscopic surgery on the cardiovascular function. We have conducted an observational study to investigate the effect of laparoscopic surgery on the cardiovascular function in morbidly obese patients undergoing laparoscopic gastric banding surgery.

Methods: Nineteen patients undergoing laparoscopic gastric banding were enrolled consecutively into the study. A CardioQ[®] oesophageal probe was used to measure cardiac function and an automated blood pressure monitor was used to measure mean arterial pressure. Hemodynamic parameters were measured during the surgery and results were analysed using paired *t*-test.

Results: The results showed heart rate slowed by up to 11% ($P < 0.002$) 5 minutes after assuming the reverse Trendelenburg position. Mean arterial pressure dropped by up to 20% ($P < 0.001$) at the same time. Cardiac output decreased progressively throughout surgery with a maximal drop of 47% ($P < 0.001$) when intraabdominal pressure was 12 mm Hg (1.60 kPa). The corrected flow time (FTc) also showed progressive decrease with the maximal decline when the intra-abdominal pressure was 10 mm Hg (1.33 kPa).

Conclusion: Laparoscopic gastric banding surgery in morbidly obese patients results in significant hemodynamic changes. There is a significant depression of cardiac output, rise in mean arterial blood pressure and a drop in preload as measured by corrected flow time. There were no significant adverse clinical outcomes associated with the haemodynamic changes.

MP 070

Neuroblastoma: Experience at the National University Hospital

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Background: The Singapore Childhood Cancer registry lists 67 cases of neuroblastoma diagnosed from 1996 to 2005. We attempted to investigate the incidence, treatment modalities used and the outcome of all patients diagnosed with neuroblastoma at our institution.

Methods: A comprehensive list of patients with neuroblastoma treated at the National University Hospital, Singapore between May 1995 and November 2005 was generated. The detailed medical records of all the patients were reviewed.

Results: There was an equal distribution of males and females, with a majority of patients being of Chinese ethnicity. The most common complaint at presentation was an abdominal mass, followed by loss of weight and various constitutional symptoms. The primary site was retroperitoneal followed by adrenal. As per International Neuroblastoma Staging System stage 4, the most common metastatic site was bone marrow disease followed by bone involvement. N-MYC amplification was not available in most patients whilst those with amplified n-MYC did worst. During the study period, various treatment regimens were employed including OPEC/OJEC, MSKCC N6 like regimen and autologous stem cell transplant. For the stage 4 patients, event free and overall survival rates remained at best 20%.

Conclusion: In early 2006, Paediatric Oncology Group- Singapore, a joint effort between NUH and KKWCH Paediatric Oncology and its various disciplines formed a Solid Tumour Committee. Discussion and collaborative analysis are being carried out to formulate a standardised protocol for the evaluation and treatment of children with neuroblastoma.

MP 071

Characteristics and Presentation of Patients with Acute ST-Segment Elevation Myocardial Infarction (STEMI): Is There a Gender Difference?

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Aim: The diagnosis of patients with myocardial infarction (MI) continues to pose a significant challenge to many Emergency Departments (ED). This study aimed to study if differences exist in the characteristics and presenting symptoms between male and female patients with ST-segment elevation myocardial infarcts.

Methods: A retrospective chart review of patients with a diagnosis of ST-segment elevation myocardial infarct was done for patients admitted via our ED from July 1, 2003 to June 30, 2004. Patient characteristics, presenting complaints and risk factors for coronary artery disease were recorded. The data was analysed using SPSS 13.0.

Results: Five hundred and forty-eight patients were discharged with a diagnosis of ST-segment elevation myocardial infarct during the study period (402 male, 146 female). The mean age of female and male ST-segment elevation myocardial infarct patients was 72.5 and 58.9 years respectively. The mean difference was 13.6 years (95% CI: 11.2-15.9). Out of the male patients, 77.9% presented with a chief complaint of chest pain; this was the case for only 50.7% of the female patients ($P < 0.001$). Forty-seven point eight per cent of male and 22.6% of female patients presented with a complaint of diaphoresis ($P < 0.001$). Female patients had significantly higher rates of diabetes (47.3% vs 30.1%) and hypertension (63.7% vs 46%) compared to males. Smoking was a significant risk factor amongst male patients (54.7%) but only 7.5% of female patients were found to be smokers ($P < 0.001$).

Conclusion: There are differences amongst female and male ST-segment elevation myocardial infarct patients. It is essential that the Emergency Department educate its staff to understand these differences and put in place work processes to overcome these potential pitfalls.

MP 072

Validation of Transcranial Doppler with CT Angiography in Cerebral Ischemia: A Preliminary Experience in Singapore

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Aim: Transcranial Doppler (TCD) is an established tool for the non-invasive assessment of cerebral blood flow. Since TCD results vary with the skills and experience of the sonographer, it requires validation against contrast angiography. We evaluated the diagnostic accuracy of TCD against CT angiography (CTA) and the feasibility of the latter as an additional screening tool in our acute ischaemic stroke patients.

Methods: Our stroke unit manages about 700 patients annually. Acute stroke patients undergo TCD for vascular assessment of major arteries of circle of Willis. Randomly selected acute stroke patients with significant stenosis on TCD underwent high-resolution cranial CTA with multidetector helical-scanner. CTA was performed within 24 hours of TCD and images were interpreted by a neuroradiologist blinded to the TCD findings. An independent neurosonologist re-evaluated TCD if the CTA findings were contradictory. Additional information by either modality were also noted.

Results: Twelve patients (8 men, mean age 60 ± 15 years) with cerebral ischemia and moderate ($>50\%$) stenosis in ≥ 1 large intracranial arterial segments on routine TCD were evaluated by CTA. Compared with 15 segments of significant stenosis on CTA, TCD showed 11 true-positive, 5 false-negative and 3 false-positive results (Sensitivity: 68.8%, Positive Predictive Value: 78.6%). In 3 cases, TCD showed findings complimentary to CTA (real-time embolisation, collateral flow patterns, evidence of distal-M2 branch occlusion).

Conclusion: TCD in our neurovascular laboratory shows a satisfactory agreement with cranial CTA in evaluating patients with cerebral ischemia. TCD can provide additional real-time dynamic findings complimentary to information provided by CTA.

MP 073

Progressive, Guttate and Confluent Leucoderma of the Limbs: A Distinct Pigmentary Disorder?

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Aim: Acquired depigmented and hypopigmented macules can have a varied aetiology. The first author has observed a distinctive type of progressive macular hypopigmentation, particularly on the legs, without any preceding injury or inflammatory dermatosis, occurring in dark-skinned Asians. Often the disease onset is in the 3rd or 4th decade of life. There is often no sexual predilection. These lesions do not resemble idiopathic guttate hypomelanosis, post-inflammatory hypopigmentation, arsenical dyspigmentation, vitiligo, leprosy, punctate leucoderma, dyschromatosis symmetrica hereditaria or leucoderma associated with cutaneous amyloidosis.

Methods: We report a case of a 28-year-old Indian man who presented with slowly progressive, asymptomatic, hypopigmented macules on the legs of 1 year's duration, varying from 2 mm to 5 mm

in size. Some lesions were coalescent, while most were discrete. There were no corresponding scars or sensory impairment. Shins were the most affected. There was no history of using skin lightening products. He had no other relevant dermatological or medical history and there was no family history of similar lesions.

Results: Skin biopsies were taken from a lesion and from normal skin. In the lesional skin there was a moderate superficial lymphocytic infiltrate with focal vacuolar alteration. There were no melanophages. The normal skin showed only a sparse superficial lymphocytic infiltrate. Massons Fontana stain revealed less intense melanisation of the basal cells and the epidermal cells compared to normal skin. The number of melanocytes in the lesional and the normal skin appeared to be similar. The exact aetiology of this condition is not known. There is no known treatment.

Conclusion: We propose the term "Progressive, guttate and confluent leucoderma of the limbs" for this disease condition.

MP 074

Triiodothyronine-predominant Graves' Disease: What is Known And What is Awaiting More Research into this Unusual and Challenging Form of Thyrotoxicosis

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Aim: Triiodothyronine (T3)-predominant Graves' disease is defined by persistently high serum T3 and normal/low thyroxine (T4) during thionamide therapy, and must be distinguished from T3-toxicosis. Such hyperthyroidism is profoundly more aggressive with a lower remission rate than thionamides and radioiodine therapy. Our case exemplifies how clinical observations synergise with subsequent research, which influences future bedside management. The objective was to characterise this phenotype and its impact on treatment options.

Methods: An 18-year-old Chinese female with T3-predominant Graves' disease was studied. We also explored a Medline literature search on its pathogenetic basis and therapeutic implications.

Results: Pre-thionamide: FT4 – 80 pmol/L with suppressed TSH. Post-thionamide: FT4 – 5.0 pmol/L, FT3 – 32 pmol/L. Despite 4 years of thionamides and most remarkably, 3 doses of radioiodine therapy, the patient remained thyrotoxic. It required total thyroidectomy and adjuvant radioiodine to achieve remission. T3-predominant Graves' disease constitutes about 2-10% of hyperthyroidism, with a prevalence of 2.3% in Singapore. Serum thyroid stimulating immunoglobulins and thyroperoxidase are higher in T3-predominant Graves' disease, with increased 5'-deiodinase activity associated with greater intrathyroidal T3:T4 production. Such data allowed us to postulate the likely mechanisms, including increased iodine turnover, low intra-thyroidal iodine pool and unique thyroperoxidase activity that could drive preferential T3 production and explain its refractoriness to standard treatment strategies.

Conclusion: Further research is necessary to unravel its nature. Since this form of Graves' disease is significantly resistant to medical and radioiodine therapy, early total thyroidectomy should be considered. This should translate into pragmatic guidelines for both physicians and endocrinologists.

MP 075

Increased Coronary Risk in Malay Patients with Kawasaki Disease – A 10-year Study

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Background and aims: Kawasaki disease is a common childhood multisystem inflammatory vasculitis of unknown aetiology with a predilection for the coronary vasculature. We assessed the risk of coronary artery involvement in a 10-year cohort of patients looking specifically for racial predispositions to outcome.

Methods: Information on all children with Kawasaki disease treated in our hospital between 1995 and 2004 were extracted from our ongoing standing database of Kawasaki disease patients. Demographic, laboratory and imaging data of patients from different racial groups were compared.

Results: There were 142 patients studied with males making up 60.6% (86/142) and females 39.4% (56/142). The racial distribution was Chinese 84.5% (120/142), Malays 14.1% (20/142) and Indians 1.4% (2/142). Indian patients were excluded from the final analyses due to insufficient numbers. The odds ratio for coronary artery involvement in Chinese compared to Malays was 0.41 (95% CI, 0.14 to 1.21; $P = 0.099$). The mean erythrocyte sedimentation rate on hospital admission for Malays was 89.50 mm/hour compared to 71.52 mm/hour for Chinese (mean difference: -17.98; 95% CI, -35.64 to -0.31; $P = 0.046$). There was no significant difference in the duration of fever prior to admission and on admission leucocyte counts and C-reactive protein levels between the racial groups.

Conclusion: Our study suggests that Malay children may tend towards a more florid inflammatory activation during acute Kawasaki disease compared to Chinese children, with a consequent higher risk of coronary artery involvement.

MP 076

Adjuvant Effects of Heat-Killed Wildtype Lactobacillus Casei on Allergen Immunotherapy in an Allergy Mouse Model

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Aim: Probiotics, like lactobacilli, have been used as a management strategy for allergy diseases. Its effects on specific immunotherapy have not been previously studied in humans. The aim was to evaluate the possible adjuvant effects of probiotics on allergen-specific immunotherapy in an allergy mouse model.

Methods: C57BL/6 mice were pre-sensitised by epicutaneous patching with recombinant Der p2, and subsequently orally fed with either heat-killed wildtype *L. casei* (Lc) NaHCO₃ buffer for 5 weeks ($n = 6$ per group). All mice then received 2 subcutaneous (s.c.) immunisations of Der p2 to mimic allergen immunotherapy, followed by aerosol challenge with Der p2 a week later.

Results: The Lc fed Der p 2 sensitised mice showed significantly lower Der p 2 specific-IgE and IgG1 after s.c. immunisations and airway challenge compared to the NaHCO₃ buffer control group. Spleen T-cells and mesenteric lymph node (MLN) cells of the Lc fed mice showed suppression of Th-2 (IL-5, IL-13, IL-10, IL-4) and pro-inflammatory (TNF- β 1 cytokines), with an increase in TGF- β 1 production in MLN cells. In addition, these Lc-fed mice, but not the controls, showed attenuated lung inflammation as demonstrated by the significantly reduced lung histopathology and total cell count in BALF. These results suggest that combined administration of the heat-killed *L. casei* and allergen could effectively down-regulate the pre-existing Th-2 allergic responses.

Conclusion: Probiotics such as *L. casei* have the intrinsic adjuvancity and immunomodulatory properties that could potentially be exploited to improve the efficacy of allergen-specific immunotherapy for allergic respiratory diseases.

MP 077

Analyses of Pim-1 Over-expression in Patients with Colorectal Adenocarcinoma

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Aim: The oncogene kinase, Pim-1, has been implicated in the development of acute leukaemias, lymphomas and prostate cancer. We sought to determine Pim-1 expression in colorectal cancer (CRC) and evaluate the association between Pim-1 expression and cell survival, proliferation, differentiation and tumourigenesis.

Methods: Patients with CRC diagnosed from 1997-1998 were selected. Immunohistochemistry was used to determine the expression of biomarkers. The association between Pim-1 expression and patient demographics, histopathologic features and relevant pathologic molecular markers was assessed.

Results: Eighty-nine cases were evaluated. The median age was 66 years (range 29-89), and 43 (48%) were male. The tumour was located in the colon in 67 patients (75%) and in the rectum in 22 (25%). The AJCC stage was I (7.9%), II (37.1%), III (27.0%), IV (24.7%) and unknown (3.4%). Pim-1 overexpression was seen in 15 (17%) cases. The frequency of Pim-1 expression increased with increasing tumour stage: T1 (0%), T2 (0%), T3 (16%), T4 (50%) ($P = 0.07$) whilst overexpression of Pim-1 was seen in 20% of tumours without lympho-vascular invasion (LVI) and 0% in tumours with LVI ($P = 0.06$). There was no significant association between the Pim-1 expression and gender, patient age, tumour location, lymph node metastasis, distant metastasis, tumour differentiation, NF-KB expression, p53 expression and Ki-67 expression.

Conclusion: There is a possibility that Pim-1 is overexpressed in tumours with more advanced T stage, suggesting that upregulation of Pim-1 may play a role in tumour invasion. This finding is limited by the small sample size. Further investigation of the role of Pim-1 in CRC is warranted.

MP 078

Neonatal Screening with Tandem Mass Spectrometry for Inborn Errors of Metabolism: Performance Characteristics

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Aim: From August 2006, newborns at the National University Hospital (NUH) were offered screening for inborn errors of metabolism (IEM) with tandem mass spectrometry (TMS). We aimed to determine the efficacy and efficiency of the programme during the first 8 months.

Methods: Parents were given information sheets which included screening charges, and screening was encouraged by the neonatologist. Screening was done >20 hours after feeding was started. Those declining were counselled and persuaded to reconsider. Capillary blood was spotted onto a filter paper card and sent to the laboratory the next day to determine amino acid and acylcarnitine profiles. Assays were run daily and retesting criteria were <1 or >99 centile of the reference range. Abnormal values were communicated to the doctor by phone, parents were informed and the infant was retested (after a 2 hour fast) as soon as possible and at no extra charge. All information was obtained from a prospectively maintained log of the screening process.

Results: During this period, 1,532 infants were born and 969 (63.2%) were screened. Three specimens (0.3%) were lost in transit; there were no losses after changing to a batched dispatch. Sixteen (1.7%) were retested and none had an IEM. A suspected heterozygote for carnitine deficiency is being investigated. Other rates: screened <24 hours of age: 4.1%, screened >72 hours: 12%, rejected specimens none, retesting within 3 days of notification: 100%, specificity and negative predictive value: 100%.

Conclusion: The programme has performed very well. An enquiry into the low screening rate is needed for improvement.

MP 079

Treatment of Paediatric Patients with Juvenile Myoclonic Epilepsy using Low Dose Valproic Acid

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Aim: The aim of this study was to evaluate the efficacy of low dose valproic acid (VPA) in the treatment of paediatric patients with juvenile myoclonic epilepsy (JME).

Methods: We reviewed the electroencephalograph (EEG) and clinical records of patients managed in our institution from 2000 to 2006, who had clinical seizures and EEG findings consistent with a diagnosis of JME.

Results: We had 29 patients, 16 females and 13 males, aged 8 to 16 years at the time of diagnosis. The presenting symptoms were generalised tonic-clonic (GTC) seizures in 17 patients (59%), myoclonic jerks in 5 patients (17%), myoclonic jerks and GTC seizures in 5 patients (17%) and generalised clonic seizures in 2 patients (7%). All the patients were treated with VPA except for 2, who had possible drug allergy. Twenty-six patients (96%) were seizure-free on a low dose of VPA (≤ 30 mg/kg/day). Only 1 patient

required 2 antiepileptic drugs, VPA and lamotrigine to achieve clinical response.

Conclusion: JME is fairly easily controlled using low dose VPA monotherapy for the majority of our patients, achieving a seizure free period of at least 2 years. Our experience is similar to previous reports.

MP 080

Audit of the Singapore Tuberculosis Control Unit Contact Screening Programme 2000 – 2004

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Aim: This study aimed to audit the performance of the Singapore TB Control Unit (TBCU) contact screening programme for the years 2000 to 2004.

Methods: Close household/family and workplace contacts of sputum bacteriologically positive TB cases identified via index case interview were invited for screening at the TBCU, while contacts in the institutionalised setting (e.g. prisons, nursing homes, Institute of Mental Health) were screened on an outreach basis. Asymptomatic contacts underwent a tuberculin skin testing protocol. Preventive therapy (PT) was recommended to those deemed to have latent TB infection. The following indicators were evaluated: (1) proportion of sputum smear-positive index cases with at least one contact screened, (2) proportion of contacts who completed their screening protocol, (3) proportion of contacts who accepted the recommended PT and (4) the PT completion rate.

Results: Over the years 2000 to 2004, the proportion of smear-positive index cases with at least one contact screened ranged between 64% and 73%. The percentage of contacts who completed their screening protocol rose from 74% to 92%. The PT acceptance rate ranged between 93% and 97%, while the PT completion rate ranged between 74% and 80%.

Conclusion: Our audit revealed that 30% or more of smear-positive index cases did not have any contact screened. This aspect of the programme's performance needs to be addressed and improved. There was, however, a heartening improvement in the proportion of contacts who completed their screening protocol, and consistently high PT acceptance and completion rates over the 5-year audit period.

MP 081

Cyclosporine Nephrotoxicity in Patients with Nephrotic Syndrome

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Aim: Cyclosporine is a calcineurin inhibitor which has played an important role in the treatment of steroid-resistant nephrotic syndrome and various glomerulonephritides especially for its steroid-sparing effect. However, it acts as a double-edged sword because of its nephrotoxicity. This study aimed to determine the prevalence of cyclosporine nephrotoxicity and identify predisposing factors in patients with nephrotic syndrome seen at The Children's Medical Institute, National University Hospital, over the past 10 years.

Methods: A retrospective review of all renal biopsies done on patients with nephrotic syndrome taking cyclosporine (median age at

diagnosis of 3.42 years, range 0.3 to 15.1 years) between January 1993 and May 2007 was conducted. Factors studied included renal histology, baseline serum creatinine at the start of treatment and duration on cyclosporine therapy. Binary logistic regression was performed with cyclosporine nephrotoxicity as the dependent factor.

Results: Twenty-six patients with nephrotic syndrome on cyclosporine underwent at least 2 renal biopsies to monitor for cyclosporine nephrotoxicity (median age at start of cyclosporine was 7.1 years, range 1.9 to 19.7 years). Mean duration of cyclosporine therapy to renal biopsy was 4.14 years. Six patients (23.1%) had evidence of cyclosporine nephrotoxicity on renal biopsy. Logistic regression analysis showed a significant association of cyclosporine toxicity with duration of cyclosporine therapy (1.75, 95% CI 1.077 to 2.831) ($P=0.024$). No association was noted between the renal histology of focal segmental glomerulosclerosis and cyclosporine nephrotoxicity ($P=0.391$).

Conclusion: Cyclosporine nephrotoxicity occurred in 23.1% of patients on cyclosporine, and this correlated significantly with the duration of treatment.

MP 082

Peripheral T-Cell Lymphoma with Large B-Cells – A Study of 18 Cases

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Aim: The objective of this study was to review 18 cases of peripheral T-cell lymphoma (PTCL) with large B-cells (LBCs).

Methods: All cases were reviewed histologically, with standard immunoperoxidases and by polymerase chain reaction (PCR) analyses for clonality of T-cell receptor (*TCR*) and immunoglobulin heavy chain (*IgH*) gene rearrangements. *In-situ* hybridization for Epstein-Barr virus (EBV)-encoded RNA (EBER) was performed on selected cases.

Results: Twelve cases (67%) yielded monoclonal *TCR* gene rearrangements. Eight cases (44%) were angioimmunoblastic, inclusive of the only 2 (11%) that showed both *TCR* and *IgH* clonality, the latter being transient in one case, which had hyperplastic germinal centres. One case each of AITL with LBC recurred as either a LBC lymphoma (LBCL) or Hodgkin lymphoma (HL), but neither had demonstrable *IgH* clonality initially. Four other cases (17%) had originally been misinterpreted as HL, including 1 with a discordant diagnosis of nodal LBCL. In 3 cases involving marrow, the LBCs were unstable, with phenotypic modulation from CD20+/CD30- to CD20-/CD30+ in 2 cases, and disappearance without anti-CD20 therapy in the third, clinching the primary pathology as PTCL despite a lack of demonstrable monoclonal *TCR* gene rearrangements. Ten (71%) out of 14 cases tested were EBV-positive.

Conclusion: In some PTCLs (not necessarily angioimmunoblastic), LBCs, often EBV-driven and sometimes resembling Reed-Sternberg cells, may proliferate due to release from T-cell immunosurveillance. These LBCs may subsequently disappear, undergo phenotypic change or recur as full-fledged LBCL or even HL. *IgH* clonality may not be detectable *ab initio*, and even if it is, may not portend recurrence as LBCL.

MP 083

The Association of Common Polymorphisms in Genes Involved in P53 Pathway and Drug Metabolism with Lung Cancer Patients

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Aim: The uridine diphosphoglucuronosyltransferases (UGTs) belong to a superfamily of phase II metabolising enzymes responsible for detoxifying numerous endobiotics and xenobiotics including carcinogens such as benzo[a]pyrene from cigarette smoking. UGT1A6 and UGT2B7 enzymes are preferentially expressed in lung tissue. The p53 pathway plays a crucial role in preventing carcinogenesis. We hypothesised those common polymorphisms in UGT1A6, UGT2B7 and p53 genes modulate pathways of lung carcinogenesis and lung cancer susceptibility. The aim of the study was to (1) characterise the allelic distribution of UGT1A6, UGT2B7, p53, p16 and MDM2 in Chinese, Malay and Indian populations; (2) determine the association of polymorphisms with lung cancer in Chinese patients.

Methods: We designed a case-control study comprised of 124 healthy volunteers (62 Chinese, 30 Indians and 29 Malays) in the control group and 49 lung cancer patients in the case group. The control group was used to characterise population allelic frequencies. Candidate genes with frequencies $\geq 1\%$ were selected for further evaluation in lung cancer patients. A total of 8 UGT1A6 polymorphisms, 10 UGT2B7 polymorphisms and 8 polymorphisms in TP53 pathway were genotyped. Genotypes were determined by PCR direct-, pyro-sequencing and restriction fragment length polymorphism (RFLP) approaches.

Results: There were significant inter-ethnic differences in the allelic distribution. We observed an increased lung cancer risk associated with the p53 (Pro47Ser) polymorphism (OR 18.7, $P < 0.001$).

Conclusion: p53 polymorphism may confer an increased lung cancer risk in the Chinese population.

MP 084

“Clonality” of Discordant Lineage in Lymphoproliferative Disorders – Possible Interpretations of a Molecular Diagnostic Pitfall

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Aim: The objective of this study was to highlight cases of lymphoproliferative disorder with discordance in lineage by genotypic and phenotypic analysis.

Methods: Three cases of B-cell lymphoma (BCL) (one hepatic marginal zone lymphoma arising in antimitochondrial antibody-positive primary biliary cirrhosis, one chronic lymphocytic leukemia presenting with cutaneous vasculitis, one Epstein-Barr virus [EBV]-

positive large B-cell lymphoma in a human immunodeficiency virus [HIV]-positive patient) and one of nasal-type NK/T-cell lymphoma presenting in the scalp were reviewed histologically, with standard immunoperoxidases, by polymerase chain reaction (PCR) analyses for clonality of *TCR* and *IgH* gene rearrangements and, in the last 2 cases, with *in-situ* hybridisation for EBV-encoded RNA.

Results: All 4 cases disclosed “clonal” peaks/bands of lineage dissimilar to their immuno-phenotype. Associated autoimmunity in the first 2 cases and HIV infection in the third raised the possibility of T-cell clonal dysregulation or repertoire restriction (RR), resulting in the detection of a discordant T-cell clone. Furthermore, in Cases 2 and 3, no concordant B-cell clone was detectable, attributable to poor consensus primer hybridisation resulting from *IgH* somatic mutations. In Case 4, preceding *IgH* monoclonality was detected in ocular aqueous humour, while the scalp biopsy yielded non-reproducible, oligoclonal *IgH* bands, consistent with either B-cell RR against EBV or an oligoclonal expansion of EBV-infected B-cells, in common with Case 3.

Conclusion: *Non-neoplastic* antigen receptor gene “clonality” may be detected by PCR in the setting of autoimmunity, immunodeficiency or viral (particularly HIV or EBV) infection. This may result in apparent genotype-phenotype discordance, resulting in difficulties and pitfalls in interpretation.

MP 085

Successful Surgical Closure of a Photographically Documented Macular Hole of 30 Years Duration

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Aim: The aim of this study was to describe a case of successful surgical closure of a long-standing macular hole of 30 years duration.

Clinical Picture: A 62-year-old Chinese male was referred with bilateral visual impairment due to photographically documented full-thickness macular hole of 2 and 30 years duration in the right and left eye, respectively. The macular hole closed successfully after surgery in the right eye but the patient declined surgery in the left eye due to the uncertain surgical prognosis of the long-standing macular hole. He later developed a rhegmatogenous macula-on retinal detachment associated with a single peripheral retinal break in the left eye. The best-corrected visual acuity (BCVA) was 6/45. He underwent retinal reattachment surgery with pars plana vitrectomy and 14% perfluoropropane (C3F8) tamponade. In addition, he had peeling of the internal limiting membrane around the macular hole in an attempt to close the hole. Anatomical closure of the macular hole was noted at one-month postoperatively and subsequently confirmed by optical coherence tomography. However, the BCVA remained at 6/45 postoperatively due to atrophic changes in the fovea.

Conclusion: Long-standing full-thickness macular holes can successfully close with surgery and, to our knowledge, this case is the longest-standing macular hole that has been successfully closed.

MP 086

Prevalence of Metabolic Syndrome in a Patient Population Attending an Obesity Clinic in Alexandra Hospital

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Aim: This study aimed to determine the prevalence of metabolic syndrome in a patient population attending an Obesity Clinic in Alexandra Hospital.

Methods: A retrospective study was conducted on 3113 consecutive patients seen at the clinic between January 2002 and June 2007. The clinical parameters analysed were age, sex, ethnic group, BMI, blood pressure and waist circumference. Biochemical parameters measured included fasting blood glucose and lipid levels. The modified Asian criteria for diagnosing metabolic syndrome were used in this study.

Results: There were 1216 females (39.1%) and 1897 males (60.9%) in the study population. Mean age was 41 years. Mean BMI was 33.8. The ethnic distribution showed 59.7% were Chinese, 21.1% Malays, 15.1% Indians and 4.1% Others. 21.5% of the study population met the criteria for metabolic syndrome; 17.5% for Chinese (95% CI, 15.8-19.4), 29.5% for Malays (95% CI, 26.0-33.1), 24.9% for Indians (95% CI, 21.1-29.1), 26.0% for Others (95% CI, 18.6-34.5). Comparing to the Chinese: Malays: OR = 1.97 (95% CI, 1.6-2.4), $P < 0.001$. Indians: OR = 1.56 (95% CI, 1.2-2.0), $P < 0.001$, Others: OR = 1.65 (95% CI, 1.1-2.5), $P = 0.018$. Metabolic syndrome according to sex: Females: 22.7% (95% CI, 20.4-25.2), Males: 21.0% (95% CI, 19.2-22.9), $P = 0.255$. Metabolic syndrome according to age group (in years): Up to 29 years: 13.3% (95% CI, 10.2-16.9), 30-39 years: 15.9% (95% CI, 13.6-18.4), 40-49 years: 25.9% (95% CI, 23.1-28.8), 50-59 years: 29.4% (95% CI, 25.9-33.2), 60 years & above: 24.2% (95% CI, 16.9-32.8).

Conclusion: The prevalence of metabolic syndrome in the study population is slightly higher than that reported previously for the general population in Singapore. No significant difference in metabolic syndrome was detected between men and women. The differences

between Chinese and the other 2 ethnic groups were highly significant ($P < 0.001$). The prevalence of metabolic syndrome increased with age, from 13.3% in those aged 17-29 years to 24.2% in those aged 60 years and above.

MP 087

Retrospective Review of Paediatric Head and Neck Tumours in a Tertiary Children's Hospital

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Aim: Paediatric tumours commonly present primarily in the head and neck. The clinical aspects of diagnosis and management of head and neck tumours are reviewed. The diagnosis and management of the various types of head and neck benign tumours and cancers in children are elaborated upon. The cases within a 10-year period (1997-2007) seen at KKWCH are also presented.

Methods: The cases were selected from the medical records of the Department of Otolaryngology of Kandang Kerbau Women's and Children's Hospital (KKWCH) from 1997-2007. All patients were of ages 0-16. The cases were chosen based on the criterion of primary tumour site in the head and neck region, including patients with systemic malignancies initially presenting in the head and neck.

Results: Out of 20 cases presented, 10 were benign tumours and were managed successfully without recurrence with surgical excision. The remaining 10 were malignant and required chemotherapy. Of the patients with malignant tumour, 3 were diagnosed only at a late stage with poor prognosis and were later put on palliative management while the rest achieved remission and are on follow-up.

Conclusion: Although neoplasia in children are rare, a firm, non-tender neck mass present for several weeks despite antibiotic therapy in a child should be considered a neoplasm until proven otherwise. This is best done by an excisional biopsy, which can be both therapeutic and diagnostic.

NUR 001

Predictive Factors Influencing Safe Discharge Time and Complications for Patients Receiving Moderate Sedation Undergoing Gastrointestinal Endoscope Procedure

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Aim: The ability to identify the factors that influence recovery time will facilitate and influence the nurse's decision on the safe discharge of the patient from the Endoscopy Department. This study aims to identify the predictive factors that influence recovery time for patients receiving conscious sedation undergoing gastrointestinal endoscope procedures.

Methodology: A total of 200 adult outpatients for gastrointestinal endoscope procedures under conscious sedation were recruited from July to August 2007. A prospective observational study was carried out on all cognitively intact and ambulatory patients except those with language barriers, hearing and speech impairment. Patients were assessed before and after the endoscope procedure and data recorded. Proportional Cox regression model was used to analyse the discharge time, based on demographics, relevant medical history and vital signs (heart rate, blood pressure, respiration rate and oxygen saturation). In addition, the level of patients' consciousness, their tolerance to the procedure (e.g., pain) and Post Anaesthesia Discharge Score (PAD) scores were monitored.

Results: Mean discharge time was 119 minutes with 65.5% (n = 131) of the patients discharged before 120 minutes. Predictors did not influence recovery and discharge time. Two patients who developed complications were not associated with early discharge. Patients who attained a PAD score of 9 or 10 at a range of 60 minutes to 100 minutes could be safely discharged from the Endoscopy Department.

Conclusion: Discharge of the patient from the Endoscopy Centre was not influenced by the predictive factors. Nurses can safely discharge patients with moderate sedation after 60 minutes of recovery time.

