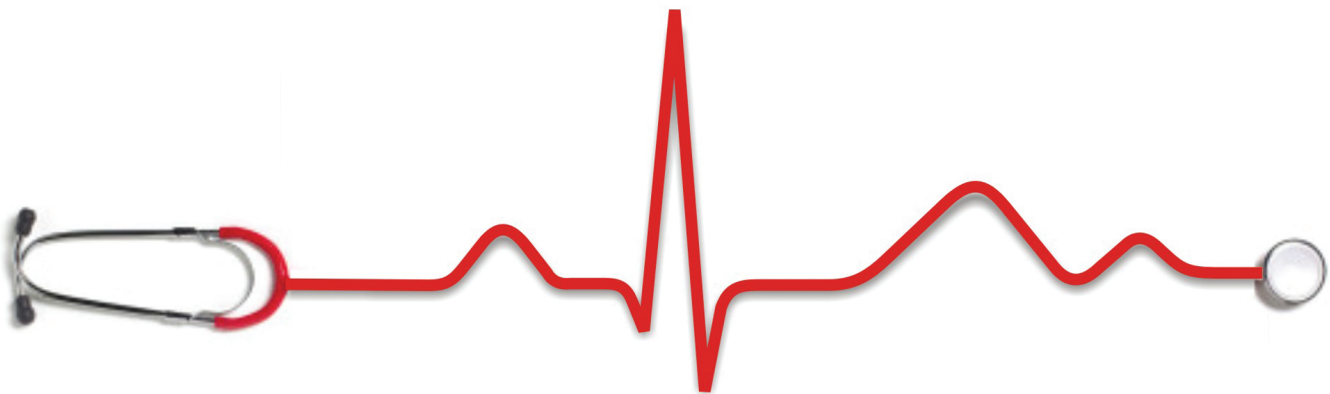




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Key Note Address

Escalating Research and Publication

Datu Dr Zulkifli bin Jantan (Sarawak State Health Director)

Modern medicine is increasingly scientific-based with the development and application of new ideas, technologies and processes. These days sound scientific knowledge is needed in the delivery of clinical and population health care. Unfortunately, we often overlook the synergies between clinical care and population health care on one hand, and research on the other. In our day-to-day practice as clinicians or allied health staff managing patients in the hospitals or clinics, we are using evidence-based knowledge that we learned from our teachers and colleagues, and also from our personal experiences that we gained every time we managed a patient. As public health officers, we carry out similar processes as clinicians, except that we manage the health of the whole population.

Putting these experiences together systematically, be it from studying one rare and unexpected case, or a series of cases, or sometimes experimentally, we have what we call clinical or public health research. Reflections on these experiences will result in improved efficiency, efficacy, and safety of the medical practices. Such gathering of experiences and reflecting on them forms a research cycle.

The research cycle consists of a systematic investigation on groups of patients or the whole population, designed to develop and contribute to new and generalizable knowledge. Every day, this knowledge, in one form or another, is used by clinicians or public health professionals. In healthcare, the basis for decision-making and policy formulation is always research evidence.

Research is here to stay. Our hope is that research in Sarawak State Health Department will not just stay at its current level, but that it will flourish and bloom. As Malaysia transforms its high technology, knowledge-intensive and capital-intensive

healthcare sector into a revenue-generating engine for economic growth, research will take centre stage. No matter what field we are in — public health, clinical medicine, or academia — progress happens because of those who dare to try new ideas, new processes, and most importantly, new mind-sets.

With regards to research, many times and in many different settings, the Malaysian Director-General of Health, Datuk Dr. Noor Hisham bin Abdullah, has stressed that clinicians need to do clinical research in addition to their clinical and training duties. From his point of view, “A clinician, who does not count, is not counted”. In other words, to the Director-General, a clinician who does not do research (that is, who does not count) is not considered important (that is, not counted).

We cannot and should not rely on other people to do research for us. We are the ones who know our patients; we are the ones who know our people. Many times, only knowledge from studies that we conduct on our own can help to improve our clinical practice and hence benefit our people.

Sarawak has been doing fairly well in terms of research, over a number of years now. For example, in 2012, the Malaysian Research and Ethics Committee (MREC) approved 24 industry-sponsored research projects (ISR), 36 investigator-initiated research projects (IIR), 50 student projects, giving a total of 110 research projects. From January to September of 2013, the MREC approved 27 ISR, 33 IIR and 21 student projects, giving a total of 81 research projects.

Many of these researchers, especially those from the Sarawak General Hospital have been very active in publication. In 2012, there were 42 published articles, mainly from the cardiology, medical and surgical disciplines. There are also a number of

publications from the rest of the State. Presentations and publications are important parts of research because that is how research findings are shared, so that others can review them, and learn from them to enhance their practice.

Thus, Ministry of Health Malaysia (MOH) and Sarawak State Health Department are constantly looking into ways to encourage and improve the quantity and quality of research by our researchers, as well as publication. Meanwhile, it is important to remember the three fundamental policy statements on research in Malaysia (*Surat Pekeliling KPK Bil.9/2007*), they are:

1. Research involving MOH personnel, conducted at MOH facility or funded by MOH research grant need to be registered at the National Medical Research Registry (NMRR) – which include case note reviews;

2. Research involving human subjects requires prior review and approval by the MREC;

3. Publications, whether in the form of research reports, journal articles or conference proceedings requires written approval from the Deputy Director-General of Health (Research and Technical Support).

Adopting a more forward-thinking strategy, and in line with the theme of Sarawak State Health Research Day 2013, Sarawak State Health Department is committed to escalate research and publication in Sarawak, with the following strategies:

1. Sarawak State Health Department encourages its staff to do research, that may range anywhere from case studies to sophisticated experimental and industry-sponsored clinical trials;

2. Sarawak State Health Department will offer and support protected time to staff to conduct research and write up the findings; the details and mechanisms to implement this shall be worked out;

3. Sarawak State Health Department will strengthen and formalise the Public Health

Research Unit, in order to guide and mentor those intending to carry out public health research in Sarawak;

4. Each of the six Programmes, namely: Hospital, Public Health, Oral Health, Pharmacy, Food Quality and Safety, and Management, will reserve a certain amount of allocation every year, starting from 2014, for holding the Sarawak State Health Research Day; and

5. Sarawak State Health Department will support the effort by the Organising Committee of the Fifth Sarawak State Health Research Day, to publish the Abstracts from this year's Research Day in a journal format, and hopefully this publication will be an annual event.

In addition, the State Research Committee shall continue to work together with the State Health Department, to determine appropriate forms of recognition to Departments or Units, and clinicians and staff that contribute significantly towards research and publications in the State.

It is hoped that those who are currently active in conducting research of various types will serve as mentors, role models and teachers to their peers and juniors who have yet to join the cause. At the same time, they will continue to further the knowledge in designing and conducting research. With this, we can escalate research and publication from Sarawak.

Hospital Observational Research

Prevalence of High On-treatment Platelet Reactivity to Aspirin in Patients with Stable Coronary Artery Disease

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Introduction: Aspirin is the most common antiplatelet agent for the treatment of stable coronary artery disease (CAD). Despite its wide usage, there is concern regarding aspirin resistance (AspR). The objective of this study was to determine the prevalence of high on-treatment platelet reactivity (HOTPR), reflecting AspR, defined by aspirin reaction unit (ARU) > 550 after aspirin treatment in stable CAD patients.

Methods: Cross-sectional data collection was done in July 2013 at the outpatient cardiac clinic. Medical records of patients with stable CAD who received daily 75 mg UniAspirin[®] (acetylsalicylic) or 100 mg Glypirin[®] (acetylsalicylic with glycine) for at least a month were screened. Patients who were compliant to their medications with 8-item Modified Morisky Scale of 6 to 8 and platelet reactivity measured by VerifyNow were included in the study.

Results and Discussion: Out of 69 patient medical records screened, 24 were included. All patients were male with a mean age of 54.8 (SD: 11.4) years and mean BMI of 25.9 (SD: 4.1) kg/m². The ethnic distribution was: 45.8% Chinese, 37.5% Malay, and 16.7% non-Malay Natives. Prevalence of established cardiovascular risk factors was high: hypertension (66.7%), dyslipidaemia (37.5%), diabetes mellitus (29.2%) and 16.7% were current smokers. The mean platelet reactivity was 417.0 (SD: 46.4) ARU. 4.2% was found to be AspR. There was no significant difference between the mean ARU of UniAspirin[®] group [n = 12, 423.0 (SD: 57.2)] and Glypirin[®] group [(n = 12), 411.1 (SD: 34.0)], (p = 0.541).

Conclusion: The prevalence of HOTPR in stable CAD treated with aspirin was low. Given the prevalence and clinical presentation of CAD in Malaysia, a larger study of HOTPR to aspirin is warranted.

NMRR ID: 13-1392-16990

Factors Influencing Time in Therapeutic Range in a Multi-ethnic Group of Patients on Long Term Warfarin Anticoagulation

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Introduction: Time in therapeutic range (TTR) is a way of reflecting anticoagulation control over a period of time. A low TTR (< 60%) is associated with a risk in haemorrhage, thromboembolism or stroke.

Objective: This study aims to examine the clinical features and factors influencing TTR in a multi-ethnic Sarawak population with atrial fibrillation (AF).

Methods: We enrolled 152 patients with AF on at least one year of warfarin therapy in Sarawak General Hospital Heart Centre. Patient demographic data, concomitant drugs and 10 previous INR measurements at the point of recruitment date were recorded.

Results: The study population comprised of 75 (49.3%) males, with a mean age (SD) of 57 (8.5) years. The ethnic distribution was 50 (32.9%) Malay, 64 (42.1%) Chinese, and 38 (25%) non-Malay Natives, respectively. All patients are at least on one year warfarin therapy. Mean TTR (SD) was 61.2% (22.1) with a mean weekly warfarin dose (SD) of 19.0 (7.1) mg. The mean weekly warfarin dose was significantly lower in females [21.4 (6.9) mg vs 16.7 (6.6) mg, $P < 0.001$] and was statistically different between ethnic groups ($P = 0.007$). TTR was not affected by CHA₂DS₂VASC score, age and race. TTR in male and female patients was 64.6% (23.5) and 57.9% (20.1), respectively ($P = 0.060$). TTR was significantly affected by concomitant anti-platelets, anti-arrhythmics and diuretics administration (all $P < 0.05$) but not statins, hypoglycaemic agents and beta-blockers.

