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## A Double-Blind, Randomized Control Trial of Rapidly Infused High Strong Ion Difference Fluid (SID) versus Hartmann's solution on Acid-Base Status in Sepsis Patients in the Emergency Department Hospital Pulau Pinang

**Yeoh CC**

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**Introduction:** Balanced fluids are preferred in initial resuscitation of septic patients based on several studies. The Stewart's concept on acid-base balance predicts that high strong ion difference (SID) fluid will increase the pH level. The impact of high SID fluid in septic patients with metabolic acidosis remains uncertain. A single center, randomized, double-blind trial to compare the effects of high-SID fluid versus Hartmann's solution on acid-base status in selected sepsis patients at the emergency department was conducted.

**Methods:** Septic patients with hyperlactatemia and metabolic acidosis were randomized to receive either high-SID fluid or Hartmann's solution during initial fluid resuscitation. The primary outcome measures were pH and bicarbonate levels difference pre- and post-resuscitation.

**Results:** 162 patients underwent randomization. 81 were assigned to receive high-SID fluid or Hartmann's solution respectively. Both group had similar baseline characteristics. High-SID group received 23.5ml/kg and the Hartmann's group received 22.7ml/kg ( $p=0.360$ ). High-SID fluid increased the mean ( $\pm$ SD) pH by 0.107 ( $\pm 0.09$ ) versus Hartmann's solution by 0.014 ( $\pm 0.12$ ),  $p<0.001$ . Mean bicarbonate levels increased significantly in high-SID group compared to Hartmann's ( $4.30\pm 3.76$  versus  $1.25\pm 3.33$ ;  $p<0.001$ ). High-SID group had higher post-resuscitation lactate clearance than Hartmann's group ( $25.4\pm 28.3\%$  versus  $12\pm 34.1\%$ ;  $p=0.009$ ). Shorter hospital stay was observed in high-SID group ( $8.04\pm 5.96$ ) days versus Hartmann's group ( $12.18\pm 12.41$ ) days ( $p=0.048$ ). Both groups showed no difference in incidence of pulmonary edema, acute kidney injury and mortality.

**Conclusion:** Initial resuscitation using high SID fluid in selected septic patient improves pH and bicarbonate levels. The high-SID group had better post-resuscitation lactate clearance and shorter hospital stay.

## Effectiveness of Educational Intervention on Patients Knowledge and Perception Regarding Atrial Fibrillation (AF) and Oral Anticoagulant Therapy (OAC)

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**Introduction:** Oral anticoagulant (OAC) is the mainstay of treatment in preventing systemic thromboembolic complications for atrial fibrillation (AF) patients. Warfarin is widely used as an OAC in government hospitals. Majority of AF patients possess little knowledge about their disease, its complications, risks and benefits of anticoagulation therapy. This study aimed to assess the impact of educational intervention on patients' knowledge and perception regarding AF and OAC therapy.

**Methods:** This was a prospective, interventional study, carried out at the Cardiology Department, Hospital Pulau Pinang. The study recruited AF patients aged  $\geq 18$  years old who were on warfarin for at least 1 month. Patients were randomized by blocks of four. Educational interventions comprised of slide presentations, video and printed handouts. Patients were interviewed using same face and content validated questionnaire to assess their knowledge and perception before and after the educational interventions.

**Results:** A total of 101 patients were enrolled. Average age was  $64.3 \pm 8.9$ . 55.4% of the subjects were males. 42.6% of the subjects had labile INR upon enrollment. This study showed that patients' educational level significantly correlated with patients' knowledge ( $X^2(2) = 22.559$ ,  $p<0.001$ ) before educational interventions. No significant correlation was found between patients' knowledge and illness perception ( $p=0.141$ ). At post-educational interventions, there was a significant increase in knowledge score (mean pre score =  $12.70\pm 3.77$ , mean post score =  $20.19\pm 1.86$ ,  $p<0.001$ ).

**Conclusion:** This study showed that the educational interventions were effective in improving patients' knowledge and perception regarding AF and OAC therapy.

## **Prophylactic Use of Topical Tranexamic Acid to Aid Surgical Hemostasis during Caesarean Sections in Parturients with Moderate to High Risk of Bleeding**

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**Introduction:** Despite global efforts to improve maternal health, deaths caused by maternal hemorrhage remains high between 16 and 27% in developed and developing nations. Recent evidence recommend systemic administration of antifibrinolytics to reduce postpartum bleeding after hemostatic insult, but the efficacy of topical route in obstetric population is unexplored. This study aimed to investigate whether prophylactic use of topical tranexamic acid (TXA) during caesarean sections can reduce blood loss and provide better surgical hemostasis in parturients at risk of bleeding.

**Methods:** A double-blind, randomised controlled trial was conducted on patients planned for caesarean sections under regional anaesthesia. 84 parturients, ASA 1 - 3, with increased risk of bleeding were enrolled and randomised into TXA Group (Topical TXA 2g diluted with normal saline) or control group (normal saline only). Study drug was administered intra-operatively after delivery of the placenta by applying the drug topically into the uterine cavity and over the surgical site. Intra-operative blood loss was measured. Hematocrit trends at baseline (pre-surgery) and 6 hour post-surgery were compared.

**Results:** Topical TXA reduces mean intra-operative blood loss ( $588.7 \pm 223.3$  ml) by 18.6% compared to control ( $723.1 \pm 196.1$  ml) ( $p=0.005$ ). There was no difference in hematocrit trends. No adverse effects were reported.

**Conclusion:** Topical TXA reduces intra-operative blood loss when given prophylactically in caesarean sections. It is simple and easy to administer and the targeted direct action of the drug has potentially better benefits versus risk ratio compared to systemic route of administration. Its use in obstetric surgeries should be explored.

## Depression, Anxiety and Stress among Chronic Hemodialysis Patients

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**Introduction:** Depression has been identified as the primary mental health problem among dialysis patients. Less emphasis is placed on the evaluation of anxiety and stress. This study aimed to explore the prevalence and socio-demographics of negative psychological states among patients on maintenance hemodialysis.

**Methods:** This cross-sectional study was performed among adult chronic hemodialysis patients undergoing hemodialysis in four district hospitals in Seberang Perai between October and December 2017. Validated Malay version of DASS-21 questionnaire was used to measure the magnitude of three psychological constructs: depression, anxiety and stress. Socio-demographics and clinical variables were obtained. Descriptive and inferential statistics were conducted using SPSS version 22.0.

**Results:** Of 99 eligible patients, (52.5%) were males. Mean age was  $52 \pm 15.8$  years (range 18-80 years). Majority were Malays (n=48, 48.5%). Mean (SD) of dialysis duration was 108.2 (69.6) months. Most were unemployed 68 (68.7%). Seven were living alone. Sixteen (16.2%) participants reported moderate to extreme severe depression, 17 (17.2%) participants reported moderate to extreme severe anxiety and three participants reported moderate to extreme severe stress. Those with moderate to extreme severe depression were more likely to be smokers (OR 3.9, 95% CI 0.1-0.8,  $p = 0.015$ ). Shift of hemodialysis, employment status and monthly household income was not significantly affecting the three psychological constructs.

**Conclusions:** One in six of our study cohort had moderate to extreme severe depression or anxiety. Suicidal risk assessment should be incorporated in seriously disturbed patients.

## A Cross Sectional Study on Sleep Quality in COPD Patients in Seberang Perai Cluster Hospitals, Penang

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**Introduction:** Disturbed sleep is common in Chronic Obstructive Pulmonary Disease (COPD) patients. COPD patients have worse sleep quality and more sleep-related problems when compared to people with other chronic diseases. In this study, we explored sleep quality and its associations among COPD patients.

**Methods:** This cross-sectional study involved patients from four hospitals within Seberang Perai Cluster Hospitals. 74 patients were recruited. The COPD Assessment Test (CAT), Epworth Sleepiness Scale, Pittsburgh Sleep Quality Index (PSQI) and modified Medical Research Council (mMRC) score and spirometry data was assessed.

**Results:** 70.3% of the patients were diagnosed with COPD via spirometry. The mean age was 67 years and the majority of them were males (89%) and Malays (50%). The mean Spo<sub>2</sub> was 96.4% ( $\pm 1.8$ ). 5.4% of the patients were on long term oxygen therapy while 51.4% of the patients had a history of exacerbation in the past 12 months. Patients with poorer sleep quality were significantly associated with higher mMRC ( $p=0.023$ ) and CAT scores ( $p=0.06$ ). The use of diuretics was also significantly associated with poor sleep quality ( $p=0.06$ ). In general, patients with frequent exacerbations and lower SpO<sub>2</sub> (< 96%) levels reported worse quality of sleep although these parameters had no statistical significance.

**Conclusion:** Multiple factors affect sleep quality in patients with COPD. Poor symptom control, worsening functional capacity and disease severity, along with use of diuretics were significantly associated with poor sleep quality in this study.

## Effectiveness of QR MEC Chart in Family Planning Counseling in Primary Care

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**Introduction:** In line with Sustainable Developmental Goals (SDGs), family planning ensures optimal reproductive health for women. This study aimed to demonstrate the effectiveness of Quick Reference Medical Eligibility Criteria (QR MEC) chart during family planning counseling in primary care settings in terms of time consumption and procedure accuracy.

**Methods:** QR MEC chart was created as an innovation product that transforms the WHO MEC into a comprehensive tool. This chart was produced using the DIY method. Medical staffs were recruited in this interventional study, carried out in April 2018. A total of 38 staffs were recruited which include 12 medical officers, 12 staff nurses and 14 community nurses working in Health Clinics (Klinik Kesihatan), Maternal and Child Health Clinics (Klinik Kesihatan Ibu dan Anak) and Rural Health Clinics (Klinik Desa). This study was conducted to compare the conventional reference materials (WHO wheel chart and WHO Medical Eligibility Criteria for Contraceptive Use 5th edition) and QR MEC chart when answering case scenarios. First five case scenarios were answered using the conventional materials. The duration taken to complete the questions were recorded and the score of correct methods chosen were evaluated. Subsequently, another five case scenarios were given that were answered using the QR MEC chart.

**Results:** Results show that time consumption was shorter and the determination on suitability of family planning techniques were more accurate.

**Conclusion:** Medical staffs were more confident using the QR MEC chart. Counseling sessions were more comprehensive as each medical factor was thoroughly screened, minimizing errors.

## A Cross-Sectional Study to Assess the Agreement between Doppler Ultrasound and Non Enhanced MRA in Diagnosing Significant Main Renal Artery Stenosis and its Influencing Factors

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**Introduction:** Doppler Ultrasound (DUS) has been selected as the screening tool to detect Renal Artery Stenosis (RAS). In indeterminate cases or when discrepancy exists, Magnetic Resonance Angiography (MRA) is performed. DUS is operator and skill dependent. This study aimed to evaluate the agreement between DUS and Non-enhanced MRA (NEMRA) in diagnosing significant renal artery stenosis. The secondary objective was to determine the factors (BMI, waist circumference and creatinine levels) affecting the agreement.

**Methods:** A prospective study of 89 patients (55 males, 34 females) with suspected RAS were investigated (age 20-89 years). DUS was performed using 3.5MHz transducer. NEMRA was performed using 1.5 T machine, reviewed by a radiologist blinded to DUS results. A Peak Systolic Velocity (PSV) of  $> 200\text{cm/s}$  within main renal artery, Acceleration Time (AT) of  $> 0.07\text{s}$  and Acceleration Index (AI) of  $< 300\text{cm/s}$  within the segmental renal arteries were considered as RAS by DUS. Main renal arteries were categorized as normal or significantly stenosed ( $> 70\%$ ) on MRA.

**Results:** 69 patients with 138 main renal arteries were evaluated. There is 98.8% agreement between DUS and NEMRA for right renal artery and 96.5% for the left renal artery. 70.1% were either overweight or obese, 36.8% have abnormal waist circumference and 36.8% have abnormal serum creatinine. BMI, waist circumference and creatinine level do not affect the agreement.

**Conclusion:** There is high agreement between DUS and NEMRA, thus supporting DUS as a reliable screening examination for RAS.

## The Quality of Removable Dental Prosthesis in Government Dental Clinics, Seberang Perai Utara, Pulau Pinang

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**Introduction:** The quality of removable dental prosthesis or dentures in terms of achieving patient's satisfaction and acceptance in government dental clinics is a challenging task due to technical, manpower and time factors. This study explored the outcomes in terms of patient satisfaction and acceptance of dentures on delivery appointment day and 1-week review.

**Methods:** Data were collected retrospectively from patients' clinical records across six government dental clinics in Seberang Perai Utara, Pulau Pinang from January 2014 to December 2015.

**Results:** A total of 1390 denture patient records were evaluated with a majority of 98.3% (1367) patients were satisfied and accepted their dentures during delivery appointment day. Out of five hundred fifteen (37.1%) patients attended the 1-week review visit, 261 (50.7%) had complaints attributed by their dentures. Main complaints include pain during function (76.6%) and loose denture (11.1%). Reasons for patients not attending the 1-week review visit were not known. Only 16 (1.2%) dentures were re-fabricated and 393 (28.3%) dentures were modified accordingly. Out of 577 elderly patients (≥60 years old) that requested dentures, 374 (64.8%) patients received their denture less than 56 days (8 weeks) from the first impression taking.

**Conclusion:** Majority of patients were satisfied and accepted the dentures provided during delivery appointment day. Low turnout for the 1-week review visit limits the evaluation of actual patient satisfaction and acceptance of their dentures. Waiting time to receive dentures for the elderly age group (≥60 years old) should be targeted to be lesser than 8 weeks.

## Continuous Digital Thoracic Suction (CDTS) in Managing Air Leak Post Lung Resection Surgery: A Retrospective Study

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**Introduction:** To determine whether CDTS is superior to Continuous Thoracic Wall Suction (CTWS) in terms of reducing the length of hospital stay and the number of chest x-rays being done.

**Methods:** A retrospective study of patients who underwent bullectomy and pleurodesis either by video assisted thoracoscopic surgery (VATS) or thoracotomy from 1<sup>st</sup> October 2016 till 31<sup>st</sup> July 2017 in Department of Cardiothoracic Surgery, Hospital Pulau Pinang by a single surgeon. All patients were diagnosed with primary spontaneous pneumothorax and confirmation was done with CECT Thorax. Medela Thopaz digital thoracic drainage system was used in this study as the digital drainage system and the drainage system is removed when the leak is persistently <40ml/min for 24 hours.

**Results:** A total of 25 patients were recruited in this study. 20 patients underwent VATS + bullectomy + pleurodesis while 5 patients underwent thoracotomy + bullectomy + pleurodesis. The mean number of chest x-rays done for patients on CDTS was 4.6 while for CTWS was 5.2. The difference was 0.6 chest x-rays and they were not statistically significant ( $p=0.81$ ). As for the length of stay, patients with CTWS stayed 12.7 days, 1.4 days longer compared to CDTS, however this association was not statistically significant ( $p=0.89$ ).

**Conclusion:** This pilot study shows digital thoracic suction is superior to conventional suction and can be efficiently used to manage air leak post lung resection surgery with reduction in hospital stay and number of chest x-rays.

## Screening for Carotid Artery Stenosis in Left Main Stem Patients Prior to CABG: Is It Useful and Cost Effective?

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**Introduction:** This study aimed to determine whether routine screening for carotid artery stenosis in left main stem (LMS) coronary artery disease patients is necessary and the rate of cerebrovascular accident (CVA) among them. The study also aimed to evaluate the number of patients who underwent interventions for carotid artery stenosis prior to CABG.

**Methods:** A retrospective study of patients with significant LMS disease (LMS >50% and LMS equivalent) with carotid artery stenosis who underwent CABG from 1<sup>st</sup> January 2015 till 31<sup>st</sup> July 2017 in the Department of Cardiothoracic Surgery, Hospital Pulau Pinang was conducted. All patients underwent ultrasound carotid Doppler as screening.

**Results:** 14 patients had carotid stenosis- 4 patients with stenosis <50%, 7 patients with stenosis between 50 to 74% and 3 patients with >75% stenosis. Only 1 patient with carotid stenosis of 98% required MRA for confirmation and further carotid angiogram and stenting prior to CABG as patient had prior history of CVA. The incidence of carotid intervention needed was 7.1% in general but when sub grouped to LMS disease it was at 11.1%. In the LMS group of patients, 9 patients had carotid stenosis, 3 patients with pre op CVA and 3 patients with post op CVA. While in the group of non-LMS patients, 5 had pre-op CVA and none had CVA post-op. The incidence of CVA was 1.1% in the LMS group but it was not statistically significant.

**Conclusion:** The incidence of intervention for carotid artery stenosis is significant in the group of patients with LMS disease. However, radiological carotid stenosis does not translate into higher CVA rate. Hence, screening for carotid artery stenosis is useful and cost effective if done in targeted group of patients.

## Depression and Coping Strategies among Parents of Children with Cancer

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**Introduction:** Depressive symptoms have been reported to be more prominent in parents of children with cancer. Depression in parents can impact the well-being of the child. This study aimed to determine the prevalence of major depressive disorder (MDD) and its association with socio-demographic factors and coping strategies among parents of children with cancer at Universiti Kebangsaan Malaysia Medical Centre (UKMMC) and Penang General Hospital (PGH).

**Methods:** This was a cross-sectional study. Participants were enrolled according to inclusion and exclusion criteria and assessed on their socio-demographic profiles and children's details. Patient Health Questionnaire (PHQ-9) was used to screen participants with high risk of depression. The diagnosis of MDD for those with high risk was established using the Mini International Neuropsychiatric Interview (M.I.N.I.), and coping strategies were assessed using the Brief COPE scale.

**Results:** A total of 162 parents participated in this study. 17.3% of participants were screened with high risk depression and was further assessed with M.I.N.I. The prevalence of major depressive disorder was 7.4%. Participants in the depressed group used denial ( $p < 0.01$ ), behavioural disengagement ( $p = 0.002$ ) and self-blame ( $p = 0.002$ ) as their coping strategies compared to participants without depression. Use of denial was found to be a predictor of MDD (OR=2.12,  $p = 0.008$ , CI=1.22, 3.68).

**Conclusion:** Screening of parents of children with cancer for depression should not be overlooked.

## Retrospective Study: Factors Contributing to Patients' Outcome in Yellow Zone of Emergency Department at Hospital Bukit Mertajam

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**Introduction:** This is a department level study which aims to identify the contributing factors of patients' outcome in yellow zone.

**Methods:** A retrospective study using patient's tracer card that was up-triaged from yellow to red zone over the period of one month (1st May 2018-31st May 2018) was conducted. Data was collected and documented to determine proper triaging in emergency department based on Malaysia's Triaging Category 2017. It assessed frequency of assessments and patient monitoring deterioration at yellow zone.

**Result:** Total patients seen in yellow zone in May 2018 were 1844. Out of 1844 patients, 61 (3.3%) patients were up-triaged from yellow to red zone with 2 (0.1%) in department deaths. From the total, 28 (1.5%) patients were missed-triaged; and 16 (0.8%) patients lacked proper evaluation and vital sign monitoring before deteriorating in yellow zone.