NUR 002

Diabetes Patient Education Programme: Using Evaluation Of Participants' Knowledge Score to Guide the Development of Programme Content

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Aim: We recently initiated a group diabetes self-management educational programme: Skills for Life – Diabetes Management (Basic) (SFL) for patients from our diabetes centre. To guide the further development of program content, we used a validated diabetes knowledge test (DKT) that evaluates understanding of key aspects of diabetes and diabetes self-management among participants.

Methods: A prospective study was done on all the participants attending SFL from November 2006 to May 2007. SFL was conducted by a multidisciplinary team of a diabetes nurse educator, dietitian and physiotherapist over two 2-hour sessions with groups of 8 to 10 participants. DKT derived from the Michigan Diabetes Research and Training Centre (Cronbach's alpha ≥ 0.70) was administered immediately before and upon completion of SFL. This test was used to provide knowledge score measurements and had earlier been adapted for local use. Paired t-test was used to compare pre and post

SFL results for each of 16 questions in the DKT. These were analysed to help guide further content development of SFL.

Results: The DKT revealed a significant improvement in total knowledge (mean score 9.2 vs 10.7, $P > 0.002$) of the 58 participants after attending SFL. The following are the pre vs post mean difference of each question:

- Q1. The diabetes diet is: 60.3 vs 67.2 ($P = 0.35$)
- Q2. Which of the following is highest in carbohydrates: 79.3 vs 74.1 ($P = 0.49$)
- Q3. Which of the following is highest in fat: 60.3 vs 67.2 ($P = 0.37$)
- Q4. Which of the following is a "free" food: 29.3 vs 31.0 ($P = 0.79$)
- Q5. Glycated haemoglobin (HbA1c) is a test that is a measure of your average blood glucose for the past: 48.3 vs 60.3 ($P = 0.10$)
- Q6. Which is the best method for testing blood glucose: 72.4 vs 81.0 ($P = 0.16$)
- Q7. What effect does unsweetened fruit juice have on blood glucose: 29.3 vs 31.0 ($P = 0.78$)
- Q8. Which should not be used to treat low blood glucose: 53.4 vs 62.1 ($P = 0.30$)
- Q9. For a person in good control, what effect does exercise have on blood glucose: 82.8 vs 94.8 ($P = 0.007$)
- Q10. Infection is likely to cause: 65.5 vs 84.5 ($P = 0.01$)
- Q11. The best way to take care of your feet is to: 84.5 vs 84.5 ($P = 1.0$)
- Q12. Eating food lower in fat decreases your risk for: 79.3 vs 84.5 ($P = 0.44$)
- Q13. Which of the following is usually not associated with diabetes: 63.8 vs 72.4 ($P = 0.25$)
- Q14. Numbness and tingling may be symptoms of: 69.0 vs 77.6 ($P = 0.19$)
- Q15. Signs of ketoacidosis include: 15.5 vs 22.4 ($P = 0.35$)
- Q16. If you are sick with flu, which of the following changes should you make: 60.3 vs 72.4 ($P = 0.12$)

The lowest pre and post SFL scores were seen in questions related to "free food", unsweetened fruit juice and signs of ketoacidosis. There was significant test-score improvement on the effect of exercise ($P = 0.007$) and the effect of infection on blood glucose ($P = 0.01$).

Conclusion: Low post-SFL scores in questions evaluating understanding of the self-management component related to free food as well as on the impact of unsweetened fruit juice on blood glucose were conveyed to educators so that teaching activities to help participants strengthen their understanding in these aspects could be enhanced. We also intended to omit the question on ketoacidosis for participants with type 2 diabetes. Programme evaluation, though cumbersome, can be a very fruitful exercise as the results may be used to guide educators in the development and improvement of the programme content.

NUR 003

Reducing the Incidence of Aspiration among Patients during Hospitalisation

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Aim: Dysphagia is common in the elderly and is known to be an important risk factor in the development of aspiration pneumonia. It is associated with a mortality of 45% among hospitalised elderly patients. In January to August 2005, it was reported that patients had aspirated during their stay in Alexandra Hospital. Data showed that out of 13 cases that aspirated, 8 (62%) were fed orally, 4 (31%) were fed via nasogastric tube and 1 (7%) via percutaneous endoscopic gastrostomy. However, only 2 cases were referred to the speech

therapist, as they had poor swallowing reflexes. There was a pertinent need in our organisation to look into the causes of aspiration as this may lead to serious consequences.

Methods: To identify the root causes for aspiration, a fish bone diagram was used. The 80-20 rule showed that there was poor screening, lack of skills and a knowledge deficit among nurses and carers.

Results: A modified dysphagia screening test and the swallowing assessment were introduced. Caregiver training for feeding for nasogastric tube, percutaneous endoscopic gastrostomy and oral feeding was revised. Visual aids for the better understanding and retaining of information were created. The taping of the nasogastric tube was done using the bolster method.

Conclusion: With the introduction of Burke's Dysphagia Screening tool and the swallowing assessment and competency checklists for carers and nurses, there were nil cases of aspiration pneumonia in Alexandra Hospital.

NUR 004

A Systematic Review on the Necessity for a Hearing Screening at 9 Months Developmental Assessment Within the Primary Healthcare Setting

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Aim: The prevalence of hearing impairment among infants and preschool children is 4 in 1000 births in Singapore. The current clinical practice within the primary healthcare setting is to screen for hearing loss at 9 months developmental assessment. This study aims to determine the necessity for a hearing screening to be done at 9 months developmental assessment.

Methods: Relevant articles published from 1993 to 2006 were identified from the OVID, Thomson Gale, PubMed databases and search engines. Reference lists were also reviewed to identify additional articles. Searches were updated monthly throughout the review synthesis. A total of 11 articles were selected and reviewed.

Results: Studies have shown that hearing screening done before 3 months old resulted in better outcomes. It was found that children with early-identified hearing loss, who received appropriate intervention by the age of 6 months, had demonstrated significantly better language, speech and social emotional development. The accuracy of current screening methods such as high-risk indicators, universal newborn hearing screening (UNHS) using otoacoustic emissions (OAE) and automated auditory brainstem response (AABR) and distraction tests were discussed. The benefits and adverse effects from the absence of the 9 months hearing screening were debatable.

Conclusion: This review concluded that there was insufficient evidence to strongly support the discontinuation of hearing screening at 9 months, unless safety measures were in place to detect delayed onset of hearing loss.

NUR 005

Time Versus Event Related Sterility: Linen and Pouch Packaging Remaining Sterile over a Year of Storage and Handling

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Aim: This study aimed to test whether our routine handling and current storage conditions of sterilised packages allows for the practice of event-related sterility.

Methods: A quantitative stratified randomisation study was conducted with a simulated 600 samples of clean jeweller's dissecting forceps, packaged into 2 different packaging materials and stored in specific storage units. The samples were randomly retrieved from storage areas at periodic intervals and sent for microbial testing.

Results: Samples were randomly taken out in the first, third, sixth, ninth and twelfth month period. This is set as a protocol, accordingly to the types of materials used for packaging. The results showed that there were no contaminations of the samples over a 1-year period related either to time or the material for packaging used. Areas identified were according to the traffic movement within the environment. This suggests that regardless of time and handling, storage in the specific areas and the traffic pattern in the current work environment, the samples remained sterile. Thus clearly demonstrates that a sterile item can be kept sterile unless the package is damaged.

Conclusion: The benefits of this research allows for cost savings on materials used and manpower on the need to spend time re-sterilising a package. Furthermore, this allows the nursing personnel to spend less time checking on expiry dates, which can also be interpreted as less handling of the item. This allows the condition of the sterile package to be kept intact and sterile for an indefinite time. The cost benefit of this research outweighs the existing current practice by using the event-related sterility principles and an evidence-based approach to the change in managing sterile packages in our environment.

NUR 006

Discharge Within 24 hours after Lumbar Discectomy

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Aim: In the US, more than 90% of patients undergo lumbar discectomy on an outpatient basis. Our aim was to achieve similar results for our local patients undergoing lumbar discectomy over a 1-year period.

Methods: Using a clinical improvement process implementing patient and nurse education before and after surgery, we assessed the length of stay and cost savings after elective lumbar discectomy. Starting 1 January 2006, 31 patients (21 males, 10 females), 20 to 77 years of age were recruited.

Results: Thirty out of 31 patients (97%) were discharged within 24 hours with no unplanned readmission. Eighty-one per cent of patients reported more than 30% improvement in physical function 6 months after the surgery. The average pain score reduction was 70% 6 months after the surgery.

Conclusion: Our successful reduction in the length of hospital stay translated to average savings of \$70 (51%) per day per patient.

NUR 007

Impact of Nurses' Practice on Blood Wastage and Unsafe Transfusion

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Background: Lapses in the practice of blood transfusion can have grave consequences for patients. Incidents of blood ordered and not used or which cannot be used result in the blood having to be discarded. The wastage of blood is a serious issue that warrants attention as it deprives others who are in desperate need for the blood product.

Aim: This study intends to identify nurses' current knowledge and practice of blood transfusion that may result in wastage of blood and compromised blood transfusion.

Methods: The research design was a cross-sectional quantitative study. Fifteen true/false and 7 multiple choice questions were developed to test the knowledge and current practice of nurses who administer blood transfusions. Subsequent 1 week's data was collected to verify the actual practice of blood transfusion to patients.

Results: A total of 517 (79.5%) nurses responded and 629 transfusion records were verified. Wastage of blood could potentially be caused by practice in 239 (30%) cases where blood was not transfused within 30 minutes of arrival in the ward. Unsafe transfusion was caused by 69 (11%) packs of blood still being transfused more than 5 hours after being issued by the blood bank.

Conclusion: From the findings, delays in transfusion may result in blood wastage and possible transfusion of haemolysed and/or contaminated blood.

NUR 008

Study Surveillance of MRSA and Isolation of Patients to Reduce Nosocomial MRSA Infections

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Aim: This study aimed to reduce nosocomial MRSA infections. The study period was from 15 August 2005 to August 2006. Positive (infected/colonised) MRSA cases were identified upon admission through nasal surveillance culture for MRSA, and patients with chronic wound and dermatitis were also included.

Methods: Laboratory screening of swabs for MRSA with Agar plate with six mg/L Oxacillin was conducted. Briefing of the MRSA study to nurses by Infection Control Nurses (ICNs) was done. They introduced the MRSA FREE DAYS' which had been uploaded to the Intranet Resource, with monthly updates to the individual ward. An MRSA study monitoring form was implemented for staff to enter the patient's information. The ICNs tracked all MRSA cases via the Laboratory Information System (LIS) and ensured that every positive patient was isolated until cleared or discharged. Hand hygiene, contact transmission precautions and environmental disinfection procedures were strictly adhered to.

Results: In total, 3435 swabs were screened during the study period. The nosocomial infection rate before the study was 0.29 cases/1000

patient days (18 cases). Six months into the study the rate was 0.17 cases/1000 patient days (9 cases). The higher incidence for the last 6 months inflated the whole study period with 0.30/1000 patient days (32 cases), due to insufficient single rooms and MRSA positive patients cohorted in cubicles

Conclusion: Our study indicated the importance of a 'Search and Destroy' policy. Even a partial application of 'search and destroy' guidelines can be effective with strict contact precautions, hand hygiene, use of gloves and gowns and disinfection of the environment.

Successful cohort isolation is not possible with open wards and the sharing of toilets and baths. Lack of physical separation between colonised and non-colonised patients make it difficult to avoid transmission.

NUR 009

Management of Caregiver Stress among Caregivers of Patients Admitted to Alexandra Hospital, Geriatric Unit

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Aim: Research has shown that caregivers experiencing burnout have limitations in their social life, poor health and lack of an outlook on caring. It is pertinent in the Geriatric Unit to identify strategies to minimise caregiver stress. The geriatric trained nurses used the Hartford Foundation's Geriatric assessments caregiver stress index to assess caregivers.

Methods: Caregivers were observed by trained geriatric nurses for signs of caregiver stress. They were assessed using the Caregiver Stress Index (CSI). The CSI is a tool used to identify families with potential caregiving concerns. It is a 13-question tool that measures strain related to care provision. The instrument can be used to assess individuals of any age who have assumed the role of caregiver for an older adult.

Results: The caregivers of 13 patients who were assessed using the CSI emphasised that they were stressed by restrictions on their social life. The stresses were diminished when placements were found for their loved ones. Four of the patients received nursing home placements, 2 received access to day care services, 3 were admitted to a nursing home for a period of 2 months so that the caregivers received some form of respite. Four caregivers did not want placements but wanted someone to talk to.

Conclusion: The CSI identified effective strategies in the reduction of caregiver stress and also detected a high level of stress among caregivers over a period of time, so that they would be targeted for assistance. This will bring about the introduction of the caregiver support group

NUR 010

Hand Hygiene Compliance by Healthcare Workers in an Acute Hospital

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Aim: Hand hygiene is critical in preventing cross infections in hospitals. In June 2004, our observational study revealed that the hand hygiene compliance among healthcare workers (HCWs) was low in Tan Tock Seng Hospital (TTSH). Since then, various events and campaigns have been implemented to promote hand hygiene. A follow-up study done in September 2006 showed a significant

increase in hand hygiene practices. This study evaluates the sustainability of hand hygiene compliance among HCWs in May 2007.

Methods: An observational study was conducted in May 2007. Three hundred and thirty HCWs in 30 wards were observed during 2-hour periods during the morning and afternoon shifts for 2 weeks. Social handwashing (SHW) is defined as washing the hands with or without antiseptic solution, but not in accordance with hospital guidelines. Proper hand disinfection (PHD) is defined as either washing or rubbing the hands with an antiseptic solution, in accordance with hospital guidelines.

Results: Overall hand hygiene compliance among HCWs after patient contact has dropped from 73.6% (2006) to 64.2% (2007). The decrease in hand hygiene practices can be seen across all groups of HCWs, with enrolled nurses/healthcare attendants (EN/HCA) showing the most significant decrease. However, among the hand hygiene practices, there were slight increases in PHD in the staff nurse group from 24.2% (2006) to 26.7% (2007) and allied health group from 28.3% (2006) to 30% (2007).

Conclusion: There was a significant increase in hand hygiene practices in 2006 as compared to 2004. This may be due to the events and campaigns implemented in 2004-2006. However, there was a decrease of about 10% in hand hygiene practices in 2007 as compared to 2006. This may be due to HCWs 'getting used' to the events or campaigns since they were introduced 2 years earlier. In addition, there were no new events or campaigns introduced after September 2006. Hence, in order to sustain improvements in compliance with hand hygiene practices, there is a need to include hand hygiene as one of the annual campaign activities.

NUR 011

Chest Pain Triage Protocol – A Useful Tool in a Primary Healthcare Setting

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Aim: The aim of this study was to evaluate the effectiveness of a chest pain triage protocol to expedite medical interventions in patients with suspected acute coronary syndromes.

Methods: A pilot project was conducted in Clementi Polyclinic. A total of 21 patients were recruited from 16 June to 5 September 2006. Patients with complaints of chest pain were referred to the triage nurse in the treatment room. The nurse assessed patients' general condition and intensity of chest pain using the chest pain triage questionnaire (CPTQ). Based on the assessment, the patients would then be assigned either a priority or a walk-in queue number for the doctor's consultation. Patients' case notes were reviewed to ascertain the final diagnosis.

Results: This pilot project found that 100% of patients with complaints of chest pain had their ECG done. Out of these, 33% were normal, 62% were abnormal and 5% were borderline. We do not have historical data on the average time taken to detect abnormal ECG and normal ECG. This project found that the average time taken to detect patients with abnormal ECG was 26 minutes. On the other hand, it took 48 minutes for patients with normal ECG. There were 21 patients triaged, 43% were referred to the Accident and Emergency Department, 52% were discharged from the polyclinic and 5% were referred to the Specialist Outpatient Clinic.

Conclusion: The implementation of a chest pain triage protocol in Clementi Polyclinic has demonstrated its effectiveness in expediting

medical interventions for patients with suspected acute coronary syndromes. The CPTQ has guided the nurses in their assessment and clinical decision during the triage process for medical intervention.

NUR 012

Effectiveness of Teaching Home-use Rectal Diazepam and its Efficacy

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Aim: Some patients with epilepsy are affected by acute repetitive or serial seizures that last several minutes or hours. Benzodiazepines are the drugs of choice for the treatment of acute repetitive seizures. They are safe and the results are instantaneous. However, oral administration is often difficult in a patient who is actively convulsing. The purpose of this study is to assess the effectiveness of teaching home administration of rectal diazepam for acute repetitive seizures by the paediatric epilepsy nurse to caregivers, and the efficacy of the rectal diazepam administered.

Methods: This prospective study included 127 patients aged 0 to 15 years old who had epileptic seizures or febrile seizures from March 2006 to May 2007. Caregivers were taught how to identify repetitive seizures, administer diazepam rectally and monitor respiration, seizure activity and adverse events. Of the 127 patients, those who were readmitted to children's emergency at National University Hospital were recruited into the study.

Results: Twenty-five patients were reviewed at the children's emergency for seizure recurrence, 22 of them (88%) had rectal diazepam administered at home and 3 of them (12%) did not receive it as the seizure stopped spontaneously within 5 minutes.

Of the 22 patients who had rectal diazepam, the seizure stopped after the administration of rectal diazepam in 16 of them (72%); 6 of the patients (27%) required further intravenous treatment in the emergency room or after admission to the hospital.

Conclusion: The education provided by the paediatric epilepsy nurse on home administration of rectal diazepam is effective. Rectal diazepam is safe and effective for acute repetitive seizures and can be administered by caregivers who are trained. It is also a reassuring safety net for patients who are prone to status epilepticus and who travel or live far away from a hospital.

NUR 013

Burning Platform for Change: A CQI Approach to Improve the Continuous Ambulatory Peritoneal Dialysis (CAPD) Programme in a Tertiary Teaching University Hospital

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Aim: The National University Hospital (NUH) renal nurses share a vision of providing Renal Replacement Therapy that is faster, better, cheaper but safer (FBCS), designed from the patient's perspective and grounded in science. An improved model, which seeks to achieve this, has been implemented for the Continuous Ambulatory Peritoneal Dialysis (CAPD) programme. It aims to help improve patient safety, cost savings for patients and the institution and customer satisfaction.

Methods: The Continuous Quality Improvement (CQI) principles

and tools were used to identify the gaps and obstacles in the “as-is” CAPD model. The challenges posed set the context to design and implement the “future-state” model: a CAPD curriculum and training of all nurses (registered and enrolled) in medical wards, roster scheduling for on-call CAPD ward nurses, logistics co-ordination and partnership with external suppliers.

Results: Since the inception of the future-state model, from November 2006 to April 2007, a median of 67% nurses were trained. There were annual savings of \$10,000 for the institution and monthly savings of \$40 per patient day/ward. With the improved model, 82% of all inpatients surveyed reported satisfaction. There was zero reported incidence of inpatient peritonitis.

Conclusion: Using the CQI methodology, a healthcare systems performance improvement science can help design and implement an economical and “future-state” model that provides quality, cost-effective and efficient care to CAPD patients. The promising results give the impetus to spread and implement this model hospital-wide.

NUR 014

Research Utilisation: Using EBN Knowledge to Prevent Constipation Related Urinary Retention (RU)

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Aim: In the National University Hospital (NUH), a retrospective 1-year survey was done on 100 elderly patients referred to Geriatric Services. Forty per cent were found to have constipation related urinary retention. This study aimed to achieve 0 incidence of constipation related urinary retention in patients above 65 years of age in Ward 64 within 6 months.

Methods: Using the quality improvement methodology, the multidisciplinary healthcare professional team studied the patient care workflow to identify potential and/or actual barriers for implementation of evidence-based “constipation and associated complications detection” bundle:

- structured questionnaire and Bristol Stool Scale Form to elicit accurate bowel history and pattern
- revised Clinical Chart
- use of bladder scanner to detect acute retention of urine (ARU)
- bowel management programme

Results: Data analyses showed that 19% of patients who met the admission criteria were identified as constipated. Among this group of patients, 17% were diagnosed with ARU. There were zero incidents of recurrent constipation and/or ARU caused by constipation following bowel management. A cost comparison analysis between the use of a bladder scanner and in-out urinary catheterisations was done. There would be annual hospital savings of \$2262.40 from manpower and consumables costs. The payback period for the investment on the equipment is 1.8 years. Patients stand to save 60% of their hospitalisation bills.

PC 001

Mental Healthcare Management in the Primary Sector – A Collaboration with General Practitioners (GPs)

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Aim: Mental disorders are recognized as a major public health problem worldwide which place an enormous burden on health services. Patients on treatment in the hospitals are largely managed by specialists either in the restructured hospitals or private practice with minimal involvement of GPs. Yet, there are many patients with chronic mental illnesses who are stable, requiring maintenance medications and who are best managed in the community. The aim of our programme is to right-site a selected group of patients to the care of the primary sector for follow-up management.

Methods: GPs were given appropriate training and support to help them manage patients with mental illnesses in their clinics. The training involved in-depth, comprehensive training on mental illness, providing the GPs with the skills necessary to manage the stable patients within the community. It also facilitated 'Early Detection Intervention' by enhancing the GPs' capabilities to detect and manage the mentally ill. Patients screened by psychiatrists who fulfill the referral criteria agreed upon by both the specialist team and the GP partners were referred to the GPs with the initial support from case managers when deemed necessary. The benefits to patients include: increased convenience, savings in terms of transport costs and travel times, the flexibility of being seen during or after office hours, less stigma and the option of managing their other medical conditions, if any, by the same doctor.

Results: Within 1 year of the programme, a total of 131 patients were successfully referred to GPs. This represented an average savings of almost 800 consultation visits to the hospital per year.

Conclusion: The programme allows for the right-siting of care for patients and allows the hospital to channel precious resources to more appropriate uses.

PC 002

Health Utilisation Patterns, Expenditures and Glycaemic Control of Diabetic Patients in a Primary Care Clinic in Singapore

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Aim: The aim of this study was to compare primary care health utilisation and expenditures among adult diabetic patients with optimal and suboptimal glycaemic control.

Methods: The study subjects were 1732 of 2109 adult diabetic patients recruited from Clementi Polyclinic who fulfilled the eligibility criteria. Sociodemographic characteristics, duration of diabetes and co-morbidities were assessed by questionnaire survey and medical records review. Calendar year 2006 out-of-pocket expenditures and service utilisation at the polyclinic were obtained from the polyclinic's billing records. The correlation of health service utilisation and expenditures to mean HbA1c in 2006 was assessed using multivariate regression after adjusting for sociodemographic variables and co-morbidities. Type I error for multiple comparisons were bonferroni-

adjusted.

Results: The distribution of patients with HbA1c <7%, HbA1c 7-8% and HbA1c >8% were 32%, 47.5% and 20.6% respectively. There was no significant difference in the mean number of physician consultations annually across the 3 groups. However, patients with mean HbA1c >8% had significantly more nurse practitioner visits per year compared to patients with mean HbA1c <7% (2 vs 0). The mean annual prescription bill for patients with mean HbA1c <7% [\$208 (95% CI \$149-267)] was significantly lower than that for patients with mean HbA1c 7-8% [\$281 (95% CI \$223-339, *P* <0.001)] and those with mean HbA1c >8% [\$312 (95% CI \$252-373, *P* <0.001)]. The mean total annual polyclinic bill (including consultation, nursing, laboratory services and prescription bills) was significantly lower in patients with lower mean HbA1c [\$289 (95% CI \$228-350) vs \$373 (95% CI \$313-433) vs \$412 (95% CI \$350-474) for patients with mean HbA1c <7%, HbA1c 7-8% and HbA1c >8% respectively (*P* <0.05)].

Conclusion: Good glycaemic control is associated with reduced health service utilisation and out-of-pocket expenditures.

PC 003

Prevalence and Risk Factors for Poor Visual Outcome after Laser Photocoagulation for Diabetic Retinopathy at 1 Year and 2 Years Follow-Up

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Aim: The aim of this study was to determine the prevalence and risk factors for poor visual outcome after laser photocoagulation for diabetic retinopathy at 1 and 2 year intervals.

Methods: This was a review of 245 eyes undergoing focal, grid or pan-retinal photocoagulation (PRP) for diabetic retinopathy, identifying risk factors for poor visual outcome (visual acuity [VA] 6/60 or worse) after 1 and 2 years.

Results: Mean age of the 245 cases was 64.7 years (range 33 to 85). In the PRP group (n = 91), 7 cases had poor visual outcome (7.7%) at 1 year and 1 (1.1%) at 2 years. Common findings in cases with poor visual outcome at 1 year were clinically significant macular edema (CSME) and tractional retinal detachment; 2 cases each. Out of a total of 11 cases that had poor VA prior to laser, 27.3% (n = 3) continued to have poor VA at 1 year vs 72.7% (n = 8) that did not (*P* = 0.043). In the focal laser group (n = 154), 6 cases (3.9%) had poor visual outcome at 1 year and 5 (3.2%) at 2 years. Three of these cases had CSME at 1 year and another 3 had CSME at 2 years. Pre-laser, only 2 cases had poor VA. The same 2 cases continued to have poor VA at 1 year follow up (*P* = 0.001).

Conclusion: The prevalence of poor outcome in the PRP group was 7.7% (1 year follow-up) and 1.1% (2 year) compared with 3.9% (1 year) and 3.2% (2 years) after focal/grid laser.

PC 004

Restraining Methods for General Radiography in the Primary Healthcare Setting

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Aim: This study aimed to equip radiographers in National Healthcare Group Diagnostic (NHGD) Imaging Centres to deal with

uncooperative, paediatric and geriatric patients. It also aimed to ensure that all NHGD radiographers have the correct approach and attitude towards these categories of patients and an aim to attain high quality radiographic and address the importance of patient safety and quality care.

Methods: The basic techniques of immobilising paediatric and geriatric patients were illustrated in the form of an informative poster located at every imaging centre. The methods and procedures used to conduct radiographic procedure for a non-cooperative, non-responsive patient were explained with the use of a line diagram and pictures. The illustrations were clear with a concise explanation of the correct execution of the restraining methods.

Results: NHGD radiographers have benefited from the informative poster and at the same time use them as a guide to show the caregiver accompanying the patient how the restraining works. This has enabled high quality diagnostic images in difficult situations, reducing the need for repeats.

Conclusion: A proper restraining method is essential to obtain diagnostic quality of X-ray images together with special consideration to patients' comfort. Together with a safe and standardised practice, NHGD radiographers can further improve their quality of service to the community.

PC 005

NHGD's Filmless Journey

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Aim: This study aimed to improve service delivery and report the turn around time of the imaging service at NHG Diagnostics located at the NHG Polyclinics, with an aim to achieve a film-less environment.

Methods: All X-ray departments sited in the NHG Polyclinics were retrofitted with the computed radiography system and an integrated Radiology Information System (RIS). A centralised PACS was set up at the Primary Data Centre (PDC) with connectivity to the various reporting centres located at the institutions. All digital images captured with the Computed Radiography system were automatically routed to the PDC which are auto-routed to the assigned reading centre at the NHG institutions and 2 private radiology report providers, with one being an off-shore provider in India.

Results/ Conclusion: The project started in July 2006 and achieved full implementation by December 2006, becoming film-less by June 2007, with film printing only required for referrals to institutions or non-NHG sources. The report turn around time has improved from 2-4 days to a 1-hour turn around time for at least 90% of all examinations. The project has improved efficiency and productivity, as well as reduced costs from negating film printing and courier services. The advantage of operating on a digital platform translates to enhanced flexibility and convenience as patients now do not need to return for a second visit to review reports. They also benefit with a lowered X-ray cost due to a fee reduction of 5% to 10% in December 2006.

PC 006

Physician Order Entry (CPOE): A Study of the Knowledge, Attitudes and Practices of Doctors in National Healthcare Group Polyclinics (NHGP) with Recomputerised guards to Computerised Prescriptions (E-Rx)

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Aim: This study aimed to determine the knowledge, attitudes and practices of doctors in NHGP with regard to the use of computerised prescriptions (E-Rx).

Methods: The study was conducted in May 2006 in the 9 National Healthcare Group Polyclinics. A 2-part self-administered survey questionnaire was developed and sent to the respective polyclinics to be filled up by the 102 doctors. The questions on perception were scored using the 5-point Likert scale. At the end of the questionnaire, the doctors were given the opportunity to comment on their concerns regarding the E-Rx. Characteristics of the respondents were tabulated using the mean and standard deviation (SD). Factor analysis was conducted to categorise the 16 questions into similar areas. Composite scores for each of the found areas were generated with the higher scores indicating higher satisfaction with the computerised prescriptions (E-Rx). T-tests were used to compare mean scores by computer literacy and length of E-prescriptions training.

Results: There were a total of 102 respondents from the 9 National Healthcare Group Polyclinics. The mean age of the respondents was 36.3 years (SD = 8.8) with a predominance of females (52%). Fifty-five per cent had prior experience with E-prescription and 40% described their computer literacy as good and above. There were 80% who had less than 1-hour training on E-prescription but 82% perceived that their E-prescription training was adequate. There were 5 areas defined from the 16 questions on perception, namely ease and efficiency, inconvenience, prescription errors, systems problems and miscellaneous. Each had a composite score. The highest was from ease and efficiency. Computer literacy and the length of prescription had no association with the composite score for each defined area. The respondents who felt that their E-Rx training was adequate had a significantly higher score for the area on ease and efficiency than those who felt that the training was inadequate (*P* value = 0.028). The results also revealed that those who perceived the E-Rx training as adequate gave significantly lower scores for "prescription error" (*P* value = 0.04).

Conclusion: We recommend that adequate training be given to clinicians by using actual and more practical scenarios, "hands-on" sessions and teaching "short-cuts" to the different templates and data entry.

PC 007

Strategy to Attain a Healthier Lifestyle at Work

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Aim: Working out at the workplace has been known to improve the sense of well-being of employees, and as part of NHGP's vision of "Adding years of healthy life to the people of Singapore", effort has been made to improve not only the patient's health but also the staff as well. Based on 2006 statistics, two-third of the employees of Yishun Polyclinic (NHGP) have a body mass index (BMI) >23kg/m² and the majority lead a sedentary lifestyle. A prospective, observational follow-up survey was set up at Yishun Polyclinic to assess the effectiveness of a self-reporting log sheet in increasing exercise frequency and the subsequent corresponding effect on BMI.

Methods: Sixty participants from Yishun Polyclinic (physicians, nurses and operations) were recruited on 1 May 2007. A self-reporting log sheet was issued to each staff member for completion for a duration of 6 weeks from 1 May to 15 June 2007. The frequency of physical activities was recorded over the 6 weeks and BMI was

collated pre and post programme.

Results: The percentage of staff who exercise 3 times a week increased significantly from 10% pre-study to 50% post-study, and this led to a corresponding significant improvement in their BMI. Of the 60 participants, 60% recorded a decreased BMI, 21.6% unchanged and 18.4% recorded an increased BMI.

Conclusion: With self-motivation through reporting log sheets leading to an increase in the frequency of exercise and subsequently leading to an improvement in BMI profile, working out to achieve a healthier lifestyle is achievable through a regular exercise routine in the workplace.

PC 008

Clinical Practice Improvement Programme (NHGP Group 12): On Increased Attendance of Booked Case Manager (CM) Appointments from 50% to 90% for a Period of 6 Months in Woodlands Polyclinic

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Aim: This study aimed to increase the attendance of booked Case Manager (CM) appointments from 50%-90% within a period of 6 months in Woodlands Polyclinic.

Methods: A review of records on Case Manager (CM) appointments was conducted and results showed a reduction of 34.7%. The process flow of patients from pre-registration until departure from the polyclinic was evaluated. The fish bone diagram was used to illustrate the causes and effects. Multi-voting was done to complete the cause and effect diagram. The pareto chart was used to prioritise areas for improvement and these were as follows: long waiting time, cost, too many stations, doctor not keen and patient not keen. For the intervention, the PLAN-DO-STUDY-ACT (PDSA) cycle was implemented and a run chart was used to show the trend of the results on a weekly basis. Intervention was focused on the long waiting time. CM appointment checklist was placed on the right side of the case sheet reminding doctors to indicate in the appointment card the CM appointment for the next visit. The CM attendance improved by 50%. The low uptake was due to difficulty in tracking defaulters and capturing patients referred by doctors because the follow-up period for chronic patients was every 2-3 monthly. The second intervention was putting a red tag/chop on the case sheet and appointment card, alerting the Patient Service Assistants (PSA) to send this patient to the CM while waiting for laboratory results. A 70% increase in CM attendance was noted but was not sustainable due to the overwhelming workload for the PSA. A patient-centred approach was implemented

by conducting a defaulter-patient telephone survey. The top 3 reasons for defaulting were that the patient was not keen, need to go back to work and long waiting time. The final intervention was improvement on the process flow. Patients with red tags on their service chit were allowed to take a queue number at the pharmacy while they were waiting for their turn in the CM room. The intervention resulted in an almost 90% increase in the attendance of the booked CM appointments.

