ABSTRACTS

Scientific Meeting of the Faculty of Accident and Emergency Medicine, The Royal College of Surgeons of England, London, 24-25 January, 1997

Ankle effusions following acute ankle injury
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We prospectively reviewed 56 patients presenting to A&E with an ankle effusion following injury. An ankle effusion was detected on the lateral radiograph as a tear shaped opacity displacing the normal fat adjacent to the anterior or posterior margin of the ankle joint. Joint effusions following trauma are often associated with a significant injury in the elbow and knee. An ankle effusion may be an indicator of serious injury and it has been proposed that effusions over 13 mm should be investigated further. We reviewed 56 patients presenting with an ankle effusion following injury prospectively. The x rays were reviewed by an experienced radiologist and the size of effusion, soft tissue swelling and soft tissue index (STI) was determined. Patients were assessed clinically and functionally at 6 months.

Results—Most injuries were inversion injuries (73%) due to falls (73%). At review four fractures were seen that were missed initially. These occurred in significantly older patients requiring symptomatic treatment only. No difference was found in the size of the effusion compared to those without fracture. The average size of effusion was 15 mm (7–28 mm) and the STI was 20 (normal 1–15). All but two resumed to their normal activities at six months. Of these two one had a complete anterior talofibular ligament rupture needing surgical stabilisation and the other had no abnormal findings with further investigations and has now resumed to normal activities. Investigations based on the size of effusion would not have selected these two and only two of the missed fractures would have been detected. The functional outcome at six months was not related to the size of effusion. The factors that were related were the size of soft tissue swelling and the STI. In addition we found that those patients who heard a distinctive noise at injury and those treated by plaster took significantly longer to recover.

Conclusions—An ankle effusion following injury may indicate a significant injury but it is a poor predictor of the clinical and functional outcome and further investigation based on the size of effusion is not indicated.

Facial x rays in the emergency department
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Patients with facial trauma usually have radiographs as part of their assessment and initial management in A&E. However, concern has been expressed that some patients may be having unnecessary and potentially harmful x ray examinations in the A&E department. A retrospective study was performed to assess the contribution of each radiograph in a standard set of three radiographs (lateral, occipito-mental (OM), occipito-mental 30°) to the diagnosis of facial trauma. The x rays of 120 patients with facial trauma were reviewed to determine the proportion of patients with normal and abnormal findings. All 120 patients had undergone varying numbers and types of views, but all had an OM view. The 120 OM views were examined separately by a radiology registrar and an A&E SHO in order to ascertain the sensitivity and specificity of using the OM view alone in diagnosing facial fractures. With each OM view the radiology registrar was asked if further views would aid in the radiological diagnosis. The results are discussed and recommendations made about radiographic investigations for patients presenting to A&E with facial trauma.

Factors associated with heroin overdose
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The increase in drug related deaths in Glasgow over the last five years has resulted in considerable media attention. Studies assessing the toxicological aspects of these deaths have reported that heroin has been involved in over 60% of cases. This study was designed to audit the number and pattern of heroin overdoses requiring acute treatment in a large inner city A&E department and to specifically identify factors which contributed to the patients attendance. It was a retrospective review of patients treated in resuscitation room following heroin overdose over a one year period (Feb 95–Jan 96).

Results—41 patients were identified (31 male, 10 female), mean age 26 years (range 19–39). A review of the individual A&E record cards revealed four contributory factors: (1) other drugs ingested (35%); (2) recent release from prison (30%); (3) abstinance/infrequent drug misuse (25%); (4) alcohol intoxication (10%).

Conclusions—Heroin overdoses and heroin related deaths remain a common problem in Glasgow. In this study they accounted for 0.6% of all resuscitation cases in one year. Action to reduce overdoses in the injecting population should focus on education with regard to the factors identified in this study.

Magnetic resonance imaging of childhood musculoskeletal injuries at the ankle
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We studied 10 children who presented with a history of an inversion injury of the ankle. The clinical signs elicited on initial examination suggested bony injury. Plain radiographs taken on presentation appeared normal. Magnetic resonance imaging of the injured ankle was successfully performed on all subjects within seven days of initial assessment. The images obtained were interpreted and scored on six pathological criteria. These pathological criteria and their incidence are shown (table).

Pathological criteria and incidence on MR scanning

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Incidence</th>
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<tbody>
<tr>
<td>Growth plate injury</td>
<td>50%</td>
</tr>
<tr>
<td>Joint effusion</td>
<td>70%</td>
</tr>
<tr>
<td>Periosteal elevation</td>
<td>70%</td>
</tr>
<tr>
<td>Ligamentous injury</td>
<td>40%</td>
</tr>
<tr>
<td>Saphenous venous stasis</td>
<td>20%</td>
</tr>
</tbody>
</table>

We conclude that children with clinical evidence of bony injury/postinversion injury of the ankle despite normal plain radiographs do indeed have demonstrable bone and soft tissue injury on magnetic resonance imaging.

Duplication and patient delays in the A&E department
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Accident and Emergency Departments, Belfast City and Royal Victoria Hospitals, Belfast

Objective—To determine the number of patients attending an A&E department who could be referred to acute assessment units at triage.

Setting—An urban A&E department in a teaching hospital.

Design—Prospective audit of all patients attending over a 15 d period.

Main outcome measures—Source of patient, number of patients suitable to bypass A&E, actual disposal, specialties involved.

Results—Of 1626 patients, 308 (19%) could have been sent to an acute assessment unit at triage and 85% of these could have been referred by the triage nurse. Half of the patients were general practitioner referrals. 30% of the general practitioner referrals were discharged from the A&E department and 53% of the self referrals. In all, 57.8% of all patients were admitted.
Conclusions—75% of the patients suitable for triaging to an acute assessment unit are admitted or referred to an outpatient department. The time they spend in an A&E department delays them getting to their definitive specialty and is a wasteful duplication of resources. Triage should assess whether access to specialist assessment should be through the A&E department or not. This would reduce A&E attendances by 19% and provide a better patient service.

Medical students’ attitude towards A&E as a career and attendance of A&E
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Medical students’ attitudes to A&E were assessed through a questionnaire at their introductory lecture to their final medical year. Thirteen questions were included involving “yes” or “no” tick box answers. 94 of 160 students returned a questionnaire. The majority of students (83%) felt A&E experience would be important for their future careers, but none chose it as their preferred career. Two thirds of them knew less about a career in A&E than other major specialties to which they had been attached. They considered A&E was harder training (62%), harder work (78%), and more stressful (93%) than other specialties. This negative attitude to A&E as a career may partly explain the difficulty in recruiting doctors to the specialty. We believe it is erroneous and would be better advice concerning the specialty during attachments to A&E may improve this outlook.