**Conclusion:** Missed-triaged patient can cause unnecessary up-triaging. Delay in detecting deteriorating patients who need priority and immediate attention will increase the rate of mortality in the department. Increasing awareness and knowledge of paramedics, staff nurses and doctors for early detection of deteriorating patients and ensuring that all paramedics are updated with the latest version of Malaysia's Triage Category 2017 is essential to improve patient assessment.

## A Retrospective Study on Comprehensive Dental Treatment under General Anesthesia in Pediatric Dental Department, Hospital Pulau Pinang

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**Introduction:** Comprehensive dental treatment under general anesthesia (GA) is a pharmacological behavioral management method provided for pediatric patients at the Pediatric Dental Department, Hospital Pulau Pinang. The method is employed to healthy children with substantial dental needs who are uncooperative or uncommunicative during dental treatment with limited behavioral improvements. Patients with certain physical, mental or medically compromised conditions who are unable to tolerate treatment under local anesthesia (LA) or a combination with conscious sedation are referred too.

**Methods:** This is a retrospective study. All comprehensive dental treatment for caries done under GA that between January and December 2016 in pediatric patients between 2-16 years old was included. Data was obtained from patients' hospital records in Pediatric Dental Department, Hospital Pulau Pinang.

**Results:** A total of 215 cases with 139 (64.7%) healthy patients and 76 (35.3%) disabled patients were treated under GA. Males (56.3%) were slightly higher than females (43.7%). Majority were Malays (75.8%), followed by Chinese (18.1%), Indians (5.6%) and other ethnicities (0.5%). There was significantly higher mean of deciduous teeth filled, extracted and sealant placement ( $p < 0.0001$ ) in the disabled group. In the healthy group, a significant difference was noted in the permanent root canal treated teeth ( $p < 0.0001$ ).

**Conclusion:** Providing early treatment for children who are uncooperative and with a chronic illness or disability may improve their dental health and maintain full dentition. It is highly recommended that dental treatment performed under GA is beneficial and efficient.

## Early Result in Managing Skeletal Metastasis in Budding Orthopaedic Oncology Center in Malaysia

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**Introduction:** Skeletal metastasis is the commonest bone malignancy in patients aged 40 and above. Appendicular skeletal metastasis is less common than axial metastasis. We reviewed cases of appendicular skeletal metastasis at our institution.

**Methods:** 17 patients with appendicular skeletal metastasis from January 2016 till January 2017 were reviewed at our institution. Patient data was traced from oncology registry to evaluate survival rate and complications. Kaplan Meier curve was used to review patient's survival.

**Results:** Out of 17 patients, 5 were females and 12 males. 8 (47.1%) patients had visceral metastasis and 9 (52.9%) had spine metastasis upon referral. 4 patients had isolated bone metastasis. 10 (58.8%) patients underwent surgery due to pathological fracture to appendicular skeleton while 75% of our patients survived more than 6 months since orthopedic referral.

**Conclusion:** Patient with appendicular skeletal metastasis benefitted from surgery regardless of whether the treatment was palliative or curative.

## Relationship between Surgical Margins and Local Recurrence in Soft Tissue Sarcoma Treated in Hospital Pulau Pinang

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**Introduction:** Soft tissue sarcomas (STS) are rare tumors that accounts for 1% of all malignancies. We assessed the relationships between margin and local recurrence rate associated with managing soft tissue sarcoma in our center. Surgical margins were directly associated with local recurrence.

**Methods:** We reviewed 48 cases of soft tissue sarcoma treated at Hospital Pulau Pinang from January 2012 till December 2016 over a period of 5 years. 35 were included in our analysis and the rest had incomplete data. Data was extracted from patient records and telephone interviews. Data analysis was done using SPSS version 23.0.

**Results:** Out of 35 cases, 18 were females and 17 were males with a mean age of 47 years. 23 patients had wide margin on histopathological examinations. The remaining 10 had closed margins and another 2 have no margins documented. Out of 23 wide margins, 1 had primary amputation and the remaining 22 had wide resections. None of the patients with wide margins had local recurrence. 10 cases had close (<2mm) or positive margins. Eight patients had local recurrence, with 7 requiring subsequent amputation. One patient was counseled for amputation but refused, ultimately died of lung metastasis. Another two cases had no local recurrence despite having close margin.

**Conclusion:** Soft tissue sarcoma surgery with adequate margin is crucial to avoid local recurrence. Local recurrence is associated with significant risk of eventual amputation.

## Psychotropic Drug Use among Patients with Dementia at Memory Clinic, Penang Hospital

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**Introduction:** Psychotropic drugs are often used in the management of dementia despite its anti-psychotic associated risks of stroke and mortality. There is lack of local reports on psychotropic use among patients with dementia. This study aimed to describe psychotropic use among patients with dementia attending the Memory Clinic of Penang Hospital.

**Methods:** This is a retrospective descriptive study. All patient records attended the clinic in 2017 with clinical diagnosis of neurodegenerative dementia were included. Demographic data, last prescribed psychotropic drugs in 2017 and the main indication of antipsychotics were extracted.

**Results:** 154 patients met inclusion criteria with female preponderance (66.2%). The mean age was 76.2 years. Alzheimer's disease (107) and vascular dementia (45) made up 98.7% of the cases; with 30.5%, 35.1% and 34.4% in mild, moderate and severe stages of dementia respectively. Slightly more than half (50.7%) were given at least one psychotropic. Antipsychotics were the most commonly used psychotropic drugs (34.4%), followed by antidepressants (18.2%), mood stabilizers (4.5%) and anxiolytics (2.6%). Higher proportion of institutionalized patients was prescribed with antipsychotics (52.4%) than community dwelling patients (31.6%). Nearly half of the antipsychotics were prescribed for non-psychotic agitation or aggression (49.1%). Of those given antipsychotics, most were on atypical types (83%), particularly risperidone (66%). 96.4% of prescribed antidepressants were selective serotonin reuptake inhibitors (SSRIs).

**Conclusion:** This is the first report that highlights psychotropic use among dementia patients in Malaysia. Atypical antipsychotics and SSRIs are the major psychotropic drugs used for treating neuropsychiatric symptoms of dementia.

## Association between Positive Emotions, Depression and Functional Recovery in Post-Stroke Patients

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**Introduction:** Post-stroke depression is associated with functional outcomes. There is limited literature on the impact of positive emotions among post-stroke patients in local setting. The objective of this study was to assess positive emotions and depression among post-stroke patients in HPP and their associations with functional recovery (FR).

**Methods:** A total of 136 patients at 6-12 weeks post-stroke were recruited from the Occupational Therapy Unit and Rehabilitation Clinic in HPP. A questionnaire that consisted of demographics, clinical data questionnaire, Positive Emotion Rating Scale (PERS) and the Montgomery-Asberg Depression Scale-Self (MADRS-S) was utilized. Functional status was assessed using the Modified Barthel Index (MBI).

**Results:** 65.4% of the patients had good positive emotions and 23.5% had depression. Patients with length of stay (LOS) less than 5 days were 7.3 times more likely to have positive emotions and 12.3 times less likely to have depression. Patients with less than 3 medical co-morbidities were 4.3 times less likely to have depression. Bivariate analysis showed both total PERS and MADRS-S scores were significantly associated with functional independence (FI) and FR in 6 to 12 weeks post-stroke. Multiple linear regression of significant factors in bivariate analysis showed that PERS, but not MADRS-S, was significantly associated with FI and FR. Other factors associated with functional outcomes were age, spouse, MBI (Discharge) and LOS.

**Conclusion:** LOS was strongly associated with depression and positive emotions. Positive emotion was a stronger predictor of functional outcome compared to post-stroke depression.

## Assessment of Knowledge, Attitude and Practise of M-Chat Screening Among Parents and Caregivers Attending a Community Programme - A Cross-Sectional Study

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**Introduction:** Modified Checklist for Autism in Toddlers (M-CHAT) is a screening tool for Autism Spectrum Disorder (ASD) that is readily available in child health record book at primary health care. This study aimed to assess knowledge, attitude and practice of M-CHAT screening usage and awareness among parents and caregivers in the community.

**Methods:** Three different community programs encompassing two talks on autism and M-CHAT screening tools were organized for parents and caregivers. All talks were given by the same health personnel. Parents and caregivers who agreed to participate in the study were given a questionnaire consisting of knowledge, attitude and practice components regarding autism and M-CHAT screening. The same questionnaire was given before and after talks. The talks given were interventions for the study. Association of knowledge, attitude and practice between pre and post intervention were analyzed using chi-square test. Correlation between the pre-intervention knowledge and attitude were analyzed using Pearson correlation test.

**Results:** Eighty-five respondents agreed to participate in this study. The mean score for knowledge pre and post intervention were 5.42 and 9.35 (95% CI, -4.81 to -3.04,  $p=0.045$ ), for attitude were 8.07 and 11.09 (95% CI, -4.21 to -1.82,  $p=0.064$ ) and for practice were 5.5 and 8.25 (95% CI, -3.52 to -1.91,  $p<0.05$ ). There was a positive correlation between knowledge and attitude pre-intervention ( $r=0.817$ ,  $p<0.05$ ).

**Conclusion:** Community programs on autism and M-CHAT screening tools improved knowledge, attitude and practice among parents and caregivers.

## Health Seeking Behavior and Health Outcomes among Unmarried Pregnant Mothers in Seberang Perai Tengah Government Health Clinics

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**Introduction:** The number of unmarried pregnant women in Malaysia is increasing. This may have negative consequences towards maternal and fetal health outcomes.

**Methods:** A cross-sectional retrospective study was conducted in Seberang Perai Tengah District involving 110 unmarried pregnant mothers delivered between 1<sup>st</sup> January 2017 and 28<sup>th</sup> February 2018.

**Results:** In this study the prevalence of unmarried pregnant mothers was 2.1%. Majority were Malays (60%). The mean age was 24.2 years. Mostly were primigravida (63.6%), living with parents (51.8%) and were unsure of last menstrual period dates (51.8%). About 12.7% were smokers and 5.5% were drug users. We found that 75% of them had late booking (>12 weeks) and 3.6% had no booking. Non-teenage mothers, Malay ethnicity and non-working mothers were significantly associated with late booking ( $p<0.05$ ). Pregnancy related medical illnesses were found in 52.7% of our sample. Anemia in pregnancy ranked the highest (38.1%). Most unmarried mothers (98.2%) delivered in hospital and 17.3% ended up with emergency caesarian section. We found that 25.5% of mothers had intra-partum complications, 23.7% of babies were low birth weight and 5 babies demised.

**Conclusion:** Our study found that the majority of unmarried pregnant women had poor health seeking behavior. Non-teenage mothers, Malay ethnicity and non-working mothers were associated with poor health seeking behavior. Anemia was commonest in our study. Health promotion about pregnancy and its related medical illness should be given to all women within reproductive age regardless of marital status.

## An Assessment of Parent's Knowledge, Attitude and Practice (KAP) on Antibiotic Use among Children in Hospital Bukit Mertajam

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**Introduction:** Parent expectations to have their child covered with antibiotics for every illness impacts physician's prescribing attitude. Parental knowledge, attitudes and practice (KAP) on antibiotic use for children is important to be assessed to avoid resource wastage and antimicrobial resistance. This study aimed to assess parents' KAP of antibiotic use among children in Hospital Bukit Mertajam (HBM).

**Methods:** A cross-sectional study was carried out using self-administered questionnaires from April to June 2016 at the outpatient pharmacy of HBM. The questionnaire underwent face validity. Convenient sampling was used. Parents visiting the pharmacy with antibiotic prescriptions for their children were recruited.

**Results:** Out of 103 respondents, most believed that antibiotics cure viral infections (85%), and should be given to kids with fever (60%) and stopped once symptoms disappear (54%). 40% of parents believed that antibiotics have no side effects. Education and age was significantly associated with parents knowledge ( $p < 0.05$ ). 43.7% of the parents agreed that their child should take antibiotics for prevention, if another child around has an infection. 91.3% of the parents never practiced purchasing antibiotics without physicians' prescription. However, 62% of the parents do request antibiotics from physicians, 24% of them practice storing antibiotics at home for future needs, and about 25% of them reduce antibiotics dosage deliberately due to safety worry of their children.

**Conclusion:** This study demonstrated that parents' KAP on antibiotics is lacking. Further steps like increasing patient-physician or patient-pharmacist consultations and awareness programs should be held to ensure appropriate antibiotics use to prevent antimicrobial resistance.

## Maternal Knowledge, Attitude and Practices toward Neonatal Jaundice in Klinik Kesihatan Kepala Batas

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**Introduction:** Knowledge, attitude and practices (KAP) regarding neonatal jaundice among mothers is important for early detection and treatment of their babies. This study aimed to assess the level of KAP and their associated demographic factors with neonatal jaundice among mothers in Kepala Batas.

**Methods:** A cross-sectional study that involved 324 antenatal and postnatal mothers was conducted in Klinik Kesihatan Kepala Batas from January to June 2017. A close-ended questionnaire consisting of demographics and questions focusing on knowledge, attitude and practice was developed. Data was collected and analyzed using SPSS (Version 16.0).

**Results:** 311 (96%) of the respondents were Malays, 5 (1.5%) were Chinese and Indians respectively, and 3 (0.9%) from other races. 314 (96.9%) had good level of knowledge on the definition of jaundice. Overall, 126 (38.8%) of mothers had good knowledge regarding neonatal jaundice, while 94 (28.9%) and 104 (32%) of the respondents had moderate and low level of knowledge respectively. All mothers had satisfactory level of attitude and practices. Parity and education level were significantly associated with knowledge ( $p = 0.024$ ,  $p = 0.053$ ), while races, parity and education level ( $p = 0.043$ ,  $p = 0.024$ ,  $p = 0.053$ ) were significantly associated with attitude and practices of neonatal jaundice.

**Conclusion:** Mothers in Kepala Batas area had good level of knowledge regarding neonatal jaundice but they did not appropriately practice the knowledge about their lifestyles. Lack of good attitude and practices in the management of neonatal jaundice may lead to various health problems among babies.

## The Interplay between Belief about Medicine, Adherence and Blood Pressure Control among Hypertensive Patients

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**Introduction:** This study aimed to evaluate medication adherence, beliefs about medicines and blood pressure (BP) control among hypertensive patients at community level in Penang.

**Methods:** Hypertensive patients that fulfilled the eligibility criteria were recruited through community health awareness programs across five districts in Penang. All patients completed validated questionnaires [i.e. Beliefs about Medicines Questionnaire (BMQ), 8- items Malaysian Medication Adherence Scale (MALMAS)]. A structured data collection form was used to record patient demographics and BP level.

**Results:** Of the total 384 patients, majority were females (59.6%). The mean age of the patients was  $56.8 \pm 12.6$  and mean BP level was  $144/87 \pm 21/15$  mmHg. More than half (222, 57.8%) of the patients were non-adherent to their medications (MALMAS score < 6) and have significant higher systolic blood pressure (SBP) ( $p=0.017$ ) and diastolic pressure (DBP) ( $p=0.022$ ) compare to medication adherents. While logistic regression analysis demonstrated that unemployed patients (OR 1.231 [95% CI:1.044,1.450];  $p=0.013$ ), longer duration of hypertension (OR 1.040 [95% CI:1.002,1.079];  $p=0.037$ ), higher perceived in medication needs (BMQ Specific-Necessity) (OR 2.298 [95% CI:1.604,3.292];  $p<0.001$ ), lower belief in medication harmfulness (BMQ General-Harm) (OR 0.628 [95% CI:0.450,0.875];  $p=0.006$ ), and higher score in NCD (OR 1.069 [95% CI:1.019,1.122];  $P=0.007$ ), were more likely to adhere to antihypertensive medication.

**Conclusion:** The medication adherence level was considered low among hypertensive patients at the community level and correlated with poor BP control. Hence, medications counseling from health professionals are needed to improve medication therapy outcomes.

## Medication Error Reporting: Underreporting and Acceptability of Smartphone Application for Reporting among Healthcare Professionals in Perak, Malaysia

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**Introduction:** In Malaysia, the national Medication Error Reporting System (MER-S) has been available since 2009, with compiled reports indicating underreporting of medication errors (ME). This survey intends to determine the ME reporting practise among healthcare professionals and acceptance of ME reporting by utilising smartphone application if it is available.

**Methods:** A cross-sectional survey was conducted for two months in 2017 among doctors and pharmacists in publicly funded healthcare facilities in Perak. The survey was distributed through various professional WhatsApp chat groups with reminders.

**Results:** Total of 334 doctors and pharmacists responded to survey; majority were pharmacists (61.7%) with median age of 32 years (IQR 29-36) and work experience of 7.5 years (IQR 5-11). Rate of respondents being aware of MER-S and having encountered ME at workplace was high, at 73.4% and 96.1%, respectively. However, only 44.8% reported ME. Pharmacists were more likely to report ME compared to doctors (adj OR 10.51; 95% CI 5.34, 20.6), especially pharmacists who had frequent encounters with ME (adj OR 2.84; 95% CI 1.70, 4.81) and who perceived ME are handled well (adj OR 3.52; 95% CI 1.93, 6.44). The percentage of doctors and pharmacists that would report ME utilising a smartphone application was 86.5%, and they preferred an application with user-friendly interface, anonymity, and limited data-entry requirements.

**Conclusion:** Doctors and pharmacists were willing to report encountered ME but only less than half had used MER-S. With primary concern of ME underreporting, an alternative smartphone ME reporting application can be developed to complement current MER-S.

## Prevalence of Multiple Antihistamines Use (MAU) among Paediatric Patients with Acute Upper Respiratory Tract Infection (URTI) in Hospital Balik Pulau

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**Introduction:** Overdose due to multiple antihistamines use (MAU) has been reported as one of the reasons that lead to fatalities in paediatrics. This study aimed to determine the prevalence of MAU among paediatric patients with acute upper respiratory tract infections (URTI) in Hospital Balik Pulau (HBP) and to identify the associated factors.

**Methods:** A retrospective cross sectional study was conducted in the outpatient department of HBP from October to November 2017. A total of 369 prescriptions were screened using systematic sampling. Self-designed data collection form was used and data were analysed using SPSS version 15.0. The associated factors with MAU were evaluated via multiple logistic regressions. P-values ( $p < 0.05$ ) were considered significant.

**Results:** The analysis included data from 369 prescriptions with a mean age of 9.1 years ( $SD = 5.0$ ). The majority were males (53.4%) and Malays (84.0%). A total of 135 (36.6%) prescriptions consisted of MAU were prescribed by those less than 5 years of practice (68.8%). The majority consisted of syrup diphenhydramine that was used together with tablet chlorpheniramine, which is 61.5%. Using multiple logistic regression, patient's age and the prescriber years of practice were found to be significantly associated with MAU at 1.16 (95% CI 1.11-1.21) and 2.11 (95% CI 1.28-3.50) respectively.

**Conclusion:** The prevalence of MAU among paediatric patients with acute URTI was 36.6%. Patients' age and prescriber years of practice were significantly correlated with MAU. Prescribers need to be more cautious in prescribing MAU in paediatric patients for acute URTI to prevent adverse effects.

