Renal replacement therapy in Brunei Darussalam: comparing standards with international renal registries.

Tan J.

**ABSTRACT**

**Background and Aims:** Brunei Darussalam is a small South East Asian country with a high prevalence and incidence of end stage kidney disease (ESRD). This study aims to compare key performance indicators recorded in the Brunei Dialysis and Transplant Registry and department records against international practice. Registries from the USA (USRDS), UK (UK Renal Registry), Australasia (ANZDATA), Europe (ERA-EDTA Registry) and Malaysia (MDTR) were used for comparisons.

**Materials, Methods and Results:** Haemodialysis (83%) and renal transplantation (6%) were the most and least favoured modality of renal replacement therapy in Brunei. Diabetes mellitus as a cause of ESRD (57%) was high in Brunei but on par with other South East Asian countries. Dialysis death rates (11%) and living-related transplant survival rates (5 year graft and patient survival 91% and 96% respectively) were favourable compared with other registries. Anaemia and mineral bone disease management were similar to Malaysia but slightly inferior to the others, but generally in keeping with KDOQI and KDIGO targets. Haemodialysis adequacy (48% achieving urea reduction ratio of >65%) was relatively poorer due to poor dialysis flow rates and low fistula usage (71%). Peritoneal dialysis peritonitis (24.5 patient-month/episode) and adequacy (78% achieving kt/v of 1.7) were in keeping with ISPD targets and international registries’ results.

**Conclusion:** Brunei has achieved reasonable and commendable standards in many areas pertaining to the renal services. This report has identified several key areas for developments but this is to be expected for a service making its first foray into international benchmarked practice.

**Correspondence:** Dr Jackson Tan. Rimba Dialysis Centre, Department of Renal Services, Bandar Seri Begawan, Brunei Darussalam

A study of the effect of relaxing music on heart rate recovery after exercise among healthy students.

Tan F, Tengah A, Nee LY, Fredericks S.

**ABSTRACT**

**Background:** Music has been employed in various clinical settings to reduce anxiety. However, meta-analysis has shown music to have little influence on haemodynamic parameters. This study aimed at investigating the effect of relaxing music on heart rate recovery after exercise.

**Method:** Twenty-three student volunteers underwent treadmill exercise and were assessed for heart rate recovery and saliva analysis; comparing exposure to sedative music with exposure to silence during the recovery period immediately following exercise.

**Results:** No differences were found between music and non-music exposure regarding: heart rate recovery, resting pulse rate, and salivary cortisol. Music was no different to silence in affecting these physiological measures, which are all associated with anxiety.

**Conclusion:** Relaxing music unaccompanied by meditation techniques or other such interventions may not have a major role in reducing anxiety in certain experimental settings.

**Correspondence:** Salim Fredericks. PAPRSB Institute of Health Science, Universiti Brunei Darussalam, Jalan...
Cyclooxygenase-2 inhibition improves antioxidative defense during experimental hypercholesterolemia.

ABSTRACT
Scientific literature shows that inflammation and oxidative stress contribute to the pathogenesis of atherosclerosis. The oxidative stress is the consequence of an imbalance between the free radical generation and elimination. One source of free oxygen radicals is cyclooxygenase (COX)-2 and, therefore, inhibiting the activity of this enzyme is likely to reduce oxidative stress. In the present study an experimental rabbit model of hypercholesterolemia was developed and the effects of COX-2 inhibitors, nimesulide and celecoxib were observed on the activities of antioxidant enzymes, superoxide dismutase (SOD), glutathione peroxidase (GPx) and total antioxidant status (TAS). Rabbits were divided into four groups: control, saline, nimesulide and celecoxib, with all groups fed a high cholesterol diet, which only received saline. Low activities of SOD, GPx and TAS were measured in the hypercholesterolemic rabbits pretreated with saline. In the same group, a reciprocal relationship was observed between the LDL-cholesterol concentration and the plasma activities of GPx, SOD and TAS. Rabbits in nimesulide and celecoxib group showed significantly higher activities of SOD, GPx and TAS in hypercholesterolemic rabbits compared to saline group (p<0.05). Our study shows that selective and time-limited use of COX-2 inhibitors would be useful in preventing the onset and development of atherosclerosis by enhancing antioxidant defence system.

