Abstracts

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INFORMATION ON THE INTERNET ABOUT HEAD INJURY PERTAINING TO INTENSIVE CARE: LESS QUANTITY AND MORE QUALITY IS NEEDED
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Introduction: Patients and families frequently search for medical information on the Internet. The content quality of information in terms of completeness and accuracy has not been widely evaluated as in peer review articles. Over the past decade, evaluation of health information websites using condition-specific criteria has been reported for a number of medical conditions. To our knowledge no peer reviewed study has evaluated websites specific to intensive care conditions. This study investigates the completeness, accuracy and website characteristics of health information pertaining to intensive care on the Internet.

Methods: We evaluated information on head injury on the Internet and compared this with the gold standard guidelines as outlined by the Brain Trauma Foundation. A cross sectional survey of the first 20 websites from the 7 most commonly used search engines was undertaken to evaluate the completeness and accuracy of information by 2 independent observers. Kappa statistics were used to evaluate inter-observer reliability. Website characteristics were also analysed and correlation was performed between these characteristics and content quality of information.

Results: Fifty eight websites were analysed. Weighted kappa score for content quality was 0.72. The median content score was 2 of out of available 23 with inter-quartile range 0 - 4. The results of the logistic regression suggest medical authors, government sponsors and second 10 retrieved websites are associated with higher scores hence higher quality while financial incentive and advertisement are associated with lower scores hence lower quality.

Conclusion: There is a large quantity of medical information on the Internet on head injury but it is of limited quality. Users need to aware of some of the website characteristics that might be associated with poor content quality.

PROSPECTIVE EVALUATION OF PROCALCITONIN IN SEPSIS IN THE ILLAWARRA AREA
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Introduction: Many overseas studies have looked at the ability of procalcitonin (PCT) to distinguish patients with bacterial sepsis from those with other causes of the systemic inflammatory response syndrome (SIRS). The aim of this study was to document the prevalence of sepsis in the critical care population in an Australian setting, namely the Illawarra Area and to establish the diagnostic value of PCT levels in the early detection and subsequent management of bacterial infections with antibiotics. Other aims were to correlate the PCT level with the effectiveness of antibiotic treatment and also the severity of bacterial sepsis and the admission APACHE score.

Subjects and setting: 204 consecutive patients admitted to the Intensive Care Unit (ICU)/High Dependency Unit (HDU) at Wollongong Hospital over a three month period from 01/10/2001 to 31/12/2001 were enlisted in this prospective, blinded study. Of these 172/204 (85%) were enrolled into the final analysis.

Methods: PCT levels were quantitatively measured daily during the patients' ICU/HDU stay using an immunoluminometric assay (ILMA) called LUMItest. These were compared to the SIRS criteria, APACHE score and positive bacterial culture results. Elevated PCT levels were considered to be those > 0.5ng/ml. Data on demographics, ventilation days, ICU length of stay, ICU and hospital mortality as well as duration of antibiotic and inotrope use was collected.

Results: The prevalence of sepsis in the ICU/HDU in the Illawarra was found to be 22% (37/172) and about 62% (23/37) of these developed septic shock. We found that PCT is an useful screening test for sepsis at a cut off value >0.85 ng/dl and that above 10 ng/dl, the diagnostic accuracy of PCT improves significantly. PCT was able to discriminate between sepsis and non-sepsis, septic shock and non-septic shock, and significant cultures and non-significant cultures. It, however did not discriminate well between SIRS and non-SIRS bacterial infection with the 95% Confidence Interval for Area under the Curve (AUC) as low as 0.59. Those patients in the upper quartile of elevated PCT levels were found to have significantly longer antibiotic, inotrope, ventilation and ICU days. The number of deaths, both within ICU and in the hospital correlated significantly with an elevated PCT level. There was no association between the admission PCT level and the APACHE 11 score. Drop in PCT levels to normal (<0.5) with antibiotic use took an average of 4.85 days in our study but this cannot be used to extrapolate the duration of antibiotic therapy. Large multicentre trials will be required to provide sufficient power to the data on the duration of antibiotic therapy.