Scale and cost of preventable trauma deaths
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Deaths from major trauma were audited in a randomised sample of hospitals in Northern Ireland over a one year period. Trauma deaths were defined by the trauma score and age combination index (TRISS) and by peer review. There were 74 trauma deaths ISS > 15. Preventable deaths ranged from 3–38% by peer review, depending on the level of panel agreement, or 30% by TRISS. Median age was 29 years, range 18–91. Following ATLS protocols may have avoided five deaths (18%), consultant presence a further three (11%). Of seven patients whose management errors occurred in the first few hours, four were seen by a trauma team. Large hospitals had the highest preventable death rates and their patients were more often cared for by junior doctors. 23% of the preventable deaths were predicted to be disabled at the one year had they survived. Conclusions—ATLS training and protocols for consultant call out may reduce preventable deaths by one third. Further reductions are more difficult to predict. Some of these depend on broader healthcare issues concerning care of the elderly, rehabilitation, and quality of life. Preventing trauma deaths through better trauma care may not be cost-effective. Prevention may be better directed at morbidity and disability.

The effect of different resuscitation fluids on lymphocyte proliferation after haemorrhage
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Haemorrhage can affect many aspects of immune function. Compromised immunity may be one of the factors involved in the development of complications after trauma. One part of the immune system that can be seriously compromised after haemorrhage is the ability of lymphocytes to proliferate in response to stimuli, resulting in poor cellular immune responses. It has also been reported that resuscitation fluids can adversely affect immunity, especially RES function. The aim of this study was to see if lymphocyte proliferation after haemorrhage was affected by the type of resuscitation given. Young adult male Balb/c mice (23–27 g) anaesthetised with isoflurane were bled through a cannula placed in the left femoral artery at a rate of 0.1 ml/min until 40% of their blood volume was removed; 30 min after the end of haemorrhage, they were resuscitated with their shed blood or an equal volume of hydroxyethyl starch or Haemaccel, or 2 ml volume of Ringer’s lactate. Sham operated animals received Ringer’s lactate but no haemorrhage/resuscitation. At 2, 24, or 48 h after the end of haemorrhage, animals were killed and their spleen and mesenteric lymph nodes removed. A single cell suspension was made of each. 2×10⁶ cells were incubated with or without the non-specific mitogen concanavalin A for 4 h at 37°C, 5% CO₂, 1µCi of ‘H-thymidine was added and the cells cultured for another 24 h. The cells were harvested and the uptake of ‘H-thymidine was measured on a scintillation counter. Data were analysed by anova. In all groups there was a depression of splenocyte proliferation at 24 h, which normalised by 48 h. There were no significant changes in mesenteric lymph node cell proliferation in any group over this time course. Different resuscitation fluids seem to exert no effect on lymphocyte proliferation beyond that already caused by the surgery and anaesthesia in this model. Different lymphocyte populations behave differently after haemorrhage and resuscitation. Thus while it is clear that certain aspects of immune function can be altered by the trauma of surgery, there is no evidence in the present study that resuscitation fluids further modify such responses.

Tissue injury attenuates the hypotension of haemorrhagic shock but worsens the metabolic insult
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Tissue injury attenuates the biphasic heart rate response and the hypotension induced by blood loss. These apparent physiological benefits are not matched by improvements in survival. This apparent paradox merits further investigation. Increasing plasma lactate concentrations are considered a hallmark of shock. We measured plasma lactate levels in a porcine model of haemorrhagic shock and the metabolic insult of haemorrhagic shock on a background of nociceptive afferent nerve stimulation (which mimics the effects of tissue injury). 10 animals were studied in each of four groups: C, surgical controls; H, 30% total blood volume haemorrhage; HNS, 30% haemorrhage on a background of nociceptive afferent nerve stimulation; and NS, nociception stimulation alone. An alphaxalone/alphadalone infusion was used for anaesthesia. The animals were bled over 30 min and the shed blood was reinfused after 30 min of shock. Nerve stimulation was started before haemorrhage in HNS and continued throughout the 90 min study. Results—HNS produced a greater tachycardia and an attenuation of the hypotension seen with H. CI and DO2 both fall to around 50% of prehaemorrhage values in H and HNS but VO2 was unchanged, as OER increased from 29% to 65% in H and from 27% to 64% in HNS. Resuscitation reversed all the changes except the tachycardia. Plasma lactate after resuscitation reached 4.8 mmol in HNS compared to 2.3 mmol in H. Taking the rise in lactate over the course of the study (Δlac) as an index of the severity of shock, Δlac was greater for HNS than for H. Conclusions—There is evidence that HNS results in more severe shock than H despite the fact that global cardiovascular indices seem to be no worse. It is likely that disturbances in regional blood flow result in a greater metabolic insult in HNS than in H.
Morphine reverses the bradycardia and hypotension associated with severe haemorrhage

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The response to progressive simple haemorrhage (blood loss in the absence of major tissue damage, eg gastrointestinal haemorrhage) is biphasic in man and rat: an initial tachycardia while blood pressure is maintained by the baroreflex followed by a vagally mediated bradycardia and hypotension due to the activation of a second depressor reflex. The latter phase can be attenuated by prior administration of morphine. The aim of this study was to determine whether the bradycardia and hypotension could be reversed by morphine, once they had been established. Experiments were performed on two groups of male Wistar rats (236-258 g). Stainless steel guide cannulas were implanted into the lateral cerebral ventricle (ivc) under pentobarbitone anaesthesia (60 mg/kg ip) 7-14 days before the start of the study. The anaesthesia was induced with isoflurane (3.5% in O2) and maintained with alphadalone/alphaxalone (16-18 mg/kg/h iv).

The electrocardiogram was recorded from needle electrodes attached to the skin of the ventrum, blood pressure from the ventral tail artery, and body temperature with a rectal probe. Body temperature was maintained constant at 38.0°C (SEM 0.1°C) and mean arterial blood pressure (MBP) was maintained using external heating. Both groups received a haemorrhage of 40% total blood volume (BV; estimated as 6.06 ml/100 g body weight) at 2% BV/min. After the loss of 26% BV, bradycardia and hypotension were established equally in both groups (table). Group I (n=8) then received 0.9% saline (20 ml ivc) while group II (n=10) received morphine (10 µg in 20 µl ivc). In group I, heart rate (HR) and mean arterial blood pressure (MBP) continued to fall, while the bradycardia was completely reversed and the hypotension attenuated in group II following treatment with morphine (table at foot of page).

Conclusions—These results indicate that morphine can completely reverse the bradycardia and partially reverse the hypotension associated with severe haemorrhage. However, any benefit may be more apparent than real since morphine reverses a cardioprotective reflex and produces a pattern of response reminiscent of that induced by injury, which is known to be deleterious.