Conclusion: The Clinical Practice Improvement Programme requires a continuous process of improvement. In order to sustain it, we recommend a second phase of the project by conducting a patient focus group and conducting a survey on doctors' perceptions and reasons for non-referral to Case Manager services.

PC 009

Hearing Loss due to Enlarged Vestibular Aqueduct in Singapore

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Aim: The aim of this study was to determine the clinical, audiological, radiologic and genotypic characteristics of Enlarged Vestibular Aqueduct (EVA) in Singapore. EVA is the most common inner ear anomaly associated with congenital hearing loss (HL), but is easily missed, as children cannot report classical fluctuating HL or giddiness. In the EVA syndrome, thyroid dysfunction is possible, with positive Pendrin mutation. Existing literature focuses on Western populations.

Methods: A case series review of 8 consecutive patients with EVA diagnosed on CT scan temporal bone at NUH (January 2006-May 2007) was conducted.

Results: There were 5 males and 3 females; 6 Chinese, 1 Vietnamese and 1 Malay; 2 unilateral and 6 bilateral EVA. Presenting problems were delayed speech (62.5%), bilateral HL (50.0%), unilateral HL (25.0%) and giddiness (12.5%). The age of symptoms onset and EVA diagnosis averaged 3.6 and 6.6 years respectively. One patient had familial HL. Twenty-eight point six per cent, 14.3% and 57.1% had progressive, fluctuating and stable HL respectively, while 60.2% had down-sloping HL. Two patients required cochlear implants. Three patients had cochlear dysplasia. Pendrin mutation was positive in 1 patient.

Conclusion: Bilateral HL and speech problems were the common complaints. Classical giddiness, fluctuating HL and familial history are uncommon. Diagnosis is delayed. Down-sloping rather than classical flat configuration HL was noted.

QLY 001

Factors Influencing Inpatient Stroke Rehabilitation Length of Stay

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Aim: To determine the association between socio-demographic, medical, functional and cognitive factors and rehabilitation length of stay of stroke patients.

Methods: The influence of these factors on length of stay was determined by comparing diagnostic, medical, socio-demographic, functional and cognitive information that was retrospectively obtained by reviewing the casenotes of stroke patients admitted to the rehabilitation centre between 1 October 2005 and 31 December 2006. ANOVA and multiple linear regression were used to generate statistical results.

Results: Three hundred and twenty-nine patients were studied. Their mean age was 62 years, 41% were female, 81% were Chinese, 73% presented with ischaemic stroke, and mean Functional Independence Measure (FIM) motor and cognitive sub-score at admission was 35 ± 15 and 23 ± 10 respectively. The mean length of stay was 32 ± 16 days. Statistical analyses showed patients in ward class A and B1 to have longer lengths of stay. To remove the influence of financial ability, these patients were excluded from subsequent analyses. Holding all other factors constant, the multiple linear regression model showed lower FIM motor sub-score at admission ($P < 0.001$), hospital-acquired urinary tract infections ($P = 0.025$) and pneumonia ($P = 0.014$) to significantly increase the length of stay. Patients who were not living with either spouse and/or children before stroke also had a significantly longer length of stay ($P < 0.001$).

Conclusion: Varying intensity of discharge interventions may be required for patients according to their pre-stroke living arrangements. Vigilance in preventing the development of urinary tract infections and pneumonia will help lower the average length of stay.

QLY 002

Predictors of 31-day Post-diagnosis Mortality Among Stroke Patients at the National Healthcare Group, Singapore

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Aim: The study aims to identify significant predictors of death within 30 days of diagnosis among acute stroke patients from 3 hospitals of NHG.

Methods: Randomly selected medical records of stroke patients discharged between April 2004 and March 2005 from 3 NHG hospitals were reviewed by trained auditors. Data on demographic, clinical and treatment-related independent variables were collected. Abstracted data were verified independently by the NHG's stroke disease manager. Associations between individual factors and mortality were tested using chi-square tests. Significant variables were then entered into the logistic regression model. Data were entered and analysed using Statistical Package for the Social Sciences version 15.

Results: Six hundred and eight patients were studied. Of these, there were 79 (13.0%) deaths within 30 days of diagnosis. Using univariate statistics, 18 factors were significantly associated with 30-day mortality

($P < 0.05$). After subjecting these factors to logistic regression, dependence on others for activities of daily living pre-stroke ($P = 0.044$) and presence of fever ($P = 0.045$) remained as significant predictors of mortality. Other factors such as admitting department (neurology vs neurosurgery vs general medicine vs geriatrics), type of stroke, and administration of antiplatelets which were significantly associated with mortality using univariate statistics were no longer significant when entered into the regression model.

Conclusion: The greater risk of death for patients who have been dependent on others for daily activities before stroke reflects the need to review management protocols for this subset of patients. Results also suggest the need for close monitoring of stroke patients who develop fever.

QLY 003

An Evaluation of Non-invasive Temperature Measurement for Inpatients: A Review of the Literature

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Aim: To evaluate the relative merits of 4 non-invasive temperature measurement methods for adult and paediatric inpatient use.

Methods: To perform this Health Technology Assessment (HTA) report, a review of the literature was performed. Published articles that included a comparison of oral, axillary, tympanic and temporal artery temperature measurements against core temperature were selected for critical appraisal. Cost and speed of thermometers were synthesised and analysed, and for locally-appropriate economic information, maintenance costs across NHG institutions were calculated.

Results: Of the 4 methods of temperature measurements reviewed, oral measurement is the most accurate and least variable, followed by tympanic measurement. Choice of tympanic measurement over oral measurement using digital thermometers across NHG institutions could save 33,000 nursing hours annually. However, there would be additional costs for equipment and consumable amounting to S\$158,000. These articles reported patient cooperation for both methods, although satisfaction and compliance with tympanic measurement was higher than digital thermometers, especially with children.

Conclusion: Oral measurement using digital thermometers is more accurate and has a lower equipment and maintenance cost. Tympanic measurement is faster in terms of speed of temperature reading and man hours required. It is also associated with increased patient comfort and compliance.

QLY 004

Antibiotic Prescribing Patterns, Consumption and Resistance Patterns at the Ward Level in Alexandra Hospital

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Aim: To look at the antibiotic prescribing pattern in septic/septicaemic patients and to analyse antimicrobial consumption and antibiotic resistance pattern at ward level in Alexandra Hospital (AH).

Methods: One hundred patients were randomly selected out of 211 septic/septicaemic patients from the period of January to June 2006.

Data obtained were analysed retrospectively. To compare the consumption and resistance pattern between wards, data on the number of patient days were obtained from AH Quality Management database. Antimicrobial consumption in AH was calculated as the Defined Daily Doses (DDD) per 100 patient days for 5 different micro-organisms – *Pseudomonas aeruginosa* (PA), *Acinetobacter* spp., *Escherichia coli* (*E. coli*), *Klebsiella* spp., *Staphylococcus aureus* (SA). Specific antibiotics were looked at for each micro-organism.

Results: In 100% of the cases, it appeared that prescribing doctors followed the culture results to ensure that the bacteria isolated were susceptible to the given antibiotic. The overall use of piperacillin/tazobactam for PA showed a positive correlation with resistance rate ($P < 0.05$). Consumption of ampicillin/sulbactam in acinetobacter, and ceftazidime in *E. coli* and *Klebsiella*, showed no correlation with resistance rates ($P > 0.05$). Consumption of cloxacillin in SA showed no correlation with resistance rate ($P > 0.05$).

Conclusion: In this study, it showed that 100% of patients had the bacteria covered by the given antibiotic. Antimicrobial consumption in AH was shown to be higher when compared to other European countries. Piperacillin/tazobactam showed a positive correlation with resistance rates of PA ($P = 0.003$). A follow-up approach would be to do a drug use evaluation of piperacillin/ tazobactam in our hospital.

QLY 005

Issues in Measuring Physician Performance: A Review of the Literature

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Aim: To determine key factors in measuring physician performance.

Methods: A systematic review of literature was performed with a specified search strategy. Journal articles and reviews were included if they had been published within the last 10 years, were in English and included information on health systems in urban settings. Articles were critically appraised, and thematically summarised.

Results: Thirty-six articles fulfilled our search criteria with 7 articles rejected on quality concerns. The 29 remaining articles covered health systems in Europe (UK, Italy) and North America (USA, Canada). Fifteen articles mainly covered experiences of a particular country or system in developing performance measures, and 4 articles focussed on a speciality (primary care, general surgery or orthopaedic surgery). Pay for performance was the focus of 8 articles, and patient satisfaction the core of a further 2 articles.

Conclusion: Despite the experiential nature of many of the articles, many themes emerged from the literature. Developing performance measures for physicians is a complex and costly process, requiring accurate data systems, buy-in from physicians and multiple sources of information (including other healthcare professionals and patient satisfaction surveys). Measures should be representative of the activities of the specialty, attributable to an individual rather than the whole care team and be adjusted for confounders but should also be feasible to collect. Process issues which cannot be changed should not be included in performance measures. Development of trusted performance measures is critical in the consideration of pay-for performance schemes.

QLY 006

Evaluating Tan Tock Seng Hospital's Staff MC Surveillance System: Can Healthcare Staff Serve as "Canaries" for Influenza Outbreaks?

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Aim: Since the 2003 SARS outbreak, Tan Tock Seng Hospital (TTSH) has implemented a surveillance system to monitor staff sick absenteeism. This paper evaluates the acceptability of TTSH's Staff Medical Certificate (MC) Surveillance System, and its performance and timeliness in influenza outbreak detection.

Methods: A cross-sectional study was conducted for the period of 1st Jan 2006 to 26th May 2007 (epidemiological-week 1 in 2006 to epidemiological-week 21 in 2007). Staff sick absenteeism for acute upper respiratory tract infection (URTI) obtained from the surveillance system was correlated with national influenza data. Staff acceptance of the surveillance system was also estimated, by comparing surveillance entries with sick leave records submitted to the human resource department (iHR).

Results: During the study period, there were 6,911 records of staff absenteeism for URTI. We observed a moderately strong correlation between staff absenteeism for URTI and influenza A activity. The correlation was strongest at a time-lag of 2 weeks in influenza A activity (Spearman's correlation coefficient $r = 0.45$, $P = 0.000$), followed by that at a time-lag of 1 week in influenza A activity ($r = 0.34$, $P = 0.004$). The surveillance system also demonstrated a high sensitivity (70%) for any surge in influenza A activity. Overall staff compliance for the surveillance system was 74.6%, with a higher rate observed among ward staff (81%).

Conclusion: Healthcare staff can serve as "canaries" for influenza outbreaks. TTSH's Staff MC Surveillance System has a high acceptability, and provides early alerts (lead-time of 1-2 weeks) on increases in influenza activity. It can serve as a useful tool for pandemic warning.

QLY 007

Them and Us: Patient and Staff Perceptions of a Short-stay Emergency Unit

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Aim: To evaluate user satisfaction with the short-stay emergency unit and use this as a basis for quality improvement.

Methods: A validated patient satisfaction survey adapted for the Singapore context was administered by phone and distributed within the EDTC. The results were then collated and analysed. Concurrently, clinicians based in the ED were invited to join focus groups or interviews to express their views on the EDTC. These interviews were then transcribed and content analysis performed.

Results: Five hundred and fifty-eight patient surveys were collected, and 56 members of staff were interviewed. Most patients felt that they were well cared-for, with 73% indicating that they would recommend the ward. Of the patients surveyed, 65% felt that the staff listened carefully and respectfully. High scores were evident in cleanliness and environment. This is echoed by clinicians, who verbalised the

difference between the bustle and queues of the ED and the relative tranquillity of EDTC. Both groups indicated that additional nursing staff would enhance the experience and reduce stress. Amongst nurses, there were discrepancies in perception of EDTC shifts, from a 'punishment' away from the excitement of the ED, to being a chance to learn new skills or a respite from tiring and stressful ED stints.

Conclusion: The experiences of the EDTC surveys show that there is common ground between patients and staff. With specific complaints, EDTC management have been able to discuss and implement process changes, such as altering water distribution to patients. For staff concerns, findings of interviews were shared anonymously with ED to start addressing the expectations of EDTC shifts.

QLY 008

The Live Programme – Successful Control of LDL-Cholesterol and Hypertension in Over 2000 Patients With Coronary

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Aim: A prior study (A-SACT) documented LDL-cholesterol goal attainment rates in Singapore as $\leq 30\%$. A disease management programme (LIVE programme) was introduced in August 2006 to improve LDL-C and blood pressure control rates in CAD patients.

Methods: The Control of Coronary Risk Factors Initiative (LIVE) Programme aims to achieve goals of LDL-C levels < 100 mg/dL and blood pressure levels $< 140/90$ mm Hg (non-diabetics) and $< 130/80$ mm Hg (diabetics) through a disease management process. All CAD patients admitted to the Cardiology Departments in 3 public hospitals are automatically enrolled in this multidisciplinary programme that involves physicians, case managers and nurse-clinicians.

Results: Two thousand, four hundred and three consecutive patients with documented CAD were prospectively enrolled from 1 August 2005 to 30 August 2006. Mean follow-up period was 17 ± 5 months. Mean age was 60 ± 13 years. Of the patients, 23% were women, 41% diabetic, 78% hypertensive, 35% both diabetic and hypertensive, 69% had high cholesterol, and 53% were both hypertensive and had high cholesterol. At hospitalisation, mean LDL-C was 6.5 mmol/L. In hypertensives, mean blood pressure was $164/85 \pm 25/25$ mm Hg. At discharge, 99% of patients were prescribed statins; 1840 (92%) were prescribed statins equipotent or more than simvastatin 40 mg. Overall 1184 (85%) of patients with elevated LDL-C & 1021 (65%) of hypertensives achieved the pre-specified goals.

Conclusion: In CHD patients managed by 3 hospitals in Singapore's public health sector, 1) LDL-C goal attainment has reached 85%, largely with generic statins and 2) blood pressure goal attainment is at 65%. 3) This testifies to the success of a disease management programme in such a setting.

QLY 009

To Reduce Rate of Unplanned Extubation of Oral Endotracheal Tube in MICU TTSH Within 6 Months

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Aim: Unplanned Extubation (UE) of oral endotracheal tube (ETT) in mechanically ventilated patients is associated with increased length of stay and several deleterious complications. In the Medical Intensive Care Unit (MICU) in TTSH, the UE was 2.8 per 100 ventilator-days from January to April 2006. A Clinical Practice Improvement Programme (CPIP) Project was undertaken with the stretch goal to eliminate UE of oral ETT from May to October 2006.

Methods: Using a Pareto Chart, the common causes of UE were identified as restless patients, improper restraint technique, lack of surveillance, and inadequate sedation level. The following Plan-Do-Study-Act (PDSA) interventions were carried out: exploring new risk assessment tool; sourcing for new restrainers and educating staff on the proper technique of applying restrainers; increased surveillance of restless patients on oral ETT and redesigning workflow; and introducing a new sedation policy.

Results: After 6 months, the UE rate was reduced to 1.95 per 100 ventilator-days (30% reduction). This change was sustained for another 3 months after the project (1.12 per 100 ventilator-days; 60% reduction).

Conclusion: By employing CPIP methodology, the rate of UE was significantly reduced in the MICU.

QLY 010

MRSA Programme at Tan Tock Seng Hospital's MICU: A Success Story

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Aim: The Medical Intensive Care Unit (MICU) at Tan Tock Seng Hospital (TTSH) has one of the highest clinical methicillin-resistant *Staphylococcus aureus* (MRSA) incidence rates in the hospital. With the aim of reducing MRSA acquisition in the ward, an active surveillance and intervention programme has been implemented since end-August 2006. This paper evaluates the impact of the programme on clinical MRSA rates in MICU.

Methods: We reviewed the clinical MRSA rates among MICU admissions in the 8-month period (December 2005-July 2006) before the launch of the MRSA programme, and compared them with those in the 8-month period (September 2006-April 2007) after its implementation. We studied the overall clinical MRSA incidence rates (proportion of MICU admissions with a positive MRSA clinical culture attributable to acquisition in MICU), as well as the colonisation and infection rates between the 2 periods.

Results: Clinical MRSA colonisation rate among MICU patients reduced significantly from 2.04% in the pre-intervention group (n = 784) to 0.65% in the post-intervention group (n = 758) ($P = 0.019$). Overall clinical MRSA incidence rates also decreased from 2.55% to 1.45%, and MRSA infection rates increased slightly from 0.51% to 0.79%. However, these changes were not found to be statistically significant. Across the 2 periods, overall clinical MRSA rates in the Neurology/Neurosurgical ICU remained similar at 1.33% (among admissions during Dec 2005-Jul 2006) and 1.36% (September 2006-April 2007) respectively.

Conclusion: The MRSA intervention programme significantly reduced clinical MRSA colonisation rates in TTSH's MICU. This could potentially lead to a reduction in MRSA infections in the ward.

QLY 011

Use of Blood Cultures in Treating Community-acquired Pneumonia – The Evidence**FR MCMASTER¹**¹Health Services & Outcomes Research, National Healthcare Group, Singapore**Aim:** To determine whether blood cultures should be performed in the ED for community-acquire pneumonia (CAP).**Methods:** A search strategy was developed in consultation with Emergency Department Physicians, respiratory physicians and researchers. This was then applied to a review of literature. Studies were included if they mentioned CAP and blood cultures, described costs associated with treating pneumonia in hospital settings, and were published within the last 10 years. We eliminated studies that only described microbiological differences in treatments.**Results:** Eight articles and 1 editorial were examined. Studies varied in design and in scope, looking at either utilisation or clinical practice. The locations of studies were either North America (USA, Canada) or Spain. Four articles gave figures for the number of altered therapies. Three of the 4 studies with treatment changes showed that rates of change in treatment after a positive blood culture are extremely low (under 5%). Only 1 study, from Spain, showed that 49% of positive cultures resulted in a change.**Conclusion:** There is considerable doubt over the impact of physician behaviour on treatment and patient outcomes following blood cultures. Research consistently states that more discrimination on blood culture use is needed. These studies were small-scale, so it is difficult to extrapolate these research situations into clinical practice here in Singapore. Further primary analysis is necessary before a final recommendation can be made to physicians.

QLY 012

24-hour Observational Ward Management of Diabetic Patients Presenting With Hypoglycaemia**HK GOH¹, EK CHEW², MI GARCIA³, L TAN⁴, GH LIM⁵**¹Emergency Medicine, Tan Tock Seng Hospital, ²Endocrinology, Tan Tock Seng Hospital**Aim:** A 24-hour observational ward (OW) was set up in the hospital emergency department (ED) in September 2005 to manage a group of patients with specific conditions including hypoglycaemia that required only short, focused in-patient care. The study aimed to evaluate the effectiveness of management of hypoglycaemia in a 24-hour OW.**Methods:** Hypoglycaemic patients admitted to the OW would have their treatment and evaluation done within 24 h. A protocol based on current available literature was formulated. Data were collected prospectively and included patients' demographics, the duration of disease, current medication and treatment rendered. The patients were discharged only after a set of discharge criteria was fulfilled. These patients were followed up via telephone interviews at 7 and 28 days post-discharge. The collected data were analysed using SPSS ver. 13.**Results:** Two hundred and three patients were recruited. Of these, 170 (83.7%) patients were discharged well but 33 (16.3%) were transferred to an inpatient team for a longer period of treatment. Among the 170 patients discharged, 151 (88.8%) were contacted at 7 and 28 days post-discharge. There were 6 patients with symptoms of recurrent hypoglycaemia of which 2 reattended the ED and were

admitted. In the other 4 patients, the symptoms were mild enough to be managed at home. Two other patients reattended for conditions not related to hypoglycaemia. There were 19 who could not be contacted but there were no records of any reattendances among this group of patients.

Conclusion: To date, there is no recommendation on how long severely hypoglycaemic patients should be hospitalised. This study showed that selected patients could be treated effectively and safely in a short stay ward.

QLY 013

The Influence of Patient Characteristics on the Rate of Posterior Capsule Rupture During Routine Cataract Surgery**MA MIAN¹, Y SUN², BH HENG³, KG AU EONG^{1,3,5}**¹Department of Ophthalmology and Visual Sciences, Alexandra Hospital, Singapore, ²Health Services & Outcomes Research, National Healthcare Group, Singapore, ³Department of Ophthalmology, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, ⁴Department of Ophthalmology, Tan Tock Seng Hospital, Singapore, ⁵Singapore Eye Research Institute, Singapore**Aim:** To investigate if patient characteristics are risk factors for posterior capsule rupture (PCR) during routine cataract surgery.**Methods:** Data of all eyes that underwent routine cataract surgery from January 2000 to September 2005 at The Eye Institute, National Healthcare Group, Singapore were retrospectively analysed. Complicated cataracts associated with trauma and inflammation, as well as subluxated cataracts were excluded from analysis. The data were analysed using chi-square and ANOVA tests as well as logistic regression.**Results:** The mean age of the 31,527 consecutive cases included in the study was 67.6 years. There were 26,087 (82.7%) Chinese, 2,606 (8.3%) Malays, 2,001 (6.3%) Indians and 833 (2.6%) were of other races. There were 17,266 (54.8%) females and 14,261 (45.2%) males. A total of 485 cases sustained PCR, giving an overall incidence of 1.5%. By univariate chi-square analysis, increased age ($P=0.001$) and higher number of systemic comorbidities ($P<0.001$) were associated with higher PCR rates. However, PCR rate was not associated with gender and race. By multivariate logistic regression, after adjusting for all other factors, both increase in age ($P=0.02$) and increase in number of systemic comorbidities ($P<0.001$, B coefficient = 0.566) remained as significant risk factors for PCR. The risk of sustaining PCR increased by 2% (95% CI, 0.1%-3%) with every 1-year increase in age of patient and by 17% (95% CI, 10%-25%) with every additional systemic comorbidity.**Conclusion:** Increased age and the number of systemic comorbidities of a patient, but not gender and race, increase the risk of PCR during routine cataract surgery

QLY 014

Diagnosing Altered Mental State in the Emergency Department: A Review of the Evidence**FR MCMASTER¹**¹Health Services & Outcomes Research, National Healthcare Group, Singapore**Aim:** To review the evidence concerning the diagnosis of Altered Mental State (AMS) in the emergency department and evaluate the extent to which CT scans are effective in early identification of stroke when AMS is the presenting symptom.

Methods: A systematic review of the literature was performed. Five electronic databases were searched for publications written in English in the last 10 years. Original articles and guidelines were included if they discussed AMS or cognitive impairment as a presenting symptom, included a discussion of early management of stroke in the ED, or contained information about diagnosing stroke.

Results: Searches yielded 8 papers. One set of guidelines was included. All studies were conducted in North America, Western Europe or Australia. It was found that shorter time to CT scan improves treatment and outcomes of acute stroke. CT scans are essential for clinical management decisions of stroke patients. However, CTs and MRIs do not always conclusively show stroke. Clinical bedside assessment is important in diagnostic pathways directing the treatment and potentially in the speed at which more complex investigations can be ordered.

Conclusion: Definitions of AMS are both varied and vague, and can indicate the complex underlying cause from a plethora of factors. There is a need for Emergency Department physicians with experience in neurological conditions who can assist in the clinical assessment of stroke. Clinical assessment of stroke when presenting as AMS should receive further health services research attention, as should further investigation into when it is clinically- and cost-effective to use CT scans.

QLY 015

Using CPIP Methodology to Improve Quality in a Tertiary Care Hospital

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Aim: The aim is to improve quality in the Department of Diagnostic Radiology in a tertiary level hospital. Managing increasing expectations within limited resources requires an innovative and sometimes radical approach. Patient feedback indicated that a period of 1 hour is acceptable for a patient to arrive and complete their entire radiological examination.

Methods: We used a clinical practice improvement programme (CPIP) with specific tools and analytic methods to gather information. Iterative CPIP projects were started. Each was focused on achieving the patient's goal in a specific sub-section e.g. ultrasound, MR section, intravenous urography and mammography. We asked team members with fundamental knowledge of the situation to brainstorm among themselves and then categorise and vote on the root cause most likely to be responsible for a failure to achieve the mission.

Results: The CPIP projects were highlighted as ongoing quality measures at the department meeting and senior management were supportive of the efforts to achieve the target of a 1-hour turnaround time. Fast tracking for payment for scheduled appointments, negotiation with referring clinics for appointment times and redeployment of existing staff was done. Each CPIP team had a leader and a guidance advisor who was able to seek help from senior management in difficult situations and gain buy-in from reluctant staff. Persistence and a belief that that the right thing is being done is essential to success. Use of a run chart showing the effect of multiple plan-do-study-act cycles is visually extremely convincing.

Conclusion: Use of a CPIP protocol helps staff who do not have extensive knowledge of quality measures achieve success within our resources. We encourage all to use this as a method of improving quality.

QLY 016

Preliminary Findings of a Respiratory Sound Analysis System Using Acoustic Signal Processing Techniques

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Aim: Respiratory sounds are key to evaluating and diagnosing respiratory disorders. Patient description and even sound recordings have significant limitations in clinical practice. Our aim is to develop a portable respiratory sound monitoring and analysis unit which can capture (from a single tracheal microphone) and extract clean respiratory sounds from unwanted noise (including heartbeat and movement artifacts), and differentiate normal breath sounds, wheeze, stridor, snoring by quantification parameters with a preliminary focus on normal breath sounds and wheeze analysis.

Methods: Our prototype consists of a tracheal microphone (Sony ECM-77), and a laptop. The captured signals are processed by our environmental noise attenuation and heartbeat removal methods using advanced filtering techniques cascading notch filter (based on forward-backward filtering) and bilinear filter (based on Wiener filtering). Automated segmentation of inspiratory and expiratory phases then determines respiratory rate, quantify wheezes by our binary transformation based approach. A Graphical User Interface (GUI) is designed for clinicians to monitor the process, and to provide visualisation of acoustic signals.

Results: Our preliminary study was based on 20 tracheal sound recordings from 10 healthy volunteers with different types of wheeze sounds. The processed recordings were verified by subjective hearing test with 20 evaluators. Ninety per cent of them found the output correctly segmented and completely free of heartbeat and background noises.

Conclusion: The results clearly demonstrated that our advanced filtering and segmentation techniques are suitable for pathological respiratory sound analysis. Our acoustic signal processing based respiratory sound monitoring and analysis system can be of great value in automated interpretation of respiratory disorders.

QLY 017

CPIP Project 100% Compliance With Guidelines for Blood Cultures (2 Bottles X 2) in Wards 2, 4, 5 Within 3 Months

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Aim: To achieve 100% compliance with guidelines for blood cultures (at least 2 bottles x 2) in wards 2, 4, 5 within 3 months. Two cultures facilitate the interpretation of the cultures. Two cultures or more increase the sensitivity of the culture system (linear correlation up to 30 mL. This is important to avoid misdiagnosis, wrong antibiotic therapy, complications, increased morbidity and mortality.

Methods: A survey created by the CPIP work group was given to doctors at Medical department (n=38). Further 'voting' was done by the CPIP group via e-mail. A 'reminder' label of 2 bottles from 2 different sites was placed on the trolley prepared for blood culture procedure and also on the container for storage of blood culture

bottles. The cultures were taken before antibiotic treatment, unless extraordinary factors prevented this.

Results: Hospital-wide numbers have changed between January and December. In the period from January to June, 19.5% of patients had 2 blood cultures done. In the period from July to December, 78.8% patients had 2 blood cultures done.

Conclusion: Both effective communication and creating awareness have enhanced compliance. There were 17% more positive patients in the period from August to December compared to the one from January to May. It was much easier to distinguish if coagulase negative staphylococcus was a true infection.

QLY 018

Managing Schizophrenia in the Primary Health Care: Results From a Singapore Survey

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Aim: The study identifies some of the difficulties general practitioners face in providing psychiatric care for patients with schizophrenia.

Methods: This is a postal survey involving 424 general practitioners (GPs) in Singapore.

Results: A total of 84% of the responding GPs were not managing any patient with schizophrenia for their mental health problem, while 57.6% of the GPs were interested in increasing their involvement. Of particular interest is that a substantial proportion of GPs (26.9%) considers schizophrenia to be a non-biological problem. Of the responding GPs, 75% indicated that they do not have sufficient knowledge to manage a patient with schizophrenia, but those who have had clinical experience in the psychiatric setting were more comfortable to do so. A total of 75% of GPs believed that there is insufficient specialist psychiatric support, and a large majority of them (91.7%) would like to see more lectures being organised. They feel that clinical guidelines for the management of schizophrenia would be helpful, as would be the improved availability of specialist psychiatric support.

Conclusion: Our results suggest that only 5% of patients with schizophrenia are being managed by GPs for their psychiatric problems. More training and education on managing mental illness should be offered to primary health care providers. A primary psychiatrist should be readily accessible to GPs who are managing patients with schizophrenia. Patients who are being managed by GPs should also have access to the specialised community psychiatric services. Bulk ordering of psychiatric medication by the public hospitals and GPs, will allow us to equalise the cost between the private and public sectors.

QLY 019

Medication Safety – A Pilot Study on the Incidence of Parenteral Medication Errors in the Inpatient Setting

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Aim: Studies have identified an incidence of 13% to 84% in parenteral medication errors in various hospitals located overseas. Local data are currently unknown. This study aimed to (1) survey the incidence

of parenteral medication errors at Alexandra Hospital and explore various methods to reduce these errors and (2) explore the cost-effectiveness of setting up an IV admixture service and the use of a novel drug delivery system.

Methods: Nurses were randomised for both phase I and II. **Phase I:** Direct observation audit of preparation and administration of parenteral therapy was done, coupled with a survey of all registered nurses in the hospital to find the preferred IV error-prevention measure. **Phase II:** The preferred error-prevention measure – a personal IV Dilution Pocket Guide was implemented and nurses audited to compare the incidence of errors from Phase I. In addition, post-audit calculations were done to compare cost of IV preparation by nurses versus an IV admixture service and MINIBAG PLUS™.

Results: (1) Parenteral errors were reduced significantly with the pocket guide. (2) Post-study cost analyses revealed that IV preparation by nurses is still cheaper than an IV admixture service and MINIBAG PLUS™, except for drugs requiring longer dissolution time.

Conclusion: Injections given by all routes should be regarded as high-risk activities that require the use of risk management procedures to maximise medication safety and minimise risk to patients. Similar studies should be carried out in other hospitals with larger sample sizes to gauge their incidence of parenteral errors and design counter-measures to improve patient care.

QLY 020

Clinical Review Programme in an Acute Hospital: Correlation Between 100% Chart Review Versus Random Sampling Study

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Aim: To determine whether the profile of 100% chart review with Adverse Events (AEs) was the same as random sampling of various percentages (80%, 70%, 66% and 50%) on our Clinical Review Programme at an acute hospital in Singapore.

Methods: All charts reviewed with AEs between Jan 2006 and Sep 2006 were included in the study. Being relatively few, ICU flags, OT flags and all special referrals were fully reviewed and not subject to random sampling. We conducted an 80% chart review, which was randomised from all charts with death flag and readmission flag separately and subsequently randomly sampled 70%, 66% and 50% of the charts. We compared AE rates, profiles of AE by criteria, type, primary review and peer review, of 100% chart review versus 70%, 66%, and 50%.

Results: A total of 773 chart reviews (400 death flag, 307 readmission flag, 29 OT flag, 27 ICU flag and 10 special referral flag) with AEs were analysed. AE rate among special referral was 3.3 per chart review, 3.1 among unplanned to ICU, 1.8 among unplanned to OT and 1.2 among unplanned readmission. There were significant correlation in terms of profiles of AEs, between 100% chart review and 80%, 70%, 66% and 50% respectively, using linear regression test (all r square >0.97 , $P <0.001$). Paired t-test also showed no significant difference $P >0.05$.