## Knowledge-Perceptions of Autism Spectrum Disorder among Health Clinic Nurses in Seberang Perai Tengah District, Penang

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**Introduction:** Knowledge-perceptions of Autism Spectrum Disorder (ASD) are essential for early recognition to initiate appropriate interventions. This study aimed to explore factors affecting knowledge-perceptions of ASD among health-clinic nurses in Seberang Perai Tengah District, Penang.

**Methods:** This cross-sectional study recruited one hundred nurses across all health clinics in Seberang Perai Tengah District using universal sampling technique. The self-administered questionnaire consisted of two parts; socio-demographic characteristics and validated measures of ASD knowledge-perception scales. Descriptive and univariate analyses using Student-t-Test and ANOVA test was conducted using SPSS version 23.0 software. Ethical approval was obtained. Participant anonymity and confidentiality was assured.

**Results:** All nurses consented to participate. Majority of them were Malays (90%), aged less than 35 years old (53.9%) and certified community nurses (57%). Only 43% of the nurses underwent ASD training and 54% perceived themselves to be knowledgeable. Nurses with ASD training had a significantly higher knowledge-perception score compared to those without such training ( $p < 0.001$ ). Significant associations were also found between work placement and knowledge-perception score ( $p = 0.002$ ); post hoc tests revealed that nurses working in maternal child health placement had higher scores ( $32.4 \pm 4.7$ ) in comparison to those working in outpatient department ( $27.2 \pm 6.6$ ,  $p = 0.002$ ).

**Conclusion:** Knowledge-perceptions of ASD among nurses were significantly associated with ASD training and work placement. Training workshops and rotations in work placement should be increased for the improvement of ASD knowledge within the nursing workforce.

## Validation of Questionnaire on Knowledge on Vaccine Cold Chain Management among Healthcare Workers in District of Seberang Perai Tengah, Penang, Malaysia

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**Introduction:** The system of transporting, storing and distribution of vaccines are crucial in maintaining the vaccines' potency. This study aimed to develop and validate the vaccine cold chain management questionnaire.

**Methods:** The initial questionnaire consisted of 18 items under "knowledge" domain. After further discussion with three panels, another 19 questions were added to make a total of 37 questions of different domains (general knowledge on cold chain management, monitoring, storage, maintenance and administration). The final questionnaire was reviewed by four expert panels in cold chain management to evaluate the appropriateness and relevancy of each question. A pilot study consisting of 30 health workers within the district of SPT was conducted to check the questionnaire's clarity and readability. A score ranging from 0-1 was given to each question. Each correct response was given 1 mark while the wrong and "not sure" responses were scored 0 marks. Mean total score between groups were calculated.

**Results:** The Cronbach's alpha for the whole scale revealed a good internal consistency ( $\alpha = 0.768$ ). There was a significant association between total score and exposure to the course on vaccine cold chain management ( $p < 0.05$ ).

**Conclusion:** It was not practical to do test-retest reliability for assessing knowledge. Future studies using this instrument across multicenter healthcare clinics should be carried out in order to make a generalized conclusion on the knowledge and practice on vaccine cold chain among healthcare workers in Penang.

## Assessment of Metered-Dose Inhaler (MDI) Technique among Chronic Obstructive Pulmonary Disease (COPD) Patients Attending Chest Clinic in Hospital Balik Pulau

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**Introduction:** Metered-dose inhaler (MDI) is the most commonly used inhaler in the treatment for chronic obstructive pulmonary disease (COPD). However, the correct use of MDI remains a challenge in many patients causing ineffective drug delivery. This study aimed to assess MDI technique use among COPD patients attending chest clinic in Hospital Balik Pulau (HBP).

**Methods:** Thirty-four patients attending chest clinic in Hospital Balik Pulau were included in this study. Data was collected on patient demographics, followed by assessment of patients' MDI techniques using an adopted checklist. Descriptive statistics was used to analyze patient demographic details and MDI techniques performed.

**Results:** Results obtained showed that majority of patients had inefficient MDI techniques (88.2%). The two most common mistakes observed were not holding breath for at least 10 seconds after deep inhalation (88.2%), followed by not exhaling gently and completely before inhalation (79.4%).

**Conclusion:** Findings of the study showed that majority of COPD patients attending the chest clinic in HBP adopted poor MDI techniques. More comprehensive counseling approach needs to be conducted by health care professionals to educate patients on correct MDI use. Follow-up counseling is essential to re-evaluate patients' MDI technique to achieve optimum treatment.

## Cost Analysis, Adherence and Glycaemic Control of Utilizing Patients Own Medicines (POMs) among Diabetes Patients in Outpatient Setting, Hospital Pulau Pinang

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**Introduction:** Medication wastage is a global issue caused by unused or expired drugs. The use of patient's own medications (POMs) in inpatient setting is proven to minimize drug wastage. However, there are limited data for outpatient setting. This study aimed to compare the differences in cost, adherence and glycaemic control of utilizing POMs and usual care in outpatient settings.

**Methods:** A prospective, randomized controlled study was conducted. Patient in POMs group brought their excess drugs from home during medication refill at weeks 0, 4, 8 and 12. Pill counts were conducted. Sufficient drug amount were added until next refill. For the usual care group, pill counts were conducted at weeks 0 and 12, and patients refilled their drugs as usual in the pharmacy. Total cost included cost of drugs, staffs and building. The cost difference between the total cost of prescription and total cost of drug dispensed was determined, where positive value indicated cost saving. Adherence was determined by pill counts and glycaemic control was captured based on glycosylated haemoglobin (HbA1c) at weeks 0 and 12.

**Results:** Thirty patients with similar baseline characteristics were included. Total costs of drug dispensed was lower (RM288.01±184.71 vs RM513.17±276.37;  $p=0.014$ ) and saved RM183.85±30.02 per patient in POMs group. Adherence improved by 51.77±27.07 in POMs group as compared to 37.67±11.19 in usual care group ( $p=0.042$ ). Mean HbA1c reduced significantly (-0.79,  $p=0.016$ ) in POMs group.

**Conclusion:** The utilization of POMs in outpatient setting saved costs, improved adherence and glycaemic control in diabetes patients.

## A Retrospective Study Comparing Bleeding Complications in Patients on Dual Antiplatelet Therapy (Aspirin-Clopidogrel versus Aspirin-Ticagrelor) Post Coronary Artery Bypass Grafting (CABG) in Hospital Pulau Pinang

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**Introduction:** Dual antiplatelet therapy (DAPT): Aspirin and P2Y12 inhibitor (Clopidogrel or Ticagrelor) reduces thrombotic events in patients of post-coronary artery bypass grafting (CABG) but is often complicated with bleeding risks. The primary objective is to compare the incidence of bleeding complications between patients treated with Aspirin-Clopidogrel and Aspirin-Ticagrelor post-CABG at Hospital Pulau Pinang (HPP). Secondary objective is to investigate the incidence of bleeding complications post-CABG in association with age and comorbidities.

**Methods:** This retrospective observational study recruited patients taking DAPT at post-CABG from HPP cardiothoracic ward between January 2015 and December 2016. Data for the subsequent one-year follow up were obtained from the cardiothoracic clinic. SPSS software was used to conduct descriptive and inferential statistical analyses. Simple logistic regressions were used and odds ratios (ORs) were yielded.

**Results:** Patients in Aspirin-Ticagrelor group have higher bleeding risks compared to the Aspirin-Clopidogrel group, but this association was not statistically significant [OR 1.61 (95% CI 0.30-8.57),  $p=0.578$ ]. Within the Aspirin-Ticagrelor group, we found no significant relationships between investigated factors (age, diabetes mellitus, hypertension, dyslipidemia) and the risks of bleeding ( $p>0.05$ ). However, chronic kidney disease seems to be a significant predictive variable for bleeding [OR 52.23,  $p=0.02$ , 95% CI (2.05, 1328.24)] in this group. Within the Aspirin-Clopidogrel group, our results show no significant relationships between any of the investigated factors and bleeding risks ( $p>0.05$ ).

**Conclusion:** There is no statistical significance between incidence of bleeding with Aspirin-Ticagrelor and Aspirin-Clopidogrel groups from our study.

## An Evaluation on Pharmacokinetic Parameters of Phenytoin in Adult Epileptic Patients in Neurological Ward and Clinic at Hospital Pulau Pinang: A Single Center Pilot Study

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**Introduction:** Phenytoin follows Michaelis-Menten pharmacokinetics, a nonlinear pharmacokinetic that occurs when the number of drug molecules saturates enzyme ability to metabolize the drug. Individual variability in relationship between phenytoin dose and plasma concentrations renders toxicity occurrence. General population data of Vm(7mg/kg/day) and Km(4mg/L) are usually used for the calculations of phenytoin dose. Studies in other countries showed that population pharmacokinetic parameters of phenytoin have high variations. This study aimed to estimate a local Vm and Km of phenytoin for adult epileptic patients at the neurological ward and clinic of Hospital Pulau Pinang.

**Methods:** Prospective observational study. All therapeutic drugs monitoring of oral capsule phenytoin was studied. Data collection period was from December 2017 till March 2018.

**Results:** Based on our study across 17 subjects, the median Vm and Km were found to be 8.25mg/kg/day and 3.80mg/l respectively. Male subjects have higher Vm (8.30mg/kg/day) but a lower Km (3.3mg/l) compared to female subjects. Chinese have the highest Vm (8.80 mg/kg/day). As for Km, Indians was the highest, with a value of 5.5mg/l. From our study, gender does not correlate with Vm and Km of phenytoin ( $p>0.05$ ). No correlations between ethnicity, Vm and Km were found ( $p>0.05$ ).

**Conclusion:** Our study showed that local Vm (8.25mg/kg/day) is higher and Km (3.8 mg/l) is lower when compared to the standard Vm (7mg/kg/day) and Km (4mg/l) from Caucasians. Gender and ethnicity have no significance on Vm and Km parameters.

## Phenotype Rh, Kidd and Duffy Group O Rh (D) Positive Blood Donor Profiles by Population at Hospital Pulau Pinang

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**Introduction:** Problem to obtain data for phenotypes occurs when there are difficulties for filtering information in the donor information system used at Hospital Pulau Pinang (HPP). The information sought from particular phenotypes was limited and non-specific. This caused difficulties when needed bloods were required to be sought immediately.

**Methods:** Donor data was retrieved from the donor registration unit using Hemoline system from January till December 2016.

**Results:** For Rh phenotype, Malays were more dominant with the CDe/CDe phenotype (74.11%) while the Chinese with cDE/cDE accounted for 6.45%. Next, the Kidd phenotype, Jk (a-b+) was more dominant among the Chinese (32.3%), while the Jk(a+b+) was found in all races. The Duffy phenotype, Fy (a-b+) was more dominant among the Indians (2.04%) while Fy (a+b-) was more prevalent among the Chinese (90.38%).

**Conclusion:** From this retrospective data analysis of group O Rh (D) positive donors found that there was a difference in frequency among the races. The results can assist in the finding of negative antigenic bloods suited for the use of patients with various allo antibodies. This can reduce the incidence of transfusion reactions as a consequence of incompatible blood antigens received.

## The Prevalence of Defaulted Diabetic Patients in Diabetic Clinic of Hospital Sungai Bakap

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**Introduction:** 3.5 million Malaysians have diabetes in 2015. The numbers of defaulted patients in Diabetes Clinic, Hospital Sungai Bakap (HSB) are increasing gradually. This situation may increase the risk of complications of diabetes patients and affect their quality of life. This study aimed to identify the prevalence of defaulted diabetes patients at the Diabetes Clinic of HSB.

**Methods:** A survey consisted of 12 questions were developed. 50 subjects had answered the survey via telephone in the past 6 months.

**Results:** 18 (36%) subjects were males and 32 (64%) females. 50% of the subjects had secondary education, while another 40%, 8% and 2% of the subjects received primary education, no education or tertiary education respectively. Majority of them have diabetes for 1 to 2 years (78%) and 22% subjects have the disease for more than 2 years. 84% received medications while 16% received insulin injections as their treatment. 68% of the subjects had never been admitted into the wards due to the disease. Only 4% of the subjects attended clinic's appointment by public transport whereas 56% and 40% of them attended with family members or by themselves respectively. The distance between their house and hospital was between 1-5 km (24%), 5-10 km (56%), 10-15 km (18%) and 15-20 km (2%) respectively.

**Conclusion:** Based on this survey, more than half of the defaulted diabetes patients were old cases, never admitted, and needed assistants to attend diabetes clinic follow-ups.

## Distribution of Lipid Profiles among Lacunar Stroke Patients in Malaysia

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**Introduction:** The objective of this study was to investigate the lipid profiles in lacunar stroke patients.

**Methods:** Lacunar stroke patients were recruited from November 2015 to August 2017 by using the verified data collection sheets. Serum lipid profiles (i.e. TC, LDL, HDL and TG) were accessed from the patients' medical records. Statistical analysis i.e. Student's t-test was performed using SPSS software version 22.0.

**Results:** A total number of 155 lacunar stroke patients (105 males and 50 females) were recruited. The mean age of males and females were  $59.23 \pm 11.04$  and  $60.18 \pm 10.85$ , respectively. Higher serum TC, HDL and LDL levels were observed among female lacunar stroke patients ( $5.49 \pm 1.51$  mmol/L,  $1.27 \pm 0.46$ , mmol/L,  $3.54 \pm 1.48$  mmol/L, respectively) as compared to male lacunar stroke patients ( $5.18 \pm 1.34$  mmol/L,  $1.20 \pm 1.06$  mmol/L,  $3.28 \pm 1.25$  mmol/L, respectively). However, male lacunar stroke patients showed a higher serum TG level when compared to female lacunar stroke patients, i.e.  $1.70 \pm 0.96$  mmol/L vs  $1.48 \pm 0.55$  mmol/L. The contrast levels of serum TC, HDL, LDL and TG were observed between male and female lacunar stroke patients, but the differences were not statistically significant.

**Conclusion:** No statistical significant differences of serum TC, HDL, LDL and TG levels between male and female lacunar stroke patients were observed.

## Use of Snake Anti-venom and Clinical Outcomes in Snake Envenomation: a Retrospective Study in Hospital Pulau Pinang

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**Introduction:** The incidence of snakebite in Malaysia was about 730 since January 2016. There are 40 species of venomous snakes that can be found in both land and sea. This study aimed to evaluate the use and clinical outcomes of snake anti-venom (SAV) in Hospital Pulau Pinang.

**Methods:** It was a retrospective cross-sectional study. Medical records of snakebite patients for the period between 2014 and 2017 were reviewed and data was extracted.

**Results:** Among 144 patients, there were only 9 patients given SAV in which 6 patients were given monovalent SAV after identification of snake and 3 were given polyvalent SAV. The patients who received SAV had visible symptoms of fang marks, blisters at site of bite, swelling and bleeding. 8 patients received SAV within 24 hours after snakebites. The average time gap to first administration was 7.23 hours. The average number of vials consumed was 8.33 vials. Other snake bite patients received treatments such as tetanus antitoxin, antibiotics and painkiller during observation and were discharged home. Most of the patients who were given SAV did not encounter any adverse effects except a child who had pyrogenic reaction and was treated with antibiotics and antipyretic. The average hospitalization stay for patients who received SAV was 6.11 days. The median cost of SAV was RM2032.80.

**Conclusion:** SAV is not required for all patients with snakebites as not all snakes are venomous. Low incidences of SAV adverse effects were observed as most patients were given pre-medication before the administration.

## Knowledge, Attitude, Practice (KAP) and Adherence towards Oral Contraceptive Pill (OCP) Usage: A Cross-Sectional Study among Women in Barat Daya District, Penang

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**Introduction:** Good KAP towards OCP regime is important to avoid unintended pregnancy. This study aimed to evaluate the KAP and adherence among women in Barat Daya District towards OCP usage.

**Methods:** This cross-sectional study recruited 384 women currently using OCP from four public primary care clinics in Barat Daya District, Penang between May and August 2017. Data on participants' demographics, self-reported OCP side-effects, KAP and adherence on OCP use were captured using a structured questionnaire. Adherence level was calculated based on Morisky Green Levine Medication Adherence Scale (MGLS).

**Results:** The prevalence of adherence among women in Barat Daya District was "low/medium adherence" (67.9%). Forgetfulness was the main reason to omit OCP taking (57.6%). Result from binary logistic regression showed women who experienced more side effects from OCP reported a significantly lower adherence level ( $p < 0.05$ ). However, women with higher knowledge towards OCP usage are 1.7 times more adherent to the medication ( $p < 0.05$ ). Surprisingly, women with better attitude towards OCP usage reported a significantly lower adherence level ( $p < 0.01$ ). Lastly, women with better OCP practice showed a significantly higher adherence level.

**Conclusion:** This study confirms that adherence problems are common among women in Barat Daya District. Therefore, identifying knowledge deficit is important, as there is a need for better education and patient counseling to improve OCP compliance and reduce unintended pregnancy.

## Food Behaviour among Malay Adolescents

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**Introduction:** In concerns about the quality of diet among young people, this study was conducted to explore the food habits or behaviour among Malay teenagers.

**Methods:** Using a cross-sectional design, Malay adolescents between 13 – 19 years old were surveyed in Program Jom Sihat at LPPKN Bertam, Pulau Pinang. A self-ministered Adolescents Food Behaviour Checklist questionnaire was used and data collected was analyzed using SPSS Version 22.0.

**Results:** Age showed a weak relationship with food behaviour or habit of the respondents. Meanwhile, food behaviour was significantly associated with gender and Body Mass Index (BMI).

**Conclusion:** This study provides an insight on factors determining the food behaviour of the adolescents which may directly impact the health and well-being of the adolescents. It provides vital information to all health professionals, researches and those who share the same interest in this matter in order to help them plan health education and health promotion activities that can be used to build a healthy population.

## The Association between Socioeconomic Status and Age of Initial Diagnosis of Autism Spectrum Disorder in Child Development Clinic, Penang General Hospital

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**Introduction:** This study aimed to identify socioeconomic factors associated with the initial age of diagnosis of Autism Spectrum Disorder (ASD) in children at the Child Developmental Clinic (CDC), Penang Hospital.

**Methods:** Case records of 208 children were diagnosed with ASD in CDC Penang Hospital between January 2014 and December 2017 was reviewed. Patients with complete data were included. A total of 183 records were reviewed.

**Results:** Mean age of first diagnosis of ASD was  $5.2 \pm 2.5$  years. Mean paternal age was  $37.8 \pm 5.4$  years and mean maternal age was  $36.3 \pm 5.0$  years. There is a significant correlation between age at diagnosis and both paternal age ( $r=0.443$ ,  $p<0.001$ ) and maternal age ( $r=0.367$ ,  $p<0.001$ ). There is a significant association between paternal and maternal education level with age of ASD diagnosis ( $p=0.023$  and  $p=0.005$  respectively). Higher parental education was associated with earlier age of diagnosis.

**Conclusion:** Older parental age and higher parental education was associated with younger age of diagnosis of ASD at CDC. We found no association between age of diagnosis of ASD and financial status of parents.