Conclusion: In a multi-ethnic population with AF treated on long-term warfarin, we noted that they were middle-aged and with females receiving lower doses. TTR level was acceptable, and factors influencing this were being on concomitant anti-platelets, anti-arrhythmics and diuretics. Future studies to ascertain factors, including genetics, that influence TTR are warranted.

NMRR ID: 12-82-10952

A Study on Cubicle Team Nursing in Obstetric Unit in Miri Hospital

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Introduction: The Obstetric Unit in Miri Hospital is the hospital's largest and busiest clinical department with average bed occupancy rate of 82.95% for the past five years. The average length of patient's stay in the ward was 2.58 days. In order to support the hospital mission, staff working in Obstetric Unit needs to provide optimum quality care, safe, effective and holistic continuity of care to all the patients. Therefore, cubicle team nursing modality was adopted into nursing practice by end of year 2012. This study was done on the nursing staff to determine staff's perception on the practice of cubicle team nursing approach in Obstetrics and Gynaecology Department in Miri Hospital.

Methods: A convenience sampling method was used. The questionnaires which consisted of demographic data, knowledge and practices were distributed to 75 nursing staff of various categories in the unit during the study period. Data were collected and analysed manually.

Results: All the 75 staff knew and were aware about the cubicle team nursing practice with a total of 70 (93.3%) staff having been briefed and knew the importance of the concept. Result showed 68 (90.6%) compliances and advantages to the staff in carrying out the tasks. However, there were 5 (6.6%) staff that were not briefed and 6 (8%) of them preferred team work nursing approach to be maintained. Seven (9.3%) staff were not compliant to the practice due to lack of knowledge (n = 4, 5.3%) and resistance to change (n = 3, 4%).

Conclusion: Nurses are accountable for their patients and their practices. Thus, a holistic integrated model of competent nurse required an individualized approach, clinical competence and professional approach. [Fraser *et al* 1998]

NMRR ID: Not available

A Study on Prescribing Practice of Assistant Medical Officers in Emergency and Trauma Department of Miri Hospital

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Introduction: Assistant Medical Officers (AMO) play an important role at Emergency and Trauma Department (ETD) and in the management of medical emergencies at rural clinics. Miri Hospital is one of the training centres for AMO. Prescription from ETD may contribute towards query verification and indirectly this will prolong patients' waiting time.

Objective: The objective is to study the perception and prescribing practice among the AMO in ETD, Miri Hospital.

Methods: Questionnaires were distributed to all the AMO in ETD. Data were collected and analysed using the statistical package SPSS version 18.0. Simple descriptive statistics were used.

Results: A total of 45 out of 50 questionnaires distributed were returned. Despite attending to high patient loads, 54.55% of the respondents stated that they prescribed 1 - 10 prescriptions per day, followed by 11 - 20 prescriptions (20.45%) and more than 30 prescriptions (15.91%). The 5 most commonly prescribed medications were analgesics (21.46%), antibiotics (19.37%), anti-histamines (19.37%), anti-pyretics (18.85%) and anti-diarrhoeals (12.04%). Forty per cent of the respondents stated they prescribed according to their prescribing category (List C), whereas 23.7% of them would refer every patient they attended to doctors. Prescribing in volume (ml) is preferred over weight (mg) for syrup preparation. Thirty-eight (84.5%) of the respondents agreed that awareness and education would benefit in reducing prescribing error.

Conclusion: Majority of AMO agreed that pharmacists played an important role in reducing prescribing errors and feedbacks on the prescribing error made should be given to safeguard patients' safety. Therefore, measures such as courses on current prescribing policy should be given to AMO from time to time.

NMRR ID: 13-431-16034

The Impact of MOH Discharge Documentation Policy 2010 on Discharge Prescriptions Requiring Pharmacist Intervention

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Introduction: With the change in the policy of Discharge Documentation 2010 effective 13 June 2011 in Sibul Hospital, patients are now supplied with discharge notes containing limited information instead of the former more comprehensive discharge summaries. Thus, pharmacists are unable to identify the changes of patient's medications throughout the admission which may increase pharmacist intervention.

Objective: This study aimed to evaluate the impact of the MOH Discharge Documentation Policy on discharge prescriptions that require pharmacist interventions.

Methods: This study involved a cross-sectional review of 6216 discharge prescriptions from January to March 2011 (before policy implementation) and January to March 2013 (after policy implementation). Data were analysed via descriptive statistics. An independent t-test analysis was conducted using SPSS[®] to determine statistical significance in the percentage of interventions before and after the policy implementation with a significance level, $p = 0.05$.

Results and Discussion: The result showed no significant difference ($p = 0.16$) between the number of interventions before (11.2%) and after the policy implementation (12.6%). However, increased intervention rate in the medical department (12.1% to 15.9%) was remarkable with the most frequent errors of inappropriate dose and missed medication. Missed medications may lead to serious consequences including treatment failure and deterioration of medical conditions. Prescribing error rates of housemen (14.0%) and medical officers (12.5%) were similar although the prescribing rate by medical officers was much lower than houseman officers.

Conclusion: The policy implementation showed no significant changes in pharmacy intervention rate. However, errors such as missed medication may jeopardize continuity of care for patients upon discharge without the comprehensive discharge summary.

NMRR ID: 13-552-16853

The Effect of Warfarin Brand Switching on INR and Warfarin Dose

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Introduction: From 2011 till 2012, we underwent nationwide warfarin brand switching from Orfarin[®] to Apo-Warfarin[®]. Different brands differ in formulation and manufacturing process. Being a narrow therapeutic drug, we are unsure whether warfarin brands are interchangeable. Switching warfarin brands may lead to fluctuation in INR.

Objectives: The purpose of our study was to determine the percentage of INR changes after warfarin brand switching and the adjustment of warfarin dose (mg) required.

Method: This was a cross-sectional study, with data collected from Sibul Hospital patients who had undergone warfarin brand switching from October 2011 to September 2012. We calculated changes in INR (%) before and after brand switching. We also determined the frequency and amount of warfarin dose adjusted to achieve target INR. Analysis was done to determine the association between changes in INR with age, gender, race, cigarette smoking, alcohol consumption, hepatic impairment and renal impairment.

Results and Discussions: There were 387 patients screened under the Anticoagulant Clinic follow-up and 157 samples were included. Majority of these patients (n = 133, 84.7%) had INR fluctuation after warfarin brand switching with percentage mean INR changes of 24.3 ± 32.5 (P < 0.001). Due to the INR fluctuation, 30.6 % (n = 48) samples required 0.3 mg dose adjustment (IQR 0.35) and two visits (IQR 2) to adjust their warfarin dose to achieve target INR after brand switching. Non-smokers had larger INR changes, 16.6% compared to only 2.8% in smokers after warfarin brand switching (Z = -2.411, P = 0.016). No significant association between difference in INR with age, gender, race, alcohol consumption, hepatic impairment and renal impairment after brand switching.

Conclusion: There were significant changes in INR after warfarin brand switching. Dose adjustments are needed to achieve target INR after brand switching. We strongly do not recommend brand switching. In unavoidable circumstances, INR monitoring 1 to 2 weeks after brand change is needed to adjust warfarin dose in achieving target INR.

NMRR ID: 12-584-12999

Improved Patient Compliance through Use of a Picture-aided Medication Chart

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Introduction: Medication non-compliance among older people of all ages is a public concern. Study has shown that non-compliance was significantly ($p < 0.05$) associated with taking more than five prescribed medications.

Objective: To investigate whether a picture-aided medication chart improve patients' compliance.

Methods: This is a prospective study with longitudinal follow-up over 3 months. Samples were randomly selected among patients in both the medical clinics and wards in Miri Hospital based on the inclusion and exclusion criteria. Demographic data of selected patient was collected and pre-intervention compliance was assessed by using Medication History Assessment Form (CP1) and 8-items Morisky Medication Adherence Scale. Then, a computer generated picture-aided medication chart was provided to patient with appropriate counselling. Recruited patients were followed up based on their Medical Clinic appointment date and through phone interview. Improvement in patient's compliance to medications was assessed by comparing pre- and post-intervention Morisky Scores.

Results: Of the 26 recruited patients, 14 were females (53.8%). The mean score of pre-intervention Morisky score was 4.5 whereas the mean score of post-intervention Morisky score was 6.75. The results of this study indicate that patients' compliance was significantly improved ($p < 0.001$) when verbal instruction on medication was reinforced with picture-aided medication charts.

Conclusion: This study has shown that picture-aided medication charts significantly improved patients' compliance to their medications. Future research efforts should be directed towards using bigger sample size with longer research period.

NMRR ID: 13-1578-16041

Survival Predictors in Paraquat Intoxication and Role of Immunosuppression

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Introduction: Paraquat intoxication leads to multi-organ failure.

Objective: We studied predictors for survival in order to identify subsets of patients with paraquat intoxication who may benefit from immunosuppression therapy.

Methods: This multicentre trial was performed with informed consent and ethical approval (NMRR-11-587-9673). We audited 83 cases of paraquat intoxication in year 2007 - 2010, followed by enrolling 85 patients over subsequent 2 years (2010 - 2012) into immunosuppression protocol with intravenous (IV) methylprednisolone (1 g/day) for first 3 days (500 mg/day if weight < 40 kg; adjust for liver impairment) and IV cyclophosphamide (15 mg/kg/day) at 4-hour infusion for first 2 days (adjusted for renal impairment). Adjusted univariable analysis was performed followed by logistic regression to identify the predictors of survival and if immunosuppression rendered better survival.

Results: Poor renal function and leucocytosis were the predictors of fatal outcome. Immunosuppression regime rendered higher survival when compared to historical in the cohort with admission eGFR < 50 ml/min/1.73m² and WBC count > 11,000/μL (35.3% versus 5.6%, 2-sided Fisher's Exact Test p = 0.041). In contrast, immunosuppression regime had no influence on those NOT fulfilling criteria of eGFR < 50ml/min/1.73m² and WBC > 11,000/μL (59.4% versus 57.7%, $X^2 = 0.033$, p = 0.855). Multivariable logistic regression ($R^2 = 0.460$) showed: survival probability = $\exp(\text{logit}) / (1 + \exp(\text{logit}))$, in which $\text{Logit} = 13.962 - (0.233 \times \ln(\text{age}(\text{year}))) - (1.344 \times \ln(\text{creatinine} (\mu\text{mol/L}))) - (1.602 \times \ln(\text{rise in creatinine} (\mu\text{mol/day}))) - (0.614 \times \ln(\text{WBC}(\text{,000}/\mu\text{L}))) + (2.021 \times \text{immunosuppression})$ and immunosuppression = 1 if given and 0 if not.