Correspondence: PAPRSB Institute of Health Sciences, University Brunei Darussalam, Jalan Tungku Link Gadong BE 1410, Bander Seri Begawan, Brunei Darussalam. Department of Pharmacy, Kohat University of Science & Technology, Indus Highway, Kohat-26000, Kohat, Pakistan.

Note: A collaboration between centers in Pakistan and Turkey.

Sigmoid volvulus in pregnancy: early diagnosis and intervention are important.
Ahmad A, Shing KK, Tan KK, Krasu M, Bickle I, Chong VH.

ABSTRACT
Bowel obstruction is rare in pregnancy, and delay in recognition can lead to serious maternal and fetal complications. Most reported causes of bowel obstruction in pregnancy (adhesions, intussusception, hernia, and carcinoma) require surgical intervention. Sigmoid volvulus is an acute surgical cause that can now be managed successfully without surgery. We report the case of 33-year-old lady who presented with a sigmoid volvulus that was successfully managed with urgent endoscopic decompression.

Correspondence: Chong VH. Division of Gastroenterology and Hepatology, Department of Medicine, RIPAS Hospital, Bandar Seri Begawan BA 1710, Brunei Darussalam. E mail: chongvuih@yahoo.co.uk

Do workplace physical activity interventions improve mental health outcomes?

ABSTRACT
Background: Mental health is an important issue in the working population. Interventions to improve mental health have included physical activity.
Aim: To review evidence for the effectiveness of workplace physical activity interventions on mental health outcomes.
Method: A literature search was conducted for studies published between 1990 and August 2013. Inclusion criteria were physical activity trials, working populations and mental health outcomes. Study quality was assessed using the Jadad scale.
Result: Of 3684 unique articles identified, 17 met all selection criteria, including 13 randomized controlled trials, 2 comparison trials and 2 controlled trials. Studies were grouped into two key intervention areas: physical activity and yoga exercise. Of eight high-quality trials, two provided strong evidence for a reduction in anxiety, one reported moderate evidence for an improvement in depression symptoms and one provided limited evidence on relieving stress. The remaining trials did not provide evidence on improved mental well-being.
Conclusion: Workplace physical activity and yoga programmes are associated with a significant reduction in depressive symptoms and anxiety, respectively. Their impact on stress relief is less conclusive.
Use of salivary biomarkers to evaluate response to a stress management intervention.
Koh D

ABSTRACT
OBJECTIVES: To discuss methodological issues related to using salivary biomarkers to evaluate response to a stress management intervention.

METHOD: Findings from a study which utilised salivary biomarkers to evaluate group responses to a stress management program are discussed. In that study, we measured responses to qigong practice as a stress intervention among 34 healthy adults.

RESULTS: Specific biomarkers studied were a stress hormone (cortisol); a surrogate marker co-released with acute stress (alpha amylase); and a marker of early physiological response to stress i.e. immune status as reflected by immunoglobulin A (IgA). Salivary cortisol and IgA were monitored over 10 weeks in the intervention group (n = 18) and the control group (n = 16). Median salivary cortisol concentrations (nmol/l) at weeks 1, 6 and 10 were 4.4, 4.8, 4.3 and 4.3, 4.0, 3.3 for the control and intervention groups. Median IgA secretion rates (µg/min) were 58.9, 63.6 and 67.4 for the control group and 43.8, 54.9 and 72.9 for the intervention group. Acute response to qigong practice, measured by median salivary alpha amylase (U/ml) showed no significant change before and after a one hour session of practice (107.7 and 93.8). Saliva collection technique, circadian rhythm and half-life of the biomarkers, and their relative concentrations in different body compartments e.g. blood and saliva, can affect the results and were taken into account in the study protocol.

CONCLUSIONS: For valid interpretation of study findings, the choice of biological markers and other methodological issues have to be considered when using salivary biomarkers to evaluate response to a stress management intervention.

Correspondence: Dr David KOH is a professor of Occupational Health and Medicine, Universiti Brunei Darussalam, Bandar Seri Begawan, Brunei Darussalam; SSH School of Public Health, National University of Singapore, Singapore. E mail: david.koh@ubd.edu.bn

Personalized diagnostics and biosensors: a review of the biology and technology needed for personalized medicine.
Ahmed MJ, Saaem I, Wu PC, Brown AS.

