

# JournalScan



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Edited by Jonathan Wyatt; this scan coordinated by Jason Lee

## Benefits of helicopter emergency medical systems

► Few areas of emergency care polarise opinion more than the benefit of Helicopter Emergency Medical Systems (HEMS). This is partly due to conflicting reports in the literature and difficulties in direct comparison of systems which vary according to region and country. This latest report is a prospective, observational study from a group in the Netherlands, whose operating system is similar to the London HEMS. Between 2000 and 2002, 346 patients with an injury severity score greater than 15 presented to a Rotterdam trauma centre. Trauma patients who were attended by helicopter-trained medical teams had increased odds of survival compared with those who were attended by ambulance staff alone. Although the evidence of benefit did not quite reach the levels of 95% confidence it will lend some weight to supporters of HEMS. Operational costs, however, were not considered.

▲ Frankema SPG, Ringburg AN, Steyerberg EW, *et al.* Beneficial effect of helicopter emergency medical services on survival of severely injured patients. *Br J Surg* 2004;91:1520-6.

## Increased mortality with prehospital intubation

► This study is the largest of its type to date and echoes the findings of three recent studies which found that prehospital intubation for brain injury was associated with a worse outcome. Retrospective data (2000-2002) on 4098 patients with head/neck abbreviated injury scores (AIS) of 3 or more who had been intubated in either a hospital or a prehospital setting were collected from a register of all patients presenting to recognised trauma centres in Pennsylvania. Transfers were excluded. The primary outcome was death, and the secondary outcomes were neurological and functional outcomes. Multivariate logistic regression was used to adjust for variables such as age, AIS, injury severity score, blood pressure, mechanism of injury, and mode of transport. The adjusted odds of death for patients intubated prehospital was four times that of patients intubated in the emergency department. Patients intubated prehospital also had increased odds of poor neurological and functional outcomes. An interesting subset analysis of patients intubated by air medical paramedics (generally more skilled in airway management than non-air paramedics) showed reduced mortality and improved neurological outcomes. The results should stimulate prospective studies to determine if intubation of patients with isolated traumatic brain injury in the prehospital setting is harmful per se, or if it is operator dependent.

▲ Wang HE, Peitzman AB, Cassidy LD, *et al.* Out-of-hospital endotracheal intubation and outcome after traumatic brain injury. *Ann Emerg Med* 2004;44:439-50.

## Palm reading inconsistent

► There has been confusion in the medical literature about the amount of body surface area (BSA) represented by the "palm". The authors of this review found four relevant articles and conclude that the adult palm including the fingers represents 0.8% BSA in males and 0.7% BSA in females, whereas the palm alone represents 0.5% BSA. The paediatric palm including the fingers represents 1% BSA. The authors suggest that if the patient's hand is to be used to estimate the extent of burns, the palm alone should be used (0.5% BSA) as this reduces variability between the sexes and different age groups.

▲ Jose RM, Roy DK, Vidyadharan R, *et al.* Burns area estimation—an error perpetuated. *Burns* 2004;30:481-2.

**A continuing role for DPL** ► Over the past decade, a single medical centre in Tel-Aviv has treated the victims of 30 separate mass casualty incidents (MCI), mainly terrorist bombings. The authors identified 12 specific areas where lessons have been learned. One such area was radiology services, which become overwhelmed in an MCI. If patients wait in turn for computed tomography (CT)—upon which surgeons are increasingly reliant—the result may be disastrous. Focused assessment with sonography for trauma ultrasound and diagnostic peritoneal lavage (DPL) are highlighted as the investigations of choice, with CT initially reserved for head injuries. DPL appears to be a dying art, but is simple, quick, and sensitive. As terrorism is now global, perhaps DPL should continue to be taught.

▲ Kluger Y, Mayo A, Soffer D, *et al.* Functions and principles in the management of bombing mass casualty incidents: lessons learned at the Tel-Aviv Souraski Medical Center. *Eur J Emerg Med* 2004;11:329-34.