Conclusion: Immunosuppression counteracts immune mediated inflammation after paraquat intoxication in those with diminished renal function and leucocytosis. Immunosuppression with IV methylprednisolone and cyclophosphamide improves survival of patients with admission eGFR < 50ml/min/1.73m² and WBC count > 11,000/μL.

NMRR ID: 11-587-9673

Efficacy and Safety of Spironolactone in Subjects with Chronic Kidney Disease

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Introduction: Spironolactone has been shown to reduce proteinuria and thus potentially retard renal disease progression. Hyperkalaemia may be a concern especially in advanced chronic kidney disease (CKD) patients. There was no study done on CKD stage 4-5 non-dialysis subjects with regards to the efficacy and safety in usage of spironolactone. Past spironolactone studies in CKD subjects have not revealed long term safety beyond few months.

Methodology: We enrolled 68 CKD subjects (27 female and 41 male; 23 CKD Stage 1 - 3 and 45 CKD Stage 4 - 5; 45 diabetes (66%)) from our Nephrology Clinic with $K^+ < 5$ mmol/L, into a prospective study. We added spironolactone 25 mg daily into their treatment. We modified medication as necessary after a month. Blood pressure (BP), urine protein-creatinine ratio, K^+ level and eGFR using the *Modification of Diet in Renal Disease Study Group* (MDRD) formula were measured at baseline, one month after spironolactone and one year later. The overall follow up period was 1.6 ± 0.7 years.

Results: The ages of the subjects ranged from 24 to 91 years, with mean of 58 years. The changes of parameter in first month and 1 year were as shown in Table 1. Overall, there was reduction in BP, proteinuria and increase in K^+ after initiation of spironolactone. The eGFR declined with time. Nineteen patients had K^+ level of > 5.5 mmol/L and seven patients with $K^+ \geq 6$ mmol/L during the follow up period. One patient needed emergency dialysis for hyperkalaemia at five month and another patient died from severe hyperkalaemia at eight month. The deceased patient was also on perindopril 4 mg daily. The other cases of hyperkalaemia resolved with stopping of the spironolactone +/- ACEI/ARB, adding diuretics or kalimate. Overall, 27 subjects (40%) discontinued spironolactone during the follow up period due to hyperkalaemia. Subjects with hyperkalaemia had lower eGFR (22 ± 9 vs. 36 ± 27 ml/min/1.73m²; $p = 0.002$). All subjects with hyperkalaemia (> 5.5 mmol/L) have eGFR < 60 ml/min/1.73m² and all the seven subjects with $K^+ \geq 6$ mmol/L has eGFR < 30 ml/min/1.73m². There was no significant difference in the usage of ACEI/ARB between those with hyperkalaemia and those without. Only one case of mild gynaecomastia was reported which did not warrant discontinuation of therapy.

Conclusion: Spironolactone may reduce BP and proteinuria in CKD patients. However, hyperkalaemia with serious consequences may develop especially in patients with advanced (Stages 4 and 5) CKD and thus close and careful monitoring is needed.

NMRR ID: Not available

Table 1. Changes in BP, urine protein-creatinine ratio (UPC) and potassium (K) level in Stages 1 - 3 and 4 - 5 of CKD

		Initial	1 month	p-value	1 year	p-value
Stages 1 - 3	(n = 23)					
Systolic BP	mmHg	145 ± 17	132 ± 18	0.008	134 ± 14	0.020
Diastolic BP	mmHg	77 ± 16	74 ± 14	0.185	73 ± 11	0.040
eGFR	ml/min/1.73m ²	57 ± 27	51 ± 25	0.017	50 ± 26	0.036
K ⁺	mmol/L	4.1 ± 0.5	4.7 ± 0.6	< 0.001	4.6 ± 0.6	< 0.001
UPC* (n = 16)	mg/mmol	83	68	0.429		
UPC* (n = 6)	mg/mmol	128			108	0.683
Stages 4 - 5	(n = 45)					
Systolic BP	mmHg	147 ± 20	134 ± 18	0.004	141 ± 16	0.111
Diastolic BP	mmHg	76 ± 10	74 ± 11	0.162	73 ± 8	0.018
eGFR	ml/min/1.73m ²	20 ± 6	18 ± 6	< 0.001	17 ± 8	0.002
K ⁺	mmol/L	4.0 ± 0.5	4.5 ± 0.7	< 0.001	4.5 ± 1.4	0.017
UPC* (n = 26)	mg/mmol	264	174	0.035		
UPC* (n = 12)	mg/mmol	187			112	0.192

Comparison is with paired t-test. *Geometric mean were shown and compared.

The Effect of Warfarin Brand Switching on Warfarin Sensitivity and Safety

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Introduction: The major concern among health care professionals and patients during warfarin brand switching are the safety and effectiveness of anticoagulation after the brand switch.

Objectives: Our primary objective was to investigate the effect of warfarin brand switching by determining the changes in warfarin sensitivity index (WSI = INR / warfarin dose) and number of adverse events during brand switching period. Our secondary objective was to determine the association between the changes in WSI with factors such as age, gender, race, cigarette smoking, alcohol consumption, hepatic impairment and renal impairment.

Methods: This was a cross-sectional study involving patients from Sibü Hospital who experienced warfarin brand switching between June 2011 and September 2012. Relevant data were collected from outpatient cards and Medication Therapy Adherence Clinic (MTAC) Warfarin patients' files. From the data collected, WSI were calculated. Subsequently, the values of WSI before and after brand switching were compared. Changes in WSI were then analysed to determine the association with age, gender, race, cigarette smoking, alcohol consumption, hepatic impairment and renal impairment. Besides, adverse events during brand switching period were also recorded.

Results and Discussions: There were significant changes in WSI after warfarin brand switching [Median = 0.139 (interquartile range 0.056 - 0.282), $P < 0.001$]. Out of 136 subjects, 51.5% showed increment in WSI whereas 48.5% showed decrement although statistically both were insignificant [$P = 0.791$]. Changes in WSI were not significantly associated with age, gender, race, cigarette smoking, alcohol consumption, hepatic impairment and renal impairment. During brand switching period, 17 adverse events were reported during outpatient follow-up, with event rate of 5%.

Conclusion: We conclude that warfarin brand switching results in WSI changes which suggest difference in bioequivalence. However, WSI increment or decrement depends on each individual. Hence, warfarin dosing should be individualized after the brand switch. Patients undergoing warfarin brand switching should be under close monitoring to ensure safe and effective warfarin use.

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NMRR ID: 12-584-12997

A Cross-Sectional Study of the Prevalence and Distribution of (Biopsied) Oral Lesions in the Dental Specialist Clinic, Sibü Hospital: 2006 - 2011

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Objective: The prevalence of oral lesions varies by geographic region. Until now, there is no study conducted regarding the prevalence of oral lesions in the central region of Sarawak. Dental Specialist Clinic at Sibü Hospital is one of the main referral centres covering Sibü, Sarikei, Kapit, Daro and Mukah. Therefore, by analysing the records of biopsied oral lesions in referred patients, we can determine the prevalence and distribution of oral lesions in this region.

Methods: A hospital based cross-sectional study was carried out at Dental Specialist Clinic, Hospital Sibü to review all biopsied oral lesions from year 2006 to 2011.

Results: A total of 188 records were reviewed with male to female ratio 1:1.5. The ethnic group distributions were Iban (42%), Chinese (40%), Melanau (8.5%), Malay (5.3%), and others (4.2%). Of the total sample, the most commonly affected age was between 41 to 60 years (27.7%), followed by 21 to 40 years (27.1%), 61 to 80 years (22.9%), and 1 to 20 years (22.3%). Several lesions were grouped and recorded such as benign soft tissue tumours (26.6%), inflammatory lesions (18.1%), malignant lesions (14.4%), soft tissue cysts (13.8%), benign odontogenic tumours (10.1%), hard tissue cysts (10.1%), fibro-osseous lesions (3.7%), and premalignant lesions (3.2%). Majority of the malignant lesions were squamous cell carcinoma (97.8%).

Conclusion: This study has provided information about the epidemiologic aspects of oral mucosal lesions in this region that may prove valuable in planning of future oral health studies.

NMRR ID: Not available

Study on Staff's Perception of New Design of Adult Vital Signs Chart

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Introduction: Observation chart is a vital tool for staff to identify early deterioration in patient's progress so that appropriate intervention can be carried out. Prompt detection and reporting of changes in these vital signs are useful in initiating appropriate treatment, which in turn affects patient's outcome. Comprehensive vital signs monitoring of all hospitalized patients is important as baseline information for comparison in subsequent care.

Background of study: In current practice, repeated charting of patients' vital signs is reported on a few separate sheets of observation chart. Ideally all these data should and could be integrated into one sheet of paper. New design of Adult Vital Signs Chart has different response from the staff.

Objective: To determine staff's perception on the new vital sign chart.

Methods: New Adult Vital Signs Charts were disseminated to 214 staff in eight different wards. A pilot study was done within a month to test tool suitability and appropriateness in this study. Convenient sampling was used. Feedbacks from all respondents were analysed to determine the effectiveness of the new chart.

Result: Out of 214 respondents, 182 (85.04%) agreed to adopt the new observation chart into their practice. The positive responses regarding the new Adult Vital Signs Chart included: (i) time saving for entering same findings in different chart as all components of six vital signs being monitored were available in one sheet, (ii) cost effective, and (iii) convenient and easy to use.

Conclusion: Frequent assessment of patients' vital signs is important in clinical management. Hence, accurate and timely recording of the findings will allow prompt and effective nursing care to be carried out. Staff's perception on the new vital sign chart was positive.

NMRR ID: Not available

Public Health Observational Research

Saliban Dam System

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Introduction: A Gravity-Feed Water Supply (GFWS) consists of three parts: a) dam, b) mainline and, c) house distribution line. Interrupted water supply, high turbidity / cloudy water and high maintenance costs were the main problems faced by the rural communities using the system. Thus we carried out an innovation project designed to solve the prevailing problems at the dam of GFWS in providing clean and potable water to the rural communities living along the Sungei Saliban, a right-bank tributary of the Limbang River.