The effects of calcium containing intravenous resuscitation fluids on platelet aggregation in whole blood in vitro

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No previous study of A&E management of PSVT in the UK has been published.

Review of PSVT management in the accident and emergency department: the use of adenosine and vagal treatment

P A Evans

Accident and Emergency Department, Leicester Royal Infirmary NHS Trust, Leicester LE1 5SW

No previous study of A&E management of PSVT in the UK has been published.

Design—Prospective A&E and medical records of patients from December 1994 to

A survey of plastic bullet injuries presenting to hospital accident and emergency departments during a week of civil disturbance in Northern Ireland

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Plastic bullets have been available to police forces as a method of riot control throughout the UK since 1988 but have been exclusively used in Northern Ireland by the security forces since their introduction in 1973, completely replacing the less accurate rubber bullet in 1975. Their use has been controversial and has been associated with fatalities. The plastic bullet is a projectile made of polyvinyl chloride (PVC). It is a cylinder measuring 10 x 3.7 cm and weighs 135 g. It is discharged from the riot control gun at low muzzle velocity to travel on its long axis to hit the target end on. During the week of 8 to 15 July 1996 widespread serious public disorder occurred in Northern Ireland and some 6000 plastic bullets were fired. We report a series of 177 patients who attended A&E departments in eight hospitals (seven in Northern Ireland and one in the Irish Republic) during this period. For 176 of these patients 183 separate injuries attributed to plastic bullets have been recorded. There were 39 injuries to head and neck, 31 to upper limb, 26 to chest, 13 to abdomen, and 74 to lower limb. ISS scores were calculated for these 176 patients. These scores ranged from 1 to 18. 45 patients required hospital admission of whom four required intensive care treatment. There were no fatalities.
March 1996 presenting to the A&E department with PSVT, treated with vagal methods or adenosine were entered into the study. A consultant cardiologist retrospectively assessed the ECG and rhythm strips.

Results—There were 108 presentations: 57 received vagal manoeuvres, 89 adenosine. The SHO identified the initial rhythm as NCT (17), BCT (2), SVT (60), AF (8), ST (1), VT (2), unsure (6), none noted (12). A cardiologist assessed the rhythms: functional nodal reentrant tachycardia and functional reentrant tachycardia (VT) (44), AF (19), VT (2), atrial flutter (5), sinus tachycardia (1), unsure 1 (total 65); 11 no ECG; results awaited, 26.

Successful treatment of junctional tachycardia—two spontaneous, three vagal of 28 attempts; 30 adenosine of 37 attempts; 23 were admitted and three had recurrence requiring drugs. Adenosine side effects occurred in 13 patients: chest pain (5), dyspnoea (2), hypotension (2), flushing (3), nausea (1), headache (1), bronchospasms (1); three of these effects occurred in one patient.

Treatment of atrial fibrillation (19)—One spontaneous, none resolved with vagal actions or adenosine. One patient, a 24 year old male with Wolf-Parkinson-White syndrome had ventricular fibrillation precipitated by carotid massage treated successfully with defibrillation.

Conclusions—(1) Adenosine is used too often with atrial fibrillation; fine irregularity is not recognised. (2) Periarrest guidelines need repeat teaching and specific department guidelines are advised. (3) Carotid sinus massage is not without risk as it is suggested that it should only be performed on a monitored patient with full ALS facilities present.

Using psychomotor skill teaching technique to teach the measurement of stroke distance for the detection of haemorrhage in the emergency department

R A Cocks, Y F Chan

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February 1997

March 1, 1997

Abstract

Serum potassium and glucose following nonthermal trauma in children

T H Rainer, C Barclay, T Beattie, P Crofts, N McNicol, M McNicol, K Sinnamon, R Stephen

Department of Accident and Emergency Medicine, Royal Hospital for Sick Children, Edinburgh

Serum potassium and glucose following nonthermal trauma in children. Chance observation indicates that serum potassium falls and serum glucose rises in some children but not in others. The effect of anaesthesia on hormonal and electrolyte factors following trauma in children is also poorly understood. Assumptions are often made that paediatric responses mimic adult responses and that electrolyte imbalances such as hypokalaemia require potassium replacement therapy.

Objectives—To investigate the relationship between serum potassium and glucose following moderate trauma in children.

Methods—Ethics approval was obtained from Lothian ethics committee for two blood samples to be taken from children presenting to the A&E department of The Royal Hospital for Sick Children following trauma. Intravenous (IV) access was gained according to normal protocol and one aliquot of blood was taken on admission and before the administration of IV analgesia. A second sample was taken several hours later before the induction of anaesthesia. No patient received IV fluid between the two samples. Diabetics were excluded. Fisher's exact, χ², Wilcoxon signed rank tests were used where indicated.

Results—There were 34 children (27 males), aged 11 months to 14 years (median 8 years) with a paediatric trauma score (PTS) ranging from 6 to 12 (median 9), an injury severity score (ISS) ranging from 1 to 11 (median 9), and a maximum abbreviated injury score (MAIS) of 1–3. The table (at foot of page) shows differences in potassium and glucose between the first and second sample. In seven cases the initial potassium level was outside the normal range (< 3.5 mmol/l; P = 0.02), the lowest of which was 2.2 mmol/l. All had corrected to "normal" by the second sample except for two, which were 3.1 and 3.4 mmol/l. There was no correlation between ISS, MAIS, PTS, and potassium and glucose on the first or second sample. However, potassium correlated with glucose (r = 0.535, P = 0.0076) on the later sample.

Conclusions—Stress following trauma alters the normal hormonal and electrolyte patterns of children. Initial hypokalaemia probably does not require potassium supplementation as the changes are temporary and quickly correct either with time or appropriate analgesia.

Alteration in leucocyte adhesion molecule expression following moderate and major trauma

R A Cocks, Y F Chan

Department of Accident and Emergency Medicine, Royal Hospital for Sick Children, Edinburgh

Serum potassium and glucose following nonthermal trauma in children

T H Rainer, C Barclay, T Beattie, P Crofts, N McNicol, M McNicol, K Sinnamon, R Stephen

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First and second median (range) plasma potassium and glucose (mmol/l) values

<table>
<thead>
<tr>
<th>Plasma values</th>
<th>1st sample</th>
<th>2nd sample</th>
<th>P value *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium</td>
<td>3.6 (2.2–5.1)</td>
<td>3.8 (3.1–5.3)</td>
<td>0.0184</td>
</tr>
<tr>
<td>Glucose</td>
<td>6.1 (2.7–13.1)</td>
<td>6.4 (4.8–5.5)</td>
<td>0.0392</td>
</tr>
</tbody>
</table>

*Wilcoxon signed rank test.
Abstracts

Stress responses following mild to moderate trauma in children

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Stress responses following trauma in children have been poorly characterised and little is known regarding the hormonal and electrolyte changes following moderate trauma in this group. The effect of analgesia on hormonal and electrolyte responses following trauma in children is also goody understood. Assumptions are often made that paediatric responses mimic adult responses. Consequently adult protocols are used in the treatment of paediatric patients.