## Empyema Thoracis in Children: An Evaluation of Real Life Practice

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**Introduction:** Community acquired pneumonia can be complicated by empyema thoracis. Prompt diagnosis and management will influence the outcome. We intend to compare the management of empyema thoracis to the Malaysian Consensus Guidelines by The Paediatric Empyema Working Group 2013 (MOH).

**Methods:** Retrospective descriptive study of children diagnosed with community acquired pneumonia complicated by empyema thoracis, who were admitted to Hospital Pulau Pinang from October 2017 to March 2018. Adherence to the standards for diagnosis, investigation and management were analyzed.

**Results:** Twelve patients were reviewed. Most patients were admitted for empyema thoracis based on the chest radiograph during the first week of illness (75%, 7/12 cases, median: 6 days). All patients were subjected to thoracic ultrasound for confirmation and staging of effusion by the second week of illness (median: Day 9 of illness). Urokinase was administered in 42% (5/12) of patients with the failure rate of 80% (4/5). Most were unsuitable for urokinase intervention due to late presentation and referrals, or clinically unstable upon diagnosis. Most patients underwent open lateral thoracotomy and decortication (92%, 11/12 cases) with prolonged median hospital stay of 22 days (range 16-52 days). This may be due to late presentation, unsuccessful urokinase therapy and inaccessibility of Video Assisted Thoracoscopy Surgery (VATS).

**Conclusion:** Empyema thoracis is associated with high morbidity but rarely mortality. Educational courses on consensus guidelines may lead to better understanding, proper implementation and improve outcomes.

## Assessing Airflow Limitation among Smokers in a Primary Care Setting

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**Introduction:** Screening for chronic obstructive pulmonary disease (COPD) is not recommended in asymptomatic patients. Patients do not generally present themselves to their doctors with “symptoms”, and therefore COPD is underdiagnosed. Smokers who know that they have airflow limitations are more likely to quit smoking. This study aimed to identify the prevalence and predictors of airflow limitations among smokers in primary care.

**Methods:** Current smokers aged  $\geq 40$  years old who were asymptomatic clinic attendees of the outpatient clinic of Penang General Hospital were recruited by consecutive sampling for two months. We used a two-step strategy: *step 1* - participants filled in a questionnaire, *step 2* - Assessment of airflow limitations using a pocket spirometer. Airflow limitations was defined as  $FEV_1/FEV_6$  ratio  $< 0.75$  or  $FEV_1 < 80\%$  predicted. Multiple logistic regression analysis was performed to determine the best risk predictors for airflow limitations.

**Results:** Three hundred participants were recruited. Mean age was 58.35 (SD 10.30) years and mean smoking history was 34.56 pack-years (SD 25.23). Readiness to quit smoking and the awareness of COPD were low. One in two smokers were found to have airflow limitations; the significant predictors were Indian ethnicity, prolonged smoking pack-year history and Lung Function Questionnaire (LFQ) score  $\leq 18$ .

**Conclusions:** The high prevalence of airflow limitations and low readiness to quit smoking imply urgency with helping smokers to quit smoking. Identifying airflow limitations as a motivator to quit smoking is justified for COPD prevention. A two-step case-finding method is potentially feasible.

## Incidence and Outcomes Following In-hospital Cardiac Arrest at Hospital Pulau Pinang

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**Introduction:** The management of in-hospital cardiac arrest (IHCA) accounts for significant healthcare expenses and workload worldwide. Despite this, no national data exists to enable accurate determination of incidence and outcome of IHCA at Malaysian hospitals. This study aimed to report the incidence, characteristics and outcomes of adult IHCA patients at Hospital Pulau Pinang (HPP).

**Methods:** A prospectively defined analysis of the Penang Hospital Cardiac Arrest Audit (PHCAA) database was performed on 300 adult patients with IHCA over a 4-month period from February to May 2018. Main outcome measures were incidence of adult IHCA, rate of successful return of spontaneous circulation (ROSC) and survival to hospital discharge.

**Results:** The overall incidence of IHCA was 15.7 per 1000 hospital admissions. Mean age of patients with IHCA was 58.87 ( $\pm$ SD 15.7) years with highest incidence noted among Chinese males with medical conditions in general wards. Overall rates of ROSC greater than 20 minutes and survival to hospital discharge were 40.7% and 6.7% respectively. Higher ROSC rates were noted when the presenting rhythm was shockable (54.1%) versus non-shockable rhythm (38.4%). Better outcomes were reported in witnessed arrests and when location of arrests occurs in emergency department and critical care areas.

**Conclusion:** The initial analysis demonstrates that the incidence of IHCA at our hospital is high and our patients have poorer survival to hospital discharge when compared to international data. This data will pave the way for future changes in service delivery, organization and treatment for IHCA at our hospital.

## A 5-year Retrospective Review of Skin Patch Testing with European Standard Series in a Dermatology Out-patient Specialist Clinic: Hospital Pulau Pinang Experience

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**Introduction:** Patch test is the gold standard diagnostics for contact allergy. Surveillance on the prevalence of contact allergy and analysis of contact sensitization pattern are vital in order to detect the changing environmental exposures. We aimed to evaluate the contact sensitization pattern in patients suspected to have allergic contact dermatitis in Hospital Pulau Pinang.

**Methods:** This is a retrospective review of patch test results among patients who underwent patch testing with the European Standard Series (Chemotechnique Diagnostics) between January 2013 and December 2017. Data were retrieved from patient's medical record and analyzed using SPSS software.

**Results:** A total of 124 patients, (67.7% females; mean age of 42.5 years) were patch-tested. Commonly affected sites were the hand/feet (50.7%), both hand and feet (15.4%), face (4.6%) and trunk (3.1%). The most common affected groups were retiree (23.7%), homemakers (15.3%), healthcare workers (6.8%) and students (6.8%). 4% reported an atopic history. The rate of allergic reaction to at least one allergen was 48.4%. Top 5 allergens were Nickel Sulfate (26.6%), Methylisothiazolinone+Methylchloroisothiazolinone (8.9%), Potassium Dichromate (8.1%), Paraben Mix (7.2%), and Cobalt Chloride and Methyl-dibromo Glutaronitrile (5.6% respectively). Nickel Sulfate was top between 2013 and 2016. Methylisothiazolinone+Methylchloroisothiazolinone were the most common allergen for 2017.

**Conclusion:** Metal and preservative allergy are still major concerns in our center. More effort and regulatory measurements should be made to reduce their incidence. Ongoing analysis of patch test sensitization rates and trend will allow us to recommend clinically relevant and up-to-date allergens for future testing.

## Ventricular Septal Defect: Closure in the Cardiac Catheterization Laboratory

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**Introduction:** Ventricular septal defects (VSDs) are common congenital heart diseases. Device closure of VSDs offers alternative to standard surgical closure. This study aimed to report our center's experience on transcatheter closure of VSDs.

**Methods:** Retrospective case note reviews of 29 patients who underwent VSD device closures in 2017 were included.

**Results:** Patients' age ranged from 5 to 31 years old and body weight ranged from 14 to 72kg. The following anatomic types of VSD were present among the 29 patients: 20 perimembranous, 5 outlets, 2 doubly committed subarterial VSD (DCSA) and 2 residual post-device closures. Median VSD size was 4mm (range 2.1mm – 5.5mm). Devices used in VSD closures were Amplatzer duct occluder (12), multifunctional occluder (9) and coils (8). Procedure was successful in all the 29 cases (100%). Complications include residual VSD in 5 cases, right ventricular outflow tract obstruction in 1 case and transient procedure related ST elevation in 1 case.

**Conclusion:** Transcatheter closure of congenital VSDs of various anatomic types is feasible with limited complications. More experience and long term follow-up are mandatory to assess safety and effectiveness of this procedure.

## Prevention of Hepatitis B Reactivation in Patient with Hematological Malignancy Receiving Rituximab in Hospital Pulau Pinang

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**Introduction:** 257 million people are infected with hepatitis B virus worldwide as reported by World Health Organization. Hepatitis B reactivation is commonly seen in Hepatitis B patients who receive chemotherapy or immunosuppression especially Rituximab. This study aimed to assess the efficacy of antivirals among hematological malignancy patients with Hepatitis B infection who receive Rituximab.

**Methods:** A retrospective analytical survey involving 23 hematological patients with Hepatitis B who received Rituximab was conducted in Hematology Unit of Penang General Hospital from year 2015 till 2017. The study variables include age, gender, HbsAg, anti-Hbc, types of antiviral treatment and liver function test.

**Results:** A total of 23 patients with a mean age of 60.6 years were included in the survey. 14 (60.9%) patients were males while the remaining 9 (39.1%) were females. Among the hematological malignancy cases, 21 (91.4%) patients were lymphoma, 1 patient (4.3%) patient each for thrombotic thrombocytopenic purpura (TTP) and chronic lymphocytic leukemia (CLL) respectively. Out of 23 patients, 22 (95.7%) patients received Lamivudine and 1 (4.3%) patient received Tenofovir. HbsAg were detected in 10 (43.5%) patients while 13 (56.5%) patients had occult Hepatitis B infection. All patients had normal baseline liver function test. 1(4.3%) patient had reactivation of Hepatitis B while 2(8.7%) patients developed transaminitis secondary to non-alcoholic steatohepatitis and drug-induced respectively.

**Conclusion:** Chemoprophylaxis is crucial for patients in the setting of immunosuppression. Routine screening for HbsAg and anti-Hbc will prevent adverse outcome associated with delay in prophylactic treatment.

## Prevalence and risk factors of osteoporosis in rheumatoid arthritis patients

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**Introduction:** To determine the prevalence of osteoporosis in rheumatoid arthritis (RA) patients and to analyze the risk factors of osteoporosis.

**Methods:** This is a cross-sectional retrospective data collection of RA patients with dual-energy X-ray absorptiometry (DXA) scan done from June 2016 to December 2017 at Hospital Pulau Pinang. The baseline characteristics of patients in osteoporotic, osteopenic and normal groups were compared. The T-scores and prevalence of osteoporosis were calculated in accordance to age subgroups. Multivariable logistic regression analysis was used to explore the associations between osteoporosis and demographics and disease-related risk factors.

**Results:** Of the 87 female patients with RA where DXA scan was done between June 2016 and December 2017, 61 patients (70.11%) were in the osteoporosis group (T-score < -2.5 SD). Age (< 70 years; OR = 4.33, 95% CI: 1.17-16.06) was the only strong risk factor for osteoporosis in this group of RA patients.

**Conclusion:** The majority of RA patients with osteoporosis were in the younger age group of <70 years old. Our study did not demonstrate the traditional risk factors associated with osteoporosis in RA. Larger study cohort involving multiple specialized rheumatology centers in Malaysia will better reflect the prevalence and disease-related risk factors of osteoporosis in RA patients.

## Using Cluster Hospital Approach to Optimize Medical Bed Utilization in Non-Lead Hospitals

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**Introduction:** Patient congestion in tertiary (lead) hospital and underutilization of district (non-lead) hospitals are common in public healthcare facilities. We evaluated the impact of Seberang Perai Cluster Hospital initiative on medical bed utilization between lead and non-lead hospitals.

**Methods:** We employed action research method in developing medical services in non-lead hospitals: Bukit Mertajam Hospital (BMH), Kepala Batas Hospital (KBH) and Sungai Bakap Hospital (SBH), led by Seberang Jaya Hospital (SJH). Strategies were implemented by stages since 2015: (1) physician visits to non-lead hospitals at regular intervals, (2) medical officers from non-lead hospitals sent for attachments, (3) step-up and step-down protocols, (4) establishment of geriatric unit in SBH. We measured bed utilization by bed occupancy rate (BOR) and average length of stay (ALOS) in respective hospitals, in 2015 and 2017.

**Results:** Medical BORs for nearly all hospitals were >95% in 2015, except SBH (64.5%). These BORs increased over time, with highest increment in SJH (+13.2%), followed by SBH (+10.9%), BMH (+1.1%) and slight decrement in KBH (-3.2%) by 2017. In SJH, ALOS for medical admission were similar for both years (4.18 versus 4.30 days), while ALOS in non-lead hospitals observed a reduction: BMH (-0.55 days) and KBH (-0.42 days). This was in contrast to SBH where ALOS increased by 0.7 days.

**Conclusion:** Cluster hospital approach improved utilization of medical bed occupancy in all non-lead hospitals with increment in BOR and reduction in ALOS. The increased ALOS for patients in SBH was likely due to the impact of the geriatric rehabilitation services.

## Does Pre-Stroke Angiotensin-Converting Enzyme Inhibitors (ACEi) Prevent Pneumonia during Acute Stroke?

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**Introduction:** The use of ACEi has been shown to reduce post-stroke pneumonia. Little is known about the role of pre-stroke ACEi usage on pneumonia during acute stroke, which led to the conduct of this study.

**Methods:** This prospective observational study involved reviewing 11,398 patients admitted to 15 Malaysian public hospitals with acute stroke. Relevant data were extracted from the Malaysian National Neurology Registry. Multivariable logistic regressions were performed to evaluate pre-stroke ACEi effect on stroke-related pneumonia and clinical outcomes.

**Results:** About 78.5% sustained first-ever stroke. 80% were ischaemic stroke type. Up to 14.6% developed stroke-related pneumonia during hospitalization, with one-fifth of total mortality being attributable to stroke-related pneumonia. About 15.9% were prescribed ACEi before their first-ever stroke, compared to 27.1% with recurrent event. Adjusting for demographics, Glasgow Coma Scale at presentation, stroke recurrence and classifications, diabetes and smoking status, patients on ACEi prior to acute stroke had lower risk of developing pneumonia (OR=0.74, 95%CI 0.63, 0.86;  $p<0.001$ ) and lower risk of succumbing to stroke-related pneumonia (OR=0.66, 95%CI 0.45, 0.96;  $p=0.032$ ), compared to their counterparts without ACEi. Subgroup analyses observed similar effects on reduction in pneumonia occurrence (OR=0.687, 95%CI 0.56, 0.84;  $p<0.001$ ) and pneumonia-related mortality (OR=0.60, 95%CI 0.37, 0.99;  $p=0.045$ ) in first-ever stroke patients, but not in recurrent stroke ( $p=0.317$  and  $p=0.309$ , respectively).

**Conclusion:** We demonstrated that ACEi prior to first-ever stroke may confer protective effects against stroke-related pneumonia and associated mortality during acute stroke event. A prospective trial to confirm its beneficial effects in high risk stroke is warranted.

## Rare Familial Weak A Subgroup: A Case Report

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**Introduction:** Occurrence of ABO weaker variants poses a challenge in transfusion medicine. The commonest weak A subgroup, i.e. A3 subgroup shows a characteristic mixed-field (mf) agglutination following incubation with anti-A.

**Case Report:** We report a case of a 62-year-old female, diagnosed with advanced left breast carcinoma that required 3 pints cross-matched compatible packed red blood cells (RBC) to alleviate anemic symptoms. Forward ABO grouping demonstrated mf reaction with Anti-A antisera which resulted in ABO discrepancy. This case report aims to identify the cause of mf reaction during forward ABO grouping. A batch of serological and saliva tests to ascertain weak subgroup was performed on patient's sample which includes anti-A1 lectin, anti-H lectin, cross-matching and Rh phenotyping. Family screening was undertaken to assess A3 prevalence in her family. Forward ABO grouping showed 2+/mf reaction with anti-A and anti-A,B whereas reverse grouping demonstrated strong reaction (3+) with B cells. Testing patient's red cells with anti-A1 lectin showed negative result. Patient's serum reacted strongly (4+) with anti-H lectin. Saliva inhibition tests exhibited presence of strong H substances and reduced A substances. Compatibility test was negative. In view of unresolved ABO discrepancy at that time, patient was supplied with group O packed (RBC). Family screening demonstrated similar reaction suggestive of A3 subgroup.

**Conclusion:** Although weak A subgroups are mainly of academic interest, we should consider A3 subgroup in mf reaction during forward ABO grouping. The inaccessibility of more advanced blood grouping techniques can be offset through extensive serological tests, detailed history and family screening.

## A Case Report of Neurocysticercosis

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**Introduction:** Neurocysticercosis is one of the commonest parasitic infections of the central nervous system worldwide but is not commonly seen in Malaysia.

**Case Report:** This is a case report of a Nepalese immigrant with neurocysticercosis who presented with altered behavior and seizure. His blood investigation showed eosinophilia and CT brain showed multiple cystic lesions with nodular hyperdensities, suggestive of different stages of neurocysticercosis. Serological testing for Taenia was positive. He was treated with antiepileptic and Albendazole for 1 month and his clinical symptoms resolved.

**Conclusion:** This patient has left his country of origin, Nepal which has high incidence of cysticercosis for more than 3 years. In view of the large immigrant population in Malaysia, this case emphasizes the importance of improved surveillance for cysticercosis.

## Cervical Rib Resection through Anterior Approach (Supraclavicular)

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**Introduction:** Cervical rib causing Thoracic Outlet Syndrome (TOS) are uncommon. Most patients improve with conservative management. We would like to report our experience in a successful cervical rib resection through the supraclavicular approach in our center.

**Case Report:** A fourteen year old girl who was diagnosed with TOS underwent a supraclavicular technique of cervical rib resection. A curvilinear incision was performed on her right neck and the structures were dissected appropriately. No structures were cut apart especially the scalene muscles. Once the cervical rib was encountered the fibrous band and the proximal end was cut apart. In this technique, we crushed the proximal end of the cervical ribs as much as possible as posterior view is limited. The cut edge was shaved off. All structures were then approximated and skin was closed in interrupted manner. Patient was discharged well.

**Conclusion:** Cervical rib resection is a challenging surgical procedure in which a well strategized technique needed to avoid major intra-operative and post-operative complications.

## Case Series of Paediatric Thoracic Actinomycosis

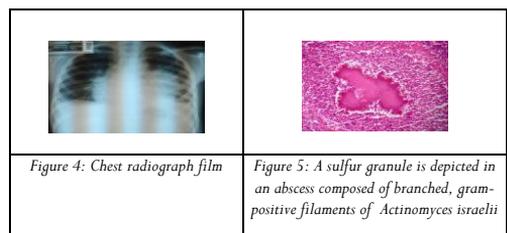
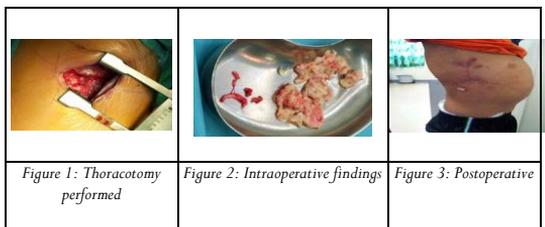
**Shafi M,** Hamzah MK

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**Introduction:** Thoracic actinomycosis is an uncommon infection caused by gram positive bacteria, *Actinomyces israelii*. It is more common in adults than children and it affects males three times higher than females. Actinomycosis is more common among patients with underlying lung disease such as emphysema and bronchiectasis.

**Case Report:** In the first case encountered, a five year old boy that was previously referred for soft tissue malignancy of the chest wall presented with a three month history of weight loss and poor appetite, associated with a low grade fever. He subsequently developed right sided progressive chest wall swelling (Figures 1, 2, 3). In the second case, an eight year old boy presented to us with a two month history of intermittent fever associated with weight and appetite loss. He later developed a tender left chest wall swelling (Figures 4, 5).