Objectives: This study was carried out to determine the effectiveness of an improved dam system for a gravity-feed water supply. The indicators used were: a) the number of interruptions, and instances of cloudy water supply to the rural communities, b) percentage in reduction of occurrences of water-borne diseases, and c) reduction in the cost of maintenance.

Methods: Kampung Long Serangan, Kampung Long Beti, Kampung Lubok Aur and Klinik Kesihatan Nanga Medamit in Limbang, Sarawak with a total of 78 doors, involving 558 people were chosen for this study. The study was carried out in two stages; pre and post intervention, for a period of 8 months. Pre-intervention stage was carried out from May 2010 to September 2010 whereas post intervention stage from October 2010 to January 2011.

Results and Conclusion: The study showed that with the implementation of an improved dam system at the Saliban River GFWS system, there was no more interruption of water supply including cloudy water occurred throughout the year. Maintenance cost was very much reduced by 50% as maintenance was carried out once a month only. There was also a 42% reduction of water-borne diseases reported at the Klinik Kesihatan Nanga Medamit, i.e. diarrhoea and vomiting. Village headman and communities expressed their profound happiness and satisfaction with the project.

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Job Stress Manifestations and Associated Factors among Secondary School Teachers in Kuching

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Introduction: Teachers are one of the most stressful professionals worldwide. Stressful working conditions contribute to negative health behaviours which increases coronary heart disease risk.

Objective: This study looked into manifestations of job stress (emotional, fatigue, cardiovascular and behavioural) and its association with socio-demographic, anthropometric measurement, behavioural and blood profile among secondary school teachers in Kuching Division.

Methods: This is a cross-sectional study conducted among 201 selected secondary school teachers in Kuching and Bau Districts who fulfilled the inclusion criteria. Simple random samplings based on available list of schools was done to select the schools and systematic sampling was used to select the teachers of each school. Instruments used were standard questionnaires consisting of Eating Attitude Questionnaire (EAT 26), Short Version International Physical Activity Questionnaire (IPAQ) and Teacher Stress Inventory Questionnaire. The measurements taken were: (a) anthropometry (body mass index and waist-hip ratio), (b) blood pressure, and (c) biochemistry (fasting blood sugar and cholesterol). Questionnaires and consent forms were distributed to the teachers on the spot. Data analysis was done using SPSS version 18.

Result: There were 201 respondents. Most of the respondents were females (72.6%). The age of the respondents ranged from 24 - 58 years with a mean age of 41.0 (SD = 8.46). The mean number of years of teaching experience was 16.2 years (SD = 9.19). Majority of respondents were Malay (33.3%) and degree holder (72.6%). Most teachers were overweight or obese Type I (33.3%), 50.7% had above normal waist-hip ratio; 39.3% had high blood cholesterol level and 63.7% indulged in moderate physical activity. Teachers who were at risk of developing hypertension and diabetes were 27.9% and 44.3% respectively. The total mean score of teacher stress manifestation was 45.8 (SD = 12.57). For stress components, the mean scores for emotional, fatigue, cardiovascular and behavioural manifestations were 12.9 (SD = 3.9), 13.06 (SD = 3.82), 7.68 (SD = 2.73) and 6.13 (SD = 3.20) respectively. Years of teaching ($\beta = -0.287$, 95% CI: -0.458, -0.116, $p = 0.001$) and eating attitude (EAT 26) ($\beta = 0.4902$, 95% CI: 0.333, 0.651, $p < 0.001$) were significantly associated with stress after controlling for all possible confounders. All the other variables studied were not associated with stress.

Conclusion: Job stress manifestation and the relationship with cardiovascular risk are of great importance. This study showed that job stress manifestations have positive association with duration of teaching and eating attitude of the teachers.

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Translation and Cross-Cultural Validation of the Caregiver Priorities and Child Health Index of Life with Disabilities (CPCHILD[®]) for Use in Malaysia

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Background: CPCHILD[®] is a proxy measure of functional and health status, caregiver burden and HRQL in children with cerebral palsy (CP). We set out to translate and validate the CPCHILD[®] for use in Malaysia.

Method: This is a cross-sectional study involving all parents or caregivers of children with CP aged between 5 and 18 years, in a community child developmental clinic from 3rd November till 17th December 2012. The guideline by Beaton and Guillemin was used for the translation process. CPCHILD[®] was translated to Malay and back-translated by two pairs of medical personnel and linguists independently, in order to maintain content validity of the instruments. CPCHILD[®] (BM) was pretested on three parents who were bilingual followed by focus group discussion to ensure the wordings' suitability and comprehensibility. The final CPCHILD[®] (BM) were administered to all parents or caregivers who fulfil the inclusion criteria, and the respondents were also asked for feedback pertaining to the ease of completing the questionnaires, acceptability of the test, and usefulness for health professionals to help their child. The children with CP were grouped according to Gross Motor Function Classification System (GMFCS). It is a five-level classification system that classifies the children with CP based on their functional mobility. Respondents were asked to complete another form 2 weeks later for test-retest reliability.

Results: CPCHILD[®] (BM) was administered to 37 caregivers (19 with ambulatory children with CP, GMFCS levels 1 to 3; 18 with non-ambulatory children with CP, levels 4 and 5). Mean age of the children was 8.6 (\pm 3) years. Different ethnicities of the community were all represented. Seventy per cent of respondents were mothers. Caregiver's educational level ranged from primary to tertiary education. The mean total CPCHILD[®] (BM) scores for ambulatory CP was 78.2 (SD 14.41, range 68.4 to 84.1). This was significantly higher ($p < 0.001$) than the non-ambulatory CP scores of 45.3 (SD 18.47, range 40.1 to 63.5). The total questionnaire score intra-class correlation coefficient (ICC) was 0.935 (95% CI: 0.860, 0.970). Seventy per cent ($n = 26$) of the caregivers completed the 2-weeks retest and the ICC was 0.933 (95% CI: 0.859, 0.969). Thirty-three (89.2%) respondents reported that the translated version of CPCHILD[®] was acceptable form of questionnaire; 94.6% ($n=35$) of the respondents agreed that the translated version was either very easy or easy to understand whereas 97.3% ($n=36$) of the respondents agreed that the tools were very useful or useful for healthcare providers to help assessing the health related quality of life of their children with CP.

Conclusion: CPCHILD[®] (BM) is a reliable and valid measurement tool for use in the Malay speaking population. Construct validity and reliability of the CPCHILD[®] (BM) is good. This validated tool may be used in Malaysia.

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Improving Sanitation and Hygiene Promotion in Asajaya District, Samarahan

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Introduction: Asajaya is a rural district well served by a good network of tar sealed roads. There are 31,874 population (Malays = 83.55%, Iban = 8.23% and Chinese = 6.5%). The main economic activities are agriculture and fishing, with the addition of swiftlet ranching being taken up recently. Two major outbreaks of acute gastroenteritis (AGE) occurred here in 2010 and 2011, with incidence rate of 1,801 and 116 per 100,000 population respectively. Both AGE outbreaks started from week 34. Contaminated *Jabatan Kerja Raya* (JKR) water supply was blamed as the contributing factor although no positive microbial growth was detected in the routine water samples taken. However, there were contraventions in residual chlorine levels, *E. coli* and total *coliforms* standards in the water samples that our staff had collected and analysed.

Objectives: The objectives of this study are to: (a) assess the knowledge, attitude, and practice (KAP) on sanitation and b) improve the sanitation and hygiene practices of the community.

Methods: A community-based intervention study was conducted in 5 villages (out of 55, as they had the highest incidence of AGE during outbreaks) from March to November 2012 by a team of officials from Samarahan District Health Office. In Phase 1 of the study, households were randomly surveyed through KAP questionnaire and observation of the environmental sanitation of the selected localities before and after the intervention programme. The second phase was collection of demographic data and pre-KAP Survey. Phase 3 was health education which was done by the Health Promotion Unit and the final phase was the post-intervention KAP survey. The study population was villagers aged 16 and above in Asajaya district.

Results: Most of the respondents (93%) understood the importance of proper hand washing before eating and preparing food, and 90.7% agreed hands should be washed after defecation. The level of knowledge on mechanism of AGE transmission was high with 83.2% of the respondents identifying contaminated drinking water and eating with dirty unwashed hands (79.1%) as important factors for transmission of AGE. Other sources or factors frequently mentioned were “eating unwashed fruits” (78.8%), “having dirty and long finger nails” (82.6%), “dirty nose” (66.4%) and “when flies land on food” (79.1%). In addition, 90.1% respondents were aware that diarrhoea could kill children. By the end of the eight-month study period, it was observed that the participants who received health education showed a slight improvement in their knowledge and awareness (1.0%, $p < 0.005$). The attitudes of the respondents had also improved from 91.3% to 93.3% ($p = 0.035$). Quite a substantial proportion of respondents (91.3%) disagreed with the statement that clear water need not be boiled and could be drunk directly from the pipe. One-third of the respondents disagreed that JKR running pipe water is always safe to drink, 93.64% respondents disagreed with the statement that we need not wash our hands when there is no visible dirt.

Conclusion: It is well-known that it is difficult to change the public attitude and practice in a short span of time. In encouraging the community to be receptive towards changes in attitude and practice, we recommend persistent health education, health promotion and intervention to the general populace to keep them aware of the importance of observing a high degree of hygienic practices.

NMRR ID: Not available

172 Years of Cholera in Sarawak

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Introduction: Cholera has been in existence in Sarawak for many years and records showed that since 1873 many major epidemics have occurred. Cholera is a disease of poverty, poor water supply, improper sewage disposal, poor personal hygiene and unsatisfactory environmental sanitation. It is well known that the important vehicle for the rapid spread of cholera is contaminated water.

Objective: To describe the chronology of cholera in Sarawak from its first documentation in 1873 until June 2013.

Methods: A search and review of documents which reported about cholera was carried out. The documents searched included available Annual Reports from Sarawak State Health Department (various years), The Sarawak Gazette (various publications), journals and online sources using Google search engine. Most of the photos were from The Sarawak Gazette and various sources online.

Results and Discussion: The first recorded occurrence of Cholera outbreak was in 1873 as documented in The Sarawak Gazette. During Rajah Brookes' era (1841 - 1941), although cholera was endemic in Sarawak very little was documented. After 1963 (apart from 1976 when the major serotype was Inaba) all the outbreaks were caused by serotype Ogawa until suddenly one case of serotype Inaba was detected in the Bintulu outbreak in 2012. The details are listed in the following table.