Objectives—To characterise the hormonal and electrolyte changes following the stress of moderate trauma in children.

Method—Ethics approval was obtained from the local ethics committee to take two aliquots of blood from children admitted following trauma—the first on admission and just before the administration of amnesia, and the second several hours later before general anaesthesia. Over three months 34 children (27 males) aged 11 months to 14 years (median 8 years) with non-thermal limb injuries attended the A&E department at The Royal Hospital for Sick Children. The paediatric trauma score (PTS) ranged from 2 to 8 (median 4), the injury severity score (ISS) ranged from 1 to 11 (median 9), and the maximum abbreviated injury score (MAIS) ranged from 1 to 3. No patient received intravenous (IV) fluid before the second blood sample. Correlation was sought between PTS, ISS, MAIS, and plasma levels of adrenaline (ADR), noradrenaline (NOR), cortisol, angiotensin II (ANG II) and arginine vasopressin (AVP). Fisher’s exact and Wilcoxon signed rank tests were used where indicated.

Results—Correlations on the first sample, taken 5-186 minutes after injury, were found on the following: ADR with MAIS (r = 0.341, P = 0.0517), ADR with PTS (r = 0.394, P = 0.0225). Further correlations on the second sample, taken 60-260 min after admission, were: cortisol and ISS (r = 0.448, P = 0.0106); cortisol and MAIS (r = 0.392, P = 0.0283). The table (at foot of page) shows the hormonal changes with time and intervention.

Conclusions—Stress following trauma alters the normal hormonal patterns of children. Cortisol and adrenaline correlate with injury severity and show the greatest change with time and/or intervention.

Training and willingness of bystanders to perform basic life support

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Ischaemic heart disease remains a major cause of sudden cardiac death in the western world in general and in the west of Scotland in particular. Two principal factors have been shown to improve outcome directly following cardiac arrest if done early—defibrillation and basic life support (BLS). Factors that improve the delivery of BLS and defibrillation will indirectly improve outcome. Although there has been significant improvement in survival from prehospital cardiac arrest in the east of Glasgow since the early 1980s, the rate of bystander CPR remains poor. We evaluated the perceived ability and willingness of people attending A&E to perform BLS.

Methods and results—This prospective observational survey, based in the A&E department at Glasgow Royal Infirmary, resulted in 718 completed questionnaires in a one week period. Training in BLS was not related to age although significantly more men had received training than women (179/310, 58%;165/393, 42%; P < 0.001). 72 non-clinical NHS employees (57%) were not trained in BLS, nor were 306 non-NHS subjects (65%). 107 respondents (55%) who had close relatives with the past history of myocardial infarction had received no training in BLS. Eight social workers and police (50%), 20 students and teachers (54%), 20 catering, domestic and porters (77%), and 11 public transport drivers (92%) had received no training in BLS. Training appeared to make no difference to the willingness of respondents to perform CPR on relatives, friends, and strangers. However, those who had received training were more certain about whether or not they would perform the procedure. 23 clinical NHS personnel (48%), 70 non-clinical personnel (57%), 246 non-NHS subjects (55%), and 10 ambulance personnel (29%) indicated that they would perform BLS rather than call for an ambulance as the first action in an non-EMS out of hospital cardiac arrest.

Conclusions—Large numbers of out of hospital and hospital based personnel remain untrained in BLS. Many ambulance and clinical NHS personnel do not appear to appreciate the value of calling an ambulance early so that early defibrillation may be implemented.

The use of the Ottawa ankle rules by nurses practitioners

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Aim—The Ottawa ankle rules used in other centres by doctors have been shown to reduce the number of ankle x rays without missing any fractures. This study assesses the use of the Ottawa ankle rules by nurse practitioners to determine whether they could be applied as effectively as when used by doctors.

Methods—665 patients over the age of 16 who presented within 24 h of an ankle injury were assessed by a nurse trained in the use of the Ottawa ankle rules. Where indicated the nurse sent the patient for an x ray. 700 patients in the same period were seen by doctors who had not received training in these rules. All patients were subsequently examined by a doctor and an x ray ordered if the doctor considered it appropriate. After three months the doctors were similarly trained in the use of the rules. Data on the reduction in numbers of x rays following this are being collected and will be available for presentation.
Results—665 patients were assessed by a nurse practitioner. 72.6% were x rayed. Of the 700 patients seen by a doctor alone, 91% were sent for x ray (P = 0.001). No fractures were missed by the nurse practitioners.

Conclusions—Nurse practitioners trained to use the Ottawa ankle rules can accurately determine which patients require a radiograph of the ankle. A comparison between the percentage of patients x rayed by nurses and doctors after the latter had been taught to use the Ottawa rules will be presented.

Prehospital diazepam: an adult of use
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The conventional management of prolonged seizures involves paramedical administration of a short acting benzodiazepine. Paramedic crews working for the Westcountry Ambulance Service Trust have recently started giving rectal diazepam to people who are fitting, according to an agreed protocol.

Methods—We undertook a retrospective audit of all patients brought to our hospital by ambulance who were diagnosed as having suffered a fit. We examined the ambulance and casualty cards of all such patients attending over a time period spanning the six months before and the six months after the introduction of diazepam on the ambulances. We recorded the following information for each patient: date of attendance, age, sex, and whether known to have epilepsy; whether a fit was witnessed by a paramedic; whether anticonvulsant was given in the community and if so by whom (carer or ambulance crew); number of fits and duration of these; length of time the ambulance was at the scene; baseline observations on arrival in hospital and whether the patient was still fitting; disposal of the patient and the final diagnosis of the cause of the fits.

Results—Over the 12 month period we identified 328 patients brought to hospital by ambulance in whom a diagnosis of fits was made. Of these, 51 had been given anticonvulsant before arriving in hospital. The patients who were given anticonvulsant by the ambulance personnel took significantly longer to reach hospital, and were more likely to be admitted overnight than those given no drug. Those treated by the ambulance crews had a significantly lower blood pressure, Glasgow coma score, and respiratory rate on arrival at hospital than those not treated. There was no difference in the pulse rate between the two groups. One patient suffered a respiratory failure followed by cardiac arrest after being given diazepam by an ambulance paramedic.

Conclusions—We do not think there is enough evidence to support the use of diazepam by ambulance crews in the catchment area of our hospital.