Conclusion: PCT is a useful screening tool in the ICU setting to detect those patients with sepsis, septic shock and septicemia with levels above 10ng/dl being most significant. Patients with a raised PCT level have a higher morbidity and mortality. PCT is not useful in discriminating those patients with SIRS from those with non-SIRS bacterial infection.

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DO OXIMES HAVE A ROLE IN HUMAN ORGANO-PHOSPHATE POISONING?
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Introduction: Organophosphate (OP) poisoning is common in the developing countries. With the increase in the use of pesticides and threats of bio-terrorism, the role of oximes in OP poisoning assumes greater significance.

Subjects and setting: Controlled trials of oximes in human OP poisoning were identified by electronic search (1966-2004) and review of published articles.

Methods: A quantitative analysis was performed using
Bradford CM, Finfer S. Magnesium in aneurysmal subarachnoid haemorrhage (MASH study) Intensive Therapy Unit, Royal North Shore Hospital, St Leonards NSW

Introduction: 70% of patients with subarachnoid haemorrhage will develop vasospasm. Vasospasm contributes to morbidity and mortality by causing cerebral ischemia and infarction. Magnesium has been proposed as a therapy to prevent vasospasm. There have been no adequately powered randomised controlled trials to test this theory.

Aim: A multi-centre, single blinded, randomised controlled trial of two target ranges for serum magnesium in patients with subarachnoid haemorrhage (starting Date April 2005, for 2 years) to compare the incidence and severity of cerebral vasospasm (as determined by cerebral angiography) in patients with aneurysmal SAH, between those with serum magnesium concentrations of 1.6-2.5 mmol/L for 12 days following haemorrhage compared to the normal range (0.65 – 0.9 mmol/L).

Subjects and setting: Patients with aneurysmal subarachnoid haemorrhage admitted within 72 hours of the bleed will be included in the trial. The setting will be Royal North Shore Hospital, Dalcross Private Hospital, Prince of Wales Hospital and Royal Hobart Hospital. 200 patients will be randomised to detect a 20% reduction in incidence of vasospasm. The trial will be powered to 90%.

Methods: Patient or next of kin consent will be sought before inclusion in the trial. Withdrawal of consent is possible at any time. Randomisation will be achieved by random number tables and allocation concealment by the use of opaque, sealed envelopes. There will be stratification for grade of SAH and by centre. For safety reasons there will be single blinding only. The neurosurgeons and radiologists, who will be the outcome adjudicators, will be blind to the treatment group. Patients will be analysed by an intention to treat analysis.

Outcomes: The incidence and severity of vasospasm on angiography. Mortality at hospital discharge and 90 days . Glasgow Outcome Score and modified rankin score at hospital discharge and 90 days. Presence of cerebral infarct on CT at day 21.

Results: Results will be collated using Microsoft Access. Statistical analysis will be performed to detect differences between control and treatment arms.

A Survey of Physicians’ Familiarity with Brain Death Certification Parameters Chin KJ, Lew TWK, Kwck TK.
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Introduction: Surveys in the USA and UK have demonstrated wide inter-physician and inter-hospital variation in brainstem death testing despite national guidelines. In Singapore, accredited physicians not involved in the acute care of the donor or recipient perform brainstem death certification under the Human Organ Transplant Act. Accreditation is based on legislation authorizing certain clinical specialties to perform certification, and not on specific training in this area. In order to assess the local need for more specific institutional protocols, we set out to ascertain the variation amongst physicians in their practice and attitudes with respect to brainstem death certification.

Subjects and setting: The study was conducted in a tertiary referral hospital for head trauma and neurological disease in Singapore. Subjects included all physicians listed on the brainstem death certification roster, and specialist staff of the department of anaesthesia and intensive care.

Methods: An anonymous structured questionnaire was sent to the selected physicians. The questionnaire covered 3 broad areas: physician demographics and experience, technical performance of the various tests, and opinions on the ranges of physiological and biochemical parameters required before proceeding to brain death testing.