ABSTRACT
Exploiting the burgeoning fields of genomics, proteomics and metabolomics improves understanding of human physiology and, critically, the mutations that signal disease susceptibility. Through these emerging fields, rational design approaches to diagnosis, drug development and ultimately personalized medicine are possible. Personalized medicine and point-of-care testing techniques must fulfill a host of constraints for real-world applicability. Point-of-care devices (POCDs) must ultimately provide a cost-effective alternative to expensive and time-consuming laboratory tests in order to assist health care personnel with disease diagnosis and treatment decisions. Sensor technologies are also expanding beyond the more traditional classes of biomarkers--nucleic acids and proteins--to metabolites and direct detection of pathogens, ultimately increasing the palette of available techniques for the use of personalized medicine. The technologies needed to perform such diagnostics have also been rapidly evolving, with each generation being increasingly sensitive and selective while being more resource conscious. Ultimately, the final hurdle for all such technologies is to be able to drive consumer adoption and achieve a meaningful medical outcome for the patient.

Correspondence: Dr Minhaz Uddin Ahmed. Faculty of Science, Universiti Brunei Darussalam, Jalan Tunkgku Link, Gadong, BE 1410, Brunei Darussalam. E mail: minhaz.ahmed@ubd.edu.bn; minhazua@gmail.com

Gluteraldehyde-induced colitis: a rare cause of lower gastrointestinal bleeding.
Mohamad MZ, Koh KS, Chong VH.

ABSTRACT
Gluteraldehyde is an effective and widely used disinfectant. Despite the large volume of endoscopic procedures carried out, gluteraldehyde-induced colitis is rare. It typically presents with acute onset
of lower abdominal pain, fever, and bloody stool, within hours to up to 2 days of endoscopy. Even though a self-limiting condition, it is important for front line clinicians to be aware of this entity as procedure related complications is of major concern to patients and healthcare providers.

Correspondence: Chong VH. Division of Gastroenterology and Hepatology, Department of Medicine, RIPAS Hospital, Bandar Seri Begawan BA 1710, Brunei Darussalam. E mail: chongvuih@yahoo.co.uk

Role of microbiological factors in predicting early childhood caries.


ABSTRACT

PURPOSE: Microbiological methods that accurately identify caries-susceptible children may enhance caries control and assist treatment planning. This study’s purpose was to evaluate the usefulness of two microbiological indicators (mutans streptococci [MS] and lactobacilli [LB] levels), singly and in combination, for predicting early childhood caries (ECC) and their contributions in multifactorial modeling.

METHODS: A total of 1,782 randomly selected three- to five-year-olds were recruited and underwent oral examination and microbiological tests using commercially available diagnostic kits. A questionnaire was completed by their parents. After 12 months, the caries increment in 1,576 (∼88 percent) children was assessed.

RESULTS: Caries risk increased with the MS and LB levels but plateaued above the LB level of $10^5$ CFU/ml saliva. MS, LB, and combined MS+LB models predicted one-year caries increment ($\Delta dmft>0$) with a sensitivity/specificity of 79 percent/67 percent, 51 percent/89 percent, and 66 percent/85 percent, respectively. Sensitivity/specificity reached 80 percent/80 percent when baseline caries experience (“past caries”) was added to the MS+LB model and up to 85 percent/80 percent and 81 percent/85 percent when psychosocial-behavioral factors and oral hygiene status were added to the MS+LB model, without and with “past caries,” respectively.

CONCLUSIONS: The combined “mutans streptococci+lactobacilli+past caries” model is useful for identifying at-risk children. Incorporating MS and LB into a biopsychosociobehavioral model slightly improved the prediction, even without “past caries”.

Correspondence: Dr David KOH is a professor of Occupational Health and Medicine, Universiti Brunei Darussalam, Bandar Seri Begawan, Brunei Darussalam; SSH School of Public Health, National University of Singapore, Singapore. E mail: david.koh@ubd.edu.bn

The white cell count in pregnancy and labour: a reference range.


ABSTRACT

Abstract Objective: The white cell count (WCC) can be raised in pregnancy, but there is no published data-set to support a normal range. This study aimed to develop one.

Methods: The WCC of 500 consecutive labouring women at term receiving regional anaesthesia and 500 consecutive women delivered at term by elective caesarean section were retrieved from an electronic database.