Conclusion: Study findings suggest that random sampling is a useful method to 100% chart review for Death and Readmission flagged cases, with no significant detriment to detect AEs and issues of health care management. It could be used as an alternative method to review charts during periods of resource shortage.

QLY 021**Increasing the Day Minus 1 Discharges****LY LEE¹, C MITRA², MT ALCOVER¹, S SAW³, MY TAN⁴, MP STELLA⁴**¹Department of Neonatology, National University Hospital, Singapore, ²Department of Obstetrics and Gynecology, National University Hospital, Singapore, ³Department of Laboratory Medicine, National University Hospital, Singapore, ⁴Department of Nursing, National University Hospital, Singapore**Aim:** The aim of this Clinical Practice Improvement Project (CPIP) was to increase the Day minus 1 (D-1) discharge of post-natal mothers and babies from Ward 42 nursery from a baseline of 37% to 80% in 6 months. The rationale for this CPIP was that the hospital has high bed occupancy and admissions are delayed due to bed shortage. Some post-natal mothers and babies are well and can be discharged prior to noon, the usual discharge time.**Methods:** The key measures of improvement were increasing the percentage of D-1 discharge and improving maternal satisfaction level. The daily discharges were captured and a satisfaction survey was performed on 50 patients. CPIP tools such as the flow process and the cause and effect diagram (Ishihara fishbone) were used. The causes for delay were identified using pareto charts. Strategies to counteract delays were identified and changes to the processes were carried out successfully.**Results:** The changes resulted in successfully achieving the aims at project closure with consistent discharge of D-1 babies and mothers with average discharge of 96.5% from the baseline of 37% by 6 months. The patient satisfaction (Likert score) of the early discharge mums was 3.2 versus 3.1 for the normal discharge mums.**Conclusion:** It is possible to increase Day minus 1 discharges by addressing the causes of delay through workflow process changes, reassignment of nursing roles as well as better collaboration between the laboratory staff and healthcare teams.**QLY 022****Predicting the Maintenance Dose of Warfarin Based on the INR (International Normalised Ratio) Obtained on Third and Fourth Day of Warfarin Dosing****YM WONG¹, V CHADACHAN², JC TAY²**¹Pharmacy, Tan Tock Seng Hospital, Singapore, ²General Medicine, Tan Tock Seng Hospital, Singapore**Aim:** To evaluate if INR taken on Day 3 and Day 4 after an initial 2 to 3 days of warfarin dosing is accurate in predicting the maintenance dose of warfarin.**Methods:** Patients initiated with a warfarin dose of 5 mg on the first 2 days and any dose on the third day were included in the study. One hundred patients were analysed and maintenance dose was identified in 96 patients. Four patients did not return for follow-up and were excluded. INR was recorded on Day 3 and Day 4 of initiation and correlation analysis carried out.**Results:** Day 4 INR correlated better (correlation -0.81) and is more predictive of the warfarin dose than Day 3 INR, regardless of the warfarin dose on Day 3. Day 3 INR could not predict the maintenance dose as accurately because majority of the INRs were still less than 2; only 13 patients had INR more than 2 on Day 3. On Day 4, 33 patients had their INR more than 2, and 3 patients had their INR more than 3 but less than 4 during warfarin initiation.**Conclusion:** Maintenance dose of warfarin was more accurately predicted with Day 4 INR compared with Day 3 INR during initiation.

The dosing chart based on INR on Day 3 and 4 were fine-tuned with the data obtained.

QLY 023**Free Home Glucose Meters and Test Strips Improves HbA1c in Low-income Patients With Diabetes Mellitus****B LIM^{1,2}, M JONG², PL NG³, HC QUEK³, SP CHAN⁴, PC SOON²**¹Department of Ambulatory Operations, Tan Tock Seng Hospital, Singapore, ²Department of Endocrinology, Tan Tock Seng Hospital, Singapore, ³Department of Nurse Clinicians, Tan Tock Seng Hospital, Singapore, ⁴Clinical Research Unit, Tan Tock Seng Hospital, Singapore**Aim:** Self-monitoring of blood glucose (SMBG) is important for good management of patients with diabetes. There are difficulties for healthcare professionals to engage lower income patients to perform SMBG in view of the costs involved. The aim of the study was to determine the impact of welfare-funded aid for glucose monitoring on the glycaemic control of recipients.**Methods:** A retrospective study of sample of patients seen at the Diabetes Centre, Tan Tock Seng Hospital, from November 2005 to March 2007, was performed. A

glycated hemoglobin (HbA1c) level was measured before and at intervals during which glucose test strips and meters were given free of charge. The patients received their supplies for 6-12 months. Analyses with stata 9.0, the multivariate generalised estimating equations (GEE) with linear link, Gaussian distribution and unstructured correlation were applied to ascertain the patients' glycaemic control over time. All tests were conducted at 5% level of significance.

Results: Two hundred and seventeen subjects aged 20 and above were included in the study (males: 47.2%). In terms of ethnicity, 43.8% were Chinese, 35.5% Malays and 18.0% Indians. The majority had type 2 diabetes (90.7%). Average HbA1c level was lowered significantly from 9.84% to 8.85% ($P = 0.04$) after 1 year on Diabetes Care Endowment Programme (DCEP) support.**Conclusion:** The DCEP facilitation of free consumables allowed self-empowerment in lower income patients. The evidence suggests that patients with diabetes had better glycaemic control with support for SMBG.**QLY 024****Community Health Screening by the Diabetes Awareness Programme: A Retrospective Study****B LIM^{1,2}, M JONG², SP CHAN³, PL NG⁴, N OTHMAN⁴, HC QUEK⁴, PC SOON²**¹Department of Ambulatory Operations, Tan Tock Seng Hospital, Singapore, ²Department of Endocrinology, Tan Tock Seng Hospital, Singapore, ³Clinical Research Unit, Tan Tock Seng Hospital, Singapore, ⁴Department of Nurse Clinicians, Tan Tock Seng Hospital, Singapore**Aim:** Health screenings enable the public to be aware of the possible medical conditions they may have and seek early intervention. Tan Tock Seng Hospital (TTSH) Diabetes Awareness Programme conducts these health screens in different community populations throughout the year. This study aims to identify the prevalence of asymptomatic Diabetes Mellitus (DM) amongst the participants of health screenings. A retrospective analysis was performed on data collected from our different health-screening exercises.**Methods:** The participants attended health screening at community centres in Sengkang and Hougang, TTSH and St. Andrew Cathedral

Church. The data collected were in the year 2006 and included the participant's demographics, comorbid conditions, family medical history and Blood Pressures (BP). Analysed with Stata 9.0, all statistical tests were conducted at 5% level of significance.

Results: The analysis included 1240 participants aged 18 and above, of which 79.1% were Chinese, 6.9% were Malays and 8.5% were Indians. Of the participants, 7.4% reported they had DM, and 17.3% had a family history with DM. In addition, 1.5% suffered from cardiac diseases. The average systolic and diastolic blood pressure measurements were 127.2 mmHg and 78.8 mmHg, respectively. The average random blood glucose (BG) was 6.5 mmol/L, and total blood cholesterol (TBC) was 5.0 mmol/L. The participants who attended screening at TTSH and Hougang were significantly older ($P < 0.001$), with significantly higher BP, BG and TBC. Also, 3.1% of the participants (who had no prior diagnosis of DM) had glucose levels ≥ 11.0 mmol/L which is highly suggestive of undiagnosed diabetes.

Conclusion: The programme facilitated possible early diagnosis of asymptomatic diabetes of the participants, which may have enabled early intervention and treatment.

QLY 025

A Review of the Management of Patients With Acute Ischaemic Stroke and Transient Ischaemic Attack at the National Healthcare Group, Singapore

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Aim: To review the quality of acute care of ischaemic stroke (IS) and transient ischaemic attack (TIA) at the National Healthcare Group (NHG).

Methods: Inpatient medical records of patients discharged from NHG hospitals from April 2004 to March 2005 were randomly selected and reviewed. Quality indicators are based on the Ministry of Health (MOH) Clinical Practice Guidelines (CPG) for Stroke. Rates were compared between patients with IS and TIA. Data were analysed using SPSS.

Results: There were 448 patients in the study, IS outnumbered TIA by 4:1. Patients with IS were significantly older (mean age, 72.2 years vs 65 years). Mortality rate for IS was 9.1% and length of stay was 3 times longer than that of TIA (11.6 vs 3.6 days). All patients had blood pressure monitoring daily. Brain scan was performed for 81.6% of IS within 24 hours of admission vis-à-vis 77.4% for TIA. Rates for blood glucose testing and ECG were over 90% for both IS and TIA. About 80% of patients were prescribed anti-platelet therapy. Among patients with IS, rate of swallowing assessment was 64.5%, physiotherapy 87.2% and occupational therapy 87.2%. Communication of patients' prognosis was higher for IS than TIA (84.5% vs 65.3%). However, only half of all patients received education of risk factors.

Conclusion: There were slight differences in the quality of care for patients with IS and TIA. Rates of key process indicators were good, with potential improvement for brain scanning within 24 hours of admission and better communication of patients' prognosis and risk factor education.

QLY 026

The Day Surgical Aspect of Laparoscopic Cholecystectomy: How it Improves Quality. The Short-term Advantages of Laparoscopic Cholecystectomy

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Aim: Laparoscopic cholecystectomy has become the treatment of choice for symptomatic and incidentally discovered gallstones. In Singapore, our surgical centre is regularly carrying out this type of treatment as an ambulatory surgery. The benefits of minimally invasive or laparoscopic cholecystectomy include less postoperative discomfort (since the incisions are much smaller), less internal scarring, quicker recovery times, shorter hospital stays and earlier return to full activities. In a group of carefully selected patients who undergo laparoscopic cholecystectomy, the postoperative complications and hospitalisation can be minimised. We investigated what factors can reduce postoperative hospitalisation, thus reduce medical expenses and making hospital beds available for new patients.

Methods: After 1 year of identifying the above-mentioned factors and implementing some intra-operative changes, we re-assessed our data to evaluate the improvement.

Results: The new data reconfirmed our preliminary observation that the implemented new methods did indeed reduce postoperative complications and hospitalisation.

Actual changes included: intra-operative administration of prophylactic anti-emetic drugs, lower dose of induction agent and shorter duration of anaesthesia. With our surgeons' increasing experience and the improving laparoscopic technology, the operative time was reduced as well.

Conclusion: These changes lead to improvement. On postoperative follow-up, our patients were more satisfied with the better cosmetic effect, reduced hospital stay, a shorter recovery time and lesser amount of medical expenses. Our team is planning to use on a more frequent basis laparoscopic surgery in liver and pancreatic resections, in carefully selected patient groups.

QLY 027

Evaluation of Pharmacy Payment Process

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Aim: To improve the turnaround time (TAT) and polyclinic pharmacy wait time (WT), the operation team suggested 3 new payment methods. They were

- (i) a group of cashiers to collect the bills of all services before the patients visited the pharmacy and another group to collect the drug bills after dispensing,
- (ii) a single point payment with cashiers to collect all the bills before dispensing,
- (iii) a single point payment when the cashiers collect all bills after dispensing.

The aim of this study was to evaluate the best payment process.

Methods: Four models were simulated so as to compare the current process against the 3 proposed methods. Factors considered for the simulation were workload arrival rates, staff schedule and all the dispensing activities such as prescription capture to the system, packing, checking and dispensing of drugs, and paying bills. The

workload arrival rate data were deduced from the system collected for a period of 2 months. The details for the duration of dispensing activities were manually recorded and noted by the staff.

Results: The simulation results showed that method (i) had an improvement of 10% for TAT and 31% for WT but required an additional cashier. However, method (iii) showed an improvement of 5% for TAT and 18% WT but did not require any additional manpower.

Conclusion: Initially, method (iii) was implemented successfully at one of the polyclinics. Currently, every other polyclinic is adopting this method of payment process due to its feasibility.

QLY 028

Public's Perception and Awareness of Diabetes Mellitus During Health Screening

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Aim: The prevalence of Diabetes Mellitus (DM) in Singapore is 8.9% (National Health Survey in 2004). The public may, however,

not be aware of this significant risk of developing DM. This survey evaluates the public's perception and awareness of this disease.

Methods: A total of 303 subjects participated in the survey questionnaire regarding the prevalence, risk factors, perceptions and treatment options in DM. A logistic regression analysis was applied to analyse the data.

Results: A total of 303 subjects responded to the survey. The mean age was 48.3 years. With regards to how the disease is perceived, 76.6% were worried about developing DM, 94.4% claimed they would seek medical treatment should they develop DM and 23.8% believed that life would not be enjoyable if they suffered from DM. Of the subject, 41.6% were aware that the risk of getting DM is high and understood that exercise and healthy eating habits could help to reduce the risk of developing DM. Respondents had their perceptions shaped from information they received from the media (64.0%), healthcare professionals (32.0%), family and friends (49.5%). Respondents with a negative outlook in life were more likely to have a lower level of awareness ($P = 0.02$).

Conclusion: The majority of people are still unaware that DM is a significant health risk with a high prevalence in Singapore. Their perceptions are shaped by information from friends and thus the accuracy of this information may be suspect. Health surveys as conducted above, will allow healthcare professionals to develop much needed appropriate and targeted strategies to increase the awareness and perception of diabetes.

SUR 001

Patient Outcomes in Endoscopic Sinus Surgery With Computer-assisted Image Guidance

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Aim: Image-guided surgery (IGS) is increasingly used in surgery involving the paranasal sinuses, where proximity to orbit and cranial cavities demands a high degree of anatomical precision. IGS has been practised routinely in our department since 2002 on all patients undergoing endoscopic sinus surgery. The aim of our study was to evaluate patient outcomes following image-guided endoscopic sinus surgery.

Methods: A prospective study was conducted on patients requiring endoscopic sinus surgery for chronic sinusitis and nasal polyposis in our department. The InstaTrak electromagnetic image guidance system was used during surgery. Preoperative assessment of symptoms, nasal endoscopic appearances and CT scan appearances were scored. Postoperative symptom and endoscopic scores were recorded at 3, 6 and 12 months. Major surgical complications were recorded. Accuracy of the system in anatomical localisation was also measured and recorded.

Results: The study was done with 146 patients, of which 23% (34) were revision cases. A total of 97% (141) of the patients experienced an overall improvement in symptoms at 1 year. Improvements in endoscopic appearances of nasal discharge, polyps and oedema at 1 year were found in 91% (133), 86% (126) and 85% (124) of the patients respectively. No major complications were recorded in any of the patients. Accuracy of the system measured was 96% of instances with mean distance error of 2 mm.

Conclusion: From our study, it appears that improved safety margin (zero complication rate) and improved patient symptom outcomes are achieved with image-guided sinus surgery. The use of image guidance as an adjunct to endoscopic sinus surgery is definitely recommended.

SUR 002

Results of Laparoscopic Adjustable Gastric Banding on Diabetes Mellitus and Metabolic Syndrome in Singapore

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Aim: Asians have a higher percentage of body fat and higher risk of medical complications related to obesity compared to Caucasians. In Singapore, diabetes mellitus (DM) was found in 8.2% of our population. Type 2 diabetes mellitus and metabolic syndrome (MS) are strongly associated with obesity. Our aim is to study the results of laparoscopic adjustable gastric banding (LAGB) programme on diabetes and metabolic syndrome among the obese patients.

Methods: Morbidly obese patients with diabetes mellitus and/or MS were subjected to LAGB. All patients were selected for surgery based on WHO guideline. All patients were managed by a multidisciplinary team. Patients were followed up at regular intervals and their metabolic status was evaluated.

Results: In a 12-month period, 124 patients were seen at our new Weight Management Clinic. Twenty-eight patients (23%) required surgery and underwent LAGB. Of these, 15 patients (54%) (12F:3M) suffered from diabetes mellitus and were included in our study. Mean age was 43.6 years (range 32-62). The average preoperative body

weight was 101.3 kg (85.4-158.2) and BMI 40.1 (32.8-54.5). The mean follow-up period was 6.36 months (2-12). The average FBG dropped from 8.1 (4.6-14.9) preoperatively to 6.2 (3.9-10.6) postoperatively and the average HbA1c from 7.3 (5.4-10.6) to 6.5 (5.4-8.8). Eight of the 15 patients (53.3%) patients started off with Type 1 diabetes; of these 1 resolved, 3 were shifted from insulin to oral anti-diabetic agents, 3 improved and 1 was lost to follow-up. Of the remaining 7 (46.7%) with type 2 diabetes, 2 resolved, 3 improved and 3 remained the same. Of the 11 hypertensives in this group, 7 improved and 4 were too early in the follow-up period to show any improvement. Of the 13 patients with dyslipidemia in this group, 8 improved and 5 remained the same. The average weight loss was 10.9 +/- 4.5 kg (range 3.6-18.1) and average fall in BMI was 4.5 +/- 1.9 (range 1-7.5).

Conclusion: Our initial experience demonstrated that diabetes and metabolic syndrome are highly prevalent among the obese patients in Singapore. Laparoscopic adjustable gastric banding improved glycaemic control and metabolic syndrome in most patients.

SUR 003

Awareness of Haemoglobin a1c and Its Relationship With Diabetic Retinopathy Among Adult Diabetic Patients Attending a Tertiary Ophthalmic Centre

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Aim: To investigate the awareness of haemoglobin a1c (hba1c) and its relationship with diabetic retinopathy among adult diabetic patients attending a tertiary ophthalmic centre.

Methods: A prospective survey of 507 randomly selected adult diabetic patients was conducted.

Results: The mean age of the participants was 62.1 years (range, 23 to 88), with 50.9% males and 49.1% females. The mean duration of diabetes was 7.8 years (range, 2 months to 45 years). During the previous 1 year, 99.6% had consulted an eye doctor and 97.6% a family physician/specialist for eye screening and diabetes follow-up respectively. Of the participants, 43.4% were aware that they had diabetic retinopathy, while 15.9% were familiar with the specific term hba1c as they had done the test previously. An additional 58.5% were aware of a test which monitors blood glucose levels over a 3-month period. A total of 32.5% knew the ideal value of hba1c while 41.8% were aware that hba1c level indicates the risk of developing diabetic retinopathy. Additionally, 67.3% were willing to have their hba1c tested at their next physician visit and 69.4% were keen to learn more about hba1c.

Conclusion: Nearly three-quarters of diabetic patients surveyed at our eye centre were aware of the specific term hba1c or the test itself. However, the majority of them were not aware that they had diabetic retinopathy and that hba1c level can indicate the risk of developing diabetic retinopathy. More education and awareness is needed make diabetic patients understand hba1c and their diagnosis of diabetic retinopathy to help control diabetic retinopathy development and progression.

SUR 004

Obstructive Sleep Apnoea (OSA) Patterns in Bariatric Surgical Practice in Asia and Response of OSA to Weight Loss After the LAGB

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Aim: To evaluate the incidence of obstructive sleep apnoea (OSA) in severely obese Asians and to study the impact of weight loss on OSA.

Methods: We report the results of routine preoperative Polysomnograms in 350 Asian patients undergoing bariatric surgery in our institute. Polysomnograms were repeated in 75 randomly selected patients with moderate to severe OSA after target weight loss.

Results: The prevalence of OSA in obese Asians is high. Moderate OSA was found in 46% of patients and severe OSA was found in 33%. Severe OSA was significantly more in the Chinese (46%) compared to the Malays (29%) or Indians (21%) ($P = 0.035$). We identified other risk factors for severe OSA (male sex, higher body mass index and the presence of hypertension) but were unable to select identifying parameters for very low (<5%) likelihood of severe OSA such that routine sleep studies prior to bariatric surgery could be omitted. After target weight loss, Apnoea Hypoapnoea Index (AHI) showed improvement of 50% at 20 kg excess weight loss with cure of OSA in preoperatively severe cases ($P < 0.005$). Mild to moderate cases reported similar improvements, though a direct correlation could not be established. Desaturation events, apnoea episodes, work of breathing and subjective assessment of sleepiness scores and QOL showed improving trends, albeit not statistically significant.

Conclusion: The incidence of OSA in Asians undergoing bariatric surgery is high. Routine sleep studies in Asian patients are justified. Weight loss brought about a significant improvement in AHI.

SUR 005

Breast Conservation Surgery – A Local Perspective

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Aim: Breast conservation surgery, in the form of wide local excision, with postoperative adjuvant radiotherapy is as effective as conventional mastectomy in treatment of early breast carcinoma with equivalent overall survival. Women whose breasts are preserved have fewer episodes of depression, anxiety and other psychosocial events. The surgical margin is the strongest predictor for local recurrence and failure of breast conservation surgery. The aim of this study is to review outcome of patients who have undergone breast conservation surgery and to determine preoperative predictors of involved margins.

Methods: Medical records including clinic notes, operation and histology reports of all patients who had undergone breast conservation surgery for breast carcinoma between January 2005 and December 2006 (24 months) were traced manually and analysed.

Results: A total of 481 female patients underwent surgery for breast carcinoma in the 2-year period, of which 242 (50.4%) underwent breast conservation surgery. Sixty-six patients (27.3%) had involved margins requiring re-operation, 40 patients underwent re-excision and 26 patients underwent mastectomy. Of the patients requiring a second operation, 37 (56.1%) had Invasive Ductal Carcinoma while 23 (34.8%) had Ductal In-Situ-Carcinoma and 6 (9.1%) had Invasive

Lobular Carcinoma. None of the patients who were treated successfully with breast conservation surgery (not requiring a second operation to ensure adequate margins) had Invasive Lobular Carcinoma.

Conclusion: Breast conservation surgery is a safe and effective treatment and should be offered to patients with early Invasive Ductal Carcinoma (IDC) or Ductal Carcinoma-In-Situ (DCIS). Patients with Invasive Lobular Carcinoma can still be treated with breast conservation surgery but will require excision with a larger margin or should be offered mastectomy for adequate treatment.

SUR 006

Patient Outcomes in Endoscopic Sinus Surgery with Computer-assisted Image Guidance

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¹Department of Otorhinolaryngology, Tan Tock Seng Hospital, Singapore

Aim: Image-guided surgery (IGS) is increasingly used in surgery involving the paranasal sinuses, where proximity to orbit and cranial cavities demands a high degree of anatomical precision. IGS has been practised routinely in our department since 2002 on all patients undergoing endoscopic sinus surgery. The aim of our study was to evaluate patient outcomes following image-guided endoscopic sinus surgery.

Methods: A prospective study was conducted on patients requiring endoscopic sinus surgery for chronic sinusitis and nasal polyposis in our department. The InstaTrak electromagnetic image guidance system was used during surgery. Preoperative assessment of symptoms, nasal endoscopic appearances and CT scan appearances were scored. Postoperative symptom and endoscopic scores were recorded at 3, 6 and 12 months. Major surgical complications were recorded. Accuracy of the system in anatomical localisation was also measured and recorded.

Results: One hundred and forty-six patients were included in the study, of which 23% (34) were revision cases. A total of 97% (141) of the patients experienced an overall improvement in symptoms at 1 year. Improvements in endoscopic appearances of nasal discharge, polyps and oedema at 1 year were found in 91% (133), 86% (126) and 85% (124) of the patients respectively. No major complications were recorded in any of the patients. Accuracy of the system measured was 96% of instances with mean distance error of 2 mm.

Conclusion: From our study, it appears that improved safety margin (zero complication rate) and improved patient symptom outcomes are achieved with image-guided sinus surgery. The use of image guidance as an adjunct to endoscopic sinus surgery is definitely recommended.

SUR 007

Laparoscopic vs Open Nephrectomy: Diverging Indications

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Aim: The authors reviewed their experience with laparoscopic nephrectomy and open nephrectomy in patients in their institution. Efficacy, safety, and cost effectiveness of these procedures were examined. Laparoscopic nephrectomy is now becoming the standard of care in many centres. We aim to compare the experience with laparoscopic and open nephrectomy within a single medical centre.

Methods: Data were collected for all patients undergoing both elective and emergency nephrectomies (radical and simple and

partial) between May 2005 and May 2007.

Results: A total of 57 patients underwent nephrectomies over a period of 2 years. Of these patients, 31 underwent open nephrectomy, and 26 were treated laparoscopically. There were 5 conversions (8.8%). The average length of the lesion resected laparoscopically was 6.5 cm (3.7 to 9 cm), compared to 10 cm (2 to 19 cm) for open. Average operative time for laparoscopic nephrectomy was 190 minutes (130 to 270 minutes) vs 176 minutes (115 to 250 minutes) for open nephrectomy. Average blood loss was 480 mL (100 to 1200 mL) for laparoscopic and 1400 mL (200 to 3700 mL) for open. Length of stay for laparoscopy was 3.6 days (1 to 6 days) vs 10 days (3 to 40 days) for open. Perioperative morbidity (10% vs 55%) was significantly less for laparoscopic nephrectomy.

Conclusion: Laparoscopic nephrectomy results in fewer hospital days, reduced complications, and more rapid recovery than open surgery. Laparoscopic nephrectomy has now become the standard of care in our institution.

SUR 008

Laparoscopic Sleeve Gastrectomy for the Surgical Treatment of Morbid Obesity, Our Early Experience

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Aim: The global epidemic of morbid obesity has not bypassed Singapore. Surgery has become more common for the treatment of morbid obesity locally. Laparoscopic Adjustable Gastric Banding is the most popular surgical procedure in Singapore. However, the option of Laparoscopic Sleeve Gastrectomy is gaining popularity in Asia. This procedure has been safely used as a definitive or part of a 2-stage procedure for gastric bypass in the west. We began to offer Sleeve Gastrectomy as an alternative to Adjustable Gastric Banding as of early 2007. We present the early results of our patients who have undergone sleeve gastrectomy.

Methods: Since Early 2007, Laparoscopic Sleeve Gastrectomy was offered to 2 suitable patients presenting to the Alexandra Hospital weight management programme. Surgery was carried out laparoscopically using the 5-port method (two 12-mm ports and three 5-mm ports) with harmonic scalpel mobilisation of the short gastrics and posterior attachments of the stomach followed by stapler resection sized around a 32 Fr endoscope.

Results: Early results from this small series of patients are presented; including extent of weight reduction, surgical complications, resolution of obesity related co-morbidities, and patient satisfaction.

Conclusion: Laparoscopic Sleeve Gastrectomy can be offered as an alternative to Adjustable Gastric Banding for the surgical treatment of lower BMI morbid obesity. Further studies to determine the complication profile and durability of weight loss are ongoing.

SUR 009

Transverse Colon Volvulus Associated With Chilaiditi's Syndrome and Acute Respiratory Distress

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Introduction: Chilaiditi described radiographic finding of colonic interposition at hepatodiaphragmatic plane in 1910. When a patient presents with this anatomic anomaly and has associated gastrointestinal

symptoms, it is called Chilaiditi's syndrome. All the transverse colon volvulus with Chilaiditi's syndrome presented with varying degree of obstruction symptoms. We report a first case of Chilaiditi syndrome associated with transverse colon volvulus with intestinal obstruction and acute respiratory distress.

Clinical Picture: A 40-year-old male, with a known case of chronic schizophrenia who had previously undergone laparoscopic assisted sigmoid colectomy for sigmoid volvulus 5 years ago, presented with acute respiratory distress due to markedly distended abdomen and obstipation. Plane abdominal and chest films showed features of dilated colon located beneath an elevated right hemidiaphragm, which was associated with pushing up lung fields and downward displacement of the liver (hepatodiaphragmatic colonic interposition).

Treatment: Emergency endotracheal intubation and assisted respiratory support were given. Colonoscopic decompression performed, but to no avail. Emergency laparotomy and resection of ischaemic gangrenous loop of volvulus done.

Outcome: Postoperative period was uneventful. Patient recovered fully from respiratory distress after operation.

Conclusion: This study, one of the extreme presentations of Chilaiditi's syndrome associated with transverse colon volvulus combined with acute respiratory distress. Emergency respiratory support and resuscitations must be performed promptly in view of respiratory problem. Colonoscopic decompression of transverse colon volvulus has been performed rarely and generally is unsuccessful. Surgical decompression and resection of the gangrenous segment is the treatment of choice in this case.

SUR 010

Posterior Capsule Rupture During Routine Cataract Surgery

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Aim: To investigate the short-term outcome in eyes which sustained posterior capsule rupture (PCR) during routine cataract surgery.

Methods: As part of a clinical audit programme, all eyes which had PCR during routine cataract surgery were coded and entered into a database. The case notes of these patients operated from January 2004 to September 2005 were retrospectively reviewed. Complicated cataracts such as traumatic and subluxated cataracts were excluded.

Results: Out of 1525 cataract surgeries performed by phacoemulsification or extracapsular extraction, 27 (1.8%) were complicated by PCR. Two cases were excluded from analysis due to incomplete data. Among the remaining 25 eyes, 13 (52%) achieved a best-corrected visual acuity (BCVA) of 6/12 or better between 6 weeks to 3 months postoperatively. Seven eyes with a postoperative BCVA worse than 6/12 had significant preexisting ocular pathology, which contributed to the poor vision. Upon the exclusion of these 7 cases, a good visual outcome was attained in 72.2% of patients. Of the remaining 5 eyes with a poor visual outcome, 3 eyes had bullous keratopathy, 1 eye had a vitreous haemorrhage and 1 case was of an indeterminate cause. The presence of coexisting ocular pathology

was a significant risk factor of poor visual outcome ($P = 0.01$).

Conclusion: The majority of eyes that had routine cataract surgery complicated by PCR had good BCVA in the early postoperative period.

SUR 011

The Use of Sefrafilm Adhesion Barrier in Frank Infections of the Abdominopelvic Cavity is Safe

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Aim: Use of Sefrafilm as an antiadhesion barrier following elective colorectal resections has proven to be safe and efficacious. There is a paucity of data on its safety in infected conditions except in animal studies. We aim to determine the safety and efficacy of Sefrafilm usage following colorectal resections in potentially infected fields.

Methods: A retrospective review of patients on whom Sefrafilm was used following colorectal resections in an infected field from April 2002 to September 2006 was undertaken. Primary endpoints were wound infection rates, intra-abdominal infection rates, morbidity and mortality rates and incidence of postoperative small bowel obstruction.

Results: Thirty-three patients (21 men, 12 women) with an average age of 61 years were analysed. Twenty-one presented with acute bowel perforations (10 from tumour, 10 from inflammatory conditions, and 1 from foreign body). Colonic obstruction with evidence of bowel ischemia secondary to colorectal tumours was seen in 6 patients whilst 3 presented with anastomotic leaks. Thirty-one patients underwent major colorectal resections and 2 patients had small bowel resections. With a median follow up of 22 (2-55) months, we noted a local wound complication rate of 9%. Three patients developed intra-abdominal collections requiring intervention. Postoperative small bowel obstruction occurred in only 1 patient. The overall morbidity rate was 21%. There were 3 operative mortalities, which were a result of cardiac failure, pneumonia and venous thromboembolism respectively.

Conclusion: Sefrafilm usage following colorectal resections in infected fields is efficacious and is not associated with an increased rate of infective complications.

SUR 012

Gastric Phytobezoars – Snaring A Common Snare

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Aim: Gastric phytobezoars is increasingly seen in our ageing population presenting with abdominal pain and gastrointestinal obstruction in the older adult. This study aimed (i) to analyse the risk factors of bezoar formation and common treatment modalities, (ii) to review surgical treatment of 11 cases of patients with phytobezoars, and (iii) to describe 2 cases of gastroscopic fragmentation of a large gastric phytobezoar using a simple endoscopic snare.

Methods: Retrospective review of a series of 11 patients presenting with abdominal pain and gastrointestinal obstruction who were found to have bezoars was done.

Results: Risk factors of gastric phytobezoar formation include gastric operations that disable the pyloric function, diabetes mellitus and deficient mastication in the edentulous elderly.

Conclusion: Abdominal pain and gastrointestinal obstruction caused

by phytobezoars is increasingly common in the elderly population and should be considered as a differential especially in the edentulous, diabetic and those with a previous gastric operation. Treatment options are varied and dependent on the size and location of the bezoar. Intestinal bezoars are usually formed in the stomach and seldom occur in isolation. We recommend that the patient with intestinal bezoars undergo OGD to exclude additional bezoars in the stomach. Endoscopic fragmentation with use of common endoscopic instruments is an effective and less invasive option. Recurrence of bezoars may be prevented with compliance to finely minced diet.