## Sudden end for erythromycin?

► Erythromycin prolongs repolarisation, and it has been associated with torsades de pointes. Metabolism occurs via cytochrome P-450 3A: inhibitors of these enzymes (for example, diltiazem, verapamil, certain antifungals) may increase plasma erythromycin levels. The authors of this study performed a retrospective review (1985-2002) of more than one million patient-years of follow up and 1476 cases of sudden death in Tennessee from cardiac causes to determine if an association exists between erythromycin, P-450 3A inhibitors, and sudden death. The incidence of sudden death among patients taking erythromycin was twice that in patients taking amoxicillin or no antibiotic at the time of death, and five times higher for patients taking erythromycin and P-450 3A inhibitors than neither drug ( $p < 0.05$ ). No increased risks were identified among patients taking amoxicillin with P-450 3A inhibitors, P-450 3A inhibitors alone, or former users of erythromycin. Erythromycin has always been known for its side effects. This study, highlighting its association with sudden death, may prove the death knell for the drug. Those continuing to prescribe erythromycin are advised to take a full drug history to identify patients taking P450-3A inhibitors.

▲ Ray WA, Murray KT, Meredith S, *et al.* Oral erythromycin and the risk of sudden death from cardiac causes. *N Engl J Med* 2004;351:1053-6.

## Meta-analysis would have identified rofecoxib's risks earlier

► In September 2004 rofecoxib (Vioxx), a cyclo-oxygenase-2 inhibitor, was withdrawn by Merck after their latest trial identified an unacceptable incidence of cardiovascular side effects. This meta-analysis was performed to establish whether the drug should have been withdrawn several years earlier. Eighteen randomised controlled trials comparing rofecoxib to non-steroidal anti-inflammatory drugs or placebo were identified. Myocardial infarction was the endpoint. By 2000 the relative risk was 2.30 (95% confidence interval 1.22 to 4.33,  $p < 0.01$ ) and by 2001 was it was 2.24 (1.24 to 4.02,  $p = 0.007$ ). The results appear to contradict Merck's reassuring statement that the increased risk only exists after 18 months of treatment. By the time of withdrawal, Vioxx had been taken by an estimated 80 million people in 80 countries, with 2003 sales worth \$2.5 billion in the USA alone. In the same issue of *The Lancet*, a scathing editorial criticises Merck's post-market surveillance and organisation of the US Food and Drug Administration. Only 5000 patients (with few risk factors) took part in the initial safety trial of Vioxx compared with the 80 million who eventually took the drug. The FDA estimates that between 1999 and 2003 27 000 excess cases of myocardial infarction and sudden death due to rofecoxib occurred in the USA. Pending litigation against Merck threatens its survival.

▲ Juni P, Nartey L, Reichenbach S, *et al.* Risk of cardiovascular events and rofecoxib: cumulative meta-analysis. *Lancet* 2004;364:2021-9.

## Emergency department crowding prolongs door-to-needle time

► This is the first large study to provide evidence that crowding affects the quality of emergency care delivered. A retrospective, observational study of 3452 patients who underwent thrombolysis for acute myocardial infarction between 1998 and 2000 in 25 community and teaching hospital emergency departments in Ontario was conducted. "Crowding" was defined as the percentage of local emergency departments (involved in a collaborative network diversion system) diverting ambulances at the time of patient registration (no, 0% crowding; moderate, <60% crowding; or high, >60% crowding). High crowding was associated with a median increase in door-to-needle time of 5.8 minutes (95% confidence interval 2.7 to 9.0,  $p < 0.001$ ). Although it is difficult to envisage a 6 minute delay in thrombolysis resulting in increased mortality, this is the median difference. Some patients were unaffected whereas others experienced prolonged delays (more patients had delays to thrombolysis greater than 60 minutes during periods of high crowding). Unfortunately, the authors did not have access to mortality data. A consequence of implementation of systems designed to improve flow through emergency departments may be a reduction in door-to-needle time for thrombolysis.

▲ Schull MJ, Vermeulen M, Slaughter G, *et al.* Emergency department crowding and thrombolysis delays in acute myocardial infarction. *Ann Emerg Med* 2004;44:577-85.