Abstracts

Effect of a standard one unit blood donation on stroke distance, blood pressure, and pulse rate in a cohort of elderly blood donors
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Objective—To determine the effect of a standard one unit blood donation on stroke distance, blood pressure, and pulse rate in the elderly.

Design—Case-control study

Setting—Predonation clinic of an autologous blood transfusion service for patients undergoing elective orthopaedic surgery.

Methods—Stroke distance was measured non-invasively in 17 patients using a 2 MHz suprasternal ultrasound probe employing the Doppler principle. Readings were taken over a 10 min predonation period and compared with readings taken over a 20 min period postdonation. Pulse rate and blood pressure were also recorded at the same time intervals. The patients acted as their own controls.

Results—While there was no significant change in pulse and blood pressure in response to a one unit blood donation, stroke distance fell significantly (P < 0.05).

Conclusions—Stroke distance changes earlier in response to blood loss than either pulse rate or blood pressure in the elderly and therefore might be useful in diagnosing hypovolaemia in the early compensated phase.

Prospective trial of Entonox and intra-articular lignocaine for acute anterior shoulder dislocation
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Objective—To assess the relative analgesic effects of Entonox and intra-articular lignocaine in patients presenting with acute anterior shoulder dislocation.

Patients and methods—A prospective randomised trial was conducted between March and July 1996. All patients over 16 presenting with anterior glenohumeral dislocations without an associated fracture were considered for inclusion in the study. Patients received either Entonox through a Mapleson C circuit or an intra-articular injection of 10 mL 1% lignocaine. Objective verbal pain scores were obtained before and after analgesia and also after reduction. The Milch and external rotation manoeuvres were the reduction methods of choice and the pain experienced during reduction was assessed. Results were analysed using the Wilcoxon rank sum and paired Student t tests.

Results—There were 31 patients in the study, 15 of whom received intra-articular lignocaine and the other 16 received Entonox. The mean ages and sex distribution were comparable for both groups. The mean pain scores are shown in the table (at foot of page). 11 patients in each group described the reduction manoeuvre as being either slightly painful or not painful at all. Four patients in the intra-articular group required supplemental analgesia to facilitate reduction while only one patient in the Entonox group required intravenous sedation/ analgesia.

Conclusions—Entonox given through a Mapleson C circuit significantly reduces pain scores in patients with acute anterior shoulder dislocations, allowing comfortable reduction in the majority of cases. In comparison, intra-articular lignocaine is less effective.

A prospective study of the effect on door to needle time and outcome of different ways of giving thrombolytic treatment to patients with MI
M Saks, J Koch, J Daly, J Eichhause, F Morris

Ambulance diazepam: an adult of use
Indications for thoracolumbar radiography in blunt trauma
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ATLS states that (a) thoracolumbar spine x rays should be obtained for any patient suspected of sustaining multiple trauma, (b) the absence of a thoracolumbar spine injury mandates radiological examination of the entire spinal column. Several North American publications suggest that routine thoracolumbar radiography is not indicated in blunt trauma patients without back pain or tenderness, provided they have no cognitive deficit or painful distracting injury.

Objective—To examine whether these ATLS guidelines were followed in the emergency department of a large district general hospital.

Design—Retrospective review of case notes.

Subjects—All patients admitted during a two year period with an ISS ≥ 9 and a diagnosis of cervical, thoracic, or lumbar vertebral fracture.

Results—Of 104 eligible patients, 72 had the required information fully documented. The commonest mechanism of injury was RTA (n = 43), followed by falls (n = 25), contact sports (n = 2), and crush injuries (n = 2). There were 36 cervical spine fractures (50%), 23 thoracic spine fractures (32%), and 20 lumbar spine fractures (28%). Eight patients had fractures in more than one region of their spine. Neurological deficit was present in 38% of patients with cervical injury, 22% with thoracic injury, and 10% with lumbar injury. Of patients with cervical fracture, 30% had their thoracolumbar spine imaged, although of those with GCS < 15 100% were imaged. Four patients with clearly documented absence of back pain or tenderness and GCS < 15 had thoracolumbar vertebral fractures; all had concomitant painful distracting injuries.

Conclusions—During the investigation period more selective clinical indications for thoracolumbar radiography were being used than those recommended in ATLS. No patient had their diagnosis missed or delayed by using clinical indications for such imaging.

Epilepsy in the accident and emergency department — developing a code of safe practice
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Objectives—To audit the case notes of 1200 patients who have presented to an A&E department following an epileptic seizure and based on the findings to produce a proforma which (1) highlights common areas of deficiency in the management of such patients and (2) offers guidelines for the management of these patients.

Methods—We audited 1200 case notes of patients who attended an A&E department following a seizure. 12 hospitals took part in the audit. Each contributed 100 sets of notes. Aspects of care examined included documentation, prehospital care, examination, investigation, management, and disposal.

Results—There were large variations in practice between departments for all aspects of care that were analysed. There were a number of important areas where documentation was deficient. The results have cost implications as well as implications for the quality of care offered to patients presenting following an epileptic seizure.

Anaesthesia for the reduction of fractures of the distal radius in Scotland
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Recent studies have shown the increasing popularity of haematomyoma blocks throughout the UK. General anaesthesia (GA) remains the commonest method of anaesthesia for fracture reduction and the use of intravenous regional anaesthesia (Bier's block) in the UK is not increasing.

Aims—To determine the methods of anaesthesia used in the immediate management of fractures of the distal radius in adults in Scotland; to compare the Scottish situation with the UK; to assess the cost implications of different anaesthetic and management strategies in the management of these injuries.

Methods—Telephone questionnaire of A&E doctors in A&E departments in Scotland which deal with trauma and see more than 20,000 patients per annum.

Results—25 hospitals fulfilled the criteria; all were contacted: 32% of hospitals (8/25) still use GA routinely for the majority of patients; 20% of hospitals (5/25) still admit all patients overnight for GA; 44% of hospitals (11/25) use Bier's blocks routinely; 12% use intravenous (IV) sedation (3/25) and 12% use haematomyoma blocks (3/25); 4/11 hospitals fast patients before Bier's blocks, 7/11 do not. Training remains patchy and generally poor. Costs are difficult to assess due to lack of available data, but GA (especially with overnight stay) is much more expensive than Bier's block.

Conclusions—Bier's block may be the anaesthetic method of choice for the management of distal radius fractures in Scotland both in terms of efficiency and economics. Training needs to be improved and standardised throughout Scotland. Improved methods of costing procedures accurately would allow more meaningful comparisons between different treatments.

The restriction of extensions to licensing hours does not influence the pattern of alcohol and assault related attendances at an inner city A&E department
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Many out of hours A&E attenders are affected by alcohol and many are the victims of violent crime. Extensions to licensing hours increases the frequency of alcohol ingestion in A&E attenders.