SUR 013

Laparoscopic Approach to the Management of Phytobezoar

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Aim: Impacted bezoar is a well-known but relatively uncommon cause of small bowel obstruction. Risk factors include patients who are edentulous or have had previous gastric surgery. Accurate diagnosis of small bowel obstruction secondary to an impacted bezoar remains a challenge till today. Traditionally, a laparotomy is the mainstay of management. We present 2 cases of small bowel obstruction secondary to impacted phytobezoar encountered in our institution managed laparoscopically.

Methods: A retrospective review of our experience with phytobezoar associated small bowel obstruction was done. Ten patients were identified from 2003 to June 2007. Eight were managed with a laparotomy while 2 were managed laparoscopically.

Results: The 2 laparoscopically-managed cases demonstrated better outcome in terms of reduced length of hospital stay as well as decreased postoperative complications compared to the other 8 cases.

Conclusion: Small bowel obstruction caused by an impacted phytobezoar can be managed laparoscopically and is associated with superior postoperative outcome for the patient.

SUR 014

Endoscopist is a Major Factor in Polyp Detection at Colonoscopy

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Aim: To determine the impact of various endoscopists and patient factors on polyp detection at colonoscopy.

Methods: Complete colonoscopies performed by Consultant General Surgeons in Tan Tock Seng Hospital between 1 January 2007 and 30 April 2007 were retrospectively reviewed. Information regarding the following variables were collected – indication for colonoscopy, endoscopist, polyp detection, duration of colonoscopy, age and gender.

Results: Four hundred and forty-seven colonoscopies were carried out during this period. Our cohort consisted of 267 males and 200 females. The overall mean age (yr) \pm SD for the entire cohort was 60.0 \pm 13.5. The main indications for the colonoscopies were haematochezia (22.9%), change in bowel habit (15.2%), history of polyps (13.3%), history of colorectal cancer (13.3%), haemorrhoids (12.4%) abdominal pain (5.78%), positive family history (3.64%) and anaemia (3.43%). There was a statistically significant difference in the polyp detection rate between endoscopists ($P = 0.029$). Endoscopists were

dichotomised into 2 groups according to their mean procedure times with the cut-off being 10 minutes. Patients aged above 50 years were more likely to have polyps detected ($P < 0.001$). "Slow" endoscopists (mean procedure time more than 10 minutes) had a significantly higher polyp detection rate ($P = 0.01$). Multivariate analysis showed that the above 2 factors were independent predictors of polyp detection. In our cohort, gender was not found to be a significant predictor ($P = 0.257$).

Conclusion: There are significant differences in polyp detection rates between endoscopists, and those with longer mean procedure times had significantly higher polyp detection rates.

SUR 015

Neuroendocrine Tumours of Pancreas

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Aim: Pancreatic neuroendocrine tumours (PNET) comprise a unique and rare group of tumours that require a high degree of suspicion for timely diagnosis. They have heterogeneity in their pathobiology and clinical behaviour. Preoperative diagnosis is aided with imaging and functional scanning. Surgery is the main stay of cure and intra-operative ultrasound is a useful adjunct during surgery. Their prognosis is usually better than pancreatic ductal adenocarcinoma. Multimodal approach with hormonal and bio chemotherapy, radionuclide therapy and surgical resection should be considered in selected cases for improved outcomes. We herewith review our 5 years of experience of PNET at National University Hospital with special emphasis on the surgical modalities used.

Methods: All the patients with the diagnosis of 'neuroendocrine tumours of pancreas' according to the ICD code were studied.

Results: Eleven patients with the diagnosis of PNET were identified. The pathobiology was heterogeneous and clinical presentation also varied. All the tumours were managed by a multidisciplinary approach. The surgical modalities included enucleation, distal pancreatectomy, distal pancreatectomy with splenectomy, whipple's procedure and central pancreatectomy. Surgical resection is the only chance of cure. Resection is recommended even in the presence of limited liver metastatic disease. Palliative debulking resection is recommended in inoperable disease. Medical management is continuously advancing and newer chemotherapeutic medicines are shown to have promising results. Laparoscopic pancreatic surgery has been associated with improved outcomes in well-selected PNET patients.

Conclusion: Surgical resection is safe with acceptable morbidity. The prognosis is determined by biological behaviour and malignant potential.

SUR 016

Cerebellar Strokes – Prognosis and Outcome

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Aim: Cerebellar strokes (both infarcts and haemorrhagic) are relatively uncommon. Indications for surgery in cerebellar infarcts and cerebellar haemorrhages varies from centre to centre and remains to be standardised. Surgical options include ventricular drainage, posterior fossa decompression and clot evacuation. We reviewed our institutional experience in the management of cerebellar strokes and report here

our results comparing the outcome of cerebellar infarcts versus cerebellar haemorrhage.

Methods: Our study is a retrospective one consisting of 80 patients seen in NUH over a span of 3 years (2004-2006). The outcome and management of 43 cases of cerebellar infarction and 37 cases of cerebellar hemorrhage were studied. Outcome measurement is based on the internationally accepted Modified Rankin Scale and the Glasgow Outcome Scale. Cerebellar haemorrhages and infarcts with brainstem extensions, cerebellar bleeds/infarcts with synchronous supratentorial bleed/infarct and bleeding from cerebellar tumours are excluded from our study.

Results And Conclusion: Our preliminary results suggest that overall patients with cerebellar infarcts do better than patients with cerebellar haemorrhages irrespective of whether surgery is done or not.

SUR 017

Gastric Adenocarcinoma Occurring in a Young Patient With Common Variable Immunodeficiency Syndrome – A Case Report and Review of Literature

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Introduction: Patients with common variable immunodeficiency syndrome have an increased frequency for malignancy.

Clinical Picture: A case of a 29-year-old man with common variable immunodeficiency who subsequently developed gastric adenocarcinoma is described.

Treatment: He had a D2 subtotal gastrectomy.

Outcome: Postoperatively, he was well and had adjuvant chemo irradiation.

Conclusion: Gastric complaints among patients are frequent. Due to the high incidence of malignancy, these complaints should be viewed seriously and investigated with a gastroscopy in order to detect these malignancies at their early stage. Common variable immunodeficiency patients tend to have chronic atrophic gastritis with or without pernicious anaemia. Chronic atrophic gastritis leads to intestinal metaplasia, dysplasia and finally carcinoma. This premalignant condition needs to be followed up.

SUR 018

Genital Fournier's Gangrene: Experience With 3 Patients

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Aim: Fournier's gangrene (FG) is an extensive fulminant infection of the genitals, perineum, or the abdominal wall. We report our experience with the management of this difficult infectious disease.

Methods: Three patients were admitted with the diagnosis of Fournier's gangrene between March 2007 and June 2007. All patients were treated with broad-spectrum triple antimicrobial therapy, broad debridement, exhaustive cleaning, and application of dressings. Multiple surgical procedures were necessary to bring the infection under control in all 3 patients. Two patients then underwent split-thickness skin grafts or delayed closure as needed.

Results: Patient ages ranged between 60 and 86 years (mean 71) with 2 male patients and 1 female patient. The mean hospital stay was 27 days (range, 18 to 45). Two of the 3 patients were diabetic. One of the

male patients had associated Carcinoma of anal canal and the female patient had infection of left Bartholin gland. All the patients underwent extensive and multiple surgical debridements. Colostomy was performed in 2 patients. Free skin grafts were applied to 2 patients.

Conclusion: Fournier's gangrene is the result of a highly lethal and rapidly progressive necrotizing infection of the perineal and genital fascia, with gangrene of the overlying skin. The cutaneous manifestations of Fournier's gangrene are merely "the tip of the iceberg" because the infection spreads aggressively along recognised fascial planes. The management of this infectious entity should be aggressive. Patients with Fournier's Gangrene need extensive debridement and cystostomy or colostomy when necessary. Broad-spectrum triple antimicrobial regimen and aggressive debridement are mandatory.

SUR 019

Two Cases of Deep Burns of the Hands Managed by Moist Exposed Burn Ointment (MEBO) Bags With Good Hand Function **GG XU¹, RCK NGIM²**

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Introduction: Two patients with deep dermal and full thickness bilateral hand burns treated with the herbal ointment MEBO are reported.

Methods: Patient A sustained 65% total body surface area (TBSA) mixed burns and bilateral deep dermal burns of his hands. Patient B sustained 36% TBSA, bilateral deep dermal dorsal hand burns and full thickness burns of the fingertips. Patient A: Both hands were treated initially with flomazine bags for slough separation and later changed to MEBO bags. Early mobilisation was started. No surgery was performed on the hands. Patient B: Immediate burns excision with non-meshed skin grafting was done on the second post burn day. When the grafts were stabilised on the fifth postoperative day, the hands were mobilised in MEBO bags.

Results: Patient A: Deep dermal burns healed without skin grafting by 8 weeks. Patient B: The dorsal deep dermal burns on the dorsum healed in 2 weeks but the full thickness fingertip burns healed in 60 days. There were residual nailbed deformities and pulp reduction. Good hand function and range of motion were achieved for both patients.

Conclusion: Hand burns treated using MEBO bags have several advantages: 1. Easily available 2. Economical 3. Rapid wound epithelisation 4. Little scarring 5. Easy wound inspection, and 6. Facilitates easy mobilisation. Deep dermal burns are usually grafted early. As an alternative, MEBO bags are used for rapid epithelisation when surgery is not performed. Full thickness fingertip burns are normally terminalised. Preservation of bony length of salvaged digits offer reconstructive options such as nail transfer and microsurgical pulp transfer.

SUR 020

Retrospective Study of Phyllodes Tumour of the Breast – The Tan Tock Seng Hospital Experience

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Aim: Phyllodes neoplasm is a rare tumour of the breast. It constitutes less than 1% of all breast tumours. PT can be classified as benign,

borderline and malignant. Local recurrence of both benign and malignant type is common when excision is incomplete. The aim of this study is to review clinicopathology presentation, treatment and outcome of patients.

Methods: Retrospective data of all patients with histological confirmation of phyllodes tumour between 2001-2006 were analysed.

Results: Forty-three patients were included in this study. All our patients were female, mean age was 45.4 years +/- 12.0 (range, 21 to 71). Twenty-five patients (58.1%) had benign phyllodes tumour, 14 (32.6%) had borderline phyllodes tumour and 4 (9.3%) had malignant phyllodes tumour. Of the patients, 74% were Chinese, 18.6% were Malays, 4.7% Indians and 2.3% Eurasians, which followed the racial distribution in Singapore. Most of our patients (93%) presented with lump and 7% of patients presented with breast pain. Mean size of tumour at presentation was 58.1 mm +/- 36.2 (range, 15 to 210). All but 1 patient underwent surgery, either wide excision or mastectomy. Overall recurrence rate was 16.7%. Not all recurrences were associated with involved margins. Patients who underwent re-operation achieved clear margins. In our study, 1 patient developed lung metastasis at 1-year follow-up. Size of tumour could not be used to predict benign or malignant type of PT.

Conclusion: With non-operative management of fibroadenoma widely adopted, it is important to differentiate PT from other benign breast lump. Excision should be recommended when rapid growth of lump is observed. Needle biopsy cytology that shows hypercellular stroma suggests diagnosis of PT. Sampling error is the most common cause of misdiagnosis. Surgery with wide negative margins is the treatment option of choice. Axillary clearance is not indicated. The role of adjuvant radiotherapy or chemotherapy is not established.

SUR 021

High-speed ICG Angiography-guided Laser Treatment for Polypoidal Choroidal Vasculopathy: 2-year Case Series

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Aim: To report the treatment outcome of Polypoidal Choroidal Vasculopathy (PCV) using HS ICG Angiogram (HRA II) guided laser treatment.

Methods: Consecutive Interventional case series diagnosed as PCV using HRA II FFA/ICG video-angiography at a tertiary referral centre for exudative AMD were studied.

Results: One hundred and twenty-three eyes with occult CNV (MPS classification) were referred to the AMD Clinic at Tan Tock Seng Hospital over 12 months (July 2003 to June 2004). A total of 24% of these cases demonstrated PCV on HS ICG. Patients with PCV had a mean age of 65.9 years, were predominantly Chinese (93%) males (1.6:1). Fifteen patients underwent laser therapy to PCV and completed 2 years of follow-up. A total of 53.3% of eyes demonstrated visual improvement (>2 Snellen lines) with 93.3% demonstrating visual stabilisation (<2 Snellen lines change in VA). Of the patients, 86.7% demonstrated angiographic resolution of PCV, whilst 66.7% demonstrated clinical resolution of presenting fundal features.

Conclusion: Confocal scanning ICG angiography provides excellent imaging of PCV, allowing identification of feeder vessel as well as accurate localisation of PCVs. Minimum 2-year follow-up suggests that this treatment option is safe and efficacious.

SUR 022**Probability of OSA Severity Based on Patient Characteristics****JF THONG¹, KP PANG²**¹Department of Otorhinolaryngology, Tan Tock Seng Hospital, Singapore, ²Pacific Sleep Centre, Singapore

Aim: Obstructive sleep apnoea (OSA) typically presents as loud snoring with or without excessive daytime somnolence. For this reason, many patients with such complaints are referred to the Sleep clinic to rule out OSA. Certain patient characteristics are also associated with OSA. In this preliminary study, we aim to determine the probability of severe OSA based on clinical history and patient characteristics.

Methods: A prospective study was conducted on consecutive patients referred to the Sleep clinic. All patients underwent Level 1 overnight attended polysomnography following full history and ENT examination. Severe OSA was diagnosed as an apnoea-hypopnoea index (AHI) ≥ 35 per hour on polysomnography. The probability of having severe OSA based on gender, body-mass index (BMI), past history of hypertension and Epworth sleepiness score (ESS) was calculated.

Results: Eighty patients (14 female, 66 male) were included, of whom 53% had severe OSA, 9% moderate, 34% mild and 5% no OSA. Of the patients, 58% of the males had severe OSA compared with 21% of the females. A total of 57% of obese patients (BMI ≥ 30) had severe OSA compared with 33% of patients with normal weight (BMI ≤ 23). Past history of hypertension gave a higher probability of severe OSA (84% compared to 43%). Probability of severe OSA based on subjective assessment of excessive daytime somnolence (ESS ≥ 10) (57%) was similar to those without (ESS < 10) (49%).

Conclusion: These are preliminary results. A larger study is currently in progress and these findings will serve as a useful means of predicting patients with severe OSA based on simple clinical history and patient characteristics.

SUR 023**Laparoscopic Hepatectomies for Hepatocellular Carcinoma in the Right Lobe of the Liver****SKY CHANG¹**¹Surgery, National University Hospital, Singapore

Aim: Screening programme among patients with chronic liver disease (CLD) has allowed hepatocellular carcinoma (HCC) to be detected earlier. Therapeutic options include liver transplantation, hepatic resection and percutaneous treatments. Liver transplantation is limited by donor shortage. Surgical resection is the definitive treatment, but in CLD, is associated with significant morbidity, which may be related to the large laparotomy wound. With increasing experience, tumours in the left lateral segment of the liver are now increasingly managed laparoscopically, but the treatment of tumours in the right lobe remains a challenging procedure. The author reviews his personal experience with laparoscopic surgery for hepatocellular carcinoma in the right lobe of liver.

Methods: Following formal 1-year training in an overseas centre, the author started the programme of laparoscopic hepatectomies in the National University Hospital. Patient data and outcome were prospectively collected.

Results: Of 10 laparoscopic hepatectomies in his local series, 4 were for HCC in the right lobe of liver with CLD. Four comparable left sided laparoscopic liver resections were selected for comparison. The

operating time is longer for the right (mean 450 vs 156 min). The right-sided resections employed more instruments. Intra-operative blood loss is more among the right-sided resections (mean 350 vs 78 mL). The only complication arise from a case of right hepatectomy with patient developing variceal bleeding postoperatively.

Conclusion: Laparoscopic liver resections in the right lobe of liver are technically feasible with recent advances in laparoscopic instruments even in the setting of tumour in CLD. However it remains a demanding procedure and involves higher risk than a left sided resection.

SUR 024**Outcomes of Salvage Surgery in Patients With Recurrent Cancer of the Nasopharynx****IS SUN¹, KS LOH^{1,2}**¹Yong Loo Lin School of Medicine, National University of Singapore, Singapore, ²Otorhinolaryngology, National University Hospital, Singapore

Aim: The surgical approach in the treatment of loco-regional recurrence of nasopharyngeal cancer (NPC) is an important alternative to re-irradiation, itself associated with significant morbidity. We evaluated the results of salvage surgery, including the use of the lateral rhinotomy with medial maxillary (LRMM) approach for nasopharyngectomy procedures, in patients with recurrent NPC for which primary chemo-radiotherapy has failed.

Methods: Between May 2004 and May 2007, data from 20 consecutive patients undergoing salvage surgery in our institution, for loco-regional recurrence of NPC, were retrospectively analysed. The remission period, operative data and postoperative outcomes were reviewed.

Results: Eight (40%) patients presented with local recurrence, 9 (45%) with regional recurrence and 3 (15%) with both local and regional recurrence. The median remission period for local and regional recurrence was 18 and 11.75 months respectively. There was no surgical mortality with the LRMM approach or neck dissection. No major postoperative complications were encountered. Of the patients undergoing surgery at the primary and regional sites, 27.3% and 8.3% respectively experienced 3 or more minor complications.

Conclusion: Salvage surgery is an effective method of control for recurrent cancer of the nasopharynx, with acceptable mortality and morbidity. A prospective randomised study is warranted to further evaluate the effectiveness of surgery versus re-irradiation in recurrent disease.

SUR 026**Laparoscopy Without Catheters With On-Demand Use of Transabdominal Veress Needle Bladder Decompression****E LIM¹, A CHENG¹**¹Department of General Surgery, Alexandra Hospital

Aim: It is traditionally taught that urinary catheters should be placed before laparoscopic procedures. This helps in obtaining an unobstructed view, prevent bladder trauma and untimely catheterisation during operation. However, catheterisation results in higher incidence of urinary tract infections (UTI), urethral trauma and postoperative lower urinary tract symptoms. We describe a series of cases of laparoscopic inguinal herniorrhaphies and colectomies performed without catheters with on-demand use of Veress needle bladder decompression.

Methods: A retrospective review of Laparoscopic inguinal hernioplasties and colectomies performed without catheters was obtained from computerised records from 2005 to 2006. Data were collected for mean time of operation, need for use of on-demand trans-abdominal Veress needle bladder decompression and UTI.

Results: Twenty-three laparoscopic inguinal hernioplasties (9 bilateral) and 4 laparoscopic colectomies were performed without catheters. The mean time of operation was 105 minutes and 120 minutes respectively. Three of the colectomies required Veress needle decompression intraoperatively whereas only 2 hernioplasties required needle decompression. There were no UTI complications.

Discussion: We present a safe and simple method of avoiding catheterisation in laparoscopic procedures. Short operations lasting about 90 minutes will usually not require catheterisation or Veress needle decompression. Longer operations such as laparoscopic colectomies may require Veress needle decompression.

SUR 027

Obturator Hernia – In the Modern Era

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Aim: Obturator hernia is a rare variety of abdominal hernia that nonetheless is a significant cause of morbidity and mortality especially in the elderly age group. Landmark articles like ‘Obturator hernia: a continuing diagnostic challenge?’, ‘Obturator hernia needs a laparotomy, not a diagnosis?’ and ‘Obturator hernia still deadly?’ have been looked into in the context of modern methods of diagnosis and management. Role of CT scan, early surgery both open and laparoscopic is discussed.

Methods: We have seen and managed 6 cases of Obturator hernias between December 2003 and December 2006. These cases represent 0.06% of all hernias repaired in our institution during this period. The mean age was 88.8 years, mean weight 33 kgs, mean height 140 cm, mean BMI 15.5 and mean number of deliveries 4.1. All 5 patients presented with signs and symptoms of intestinal obstruction (IO). None had previous experience of abdominal surgery. No external hernias were noted on examination. Howship Rhomboid Sign (HRS) was positive in 2 patients. CT scan of abdomen and pelvis was done in all the patients preoperatively.

Results: Correct preoperative diagnosis made in 6/6 (100%) patients by clinical signs and CT scan of abdomen and pelvis. All patients were operated via a lower vertical midline abdominal incision. Small bowel was contents of hernia sac. Three of the 6 operated patients required a bowel resection. Simple closure of obturator canal with prolene no. 1 was done. The mean hospital stay was 24 days (6-44 days). No mortality was recorded. Postoperative complications included pneumonia (n = 1) and wound infection (n = 2). No recurrence was noted in the 3 patients followed up to 20 months.

Conclusion: Obturator hernia is a rare entity. This occurs through the obturator foramen and usually afflicts elderly, emaciated female patients. It is occult on external examination. Clinical signs are seldom thought and hence seldom sought. High clinical suspicion is required and early diagnosis with a CT scan is possible. Early surgery and not prolonged preoperative evaluation is the key to prevent morbidity and mortality. Laparoscopic management can reduce morbidity and mortality.

SUR 028

Frequency Of Measurements of Serial Bilirubin and Liver Function Test Levels After an Endoscopic Retrograde Cholangiopancreatography Clearance of Common Bile Duct Stones

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Aim: Serial bilirubin levels are performed after endoscopic retrograde cholangiopancreatography (ERCP) clearance of common bile duct stones (CBDs). In patients where there is a retained stone, the bilirubin may not decline or the decline may only be temporary. We aim to study the trend of the decline of conjugated bilirubin after endoscopic clearance of bile duct stone and through this determine the optimal frequency of measurements of the liver function test (LFT).

Methods: Patients who underwent ERCP for CBDs between October 2004 and December 2005 had their trend of the LFT studied to identify the timing of their decline. Patients with retained CBDs were compared with those who had successful ERCP. The effect of level of pre-procedural bilirubin, degree of CBD ectasia and use of biliary stents on the timing of decline of LFTs was also analysed.

Results: A total of 182 patients had ERCP for CBDs, of which 60 had a complete set of post-procedural LFT measured daily from Day 0 to Day 11. All of these patients had sphincterotomy after retrieval of stones. Successful ERCPs were recorded for 91.7% of the patients. Forty-seven of the patients (78.4%) showed a drop in serum conjugated bilirubin level post-ERCP day 1. Two (3.3%) manifested a drop in serum bilirubin level post-ERCP day 2-3, while 6 (10%) manifested a drop in serum bilirubin level post-ERCP day 4. The remaining 5 (8.3%) had retained stone requiring repeat ERCP.

Conclusion: It is recommended to measure bilirubin levels day 0-1 and if levels stayed the same or were higher, a second measurement should be done on day 4. Repeat ERCP is recommended if day 4 level is elevated compared to day 1.

SUR 029

A Review of Ambulatory Laparoscopic Cholecystectomy in a Singapore Institution: Are We Ready for Day-case Laparoscopic Cholecystectomy?

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Aim: Day-Case laparoscopic cholecystectomy (LC) is widely practised in many countries. However, this has yet been accepted in Singapore. Acceptable criteria for day-case discharge includes minimal pain, able to tolerate feeds, ambulate independently and void spontaneously after 6-8 hours of monitoring. Our aim is to review the proportion of our patients that met these criteria and assess its potential applicability. Predictive factors for success will also be identified.

Methods: This is a retrospective review of all our patients listed for LC under our Ambulatory Surgery 23Hour (AS23). Data were analysed with Stata ver9.0 (Stata Corp, Texas, USA). All Statistical tests were carried out at 5% level of significance. Multiple logistic regression was applied to identify predictive factors.

Results: From 2005 to 2006, of 405 patients listed for elective LC, 339 patients were admitted to our AS23 ward. Of these, 63.4%

fulfilled all 4 criteria and could be discharged the same day. Comparing this group with those who did not meet all 4 criteria, we found no significant differences in age, gender, race, co-morbidities, duration of surgery, surgeon's grade and additional procedures in predicting outcome. Our conversion rate for open surgery was 10.1%. A previous history of biliary sepsis was a strong predictor for conversion (OR = 12.7, $P < 0.001$). There was no unplanned readmission.

Conclusion: More than half of our AS23 LC patients actually qualify for same day discharge if we had this scheme in place. It is therefore worthwhile and timely to start day-case LC in Singapore.

SUR 030

The Role of Long-stem Bipolar Hemi-arthroplasties in Primary and Revision Hip Surgery – A Clinical Case Series

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Aim: Long-stem bipolar arthroplasties are uncommon procedures and are usually reserved for select cases with extensive pathology of the head and proximal femoral neck. The aim of our study is to review the profile of patients undergoing such procedures and functional and radiological outcomes of such patients.

Methods: A consecutive case series of long stem bipolar hemiarthroplasties performed in a tertiary institution, between 2005 and 2006, by a single surgeon were reviewed.

Results: Fourteen consecutive long-stem bipolar hemiarthroplasties were performed, with a mean follow-up of 19.9 ± 2.7 months (range, 16 to 24). Twelve patients had a preoperative ASA (American Society of Anesthesiology) of 2, while the other 2 had ASA scores of 3. Indications for surgery included revision of primary hip implant-related complications (8 cases), proximal femoral tumours (3 cases) and as primary fixation for extensive proximal femoral fractures (3 cases). The mean duration to ambulation postoperatively was 4.2 ± 3.0 days. Mean d'Aubigne and Postel score increased from 3.7 preoperatively, to 10.8 postoperatively ($P < 0.0001$). Complications incurred include iatrogenic femoral shaft perforation (1 case) and anterior dislocation (1 case). Two unrelated mortalities were encountered, 1 due to urinary tract sepsis 2 months after the initial operation, and another, from congestive cardiac failure 8 months later.

Conclusion: Long-stem bipolar hemiarthroplasties are uncommonly performed procedures and usually reserved for patients in whom extensive proximal femoral pathology exists. In appropriately indicated cases, with the absence of acetabular disease, long-stem bipolar arthroplasty provides optimal hip stability, early ambulation with satisfactory functional outcomes.

SUR 031

Laparoscopic Liver Metastases Resection Following Laparoscopic Colorectal Resection

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Aim: Minimally invasive surgery offers shorter hospitalisation time, reduced need for analgesics and earlier bowel function recovery over conventional surgery. In recent years, several randomised controlled trials in colorectal cancers have also demonstrated comparable long-

term recurrence and survival rates between the laparoscopic and open groups. Liver resections for colorectal metastases have been proven to improve patient survival. However, few surgeons have attempted performing it laparoscopically as the intra-abdominal adhesions developed following previous colorectal surgery may prohibit safe attempt at laparoscopic liver resection. Our team aimed to commence the programme of laparoscopic liver resection for colorectal metastases following previous laparoscopic resection of colorectal primary.

Methods We conducted a review of the literature on this topic and review in detail using video capture, our first case of laparoscopic liver resection for colorectal metastases performed on a 54-year-old male.

Results: Our patient had a laparoscopic assisted abdominal-perineal resection with a permanent colostomy done for a stage III rectal adenocarcinoma in March 2006. Upon follow up, increasing CEA levels and radiological evidence suggests liver metastases in segment IV of the liver 1 year later. After informed consent, a segmental laparoscopic resection of the liver was performed. Intraoperative blood loss was 100 mL. Total operative time was 200 minutes. Postoperatively, the patient had early recovery of bowel function and minimal need for oral analgesias. He was discharged on the third postoperative day.

Conclusion: Laparoscopic liver resection is feasible following colorectal resection especially if the first operation was also performed laparoscopically.

SUR 032

Intracranial Aneurysms - Which Way Forward?

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Aim: Intracranial aneurysms present are a severe and life-threatening condition. After the ISAT trial (International Subarachnoid Aneurysm Trial) in 2002, which showed slightly improved 1-year survival/dependency in patients who underwent endovascular coiling vs surgical clipping of intracranial aneurysm, there has been a shift in practice towards endovascular coiling of intracranial aneurysm as the first line treatment. The aim of this paper was to compare our local data with international data, as well as to compare the outcome of aneurysms treated at our institution.

Methods: Retrospective study involving patients who presented to our hospital with a ruptured aneurysm, comparing the outcome of coiling vs clipping using the modified Rankin scale score.

Results: The results show minimal differences in the outcome of either treatment.

Conclusion: Both methods are viable options for the treatment of ruptured aneurysm.

SUR 033

Male Breast Carcinoma – Presentation, Management and Outcomes – A 7-year Experience

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Aim: Male breast cancer is a rare disease, accounting for <1% of all breast cancers and <1% of all annual cancer deaths in men. Nevertheless, it is significant since it has a more aggressive course.

Methods: We present our institution's experience of male breast

cancer over a period from January 2000 to December 2006. A total of 8 cases were analysed retrospectively.

Results: The average age of our patients was 61 years. A total of 50% of our patients had an axillary clearance and 1 had a Sentinel lymph node biopsy only. Histological 62.8% of the patients were diagnosed with invasive ductal carcinoma (IDC), and 1 with ductal carcinoma in situ (DCIS). The average invasive component of all the tumours was 16 mm. About 50% of the patients were oestrogen receptor (ER) positive. All our cases were either a Stage I or II. None have had recurrences and there were no mortalities.

Conclusion: Male breast cancer (MBC) is a rare entity. Male breast cancer patients present at an older age. Though anatomically and physiologically different from a female breast, histologically majority of the tumours are infiltrative ductal carcinomas. With early detection and surgery, the outcomes are satisfactory. Most of the knowledge we have gained from female breast carcinoma (FBC) can be applied to MBC including Sentinel lymph node sampling. Despite the similarity, MBC on its own requires separate attention, as the psychosocial effect of a women's disease occurring in men cannot be underestimated.

SUR 034

A Retrospective Analysis of the Diagnostic Yield from Frameless Stereotactic Brain Biopsies of Patients from 2002-2007

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Aim: To evaluate the diagnostic yield of positive brain biopsy results using a frameless stereotactic technique in patients who underwent this surgical procedure from 2002-2007 in our division.

Methods: Data were collected retrospectively. Eighteen selected patients underwent a standard MRI Brainlab frameless stereotaxy neuronavigation protocol prior to surgery. GA was used in all cases. A single burrhole was made in all cases. The frameless stereotactic technique was performed using the BrainLab VectorVision. A standard 4-quadrant biopsy was done in most cases. All collected specimens were processed by the same Pathology Laboratory.

Results: The diagnostic yield from the study showed positive results for 16 out of the 18 patients (88.9%). Two cases showed initial negative results, which were later positive on the second repeat stereotactic biopsy (1 frameless and 1 framebased).

Conclusion: The results of Frameless Stereotactic Brain Biopsy from our institution are comparable to results from other institutions reported in the literature.

SUR 035

Retrospective Review of Breast Carcinoma Cases With Liver Metastases in Tan Tock Seng Hospital, Singapore

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Aim: It is a known fact that metastatic breast cancer is associated with poor prognosis. However, the question that remains unanswered is whether patients with systemic metastasis would be suitable candidates for liver resection for hepatic metastases.

Methods: A retrospective review of breast cancer cases with liver

metastases seen in Tan Tock Seng Hospital between January 2003 and January 2007 was performed. Twenty-eight cases were identified and dichotomised based on synchronous versus metachronous metastases. The following data were further analysed, keeping in mind biochemical markers, computerised tomographic findings and presence of extrahepatic disease.

Results: Whitley-Cox statistical analysis was performed on the data collected. Thirteen of our patients had synchronous tumours and 15 were metachronous. Fifteen of our patients had presented with stage 4 disease. At presentation, 19 patients had >3 liver metastases, 20 patients had albumin levels <35mmol/L and 20 patients had bilirubin levels >10g%. Seventy-five per cent of our patients had extrahepatic metastases at presentation – 17 patients (60.7%) to bone, 13 patients (46.4%) to lungs, 2 patients (7.14%) to brain, 9 patients (32.1%) to bone and lungs and 2 patients (7.14%) to bone, lungs and brain.

Conclusion: The literature review states improved prognosis in patients with metastatic breast cancer undergoing hepatic resection. This may not be applicable in our institution as the patients in our cohort tend to present with multiple metastases and widespread systemic disease. However, there may be a role for hepatic resection in candidates who present with isolated controlled hepatic metastases.