Results: The mean and derived reference range at term with no labour was $8.9 \times 10^9$ (5-13 $10^9$/L) and for the labouring group was $15.3 \times 10^9$/L (5.3-25.3 $10^9$/L). Fifteen women had a WCC > $25.3 \times 10^9$/L (range 25.4-33.5 $10^9$/L) not associated with severe sepsis.

Conclusion: Two distinct normal ranges have been established to aid clinicians recognise normal and abnormal results.

Correspondence: Rachel Collis. University Hospital of Wales, Cardiff, UK. E mail: Rachel.Collis@wales.nhs.uk.

Note: Collaboration between RIPAS (Sivasankar R) and external centre.

Factors and trade-offs with rehabilitation effectiveness and efficiency in newly disabled older persons.


ABSTRACT

OBJECTIVE: To determine the factors for rehabilitation effectiveness (REs) and rehabilitation efficiency (REy) among newly disabled older persons and if there is any trade-off between REs and REy.

DESIGN: Retrospective cohort study.

SETTING: Rehabilitation hospitals.

PARTICIPANTS: Patients (N=8828) aged ≥65
years admitted for inpatient rehabilitation from 1996 to 2005.

**INTERVENTIONS**: Not applicable.

**MAIN OUTCOME MEASURES**: Independent factors affecting REs and REy were determined. The median rank ratios of REs to REy for each admission Barthel Index (BI) unit and number of days of stay were generated. The ideal ranges of admission BI score and length of stay (LOS) that corresponded to the REs to REy median rank ratio of 1 (both REs and REy optimized) were identified.

**RESULTS**: Factors associated with poorer REs and REy were older age, Malay ethnicity, delayed admission, admission diagnosis of amputation, and comorbidities of dementia and stroke. An increase of 10 in admission BI score was associated with an increase of 3.47% in REs but a decrease of 1.1 per 30 days in REy; and an increase in LOS of 2.7 days was associated with an increase of 28% in REs but a decrease of 5.2 per 30 days in REy. A trade-off relation between REs and REy with respect to admission functional status and LOS was observed. The range, which optimized both REs and REy, was 50 to 59 units for admission BI score and 37 to 46 days for LOS.

**CONCLUSIONS**: There are trade-offs between REs and REy with respect to admission functional status and LOS. Clinicians, policymakers, patients, and other stakeholders should be aware of such trade-offs when they make joint policy decisions about rehabilitation services.

**Correspondence**: Dr David KOH is a professor of Occupational Health and Medicine, Universiti Brunei Darussalam, Bandar Seri Begawan, Brunei Darussalam; SSH School of Public Health, National University of Singapore, Singapore. E mail: david.koh@ubd.edu.bn

---

**Anti-inflammatory and antiplatelet activities of plasma are conserved across twelve mammalian species.**


**ABSTRACT**

Human plasma inhibits arachidonic acid metabolism and platelet aggregation. This helps human form a haemostatic control system that prevents the progress of certain aggregatory or inflammatory reactions. Whether this property of plasma is unique to human or extends to other species is not well known. It is speculated that this protective ability of plasma remains evolutionarily conserved in different mammals. In order to confirm this, the effect of plasma from 12 different mammalian species was investigated for its inhibitory potential against arachidonic acid metabolism and platelet aggregation. Metabolism of arachidonic acid by cyclooxygenase and lipoxygenase pathways was studies using radioimmuno assay and thin layer chromatography while platelet aggregation in the plasma of various mammals was monitored following turbidmetric method in a dual channel aggregometer. Results indicate that inhibition of AA metabolism and platelet aggregation is a common feature of plasma obtained from different mammalian species, although there exists large interspecies variation. This shows that besides human, other mammals also possess general protective mechanisms against various aggregatory and inflammatory conditions and this anti-inflammatory property of the plasma is evolutionarily conserved in mammalian species. The most likely candidates responsible for these properties of plasma include haptoglobin, albumin and lipoproteins.

**Correspondence**: Ahmed S. PAPRSB Institute of Health Sciences, University Brunei Darussalam, Gadong BE1410, Bandar Seri Begawan, Brunei Darussalam. sagheer.ahmed@ubd.edu.bn.

Note: A collaboration between the PAPRSB Institute of Health Sciences, University Brunei Darussalam and other external centres.