



## Emergency medicine

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## Emergency medicine

### EME/TUE/01 INTERNATIONAL COLLABORATION VALIDATING SICK SCORE: A NON-INVASIVE SEVERITY-OF-ILLNESS ASSESSMENT

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**Aims:** Severity-of-illness scores such as PRISM help prioritise care and predict mortality. Existing scores depend on laboratory parameters and need trained staff. The "signs of inflammation in children that can kill" (SICK) score uses only physical criteria that are measurable on presentation. Developed with multiple logistic regression model coefficients converted to integer scores, its validation in an intensive care unit has been published. This study aims to validate the scoring system in the context of all hospital admissions. The international collaboration of two hospitals (in London and Delhi) allows a comparison of its performance in resource-rich and poor settings.

**Methods:** All paediatric admissions in both centres were prospectively evaluated over one year. 3895 Children in Delhi and 1473 children in London were studied. SICK scores were computed using custom-built open-source computer software and were correlated with in-hospital mortality. Discrimination by areas under receiver operator characteristic (ROC) curves was used to measure performance.

**Results:** The scoring system was uniformly good in both centres. The areas under the ROC were 84.8% (95% CI 78.3% to 91.3%) in India, 81.0% (CI 45.4% to 100.0%) in the United Kingdom and 84.1% (CI 77.5% to 90.7%) for combined data. The SICK score was found to predict mortality reliably. ROC values were consistent with those in the development cohort (89%) and a previous validation study (76%). It was comparable (by ROC) to PRISM 2, which is in the public domain (77%).

**Conclusion:** SICK score calculated at admission can help prioritise care for children who need urgent aggressive management.

### EME/TUE/02 SERVICE EVALUATION ON THE PROVISION OF ADDITIONAL HEALTH INFORMATION AVAILABLE TO PARENTS AND CARERS OF CHILDREN AFTER DISCHARGE FROM THE PAEDIATRIC EMERGENCY DEPARTMENT AND ITS NEED FOR IMPROVEMENT

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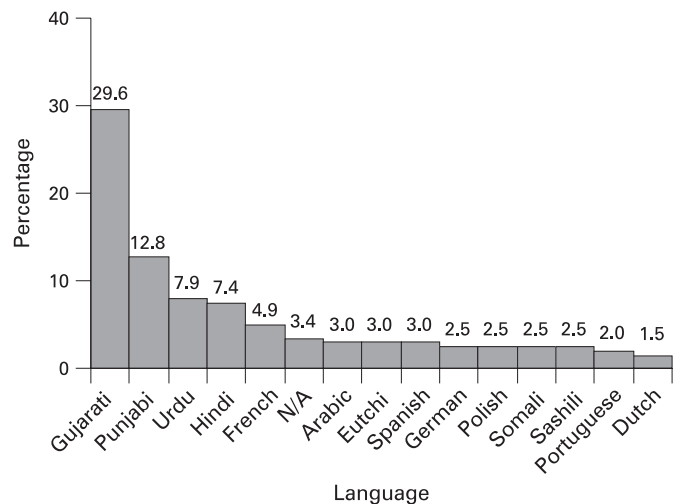
**Aims:** To investigate parents' and carers' preferred delivery of additional information after discharge from a children's emergency department (ED) and to evaluate the need for any additional provisions for passing on information.

**Methods:** A prospective evaluation and exploratory study involving 1046 patients and their carers between April and June 2007 using a questionnaire developed for the purpose, which was validated by a panel of service users. Demographic data were obtained about the child, family and carers, including ethnic background, reason for attendance, language preference and ability and the perceived usefulness of the way additional health information is currently provided. Health information provision was investigated by profiling families' media use and accessibility as well as the evaluation of their preferred media.

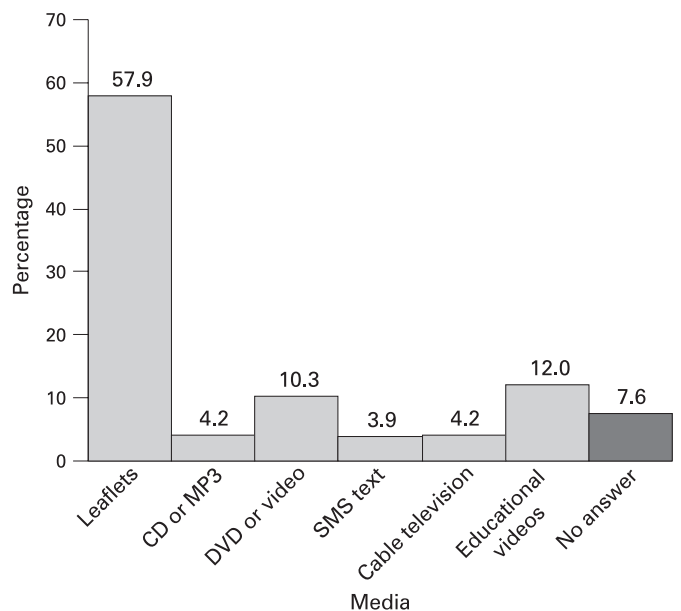
**Results:** 1046 children were evaluated along with their carers attending the dedicated children's area of the ED of a large teaching hospital. The mean age of the children was 7.25 years, 49.6% of