**Conclusion:** Actinomycosis is a chronic, suppurative granulomatous infection. It commonly presents as a jaw mass involving the cervicofacial region (>50%). Thoracic actinomycosis accounts for 15-50% of the total cases. Their bimodal distribution occurs between eleven and twenties and between fourth to fifth decades of life. Common presentations of thoracic actinomycosis are cough, fever and chest pain. Advanced or disseminated disease usually presents with constitutional symptoms, fever and sinuses. Actinomycosis is still rare with decreasing incidence and virulence.



## Twiddler's Syndrome - A Case Report

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**Introduction:** Twiddler's syndrome, first described by Bayliss in 1968, is a rare condition characterized by permanent pacemaker dysfunction due to patient's own manipulation. It is diagnosed in the first year of implantation. The pacemaker failure is due to lead displacement and loss of ventricular pacing. Patients usually deny pain or manipulation of the device. Continuous reeling of the leads around the generator will cause ipsilateral phrenic nerve stimulation, diaphragmatic pacing and subsequently abdominal pulsation.

**Case Report:** A 73-year-old female on pacemaker for complete heart block presented with persistent left arm twitching and sense of vibration at the left upper chest. Electrocardiogram on admission shows left bundle branch block. Interrogation of the device shows no sensing on the right ventricle. Fluoroscopy showed right ventricle lead dislodgement and a new pocket creation. The pacemaker box was reattached and anchored to pectoralis major muscle with non-absorbable suture. The deep pocket was closed, downsized and the wound closed in layers. Postoperative stay was uneventful.

**Conclusion:** Twiddler's syndrome occurs in elderly females, psychiatric and obese patients. The earliest reported case was within 17 hours. Application of multiple dressing over the wound, making smaller pockets, proper fixing of device and good patient education may prevent dislodgment.

## Carbamazepine Induced Neutropenia Complicated with Disseminated Aspergillosis

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**Introduction:** Invasive aspergillosis is rare and more commonly observed in immune-compromised patients. Extrapulmonary extension to the central nervous system is highly lethal as its mortality rate approaches 100%.

**Case Report:** We report a case of a 23-year-old Chinese man who is mentally challenged and epileptic. He presented with fever, chills and rigors, vomiting, diarrhea, lethargy and chesty cough for four days. His medications include carbamazepine, topiramate and clonazepam. He was febrile and had right lower zone crepitations. His blood investigations showed a pancytopenic picture that was attributed to carbamazepine. He was intubated for respiratory distress and suffered multiple episodes of seizures. Subsequently, he developed central diabetes insipidus. Broad-spectrum antibiotics and antiviral drugs were administered. However, there was no clinical improvement. CECT thorax revealed lung consolidation with air bronchogram in posterior segment of right upper lobe and both lower lobes and extensive ground glass opacities. CECT brain showed a large area of non-enhancing hypodensity involving both white and grey matter at the right parieto-occipital region. Lumbar puncture results were inconclusive. Serum galactomannan was positive. Voriconazole was recommended in the treatment of invasive aspergillosis due to its ability to penetrate the blood-brain barrier. However, due to its cost and availability in our hospital, amphotericin B was instituted instead. The patient significantly improved.

**Conclusion:** The diagnosis of invasive aspergillosis requires a high clinical index of suspicion. Early diagnosis allows prompt treatment and improved patient outcomes.

## Arthroscopic Suture Fixation of ACL Bony Avulsion Fracture: A Case Report

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**Introduction:** The treatment option of type III ACL avulsion fracture (Meyers and Mckeever) is controversial in terms of approach (open vs arthroscopic) as well as method (screw vs suture fixation).

**Case Report:** We report a case of a 25 year old male with left anterior cruciate ligament (ACL) bony avulsion fracture and left lateral tibial second fracture undergoing primary fixation at 2 weeks post trauma has been described. Preoperative assessment revealed a fixed flexion of left knee at 30 degrees and positive anterior drawer's test. Intra-operatively, K-wire was inserted to reduce the second fracture and subsequently cannulated screw of size 4.0mm diameter with washer was used to apply buttressing effect on the fracture fragment. ACL bony avulsion fracture was reduced directly under arthroscopic guidance. Lasso fiber wires were passed through the fibers of the ACL as close to the bony fragment as possible. Sutures were held and secured using screw post technique with knee in full extension. Post operatively, patient achieved full knee extension and scheduled for regular follow-ups, adhering to our center's rehabilitation protocol. The patient achieved good short term outcome after fixation of second and ACL avulsion fracture. The outcome of operative treatment of Type III ACL avulsion fracture (Meyers and Mckeever) for our patient was good with no residual laxity as we are able to achieve anatomical reduction. Patient achieved excellent International Knee Documentation Committee (IKDC) score post operatively.

**Conclusion:** Primary arthroscopic suture fixation of ACL bony avulsion fracture type III has a good short term outcome.

## Case Report: Mesenteric Venous Gas Secondary to Bowel Ischemia

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**Introduction:** Mesenteric venous gas is a rare condition. It is thought to be associated with disease processes that can cause bowel wall alteration, permitting passage of intraluminal air into mesenteric venous system.

**Case Report:** A 60 year old gentleman with underlying diabetes and hypertension presented with abdominal distention and not passing flatus for two days. Upon examination, there was generalized abdominal tenderness. Computed Tomography (CT) abdomen showed tubular pattern of gas lucencies in the mesentery, suggestive of gas in the small mesenteric veins. The jejunum and ileum were dilated with thin and non-enhancing wall, suspicious of bowel infarction. Superior mesenteric artery (SMA) was thrombosed. Wedge-shaped infarcted areas were seen in the spleen and right kidney. Emergency laparotomy was performed. Gangrenous bowel was resected with stoma creation. Patient made a good post-operative recovery.

**Conclusion:** Mesenteric venous gas should not be confused with pneumoperitoneum at CT. The most common and serious etiology of mesenteric venous gas in adult is bowel ischemia, although it could also be observed after liver transplantation or in rare cases of colonic diverticulitis. When bowel ischemia is suspected, emergency surgery is warranted. Embolic disease causes SMA occlusion and subsequently bowel infarction in this patient. Findings of mesenteric venous gas at CT should be carefully evaluated in the context of clinical findings to determine accurate diagnosis and appropriate management in order to reduce mortality.

## Case Report on Panuveitis as the Sole Manifestation of Ocular Syphilis and Neurosyphilis Leading to HIV Diagnosis in a 25 Years Old Man

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**Case Report:** A 25 years old previously healthy man complained of reduced right eye vision, redness and floaters of 2 weeks duration without any other systemic manifestations. The visual acuity for left and right eye was 6/12 and 6/60 respectively. Ophthalmic examination showed features of bilateral panuveitis with dense vitreous exudates and retinitis. Further laboratory evaluations demonstrated a reactive rapid plasma reagin (RPR) test with a titre of 1:256 with positive treponema pallidum hemagglutination (TPHA) test. Subsequently, HIV enzyme-linked immunosorbent assay (ELISA) and HIV particle agglutination (PA) tests were performed, which confirmed HIV infection. Lumbar puncture (LP) was performed and cerebrospinal fluid (CSF) for VDRL was positive. On further questioning, he admitted on having multiple sexual partners of both genders. His vision improved after intravenous penicillin therapy for 14 days.

**Conclusion:** HIV positive patients may present with panuveitis as the only manifestation of ocular syphilis and neurosyphilis in the absence of others systemic symptoms.

## An HIV-Infected Patient with Cytomegalovirus Retinitis, Pulmonary Cryptococcosis and Syphilis

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**Case Report:** We present a case of an HIV-infected patient with AIDS-defining conditions (opportunistic illnesses that occur more frequently or more severely) because of immunosuppression. Cytomegalovirus (CMV) retinitis is a cause of blindness among patients with AIDS in low- and middle-income countries and is an uncommon initial opportunistic illness in HIV-infected individuals. Cryptococcosis is also an opportunistic infection in patients with AIDS.

**Conclusion:** This case discussed about an HIV-infected patient presented with concurrent CMV retinitis, syphilis and isolated pulmonary cryptococcosis. The absence of serum cryptococcal antigen imposed diagnostic difficulty. The video-assisted thoracoscopic lung biopsy concluded the diagnosis of pulmonary cryptococcosis. He responded to a course of ganciclovir, penicillin and antifungal treatment combined with initiation of highly active antiretroviral therapy (HAART).

## Posterior Segment Ocular Cysticercosis: A Rare Case with Secondary Angle Closure Glaucoma

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**Introduction:** Cysticercosis is a preventable disease with high prevalence in developing countries. It is a parasitic infestation caused by larval form of *Taenia solium*. Cysticercosis may involve any body parts, including the eye, subcutaneous tissue, skeletal muscle and brain. We report a case of posterior segment ocular cysticercosis.

**Case Report:** A 47 year-old Malaysian Muslim presented with left eye pain and blurring of vision associated with left sided headache for 1-day. Visual acuity was hand movements in left eye and 6/9 in right eye. Left eye examination showed cornea edema, shallow anterior chamber with intraocular pressure (IOP) of 62mmHg. Right eye anterior segment was normal. He was treated as left eye acute angle closure glaucoma and laser peripheral iridotomy was done. After reduction of IOP with clearer cornea, left eye posterior segment revealed free floating vitreous cyst, multiple subretinal cysts and extensive retinal pigment epithelium atrophy over the inferior half retina. A subretinal cyst was identified over the right eye. Diagnosis of ocular cysticercosis was made after joint consultation with medical retina team. Albendazole was started for six weeks. Patient underwent left eye pars plana vitrectomy to remove the vitreous cyst. Histopathological report for vitreous cyst did not yield parasitic body due to suboptimal specimen, resulted a challenge to diagnose ocular cysticercosis in endemic Muslim population.

**Conclusion:** Ocular cysticercosis may result in significant ocular morbidity. We highlight the importance of high index suspicion

## Bronchopleural Shunting in Cardiac Arrest - When to Stop Resuscitating?

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**Introduction:** What to do when each step of our resuscitation effort fail to benefit a patient with a seemingly reversible cause of cardiac arrest?

**Case Report:** We are reporting a case of a 76 year old gentleman with acute presentation of shortness of breath without any known medical illness. He arrested during transport to hospital and high quality CPR was commenced immediately. After a short period of CPR, patient regained spontaneous circulation and advanced airway was established. However, patient condition began to deteriorate. Patient repeatedly asystoled and developed diffuse subcutaneous emphysema which required double chest tube insertion; after which we observed that there was continuous air leak across both tube.

**Conclusion:** Managing mechanical ventilation in patient with cardiac arrest with coexisting bronchopleural shunting is a challenging situation. To our knowledge, there is no guideline available which establishes the end-point of resuscitation in such condition.

## A Case Report of Pregnancy and Delivery in a Patient with Glanzmann's Thrombasthenia

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**Introduction:** Glanzmann's thrombasthenia is an autosomal recessive platelet disorder. Pregnancy and delivery is associated with risk of intra and post-partum haemorrhage. We present a case of primigravida with Glanzmann's Thrombasthenia.

**Case Report:** A 21 year old primigravida presented with episodes of muco-cutaneous bleeding since childhood. She had no antecedent exposure to haemostatic challenges or family history of bleeding disorder. Initial work-up include complete blood count, coagulation profile, serum fibrinogen, factor VIII level and von Willebrand screen which were normal. She defaulted follow up and was referred back to us at 10 weeks of pregnancy. Platelet flow cytometry confirmed a diagnosis of Glanzmann's thrombasthenia. She went into spontaneous labour at 39 weeks of gestation. She was given one unit of single donor platelet during active phase of labour and 5mg (90mcg/kg) of recombinant factor VIIa prior to second stage of labour. Estimated blood loss was 500ml. Second dose of recombinant factor VIIa was given 2 hours post-delivery due to bleeding from episiotomy wound. Subsequently haemostasis was secured. She was discharged home on day 3 post-delivery.

**Conclusion:** Pregnancy and delivery in patients with Glanzmann's thrombasthenia can be life threatening for both mother and fetus due to bleeding. Adequate intra-partum prophylaxis of platelet transfusion and recombinant factor VIIa can avoid postpartum bleeding.

## Chronic Inflammatory Demyelinating Polyradiculoneuropathy: A Case Report with Positive Anti-Acetylcholine Receptor Antibody

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**Introduction:** Chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) is a heterogeneous disease in which diverse autoantibodies have been described. Anti-acetylcholine receptor (AChR) antibody is commonly present in myasthenia gravis (MG) but co-existence in CIDP has not been reported.

**Case Report:** We report a 21 year old gentleman presented with bilateral lower and upper limb progressive ascending weakness over 10 months. He had dysphagia, dysphonia and dysarthria. There was no diplopia, drooping of eyelids, facial weakness or fatigability. He was initially investigated by another hospital for muscular dystrophy. MRI of his thigh was normal. He refused muscle biopsy. On examination, he had tongue atrophy with fasciculations, generalised limb weakness with Medical Research Council (MRC) scale 3/5 and absent tendon reflexes. Nerve conduction study (NCS) revealed demyelinating neuropathies with secondary axonal motor predominant polyneuropathy and normal needle electromyography (EMG). His creatinine kinase was raised (929 U/L). His CSF analyses were normal. He was commenced on intravenous immunoglobulin (IVIG) for 5 days. Subsequently, his AChR antibody was positive (0.93 nmol/l). Trial of pyridostigmine failed to improve his symptom.

**Conclusion:** This case illustrated the importance of clinical correlation with presence of autoantibodies. Our patient is less likely to have MG in view of simultaneous occurrence of MG and CIDP is rare and lack of clinical improvement after trial of pyridostigmine. The coincidental occurrence of CIDP with MG cannot be totally excluded. The interpretation of anti-AChR antibodies is rather complex and the presence in CIDP need to be further elucidated.

## Calpainopathy: A Case Report with Clinical and Histopathological Correlation

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**Introduction:** Limb girdle muscular dystrophies (LGMD) demonstrate heterogeneity of clinical phenotypes and pathogenetic mechanisms. Calpainopathy (LGMD type 2A) is a relatively common type of LGMD.

**Case Report:** We report a case of a 49 year old female with developmental motor delay since birth. She was having proximal myopathy since childhood. One of her uncle's grand-child was a floppy baby and bed bound since birth. No family history of consanguinity. On examination, she has no facial muscle weakness and with normal cognition. She has positive Gower's sign. No winging of scapula. Neurological examination showed symmetrical proximal muscle weakness. She is able to ambulate independently. In 2004 at UMMC, nerve conduction study was normal. Needle electromyography showed evidence of small polyphasic motor unit potentials consistent with primary muscle disorder. Her muscle biopsy over left deltoid in 2005 showed limb girdle muscular dystrophy, possible calpainopathy. Her creatinine kinase was normal.

**Conclusion:** Calpainopathy is caused by mutations in the CAPN3 gene and can be autosomal recessive or autosomal dominant. However, molecular genetic studies are not widely available in Malaysia. Calpainopathy is characterized by symmetrical proximal atrophy with no cardiac or facial disturbance and normal intelligence. Muscle biopsy specimen is warranted as there are overlaps between clinical presentations of LGMD subtypes. High cost of genetic analysis still hinders investigations for LGMD in many parts of the developing world. Detailed clinical history with examination and muscle biopsy are important tools for the initial diagnosis and classification of LGMD.

## Polyorchidism

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**Introduction:** Polyorchidism is a very rare anomaly that is defined by the presence of more than two testes.

**Case Report:** A 27 year old Bangladeshi gentleman presented to surgical OPD with multiple swelling in the scrotum for 4 years which are increasing in size. No other symptoms. Upon examination, noted two small non tender swellings in the right scrotum and base of shaft of penis respectively. Ultrasound of testes revealed four structures resembling testes noted in the scrotal sac, all are homogenous with normal intra-testicular vascularity. No intra-testicular lesion noted. Generalised scrotal wall thickening and mild hydrocele was noted bilaterally.

**Conclusion:** Diagnosis of polyorchidism can be achieved by color Doppler ultrasound and further supported by magnetic resonance imaging (MRI). Most common location of the supernumerary testis is within the scrotum. There is an increased risk of testicular malignancy in the presence of polyorchidism regardless of the location of the supernumerary testicle. The management of polyorchidism is resection of the dysplastic testicle without a duct. Supernumerary testis contributes to spermatogenesis, hence most of the time it is retained and followed up by ultrasound yearly, provided malignancy is not suspected. However, if malignancy is suspected, orchidectomy is the option. Polyorchidism is a rare condition and it has increased risk of testicular malignancy regardless of the location of the supernumerary testis.

## Case Report: Right Superior Ophthalmic Vein Thrombosis and Bilateral Cavernous Sinus Thrombosis

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**Introduction:** Superior ophthalmic vein thrombosis (SOVT) is a rare entity and could be life threatening if complicated with cavernous sinus thrombosis (CST).

**Case Report:** A 23 year old gentleman presented with painful right eyelid swelling and headache for four days. Examinations revealed, right eye proptosis with swollen and erythematous eyelids. Visual acuity in both eyes was 6/9. Intraocular pressure in the right eye was slightly high (24mmHg in up gaze). Conjunctiva is injected with chemosis. Corkscrew vessels noted laterally. Left eye is unremarkable. CECT/CTV brain and orbit revealed right pre and post septal cellulitis with right superior ophthalmic vein thrombosis and cavernous sinus thrombosis. Patient was treated with IV antibiotics and anticoagulant for 1 week and subsequently symptoms resolved and patient was discharged.

**Conclusion:** This patient had typical clinical signs of right orbital cellulitis complicated with right SOVT and bilateral CST that was confirmed by CT images. The etiology of SOVT can be divided into septic and aseptic. The commonest cause is orbital inflammations. In early stages, mildly enlarged SOVT may be missed on CT scans. MRI and MRV are more sensitive early in the disease process and are recommended if there is suspicion of SOVT or CST. Management of the SOVT depends on etiology. In infection-related SOVT, broad spectrum antibiotics and anticoagulant are important. Although SOVT is a rare disease, early diagnosis and prompt treatment are crucial to prevent permanent disability and fatality, as CST is a potentially devastating condition.

## Mitochondrial Cytopathy the Great Mimicker

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**Introduction:** Mitochondrial cytopathy greatly mimics myasthenia gravis because of an almost similar clinical presentation.

**Case Report:** We report a case of a patient who presented with bilateral ptosis without diurnal variation since 1998. She denies diplopia, dysphagia, dysarthria, limb weakness & shortness of breath. She was treated with pyridostigmine since 1998 with clinical response but has residual ptosis. She had bilateral tarsorrhaphy done in 2007. Her mother and 2 out of her 3 children has similar ptosis. She has bilateral ptosis, orbicularis oculi weakness with reduced range of movement for all eye movement and eyelid fatigability. Her neck flexion power was 4/5, extension 5/5; bilateral upper & lower limbs proximal power was 5/5. No retinitis pigmentosa. Acetylcholine receptor antibody was at 0.10nmol/L (negative). Nerve conduction study showed no significant reduction in response on repetitive stimulation test. Single fiber electromyography was negative. Modified tension test was negative. Lactate reported 1.0mmol/L and Creatinine kinase as 132U/L. Electrolytes were normal. She was not keen for muscle biopsy.