Epidemics of Cholera in Sarawak (1873 - 2013)

Year	Cases	Number of Death	Remarks
1873	Unknown	Unknown	Capt. Giles Helyer, Commander of the gunboat "Heartsease" died of cholera and during this period two children of H.H. Raja Brooke died on board ship mysteriously, possibly due to cholera.
1883 - 1886	-	-	No record of any cholera outbreak.
1888	Unknown	>80	The number of deaths from cholera in Simanggang amongst the Malays, Dayaks and Chinese was well over 80 persons.
1889 - 1901	-	-	No recorded epidemics of cholera.
1902	Unknown	>1500	The worst epidemic in Sarawak and the actual number of cases being unknown in Batang Lupar and Kuching.
1910	85	67	
1911	109	77	
1911 - 1922	-	-	A Medical Department report in 1922 suggested that there were no outbreak from 1911 to 1922.
1922 - 1941	Unknown	Unknown	The Medical Department Report in 1957 reported "it was considerably more than 20 year since cholera or plague had occurred", thus was suggesting that there was no major outbreak.
1941 - 1963	Unknown	Unknown	According to Medical Sarawak Annual Reports, only two cholera outbreaks were reported.

1961	301	70	A major outbreak was reported in Kampong Sourabaya, Kuching (started on Wednesday 12 th July 1961), which lasted for 100 days and had spread to four other Divisions except the fifth Division. Anti-cholera vaccinations were given to 444,698 persons (60% of the entire population of the country, or 80-85% of the population living in the areas considered to be at risk) in early 1962.
1962	16	3	A smaller outbreak occurred in November and December 1962.
1963	98	7	
1964	198	33	
1965 - 1966	15	0	1965 = 15, 1966 = 5
1970 - 1972	130	0	1970 = 20, 1971 = 25, 1972 = 85
1973 - 1975	130	0	1973 = 30, 1974 = 30, 1975 = 70
1976	177	0	
1977	223	0	Involved most of the Divisions in Sarawak.
1978 - 1981	8	0	1978 = 1, 1979 = 3, 1980 = 2, 1981 = 2
1982	108	0	
1983 - 1985	22	0	1983 = 22, 1984 = 0, 1985 = 0
1986 - 1988	121	0	1986 = 10, 1987 = 15, 1988 = 96
1989	71	0	1989 = 0, 1990 = 71, 1991 - 1993 = 0
1994	147	0	
1995	166	0	1995 = 48, 1996 = 33, 1997 = 85
1998	576	0	
1999	766	1	A major outbreak occurred in 1999 with one death case reported in Limbang district from a total of 40 cases due to dehydration.
2000	2	0	2000 = 1, 2001 = 1, 2002 = 0
2003 - 2010	15	0	2003 = 15, outbreak in Miri and Marudi district.
2011	252	0	Outbreak in Limbang district.
2012	111	0	Outbreak in Bintulu and Tatau district.
2013	0	0	

Conclusion: Cholera epidemics usually occur during the dry months of May until July and affected mostly the population in coastal areas with poor environmental sanitations; poor water supply, poor refuse disposal and indiscriminate disposal of faeces. Cholera El Tor (biotype) had been responsible for most outbreaks.

NMRR ID: Not available

Epidemiological Review of Progress of Malaria Elimination in Sarawak

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Introduction: Malaria elimination aims at sustainable interruption of local human malaria transmission by mosquitoes despite a continued presence of malaria vector mosquitoes and importation of parasites from abroad through international travel and migration. Sarawak embarked on malaria elimination activities in 2011 and has set 2020 as its deadline for elimination of malaria transmission in Sarawak.

Malaria Elimination Strategies in Sarawak:

- 1) Improving Malaria Surveillance
- 2) Vector Control through Integrated Vector Management
- 3) Early Detection and Prompt Treatment
- 4) Outbreak Preparedness and Response
- 5) Communication and Social Mobilisation
- 6) Capacity Development
- 7) Research

Methods: A retrospective descriptive analysis was conducted on human malaria epidemiological (*P. falciparum* and *P. vivax*) data routinely collected through the Sarawak State Health Department's Malaria Epidemiological Surveillance Information System between January 2010 and December 2012.

Results: Sixty-nine cases of locally transmitted *P. falciparum* infections were reported in 2010 compared to 12 cases in 2012 (-82.6%). There were 54 *P. falciparum* foci in 2010 as compared to seven foci in 2012 (-87.0%). There were four *P. falciparum* outbreaks in 2010 with four outbreak foci involving ten cases compared to two *P. falciparum* outbreaks (-50.0%) in 2012 with two outbreak foci (-50.0%) involving eight cases (-20.0%). In 2010, there were 2,132 locally transmitted *P. vivax* cases as compared to 301 cases in 2012 (-85.5%). There were 302 *P. vivax* foci in 2010 compared to 99 foci in 2012 (-67.2%). There were 50 *P. vivax* outbreaks in 2010 with 44 outbreak foci involving 1,420 cases compared to 14 *P. vivax* outbreaks (-72.0%) in 2012 with 13 outbreak foci (70.5%) involving 111 cases (-92.2%).

Conclusion: Malaria Elimination activities in Sarawak have reduced the incidence and outbreaks of locally transmitted *P. falciparum* and *P. vivax* from 2010 to 2012.

NMRR ID: Not available

Wabak Demam Denggi di Jalan Hua Tai, Sarikei, Sarawak

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Pengenalan: Di antara tahun 2009 dan 2012, bilangan wabak demam denggi telah menurun dan setiap wabak yang berlaku telah dapat dikawal sepenuhnya. Namun pada tahun 2013 satu wabak demam denggi telah dilaporkan di Jalan Hua Tai yang melibatkan 11 kes dan berlarutan sehingga 34 hari walaupun tiada kematian dilaporkan di lokaliti wabak ini.

Objektif: Untuk mengenalpasti punca jangkitan demam denggi serta membuat langkah pencegahan supaya wabak tidak berulang.

Kaedah: Ini adalah kajian kes rekod berkenaan dengan pemeriksaan persekitaran (iaitu pemeriksaan pembiakan *Aedes*) untuk melihat indeks larva dan melihat keberkesanan pemeriksaan tersebut. Semburan racun termal (SRT) dan semburan Ultra Low Volume (SRULV) juga digunakan untuk membunuh nyamuk dewasa.

Keputusan: Sebanyak 11 kali pemeriksaan pembiakan nyamuk *Aedes* dijalankan sepanjang berlakunya wabak ini. Pada pemeriksaan awal wabak, indeks larva menunjukkan Aedes Index (AI) = 11.8, Breteau Index (BI) = 17.2 dan Container Index (CI) = 8.3. Pemeriksaan seterusnya menunjukkan AI = 9.88, BI = 9.88 dan CI = 8.16 manakala pemeriksaan akhir indeks larva menunjukkan AI = 1.01, BI = 1.01 dan CI = 0.35 di mana indeks larva seharusnya AI < 1, BI < 5 dan CI < 10. SRT dan SRULV juga dilakukan di dalam jarak 400 m radius dari lokaliti kes sepanjang tempoh wabak tersebut. Selain itu, aktiviti gotong-royong juga telah dijalankan sebanyak 6 kali dan seramai 430 orang dari komuniti setempat telah hadir bersama-sama untuk aktiviti gotong-royong.

Kesimpulan: Melihat indeks larva yang tiada penurunan, ini menunjukkan pemeriksaan persekitaran, SRT dan SRULV perlu dijalankan secara serentak di keseluruhan lokaliti wabak supaya lebih efektif dan efisien. Penglibatan dari komuniti setempat juga perlu untuk bersama-sama dalam aktiviti gotong-royong bagi menghapuskan tempat pembiakan nyamuk.

NMRR ID: Not available

Knowledge and Health-Seeking Behaviour among Patients at ATAS Clinic, Kuching

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Introduction: Tuberculosis (TB) remains a major public health problem and a leading cause of morbidity and mortality in developing countries. In 2010, the incidence of TB in Malaysia was reported at 82 per 100,000 people (World Bank Report, 2012). The notification rate was high. In 2003 the rate was 79.9 per 100,000 population in Sarawak, about twice the national target of 40 per 100,000 population. Sarawak ranked third in terms of TB incidence rate in Malaysia despite gradual decline since 2001 (Sarawak State Health Department, 2004).

Objective: This was a cross-sectional research to determine the level of knowledge regarding Tuberculosis and health seeking behaviour among patients attending ATAS clinic in Kuching.

Methods: A convenience sample of 220 respondents among the TB patients attending ATAS clinic were selected for the study. Data was collected using structured questionnaires by face-to-face interview. The questionnaires were pre-tested in the non-sampled area.

Results: This study showed that the TB was more commonly seen in married male, working adult, Malay with secondary school educational background. The level of TB knowledge was poor in elderly (>70 year old), unemployed and primary school educational background. Most of the respondents preferred government facilities in their treatment of choice; however there was delay in seeking initial treatment. There were significant difference of health seeking behaviour and level of TB knowledge among the respondents.

Conclusion: The awareness of the disease in the community still need to be increased and the public health sectors need to strengthen the health programmes and activities to combat the disease. Awareness on the symptoms and early treatment needs to be improved for early detection and control of the disease in the community. Health education and promotion can be started during school age.

NMRR ID: Not available

Depressive Symptoms among Secondary School Students in Samarahan, Sarawak

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Background: Depression among adolescents is becoming a public health issue that warranted exploration.

Objective: The main objective of this study was to determine the prevalence of depressive symptoms and associated factors among secondary school students in Samarahan area in Sarawak.

Methods: The study instruments used were the Children Depression Inventory (CDI), McMaster Family Assessment Device (FAD) and What is Happening in This Class Questionnaire (WIHIC), with CDI score as the main measurement.

Results: Around 34% of students had depressive symptoms with ethnicity and school environment significantly associated with it. The median score of CDI among the Chinese was 21.32 ± 10.33 compared to the Malay (13.72 ± 6.87) and other Sarawak natives (12.71 ± 9.17). Rural students reported less depressive symptoms compared to urban students. Anhedonia, which is the loss of ability to experience pleasure (59%) and negative self-esteem (57%) were the most commonly reported depressive symptoms.

Conclusion: Identification and intervention of high risk adolescents with depressive symptoms must be part of the strategies used by all parties concerned in ensuring teenagers' psychological wellbeing.