attendees were white British and 15.1% were Asian Indian. The preferred language of 81.7% of children (80.5% of carers) was English (other languages listed in fig 1). 41.3% of respondents thought it would be useful for children to have illness information, rising to 74.4% for 12–16 year olds. More information was requested by 29% of attendees; of these, 77.2% would prefer this to be in English, with 13.1% preferring other languages. 57.9% of attendees were happy with leaflets (other preferences listed below, see fig 2). Other sources of information, such as family and friends, also proved popular, being the preferred choice of 30.3% of attendees.

**Conclusion:** The results show that providing additional health information with educational leaflets in English is the most preferred adjunct to verbal medical advice, irrespective of ethnic background. The findings indicate that there is a particular need for the provision of health information to children or young people themselves, making this a potential area for further study. The



Abstract EME/TUE/02 Figure 1 Whole group: 15 most frequent secondary non-English languages spoken by the respondent.



Abstract EME/TUE/02 Figure 2 Whole group: media preferences.

importance of health advice from family and friends is highlighted, hinting at the complexity of decision-making by service users. Providing age-appropriate information to children and young people, as well as educating family and friends and thus the wider public, should be considered when providing future healthcare information and implementation policies.

### EME/TUE/03 KNOWLEDGE OF THE CHANGES IN THE PAEDIATRIC LIFE SUPPORT GUIDELINES (2005) AMONG DOCTORS WORKING IN PAEDIATRICS IN ENGLAND

A Mansoor, P Bharathi. *Queen's Hospital, Burton on Trent, UK*

**Introduction:** The management of a sick child requires knowledge, clinical skills and experience. Paediatric life support (PLS) courses are designed to deliver a structured approach to emergencies. Changes were introduced in the PLS guidelines in 2005 based on new scientific evidence.

**Aim:** To assess the knowledge of the new PLS guidelines among doctors working in paediatrics.

**Methods:** Data were collected by a telephone questionnaire from 100 doctors in paediatrics in November 2007. Doctors working on the middle grade and Senior House Officer rota were randomly selected from hospitals in England. Questions focused on the recent changes as per the Resuscitation Council guidelines.<sup>1</sup> Details of the last PLS training were noted.

**Results:** The study population consisted of 62 middle grades and 38 doctors working on the SHO or equivalent rota. Results are shown in the table. The best response was mostly seen in doctors who had recent PLS training or update (mostly in the past 6 months) and who were instructors for such courses.

**Conclusion:** Competency in the delivery of emergency care cannot be assessed solely based on scores from such questionnaires but they do reflect the working knowledge of doctors. PLS courses provide excellent means of providing this knowledge but the value of updates and regular scenario-based in-house training cannot be overemphasised. The successful completion of PLS is a desirable criteria for entry into the specialist training programmes but with more junior doctors on the SHO rota PLS should be mandatory in-hospital induction, with assessment of the trainee through appropriate tests.

1. **Resuscitation Council.** Resuscitation guidelines 2005. London, UK: Resuscitation Council, 2005:104 pp.

#### Abstract EME/TUE/03

Scores as percentage	100%	60–90%	<60%
Middle grades	11	57	32
SHO/equivalent	5	50	45

SHO, senior house officer.

### EME/TUE/04 THE USE OF CHILD PROTECTION TRIGGERS IN THE EMERGENCY DEPARTMENT: ARE THEY RELIABLE?

S Morrison. *Alder Hey Children's Hospital, Liverpool, UK*

**Aims:** The aim of this audit was to establish whether the triggers used at accident and emergency (A&E) triage reliably identified children at risk of abuse.

**Methods:** Initially the child protection team records were searched for all referrals made from the A&E department from 1 June 2005 to 31 May 2006. The A&E notes for these patients were checked for triggers present at triage. The triggers used are inappropriate delay in presentation, injury in a non-ambient child, inconsistent history/injury, multiple attendances, interaction between parent/child and other concerns (cardiopulmonary resuscitation, domestic violence, drugs/alcohol). The child protection team notes were checked for

the outcome of the referral. Both sets of notes were checked for further details of any triggers present. Second, the A&E computer system was searched for all children with triggers present at triage during the same year. These notes were then checked for triggers present and the outcome of the attendance, including any referrals made.