Aims—To determine the effect of restriction of licensing extensions on profile of alcohol and assault related attendances at Edinburgh's only adult A&E department.

Methods—Data collection on all patients presenting between 1700 h and 0900 h during three two-week periods, immediately before and after restrictions introduced and five weeks after restrictions started. Data collected included age, sex, date and time of presentation, mode of arrival, location of alcohol consumption before attendance, principal diagnosis, and breath alcohol concentration (BAC).

Results—5023 patients were seen over six weeks of study. 2187 (43.5%) did not provide a BAC sample (284 could not or would not give sample, 1903 did not have sample taken for other reasons). Of 2836 patients who gave BAC reading, 71.1% (2017/2836) had a zero reading, 7.8% (222/2836) were positive below legal driving limit (0.5 mg/l), 21.1% (597/2836) were positive above legal driving limit; 31% (253/819) were admitted as inpatients. 444 patients (8.8%) were involved in assaults, 133 were involved with weapons. No significant changes in pattern of attendances following restriction of hours.

Conclusions—Alcohol and assault related demands on A&E departments out of hours is high. Changes in licensing laws did not appreciably influence profile of alcohol and assault related attendances at A&E in this study.

Prehospital rapid sequence induction
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Aims—To determine the number of and reasons for rapid sequence inductions performed by A&E doctors out of hospital as part of the activities of the MEDIC 1 Flying Squad. Rapid sequence induction was defined in this context as any attempted endotracheal intubation accompanied by the use of drugs to assist ventilation and relaxation, including opiates, benzodiazepines, intravenous and topical anaesthetics, and neuromuscular blocking drugs.

Methods—Retrospective case note review of all MEDIC 1 and A&E records over the period 1 February 1993 to 28 February 1996 (37 months). The anaesthetic technique used, drugs used, complications, difficulties, reasons for induction out of hospital, and grade of doctor performing the technique were determined.

Results—26 patients were treated over 37 months; data for 25 were available—20% (5/25) had RSI for medical indications: asthma/epilepsy/O/D/LVF x 2; 80% (20/25) had RSI for trauma indications: inadequate airway 70% (14/20), inadequate ventilation 85% (17/20), head injury 85% (17/20), chest injuries 25% (5/20). A variety of anaesthetic techniques was used. No patient acutely deteriorated as a result of prehospital rapid sequence induction.

Conclusions—This is a safe and valuable technique for trained A&E doctors. Precise benefits of prehospital rapid sequence induction remain to be quantified.
Information technology in accident and emergency departments

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Objective—To assess how much information technology is available in A&E departments and how it is used.

Methods—A postal questionnaire was sent to 217 A&E departments in Great Britain. Responses were obtained from 159 (73.3%).

Results—129 departments (81.1%) were computerized. Computerised data were used for administration in 96.9%, for audit in 79.1%, and for research in only 41.1%. Although most departments had a fax machine, only the minority had the Internet, e-mail, or a publication database available. Most departments used several sources of toxicity information, but telephone advice from the Poisons Information Centre was the main source. 74.2% of hospitals offered courses in computer technology to staff.

Conclusions—There appears to be a variable amount of information technology available and this is not dependent on department size. The technology is generally underused. We need to attend appropriate courses to get the most from technology available and not get left behind. We display some of the potential facilities available and outline how to get "online."

Quantitative analysis of clinical record audit in the A&E department and use of a weighting scoring system

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Aims—To develop an analytical method to assess the quality of clinical records in A&E using a simple spreadsheet; to allow numerical performance scores to be derived for each variable, SHO, and clinical record; to standardise the system to enable valid comparisons of doctors and departments over time.

Methods—Each clinical record was assessed by an independent observer. Standard clinical records were used. Each variable, eg, adequacy of history, examination etc, were evaluated. A score of 1 was awarded if the variable was satisfactorily completed, and a score of 0 if the variable was incomplete. 100 records for each SHO were examined: 50 from patients from triage group 1 and 50 from triage group 2 or 3. Using a standard spreadsheet programme, scores were derived for each record, SHO, and variable. Further refinement of the system was achieved using a weighting system. Each variable was given a weighting factor to reflect its importance for administrative, clinical, and medicolegal purposes.

Results—The results will be demonstrated in table and graphical form.

Conclusions—This is a simple system that allows detailed, objective, and reproducible evaluation of clinical records in A&E.

Coping with an epidemic of ice injuries: a comparison of two management strategies

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Objective—To document the experience of two A&E departments in dealing with a "mini-major incident" brought about by icy weather conditions and compare the different responses of each department to the increased workload.

Methods—A retrospective analysis of all the notes of patients attending the two departments on Saturday 30 December 1995 following a fall on ice. The incident was quantified by comparison of the number of attendances on the study day with the number of attendances on the four previous and four subsequent Saturdays. The numbers of calls made to each local ambulance service over a similar period were also recorded. The responses made by each department are compared.

Main outcome measures—Numbers of patients, clinical features of those patients who had fallen on ice, the responses of each department to the increased workload.

Results—In department A there was a 45.6% increase in the number of attendances on the study day, with the peak in the number of hourly attendances between 11:00 and 15:00 h. Department B saw an increase in attendances of 99.9%, with the peak in attendances between 10:00 h and 18:00 h. Department A saw 104 patients who attended falling on ice, of whom 35.5% had sustained a fracture; department B saw 177 patients, 44.6% of those sustaining a fracture. Department A dealt with the incident without involving other disciplines, in contrast to department B where other specialties were called upon to help manage the incident.

Conclusions—The public were inadequately prepared for such adverse weather conditions, despite epidemics of this nature occurring on a regular basis. An epidemic of ice injuries can have significant ramifications with regards to resource allocation for several days after the incident. The two departments each used a different strategy to handle the incident resulting in different resource needs.

Radionuclide bone scanning in the evaluation of suspected scaphoid fracture in an accident and emergency review clinic

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Objective—to determine the appropriateness of radionuclide bone scanning in establishing an accurate diagnosis in patients with symptoms and signs suggestive of scaphoid injury attending an A&E review clinic.

Methods—A retrospective study was conducted using A&E and radiology records to determine those patients who were booked into the review clinic over a one year period with a suspected scaphoid fracture. The details of all patients who were booked into the clinic were studied. Radiology records were consulted to obtain the results of initial scaphoid radiographs, as well as second radiographs and bone scans where applicable.