SUR 036

Nasal Reconstruction Post Pediatric Nasal Amputation for Mucormycosis

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Aim: Nasal reconstruction remains a formidable challenge to the reconstructive surgeon, with a multiplicity of functional and aesthetic considerations. A variety of methods have been used historically for reconstruction of the nose, with variable results. The authors illustrate the use of an expanded forehead flap for the successful staged reconstruction of the nasal lining, soft tissue defect and maintenance of the nasal passage.

Methods: This case involved a 17-year-old girl with a history of congenital stomatocytosis with neutrophil defect and distal renal tubular acidosis with rickets. She had severe nasal mucormycosis and extensive surgical debridement at the age of 2, resulting in a collapsed ala, dome and septum, with obliteration of the right nasal passage. She underwent a staged expanded forehead flap in November 2005 for reconstruction of the right nasal ala and septal mucosal lining, and a secondary costochondral graft for reconstruction of the columella and ala rim.

Results: The patient was followed up 12 months postoperatively and has a patent left nasal passage, well-formed nasal dorsum, septum and ala rims bilaterally. She is capable of nasal breathing at all times and is satisfied with the functional and aesthetic outcome.

Conclusion: The use of a 2-stage expanded forehead flap as the primary reconstructive procedure of the nasal soft tissue and nasal lining is a simple one, in which the potential complications associated with free flaps or multi-staged procedures may be averted. With careful patient selection, this is an extremely versatile tool in the field of nasal reconstruction.

SUR 037

Endoscopic Treatment For Early Gastric Cancer in a Patient With Pernicious Anaemia

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Introduction: Gastric cancer is one of the top 10 cancers in Singapore. Pernicious anaemia is a known risk factor for gastric cancer. The treatment for gastric cancer has progressed rapidly in the past 30 years. Endoscopic treatment can now be done for early gastric cancer.

Clinical Picture: We report a case of a 55-year-old man with early gastric cancer and pernicious anaemia.

Treatment: He underwent endoscopic submucosal dissection. As the resection margin of the endoscopic submucosal dissection specimen was not clear, he subsequently had a laparoscopy-assisted total gastrectomy with D2 dissection.

Conclusion: Endoscopic treatment can be done for early gastric cancer in patients with pernicious anaemia. Gastric endoscopies and biopsies, both before and after endoscopic resection, should be performed to exclude multi-focal disease and residual carcinoma outside the resected specimen. For those lesions that fulfill currently accepted criteria, endoscopic management may provide definitive therapy in a minimally invasive way. Surgical option should be considered in patients with multi-focal disease and residual carcinoma outside the resected margin.

SUR 038

The Effect of Preoperative Counselling on Fear Caused by Visual Sensations During Phacoemulsification – A Randomised Controlled Trial

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Aim: To determine whether preoperative counselling on the potential intraoperative visual perceptions during cataract surgery helps reduce the fear experienced by patients during the surgery.

Methods: Patients undergoing cataract surgery (phacoemulsification) under topical anaesthesia were randomised to those who received additional counselling and those not counselled. Patients were interviewed postoperatively on their intraoperative experiences.

Results: Of 851 patients, 558 (65.6%) received preoperative counselling while 293 (34.4%) were not counselled. A lower proportion of the group which received additional preoperative counselling were frightened compared to the group not counselled for perception of light (7/558 [1.3%] vs 13/293 [4.4%], $P = 0.007$), colours ($P = 0.001$), movement ($P = 0.020$), flashes ($P = 0.072$) and instruments ($P = 0.599$). The mean fear score was significantly lower in the counselled group compared to the non-counselled group for light perception (0.03 vs 0.12, $P = 0.002$), colours, ($P = 0.001$) movement ($P = 0.005$), and flashes ($P = 0.035$). Analysing separately by gender, the above findings were true of males, whereas no significant association between fear and preoperative counselling was found for female patients. Preoperative counselling was a significant factor affecting fear after accounting for age, gender, operated eye and duration of surgery (multivariate odds ratio 4.3, 95% confidence interval, 1.6-11.6, $P = 0.003$). More patients in the

counselled group reported increased satisfaction as a direct result of their intraoperative visual sensations (433/558 [77.6%] vs 141/293 [48.1%], $P < 0.001$).

Conclusion: Preoperative counselling on possible visual sensations during cataract surgery significantly reduces both the proportion of patients frightened and the mean fear score compared to patients not counselled. Patients counselled experienced greater satisfaction from their intraoperative visual experiences.

SUR 039

Lattissimus Dorsi - Serratus Anterior - Rib (LS-SA-Rib) Composite Flap for Reconstruction of Bone and Soft Tissue Defects in the Lower Limb

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Introduction: The LD-SA-rib flap is useful for reconstruction of large soft tissue and bony defects, requiring a single microsurgical anastomosis.

Methods: From 2000 to 2007, 6 patients involved in road traffic accidents were treated with the LD-SA-rib flap. One had a crushed foot with loss of the cuneiforms and defect of the dorsum. He had adipo-fascial cover and developed instability of the foot. Four had Grade IIIB tibia/fibula fractures and the last had an infected supracondylar fracture of the left femur with bony and soft tissue defect. Reconstruction of the foot was done. The rest had skeletal stabilisation, multiple debridements and flap cover when the wound was clean. Skeletal continuity with screw fixation and external fixation was done. Anastomosis was performed using the sural artery (2), anterior tibial artery (3) and popliteal artery (1). Average duration from injury to flap surgery was 4.45 months (11 days to 15.5 months). Average follow-up period was 12.83 months (2 months to 3.33 years).

Results: All flaps survived. Wounds healed at 6.5 weeks (6-7 weeks). Bony union was achieved at 8 months. Complications included deep infection, seroma formation and eczema. The reconstructed foot showed rib hypertrophy allowing normal gait at 9.5 months. One case of open tibia fracture showed hypertrophy of the rib allowing normal weight bearing. The remaining cases have a relatively short follow-up (2 to 6 months).

Conclusion: The LD-SA-rib flap is a 1-stage procedure well-suited to reconstruct soft tissue and bony defects in patients with open fractures of the lower limb.

SUR 040

The Successful Use of Left Ventricular Assist Device as a Bridge to Recovery in a Patient With Viral Myocarditis

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Aim: Acute end stage heart failure is associated with major disability and poor prognosis.

Mechanical circulatory support through use of the Left Ventricular Assist Device has attracted increased interest as an option for these patients whether as a bridge to heart transplantation, a bridge to

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myocardial recovery, or as a destination therapy. Continued development and improvement in multidisciplinary perioperative care has made the wider use of the device a reality. The use of Left Ventricular Assist Device in Singapore is not as widespread as those in the United State, Europe or Australia. We would like to share our experience in looking after a patient at the National University Hospital, Singapore, with outlines of the clinical presentation, discussion on perioperative care, and the eventual progress to myocardial recovery and successful explantation.

Methods Retrospective review of case notes, charts, investigations performed during the

perioperative period and review of current literatures on management of ventricular assist device was done.

Results: We present the 14-year-old child who had near myocardial collapse, early implantation of left ventricular assist device (Levitronix CentriMag), perioperative complications, use of activated factor 7, eventual recovery and explantation of the device. We discuss the multidisciplinary perioperative care and current literature reviews on management and complications.

Conclusion: We hope that our experience will benefit others who will be looking after patients with Left Ventricular Assist Device in Singapore. Improved experience in multidisciplinary care and ongoing research will reduce morbidity and mortality associated with end stage heart disease.

SUR 041

Laparoscopic Nephrectomy in a Teaching Institution Has Reliable Outcomes

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Aim: The authors review their outcome of laparoscopic nephrectomy in their institution over a period of 2 years. Laparoscopic nephrectomy is the standard of care in many institutions. Our hospital as a teaching institution also instructs surgeons in learning this technique. The concern regarding teaching of laparoscopic cases is that of increased complications and morbidity. We reviewed our results of "teaching cases" of laparoscopic nephrectomy.

Methods: Data were collected for all consecutive patients undergoing laparoscopic nephrectomy (radical and simple) between May 2005 and May 2007.

Results: A total of 26 patients underwent laparoscopic nephrectomy over a period of 2 years. There were 5 conversions (8.8%). The average length of the lesion resected laparoscopically was 6.5 cm (3.7 to 9 cm). Average operative time was 190 minutes (130 to 270 minutes). Average blood loss was 480 mL (100 to 1200 mL). Length of stay was 3.6 days (2 to 6 days). Perioperative morbidity was 10% (post operation requiring blood transfusion due to blood loss) for laparoscopic nephrectomy. There was no mortality.

Conclusion: The properly structured teaching programme for instructing laparoscopic nephrectomy produces results comparable to world class centres.

SUR 042

Long-stem Bipolar Hemiarthroplasty as Salvage Treatment for Gamma Nail Implant Failure: A Case Report

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Aim: Gamma nail implants are commonly used for treatment of subtrochanteric fractures. Implant failure is an uncommon occurrence, less than 20 cases have been reported in the literature. This study aims to review the outcome of a patient who underwent long-stem bipolar hemiarthroplasty as salvage treatment for a failed Gamma nail implant.

Methods: A 73-year-old lady sustained a traumatic 3-part intertrochanteric fracture of the left femur with subtrochanteric extension. She was initially treated with a Gamma nail and was able to ambulate on the second postoperative day. She was lost to follow-up and presented 2 years later with a sudden onset of left hip pain with inability to weightbear. Radiographs revealed nonunion of the intertrochanteric fracture with Gamma nail breakage at the cephalic lag screw hole. Radiographs showed the absence of acetabular disease and she underwent a bipolar hemiarthroplasty with a cemented long femoral stem.

Results: The patient was capable of ambulation on the second postoperative day and resumed independent full weight-bearing at the 6th week. At 24 months post-salvage surgery, she achieved good functional hip score (d'Áubigne-Postel 12) and range of motion (flexion 0-110°, abduction 0-50° and external rotation 0-35°). Interval radiographs showed no implant loosening.

Conclusion: The authors believe that this is the first case in which a bipolar hip hemiarthroplasty was used to successfully salvage a case of Gamma nail failure. The use of the bipolar hemiarthroplasty is safe, provides a stable hip with the ability for early rehabilitation and good intermediate-term results.

SUR 043

Chylous Ascites: An Institutional Experience

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Aim: Chylous ascites is defined as the accumulation of triglyceride-rich peritoneal fluid rich due to the presence of thoracic or intestinal lymph. In countries with advanced healthcare, this usually occurs as a result of surgery at the base of mesentery, retroperitoneum or around the cisterna chili. Without early diagnosis and intervention, chylous ascites may lead to significant morbidity, such as symptomatic ascites, peritonitis and chronic malnutrition. The literature is still divided on the best modality for treatment of such patients.

Methods: A retrospective series of patients diagnosed with chylous ascites between 2005 and 2006 in a tertiary hospital were followed up. The biodata, aetiology and treatment modalities and outcomes of these patients were reviewed.

Results: Three patients were diagnosed with chylous ascites during this time period. All cases were post-surgical – 2 following radical pancreaticoduodenectomies while 1 occurred following a radical nephrectomy. All patients were noted to have chylous drainage which had a fluid triglyceride level in excess of 200 mg/dL (2.26 mmol/L), which occurred within a week of surgery. Two were treated successfully with low-fat diet with medium chain triglyceride supplementation, while 1 required total parenteral nutrition for 2 weeks. All patients had spontaneous resolution of chylous ascites with no apparent chronic sequelae.

Conclusion: In our cohort, non-surgical management led to spontaneous resolution in all cases. Prompt recognition and institution of appropriate treatment of chylous ascites can lead to favourable clinical outcomes.

SUR 044

The Effect of Transurethral Catheterisation at Laparotomy on Patient Satisfaction and Urinary Tract Infections – Is There a Need to Consider Suprapubic Catheterisation Instead?

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Aim: Both transurethral and percutaneous suprapubic urinary catheters are used for bladder drainage during and in the early postoperative period. Both systems have been known to be associated with urinary tract infections. The claimed advantages of the suprapubic catheter are a lower infection rate, possibility of normal micturition with catheter in-situ, reduced need to recatheterise, avoidance of risk of urethral stricture and patient satisfaction with less discomfort. The aim of this study is to assess present satisfaction levels of transurethral catheters following elective major abdominal surgery.

Methods: Fifty patients undergoing elective major abdominal surgery were surveyed between May 2006 and July 2007. Data were gathered on the day of catheter removal in the wards after informed consent was obtained.

Results: Of the 50 patients, 16 were female and 34 were male. With transurethral catheter-in-situ, 73.5% (25/34) of male patients had burning sensation at urethra and 58.8% (20/34) experienced sensation to void, while 43.8% (7/16) of female patients had burning sensation at urethra. Of the patients, 64% (32/50) experienced difficulty in ambulation with catheter in-situ. During catheter removal, all patients experienced pain with median pain score of 7.3 (on a scale of 1 to 10). Post removal of catheter, 70% (35/50) of patients experienced symptoms of urinary tract infection.

Conclusion: This survey has portrayed quite clearly the high incidence of urinary tract infection and patient dissatisfaction with transurethral catheterisation. It is a strong indication for adopting a new method of bladder drainage. A randomised controlled trial comparing transurethral versus suprapubic catheters in elective major abdominal surgery is recommended and its results may herald a new era for bladder drainage procedures in elective laparotomies.

SUR 045

Sphenchoanal Polyp: Experience of Three Cases and Review of Literature

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Aim: The maxillary antrum had been routinely regarded as the sinus of origin of a unilateral choanal polyp. However, there is increasing evidence to suggest that a choanal polyp may arise from other sinuses as well. Sphenchoanal polyp is an uncommon but increasingly recognised clinical entity. A series of 3 patients having sphenchoanal polyps is presented with a review of literature.

Methods: Unilateral nasal obstruction was the commonest presenting symptom. Diagnosis was based on endoscopic finding of the polyp arising from the sphenothmoid recess and lying medially to the middle turbinate.

Results: CT scans confirmed the origin of polyp from sphenoid sinus. The maxillary sinus was clear on the scans. Medical treatment failed to reduce the polyp size. All patients underwent functional endoscopic sinus surgery. Image guidance system was used during surgery. Histology suggested benign inflammatory polyp. Patients were symptom-free after surgical excision and did not require antiallergic treatment.

SUR 046

Patterns of Limb Injuries in Motorcyclists Involved in Road Traffic Accidents Seen at an Emergency Department in Singapore

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Aim: This study's aim was to analyse the patterns of limb injury in motorcyclists involved in road traffic accidents seen in an Emergency Department over a 1-month period.

Methods: Data were collected retrospectively for all motorcyclists involved in road traffic accidents from 1 March 2006 to 1 April 2006. This information was derived from the electronic records used at the Emergency Department (National University Hospital). Patients who were classified under Accident Type: Road were analysed. All patients who were aged 16 years and above at the time of presentation were studied. Only the first consult for one particular accident was used for analysis. All fractures and dislocations involving the limbs were included. Deep or complex lacerations requiring admission for surgery in the operating theatre (without associated fracture or dislocation) were included also. Abrasions and contusions were excluded from analysis.

Results: A total of 192 patients were studied, of which 168 (87.5%) were male and 122 (63.5%) were aged between 17-30 years. Fifty-four patients (28%) with 68 limb injuries fitted the above inclusion criteria. There were 47 upper limb injuries and 21 lower limb injuries. The 47 upper limb injuries were: acromioclavicular dislocations 5, clavicle fractures 9, shoulder dislocations 2, humerus fractures 1, radius/ulna fractures 6, wrist fractures 8, hand/finger fractures 11, and complex hand/finger lacerations requiring surgery 5. The 21 lower limb injuries were: femur fractures 1, tibia/fibula fractures 7, ankle fractures 4, calcaneal fractures 2, foot fractures 3, and complex wounds requiring surgery 4.

Conclusion: Limb injuries occur frequently in motorcyclists involved in road traffic accidents. The upper limbs are more frequently injured compared to the lower limbs.

SUR 047

Emergency Suprarenal Abdominal Aortic Aneurysm Repair in a 37-year-old Chinese Male

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Introduction: Emergency repairs of abdominal aortic aneurysms (AAAs) are associated with high morbidity and mortality. Suprarenal aneurysms have a particularly poor prognosis because of difficult surgical access and involvement of the renal arteries and the superior mesenteric artery (SMA).

Clinical Picture: A 37-year-old Chinese male presented to the emergency department with abdominal pain radiating to his back. The diagnosis of AAA was made on bedside ultrasound. This was further investigated with a contrast CT scan that revealed a contained leak of a 5.7cm suprarenal AAA.

Treatment: The patient underwent an emergency AAA repair and staged revascularisation of the SMA and right renal artery via a retroperitoneal thoracoabdominal approach. The left kidney was found to be infarcted and therefore removed.

Outcome: The postoperative period was uncomplicated. The patient was transferred out of intensive care on postoperative day 4 and discharged home on day 12. He remains well at 8 months post-operation with no signs or symptoms of intestinal, renal or lower limb vascular insufficiency.

Conclusion: The retroperitoneal thoracoabdominal approach and staged revascularisation should be considered in patients with emergency leaking suprarenal AAAs without frank rupture. This approach may reduce the ischaemic time to abdominal organs and lower limbs.

SUR 048

Giant Hepatic Cysts – The Feasibility of Laparoscopic Surgery

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Aim: The aim of this study is to review our experience and the surgical outcome of laparoscopic management of giant hepatic cysts (>8 cm) in a tertiary institution.

Methods: From January 2002 to December 2006, 7 patients underwent surgery by the hepatobiliary team for symptomatic giant hepatic cysts (>8 cm). The demographic and operative data were collected and analysed.

Results: There were 4 males and 3 females with the median age of 64 (50 to 78) years. The median size of the cyst by radiological measure was 18 (9 to 30) cm. Partial cystectomy leaving behind the cyst wall adjacent to liver parenchyma was performed for all patients. Six underwent laparoscopic surgery with 1 conversion to open surgery due to dense adhesions and a posteriorly sited cyst in segment VI. One patient underwent open surgery due to the preoperative suspicion of hydatid cyst. The median length of surgery was 200 (105 to 230) minutes for patients managed laparoscopically compared to 225 minutes for those managed with open surgery. Postoperatively, 1 patient who was managed laparoscopically had deep vein thrombosis

while 1 patient who underwent open surgery had pleural effusion. There was no mortality. The median length of stay was 3 (1 to 12) days for those who were managed laparoscopically compared to 9 days for those with open surgery.

Conclusion: Laparoscopic partial cystectomy for giant hepatic cysts is safe and effective. It can be performed within reasonable time limits with minimal morbidity. Patients recover faster and enjoy a shorter hospital stay.

SUR 049

Primary Rectal Signet Ring Cell Carcinoma With Peritoneal Dissemination and Gastric Secondaries

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Introduction: Disseminated signet ring cell carcinomas frequently arise from the stomach. However, primaries from the colon and rectum have been reported

Clinical Picture: We present a case of a 68-year-old lady with change of bowel habits. Colonoscopy performed showed a stenosing rectal tumour at 7 to 8 cm from anal verge. Multiple scattered ulcers were also noted along the entire length of colon. Biopsies of these lesions revealed the findings of signet ring cell adenocarcinoma. Gastroscopy performed again showed multiple nodules with ulceration over many parts of the stomach that were similar in appearance to the colonic lesions. There was however no gastric primary tumour seen. Biopsies of the gastric lesions also supported the finding of disseminated signet ring cell adenocarcinoma. Computed tomography scan of the abdomen and pelvis showed circumferential tumour in the rectosigmoid junction with possible invasion into the left ischiorectal fossa. The overall picture was that of a primary rectal signet ring cell carcinoma with peritoneal dissemination.

Treatment: She was referred for palliative chemotherapy in view of the disseminated disease.

Outcome: She was well 5 months post diagnosis with no evidence of intestinal obstruction.

Conclusion: We discuss this very interesting pathological entity and review how pathological techniques may help to identify the primary.

SUR 050

Acquired Cryptorchidism in an Ectopic Location: A Case Report

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Aim: Acquired cryptorchidism usually occurs in prepubertal males, and occur along the line of embryological descent of the testes. The authors present a unique case of recurrent testicular ascent associated with ectopic testis occurring in a previously developmentally post-pubertal male and review his clinical outcome.

Methods: A previously well 19-year-old male presented initially in March 2006 after a motorvehicle accident. He sustained a closed right distal radius fracture and noted bilateral spontaneous testicular ascent after the accident. Clinical examination revealed bilateral testes to be at the superficial inguinal ring. Closed reduction was performed and the patient was subsequently well. He sustained another accident in July 2006, after which he noted spontaneous ascent of the left testis without any episodes of descent. Ultrasonographic examination found the left testis lying in the inguinal region.

Results: Intraoperative exploration of the testis found it to be lying in the subcutaneous layer superficial to the inguinal canal, lateral to the deep inguinal ring. The ductus deferens was found to pass in the subcutaneous tissue and redouble into the superficial ring. Bilateral standard orchidopexies were done and the patient was discharged on the first postoperative day. At the latest clinical review 9 months postoperatively, both testes were intrascrotal.

Conclusion: This is the first reported case in which testicular ascent occurred in a post-pubertal male, and in an ectopic location. Early surgical exploration is warranted. Radiologists and urologists should be aware of the possibility of extrainguinal position of testes in cases of acquired cryptorchidism.

SUR 051

Laparoscopic Anatomical Liver Resection in a Singapore Teaching Hospital – Our Initial Experience

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Background: Laparoscopic hepatectomy has been performed in many overseas centres. By avoiding long incisions associated with open hepatectomies, patients suffered less pain, recovered faster and had a shorter hospitalisation period. In Singapore, many centres have recently embarked on this approach. The aim of this study is to review our centre's initial experience with laparoscopic anatomical liver resection.

Methods: We selected only patients with small lesions confined to Couinaud's liver segments of 2, 3, 4B, 5 and 6. Patients requiring laparoscopic wedge resections were not included. Surgical technique was similar in all cases, including intra-operative ultrasound for localisation, ultrasonic shears and surgical staplers for parenchymal transection, and delivery of specimen via a Pfannestiel incision. No hand-ports were used. Patients' records were retrospectively reviewed.

Results: Between July 2006 and March 2007, we had 3 patients. Their median age was 48 years (range, 36 to 63). Two patients were treated for hepatocellular carcinoma, while 1 had a hepatic abscess. Lesions were localised to segments 5/6 in 1 patient, and 2/3 in 2 patients. Consequently, 1 had a laparoscopic 5/6 bisegmentectomy, whilst the other 2 had laparoscopic lateral segmentectomies. Median operative time was 270 minutes (range, 250 to 290) and mean intraoperative blood loss was 300 ml. The median LOS was 4 days (range, 3 to 4). Our initial results compares favourably with those of more established centres.

Conclusion: We propose that with the proper surgical expertise and patient selection, laparoscopic anatomic liver resection is a feasible option. Even with our early experience, patients still enjoyed faster recovery with a shorter postoperative hospitalisation.

SUR 052

Tongue: Intraglossal Foreign Bodies

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Introduction: Accidental ingestion of foreign bodies is one of the most common ENT emergencies encountered. Majority of foreign bodies are lodged in the tonsils, base of tongue or vallecula. Intraglossal fish bone impaction is rare. We present a series of 5 patients presenting with intralingual foreign bodies.

Clinical Picture: Patients typically present with history of fishbone ingestion. A tender tongue nodule was clinically evident in all patients. One patient presented with intraglossal abscess.

Treatment: Tongue exploration with removal of foreign body is the treatment of choice. CT scanning using extra-fine cuts and sagittal reconstruction was helpful in accurately localising the foreign body.

Outcome: All foreign bodies were successfully removed surgically. None of the patients experienced any tongue mobility disorder.

Conclusion: In this series, we relate our experience with this unusual problem and discuss our approach to their management. Emphasis is given to accurate localisation of foreign body by CT scanning.

SUR 053

Lap Adrenalectomy – A New Standard

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Aim: The authors evaluate the effectiveness of all their adrenal surgical procedures in their institution. Laparoscopic adrenalectomy is replacing open adrenalectomy in most medical centres as the standard surgical approach for uncomplicated tumours. This is a retrospective study of all the adrenal surgical procedures done over a period of 2 years.

Methods: Chart review (perioperative and postoperative records) of all the patients was performed.

Results: A total of 18 adrenalectomies were performed – 16 laparoscopic and 2 open. Indications of the 16 laparoscopic adrenalectomy were pheochromocytomas, Conn's disease and Cushing's disease. The average size of the lesion was 1.53 cm. Average operative time for was 116 minutes (75 to 190 minutes). The estimated blood loss was minimal. There was no mortality and post-operation morbidity. The average length of stay is 2.3 days (1 to 4 days). Of the 2 cases of open adrenalectomies, the indication was for suspected adrenal cancer (6 cm) and metastatic adrenal carcinoma (10 cm). The operative times were 250 minutes and 350 minutes respectively. Postoperative complication for the first patient was hypotension secondary to blood loss and the second patient was transfused due to symptomatic anaemia. Both were hospitalised 7 and 9 days respectively.

Conclusion: Laparoscopic adrenalectomy is safe and effective, and reduces hospital stay and post-operation morbidity. The laparoscopic approach is the procedure of choice for routine adrenalectomy. Open adrenalectomy was reserved for larger more complicated lesions.

SUR 054

A Comparison of 4 Different Proprietary Gastric Bands

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Aim: Lap Band surgery is fast becoming a favourite procedure for the surgical treatment of morbid obesity. That gastric restriction by banding is efficient in weight and co-morbidity reduction is well established. Certain short- and medium-term morbidities have also been identified. There are several popular brands of bands available in the market. They can be low volume high pressure; or high volume low pressure. Each of these brands has its own champions. Alexandra Hospital in Singapore has the largest single institution experience in gastric banding procedure in South East Asia. Information relating to Asian patients undergoing gastric banding using different proprietary

bands is so far not available.

Methods: We carried out a small prospective study of 4 different proprietary bands. The average follow-up is 12 months. Weight reduction, short-term complications, and other surgical issues are addressed with respect to these different bands.

Results: The result is presented with respect to weight reduction as a percentile of excess body weight, patient gastrointestinal satisfaction scores, number of adjustments to reach optimal weight loss, short-term complications of band leak, slippage and erosion.

SUR 055

The Clinical Manifestations of Adrenocortical Carcinoma – Our Experience With 6 Patients

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Aim: Adrenocortical carcinoma is a rare endocrine neoplasm with an incidence of 2 per million per year. We summarise our experience in diagnosing and treating patients with adrenocortical carcinoma and reviewing their different clinical manifestations.

Methods: The clinical records of all patients who underwent surgical resection for adrenal lesions and in whom the final histology confirmed adrenocortical carcinoma were reviewed.

Results: Six patients were included, of which 3 presented as Cushing syndrome, 1 as spontaneous rupture, 1 as abdominal mass and the last as incidentaloma.

Conclusion: The majority of these cases present as functioning tumours manifesting as Cushing syndrome. The rest, which are non-functioning, typically give rise to symptoms from mass effect, invasion of nearby structures or are picked up as incidentalomas. Diagnosis is based on ascertaining the hormonal profile of the tumour, as well as radiological investigations. Surgery remains the mainstay of treatment and these patients should have lifelong follow-up.

SUR 056

Right-sided Diverticular Disease in Asians: A Diagnostic Challenge

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Aim: Right-sided diverticular disease occurs more commonly in Asians compared to the West where left-sided diverticulosis predominates. This study aims to determine the various presentations, management strategies and outcomes of patients who underwent surgery for right-sided diverticular disease in a 1500-bed public hospital over a period of 5 years.

Methods: One hundred and twenty-four consecutive patients who underwent surgery for complicated diverticular disease between February 2001 and December 2005 in the Department of Surgery, Tan Tock Seng Hospital, Singapore, were accrued from a log of all operative procedures. Of these, 52 patients had exclusively right-sided diverticular disease.

Results: Thirty-three patients (33/52, 63.5%) had acute diverticulitis, of which 7 (7/52, 13.5%) were uncomplicated, 21 (21/52, 40.4%) had perforation and 5 (5/52, 9.6%) had abscess formation. Eighteen patients (18/52, 34.6%) had bleeding diverticular disease and 1 (1/52, 1.9%) had intussusception. Fifty-seven per cent (12/21) of patients with perforated diverticulitis and 80% (4/5) of patients with diverticular abscess were diagnosed preoperatively as appendicitis.

Forty-four (44/52, 84.6%) patients underwent emergency surgery compared to 8 (8/52, 15.4%) patients who had elective surgery. The median postoperative length of stay was 5 (2 to 62) days.

Conclusion: Right-sided diverticulitis, particularly those complicated by perforation or abscess formation, often mimics appendicitis and occurs more commonly in the younger age group. Surgical resection is the definitive treatment of choice for symptomatic right-sided diverticular disease and is associated with a low rate of recurrence.

SUR 057

Ambulatory Thyroid Surgery – An Audit of Safety and Outcomes

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Aim: Elective hemithyroidectomy is a common operation with a low complication rate. The aim of this study was to conduct an audit on the safety and efficacy of ambulatory hemithyroidectomy in carefully-selected patients.

Methods: This is a cohort study of 114 patients who were scheduled to have either ambulatory (n = 50) or inpatient (n = 64) hemithyroidectomy over a 2-year period. Selection for ambulatory surgery was based on pre-established criteria and patient preference. Preoperative patient characteristics, indications for surgery, operative characteristics, histological diagnoses and surgical complications were compared. The chi-square test was used to compare operative characteristics and postoperative complications.

Results: Forty-five of the 50 patients in the ambulatory group (90%) were discharged on the day of surgery. Two patients required admission for wound complications and the other 3 were admitted for non-medical reasons. The complication rates of the 2 groups were similar. The incidence of postoperative haemorrhage requiring return to the operating room was 1.6% and 2.0% for the inpatient and ambulatory groups respectively. Both cases presented within 6 hours of the completion of surgery. There was 1 case each of postoperative superior laryngeal nerve palsy and recurrent laryngeal nerve palsy, both of which occurred in the inpatient group.

Conclusion: The overall complication rate was low. There were no differences in the rate of complications between ambulatory and inpatient hemithyroidectomies. Ambulatory hemithyroidectomy can be performed safely for a select group of patients in the setting of appropriate facility and management protocol.

SUR 058

Artificial Bowel Sphincter: The NUH Experience

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Aim: This study was undertaken to evaluate our experience with the AMA artificial bowel sphincter (ABS) implantation for the treatment of intractable faecal incontinence.

Methods: At the National University Hospital of Singapore, 6 patients underwent ABS implantation between March 2004 and January 2007 for the treatment of faecal incontinence. These patients were reviewed retrospectively to determine operative and functional outcomes.

Results: The ABS was implanted successfully in 6 patients (mean age 50 (20-73) years; 4 males). The 2 most common cause of

incontinence are congenital anomaly (imperforate anus after a pullthrough procedure: 2 patients) and previous ultralow anterior resection (2 patients). Two patients (33%) required explantation due to postoperative infection, 1 of whom eventually required a stoma. No other patient required a revision or replacement. After a mean follow-up of 22 (4-36) months, 4 patients (67%) had a functional artificial bowel sphincter. Faecal incontinence severity scores ranged from a mean of 13 (12-14) preimplant to 6 (0-9) post activation. Manometry results showed a decrease in mean resting and squeeze pressure (mean resting 39.55 vs 29.1; mean squeeze 59.15 vs 44.82 mmHg pre and post implantation respectively). The comparative preoperative and post-activation faecal incontinence quality of life scores showed improvement (coping: 2.35 vs 3.0; depression: 2.55 vs 3.1; embarrassment: 2.2 vs 2.42 and lifestyle quality of life 3.25 vs 3.07).

Conclusion: Infection was the most common cause of failure in the ABS implantation. However, patients who had successful devices implanted benefited from improved quality of life.

SUR 059

Splenic Flexure Cancer: Extended Right or Left Hemicolectomy?

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Aim: The aim of this study was to determine the short- and long-term outcomes of cancer following extended right compared with left hemicolectomy.

Methods: Forty-four patients with splenic flexure cancers who underwent surgical treatment from January 2000 to February 2007 were retrospectively reviewed. Of these, 17 (38.6%) had extended right hemicolectomy (RH) performed whilst 19 (43.2%) had left hemicolectomy (LH) performed. Subtotal colectomy was performed for the remaining 8 patients, who were excluded. Survival data were analysed using the Kaplan Meier survival method.