**Conclusion:** Detailed history taking that includes family history and examination of family members is crucial to aid diagnosis. Our case mimics myasthenia gravis clinically and was treated with pyridostigmine. Persistent progressive ptosis warrants detailed family history taking and examination of other family members for the presence of bilateral ptosis, especially when investigations are negative for myasthenia gravis. A muscle biopsy would be helpful in confirming the diagnosis.

## Anti-NMDA-Receptor Encephalitis associated with Immature Ovarian Teratoma: A Case Report

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**Introduction:** Anti-N-methyl-D-aspartate receptor encephalitis is a para-neoplastic syndrome associated with ovarian teratomas.

**Case Report:** A previously healthy 16-year-old girl presented with altered mental status and rapid cognitive decline requiring immediate intubation. Initial workups found negative results and no evident of clinical improvement on meningitis treatment. This led to the suspicion of NMDA encephalitis. The serum anti-NMDA receptor antibody was positive and pelvic ultrasound showed a complex adnexal lesion. Laparotomy, left salphingo-oophorectomy and omentectomy was performed and histopathological examination of the specimen was reported as immature teratoma Grade 3. Postoperatively, her mental status improved and after 3 months of hospitalization, she recovered tremendously and was discharged.

**Conclusion:** This case highlights the paramount importance of early recognition of this rare condition and prompt treatment by a multidisciplinary team as recovery is possible. The substantial number of cases associated with ovarian teratoma should prompt low threshold for radiology imaging to exclude causative tumor. The potential recovery or fatality from the condition may warrant its escalation from a diagnosis of exclusion. We recommend laparotomy as it allows exploration of the ovaries while avoiding inadvertent cyst content spillage and dissemination of a potentially malignant tumor. The outcome of the disease depends greatly on early recognition, time to operation, and nosocomial complications.

## A Case Report of Hepatic Artery Pseudoaneurysm Post Laparoscopic Cholecystectomy

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**Introduction:** Laparoscopic cholecystectomy is commonly performed due to fewer complications and short recovery time. Pseudoaneurysm is one of the rare complications but carries serious clinical dilemma.

**Case Report:** A 51 year old lady presented with one week history of epigastric pain and three episodes of hematemesis. Two months before she had a laparoscopic cholecystectomy with peritoneal lavage and evacuation of blood clots. Upon examination, she was pale, hypotensive and anaemic. Oesophageal-gastro-duodenoscopy demonstrated large D1/D2 duodenal ulcer with large blood clot. Computer tomography angiogram (CTA) mesentery showed right hepatic artery pseudoaneurysm. Laparotomy was done. The aneurysm was excised, right hepatic artery branch was ligated and duodenal perforation was repaired.

**Conclusion:** Right hepatic artery pseudoaneurysm post laparoscopic cholecystectomy has been recorded in 0.6% of cases. The exact mechanism is unknown but the diathermy effect to the vessel wall and the immediate complication post laparoscopy may contribute to patient's complication. The signs and symptoms are variable, but most common ones such as acute pain, gastrointestinal hemorrhage and anemia are demonstrated in this case. The final diagnosis was made in this case based on CTA mesentery and was proven intra-operatively. Although hepatic artery pseudoaneurysm post laparoscopic cholecystectomy is rare, it may lead to catastrophic consequences. CTA is one of the sensitive modality for final diagnosis.

## Aplastic Anemia in Epilepsy: A Rare and Overlooked Condition

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**Introduction:** Many antiepileptic drugs (AEDs) are associated with a spectrum of hematological disorders, ranging from mild thrombocytopenia or neutropenia to anemia, red cell aplasia and bone marrow failure.

**Case Report:** We present a rare case of a 41-year-old gentleman with incidental finding of pancytopenia (WBC 2.3, Hb 4.7 and Platelet 20) during neurology clinic follow-up. He had scar epilepsy post traumatic brain injury in 2008. Extensive workup for the cause of pancytopenia revealed toxic phenytoin level and folate deficiency. He had a history of phenytoin toxicity in 2015 in which phenytoin was withdrawn and substituted. However, he was restarted on phenytoin and sodium valproate after sustaining status epilepticus in 2016. Peripheral blood film showed no blasts or dysplastic changes. The diagnosis of acquired aplastic anemia was concluded by bone marrow aspiration and trephine (BMAT) biopsy. AED was switched to topiramate and subsequently co-managed by the hematology team.

**Conclusion:** Aplastic anemia is an immune-mediated T-cell destruction of marrow. AEDs were associated with a nine-fold increased risk of aplastic anemia. Polytherapy with AEDs was strongly associated with aplastic anemia compared to monotherapy. Enzyme-inducing AEDs such as phenytoin, carbamazepine, primidone and phenobarbital were known to reduce folate level. Folic acid deficiency is commonly seen in patients with long-term phenytoin therapy. Therefore, he was started with both oxymetholone and folate supplementation. Regular full blood count monitoring is necessary for patients on AED especially those on polytherapy to look for potential fatal hematological disorders such as aplastic anemia.

## Egg and Workout Made Me Pass-out: A Case of Food-Dependent Exercised Induced Anaphylaxis

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**Introduction:** Exercise-induced anaphylaxis (EIA) is a rare disorder in which anaphylaxis occurs after physical activity. A distinct subset of EIA is food-dependent exercise-induced anaphylaxis (FDEIA), in which anaphylaxis develops only if physical activity occurs within a few hours after eating a specific food. Neither food intake nor physical activity by itself produces anaphylaxis.

**Case Report:** We report a case of a 22 year old gentleman who developed sudden onset of anaphylaxis symptoms while he was jogging at a park. His symptoms improved upon arriving to our center. He consumed egg sandwich at home prior to jogging. He was stabilized and treated accordingly. He later revealed he had history of similar events after consuming egg and going out for a jog. He had no allergy symptoms with eating egg or with jogging alone.

**Conclusion:** Education on prevention remains the best treatment for patients with FDEIA and the need of providing self-injectable emergency epinephrine for these patients needs to be considered.

## A Case Study: "Why are My Eyes Down and Out?"

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**Introduction:** The third, fourth and sixth cranial nerves innervate the extra-ocular muscles that position the globes in the orbits. With unilateral third cranial nerve palsy (oculomotor nerve), the involved eye is usually deviated "down and out" and there may be a partial or complete ptosis. A painful pupil that involves oculomotor nerve palsy may result from a life-threatening intracranial aneurysm. Therefore, recognition of oculomotor nerve palsy is critical to ensure prompt and appropriate evaluation and treatment.

**Case Report:** A 62 year old Asian female with underlying hypertension presented with right eye ptosis for a week, preceded with a history of headache for two weeks. She had no history of trauma or skin lesions. On examination of her right eye she had a complete ptosis, dilated pupil, loss of pupillary reflex, unable to look up and adduct. Other cranial nerves examination was intact. Her computer tomography angiogram of brain results showed no aneurysm and her magnetic resonance of brain was also normal. She was diagnosed to have mono-neuritis multiplex.

**Conclusion:** Mono-neuritis multiplex is defined as nerve damage in two or more named nerves in separate parts of the body. This is because nerve length affects the frequency of clinical involvement by vasculitis neuropathy, and because the longest nerves are affected first, foot drop is the most common manifestation. However, in this case the trochlear nerve (longest cranial nerve) in the body is affected. Not all third cranial nerve palsy with pupillary involvements is caused by surgical lesion

## Surface Osteosarcoma- Diagnostic Challenges

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**Introduction:** Surface osteosarcoma is rare and accounts for 3-6% of all osteosarcomas. Three major groups of surface osteosarcomas are parosteal (cPOS), periosteal (PerOS) and high grade surface osteosarcomas (HGSO).

**Case Report:** We report a case of a 44 year old woman presented with two year history of left knee spontaneous painless swelling, increasing in size and causing difficulty in squatting. Otherwise she had no systemic symptoms of cancer. Examination revealed a fixed, hard mass over left popliteal fossa. Open biopsy reported as CPOS. CT thorax showed no lung metastasis. Wide resection was performed with mega-prosthesis reconstruction. Histo-pathological examination of resected tumor reported PerOS with clear margin. No adjuvant chemotherapy was given.

**Conclusion:** cPOS has predilection for posterior cortex, distal metaphysis of femur and present as ossified exophytic tumor on bone surface as in this case. A lucent cleavage plane (string sign) is seen between the tumor and the underlying cortex differentiating it from osteochondroma. PerOS commonly occurs at meta-diaphyseal portion of tibia. Wide resection was planned due to the tumor involving the lateral collateral ligament. There is uncertainty in role of chemotherapy for PerOS. As our case had typical clinical and radiological features of cPOS, we did not subject the patient for chemotherapy although the final HPE was perOS. cPOS can be confused with PerOS, which are moderately high grade. Treatment entity remains the same (wide resection) and justification to start chemotherapy for PerOS remains a controversy.

## Case Report of Pulmonary Kaposi Sarcoma in a HIV Infected Patient

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**Introduction:** Kaposi sarcoma is an angioproliferative tumor associated with human herpes virus 8 (HHV8). The incidence of kaposi sarcoma has decreased markedly since the widespread use of potent combine antiretroviral therapy. Pulmonary involvement occurs in about one third of patient with kaposi sarcoma.

**Case Report:** A 31 year old gentleman presented with multiple hyper-pigmented plaque like lesions over his scalp, forehead and his left hand for over a year. He had intermittent fever, non-productive cough and shortness of breath for 3 months duration. Retroviral disease was tested positive. Biopsy was taken from the forehead lesion which was reported as spindle cell sarcoma initially. However, immunohistochemistry staining subsequently confirmed kaposi sarcoma. He was then started with highly active antiretroviral therapy. Contrasted CT scan of the lung showed multiple lung nodules. Bronchoscopy was performed and revealed multiple violaceous lesions on his trachea and over middle lobe of the left lung. Transbronchial needle aspiration of the lesion was consistent with kaposi sarcoma.

**Conclusion:** Clinical diagnosis of pulmonary kaposi sarcoma remains challenging as it is an uncommon disease in the era of highly active antiretroviral therapy. Bronchoscopy will be needed in the case of diagnostic dilemma. Combine antiretroviral therapy is the cornerstone treatment for HIV infected patients with kaposi sarcoma. Systemic chemotherapy may play a role depending on the extent of the disease.

## Metastatic Follicular Thyroid Carcinoma to Sphenoidal Sinus with Orbital Apex and Base of Skull Involvement

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**Introduction:** We aim to describe an uncommon case of metastatic follicular thyroid carcinoma to sphenoidal sinus with orbital apex and base of skull involvement. Relevant information was extracted from the medical records, including patient's history, physical examination, operative findings, pathology reports and radiology studies. A PUBMED search was performed for reports of similar cases.

**Case Report:** A 42-year-old woman who presented with sphenoidal sinus showed metastatic thyroid carcinoma based on mass biopsy. She underwent complete thyroidectomy and no evidence of malignant histology was noted in the thyroid gland. Her un-stimulated serum thyroglobulin was raised up to the level of 274ug/L. To ascertain correct pathological diagnosis of follicular thyroid cancer, she underwent radioiodine-131 diagnostic whole body scan, showing iodine-avid functioning thyroid tissues in the head, right orbital region, neck region, left upper chest wall, right side of the abdomen and left lower limb. She was treated with high dose radioiodine therapy and the sphenoidal sinus mass decreased in size after treatment. A literature review identified that follicular carcinoma rarely metastasize to paranasal sinuses with only 7 cases reported to date. These patients varied in terms of their treatment and management. This is the first case of follicular thyroid cancer metastasis to paranasal sinus with no malignancy found in the thyroid gland.

**Conclusion:** Follicular thyroid cancer metastasis to paranasal sinus is extremely rare and multidisciplinary approach is required to minimize morbidity and improve survival.

## Basal Cell Carcinoma of External Auditory Canal with Second Primary

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**Introduction:** Carcinomas originating from external auditory canal (EAC) are rare with an annual incidence of around 1 per million people. Among these tumors, basal cell carcinoma less frequently occurs than squamous cell carcinoma. Due to the rarity of malignant tumors of EAC, there is no widely accepted treatment modality yet.

**Case Report:** Recently we experienced a case of a 61-year-old Malay lady presented to us with a one month history of otalgia, otorrhea and hearing loss in the right ear. The patient underwent tumor resection and excision of right pinna with full thickness skin graft. Post-operative histopathology showed basal cell carcinoma and adjuvant radiotherapy was given. Patient was lost to follow-up after two years and returned to us four years later with a month history of right facial asymmetry and otorrhea in the right ear. Examination showed an ulcerative mass over the right auricular region and excision biopsy showed squamous cell carcinoma (SCC).

**Conclusion:** Patient succumbed to disease before treatment started. Is this a radiation induced SCC or a second primary SCC?

## Lumbosacral Agenesis- A Case Report of a Rare Congenital Disorder

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**Introduction:** Lumbosacral agenesis is a rare congenital disorder characterized by abnormal development of the sacrum and the lumbar spine in utero. It is characterized by varying degrees of absence of the sacrum and lumbar spine. The exact etiology is unknown. Uncontrolled maternal diabetes mellitus is a risk factor. Other abnormalities include the gastrointestinal, genitourinary, cardiovascular, renal, skeletal and neurological systems. Prognosis and functional capacity depend on the severity of the condition and the extent of the neurological deficit. There is no consensus on the treatment of severe cases.

**Case Report:** We present a case report of a variant of lumbosacral agenesis, where the entire lumbar spine is absent and the caudal most vertebra does not articulate with the bilaterally fused ilia. Limb deformities included flexion contractures of the bilateral knees and unilateral equinovarus of the right foot. There was no obvious active movement of both lower limbs. Other systemic conditions include an imperforate anus, renal agenesis and patent ductus arteriosus.

**Conclusion:** Lumbosacral agenesis can have severe functional impairments. When maternal diabetes is present, optimal glycemic control is necessary for its prevention.

## A Rare Fungal Infection: *Pseudozyma antarctica*

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**Introduction:** *Pseudozyma* spp is a basidiomycetous plant pathogen. *Pseudozyma* spp. infections in humans are rarely reported since its' first characterization as a human pathogen in 2003. Main risk factors for *Pseudozyma* spp. infections are extremes of age, cancer chemotherapy, neutropenia (<3000 cells/IL), presence of a central venous catheter (CVC) and severe thrombocytopenia. It is important to recognize and differentiate this species from other yeasts as it may require the use of amphotericin B or voriconazole instead of fluconazole, to which the organism is variably resistant.

**Case Report:** We report a case of a rare yeast infection, *Pseudozyma antarctica* in an old gentleman with ischemic heart disease, hypertension and type 2 diabetes mellitus for 10 years, and having femoral catheter as a risk factor. A yeast-like fungus was isolated from blood culture of this patient. Upon the initial identification, the yeast isolate was suspected as *Pseudozyma* spp. as the gram stain revealed fusiform-shaped cells with budding. The isolate was not identified by commercial fungal identification systems in the laboratory. This yeast isolate was later sent to IMR for DNA sequencing and was identified as *Pseudozyma antarctica*.

**Conclusion:** This rare yeast species have yet to be correctly identified using commercial fungal identification systems that are available in routine diagnostic laboratories. DNA sequencing and phylogenetic analysis helps with its identification.

## Utilization of Single Photon Emission Computed Tomography / Computer Tomography (SPECT/CT) in Radiosynoviorthesis of the Knee Joint with Yttrium-90 Citrate in Pigmented Villonodular Synovitis

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**Introduction:** Pigmented villonodular synovitis (PVNS) is a rare, benign, but potentially aggressive and recurrent condition characterized by synovial proliferation and hemosiderin deposition inside the joints. Surgical approach is the mainstay of treatment but it carries high relapse rates and joint damages. Combined therapy with intra-articular radiosynovectomy (RSO) which is the application of radioisotope into the joint has been shown to offer better clinical outcome with reduced rate of recurrence. Post-therapy Bremsstrahlung imaging is a useful tool in performing RSO.

**Case Report:** We present a case of a 14-year-old girl initially presented with recurrent right knee swelling. Clinical examination and MRI of the right knee showed features of right knee PVNS. She underwent wound debridement and synovectomy twice due to recurrence. She underwent RSO of the right knee with <sup>90</sup>Y-Citrate followed by a post-therapy Bremsstrahlung planar imaging with SPECT/CT acquisition of the knee joint. The images showed good tracer distribution within the knee joint with no extra-articular tracer distribution into the skin, vessel or lymphatic drainage. Post-procedure 3 months, she is ambulating well with no evidence of disease recurrence.

**Conclusion:** RSO along with surgery provides the best outcome for recurrent PVNS in young patients. The application of Bremsstrahlung scan with SPECT/CT provides good tracer localization and allows prediction of outcome. It has been shown to improve clinical outcomes, allow better understanding of tracer distribution and subsequently permit earlier detection of possible complication. This imaging technique permits evaluation and improvement in injection technique and treatment protocol.

## Cryptococcal Peritonitis in Continuous Ambulatory Peritoneal Dialysis: Case Report

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**Introduction:** Fungal peritonitis is a serious complication of peritoneal dialysis (PD) peritonitis with significant morbidity and mortality. Prior use of antibiotics and immune-compromised state were associated with fungal PD peritonitis.

**Case Report:** We present a rare case of fungal CAPD peritonitis caused by *Cryptococcus neoformans*. A 69 year old gentleman with underlying diabetes and end stage renal disease on continuous ambulatory peritoneal dialysis (CAPD) for a year presented with cloudy PD fluid and abdominal pain. His PD fluid analysis was consistent with PD related peritonitis with white cell count of 299 cells / mm<sup>3</sup>. Intra-peritoneal (IP) Cefazolin and Ceftazidime were started empirically. IP Amikacin and later IP Meropenem were added. Despite being administered with three types of antibiotics, his symptoms persisted. IP Fluconazole was started for possible fungal peritonitis and removal of peritoneal dialysis catheter was planned. Five days post-presentation, his PD fluid culture grew as *Cryptococcus neoformans*. Intravenous (IV) Amphotericin B and tablet Flucytosine were started. Abdominal pain resolved after PD catheter removal. Chest radiograph and serum cryptococcal antigen were sent to rule out disseminated cryptococcosis. Results were negative. He completed 3 weeks of antifungal therapy, discharged well.

**Conclusion:** High index of suspicion of fungal PD peritonitis is warranted in patients who aren't responding to antibiotics. *Cryptococcus neoformans* is an encapsulated fungus. Primary route of infection is inhalation that causes disseminated cryptococcosis in immune-compromised patient. The diagnosis of cryptococcal peritonitis requires extensive search for extra-peritoneal site infections for the initiation of aggressive antifungal therapy with early PD catheter removal.

## A Case Report on Postoperative Complication Related to Usage of Air Technique to Locate Epidural Space

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**Introduction:** Major determinant of successful epidural anesthesia is the localization of the epidural space. Should air or saline be used in detecting the point of loss of resistance? No consensus exists as to which technique is superior till date.