Results: 93 physicians listed on the hospital’s brainstem death certification roster and 18 specialists in anaesthesia and intensive care were surveyed. 36 completed questionnaires were returned (32%). Brainstem death testing was an uncommon procedure, with only 17% of respondents having conducted testing more than 5 times in the last 3 years of clinical practice. Minor variations in the technical performance of tests were common. There was a lack of consensus regarding the limits of physiological and
biochemical parameters that would preclude brain death testing.

Conclusion: Although detailed written protocols are readily available, formal physician training in the technical aspects of brainstem death testing is still useful, given the rarity of the procedure. Current legislation deliberately allows for some latitude in clinical judgement regarding preconditions for brainstem death testing. This may be due to a lack of large cohort studies in this area. However, individual institutions should formulate their own consensus guidelines on the definition of these preconditions. This would minimise disagreement between certifying physicians and unnecessary delay in the transplantation process.

OUTCOME OF SEVERE HEAD INJURY IN TASMANIA 1999-2003


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Introduction: The aim of this study was to epidemiologically describe severe traumatic brain injury and provide an economic evaluation with detailed outcomes from Tasmania during 1999-2003.

Subjects and setting: The study included all patients, 15 years and older, who were referred to the Tasmanian Neurosurgical Unit and admitted to Intensive Care with severe traumatic brain injury.

Methods: Patients with severe traumatic brain injury (by definition of Glasgow Coma Score of 3-8 post-resuscitation) were identified by the AORTIC ANZICS national database. Retrospective variables such as age, sex, prehospital treatment, Apache 11 score, hypotension, hypoxia, pupil status, intracranial pressure, cerebral perfusion pressure, cerebral spinal fluid infection, Marshall CT brain scores were matched. Intensive Care management was reviewed in detail. Follow-up occurred via telephone, at a single time point in September 2004, and consisted of the Extended Glasgow Coma Score and other functional measures some 12 months to 60 months post injury.

Results: The cohort consisted of a total of 91 patients admitted with the median age of 33 years (16-78), Apache 11 score of 20.1 (SD3), risk of death 27 (SD14), of which 25 (27%) died. Follow-up was possible in 72 patients (79%). Of these, Extended Glasgow Outcome Scores were:

Extended Glasgow Outcome Status

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead</td>
<td>25</td>
</tr>
<tr>
<td>Vegetative State</td>
<td>6</td>
</tr>
<tr>
<td>Lower Severe Disability</td>
<td>6</td>
</tr>
<tr>
<td>Upper Severe Disability</td>
<td>11</td>
</tr>
<tr>
<td>Lower Moderate Disability</td>
<td>7</td>
</tr>
<tr>
<td>Upper Moderate Disability</td>
<td>7</td>
</tr>
<tr>
<td>Lower Good Recovery</td>
<td>5</td>
</tr>
<tr>
<td>Upper Good Recovery</td>
<td>5</td>
</tr>
<tr>
<td>Lost To Follow-Up</td>
<td>19</td>
</tr>
</tbody>
</table>

Conclusion: Severe traumatic brain injury is associated with a poor outcome in at least 50% of patients. Treatment can be further optimised (60% of patients having a cerebral perfusion pressure < 60mmHg at some point). Functional outcomes such as changes to work status, relationship status and follow-up medical and health care support are examined. Retrospective follow-up of these patients is difficult even on an island such as Tasmania. The ongoing prospective Tasmanian Neurotrauma Register will shed more light on this subject in the future.

FROM SIRS TO SAREES

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Introduction: The opportunity for 2 post-Fellowship exam, ICU senior registrars to travel to India arose in May 2004 after a contingent of intensivists practising in India observed the Fellowship exam of the Joint Faculty of Intensive Care Medicine, ANZCA / RACP at Royal North Shore Hospital, Sydney. Their vision was the establishment of an Intensive Care training and certification program based closely on the Australasian model. The first exam was scheduled for December 2004. We were fortunate to be chosen to make the trip.

Aim: In this photo-essay we share reflections and observations from a four week teaching visit to India in November 2004.

Setting: We visited five hospitals helping prepare exam candidates with informal and didactic teaching. These were located in Mumbai and Pune in the north, and Cochin and Kozhikode in the south.