NMRR ID: Not available

Anaemia in Pregnancy – A Cross-Sectional Study in Limbang, Sarawak

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Introduction: After many years, Limbang Division is still classified as an area having pregnant women with moderate to severe anaemia. Iron supplementation, advice on high iron meal, calibration of haemoglobin (Hb) machine and related health promotion has been done. But this public health problem remains stagnant for many years despite the fact that anaemia is largely preventable and easily treatable.

Objective: This study was conducted to identify the contributing factors that affect Hb levels during pregnancy that can be used for future planning on anaemia intervention.

Methods: The six-month (February – July 2013) study involved pregnant women with period of amenorrhea (POA) 8 to 36 weeks who were randomly selected from antenatal clinics in Limbang District (n = 110) and Lawas District (n = 188). Women with thalassaemia and other terminal and/or mental illness were excluded. Data on socio-demography, medical history, appetite, nutritional intake and physical activity were collected through one-to-one interview. Anthropometric data, blood pressure (BP) and Hb status were measured as well.

Results: Among the 298 respondents, 99 (33.2%) were anaemic and the percentage was higher in Lawas District (35.1%) compared to Limbang District (30.0%). The mean Hb level among anaemic pregnant women was 10.4 ± 0.5 g/dL and among non-anaemic pregnant women was 12.0 ± 0.9 g/dL. The anaemic pregnant women had significantly poorer appetite (38.4%) resulting in calorie intake less than 25% of Recommended Nutrient Intakes (RNI, 62.8%). Pearson's correlation showed Hb level had significant linear relationship with appetite score ($r = 0.18$, $p < 0.05$), calorie intake ($r = 0.14$, $p < 0.05$), protein intake ($r = 0.18$, $p < 0.05$), iron intake ($r = 0.36$, $p < 0.05$), vitamin C intake ($r = 0.23$, $p < 0.05$), body weight ($r = 0.15$, $p < 0.05$), BMI ($r = 0.16$, $p < 0.05$), systolic blood pressure ($r = 0.22$, $p < 0.05$) and diastolic blood pressure ($r = 0.17$, $p < 0.05$). Regression analysis revealed iron intake, vitamin C intake, appetite and systolic blood pressure were the predictors in this study [$R^2 = 0.196$, adjusted $R^2 = 0.184$, $F(4,275) = 16.769$, $p < 0.05$].

Discussion: The mean Hb level in Limbang division was slightly lower than a study conducted in Kelantan which was 11.5 ± 1.3 g/dL. Hb level was significantly higher in those with good appetite but the difference was very small. US Department of Health & Human Service, National Institute of Health 2011 reported that those who have iron deficiency anaemia could have poor appetite. Intakes of energy, protein, iron, vitamin C and calcium within $\pm 25\%$ of RNI have a significant difference to the Hb level. The main factor contributing to anaemia in this study was daily iron intake. Although 98% reported taking haematinic pills, the Hb level was still low. The ways haematinic pill was consumed may be the reason. Some dietary components, particularly ascorbic acid and animal tissue, promote iron absorption while others such as phytates, polyphenols, calcium, and certain proteins found in cow's milk and legumes such as soy beans are inhibitory.

Conclusion: Dietary intake was the main contributing factor to anaemia in pregnant women. Therefore, we plan to develop an interactive education package that consist of local recipes with some modification as to increase absorption of iron as well as other approach that helps to increase appetite.

NMRR ID: Not available

Prevalence of Hypertension among Patients Attending Sekuau Clinic, Rural Sibu, Sarawak.

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Background: Hypertension is a burden for public health in Sarawak. According to the 2011 Malaysian National Health and Morbidity Survey, the overall prevalence of hypertension was 32.7% in the country as a whole and 40.5% in Sarawak. [1] It is generally perceived that the prevalence of hypertension is less in the rural areas compared to urban areas, the difference being ascribed to different lifestyle factors in the rural versus urban areas.

Objective: To determine the prevalence of hypertension among patients attending Sekuau clinic in a rural part of Sibu District, Sarawak.

Method: All data with at least one blood pressure record for patients attending Sekuau clinic from 1 January 2008 to 31 April 2013 were extracted from the TPC database. The data were cleaned and analysed using Microsoft Excel 2007. In this study, hypertension was defined as blood pressure (BP) reading $\geq 140/90$ at age above 18 years old. [2] Patients aged 18 years and above at the time of creation of the clinic visit record were included.

Results: There were 3028 patients with at least one BP reading in the TPC database. Two thousand nine hundred and sixty-three (2963) patients fulfilled the inclusion criteria. Ninety-five per cent of them were Ibans followed by others (Chinese, Melanau and Malay) reflecting the population served by Sekuau clinic. Based on the first BP reading, 576 patients were noted to have hypertension, giving a prevalence of 19.4%. On subsequent follow up of the remaining 1,117 patients over the 64 months period, 633 (56.7%) of them developed hypertension. Thus, out of the 2963 patients, a cumulative total of 1209 (40.8%) had hypertension. The prevalence among males and females were very similar. However, there was a sharp rise in prevalence with age, from 14.0% among the 20-39 year olds, to 47.2% among the 40 - 56 year olds, before it started to stabilize at 63.2% among the 60-79 year olds and 67.2% among the 80 - 99 year olds. The prevalence of hypertension among Iban males were consistently higher at all age groups compared to Iban females. The ages of the hypertensive patients ranged from 20 to 99 years with a median of 57 years.

Conclusion: The prevalence of hypertension among patients attending this rural clinic is high. The findings highlight the importance of taking blood pressure readings at all clinic visits because most of the hypertensive patients were detected on visits subsequent to the one when the blood pressure readings were first taken.

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Clinical Manifestations of Leptospirosis in Sri Aman: A Cross-Sectional Study

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Introduction: Leptospirosis is a zoonotic disease of worldwide importance, especially in the tropics. The clinical manifestations of leptospirosis may resemble other common tropical diseases. The lack of diagnostic clinical features of leptospirosis and inadequate microbiological support makes it difficult for the health personnel to make a definite diagnosis. A hospital-based study done on seroprevalence of leptospirosis among febrile cases in Malaysia showed only 31% of the confirmed leptospirosis cases were truly diagnosed as leptospirosis, 38.1% were misdiagnosed as dengue fever and the rest as pneumonia, typhoid fever and viral fever. In Malaysia, under the Prevention and Control of Infectious Disease Act 1988 leptospirosis has been gazetted as a notifiable disease on 9 December 2010.

Objective: This study aimed to determine incidence rate, socio-demographic and clinical manifestations of the leptospirosis cases notified to Communicable Diseases Control (CDC) Unit, Sri Aman Division.

Methods: This is a cross-sectional study in two districts of Sri Aman Division. All cases notified as leptospirosis to CDC Unit, from January to December 2012 were identified from Investigation Form for Leptospirosis (MOH). All cases with positive rapid test for leptospirosis were defined as leptospirosis cases and with negative rapid test as non-leptospirosis cases.

Results and Discussion: A total of 43 cases were notified as leptospirosis to CDC Unit for year 2012. A total of 33 (76.7%) cases, *Leptospira* IgM rapid test were positive. The mean (SD) age was 41.1 (16.3) years and male contributed 51.5% of the total leptospirosis cases. Fever (93.9%), headache (78.8%), calf pain (66.7%), chills and rigors (57.6%), and myalgia (54.5%) were the most frequent symptoms experienced by leptospirosis cases. Presence of jaundice was described in about 12% of cases. Calf pain ($p = 0.003$) and malaise ($p = 0.043$) were significantly associated with leptospirosis cases. In our study, the incidence rate for leptospirosis was 33/100,000 population. In north eastern Malaysia, a hospital-based study on sero-prevalence of leptospirosis among febrile cases was 8.4% by microscopic agglutination test and the predominant serogroup was *Sejroe*. Socio-demographic finding is comparable with other studies done in Malaysia, showing a preponderance among the productive age group, which in turn may be reflections of the risks related to their daily activities.

Conclusion: This study showed that leptospirosis is not an uncommon notifiable disease in Sri Aman Division. The finding of significant clinical manifestations associated with leptospirosis might help the healthcare personnel to make a definite diagnosis especially in Sarawak and generally to other states.

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NMRR ID: Not available

Evaluation of Tuberculosis Surveillance and Action Performance in Sarikei, Sarawak

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Introduction: In 2010, two districts in Sarikei (Pakan and Julau) were among the top ten districts with the highest incidence of tuberculosis (TB) in Sarawak with incidence rates of 105 and 97.6 per 100,000 population respectively, compared to 82.1 per 100,000 for the whole state.

Objective: The TB surveillance system and action performance in Sarikei was evaluated with a view to re-strategize TB prevention and control measures.

Methods: A cross-sectional study was done to identify all TB cases in 2011 in health facilities and laboratories that tested or diagnosed TB in Sarikei. Eighteen of 74 (24%) notification forms were randomly selected and examined for data quality and timeliness. Eighteen key informants completed a questionnaire assessing the attributes of the notification system. Records kept by health inspectors as well as laboratory records were examined to assess the performances in detection and confirmation.

Results and Discussion: All TB cases (n = 124) that were detected or diagnosed at the health facilities were reported. Eighty-nine per cent (110 out of 124 cases) were notified within seven days after diagnosis. Data quality was poor where only 66.7% (12 notification forms) were complete. All (n = 18) key informants reported that surveillance system and notification system was simple and 83.3% (n = 15) were satisfied with the system. Only 2.4% (79 of 3343) of patients who had their sputum screened were detected positive for TB. Case-to-contact ratio was on average 1 to 5. Screening of contacts detected only 0.26% (2 of 769) positive for TB. Data was used only minimally for planning prevention and control of TB.

Conclusion: Notification and timeliness were good. Nevertheless, data quality needs to be improved for it to be useful for case investigation and contact screening. New strategies are needed to improve the yield from sputum screening and contact screening. Data collected need to be utilised more extensively in order to improve strategic planning of TB management. This can enhance the effectiveness of TB prevention and control measures in Sarikei.

NMRR ID: Not available

School Milk Poisoning among Students from SJK St Anne, Sarikei, Sarawak

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Introduction: 1 Malaysia Milk Programme was re-introduced by the Prime Minister of Malaysia on 16 September 2010, aiming to improve nutritional status of primary school students especially those from the rural areas. However, the Programme has been associated with a number of foodborne diseases outbreaks. We report one such outbreak here. The outbreak came to our notice when 10 students from SJK St Anne, Sarikei experienced abdominal pain and vomiting, and were sent to Sarikei Hospital on the first day of school milk distribution in 2012.