**Case Report:** We highlight the complication arising from air technique localization of epidural space. A 56 year old male (BMI: 40) with underlying hypertension was scheduled for open cholecystectomy for gallbladder empyema under general anesthesia and epidural for post-operative pain management. Epidural catheter was inserted at T9 using air technique. Multiple attempts were made as patient had thick subcutaneous tissue. Total of 10-15mls of air was injected while trying to locate the epidural space. Post-catheter placement, 3mls of 2% lidocaine was given as a test dose. Subsequently 10mls of 0.5% Bupivacaine of incremental dose was administered to achieve the desired level of block. Patient was stable intraoperative. Patient was sent to ward with epidural infusion (0.1% Bupivacaine with 1mg of fentanyl infusion running at 7mls/hr) post-surgery. During Acute Pain Service rounds, patient complained back pain and breathing difficulties. Examination revealed extensive subcutaneous emphysema extending from cervical region to the thoracolumbar region posteriorly. Epidural catheter was removed and PCA Morphine for pain control was started. Skin demarcation was done to identify the extension of subcutaneous emphysema. Patient was put on NP02 3l/min and was admitted to HDU for close monitoring.

**Conclusion:** Patient was on close monitoring for respiratory distress. After 5 days, subcutaneous emphysema resolved spontaneously and patient was discharged well.

## Late Onset Mycophenolic Acid-Induced Diarrhea

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**Introduction:** Mycophenolate Mofetil (MMF) is widely used to prevent solid organ transplant rejection. We describe a renal transplant patient with late-onset diarrhea after 10 years of MMF therapy as immunosuppressant.

**Case Report:** Ten years after receiving a living-related renal transplant in 2006, a 43-year-old man presented with chronic diarrhea. He reported to have more than 10 bowel movements per day. His medications include Tacrolimus 2mg/1mg bd, Prednisolone 5mg daily and MMF 750mg bd. Thyroid function and colonoscopy were normal. Cytomegalovirus DNA was non-reactive. He was converted to enteric-coated Mycophenolate Sodium (MPS) 360mg bd. His bowel movement reduced to twice a day. However, he was admitted twice for infective diarrhea in the following months. He developed significant weight loss of 15kg gradually over 6 months. MPS was reduced to 180mg bd. Computed tomography scan of abdomen showed diffused thickening of the small bowel wall. Repeated colonoscopy with biopsy showed chronic colitis and ileitis. There were focal increase in lymphoplasmacytic cells in lamina propria; focal glands and crypts displayed architectural distortions and branching. Patient also developed pancytopenia. Bone marrow aspiration and trephine biopsy showed hypocellular marrow. MPS was stopped. His diarrhea subsided within 4 days. His weight gradually increased from 44kg to 60kg over 3 months. Pancytopenia resolved.

**Conclusion:** Diarrhea in long-term renal transplant can be due to infection, drug, malignancy and metabolic causes. Diarrhea in renal transplant maintained on MMF is common but mostly occur in early post-transplant. Mycophenolate toxicity should be considered in the evaluation of late onset post-transplant diarrhea.

## Perioperative Anaphylactic Shock after Exposure to Multiple Agents in a Patient Undergoing Orthopaedic Surgery: A Case Report

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**Introduction:** Anaphylaxis remains one of the causes of perioperative death, generally being unanticipated and progress quickly to life-threatening situations. It occurs suddenly after exposure to an allergen, leading to histamine-induced vasodilatation and increased vascular permeability with severe hypotension.

**Case Report:** We report a case of anaphylactic shock that occurred intra-operatively 40 minutes after induction of general anesthesia in a 42 year-old Malay man with no previous history of known allergy or medical illness, planned for right lower limb orthopedic surgery in September 2017. He developed rashes over the neck and chest, followed by severe hypotension, not responding to fluid resuscitation and vasopressor boluses, but only stabilized after IV Adrenaline. Surgery was aborted. He was admitted to ICU for close observation. The patient was extubated uneventfully few hours later. He was referred to Anaesthetic Allergy Clinic HKL for immunological tests, which revealed that he is allergic to alpha-gal component of gelatine-containing colloid found in Gelofusine. Povidone might also be the triggering agent due to equivocal results upon skin testing. Subsequently, he underwent definitive surgery in April 2018. Despite choosing Chlorhexidine which was tested negative previously for skin preparation, he developed anaphylactoid reaction, requiring few doses of rescue vasoconstrictor. The surgery still proceeded with prophylactic subcutaneous adrenaline injection and was performed under "Combined Spinal Epidural" anaesthesia with minimal hypotension.

**Conclusion:** Retrospectively, based on the onset of hypotension post-exposure to certain drugs/chemicals during both surgeries, we concluded that this patient is at high risk of developing anaphylaxis in any future surgery.

## **Imatinib-Induced Skin Blistering: Rare Side Effect**

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**Introduction:** Imatinib Mesylate is a tyrosine kinase inhibitor commonly used as first line treatment for chronic myeloid leukemia (CML) in chronic phase. Common adverse effects include edema, nausea, vomiting, diarrhea, musculoskeletal pain, fatigue, abdominal pain and dermatitis. Among the cutaneous side effects, bullous reaction is rare.

**Case Report:** We report a case of bullous skin reaction in a patient on imatinib. A 77 year old female was diagnosed with CML in chronic phase and was started on imatinib 400mg daily. Her medical history includes hypertension and gout. She responded well to imatinib and achieved major molecular response after 6 months. However, she presented with blister over her right hand after taking imatinib for one year. She denied fever or pruritus over the skin lesion. No new medication or supplements were started and no history of recent trauma over that area. On examination, one hemorrhagic blister was noted over the lateral aspect of right hand without surrounding erythema. Mucous membranes were not involved. Needle aspiration of the blister was done, however it recurred after one month. A second aspiration of blister was done and the dose of imatinib was reduced to 300mg daily. During follow up post-three weeks, her condition improved with no new blister formation and her condition remained stable.

**Conclusion:** Bullous skin reaction is a rare side effect of imatinib. It should be considered among CML patients on imatinib. Early recognition and treatment of the adverse reaction helps in optimizing adherence to treatment and improve prognosis of CML.

## **Takayasu Arteritis – F-18 FDG PET-CT as a Tool to Look for Active Disease**

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**Introduction:** F-18 Fluorodeoxyglucose (FDG) PET-CT scan have a potential role as a non-invasive tool to diagnose the onset of Takayasu arteritis earlier than traditional anatomical imaging techniques. This enables prompt treatment and may delay or prevent occlusive disease. F-18 FDG PET-CT scan may also be superior compared to angiography in detecting the disease activity earlier, demonstrating active inflammation (even within chronic changes) and monitoring the effectiveness of treatment.

**Case Report:** We report a case of a young lady diagnosed with Takayasu arteritis during her pregnancy. She is currently on treatment with Azathioprine and Prednisolone. Her latest erythrocyte sedimentation rate (ESR) was raised. She was referred for assessment of disease activity using F-18 FDG PET-CT scan.

**Conclusion:** This case illustrates the importance of F-18 FDG PET-CT in assessing the disease activity of Takayasu arteritis during course of treatment. F-18 Fluorodeoxyglucose PET-CT scan has a definitive role in monitoring disease activity in Takayasu arteritis. The elevated ESR level increases the sensitivity of positive findings on F-18 FDG PET-CT scan.

## Rare Case of Abdominal Apoplexy: Diagnostic Challenge and Radiological Learning Points

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**Introduction:** Abdominal apoplexy or spontaneous intra-peritoneal hemorrhage is rare and potentially fatal in non-traumatic intra-abdominal bleeding.

**Case Report:** A 78-year-old woman with atrial fibrillation on warfarin presented with sudden onset of epigastric pain. Blood parameters showed leucocytosis and INR was 1.8. She rapidly progressed to generalized abdominal pain with drop in hemoglobin. CECT abdomen showed haemoperitoneum / mesenteric hematoma with “contrast blush”. CTA abdomen revealed active bleed from a branch of superior mesenteric artery. Decision made for embolization but unfortunately patient succumbed to her disease prior to it.

**Conclusion:** Spontaneous intra-peritoneal hemorrhage is a complication of anticoagulant therapy, pancreatitis or visceral artery aneurysm. Specific CT signs include sentinel clot, active arterial extravasation and mesenteric fluid, and may indicate source of bleeding. Hematocrit sign on CT is specific for coagulopathic hemorrhage. CT attenuation helps in differentiating ascites (0-15HU), un-clotted extravascular blood (30-45HU), clotted blood (45-70HU) and active arterial extravasation (85-370HU). Ultrasound findings of intra-peritoneal hematoma are cystic, low level echoes, fluid-fluid levels or septations, depending on time interval. In contrary, conventional angiography is useful for diagnosis and treating the bleed source in the same setting. High index of suspicion and knowledge of common CT findings of haemoperitoneum is essential for a favorable outcome.

## A Thyroglossal Fistula with Multiple Openings

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**Introduction:** A thyroglossal duct cyst is a congenital anomaly in the neck region which is formed at birth. In cases of infected thyroglossal cysts, inadequate excision or spontaneous rupture of infected thyroglossal duct cyst can leave the patient with a thyroglossal duct which may end anywhere in the neck. It may have single or multiple tracts.

**Case Report:** We report a case of thyroglossal fistula. A 39 year old man presented to the otorhinolaryngology clinic with history of discomfort and pus discharge from left submental area fistula for the past 12-15 years, with history of incision and drainage done previously but fistula still persistently having discharge. Patient also complained of foul discharge occasionally in the oral cavity. Methylene blue was injected into the submental fistula opening while simultaneously flexible naso-endoscope was performed to locate the fistula opening at the base of tongue.

**Conclusion:** Direct laryngoscopy and excision of thyroglossal fistula was performed for this patient with successful results.

## Case Series: From the Operation Theatre (OT) to the Ward – Enhanced Recovery Pathway in Paediatric Tonsillectomy for Severe Obstructive Sleep Apnea Syndrome (OSAS) Using Opioid Free Anaesthesia (OFA)

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**Case Report:** We report 10 pediatric cases with severe OSAS, 2/3 of patients confounded with obesity, all of whom underwent tonsillectomy using OFA from mid-June to mid-July 2018. The age ranged from 2.5 to 16.5 years old with the highest apneic hypopneic index (AHI) being 71. All patients were pre-medicated with oral Paracetamol. Prior to induction, intravenous infusion of Dexmedetomidine was loaded over 10 minutes, followed by Lidocaine, Propofol and Rocuronium at induction. Intravenous Ketamine, Magnesium Sulphate and suppository Diclofenac were given immediately post-induction. Anesthesia was maintained with Desflurane (MAC of 0.7 to 1.0). Dexmedetomidine and lignocaine infusions were continued intra-operatively. Haemodynamic parameters of all patients were stable throughout the operations. At the conclusion of the surgery, Dexmedetomidine and Lignocaine infusions were stopped, Desflurane was discontinued and all patients were successfully extubated. No documented desaturation from any patients. Minimal complains of post-operative pain noted in recovery bay. All patients were discharged to normal pediatric ward without ICU admission. The postoperative analgesia comprised of Paracetamol and Non-Steroidal Anti-Inflammatory Drugs (NSAIDs). Patients were discharged with good pain control, without post-operative nausea and vomiting.

**Conclusion:** Post-operative recovery with clear headedness, ability to maintain airway and oxygenation, absence of nausea and vomiting and excellent analgesia are much desired to fast track patient discharge from the recovery bay to the ward, especially when airway surgeries are involved. OFA is an excellent anesthetic technique to achieve these goals without compromising patients' safety and ensuring smooth, complete recovery in pediatric aged groups without requiring ICU admissions.

## Type 2B Von Willebrand Disease Masquerading Immune Thrombocytopenic Purpura in Pregnancy: A Case Report from Hospital Pulau Pinang

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**Introduction:** VWD is the commonest inherited bleeding disorder. Type 2B VWD with autosomal dominant inheritance contribute to < 10% of all cases. Thrombocytopenia occurs due to mutation in Von Willebrand Factor (VWF) causing increased binding of VWF to glycoprotein 1b on platelet surface. Pregnancy increases dysfunctional VWF and worsens thrombocytopenia.

**Case Report:** We present a case of type 2B VWD diagnosed during third trimester of pregnancy which was treated as ITP for the past 14 years. A 26 year-old lady presented with menorrhagia in 2004 (12 years old) with WBC: 6.4, Hb: 12.9 and Plt: 48,000. Peripheral blood film (PBF) showed hypochromic microcytic anemia, true thrombocytopenia with giant platelet. She was treated as ITP with Prednisolone and Azathioprine, and platelet ranged from 50,000-100,000 during treatment. She defaulted treatment from 2013-2016. Her first pregnancy and delivery was uneventful in June 2015. Her platelet was stable without treatment (50,000 to 70,000) since August 2016. She was admitted at 36 weeks of gestation during second pregnancy for Methylprednisolone due to severe thrombocytopenia (platelet 24,000). PBF showed platelet clumping and aggregation. Her sister also had unexplained menorrhagia. Diagnosis was revised to type 2B VWD due to low VWF: Rcof (11.5%) with positive family history of bleeding. She was given IV Alphanate pre and post-partum with tranexamic acid coverage.

**Conclusion:** Type 2B VWD is often misdiagnosed as ITP. We should have high index of suspicion to exclude type 2B VWD when there is presence of characteristic platelet aggregation on PBF and positive family history.

## L-Asparaginase associated Cerebral Sinovenous Thrombosis (CSVT) in Acute Lymphoblastic Leukemia

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**Introduction:** L-Asparaginase is a bacteria-derived enzyme that provides specific therapy for lymphoid malignancies such as acute lymphoblastic leukemia (ALL) by catalyzing the hydrolysis of L-Asparagine to L-Aspartic acid and depleting the circulating pools of this amino acid. CSVT is a rare but life threatening complication of this therapy.

**Case Report:** We report a case of a 35 year old male who was diagnosed with CALLA positive ALL and was started on induction chemotherapy. He was given L-asparaginase on day 11 of chemotherapy. The next day, he developed lower limb numbness and subsequently both upper and lower limb weakness on day 13 followed by generalized tonic – clonic seizure. An urgent MRI post gadolinium images demonstrated a filling defect within the superior sagittal sinus consistent with venous thrombosis. He was given low molecular weight heparin after which his symptoms improved.

**Conclusion:** L-Asparaginase induced CSVT occurs at a median of 5.5 days following the first dose. L-Asparaginase may impair the hemostatic system by reducing the coagulation factors (fibrinogen, factor II, IX, X) and inhibitors of coagulation (antithrombin, protein C, protein S) as a consequence of asparagine depletion. L-Asparaginase-induced deficiency of antithrombin III is highly responsible for the increased risk of sinovenous thrombosis in the brain. The diagnosis of CSVT in leukemic patients being treated with L-asparaginase requires a high index of clinical suspicion in the presence of a focal neurological deficit, seizures and features of raised intracranial tension.

## Rosai-Dorfman Disease

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**Introduction:** Rosai-Dorfman Disease (RDD) is a rare non-langerhans cell histiocytosis characterized by accumulation of activated histiocytes within affected tissues.

**Case Report:** We report a 59-year-old female presented with a lesion over right cheek for 3 to 4 months. It started as a painless small red papule which gradually increased in size to around 3x5cm. Not itchy with no reduced sensation over the skin. No pus discharge and no vesicle formation. She applied topical cream but not improvement. She had diabetes, hypertension and dyslipidemia. No family history of malignancy or similar symptoms. Examination showed a fungating mass over the right cheek measuring 3x5cm, non-tender and no pus discharge. There were no thickened ear lobes, hepatosplenomegaly or lymphadenopathy. Blood investigations revealed TWC=9.5, Hb=12.4, Plt=382, EOS=6.3%, PBF showed mild eosinophilia, no immature cells or blast. TSH=0.869, FT4=16, Creat=57, ESR=34, RPR/TPHA=Non-reactive, ANA=negative, RF=negative, CXR was clear. Initial right cheek lesion biopsy was reported as borderline leprosy. A second opinion revealed granulomatous lesion suggestive of RDD. Subsequently her right cheek lesion became bigger requiring excision biopsy in Dec 2015. No new lesion since then.

**Conclusion:** This case illustrated the importance of clinical and histopathological correlation. The features of RDD include numerous large histiocytes with abundant pale cytoplasm and phagocytosed lymphocytes (emperipolesis). Surgery is the main stay of treatment for cutaneous RDD followed by observation. RDD is a rare and heterogeneous disorder presenting many diagnostic and therapeutic challenges.

## Tobacco and Smoking Across the Globe: Evidence-Based Medicine

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**Introduction:** Stop Smoking Clinics (SSCs) are becoming more common across the world, with Malaysia having more than 300 SSCs made available to patients and public who wish to quit smoking. Despite high dependence on smoking, there are relatively few smoke-free policies to aid these smokers to give up smoking.

**Methods:** A literature review of articles pertaining to smoking in countries around the world and especially in Malaysia was done to ascertain the impact of smoking and its smoking cessation measures. This literature review aimed to investigate the knowledge, attitude and practice of smoking and smoking cessation in healthcare settings, involving patients, doctors, medical students and other healthcare workers. Twelve literatures were hand-picked to present the grave problem of smoking around the world.

**Results:** As such there is still a wide gap between smoking and cessation of smoking. Although there have been measures taken to reduce the number of smokers, smoking continues to plague majority of countries in the world.

**Conclusion:** Doctors and healthcare workers need to be educated on steps of smoking cessation to aid in quit smoking initiatives.

## Audit on the Labeling of Psychotropic Tablets in the Wards of Hospital Kepala Batas

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**Introduction:** Medication labeling error and mis-identification are well-known contributors to medication errors. Psychotropic drugs are known to produce neurophysiological effects in humans. As such, erroneous administration of these drugs may be detrimental to patients' health and cause fatalities. This audit aims to ensure that all oral psychotropic tablets are labeled appropriately according to required standards and to implement remedial actions to achieve that.

**Methods:** A retrospective audit was conducted in April 2017 to collect pre-remedial data involving wards in Hospital Kepala Batas (HKB) that store psychotropic tablets as their ward stocks. Remedial measures were implemented in May 2017 and a post-remedial audit was conducted prospectively. Standardized data collection forms were utilized during both cycles of audit, and the data collected was analyzed using Microsoft Excel to assess compliance to the standards.

**Results:** Pre-remedial audit results showed that all psychotropic tablets in the wards were not properly labeled. These tablets were not individually labeled and were kept in a general container without proper segregation for those of different batches and expiry dates. Remedial action was done by producing mini, computer generated, individual labels for each tablets stating the name, strength, batch and expiry date of the drug. Following this, a post-remedial audit showed that 98.1% of psychotropic tablets now comply with the required labeling standards.

**Conclusion:** Proper and intelligible labeling of psychotropic tablets should be continuously implemented to encourage safe and effective use of medications.