Observations: The presentation will compare and contrast the two systems of intensive care, focussing in particular on: case-mix; health care models; training in intensive care; educational resources; intensive care practice; infection control policy and the Indo-Australian training program.

Conclusion: It is often said that the teacher, in the process of preparing and presenting their material benefits more from teaching than their audience. We both gained enormously from the teaching on this trip, which although demanding and tiring, was often exhilarating. We were inspired by the enthusiasm and thirst for knowledge demonstrated by everyone we met professionally. Our decision to tour together enabled us to maintain a demanding schedule, delivering the high quality teaching that our colleagues in India deserve. While the specialty of Intensive Care is in its infancy in India, we met a large number of doctors keen to enhance their skills and knowledge in this discipline. It is hoped that on-going collaboration with Australian intensivists will help in the evolution of the specialty.

We gratefully acknowledge the generous funding for Dr Carole Foot by Claris. Dr Nikki Blackwell used part of her Matt Spence Medal award, plus a grant from the Princess Alexandra hospital to meet expenses.
IDENTIFICATION OF PROSTHETIC HEART VALVES ON AP CHEST RADIOGRAPHS

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Introduction: The study examined the utility of four criteria for distinguishing aortic from mitral valve prostheses on supine AP chest x rays in critically ill patients.

Subjects and setting: Post operative cardiac surgical patients undergoing a single, radio opaque, aortic or mitral valve replacement over a 32 month period, at an Australian quaternary referral hospital.

Methods: Two reviewers independently examined the post operative chest x rays of all patients, in a blinded fashion. They applied four criteria to each film. For each criterion a sensitivity and specificity of differentiating the valve positions correctly was calculated for each reviewer, as well as a kappa statistic for inter-observer agreement between the two reviewers.

Results: Two hundred and twenty seven x rays were evaluated by each of the reviewers. There were 174 aortic and 53 mitral valve replacements. There was a high level of inter-observer agreement for all four criteria applied with kappa values ranging from .785 to .966. Criterion one (imaginary line method) could be applied by both reviewers to less than 50% of x rays, and when applied was specific but not sensitive. The other three criteria could be applied by both reviewers to approximately 80% of films. Criterion 2 (orientation method) was sensitive but not specific. Criteria 3 (valve orifice method) and 4 (perceived direction of blood flow method) were both highly sensitive and specific and are therefore the best methods.

Conclusion: The well described imaginary line method is of limited value in differentiating aortic from mitral valve prostheses on supine AP chest x rays.

IS THERE ANOTHER OPTION?

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Introduction: Patients with catastrophic intracranial haemorrhage (ICH) may have treatment withdrawn because of a dismal prognosis. Factors such as older age and extensive haemorrhage predict a worse outcome and are associated with an early decision to cease treatment. Although withdrawal of treatment may be the only option considered, there is often another alternative – that of organ donation (OD).

Aim: To present two cases involving older patients with massive ICH for whom clinicians considered OD, and which led to successful organ procurement and transplantation, in circumstances where treatment might ordinarily have been withdrawn.

Setting: Case 1 – 75 y.o. male presented to a rural hospital with collapse. Following transfer to a regional centre a CT scan showed a large ICH. Brain death was suspected and the treating clinician contacted LifeGift to ascertain suitability prior to raising the option of OD with the family. The outcome was a life-saving liver transplant for a young recipient. Case 2 – 69 y.o. male presented to a small rural hospital with a massive ICH. A donor card was found and, after family assent, discussions with LifeGift led to patient transfer to a metropolitan hospital for the purpose of OD. Liver and corneal transplants resulted.

Observations: The successful outcome of organ donation and transplantation occurred in each case due to willingness of both family and healthcare professionals to explore the situation fully. Logistical impediments, including distance and limited facilities available at rural centres, were overcome through liaison with LifeGift and larger hospitals.

Conclusion: There is an increasing community expectation that organ and tissue donation be facilitated whenever possible. In view of this, it is vital that all patients with a catastrophic brain injury, in whom there is the intent to withdraw life support, be considered as potential organ donors and that this option is raised with the family.