Results—162 patients were booked into the A&E review clinic, of whom 128 actually attended. 59 of these attendees were deemed on the basis of clinical grounds and normal radiographs to require radionuclide bone scanning to establish an accurate diagnosis of their injury. In 40 cases there was no evidence of fracture (25 scans normal, 11 indicated a soft tissue injury). In 19 cases the bone scan indicated the presence of a fracture (7 scaphoid, 5 distal radius, 3 trapezius, 3 triquetral, 1 capititate). 93 patients had second scaphoid radiographs performed in the clinic of these only two were deemed to show scaphoid fractures that were not apparent on the initial films.

Conclusions—The repeat radiograph at 10-14 d is an insensitive test for detecting scaphoid fractures. Conversely radionuclide scanning in conjunction with repeat clinical examination had a 32% fracture pick up rate. We conclude that suspected scaphoid injuries can be effectively pursued to a diagnostic conclusion in A&E clinics where there is access to radionuclide bone scanning.

Clinical predictors of the circulatory status of an injured adult

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Objective—to test the hypothesis that other simple bedside tests ("new tests") may more accurately predict the circulatory status of recently injured adults than pulse rate (PR) or blood pressure (BP) ("current tests").

Setting—Emergency department, Hope Hospital, Salford and the trauma unit, Grote Schour Hospital, Observatory, Cape Town.

Methods—A cohort of 239 injured adults was recruited prospectively, 50% from each of the above settings. All subjects had sustained injuries within the previous 24 h proximal to the tarsus or carpus which were severe enough to warrant inpatient treatment. The "new tests" for assessing the circulation were: bedside measurements of blood glucose (BG), haemoglobin (Hb), Glasgow coma score (GCS), appearance (pale, sweaty, restless, agitated), pulse oximetry signal, respiratory rate, shock index (SI), stroke distance, and tympanic temperature. These "new" and the "current tests" were measured in a rapid sequence in each subject before taking a blood sample from an uninjured limb for measurement of plasma lactate and alkaline phosphatase.

Outcome measures—Each test's ability to predict circulatory impairment, defined by a plasma lactate ≥ 2.5 mmol/l, was analysed through receiver operating curves (ROC), and using McNemar's test for comparing proportions in paired data; comparisons of sensitivity for detecting circulatory impairment at fixed specificities (74% and 90%) and comparisons of specificity for excluding circulatory impairment at fixed sensitivities (61% and 90%).

Results—80 patients (34%) had circulatory impairment as defined by plasma lactate. 76 patients had ISS scores of 16 and over. PR was better than BP (mean, systolic, and diastolic) for predicting circulatory status. ROC curves suggested that GCS, Hb, BG, and SI were generally more accurate than PR, though McNemar's test showed that only GCS and Hb were significantly (P < 0.05) better at comparable sensitivities/specificities.

Conclusions—the data support the hypothesis and suggest that it may be of benefit in initial assessment areas to regularly monitor GCS and Hb as well as PR and BP as indicators of the circulatory status in moderately to severely injured adults.
Human neutrophil elastase release during cardiac arrest

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Degranulation of neutrophils (thus releasing elastase into the circulation) after a variety of stresses has been implicated in the pathogenesis of certain illnesses, most notably adult respiratory distress syndrome (ARDS) after trauma. Recent work has shown that the release of elastase from neutrophils occurs within minutes of injury, but that the amount released varies enormously between individuals. The rapid mechanism causing elastase release and the reason for variation in the amount released is unclear. Using cardiac arrest as a model we investigated this phenomenon.

Methods—51 patients presenting to one A&E department following out of hospital cardiac arrest had blood samples drawn on arrival at hospital. The timing and treatment of cardiac arrest before obtaining the samples was recorded. In particular, the administration of drugs (which depended on the training of the ambulance personnel involved) was carefully documented. After separation by centrifuge, plasma was aspirated, frozen, and stored at −80°C. Plasma neutrophil elastase was measured in these samples and others obtained from healthy volunteers by specific radioimmuno-assay with rabbit polyclonal antiserum.

Results—Plasma neutrophil elastase levels were higher (P < 0.05) when analysed using the Mann Whitney U test (non-parametric data) in patients presenting in cardiac arrest (median 75.0 ng/ml) than in healthy controls (median 18.6 ng/ml). When analysing possible triggers for the release of elastase, the 33 patients treated with intravenous adrenaline before sampling had higher (P < 0.05) elastase levels (median 103.0 mg/ml) than the 18 who had not received adrenaline (median 52.3 mg/ml).

Conclusions—Cardiac arrest is a stimulus for neutrophils to release elastase into the circulation. The results suggest that circulating adrenaline may be the trigger responsible for this. If proved to also be the trigger in ARDS, the implications would be considerable: it might be possible to prevent its development in patients after trauma by the use of specific adrenergic blocking agents.

Active compression-decompression cardiopulmonary resuscitation given by a mechanical device

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Studies suggest that manual active compression-decompression cardiopulmonary resuscitation (ACD CPR) provides an improved haemodynamic profile. However, effective manual use of the ACD device for more than a short period is limited by the effort required by an individual to use it. In order to address this problem, a mechanical ACD device has been produced.

Methods—27 adult patients presenting in non-traumatic cardiac arrest to one A&E department were enrolled into the study. The European Resuscitation Council guidelines for the management of cardiac arrest were followed. Sequential 3 min periods of standard CPR given by a mechanical “Thumper” were compared with those given by the mechanical ACD device. The following recordings were made: end tidal CO₂ (continuous sampling from end-inspiratory tube), arterial pressures (femoral arterial lines provided continuous traces), arterial blood gases and mixed venous blood gases (from an internal jugular central line). The timing of any return of spontaneous circulation (ROSC) during the study was noted.

Results—Of the five patients who had a period of ROSC, four experienced this during ACD CPR. Similar femoral arterial pressure tracings were obtained during both ACD and standard CPR. Mean end tidal CO₂ during ACD CPR was 8.9 mm Hg, compared with 7.3 mm Hg and 6.9 mm Hg during first and second periods of standard CPR respectively, but the differences were not significant when analysed using the Student paired t test. Similarly, there was no significant rise in mixed venous H⁺ or Pco₂ during ACD CPR, when compared with standard CPR.

Conclusions—The results fail to provide evidence that mechanical ACD CPR is more effective haemodynamically than standard mechanical CPR. Considering the result of this study in conjunction with those recent clinical trials of manual ACD CPR, the future role of ACD CPR remains in some doubt.

Abdominal injury associated with pelvic fracture: a diagnostic dilemma

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Abdominal injury is an important cause of mortality and morbidity in injured patients. The diagnosis of abdominal injury can be missed initially and missed injuries are associated with higher mortality. Timely accurate diagnosis and treatment of abdominal injury is mandatory to reduce mortality and morbidity.

Objectives—To determine whether a swimmer’s view or supine (trauma) oblique views are more likely to visualise the lower cervical spine when a lateral view fails to show the cervico-thoracic junction.