Results: The demographic data in the 2 groups were comparable (RH: n = 17, 9 males, mean age 68.4 years vs LH: n = 19, 9 males, mean age 65.9 years). Preoperative co-morbidities and ASA status were also comparable, as were the oncologic data of the resected cancers. The majority of patients who had RH performed presented with colonic obstruction as compared to LH (70.6% vs 10.5%, $P < 0.05$). Per rectal bleeding was the predominant presentation in patients who had LH (58.0% vs 17.6%, $P < 0.05$). RH was the procedure of choice in the majority of patients requiring emergency surgical intervention (58.8% vs 10.5%, $P < 0.05$). Mean operative time for the RH procedure was longer at 134 (95-200) minutes compared to the LH procedure at 102 (65-185) minutes ($P < 0.01$). The requirement for transfusion of blood products was similar in both groups. Postoperative morbidity (ileus, wound infection and fever; $P > 0.05$) and the mean length of stay (RH vs LH: 9.2 vs 9.4 days, $P = 0.9$) were also comparable and hospital length of stay (Mean LOS: RH 9.18 +/- 4.5 and LH 9.35 +/- 5.7; $P = 0.9$) were not statistically significant. The 30-day mortality rates for the 2 groups were 5.2% and 5.8% ($P > 0.05$). With a mean follow-up of 35.2 +/- 23.3 months. The overall survival rate was 86.1%. The mean survival time were comparable (RH 65.5 +/- 7.4 and LH 66.8 +/- 4.7 months; $P > 0.05$). Disease free survival for those who had RH was 51.1 +/- 7.8 months compared to 63.9 +/- 5.3 months for those who had LH. The probability of survival at 5 years was similar in both groups (RH vs

LH :0.81 +/- 0.1 vs 0.86 +/- 0.1; $P = 0.5$).

Conclusion: The short-term and long-term outcomes in patients undergoing RH and LH for splenic flexure cancers were comparable.

SUR 060

Is CT Scan Misleading in the Diagnosis of Splenic Injuries? Report of a Case

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Aim: Splenic injury is a common finding in cases with blunt abdominal trauma (40% to 55%). We present an unusual case of CT diagnosed splenic fracture following blunt abdominal trauma which subsequently revealed a completely normal spleen at laparotomy.

Methods: A 50-year-old male presented with a history of blunt abdominal trauma over left hypochondrium. Ultrasound of abdomen revealed a suspected splenic laceration but with no perisplenic hematoma. A contrast enhanced CT scan of abdomen confirmed the ultrasound findings of a splenic fracture along with a small perisplenic collection. An increasing heart rate and a drop in blood pressure necessitated urgent resuscitation and an emergent laparotomy. At laparotomy the spleen was found to be remarkably normal with no evidence of any perisplenic or subcapsular haematoma or even a large congenital fissure or cleft that could mimic a splenic rupture. There was also no evidence on the surface of the splenic capsule to suggest an infarct as a cause of the CT findings. The patient recovered well postoperatively.

Results: The CT scan was subsequently repeated and also reviewed by 2 radiologists who confirmed the radiological diagnosis of splenic laceration. Literature reveals a huge plethora of evidence in favour of CT scan for the diagnosis of splenic injuries with a very low false positive rate. Most reported series in fact concentrate on missed cases rather than overdiagnosis. Moreover most nontherapeutic celiotomies confirm the type and degree of splenic trauma documented on the CT scan. Free fluid on CT scan in suspected cases is a harbinger of significant pathology. Sonography may be used as an initial screening test in such cases, but CT scan by far is the best investigation to date as it supposedly also helps to differentiate other rarer causes like infarction, abscess or even congenital fissures, clefts etc. Infarction may show up as a wedge-shaped defect with a lack of flow on colour flow imaging. A normal flow, however, does not exclude an infarct because an embolus may lyse subsequently restoring flow. This may well be the cause in our case. CT scan confirms a suspected splenic infarct in most cases. The role of diagnostic peritoneal lavage in cases of blunt abdominal trauma is also discussed. A case of congenital cleft spleen mimicking splenic laceration after blunt abdominal trauma.

SUR 062

A Case of Gastric Bronchogenic Cyst in Singapore With Multiple Intrigues

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Introduction: The incidence of subdiaphragmatic gastric bronchogenic cysts is exceedingly rare, with less than 10 cases reported so far in the published literature. The incidence of raised CA 19-9 is also rare in bronchogenic cysts

Clinical Picture: A 30-year-old Chinese lady, with a known history of chronic hepatitis B infection was referred to our hepatobiliary unit for the evaluation of a cystic pancreatic mass. Her serum CA 19-9 was also noted to be raised. In view of the size and the predisposition of mucinous pancreatic cystic tumour for malignant change, she was advised to have an operation to resect the lesion.

Treatment: A laparoscopic spleen preserving distal pancreatectomy was scheduled. However, during the diagnostic laparoscopy, the cyst was found to be an exophytic mass arising from the posterior wall of the stomach instead. Laparoscopic wedge resection of the stomach was performed eventually.

Outcome: She recovered well and was discharged on the third postoperative day. A repeat CA 19-9 performed several months later showed that it had normalised

Conclusion: Bronchogenic cysts are usually benign developmental anomalies rarely seen below the diaphragm. We present an interesting case which was filled with rarities

SUR 064

Cerebellar Strokes – Outcome

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Aim: Cerebellar strokes (both infarcts and haemorrhagic) are relatively uncommon. Indications for surgery in cerebellar infarcts and cerebellar haemorrhages varies from centre to centre and remains to be standardised. Surgical options include ventricular drainage, posterior fossa decompression and clot evacuation. We reviewed our institutional experience in the management of cerebellar strokes and report our results comparing the outcome of cerebellar infarcts versus cerebellar haemorrhage.

Methods: Our study is a retrospective one consisting of 80 patients seen in National University Hospital over a span of 3 years (2004-2006). The outcome and management of 43 cases of cerebellar infarction and 37 cases of cerebellar hemorrhage were studied. Outcome measurement is based on the internationally accepted Modified Rankin Scale and the Glasgow Outcome Scale. Cerebellar haemorrhages and infarcts with brainstem extensions, cerebellar bleeds/infarcts with synchronous supratentorial bleed/infarct and bleeding from cerebellar tumours are excluded from our study.

Results: Our results show that patients with cerebellar infarcts have better outcomes compared to patients with cerebellar haemorrhages irrespective of whether surgery is done or not.

Conclusion: Patients with cerebellar infarcts do better than patients with cerebellar haemorrhages irrespective of whether surgery is done or not. This is the largest reported series in the literature comparing the outcome of patients with cerebellar infarcts and haemorrhages.

SUR 065

An Evaluation of the Use of Computed Tomography Brain Imaging for Elderly Patients with Minor Head Injuries

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Aim: To evaluate the use of Computed Tomography Brain imaging for elderly patients admitted for Minor Head Injuries from January 2004 to December 2005. This aims to ascertain the sensitivity of Computed Tomography Brain imaging in the elderly with minor head

injury and reduce the length of hospital stay for those with negative findings.

Methods: Data were collected retrospectively. All 229 selected patients were 65 years old or above. They were admitted solely for minor head injury without any concurrent injuries. Parameters considered included Glasgow Coma Score on admission, Computed Tomography Brain findings, need for surgical intervention and length of their hospital stay.

Results: Computed Tomography Brain findings of an intracranial injury was positive in 36 out of 229 patients (15.7%). Subsequent neurosurgical intervention was performed for 7 out of these 36 patients (2.9%). The length of hospital stay ranged from 1 to 63 days. The median length of hospital stay is 3 days without neurosurgical intervention.

Conclusion: The use of Computed Tomography Brain is a sensitive radiological tool to diagnose intracranial pathology in the elderly with minor head injury, which may require eventual neurosurgical intervention.

SUR 066

Use of Traditional Chinese Medicine Among Surgical Outpatients

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Aim: Use of traditional Chinese medicine (TCM) is a common practice among the local patients. The practice of taking TCM may delay the patients from seeking treatment. TCM may interfere or affect treatment outcomes. This is a questionnaire survey to evaluate the patients' attitude towards TCM and prevalence of TCM usage among surgical patients.

Methods: A self-administered questionnaire was given to adult patients above 21 years of age attending surgical outpatient clinic. Verbal consent was obtained before the questionnaire. The questionnaire was collected after 30 minutes.

Results: The questionnaires were given to a total of 200 surgical outpatients. Only 138 patients answered and returned the questionnaire papers (response rate 69%). Seventy-eight (57%) patients were male and 60 (43%) were female. Majority (84.8%) of these patients were Chinese. It was found that 39% of patients had taken TCM for various reasons, 64.8% of these users would inform their doctors regarding the TCM usage. Sixty-three per cent did not think TCM may interfere with their medical treatment, 76% believed that TCM was better than medical treatment.

Conclusion: More than one-thirds of the patients had tried some form of TCM before or concurrently with treatment from hospital. Many of them did not think that TCM may interfere with treatment from hospital. It would be interesting to survey bigger samples with subgroup analysis of cancer patients to assess whether TCM delays their presentation.

SUR 067

Post-auricular Dermoid Cyst – A Rare Lump Behind the Ear

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Introduction: Dermoid cysts are benign developmental anomalies postulated to originate from congenital inclusion of germ layers in the deeper tissues along the lines of embryonic fusion. Dermoid cysts can

be divided into 3 types according to their histological characteristics namely epidermoid, dermoid and teratoid. Most dermoid cysts arise in the ovaries. Those occurring in the cervico-facial region are uncommon, accounting for about 7% of all dermoids. Dermoid cysts around the auricular region are rare. To the best of our knowledge, there have been only 4 cases of post-auricular dermoid cyst reported in literature.

Clinical Picture and Treatment: We report a case of a 54-year-old man who presented with a long-standing asymptomatic lump behind the left ear.

Outcome and Conclusion: The patient underwent successful surgical excision.

SUR 068

Perforator Based Flap Coverage for Medium-sized Traumatic Pretibial Soft Tissue Defects From Anterior and Lateral Compartment of the Leg - A Simple Solution for a Complex Problem

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Aim: To evaluate the usefulness of the perforator-based flaps in pretibial wounds complicated by compound fractures in acute trauma set up where time and simplicity plays a vital role.

Methods: A prospective study of 10 cases of moderate-sized defects in the leg exposing the tibia due to trauma was undertaken between January 2003 and April 2004 with an average follow-up of 8 months. Preoperative identification of the perforator around the wound was meticulously performed using hand-held Doppler equipment. Most of the wounds were covered within first 3-5 days of the injury. All the flaps were raised from the anterior or the lateral compartment of the leg to cover the adjacent tibial bone. Five flaps were raised as proximally-based and 5 flaps were raised as distally-based flaps. No flap was raised and advanced in a V-Y fashion. Split skin grafting was required in all cases to cover the secondary raw area created following the flap elevation.

Results: All flaps survived and served the purpose. In one case we encountered a deep seated infection resulting in sinus formation needing further debridement in the form of sequestrectomy which healed finally.

Conclusion: The authors believe that the perforator-based flap cover described here is simple, safe and a time-saving procedure for a trauma surgeon to cover the moderate-sized traumatic pre-tibial wounds exposing the bone and the tendons.

SUR 069

Quality of Life Associated with Age-related Macular Degeneration in Singapore

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Aim: To ascertain the quality of life (QoL) associated with age-related macular degeneration (AMD) in Singapore.

Methods: Two hundred and twenty randomly selected ophthalmology outpatients diagnosed with AMD were interviewed using a standardised questionnaire. Utility values were calculated using the time trade-off (TTO) and standard gamble (for death and blindness) techniques. The EuroQol 5D (EQ-5D) health status questionnaire was used to assess QoL.

Results: The mean age was 66.8 (range 55-89) years with a male predominance (63%). There were 88% Chinese, 8% Malays and 4% Indians. Wet AMD was present in 18.6% of the patients while 81.3% had dry AMD. The mean utility values were 0.86 for TTO, 0.90 for standard gamble (death) and 0.94 for standard gamble (blindness). Chinese reported significantly higher utility values compared to non-Chinese for TTO (0.87 vs. 0.78; $P = 0.02$) and standard gamble (death) (0.92 vs. 0.80; $P = 0.04$). Impaired visual acuity (6/12 or worse) was associated with significantly lower utility values for standard gamble (blindness) using multivariate analysis ($P = 0.03$). A significant proportion of patients had problems with mobility (14%) and usual daily activities (8.5%). Fourteen per cent of patients also reported some form of anxiety or depression.

Conclusion: AMD and impaired vision are associated with a decrease in QoL as measured by the utility values and EQ-5D, with some differences among the races. A significant proportion of AMD patients also have anxiety or depression, and problems with mobility and usual daily activities.

SUR 070

Primary Adenoid Cystic Cancer of the Breast in a Male Patient - A Case Report and Review of Literature

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Introduction: Adenoid cystic carcinoma (ACC) of the breast is a rare neoplasm accounting for 0.1% of all breast carcinomas. Male breast AAC is an even rarer pathology. We report a case of ACC of the male breast and review the literature.

Methods: A 29-year-old Chinese male presented with a right breast lump for 4 months in January 2002. Patient underwent a simple excision biopsy for the lump, which showed ACC on histology. Patient subsequently had a simple mastectomy. Post simple mastectomy he had no adjuvant therapy. He has been on follow-up for the last 5 years and has shown no evidence of recurrence.

Results: In contrast to the aggressive nature of ACC at other sites, ACC of the breast has a favourable prognosis. Treatment is basically of simple mastectomy. Adjuvant treatment have been infrequently used and evaluated. It normally presents as a painful breast lump in the older age group. This information is derived from our knowledge based on female breast ACC. The experience with male breast ACC is limited and hence the presentation not so classical. However the treatment options and the follow-up remains similar to female breast ACC.

Conclusion: Male breast cancer is uncommon pathology and among these, male breast ACC is a rare entity. Though the presentation of the case varies, the principles of surgical management and follow-up remain same as female breast ACC. Unlike infiltrative ductal cancer (IDC), its prognosis is favourable.

SUR 071

Management of Complicated Perforated Duodenal Ulcers With Omental Patch Repair and Pyloric Exclusion

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Introduction: Operative risk for complicated perforated duodenal ulcers previously showed to be related to concurrent major illness, prolonged perforation of more than 24 hours and preoperative hypotension.

Clinical Picture: We report a series of 3 cases from February 07 to April 07 admitted to Alexandra Hospital for perforated duodenal ulcers, who were managed surgically with omental patching, pyloric exclusion and gastrojejunostomy formation. All 3 patients were complicated by prolonged perforation of more than 24 hours. One patient also had preoperative hypotension requiring inotropic support. The mean age of the patients was 62 (50-78) years and their American Society of Anesthesiologists' grade ranged from 2E to 3E.

Treatment: Intraoperatively, the perforated ulcers ranged from 1 to 5 cm with gross intra-peritoneal soilage. Omental patch repair of the ulcer, pyloric exclusion and gastrojejunostomy formation were performed in all 3 cases. Pyloric exclusion was done with vicryl 2/0 purse-string from the stomach.

Outcome: Postoperatively, 1 patient was fit for general ward management. The other 2 patients stayed 2 days each in the intensive care unit, and 2 and 7 days each in the high dependency unit. The mean hospitalisation period was 17.3 (11-25) days. All 3 patients were followed up with no mortality. One patient had a complication of right flank abscess that responded to drainage and antibiotics.

Conclusion: In complicated perforated duodenal ulcers, omental patch repair and pyloric exclusion and gastrojejunostomy formation yielded favourable results. A partial gastrectomy may expose a patient to added surgical stress while an omental patch repair alone may not suffice.

SUR 072

Oesophageal Dilatation: A Late Complication of Laparoscopic Adjustable Gastric Banding for Morbid Obesity

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Aim: Laparoscopic adjustable gastric banding is a popular surgical procedure for the treatment of morbid obesity. A small gastric pouch with an adjustable outlet diameter is created. Early satiety and delayed emptying of this pouch is the mainstay of the mechanism of weight reduction. However, a high-pressure zone is created, similar to that of achalasia. Gastric pouch and oesophageal dilatation have been reported as a complication of adjustable gastric banding for morbid obesity.

Methods: Alexandra Hospital has a database of over 300 Laparoscopic adjustable gastric banding patients. Several patients with symptoms suggestive of pouch or oesophageal dilatation underwent evaluation with barium swallows. Several oesophageal dilatations were recorded. Various methods were used to manage these patients.

Results: Of these patients with oesophageal dilatations, some elected to have their Bands deflated, thus relieving the outlet obstruction. Others elected to have the bands half deflated and some refused to have any adjustment, fearing weight gain after deflation. Follow-up barium studies were carried out. Their outcome is presented.

Conclusion: Oesophageal dilatation is a known complication of adjustable gastric banding. It is usually advisable to relieve the outlet obstruction, thus allowing the oesophagus to recover from dilatation.

SUR 073

Epidemiology of Postoperative Endophthalmitis in Two Asian Populations

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²*Aravind Eye Hospital, Pondicherry, India*

Aim: To compare the clinical features and outcomes of postoperative endophthalmitis between 2 Asian populations.

Methods: The epidemiological data of patients who developed endophthalmitis after cataract surgery in India (Aravind Eye Hospital, Pondicherry) were compared with those in Singapore (Tan Tock Seng Hospital).

Results: The rate of postoperative endophthalmitis is higher in India compared to Singapore, 77 of 45410 cases, 0.17% vs 21 of 29541 cases, 0.07%. The majority of cases developed early in both populations: 69 of 77 (89.6%) in India, 19 of 21 (90.5%) in Singapore. Of these, 100% presented within 3 days in Singapore while only 49.4% sought treatment in India within the same duration. There were more males (0.09%) compared to females (0.04%) in both Singapore [multivariate O.R. 2.51 ($P = 0.063$)], and Indian subjects (63.6% vs 36.4%). The rate of endophthalmitis was higher in the left eye compared to the right (0.09% vs 0.04%) [multivariate O.R. 0.35 ($P = 0.045$)]. Positive cultures from vitreous taps were obtained from 48.7% in India and 47.6% in Singapore. Coagulase-negative Staphylococcus (CNS) was the most common organism in both groups (10.5% India vs 14.3% Singapore). Final visual acuity (VA) better than 6/12 was achieved in 33.3% of Singapore patients and 7.8% of Indian patients.

Conclusion: There is a higher incidence of postoperative endophthalmitis in India. In both populations, more males were affected and CNS was the most common organism cultured. Most patients had VA worse than 6/12.

SUR 074

Common Injuries and Outcome of Non-judicial Hanging

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Aim: Hanging is the second most common method of suicide in Singapore. There were 793 deaths from hanging between 1991 and 2000. We aim to identify the common complications and prognostic factors following hanging in juries.

Methods: Retrospective studies and case series were reviewed. Data were pooled to estimate injury prevalence and outcome measures.

Results: The common injuries associated with non-judicial hanging are cervical soft tissue trauma, hypoxic brain injuries, pulmonary complications (adult respiratory distress syndrome, pneumonia). Incidence of cervical spine injury is highly variable – 0.6% to 7%. Overall mortality of non-judicial hanging is 36.5% (standard deviation: 16.2%). A total of 55.9% recover fully whilst 7.6% have residual disability. Glasgow Coma Scale at emergency department is a strong predictor of outcome: Glasgow Coma Scale 15-96.9% full recovery, 3.1% residual disability; Glasgow Coma Scale 3-87.7% mortality, 5.2% residual disability, 7.1% full recovery. Cardiac arrest associated

with poor prognosis caused a mortality of 91.9%. There was significantly improved survival if Injury Severity Score <15.

Conclusion: Non-judicial hanging is associated with a broad spectrum of injuries and high mortality. Glasgow Coma Scale, cardiac arrest, and ISS are predictive of outcome.

SUR 075

Periampullary Carcinoid Tumour: A Rare Condition With a Rarer Presentation

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Introduction: Carcinoid tumours of the gastrointestinal tract are uncommon occurrences. They are generally slow-growing and are associated with a good prognosis. Symptoms usually arise from mass effect or neurohormonal products.

Case Report: The authors present a unique case of a carcinoid at the ampulla of Vater inciting a large inflammatory mass and presenting with biliary and pancreatic duct obstruction mimicking a large tumour in the head of pancreas. Preoperative imaging suggests displacement and invasion of the portal vein and peri-pancreatic nodal enlargement. A radical pancreaticoduodenectomy with portal vein wedge excision was thus performed. Intraoperative biopsy of the enlarged nodes was found to be not involved and postoperative histology of the large pancreatic mass yield a surprising finding of a small carcinoid tumour with a large inflammatory mass adherent to the portal vein.

SUR 076

Utility Values and Myopia in Teenage School Students Attending a Tertiary Eye Care Centre

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Aim: To determine the utility values of myopic teenage students in a tertiary eye care centre.

Methods: Demographic data and utility values of 499 subjects aged 12 to 19 years seen at the Aravind Eye Hospital, Pondicherry, India, over a 6-month period were analysed. Time trade-off (TTO – the number of years of life patient is willing to sacrifice) and standard gamble for blindness (SGB – the risk of blindness patient is willing to accept) were calculated.

Results: The mean age of the 499 subjects was 13.9 years (SD ± 1.2; range, 12-19). In the right eye, there were 343 subjects (68.7%) with low, 143 (28.7%) with moderate and 13 (2.6%) with high myopia respectively. The mean time trade-off (TTO) was 0.94 (SD ± 0.08; range, 0.06-1.00) and the mean standard gamble (SG) was 0.85 (SD ± 0.27; range, 0-1.00). Both the TTO and SG correlated significantly with the spherical equivalent ($P = 0.049$ and $P < 0.001$ respectively). Low myopes had a higher SG than moderate or high myopes ($P = 0.019$ and $P = 0.042$ respectively). The TTO was significantly higher for those in school compared to college students (0.94 vs 0.86, $P < 0.001$) but the difference in SG was not significant. TTO and SG did not vary significantly with gender, type of school or family income.

Conclusion: Utility values were generally high among myopic

teenagers; but were significantly lower amongst high myopes, indicating a poorer quality of life.

SUR 077

Advanced Hip Osteonecrosis Managed Using Vascularised Fibula Graft: Case Report on Technical Challenges

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Aim: Management of hip osteonecrosis in the young is challenging and femoral head preservation surgery is often preferred. Various methods have been used with varying results, including primary core decompression with allograft or vascularised fibular autografts, resurfacing arthroplasty and total hip replacement. The authors report the first local case of treating advanced hip osteonecrosis with core decompression and vascularised autogenous fibula graft.

Methods: A previously well 26-year-old man presented with a 3-month history of progressive left hip pain after a fall. Clinical examination noted a 1-cm shortening and a tender left hip. Range of motion was full. Radiographs showed Ficat III osteonecrosis of the left hip with femoral head collapse. He underwent core decompression of the left femoral head and reconstruction with a vascularised autogenous fibular graft. The patient has been followed up for 12 months postoperatively.

Results: The patient was commenced on weight-bearing ambulation 6 weeks postoperatively and subsequent interval radiographs showed osteointegration of the fibular graft as well as the lack of further femoral head collapse. At his latest review 12 months postoperatively, the patient was pain-free and had good range of motion (flexion 120°, abduction 60°, external rotation 30°).

Conclusion: Osteonecrosis is a common clinical problem that tends to present late in our population. Careful staging and patient selection should be done. This case demonstrates that the use of a vascularised fibular autograft is a safe and effective reconstructive technique in similar cases.

SUR 078

Peritoneal Inflammatory Pseudotumours Occurring Post-Distal Pancreatectomy

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Introduction: Inflammatory pseudotumours are uncommon but known to occur in almost every organ. Their occurrences give rise to unnecessary fear and often extensive investigations are carried out in an attempt to rule out a malignant diagnosis, failure of which, surgical procedure may even be performed only to discover on histology its true nature. We present a case of multiple peritoneal inflammatory pseudotumours developing after a laparoscopic distal pancreatectomy for a cystic neoplasm of the pancreas. These showed resolution on follow-up with conservative treatment.

Case Report: A 44-year-old man had a magnetic resonance imaging showing a cystic lesion in the distal 1/3 of pancreas, with irregular wall and some solid component. Endoluminal ultrasound showed a 15 mm rounded hypoechoic homogeneous mass with slightly irregular margin. Serum CA 19-2, CEA, amylase and AFP were not raised. Laparoscopic pancreatectomy with splenectomy was performed. Histology revealed microcystic cystadenoma (serous cystadenoma).

Postoperative computed tomography (CT) scan of the abdomen done 6 months later revealed a cystic lesion at the resection margin with multiple peritoneal lesions of mixed density which were suspicious for tumour seeding. Multiple prominent and mildly-enlarged mesenteric lymph nodes were also present. The patient underwent CT guided fine needle aspiration and biopsy of the peritoneal nodules. These showed only inflammatory cells. A diagnosis of post-surgical inflammatory pseudotumours was made. A repeat CT scan showed resolution of the peritoneal nodules.

SUR 079

Periampullary Carcinoid Tumour: A Rare Condition With a Rarer Presentation

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¹*Surgery, National University Hospital, Singapore, ²Pathology, National University Hospital, Singapore*

Introduction: Carcinoid tumours of the gastrointestinal tract are uncommon occurrences. They are generally slow-growing and are associated with a good prognosis. Symptoms usually arise from mass effect or neurohormonal products.

Case Report: The authors present a unique case of a carcinoid at the ampulla of Vater inciting a large inflammatory mass and presenting with biliary and pancreatic duct obstruction mimicking a large tumour in the head of pancreas. Preoperative imaging suggests displacement and invasion of the portal vein and peri-pancreatic nodal enlargement. A radical pancreaticoduodenectomy with portal vein wedge excision was thus performed. Intraoperative biopsy of the enlarged nodes was not found to be involved and postoperative histology of the large pancreatic mass yield a surprising finding of a small carcinoid tumour with a large inflammatory mass adherent to the portal vein.

SUR 080

Ethambutol-induced Optic Neuropathy – A Case Series and Review of the Literature

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Aim: To report the clinical features of ethambutol-induced optic neuropathy in Singapore, examine the factors associated with reversibility and evaluate ethambutol's safety margin locally.

Methods: A search was made of Singapore National Eye Centre's Neuro-ophthalmology clinic database between January 2000 and December 2005. Patient selection criteria included ethambutol therapy, clinical features of toxic optic neuropathy, exclusion of other causes and absence of ocular trauma.

Results: Eight patients were identified. Average dose of ethambutol was 16.5 mg/kg/day. Mean duration of therapy before toxicity onset was 6.8 months. Mean follow-up duration after stopping ethambutol was 12.6 months. In all cases, bilateral visual impairment was reported with decreased visual acuity, colour vision and visual field defects. Thus there may not be a "safe dose" as all developed optic neuropathy despite being on recommended low doses. Predisposing risk factors for toxic optic neuropathy should be considered when initiating treatment to minimise complications. Secondly, longer treatment duration and more severe visual impairment are associated with poorer reversibility. Thirdly, patients on ethambutol and isoniazid with visual loss should stop both to reduce progression of toxicity that could be due to either drug.

Conclusion: Primary prevention of ethambutol optic neuropathy is essential as tuberculosis is endemic locally and ethambutol is often used as first-line treatment. Patients must be reminded to return immediately at the onset of visual loss. Pretreatment eye examination should be instituted to establish baseline ocular disease and visual function with subsequent regular monthly monitoring. This practice may be facilitated by initiating a standardised Clinical Practice Pathway for ethambutol therapy.

SUR 081

Lap-Band Causing Left Gastric Artery Erosion Presenting With Torrential Haemorrhage

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A 61-year-old lady presented 2 years after Lap-Band surgery with haemetemesis. She was stable on admission and band erosion was diagnosed on gastroscopy. Laparotomy was performed to remove the Lap-Band. Upon division of the Lap-Band, torrential haemorrhage from the eroded left gastric artery was encountered. An anterior gastrostomy was done in order to expose the artery. Intraoperative gastroscopy was also performed to define the cardioesophageal junction. The artery was eventually ligated and the gastrostomy repaired. The patient was discharged after 9 days in hospital. This case highlighted the possibility of compromise of the left gastric artery in band erosion presenting with haemetemesis. Torrential bleeding may be encountered upon division of the Lap-band and this should be anticipated during laparotomy.

SUR 082

Case Report of Concurrent Laparoscopic-assisted Resection of Liver and Colonic Tumour in a Geriatric Patient

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Aim: Concurrent laparoscopic resection of synchronous colon and liver tumour is rarely performed and controversial. A report of a patient with ascending colon tumour with synchronous liver segment II tumour who underwent concurrent laparoscopic-assisted resection of both colon and liver tumours is presented.

Methods: The patient was an 84-year-old man, with co-morbidities consisting of previous stroke, dementia and ambulating. He presented with altered bowel habits and underwent a colonoscopy, which found a tumour at the ascending colon. Biopsy revealed poorly differentiated adenocarcinoma. Abdominal CT scan revealed 2 hypodense lesions in segment II of the liver suspicious for metastases.

Results: The liver resection was performed first. A hand port was used in the right hypochondrium. Segments II and III were resected with a laparoscopic harmonic scalpel with intermittent Pringle's using a bowel clamp. Total Pringle time was 15 minutes with 2 episodes of 5-minute release. The pedicle was divided using vascular staples. The right hemicolectomy was continued with mobilisation performed intracorporeally. The right colon was brought out through the handport for extra-peritoneal resection and reconstruction using staples. The duration of the operation was 5 hours and 30 minutes. Estimated blood loss was 150 ml. The patient was extubated after the operation and was monitored in high dependency unit overnight. Post-operation recovery was complicated by pneumonia which he soon recovered and was discharged well.

Conclusion: Concurrent laparoscopic-assisted resection of

synchronous colon and liver tumours is possible in selected cases and may benefit patients in terms of being minimally invasive.

SUR 083

Natural History of Small ‘Indeterminate’ Hepatic Lesions in Patients With Colorectal Cancer

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Aim: Colorectal cancer is the commonest cancer in Singapore. The initial staging computed tomographic (CT) scan for patients diagnosed with colorectal cancer may reveal small ‘indeterminate’ hepatic lesions <1 cm in diameter. The significance of these lesions is often unknown at the time of diagnosis. Follow-up of these lesions is required as it may have potential impact on the subsequent management. This study aimed to determine the prevalence and significance of small ‘indeterminate’ liver lesions (<1 cm on CT scan) in patients diagnosed with colorectal cancer and also to retrospectively review the amount of follow-up time required to determine the significance of these lesions.

Methods: Data were collected retrospectively from 1 January 2002 to 31 December 2003. All patients who were surgically treated for their colorectal cancer and noted to have small ‘indeterminate’ liver lesions on their initial staging CT were analysed. These lesions were reported as being too small to be characterised. Subcentimetre hepatic lesions, which were characterised definitively by the radiologists as a cyst or metastases, were excluded. All subsequent imaging of the liver were reviewed to assess the natural history of these small ‘indeterminate’ liver lesions.

Results: A total of 196 patients underwent surgery with a curative intent for their colorectal cancer. Forty-three patients (21.9%) had small ‘indeterminate’ liver lesions on their initial staging CT which could not be definitely characterised. Of these, 30 (69.8%) had multiple lesions whilst the remaining 13 had single lesions. Thirty-three (76.7%) had subsequent follow-up imaging for their liver lesions which include magnetic resonance imaging (MRI) in 1 patient, ultrasound in 2 patients and CT for the rest of the patients. Thirty-one (93.9%) of these were shown to be stable lesions, which were likely to be benign in nature. Only 2 patients showed evidence of progression suggestive of early metastases. The progression of lesions in these 2 patients was seen on subsequent liver imaging done 3 and 9 months respectively after the initial staging CT. These 2 patients subsequently received palliative treatment.

Conclusion: Small ‘indeterminate’ liver lesions may occur in up to 21% of colorectal cancer patients. Most of these are benign and do not progress. There is no role for additional surveillance imaging of these findings.

SUR 084

The Current Trend in Cosmetic Surgery

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Aim: To illustrate the trend in proportion of cosmetic surgical procedures in comparison to non-cosmetic surgical procedures from 5 years ago with the last 2 years in our centre and outpatient service; and to elucidate the demography of patients undergoing cosmetic procedures.