## A Clinical Audit on Management of Acute Exacerbation of Bronchial Asthma (AEBA) in Children and Adults Who are Fit for Discharge at Emergency Department, Seberang Jaya Hospital (EDHSJ)

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**Introduction:** AEBA are common for ED visits. Poor adherence to published guidelines, delayed specialist referrals and inappropriate follow-up arrangements causes frequent relapse of AEBA and increased financial burden. This audit aims to determine the guideline (Global Initiative for Asthma-GINA; Asthma & COPD Clinical Pathway Pulau Pinang-ACCP) adherence in EDHSJ and suggests intervention implementations to improve guideline adherence.

**Methods:** This is a two phase pre- and post-remedial audit. Patients aged 5 years or older who were fit for discharge were included in this audit. Patients' records were reviewed and analyzed. The guidelines were reviewed and reinforced during daily morning meeting at EDHSJ. Prednisolone was provided at asthma bay and referral letter sheet was implemented.

**Results:** This audit showed marked improvements on adherence to the guidelines in which percentage of patients who were given systemic corticosteroid at presentation was improved from 40 to 83%. The percentage of patients discharged home with prednisolone rose from 93 to 99% while the percentage of patients being discharged with the correct dosage of prednisolone rose from 85 to 96%. The percentage of patients discharged with follow-up plan has markedly improved from 15 to 90%.

**Conclusion:** Awareness about the importance of adherence to the guidelines among healthcare workers has to be raised. Reduction in relapse of AEBA increases the potential to improve patients' quality of life, cost effectiveness and reduce workload in ED.

## Audit on Survival and Adherence to Evidence Based Guidelines for Post Cardiac Arrest Care in Penang Hospital

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**Introduction:** Post-resuscitation care following return of spontaneous circulation (ROSC) is important for survival and good functional outcomes at discharge. No national data on the quality of post-resuscitation care, survival rate and outcomes is available. We determined compliance to Adult Life Support protocols for post-resuscitation care. Secondary objectives include survival and functional status at hospital discharge.

**Methods:** Retrospective audit from Penang Hospital Cardiac Arrest (PHCA) database. 119 adult patients with ROSC for more than 20 minutes from February to May 2018 were included. 46 patients who survived  $\geq 24$  hours were audited for post-resuscitation care. Parameters audited include oxygenation and ventilation management, cardiovascular care and neurological care. Functional status at discharge was measured with Cerebral Performance Category (CPC) score.

**Results:** 71 subjects died within 24 hours. There were two missing data. Among the 46 audited subjects, 75% were managed at critical care areas. Oxygen saturation and PaCO<sub>2</sub> targets were met in 35 (76.1%) and 21 (45.7%) of the subjects. Mean arterial pressure was met in 39 (84.8%) subjects. Cardiac catheterization was performed in 3 (18.8%) of 16 indicated subjects. Targeted temperature and blood glucose controls were achieved in 24 (52.2%) and 26 (56.5%) patients respectively. Only 13% had seizures which were promptly treated. 18 patients survived to discharge. 61.1% of survivors had good neurological outcomes (CPC 1 with 9 and CPC 2 with 2 subjects).

**Conclusion:** Most post-ROSC patients died within 24 hours. Suboptimal adherence to guidelines may contribute to poor outcomes. Further studies are needed to identify barriers to improve compliance.

## Concerns over Medications Safety during Transitions from Tertiary to Primary Care Settings

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**Introduction:** Medication safety during transitions of care from hospital to primary care has been identified by the WHO as a priority area to ensure patient safety but is relatively under-researched in multi-ethnic Southeast Asia. This study aims to explore concerns over medications safety during post-discharge transitions from tertiary to primary care settings.

**Methods:** A qualitative study using purposive and snowball sampling consisting 32 face-to-face interviews was conducted in 2 major public hospitals and 2 primary healthcare settings with hospital and primary care professionals in Kedah. Semi-structured interview guide was employed. Data saturation was achieved, transcribed verbatim and analyzed using content thematic analysis.

**Results:** Respondents comprised of 8 hospital physicians, 6 hospital pharmacists, 4 hospital nurses, 6 primary care practitioners, 5 primary care pharmacists and 3 primary care nurses. Multiple transitional care practices at tertiary-primary care interface that potentially challenged patient safety was identified with four themes emerged from 13 sub-themes representing the medication safety aspects: (1) healthcare professionals' prioritization of medication safety at transitions; (2) patient-specific care coordination at hospital-primary care interface; (3) organizational culture; and (4) medication safety issues surrounding transitions of care. Current transitional care is haphazard with displeased care experiences among care providers, patients' tendency to resume pre-admission medications despite hospital-initiated changes, and readmissions related to avoidable medication discrepancies.

**Conclusions:** Study findings provided clear insights to the context in which patient safety is challenged during transitions from tertiary to primary care settings. Interventions tackling these areas require healthcare leaders to prioritize medications safety during transitions of care.

## A Qualitative Approach to Explore Public Perceptions toward the Role of Community Pharmacists in the State of Penang, Malaysia

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**Introduction:** Worldwide, the role of community pharmacist has expanded dramatically in terms of delivering pharmaceutical care and professional services. Community pharmacists play an important role in delivering health care services to the community due to their professional skills, knowledge, accessibility, availability and close interaction with the public. This study aimed to explore the public perception towards the role of community pharmacists in the state of Penang.

**Methods:** A qualitative methodology using face-to-face, semi-structured interview was used for data collection. Convenient sampling technique was applied. Interviews were carried out till saturation point was reached. Thematic content analysis was used to analyze the recorded interviews.

**Results:** Four main themes emerged when analyzing the recorded interviews: (1) Understanding the concept of community pharmacy; (2) Familiarity with the pharmacist role; (3) Capabilities of community pharmacist; (4) Factors influencing utilization of community pharmacy services. Majority of the participants were unfamiliar with the term and concept of community pharmacy. The participants' perceived community pharmacists as a medication expert, and they expressed a good trust level in terms of medication consulting. Some of the factors that influence the public to use the community pharmacy services were availability of pharmacists, location of the pharmacy and the pharmacy operational hours.

**Conclusion:** Majority of the participants' have basic perceptions towards the role of community pharmacists as they were being viewed as drugs experts. Community pharmacists still face challenges associated with the provisions of pharmaceutical care and services to the community

## The Satisfaction of Patients toward Kidney Stones Disease Management: A Qualitative Study

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**Introduction:** This study aimed to explore patient perceptions and social insights toward satisfaction of kidney stones disease management.

**Methods:** A phenomenological approach was employed using purposive sampling technique. Face-to-face semi-structured interviews were conducted among patients with kidney stones. Voice-recorded interviews were transcribed verbatim and translated. Content analysis was carried out by coding and closely studying the transcribed interviews to identify the main themes.

**Results:** Interviewing was done for 15 patients. The satisfaction towards the management of kidney stones was influenced by the treatment option chosen for each patient, expectations and perceptions of the treatment and disease, and healthcare system related issues.

**Conclusions:** The findings provide real evidence about patients' opinion and perceptions toward their treatment. Such findings can provide a guide for clinicians to reach excellence and optimization in health services to fulfill patient expectations.

## A Qualitative Exploration of Knowledge, Attitudes and Practices of Hospital Pharmacists towards Adverse Drug Reaction Reporting System in Lahore, Pakistan

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**Introduction:** Medication safety (MS) is a major public health concern despite established pharmacovigilance programs in developed countries. Literature on this issue in low and middle income countries is scarce. This study aims to evaluate the knowledge, attitudes and practice of hospital pharmacists towards MS and ADR reporting in Lahore, Pakistan.

**Methods:** A qualitative approach was used. Semi-structured interview guide was developed. 10 hospital pharmacists were recruited and interviewed through convenience sampling. All interviews were audio-taped, transcribed verbatim and analyzed using thematic content analysis.

**Results:** Analysis resulted in 6 major themes, including (1) Familiarity with MS and ADR concept, (2) Current system of practice and reporting of ADR in hospital setting, (3) Willingness to accept the practice change, (4) Barriers to ADR reporting, (5) Policy change needs, and (6) The recognition of role. Majority of the pharmacists were familiar with the concept of MS and ADR reactions reporting however they were unaware of the existence of national ADR reporting system in Pakistan. Barriers hindering ADR reporting include lack of awareness and training and communication gaps between hospitals and regulatory authorities.

**Conclusion:** This study revealed that hospital pharmacists understood well MS and ADR reporting, but their practice deviated from real sense. The readiness of hospital pharmacists towards the practice change has indicated that they are set to be actively involved in the provision of MS in hospitals. Involvement of key stakeholders from the ministry of health, academia, pharmaceutical industry and healthcare professionals to promote safe and effective medicines use is warranted.

## Mammographic Image Quality in Relation to Positioning of the Breast Using PGMI Assessment

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**Introduction:** High quality mammographic imaging is crucial to ensure an effective diagnostic and screening program for detection of breast cancer. The criteria of perfect, good, moderate or inadequate images (PGMI) were applied in our mammographic assessment for year 2017. National accreditation standards require a minimum of 50% of images to be graded P or G (75% desirable), images with P, G & M categories shall be >97% and images with I category shall be <3%.

**Methods:** 50 mammograms from year 2017 were randomly picked for quality assessment. Two readers comprising of a radiographer and a radiologist, each with > 5 years' experience separately evaluated the mammograms and applied the prescribed PGMI criteria.

**Results:** This study fulfilled the national accreditation standards, with 94% being graded P or G, 100% under P, G or M categories and 0% under I category. 86% of the films were graded similarly between the two readers and 14% differently. The difference in grading between the two readers were in terms of infra mammary fold, whether nipple was in profile and the degree of pectoralis coverage. No significant correlation was found between mammographic grades and operator's experience or breast density composition.

**Conclusion:** PGMI is a useful criterion for the evaluation of mammographic image quality and it provides a tool for continuous quality improvement. Interval staffs training and education in mammographic film acquisition are necessary to ensure PGMI standards are achieved.

## Evaluation of Cepheid HCV Viral Load Assay in Hospital Pulau Pinang

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**Introduction:** In Malaysia, approximately 2.5% of population aged 15 – 64 years are infected with Hepatitis C. Detection and measurement of HCV RNA is critical for the diagnosis and management of hepatitis C. The objectives of this study are to 1) evaluate the performance of Cepheid HCV assay using specimens with known HCV infection status; 2) compare the quantification of hepatitis C viral load using the Cepheid HCV assay with the COBAS AmpliPrep/COBAS TaqMan HCV Test.

**Methods:** A total of 20 plasma specimens with known status of HCV infection were collected from a referral laboratory and used for evaluation. Data obtained were analysed by Spearman Rank and Log Difference tests.

**Results:** Comparison of the COBAS and the Cepheid data showed positive percent agreement as 100%, negative percent agreement as 90% and overall percent agreement as 95%. This study found that the Cepheid Assay detects very low concentration of HCV RNA in a specimen from HCV Positive Patient. In contrast, this RNA level was not detected by the COBAS test. This observation was supported by the finding from the manufacturer; the detection limit of the Cepheid assay is 4 IU/ml which is more sensitive than the COBAS Test (15 IU/ml). Besides, the Cepheid assay demonstrated good correlation ( $r = 0.9273$ ) with acceptable log<sub>10</sub> differences when compared to the COBAS test.

**Conclusion:** Overall, performance of Cepheid HCV viral load assay is user friendly, time saving, cost effective and able to detect HCV accurately with short turn-around time.

## SLC17A3 Gene Expression Profiling and Waist-Hip-Ratio among Ischemic Stroke in Malaysia

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**Introduction:** The objectives of this study are to profile FERD3L, RASIP1, SLC17A3, MUT, PITX2 and TWIST1 (panel) gene expressions and to correlate these gene expression profiles with comorbidities of ischemic stroke.

**Methods:** Cases and healthy controls were recruited based on the inclusion and exclusion criteria, using a verified data collection sheet containing demographic information and comorbidities. Study period was from November 2015 to September 2017. Panel genes were profiled using Qiagen® Custom RT2 Profiler PCR array in Bio-Rad CFX96™ Real-Time PCR Detection System and further analyzed with  $2^{-\Delta\Delta Ct}$ . Student t-test and association between gene expression profiles with comorbidities of ischemic stroke (BMI, WSR and WHR) were determined using SPSS software.

**Results:** Cases and healthy controls (n=199 and n=198 on each arm) of Malay, Chinese and Indian descents with the mean age of  $60.49 \pm 11.61$  and  $51.87 \pm 9.67$  were recruited. BMI, WSR and WHR for cases and healthy controls were  $26.03 \pm 5.16$  vs  $26.04 \pm 4.68$  ( $p=0.984$ ),  $0.57 \pm 0.09$  vs  $0.55 \pm 0.07$  ( $p=0.002$ ), and  $0.96 \pm 0.07$  vs  $0.89 \pm 0.13$  ( $p<0.001$ ), respectively. Gene expression profiles of FERD3L and SLC17A3 were down-regulated by 2.52- and 2.75- folds ( $p=0.002$  and  $p<0.001$ , respectively). Gene expressions profile of SLC17A3 was associated with WHR (0.098, 95% CI: 0.68 - 4.87,  $p=0.01$ ) but not BMI and WSR. Likewise, FERD3L was not associated with either of the comorbidities.

**Conclusion:** Down-regulation of SLC17A3 may regulate WHR and predispose individuals to ischemic stroke. FERD3L poses a direct effect to ischemic stroke risk.

## Inhalation of Rifapentine Crystals for Rapid Treatment of Tuberculosis

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**Introduction:** Pulmonary delivery of rifapentine could significantly enhance and prolong drug concentration in the lungs, which have the potential to shorten the treatment duration of pulmonary tuberculosis. We produced an inhalable form of rifapentine powder and evaluated for inhalation using a modified Aerolizer®. This was followed by characterization of pulmonary inflammation upon deposition of the rifapentine particles using a mouse model.

**Methods:** A crystalline rifapentine powder was produced using co-solvent precipitation and spray drying techniques. In vitro aerosol performance of the powder was assessed using a multi-stage liquid impinger (MSLI) and a modified Aerolizer® at inhalable conditions achievable by patients. The rifapentine powder was delivered by intratracheal intubation and insufflation at a dose of 20 mg/kg to 8 weeks old BALB/C mice. Mice were euthanised at 12, 24 hours and 7 days post-treatment; bronchoalveolar lavage (BAL) and lungs were collected for total cell count using flow cytometry.

**Results:** The modified Aerolizer® efficiently dispersed high doses (100 mg) of rifapentine powder at the inhalation conditions achievable by patients. When rifapentine delivered to the mouse, an inflammatory response characterized by a significant influx of neutrophils was observed in the lungs at 12 and 24 hours post-exposure, and the response was resolved by day 7.

**Conclusion:** The modified Aerolizer® showed potential to deliver high doses of rifapentine to the lungs. Pulmonary delivery of rifapentine caused neutrophil-associated inflammatory response in the lungs and resolved over 7 days. This may limit pulmonary delivery of rifapentine to once a week at a dose of 20 mg/kg.

## Home Remedies: Limau Nipis and Limau Kasturi have the Potential for the Treatment of Tuberculosis

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**Introduction:** Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* (Mtb) which is easily dispersed through the air. One-third of the world population is infected with Mtb. Globally, TB kills approximately three million people in a year and more than 10 million new cases are reported annually. There is an urgent need for a plant-derived regimen to combat this deadly disease. Limau nipis [*Citrus aurantiifolia* (Christm & Panzer) Swingle] and limau kasturi (*Citrus microcarpa* Bunge) are commonly used in cooking and traditionally consumed to treat coughs. This study investigated potential anti-TB properties for these plants.

**Methods:** Plant extracts were prepared from dried skin of these citrus fruits: (1) soaked in 80% methanol and (2) partitioned using liquid-liquid fractionation (hexane, chloroform, ethyl acetate and aqueous). Tetrazolium microplate assay (TEMA) method was used to determine the minimal inhibitory concentration (MIC) of the fractioned extracts against *Mycobacterium tuberculosis* H37Ra.

**Results:** The n-hexane fraction of both plants exhibited highest anti-TB activity with MIC value of 100µg/mL followed by chloroform fraction of limau kasturi of 200µg/mL. The aqueous fraction of limau kasturi didn't show any inhibition even at the highest concentration of 1600µg/mL.

**Conclusion:** Limau nipis and limau kasturi are worthy of further investigation for the discovery of arsenal anti-TB regimen.

## Oil Palm (*Elaeis guineensis*): An Economical Crop as a Potential Source of Agents against Tuberculosis

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**Introduction:** Tuberculosis (TB) is a highly infectious respiratory disease causing serious health crisis worldwide. According to WHO, TB is infecting millions of people annually. In Malaysia, TB infects about 25,700 people and claimed 1,945 lives in 2015. TB management is challenged by long treatment periods (6-9 months), HIV co-infection and drug resistant TB. There is urgency for TB chemotherapy to develop highly efficient and cost-effective drugs. Oil palm fruit is a potential anti-oxidant source which contains vitamin E and carotenoids. It also contains fatty acids like myristic acid and palmitic acid to exhibit anti-mycobacterial activity.

**Methods:** Oil palm fruits were washed and cut into small pieces then dried. It was extracted by 80% methanol and sequentially partitioned using four solvents: n-hexane, chloroform, ethyl acetate, and n-butanol, successively. The partitions were screened against *M. tuberculosis* H37Ra to determine their MIC values using Microdilution Alamar Blue Assay (MABA). The most active partition was further fractionated using column chromatography (CC). The obtained fractions were screened again against *M. tuberculosis* H37Ra.

**Results:** The n-hexane partition exhibited the most promising activity among other partitions with MIC value of 800µg/mL. The fractions obtained from CC achieved an excellent inhibition activity with the lowest MIC value of 50µg/mL, having a 16-fold enhanced inhibition power.

**Conclusion:** These outstanding results suggest that oil palm fruits are potential anti-TB drugs for optimum TB management.

## Assessment of Cold Chain Status and Clinical Specimen Packaging System in Microbiology Unit, Hospital Pulau Pinang

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**Introduction:** Proper packaging plays an important role in maintaining clinical specimen integrity at 2 – 8°C throughout the cold chain process. Breaches of the upper specification limit over prolonged periods can have an adverse impact on the quality of laboratory services. This study aimed to evaluate the cold chain management of outsourced clinical specimens in microbiology unit.

**Methods:** The clinical specimen packaging system was evaluated with different parameters such as tube condition, number of tube and external temperature. This study monitored cold chain temperatures on a randomly selected sample of serum shipments from Hospital Pulau Pinang to the referral laboratories.

**Results:** The current study demonstrated that pre-chilled tubes can prolong the time below 8°C in the sealed container when compared to the tubes without placing in chiller overnight. The container that contained 30 tubes has shorter cumulative time below 8°C (2 days 12 hours) as compared to those with 10 and 20 tubes ( $\geq 3$  days). This system can maintain the desired temperature range ( $\leq 8^\circ\text{C}$ ) up to 3 days at 20°C - 30°C external temperature. Temperature records from two referral laboratories showed 96% of the specimens were still within acceptable specification limit ( $\leq 9^\circ\text{C}$ ) upon one-day delivery. Only 4% of them fell within the range of 10°C - 14°C.

**Conclusion:** Temperature of clinical specimen arriving at the referral laboratory will be reduced if quality of specimen packaging system is improved and shipping time length is shortened.

# NOTES