Design—A prospective study comparing two 20 week periods, the first of which involved use of the swimmer’s view as an additional view when the cervico-thoracic junction was not initially seen, replaced in the second period by paired supine oblique views.

Setting—A teaching hospital (Glasgow Royal Infirmary) A&E department with 72 000 new attendances per year.

Subjects—430 consecutive traumatised patients requiring supine cervical spine radiographs to exclude cervical injury.

Results—There were 230 patients in the first phase, of whom 60 required swimmer’s views. In the second phase out of a total of 197 patients, 62 required supine obliques. 34 patients (9%) had swimmer’s views rejected by A&E staff, compared with 26 patients with supine oblique reject films (41%). The numbers of rejected films in each group was compared using a χ² test with a Yates correction and found to be significantly lower in the supine oblique group (P < 0.05). Films were analysed by a radiologist (IB). Supine oblique views were judged to show the vertebral bodies at the cervicothoracic junction in only 36% of patients; however, the facet joints and posterior elements were clearly seen in 72%. Exposure doses were calculated and revealed a substantial reduction for a pair of supine oblique views (1.6 miliG- rays) over a single swimmer’s view (7.2 miliG-rays).

Conclusions—In injured patients for whom the standard three-view series fails to show the cervicothoracic junction, swimmer’s views remain useful for visualisation of the vertebral bodies. However, in unconscious patients in whom cervical spine fracture dislocation must be rapidly excluded, right and left supine (trauma) oblique films are more likely to be successful (by demonstration of the posterior elements). They expose patients to less radiation than swimmer’s views and are an invaluable additional view in trauma radiology.
Staff affected by verbal and physical violence in accident and emergency
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We set out to determine the number and type of violent incidents occurring in Glasgow Royal Infirmary A&E department, a busy urban department with 72000 new annual attendances. A prospective questionnaire survey was carried out on all staff for a three month period (February to April 1996). All staff working in A&E, including ambulance personnel and police in the department, completed a survey form immediately after violent incidents occurred. Staff detailed the type of incident: verbal (with an implicit threat of violence) or physical assault; staff members involved; use of weapons; alcohol or drug intoxication; waiting time and date and times of incidents. 69 questionnaires were completed during the study period. Multiple staff were involved on 37 occasions with 129 staff involved in all (table).

<table>
<thead>
<tr>
<th>Nurse</th>
<th>Doctors</th>
<th>Others</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>Verbal</td>
<td>62</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>Physical</td>
<td>14</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>36</td>
<td>17</td>
</tr>
</tbody>
</table>

Police were involved in 29 of the 69 incidents reported (42%). Of those affected by physical violence (31 staff members and one patient), no significant injuries were recorded. Weapons were brandished on four occasions (a knife, a chair, a stick, and a crutch). The majority of offenders were male patients (75%) whose average age was 33 (range 18-65). Alcohol intoxication was clinically evident in 76%. Incidents appeared to bear no relation to waiting time or day of the week but 65% occurred between 2100 h and 0700 h.

Conclusions—Violence in this A&E department remains a significant problem for nursing and medical staff. Although there were no significant injuries there was a heavy reliance on a rapid response from the police. The findings of this survey, along with unsolicited local media publicity, have prompted the hospital trust management to undertake an urgent review of security arrangements and department layout in order to try to reduce the number of violent incidents.

Trauma triage: a comparison of CRAMS and TRTS in a United Kingdom population
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The CRAMS and triage version of the revised trauma score (TRTS) are methods of prehos- pital trauma triage developed to identify patients who may benefit from transportation to a trauma centre. Despite the absence of a formal trauma centre network in the UK these scales are of potential value to seriously injured patients by allowing prearrival activation of hospital trauma teams. We evaluated their use in a sample of the UK trauma popu-

The effect of traumatic brain injury on cardiorespiratory function
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64% of trauma deaths have associated traumatic brain injury. The cardiorespiratory con-
sequences of this injury are poorly understood. The aim of this study was to determine the acute cardiovascular, respiratory, and autonomic effects of mild and moderate brain injury. The study was conducted on 15 male Wistar rats (240-260 g) anaesthetised with alphadalone/alphaxalone. Instantaneous heart rate (HR) was calculated from R-R intervals from the electrocardiogram, mean arterial blood pressure (MBP) through a cannula in the tail artery, and respiratory frequency using a neonatal respiration moni-
tor. R-R interval standard deviation (R-R SD, an index of cardiac parasympathetic activity) was determined only during normal respira-
tion. Normal body temperature was main-
tained throughout. Three groups of five animals were studied. The first group received a moderate brain injury (1.6-1.8 atm pres-
sure, 10 ms duration applied directly onto the aura over the parietal lobe through a cannula sealed into the skull); the second group received a mild injury (1.0-1.2 atm, 10 ms); the third underwent all of the surgery but not the pressure pulse (control). Measurements were made before, 2 s after injury, and at 15 min intervals thereafter for 60 min. Moderate brain injury produced an immediate, signifi-
cantly, fall in HR of 175 (SEM 50) from 465 (7) beats/min (P < 0.05, analysis of variance), a rise in MBP of 24 (5) from 110 (4) mm Hg, and apnoea lasting 34 (2) s. Thereafter HR, MBP, and respiration returned to control lev-

Improving the diagnosis of septic olecranon and prepatellar bursitis
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Olecranon and prepatellar bursitis, are rela-
tively common problems presenting to the A&E department. Clinical features can be helpful in separating septic from non-septic cases, but it is still difficult to be certain in a high proportion of cases. The tests which have been used to help to make this distinction include cell counts on, and culture of, the aspirated fluid. However, false negative culture results on plain samples appear to be common. 27 cases, 10 of olecranon and 17 of prepatellar bursitis, were analysed prospec-
tively, with samples of the aspirate being sent where the volume was adequate for each of: an unanaesthetised culture of a plain sample, and inoculation into blood culture bottles. 18 of the 27 cases were septic and S aureus was the infective agent in all cases. The mean white cell count on non-
septic cases was 2.1 x 10^3, and in septic cases was 12.9 x 10^3. The difference was statisti-
cally significant (P < 0.05), but the overlap of the ranges was too great for this to be a useful test. Of the 18 septic cases, 12 had both plain culture, and inoculation into blood cultures performed. Only seven of these 12 had positive cultures on the plain samples, with all 12 of the samples inoculated into blood culture bottles yielding positive cultures (sta-
tistically significant difference, P < 0.02, x^2 test).

Conclusions—All cases of olecranon and pre-
patellar bursitis should be aspirated. The inoculation of this fluid into blood culture bottles will accurately determine whether or not the bursa is infected. This distinction is essential for accurate treatment, to avoid worsening suppuration and sinus formation.