Methods: Data were gathered on all operations - patient biodata, type

of operation done, status of operation whether elective or emergency, operation code, operation table and purpose of operation whether medical or cosmetic done by members of the Division of Plastic, Reconstructive and Aesthetic Surgery from the following time frames:

01 April 2002 – 31 March 2003

01 April 2005 – 31 March 2006

01 April 2006 – 31 March 2007

A comparison of the proportion of cosmetic procedures with the non-cosmetic ones was made between the 3 time frames. Within the cosmetic group, characterisation of the patient demography i.e. age, gender and race was done to identify the changing trend.

Results: There is a significant increase in number and proportion of cosmetic procedures as compared to non-cosmetic procedures done within the last 2 years in contrast to 5 years ago.

Conclusion: There is a significant increase in demand for cosmetic procedures in the recent years. Measures can be taken to improve and expand the types of surgical services and amenities to accommodate this rising trend. Healthcare institutions can stand to benefit from providing and improving accessibility to these cosmetic procedures to the general public.

SUR 085

Methylene Blue Aided Jejunal Resection in Small Bowel Haemorrhage

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Aim: We present a novel technique of methylene blue aided jejunal resection in a patient with small bowel haemorrhage

Methods: A 73-year-old Chinese female presented with frank bleeding per rectum and giddiness of 3 days’ duration. Gastroscopy and colonoscopy was unremarkable. An urgent mesenteric angiography with superselective cannulation of a jejunal branch artery localised the active bleed to a proximal segment of jejunum. Attempts to embolise the bleeding artery failed as the artery went into vasospasm. The catheter was left in-situ to allow infusion of vasopressin at a rate of 0.1 mg/min. The patient had continual bleed despite the vasopressin infusion, and the decision was made for an emergency laparotomy. A midline laparotomy was performed and findings were that of multiple jejunal diverticuli beginning 20 cm from the duodeno-jejunal flexure and extending for 20 cm distally. The largest diverticulum measured 2 cm in diameter. The microcatheter could not be palpated, and methylene blue dye was injected into the microcatheter port to reconfirm the area of hemorrhage, which coincided with the area of diverticulosis. The dye also outlined the 20 cm length of bowel, which was resected, and a functional end-to-end jejuno-jejunostomy was fashioned.

Discussion: The aims of patient management in cases of intestinal bleeds are twofold: to localise the site of the lesion, and to achieve hemostasis if the lesion is still actively bleeding. Various imaging and diagnostic modalities are available to help us localise the segment of gut responsible for the hemorrhage. However, they have limited applications in cases where there is active exsanguination and hemodynamic instability. In patients with active bleeding, a mesenteric angiogram provides both diagnostic certainty and a choice of therapeutic option previously with vasopressin infusion to induce vasospasm, and more recently embolisation using coils and gelfoam. Transcatheter super selective embolisation has been shown to be an effective and safe modality in the treatment of acute GI bleeding distal

to the ligament of Treitz. The main difficulty lies in successfully catheterising the mesenteric arteria recta. Our own experience in this patient was that of failed embolisation following catheterisation due to vasospasm of the actively bleeding artery. After the demonstration of the initial blush of contrast the artery went into spasm, necessitating parking of the catheter in an adjacent vessel to allow vasopressin infusion. Our use of methylene blue demonstrates 2 principles – the dye provides intra-operative confirmation of the bleeding lesion, as well as indicating the margins of resection. In using methylene blue to determine the margins of resection, the dye injection should only be performed after the jejunum has been adequately exposed and preparations made for resection. The surgeon should be ready to mark the margins of the bowels at the instant of the first blush, or subsequent diffusion of the dye might render a more extensive bowel resection than is necessary.

SUR 086

Review of Early Gastric Cancer in Singapore Population

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Aim: To review the incidence of early gastric cancer in Singapore

Methods: This is a retrospective study of 479 patients diagnosed with gastric adenocarcinoma in Singapore, from 1993 to 2005. Data regarding the patients' details were obtained from a database maintained by Tan Tock Seng Hospital. Patients lost to follow-up were contacted by phone. A total of 57 patients (11.9%) were identified to have early gastric cancer (EGC) (T0 or T1; Nx; M0). Statistical Package for Social Sciences (SPSS) v14.0 for Windows was used to analyse the data.

Results: A study was carried out on 57 (11.9%) early gastric cancer patients over a 12-year period (1994-2005). There were 31 males (54.4%) and 26 females (45.6%) with a ratio of 1.2:1.0. Mean and median ages were 68.6 years and 71 years respectively. Most of the patients were over 50 years of age. Fifty-five patients (96.5%) were Chinese and 2 patients (3.5%) were Indians. The main presenting symptoms were pain (n = 20, 39.2%) and gastrointestinal bleeding (n = 18, 35.2%). Most of the lesions were located in the distal 1/3 in the lesser curvature. Submucosal infiltration was present in 29 (54.7%) patients and lymph nodes metastases in 9 patients (N1). Lymph node metastases tended to occur in T1b lesions compared to T1s and T1a lesions. There were 3 deaths due to early gastric cancer.

Conclusion: The incidence of early gastric cancer in Singapore population corresponds more to western literature as compared to the Japanese. It has a slight preponderance to Chinese population. Lymph node metastasis in T1b results in a poorer outcome compared to T1a.

SUR 087

Chinese Herbal Medicine in the Treatment of Hepatocellular Carcinoma – An Analysis

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Aim: Hepatocellular carcinoma (HCC) is the fifth leading cause of cancer worldwide, with increasing incidence. In Asia and Africa, HCC is responsible for a large proportion of cancer deaths. The treatment remains a controversial issue, despite the progress that has

been made during the past decades, as most HCC patients are diagnosed at late stages and receive only palliative treatments not intended to extend survival. Untreated patients with advanced disease have a 1-year survival rate of 29%, a 2-year survival rate of 16%, and a 3-year survival rate of 8%. In China, Hong Kong and Singapore, herbal medicine is frequently used in the treatment of liver cancer. In our analysis, we sought to assess the effectiveness of this therapy for HCC by analysing data from studies that compared treatment with Chinese herbal medicine combined with other conventional medical to treatment with conventional medical therapy alone.

Methods: *Systematic Search* - We performed a retrieval of studies in all languages through systematic searching of the databases TCMLARS, PubMed, Science Direct and EMBASE using the keywords liver cancer, Chinese medicine, Criteria for Inclusion, exclusion, and combinality.

Results: Selection of Trials, Treatment Effectiveness

Conclusion: Our data analysis suggest promising evidence that traditional herbal medicine might have therapeutic and palliative effect in the treatment of hepatocellular carcinoma.

SUR 088

The Use of Perfluorocarbon Liquid as Postoperative Endotamponade in Proliferative Vitreoretinopathy and Posterior Segment Complications of Ocular Trauma

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Objective: To evaluate the use of perfluorocarbon liquid (PFCL) as endotamponade in posterior segment complications of severe ocular trauma, and retinal detachments associated with proliferative vitreoretinopathy (RD/PVR).

Methods: This retrospective case-record review focused on disease severity, previous vitreoretinal surgeries, pre- and postoperative vision, operative details, duration of PFCL endotamponade and postoperative complications.

Results: Sixty-one eyes of 60 patients had vitrectomy with PFCL endotamponade for ocular trauma (24 eyes), and RD/PVR (37 eyes). In trauma eyes, disregarding 2 eyes in which PFCL was left in-situ for 92 and 49 days, mean duration of PFCL endotamponade was 14 days for the remaining 21 eyes (range, 7 to 28 days). Anatomical success with initial PFCL-endotamponade surgery was 33.3%, and 58.3% with further surgeries. Vision improved in 48%, stabilised in 43% and 2 patients eventually underwent enucleations. In eyes with RD/PVR, PFCL was left in-situ for a mean of 16.7 days (range, 7 to 46). Successful reattachment after initial PFCL-endotamponade surgery was 51.4%, and 64.9% with additional surgeries. Vision improved, remained stable and deteriorated in 38%, 32% and 22% of eyes respectively, the 3 remaining eyes were eventually enucleated. Complications seen included raised IOP (6.5%), anterior chamber dispersion (17.7%), cataract formation (11.8%), keratopathy (9.7%), anterior segment inflammation (9.7%), and posterior segment membrane re-proliferation (19.4%).

Conclusion: PFCL is a viable alternative as postoperative endotamponade in complicated vitreoretinal conditions like severe ocular trauma and PVR, with specific long-term retinal stabilisation requirements. No severe or long-lasting toxicity associated with prolonged use of PFCL endotamponade was seen in this study.

SUR 089**A Prospective Randomised Study to Determine the Need for Prophylactic Antibiotics in Elective Laparoscopic Cholecystectomy****J LEE¹, E LIM¹, A GAN¹, A CHENG¹, D TAN¹, TK TAN¹, K MAK¹**¹Department of General Surgery, Alexandra Hospital, Singapore

Aim: Prophylactic antibiotics for elective laparoscopic cholecystectomy are a matter of controversy. We performed a prospective randomised study to determine any difference in infective complications with or without prophylactic antibiotics following elective laparoscopic cholecystectomy. Secondary aims are to assess (i) rate of infected bile and bacteriology of positive bile cultures in our population; (ii) whether positive bile culture increase postoperative infection.

Methods: From June 2004 to October 2006, 91 consecutive patients in Alexandra Hospital who underwent elective laparoscopic cholecystectomy were recruited into the study. We randomised them into 2 groups, group A (n = 43) received prophylactic antibiotics, while group B (n = 48) did not. Prophylactic antibiotics consist of i/v rocephine 1 g given at induction, or i/v gentamicin 120 mg if patient had drug allergy. Extraction of bile was standardised at start of operation once pneumoperitoneum was created. Patients were assessed perioperatively, at 1 week and 1 month for infective complications.

Results: The only postoperative complication was wound infection. There were 3 umbilical and 1 epigastric port site wound infections (4/91 = 4.4%), 2 from group A (2/43 = 4.65%) and 2 from group B (2/48 = 4.17%). There was no difference in the rate of infection between the 2 groups. The number of positive bile cultures was 18 (19.8%), and this did not increase wound infection rates. Except for 1 case of gram-positive anaerobe, the rest of our positive bile cultures were gram-negative bacteria.

Conclusion: Prophylactic antibiotics are unnecessary in low risk patients undergoing elective laparoscopic cholecystectomy.

SUR 090**Accuracy of an Initial Diagnosis of Acute Appendicitis in Patients Admitted From Emergency Department****F ALI AKBAR¹, A PUNYADASA¹, M MAHADEVAN¹, WH CHAN¹**¹Department of Emergency Medicine, National University Hospital, Singapore

Aim: To evaluate the accuracy of Emergency Department diagnosis of acute appendicitis.

Methods: A retrospective study was done on 244 patients hospitalised with abdominal pain suggestive of acute appendicitis. Emergency Department diagnosis was based on 6 diagnostic criteria: 1) Migratory abdominal pain, 2) Fever, 3) Nausea and vomiting, 4) Right iliac fossa tenderness, 5) White cell >10K and 6) Left shift of neutrophils >75%. Accuracy of initial diagnosis was evaluated based on final discharge label. The diagnostic yield of various inpatient investigations was also evaluated.

Results: One hundred and forty-nine female and 95 male patients, between the ages of 14 and 40 were studied. The most common features were right iliac fossa tenderness in 228 patients (93.4%) and migratory abdominal pain in 220 patients (90.2%). Inpatient urinalysis and pelvic scans were performed in selected patients. These investigations confirmed diagnoses other than appendicitis in 30 patients (12.3%). A total of 123 patients (50.4%) underwent appendectomy. Of these, 101 (82.1%) had histological confirmation of appendicitis. Eighty-nine patients (36.5%) were discharged with

a diagnosis of non-specific abdominal pain.

Conclusion: In our study, the Emergency Department diagnosis of acute appendicitis (based on the criteria outlined above) was accurate in 42.2%.

SUR 091**A Single Flap for Mons Pubis and Vulvar Reconstruction****A GAN¹, J LIM¹**¹Division of Plastic, Reconstructive and Aesthetic Surgery, National University Hospital, Singapore

Aim: To report a case of immediate mons pubis and vulvar reconstruction using a transverse rectus abdominis musculocutaneous flap post-simple vulvectomy.

Methods: A 57-year-old Chinese female with Paget's disease of the vulva underwent a simple vulvectomy with resection of the entire vulva and anterior perianal skin with 5 cm margins anteriorly and laterally. Immediate reconstruction using a right TRAM flap was done. A pedicled right TRAM flap was raised based on the right deep inferior epigastric vessels and transferred to the perineum through a subcutaneous tunnel created in the remnant pubis. Donor site wound closure was done in layers with Vicryl 2/0, Monocryl 3/0, Monocryl 4/0 and Vicryl Rapide 5/0 to skin. Recipient site closure was done after de-fattening of the flap with Vicryl 3/0, Monocryl 4/0 and Vicryl Rapide 5/0.

Results: A cosmetically pleasing result with little donor site scarring was achieved. The patient was discharged well on the 6th postoperative day.

Conclusion: The TRAM flap is a feasible and favourable alternative for immediate mons pubis and vulvar reconstruction post-vulvar resection.

SUR 092**Infective Keratitis in Singapore: Corneal Culture Results and Treatment Outcome in a Tertiary Hospital over a 20-month Period****J CH TAN¹, EWT POH¹, LW VOON¹**¹Department of Ophthalmology, The Eye Institute, Tan Tock Seng Hospital, Singapore

Aim: To compare outcomes in patients with culture-positive infective keratitis versus culture-negative keratitis in Tan Tock Seng Hospital, Singapore.

Methods: A retrospective analysis of 112 cases of presumed infective keratitis seen at Tan Tock Seng Hospital, Singapore over a 20-month period was done. The diagnosis of infective keratitis was based on clinical findings of corneal infiltrate of at least 1 mm in size with overlying epithelial defect and associated anterior chamber cells of 1+ or more. Corneal culture results were analysed and the initial and final Logmar best corrected visual acuity (BCVA) in both groups were compared.

Results: Ninety-one cases (81.3%) were culture-positive while 21 (18.8%) were culture-negative. Forty-nine (43.8%) were gram negative bacilli, 34 (30.4%) were gram positive bacteria, 2 (1.8%) were fungal and 6 (5.4%) showed mixed growth. In the culture-positive group, the median initial BCVA was 0.30 while the median initial BCVA for the culture-negative cohort was 0.50 ($P < 0.001$). The median final BCVA was 0.20 for the culture-positive group while the median final BCVA for the culture-negative group was 0.10 ($P < 0.001$).

Conclusion: Patients with culture-negative corneal ulcers have a better visual outcome. This may be attributed to cases of smaller ulcer size with lower microbial load and the possibility of misdiagnosing marginal keratitis as infective keratitis.

SUR 093

Rapid Development and Subsequent Spontaneous Partial Resolution of Diabetic Retinopathy in a Newly-diagnosed Diabetic Following Initiation of Rapid Glycaemic Control

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Aim: To report an unusual case of rapid development of diabetic retinopathy following rapid initiation of glycaemic control in a newly-diagnosed diabetic with subsequent partial spontaneous resolution of the retinopathy.

Methods: Observational case report.

Results: A 29-year-old Chinese woman admitted for a leg ulcer was found to have previously undiagnosed diabetes mellitus. Baseline eye examination showed unaided visual acuity of 6/6 and normal ocular fundi with no evidence of retinopathy bilaterally. She was started on subcutaneous insulin injections, and rapid glycaemic control was achieved with glycosylated haemoglobin (HbA1c) levels dropping from 14.5% at baseline to 6.9% within 2 months. Four months after commencement of treatment, the HbA1c level had dropped further to 5.9%, and she complained of sudden onset of blurred vision in the right eye. The vision in the right eye was 6/12 partial unaided and 6/7.5 partial best-corrected. Funduscopy revealed bilateral moderate non-proliferative diabetic retinopathy (NPDR) with multiple cotton-wool spots (CWS) around the vascular arcades and posterior pole in both eyes. In particular, there was one CWS over the papillo-macular bundle in the right eye. Fluorescein angiography revealed multiple microaneurysms with mild diffuse leakage. The CWS gradually resolved and 4 months later, funduscopy revealed only mild NPDR with no CWS bilaterally and right unaided visual acuity was 6/6 partial.

Conclusion: Diabetic retinopathy can develop rapidly following initiation of glycaemic control in newly-diagnosed diabetics and this case emphasises the importance of close ocular monitoring in newly-diagnosed diabetics receiving treatment.

SUR 094

Severe Gastrointestinal Haemorrhage – A Potentially Fatal Complication of Adjustable Gastric Band for Morbid Obesity

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Aim: Laparoscopic adjustable gastric banding has become a popular procedure for surgical treatment of morbid obesity. As more of these procedures are performed, more medium term and late complications are encountered. We wish to present 2 patients with adjustable gastric bands who presented with severe gastrointestinal (GI) haemorrhage.

Methods: Two cases of severe upper GI haemorrhage presenting as complication after adjustable gastric band for morbid obesity has been recorded.

Results: Two morbidly obese patients were subjected to laparoscopic gastric banding. Surgery was uneventful. Both patients presented with severe upper gastrointestinal haemorrhage several months to several years after the initial surgery. Emergency endoscopy confirmed the diagnosis of bleeding due to band erosion. On both occasions, emergency laparotomy, removal of the band and repair of the stomach was carried out with good outcome.

Conclusion: Gastric band erosion, while uncommon and often asymptomatic, can at times cause life-threatening upper gastrointestinal haemorrhage. While more adjustable gastric banding procedures are being carried out, more of this type of complications can be expected.

SUR 095

Laparoscopic Liver Resection in Singapore - Advances and Challenges

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Aim: Laparoscopic hepatectomy is becoming an increasingly used modality in the curative treatment of patients with liver cancer in Europe and USA. The aim of our study was to assess the benefit and safety of laparoscopic liver resection compared with open resection.

Methods: Our hypothesis is that patients undergoing laparoscopic hepatectomy would have less postoperative complications, the morbidity and mortality rate would decrease, the patients would need shorter hospitalisation, would recover and return to normal activity faster, thus healthcare expenses would be significantly reduced. We searched the literature according to the following: the primary endpoint being short-term (within 1 month of the surgery) mortality and morbidity (intra-abdominal complications) rate, overall survival, blood loss during surgery, number of positive resection margins, local recurrence and hospital stay. The secondary outcomes included cancer-free survival 1 and 3 years after surgery. Laparoscopic liver resection has not been widely used in Singapore. Our study would be the first of such trials to be reported and would have an impact on the therapeutic strategy of liver cancer.

SUR 096

Comparative Study of Routine Laparoscopic Cholecystectomy vs Follow-up After Endoscopic Therapy for Common Bile Duct Stones

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Aim: Obstructive jaundice from common bile duct stones (CBDs) is mostly managed by endoscopic bile duct clearance (ECBDc) followed by Laparoscopic cholecystectomy (LC). However, for the old and less fit patients, observation had been advocated. This study aimed to determine the rate of secondary event after endoscopic clearance of common bile duct stones and type of secondary event.

Methods: One hundred and fifty-five patients who had ECBDc were prospectively follow-up and divided into 2 groups; group A (n = 85): patients followed-up non-surgically; group B (n = 70): patients planned for an elective cholecystectomy.

Results: The mean age of patients in Group A was 66.02 years and in Group B 61.76 years ($P = 0.078$). Group A included 46 males and 39 female patients and group B had 33 male and 37 female patients ($P = 0.38$). Group A: Mean follow-up was 24.66 months. Twenty-two (25.88%) developed a secondary event, 8 recurrent cholangitis, 2

cholecystitis, 6 biliary colic, and 1 biliary pancreatitis. Group B: In Group B patients, 2 (2.85%) developed a secondary event before their intended cholecystectomy. There were 6 complications which included 1 bile leak which resolved spontaneously, 3 wound infections, 1 occipital stroke, 1 respiratory infection. Two patients had retained stones giving rise to subsequent pancreatitis and obstructive jaundice respectively.

Conclusion: LC should be recommended as there is a 26% risk of developing a secondary event after an average follow-up of 2 years, which includes conditions requiring removal of the gallbladder.

SUR 097

Acute Painful Ptosis Following Paranasal Sinusitis

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Aim: To describe an unusual presentation of acute painful ptosis due to para-nasal sinusitis.

Methods: Observational case report

Results: A 28-year-old Indian man presented with acute onset of left droopy eyelid, periorbital pain and pain on looking up of 3 days' duration. His best-corrected visual acuity was 6/9 in both eyes. Examination revealed severe left ptosis (Margin Reflex Distance 1 was -3 mm), and limitation of elevation but no anisocoria. The anterior segment was unremarkable and the fundus showed evidence of old resolved inferior retinal detachment. An urgent MRI/MRA orbit revealed opacification of left frontal, ethmoidal and sphenoidal sinuses suggestive of sinusitis and normal intra-cranial findings. There was no involvement of the extraocular muscles or orbital bony erosions. Urgent fronto-ethmoidectomy, MMA and sphenoidectomy were performed and the patient was started on parenteral antibiotics. He was noted to have full resolution of the ptosis and ocular motility deficit on the first postoperative day.

Conclusion: Acute ptosis may rarely occur after paranasal sinusitis. Neuritis (superior division of oculomotor nerve) and/or myositis following sinus inflammation may be causative factor(s).

SUR 098

Optical Coherence Tomography in Retinal Arterial Macroaneurysm

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Aim: To present the optical coherence tomography (OCT) findings in a case of retinal arterial macroaneurysm.

Methods: An 80-year-old Chinese hypertensive female presented with loss of vision in the right eye. On examination, the best-corrected visual acuity (BCVA) was counting fingers. Dilated fundus examination showed an arterial macroaneurysm associated with preretinal and subretinal haemorrhage. Fluorescein angiography showed blocked fluorescence corresponding to the presence of blood and late staining of the macroaneurysm. An OCT scan was obtained.

Results: OCT showed a dome-shaped, elevated, highly reflective

space suggestive of preretinal blood that blocked the optical reflections from the retina below showing apparent absence of the retina. It also confirmed the presence of intraretinal and subretinal blood. BCVA of counting fingers at initial presentation improved to 6/120 at the last follow-up of 7 months as the haemorrhage gradually resolved.

Conclusion: OCT is considered an imaging modality that provides cross-section of the retinal tissue. However, in certain cases of retinal macroaneurysm with blood in different layers of the retina, it is an interesting observation that OCT scan may obscure the very retinal architecture that is being studied.

SUR 099

Results of a New Surgical Protocol for Partially Accommodative Esotropia

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Aim: To test a protocol for augmented surgery based on the average of near deviation with correction and distance deviation without correction, and to assess the factors influencing the success and effectiveness of the surgical protocol.

Methods: A retrospective case series, in which we reviewed the medical records of 87 patients operated over a period of 18.5 years by 1 surgeon (MAD). **Intervention:** Bilateral medial rectus recession performed by the same surgeon (MAD). The amount of surgery was determined by the new protocol. **Main outcome measures:** Postoperative alignment, stereopsis and spectacle use.

Results: Success was defined as orthophoria or esotropia less than or equal to 10 prism dioptres. Any exotropia was considered failure. At 2 months postoperative, 77 patients (88.5%) achieved success. Three patients (3.5%) were overcorrected and 7 patients (8.0%) were undercorrected. Comparable success rates were obtained at 6 months and 2 years postoperative. Stereopsis improved in 70% of the patients. The surgical dose response significantly correlated with the amount of recession linearly. Higher age was the only factor significantly correlated with the success of our protocol.

Conclusion: We have described a new surgical protocol to treat partially accommodative esotropia. It is safe, with low overcorrection rates and has achieved good success rates.

SUR 100

Surgical Correction of Myopic Strabismus Fixus by Modified Loop Transposition with Scleral Myopexy

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Aim: In myopic strabismus fixus, there is large angle esotropia and hypotropia with marked limitation of elevation and abduction. The presumed pathophysiology involves the elongated globe herniating superotemporally and retroequatorially through the muscle cone. The cause of esotropia and hypotropia is a combination of restriction due to massive expansion of the posterior globe against tight medial rectus and displaced lateral and superior rectus muscles, which change the vector forces. Surgical treatment is difficult. Recession-resection and transposition procedures have been described. We describe a case of severe myopic strabismus fixus treated successfully with new modified loop transposition with scleral myopexy.

Methods: This is a modification of Yokoyama's technique. Preoperative alignment was esotropia greater than 95 PD and hypotropia of 35 PD. Orbital MRI showed classic findings of inferior displacement of lateral rectus and nasal displacement of superior rectus. We performed medial rectus and inferior rectus recessions. The superior rectus and lateral rectus were looped together with 5/0 mersilene suture and the junction sutured to sclera at a point 15 mm posterior to the limbus. The transposition was further stabilised by anchoring the nasal border of superior rectus and the inferior border of lateral rectus to sclera 12 mm posterior to insertions.

Conclusion: Successful treatment of myopic strabismus fixus must include realigning displaced muscles (lateral rectus, superior rectus) and releasing tight muscles (medial rectus, inferior rectus) to restore more normal force vectors on the globe. Ocular alignment and motility was remarkably improved in our patient, as documented by pre-op and post-op photography.

SUR 101

Audit of Laparoscopic Surgery in NUH Urology

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Aim: Laparoscopic urological procedures are gaining popularity among established urological centres around the world. This review aims to audit laparoscopic surgeries done in our institution and to compare our results with other established centres performing similar procedures.

Methods: A retrospective review of 64 patients who had urological laparoscopic procedures performed by the department of Urology NUH from 2002 January to 2007 May was done. All cases were identified using the hospital computerised database, and medical records were reviewed. All cases were reviewed in respect of diagnosis, operative procedure done, intra-operative complications, postoperative complications, conversion to open surgery, patient comorbidities, length of surgery, blood loss, blood transfusion, postoperative renal function, time to drain removal, postoperative convalescence (oral intake, ambulation) and length of hospital stay.

Results: Preliminary data show that the incidence of complications is around 10%, most commonly attributed to wound infection. The majority (more than 90%) of our patients were discharged within 6 postoperative days.

Conclusion: Laparoscopic urological procedures are a viable alternative to traditional open surgeries, given their favourable surgical outcomes and shorter postoperative recovery. With continual advancement of laparoscopic instruments and the development of surgical competence, we expect increasing numbers of such procedures being performed in the future.

SUR 102

Endovascular Laser Therapy for Superficial Venous Reflux Disease of the Lower Limb: Our Early Experience

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Aim: This single operator series aim to evaluate the outcomes and complications of Endovascular Laser Therapy (EVLT) in the treatment of superficial venous reflux disease of the lower limb during the first 10 months.

Methods: From February 2006 to December 2006, 56 patients (34 females and 22 males) underwent Endovascular Laser Therapy (EVLT) under a single operator for treatment of superficial venous reflux disease of the lower limbs. All 56 patients had superficial reflux disease confirmed on ultrasound duplex scan preoperatively. In all 56 patients, the surgery was done as an ambulatory surgical procedure, under general anaesthesia. Follow-up of these patients include clinical evaluation in our outpatient clinics with the first post-op visit planned at 4 to 6 weeks and 3 to 6 months thereafter.

Results: Overall, EVLT was well-tolerated with only minor complications. The commonest complication, reported in up to 50% of our patients, was that of residual numbness which resolved subsequently. One patient suffered postoperative wound infection due to non-compliance with wound care advice. Outcomes were generally good with most patients reporting improvements either aesthetically or with regards to symptoms.

Conclusion: Outcomes with EVLT were generally good with low complication rates. However, a longer period of follow-up is required before our study can prove to be more conclusive. In future, it may be worthwhile to look into data from long-term follow up and compare with standard Long Saphenous Vein stripping before establishing EVLT as the standard form of treatment for superficial venous reflux disease of the lower limbs.

SUR 103

An Interesting Case of Stanford B Dissection with Concomitant Infra-renal Abdominal Aortic Aneurysm Presenting with Acute Bilateral Lower Limbs Ischemia

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Aim: Case report including the management of the rare case of Stanford B dissection with concomitant infra-renal abdominal aortic aneurysm (AAA) presenting with acute bilateral lower limbs ischemia.

Methods: Literature review and review of the case notes.

Results: The dissection of the descending aorta in the concomitant abdominal aortic aneurysm causing acute bilateral lower limbs ischemia is rare. Such a rare case was admitted to our hospital in May 2007. He was diagnosed and had emergency operation of right axillo-bifemoral bypass grafting done to re-perfuse the legs. Patient was discharged well after about 3 weeks stay in hospital.

Conclusion: Dissection of the aorta most frequently originates in the ascending aorta (70%) followed by descending aorta (22%), the aortic arch (7%) and the abdominal aorta 1%. The dissection of the aorta with concomitant abdominal aortic aneurysm is rare. The right axillo-bifemoral bypass grafting is one of the best treatment options for the reperfusion of the acute lower limb ischemia in those patients with Stanford type B aortic dissection and concomitant abdominal aortic aneurysm. It has the better outcome with less morbidity and mortality.

SUR 104

Diagnosis and Management of Subglottic Stenosis in Infants and Children

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Aim: To study the epidemiology and outcome of subglottic stenosis in infants and children at KK Women's and Children's Hospital.

Methods: Between January 1997 and July 2007, all infants and children diagnosed with subglottic stenosis were identified. Their casenotes were studied by retrospective review and long-term follow-up in office.

Results: Eighteen patients (9 males and 9 females) with a median age of 7.5 months at the time of diagnosis of subglottic stenosis were identified. Two patients were diagnosed with congenital stenosis; 15 with acquired stenosis. The majority had a Grade I stenosis (55.6%), followed by Grade II (22.2%), Grade III (16.7%), and Grade IV (0%). Seventeen patients were intubated; 7 underwent tracheostomy. The most common surgical intervention performed was microlaryngoscopy and bronchoscopy. As of August 2007, the median duration of treatment lasted 4 years with an overall success rate of 61.1%. A total of 57.1% of patients who underwent tracheostomy were successfully decannulated. There have been 2 mortalities due to reasons unrelated to subglottic stenosis.

Conclusion: Providing an adequate airway to allow decannulation is a benchmark of successful management of paediatric subglottic stenosis. Experience in airway endoscopy is crucial, as it allows establishment of the severity of stenosis and helps determine whether the child may outgrow the stenosis. In the majority of Grade I stenoses, conservative management may be all that is required. More severe cases might warrant reconstructive surgery. Subglottic stenosis presents a problem that tends to attract a surgical approach. However, all possibilities have to be carefully considered.

SUR 105

Screen Detected Breast Carcinoma: How Effective Is It?

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Aim: Breast Screen Singapore (BSS) was initiated to detect early breast cancer. We analyse the effectiveness of the programme locally.

Methods: Seven hundred and three patients were seen from January 2005 to April 2007. Of these, 552 (78.52%) patients were referred for clinically detected breast cancer. The remaining 151 (21.48%) were referred for screen-detected breast cancer.

Results: It was found that 552 (78.52%) patients were symptomatic. A total of 76.13% detected a lump, 13.02% experienced mastalgia, 4.2% had nipple discharge and 1.27% experienced axillary lump. Of the patients, 9.78% had extensive carcinoma, 77.6% underwent surgery while 22.40% patients did not undergo surgery. The reasons for conservative management were advanced disease, refusal, ill-health or default. Reasons for default include seeking a second opinion and traditional healing. Stage of tumour at presentation was: stage 0 (10.11%); I (20.04%); II (26.53%); III (13.90%); IV (10.47%). Surgical procedures performed were wide excision (44.71%), mastectomy (52.71%), mastectomy with reconstruction (2.59%). There were 151 screen-detected patients, of which 91.39% were Chinese. A total of 15.24% experienced a lump, 0.67% experienced mastalgia, 1.32% had advanced disease while the rest were asymptomatic. Of the patients, 81.08% underwent surgery; while 18.92% did not undergo surgery. The reasons for not undergoing surgery were refusal, ill-health and default. Seeking a second opinion and traditional healing were reasons for default. Stage at presentation: stage 0 (29.14%); I (29.14%); II (13.91%); III (5.96%); IV (0%). Types of surgery are wide excision (69.35%), mastectomy (29.03%), mastectomy with reconstruction (1.61%).

Conclusion: Screening is underutilised especially in the non-Chinese. A large proportion of patients undergoing mammogram are symptomatic. Breast screen Singapore policies may need to be reviewed for it to be more effective.

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