**Results:** 46 patients were referred by A&E to the child protection team during the study year. 22 (49%) had a trigger present at triage. Evidence of at least one trigger was documented in either the A&E or child protection team notes in 78% of cases. The majority had only one trigger present at triage (59%). The maximum was three triggers (14%). All three patients with three triggers present had a final diagnosis of non-accidental injury made. 77 patients had triggers present at triage during the study year. 15 (19%) were referred to the child protection team. 43% of patients were either referred to the child protection team or a social services referral was made. Again the majority had only one trigger present (78%); the maximum number of triggers present was four. Multiple attendances were not found to be a useful trigger. No patients referred had this trigger present and on analysing the number of attendances in the referred patients no association was identified between the number of attendances and outcome. The other triggers were present in approximately equal numbers in the cases with a final diagnosis of non-accidental injury and were felt to be useful.

**Conclusion:** The child protection triggers are reliable in identifying children at risk of abuse, although they were not specific and abuse can not be assumed just on the presence of a trigger. These cases should be reviewed by a senior doctor. The absence of triggers does not exclude the risk of abuse.

### EME/TUE/05 BUCCAL MIDAZOLAM OFFERS A HIGH DEGREE OF SATISFACTION AMONG PARENTS AND HEALTHCARE PROFESSIONALS IN MANAGING PROLONGED SEIZURES

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**Introduction:** In the absence of intravenous access, rectal diazepam has historically been the standard management for prolonged seizures. The superiority of buccal midazolam (BM) over rectal diazepam has been established in randomised controlled trials.<sup>1–3</sup> Evidence-based medicine currently advocates BM as first-line management for prolonged seizures, in children with seizures.

**Objective:** To identify the usage of BM along with the ease of its application and experience among parents and healthcare professionals in a district general hospital setting.

**Methods:** Questionnaires were distributed among parents of children who suffer from epilepsy as well as doctors and nurses within the paediatric ward and outpatient department in a period of 3 months.

**Results:** 134 questionnaires were analysed. The results are shown in the table.

**Conclusions:** This survey demonstrated a good level of satisfaction over the efficacy and mode of administration of BM. It also identified that many parents and healthcare professionals are still

#### Abstract EME/TUE/05

	Parents	Doctors	Nurses
No of questionnaires	53	46	35
Awareness of buccal midazolam	18 (34%)	33 (72%)	32 (91%)
Number given buccal midazolam	14 (78%)	7 (21%)	17 (53%)
Oral preparation used	13 (93%)	1 (15%)	2 (12%)
Satisfaction with mode of application	13 (93%)	6 (86%)	16 (94%)
Satisfaction with efficacy	14 (100%)	6 (86%)	16 (94%)

not aware or familiar with the use of BM. Current practice could be improved by standardising guidelines and education

1. **McIntyre J**, Robertson S, Norris E, *et al*. Safety and efficacy of buccal midazolam versus rectal diazepam for emergency department treatment of seizures in children: a randomized controlled trial. *Lancet* 2005;**366**:182–3.
2. **Scott RC**. Buccal midazolam as rescue therapy for acute seizures. *Lancet Neurol* 2005;**4**:592–3.
3. **Hussain N**, Regan E, Gosalakkal J, Whitehouse WP. Use of buccal midazolam in children. *Arch Dis Child* 2006;**91**:1041–2.

EME/TUE/06

#### SEVERE METABOLIC ACIDOSIS IS COMMON IN HOSPITALISED CHILDREN WITH ROTAVIRUS GASTROENTERITIS AND IS AN INDICATOR OF DEHYDRATION

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**Aims:** To investigate whether rotavirus gastroenteritis is associated with metabolic acidosis, the type of acidosis, associated patient characteristics, biochemical abnormalities and management implications.

**Methods:** In a retrospective study all children presenting to the paediatric unit with a stool positive for rotavirus over a one-year

period were included. Data collected included demographic variables, degree of dehydration, results of blood gas analysis, renal function tests and urine analysis for ketones on admission, fluid management and duration of hospitalisation. Patients with (cases) and without (controls) severe metabolic acidosis (bicarbonate <17 mmol/l) were compared.

**Results:** A total of 78 of 133 children (58%) presenting to hospital with rotavirus gastroenteritis had a blood gas analysis performed on admission. 73/78 (94%) had metabolic acidosis (bicarbonate <22 mmol/l) and 35/78 (45%) had severe metabolic acidosis. There was no difference in the duration of symptoms before admission, gender, temperature on admission, c-reactive protein levels, ketonuria, blood chloride and lactate levels, anion gap and the duration of hospitalisation between patients with and without severe metabolic acidosis. Significantly more patients with severe metabolic acidosis were dehydrated and required boluses of fluid and intravenous rehydration. Urea and creatinine levels were significantly higher in patients with severe metabolic acidosis and correlated negatively with bicarbonate levels ( $r = -0.29$ ,  $p = 0.02$ ).

**Conclusions:** Severe metabolic acidosis in rotavirus gastroenteritis was common in children attending hospital and was associated with more severe dehydration and higher urea and creatinine levels.