Objective: To find the cause and risk factor of this incidence.

Methods: A case-control study, food history investigation and risk-based assessment on the hygiene of school canteen and “Food Aid Program” caterer’s kitchen were conducted. An Hazard Analysis Critical Control Point (HACCP)-based investigation was further carried out on the supply chain of school milk from the local warehouse till the point of consumption by students.

Results: There were 137 affected students in the school detected from passive case detection. The food premises were rated as low risk to cause food poisoning. The school milk had the highest attack rate difference (37.2%) and odds ratio (22.5, $p < 0.05$) among the foods consumed by the students. However, laboratory analysis could not show that the milk had any contravention. Through HACCP investigation, the school milk was found to be exposed to sunlight during storage at school for more than 6 weeks. The Guideline of School Milk Handling was not strictly followed by every stakeholder to reduce the risk of food poisoning caused by the milk.

Conclusion: The school milk was identified as the cause of the food poisoning and the improper storage at school was suspected to be the risk factor. Health education talk was given and the school had been advised on the proper storage place for the milk. A list of suggestions to prevent milk poisoning had been sent to every school through District Education Office.

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NMRR ID: Not available



Figure 1. Storage of school milk at school with sunlight exposure

Predictor of Falls among Older Persons Living Nearby Rural Clinics in Limbang District, Sarawak

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Introduction: Ageing leads to an inevitable increase in degenerative and age-related diseases. Degenerative changes due to ageing leads to reduced adaptability to sudden changes in environment or body position and this results in loss of balance and falls. The World Health Organisation estimates that 28% to 35% of elderly fall each year. [1] A recent study in Peninsular Malaysia estimated that 27.3% of elderly have fallen within the past year. [2] Falls often lead to serious morbidity and mortality, and this is evident even in Malaysia where the overall incidence of hip fracture is 90 per 100,000 population. [3] Falls among the elderly is a serious public health problem.

Objective: To determine the rate of falls among the rural populace in a rural division of Sarawak and to assess any risk factors and predictors of falls among that population.

Methods: A total of 187 community dwelling older persons were selected by systematic random sampling of five villages within all five rural government health clinic operational areas in Limbang district, Sarawak. This survey was carried out from November 2010 to February 2011 using face to face interviews. A questionnaire was developed that contained sections on socio-demographic variables and environmental fall risk factors, including falls and circumstances of falls, medical conditions and prescribed medications. Functional status assessment was carried out using a ten-item modified Barthel Index. Information on medical conditions and prescribed medications were obtained from home-based medical record or direct assessment by a trained healthcare worker. Data was analysed using descriptive statistics, Chi-square test for association between falls and risk factors and finally binary logistic regression for predictors of falls.

Results: The rate of falls was 30.5% and 96.5% of fallers had no injury. Most falls (84.2%) occurred during the day and 63.2% occurred outside the house. The main reason for falls was due to slips (73.7%) and trips (17.5%), and the remaining due to dizziness. Falls occurred almost equally among the age groups, males and females, those married and those without spouses, the ethnic groups, education levels, various income groups, and those staying alone or with extended family. There was significant association between falls and functional status, arthritis, asthma or chronic obstructive pulmonary disease, visual impairment and urinary incontinence. However, binary logistic regression analysis found that functional status was the only predictor of falls among the study population with an odds ratio of 2.7 (95% CI: 1.2, 6.1) to that of non-fallers.

Conclusion: Function limitation in activities of daily living is a predictor of falls. This knowledge provides program managers of elderly care with an opportunity for targeted intervention for prevention of falls in the elderly.

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An Audit of Antibiotic Prescribing for Upper Respiratory Tract Infection in Meradong District, Sarawak

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Background: In Malaysia, upper respiratory tract infection (URTI) is the most common acute illness encountered in primary care. Over-prescribing of antibiotics may lead to emergence of resistant strains and thus reduce the effectiveness of an antibiotic. There is also an increased risk of adverse drug reactions. The Malaysia National Medical Care Survey 2010 reported that antibiotics were prescribed in 30.8% of URTI encounters.

Objective: To determine the proportion of antibiotic use in patients with URTI and its prescribing pattern in the treatment of URTI in Klinik Kesihatan Bintangor.

Methods: This study was conducted from 13 to 17 May 2013 at Klinik Kesihatan Bintangor, Sarawak. Patients' prescriptions and clinic medical records were reviewed. All prescriptions with the diagnosis of URTI were included. Cases without written diagnosis and not URTI were excluded. The data entry was managed and analysed by using Microsoft Excel 2010 software.

Results: There were 241 records of patients with diagnosis of URTI and 117 prescriptions during the audit period. The median age was 19 years old and ranged between 4 months to 82 years of age. Children < 12 years old constituted 39.7%. Antibiotic prescribing rate for URTI was 48.5%. The main antibiotics used were macrolides (80.0%) and penicillin (20.0%). The mean duration of therapy was 5 days. The estimated cost spent on antibiotics used in URTI per year was RM22,175.

Conclusion: The antibiotic prescribing rate in this study was higher compared to that recorded in Malaysia National Medical Care Survey. Further study is needed to explore the reasons for high prescribing rate and this will help to reduce inappropriate antibiotic prescribing.

NMRR ID: Not available

Case Reports and Case Series

Spinal Haematoma in Post-Caesarean Section Patient with HELLP Syndrome and Acute Foetal Distress: Case Report

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Introduction: Neurological complications associated with regional anaesthesia are reported to be very rare. The spinal or epidural needle may cause direct injury to the spinal cord or nerve roots.

Case: A 36 year-old para 4 lady presented at 40 weeks gestation with impending eclampsia underwent emergency Caesarean section for acute foetal distress. Spinal anaesthesia was attempted multiple times at level L2 - L3 before converting to general anaesthesia. She was diagnosed with HELLP Syndrome (H = haemolysis, EL = elevated liver enzymes, LP = low platelet count) post-Caesarean section. Her platelet level dropped from 132,000/ μ L to 55,000/ μ L 3 hours after Caesarean section. She also developed paresis of the lower limbs and sphincters incontinence 13 hours post-operatively. Magnetic resonance imaging (MRI) showed epidural haematoma at level L1 following which an emergency laminectomy and evacuation of haematoma was performed. The patient also developed intra-ventricular and subarachnoid haemorrhage, and mild hydrocephalus. MRI 6 days post laminectomy showed sub-acute cord (intramedullary) haemorrhage and smaller residual sub-acute extradural bleed at L1 with the spinal cord ending at L2 level. Computed tomography brain one week later showed resolved hydrocephalus and haemorrhage. At six-month follow-up, patient had near complete neurological recovery.

Discussion and Conclusion: Timely diagnosis of HELLP Syndrome pre-operatively in this case might have helped alerting both obstetric and anaesthetic teams to closely monitor coagulation profile even though anaesthesia in patients with an adequate platelet count but without disseminated intravascular coagulation is controversial. Early conversion from spinal to general anaesthesia should be considered to avoid multiple attempts of spinal anaesthesia. A lower interspace for spinal anaesthesia may be more appropriate in view of the risk of neurologic injury for interspaces above L3 / L4 level as studies have found that anaesthetists select interspaces that are one or two spaces higher than their intended selected space. In addition, 28 - 58% of the adults' cords end below the L1 vertebral body, as low as upper body of L3.

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Achalasia in a Teenage Girl with Down Syndrome: Chronic Cough as the Presenting Symptom

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Introduction: Achalasia is a rare primary oesophageal motor disorder of unknown aetiology with a prevalence of 8 per 100,000 in the general population. It is characterized by a lack of normal peristalsis and failure of relaxation of the lower oesophageal sphincter resulting in a variety of symptoms such as dysphagia, vomiting, regurgitation, retrosternal chest pain, heartburn and failure to thrive. It may also cause chronic cough as a result of chronic aspiration of undigested food contents or tracheal compression by a dilated oesophagus.

Case: We report a case of achalasia in a teenage girl with Down syndrome who presented with one year history of chronic cough. She was initially treated with nebulisations and antibiotics without improvement. Subsequently, she developed recurrent vomiting of semi-digested food and significant weight loss which prompted further investigations. Following an upper gastrointestinal endoscopy study, a barium swallow study and a computed tomography of the abdomen, the diagnosis of achalasia was made.

Discussion and Conclusion: The association between achalasia and Down syndrome has been reported in the literature. This case highlights the importance for clinicians to be aware of this association and the varied presenting symptoms of achalasia. An early diagnosis can prevent unwarranted complications of aspiration pneumonia and tracheal compression by a dilated oesophagus.

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Figure 1. Chest radiography showing hyperinflated lungs with features suggestive of marked oesophageal

A Rejang River Rash – A Case of Scrub Typhus in Rural Song, Sarawak

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Introduction: The Rejang River is the lifeline of rural Sarawak. Indigenous settlements along the Rejang depend on the river and jungle for their daily living, sustenance and transport. Hence, they have greater contact with possible typhus bearing vectors.

Case study: A 30-year-old Iban female presented with 2 days history of generalised rash preceded by fever. She also complained of malaise, arthralgia, myalgia and poor appetite. On examination, she had bilateral conjunctival injection and palpable left anterior cervical lymph nodes. There were multiple erythematous macules over her body, predominantly over the chest and abdomen. An eschar was noted at the right hypochondriac region. There was no hepatosplenomegaly and the rest of systemic examination was normal. Upon further questioning, the patient admitted being bitten by a “*kutu babi*” or mite 3 days before the onset of her symptoms. Full blood count showed a predominantly neutrophilic picture with normal parameters. Renal and liver functions were normal. Blood films for malaria parasites were negative. Diagnostic confirmation for scrub typhus using serology testing or Weil–Felix OX-K agglutination reaction was not available. An eschar is pathognomonic of scrub typhus. Differential diagnosis would include malaria, dengue fever and leptospirosis as these were all endemic to the area. Twice daily dose of 100 mg oral doxycycline was given for 1 week. Alternative regimes include single dose of 500 mg azithromycin or a week of either 500 mg qid of tetracycline, 500 mg qid of chloramphenicol or once daily of 900 mg rifampicin. There was complete resolution of the rash and lymphadenopathy 2 weeks later. Hyperpigmented scarring was seen at the eschar site.