## Guidelines for STEMI

► In August 2004, the American College of Cardiology and American Heart Association (ACC/AHA) joint task force updated their 1999 guidelines on management of ST elevation myocardial infarction. Whereas much of the guidance on thrombolysis is already standard practice in the UK, guidance on acute percutaneous coronary intervention (PCI) will be less familiar to UK emergency physicians. The ACC/AHA recommends the following:

- Patients presenting within three hours of symptom onset should receive PCI if the door-to-PCI time is expected to be less than 60 minutes longer than door-to-thrombolysis time.
- Patients presenting more than three hours after onset of symptoms should have PCI if it can be carried out within 90 minutes of arrival.
- PCI is recommended for patients with congestive heart failure.
- PCI is recommended for patients with contraindications to thrombolysis.

Perhaps when these guidelines are revised in 2009, they will be of more direct relevance to emergency physicians in the UK than at the present time.

▲ Antman EM, Anbe DT, Wayne P, *et al.* ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction. *J Am Coll Cardiol* 2004;44:671-719.

## DIY method effective for "waterproofing" plaster casts

► Patients often ask how to keep their plaster cast dry in the shower. This study compared a plastic bag and elastic bands (estimated cost 10 pence) with commercial products specifically designed to protect plaster casts while swimming and

showering (costs in excess of £10). Each protector was worn over a forearm cast and tested by submersion (one minute), showering (two minutes) and swimming (100 m front crawl). The plastic bag and elastic bands allowed less than 1 ml intrusion in any setting which was equivalent or better than the tested commercial products. Purchasing expensive covers for casts appears unnecessary.

▲ Nielsen DM, Ripley LG, Ricketts DM. Keeping plaster casts dry: what works? *Injury* 2004;36:73-4.

## Penicillin for toothache?

► Dental pain is an increasingly frequent cause of emergency department presentation. Many patients are discharged with analgesics and antibiotics, in spite of evidence of overt infection. This prospective, randomised controlled trial of patients presenting to a US emergency department with dental pain compared penicillin with placebo. Outcome measures were pain, adverse effects, and evidence of dental infection at follow up in a dental clinic at seven days. Exclusion criteria included fever, intraoral or extraoral swelling, purulence, trismus, valvular heart disease, and immune compromise. There was no difference between the groups with regard to pain or incidence of infection at follow up, but one patient in the penicillin group had an allergic reaction. The authors concluded that antibiotics are unnecessary for dental pain in the absence of overt infection. The study has some important limitations: the follow up rate was only 64%, placebo and antibiotics were not identical in appearance, and dental infection was determined clinically by dental residents.

▲ Runyon MS, Brennan MT, Batts JJ, *et al.* Efficacy of penicillin for dental pain without overt infection. *Acad Emerg Med* 2004;11:1268-71.

## Ibuprofen better than paracetamol for fever in children

► This meta-analysis of 17 blinded, randomised controlled trials compared the efficacy of first dose paracetamol with ibuprofen for pain or fever in children. No difference was found between ibuprofen and paracetamol for pain reduction. Ibuprofen (5-10 mg/kg) was significantly better than paracetamol (10-15 mg/kg) at reducing fever at 2, 4, and 6 hours after the dose. The reduction in fever was more pronounced with higher doses of ibuprofen, and at 4-6 hours compared with 2 hours. At 4 hours, 38% more children experienced fever reduction with ibuprofen (10 mg/kg) than with paracetamol (10-15 mg/kg). Combination treatment and repeat dosage effects were not addressed. As mean between-drugs temperature differences from individual trials were converted to fixed effects for the analysis, the degree of improvement cannot be quantified and the clinical significance is unclear. However, as no difference in the incidence of adverse effects was demonstrated, until evidence suggests otherwise, ibuprofen 10 mg/kg seems the logical first choice for fever.

▲ Perrott DA, Piira T, Goodenough B, *et al.* Efficacy and safety of acetaminophen vs ibuprofen for treating children's pain or fever. *Arch Pediatr Adolesc Med* 2004;158:521-6.

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