Discussion: Scrub typhus is caused by *Orientia tsutsugamushi*. They are harboured by trombiculid mites whose main hosts are wild rodents. In endemic areas, it is one of the main causes of pyrexia of unknown origin and it usually presents as an acute febrile illness with non-specific symptoms and signs such as rash, diffuse lymphadenopathy and myalgia. Although pathognomonic, eschars are uncommon among South East Asians or those from endemic areas. Antibiotics can shorten the course of the illness and reduce mortality. In severe cases, intravenous antibiotics may be required. Although a vaccine has yet to exist, chemoprophylaxis with a weekly 200 mg dose of doxycycline is effective. Travellers to endemic areas should use dimethyl phthalate impregnated clothing and apply a DEET based repellent on exposed skin to prevent possible mite bites.

Conclusion: A high index of suspicion for scrub typhus is needed in those presenting with a febrile illness and rash, especially those in whom contact with typhus bearing vectors is possible. Early treatment with antibiotics is imperative to prevent complications including septic shock, multi-organ failure and death.

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Adrenal Insufficiency and Erythrodermic Psoriasis in a Chronic Plaque Psoriasis Patient

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Introduction: Psoriasis is a common skin disorder caused by polygenic predisposition and triggering environmental factors, which affects approximately 2% of the population. There is no known cure. Erythroderma represents the most severe form of psoriasis and precipitating factors include administration of systemic corticosteroids, excessive use of topical steroids, phototherapy complications, severe emotional stress and preceding illness. Erythrodermic psoriasis is defined as a scaling erythematous dermatitis involving > 90% of body surface area and one of the definition of severe psoriasis is psoriasis involving > 30% of body surface area. Adrenal insufficiency can be primary (damaged adrenal gland with subsequent hypocortisolism and hypoadrenalism) or secondary (hypocortisolism due to failure of the pituitary gland to produce enough adrenocorticotropin causing hypo-stimulation of adrenal glands). Clinical features of chronic primary adrenal insufficiency in order of frequency are weakness, anorexia and weight loss (100%), hyperpigmentation (94%), electrolytes disturbance such as hyponatremia (92%) and hyperkalaemia (88%), hypotension (80%), gastrointestinal symptoms such as nausea and vomiting (75%), and diarrhoea (16%). Hyperpigmentation, hyperkalaemia and gastrointestinal symptoms are uncommon in secondary adrenal insufficiency due to the presence of aldosterone.

Objective: To describe a case of Cushing syndrome and erythrodermic psoriasis in a chronic plaque psoriasis patient that was caused by chronic topical glucocorticoid usage. The clinical course was complicated by an atypical presentation of adrenal insufficiency.

Case Report: 34 year old single lady presented with generalized skin scaling and redness with fever and chills, and acute renal failure one year after defaulting follow up. She had been self-medicating with potent topical steroids for 1 year. A diagnosis of chronic plaque psoriasis was made 6 years ago. Careful questioning did not elicit any oral supplementation. A diagnosis of erythrodermic psoriasis with Cushing syndrome secondary to topical steroid abuse was made. Patient had multiple large striae distributed over her back and limbs. She recovered with intravenous hydration, topical moisturizers and mild topical steroids. She was also empirically treated with intravenous cephazolin for staphylococcus sepsis as she was febrile. Antibiotics were stopped when cultures were negative. Patient was readmitted 3 days later with fever, passing multiple loose watery stools, nausea and vomiting. Stool and blood cultures were negative. There were no episodes of hypotension, hypoglycemia or electrolytes imbalance. All symptoms resolved with hydrocortisone supplementation after a diagnosis of adrenal insufficiency was made when the early morning cortisol level measured 0.35 µg/dL (normal 4.50 - 22.40). Patient was subsequently well on oral methotrexate for her psoriasis.

Conclusion: Physicians should be alert for the dangerous side effects of topical steroids and long term usage should be avoided. Adrenal insufficiency may present in an atypical manner.

Osteonecrosis of Mandible: A Rare Complication of Long Term Steroid Use – A Case Report

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Introduction: Osteonecrosis is defined as the presence of exposed bone in the maxillofacial region that does not heal within eight weeks after identification by a healthcare professional. Long bone osteonecrosis especially at femoral head is a well-known complication in patients with systemic lupus erythematosus, often associated with steroid therapy. Osteonecrosis of mandible associated with long term steroid use is a rare condition and has never been reported in the literature.

Case Report: We describe a case of 35 year old female who was diagnosed with class V lupus nephritis on long term steroid treatment. She had three episodes of long bone fracture and also underwent a hip replacement. She presented with oral halitosis associated with non-healing exposed bone at left mandible more than eight weeks after a single tooth extraction. Conservative management with oral antibiotic was initiated. Subsequently, a sequestectomy under local anaesthesia with primary closure and ultrasound treatment were performed in an attempt to cure the osteonecrosis. Though the osteonecrosis did not resolve, it remained asymptomatic for the next two years. She was later prescribed with oral bisphosphonate to control her bone porosity. The left mandible osteonecrosis was aggravated and associated with pain, lymphadenitis and sub-mental fistula. Upon diagnosis, the orthopaedic team was consulted and the bisphosphonate was withheld. The infection and sub-mental fistula resolved after antibiotic treatment while the size of osteonecrosis remained the same.

Conclusion: This case report highlights the possible risk of jaw osteonecrosis following long term steroid use, and aggravation by bisphosphonate. We hope this will provide some oral care guidelines and prevention measure for future patients.

Value of Urine Pregnancy Test in End Stage Renal Failure Patients: A Case Report

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Introduction: We explore the usefulness of urine pregnancy test (UPT) in managing pregnancy-related emergencies in end stage renal failure (ESRF) patients.

Case Report: A 28 year-old newly-wed, with underlying ESRF on haemodialysis, polycystic kidney disease and systemic lupus erythematous, presented with sudden onset of colicky right iliac fossa pain radiating to the lumbar and lower abdomen, associated with per-vaginal spotting for 2 days. During work-up, she developed fever, hypotension and tachycardia with investigations showing anaemia and leucocytosis. Differential diagnosis included ectopic pregnancy and perforated appendicitis. Bedside ultrasonography (USG) findings were supportive of ectopic pregnancy, however bedside UPT was negative. Amidst resuscitation, computed tomography (CT) scan of abdomen revealed a right adnexal cystic lesion.

Discussion: UPT detects β -human chorionic gonadotropin (hCG) levels, secreted by the pituitary gland and syncytiotrophoblast of the placenta during implantation. [1, 2] hCG results varied from 4.3 to 4020 mIU/ml (932-fold) on the expected day of missing a menstrual period. At the time of implantation, urine hCG levels are approximately equal to serum hCG. It is equivalent to or exceeds serum hCG at approximately six weeks of gestation. The UPT strip contains monoclonal anti-hCG antibody which will react with urine β -hCG to form a complex that migrates via capillary action, and bounded by polyclonal anti-hCG antibody to provide a positive result. Sensitivity of the test kit varies from 6.3 mIU/ml to 100 mIU/ml. [3]

Conclusion: In ESRF patients, UPT is of limited value. [4] In assessment of pregnancy and its related complication, USG is more reliable. However, CT scan triumphs in work-up of complicated acute abdomen of unknown origin.

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Mushroom Poisoning: A Case Report from Saratok, Sarawak

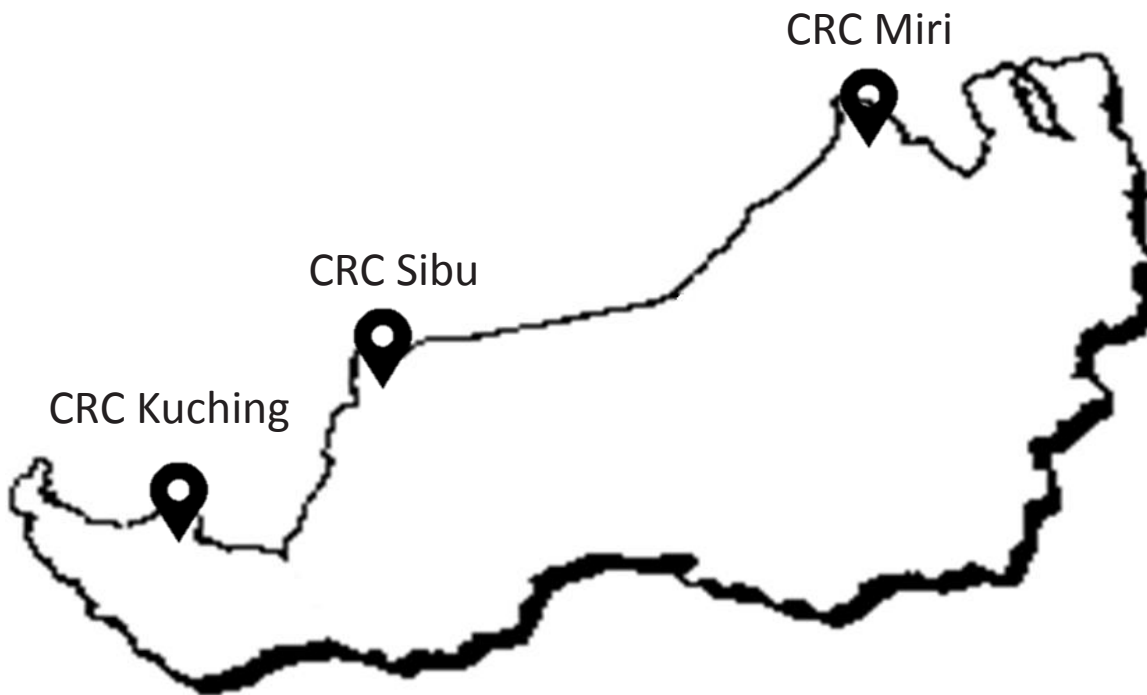
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There are many thousands of mushroom species in the world; some are edible and some are poisonous due to toxins. Mushroom poisoning usually results from ingestion of wild mushrooms due to misidentification of poisonous mushroom as an edible species. This paper describes three outbreaks at three different localities within a year of 2011 in Saratok, Sarawak. We report here seven cases of mushroom poisoning involving *Amanita* species and 2 cases involving *Russula* species. All patients presented with gastrointestinal symptoms including vomiting and diarrhoea. Some of them presented with dizziness, body weakness and hemiparalysis. In view of these two poisonous mushroom species are likely to be confused with edible mushrooms, it is important to educate people about the dangers of mistaking poisonous mushrooms as edible. Aiming at primary prevention, public education on recognition of poisonous mushrooms should be introduced.

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