

## Emergency

### G51 HAS MODERN MEDICINE DESKILLED THE GENERAL PAEDIATRICIAN IN DIAGNOSING DEATH?

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**Introduction:** Following a prolonged out of hospital arrest (OHA) or period with fixed dilated pupils (FDP), a child will have undergone potentially irreversible brainstem damage or death. The prognosis for these cases is hopeless and ICU admission futile. Previous studies provide good evidence for limiting paediatric resuscitation<sup>1,2</sup> but are they followed in clinical practice?

**Method:** Retrospective case note review of all PICU/NICU admissions (Jan 1995–Dec 2002) to identify cases of OHA and FDP. Hopeless cases were identified using a criteria specific definition.<sup>3</sup> Outcome variables included survival or neurological status at ICU discharge.

**Results:** In the study period, the admission rate for hopeless cases has increased sixfold. In total, 146 cases were admitted with histories of OHA (n=86) or FDP (n=60). After 63 were excluded, 83 (42OHA/41FDP) cases were deemed hopeless. Of the 42 OHA cases, 37 (88%) died on ICU. Four of the five survivors were discharged in vegetative states. All 41 hopeless FDP cases died on ICU. Of the 63 excluded cases, 46% died. A total of 107 (73%) children died, of which 44% fulfilled brainstem criteria and a further 19% had care withdrawn on the basis of other neurological tests. 56% died before formal withdrawal of care; the remaining 15% had care withdrawn in anticipation of death.

**Conclusion:** Referrals for hopeless cases to PICU are rising. Such admissions bring false hope and undue trauma to families while denying beds to more appropriate cases. DGH paediatricians are not comfortable with withdrawal of care in the DGH setting. Reasons for this may include shortened SpR training, centralisation of PICU services, and fear of criticism.

1. Schindler MB, Bohn D, Cox PN, *et al.* Outcome of out-of-hospital arrest in children. *N Engl J Med* 1996;**335**:1473–9.
2. Pfenniger J, Santi A. Severe traumatic brain injury in children—are the results improving? *Swiss Medical weekly* 2002;**132**(9–10):116–20.

### G52 PAEDIATRIC A&E ATTENDANCE—EVIDENCE TO SUPPORT GPs IN CASUALTY

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**Aims:** To survey the various pathways by which children and their parents chose to attend the A&E department of a city hospital and to assess the appropriateness of these attendances.

**Method:** An anonymous, self administered questionnaire was designed, to acquire information on all patients up to 16 years attending A&E for a period of 1 month, starting in February 2003. The survey was designed with input from the PCT as well as the hospital. Data collected included patient demographics, appropriateness of attendance, and parental reasons for that attendance. The questionnaire used was modified from an original, which had been piloted for 1 week in January 2003. Appropriateness was assessed using a modified Sheffield process method. Questionnaires were distributed by the A&E staff members who saw the child.

**Results:** 1674 children attended the department during the study period. 598 questionnaires (37.5% of attendees) were collected. 455 (76%) were complete, 138 (23%) were partially completed but could be used in some of the data analysis. 51% of all parents made no attempt to access any other emergency healthcare service before attending A&E. 40% of children required treatment that could only be provided in A&E. 21% of all parents attending A&E perceived their GP to be unavailable in an emergency, 15% did so because of an accident, 23% because they perceived their child to be acutely unwell, and 27% were referred in.

**Conclusion:** In most cases attending A&E the children were suitable for GP care. In a substantial proportion of cases, parents attended A&E because of a perceived lack of access to GPs, for either advice or treatment. On the evidence of this study PCTs should be looking at funding GPs, based in A&E departments, to provide primary care facilities at the point where patients are choosing to access them.

### G53 KEEPING YOUNG CHILDREN OUT OF HOSPITAL: PAEDIATRIC AMBULATORY CARE (SHORT STAY) UNITS REDUCE THE PROPORTION OF CHILDREN UNDER FOUR BEING ADMITTED

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**Aim:** To evaluate a 16 bedded short stay 4–6 hour assessment and diagnostic unit (PACU) in terms of inpatient bed usage following opening of unit in 1998.

**Methods:** Before and after comparative study using hospital information system reports, clinical record, and ward admission books.

**Results:** Last quarter (Sept–Dec) annual admissions fell from 682 in 1998 to 515 in 2001 (p 0.0007), with an increase in PACU attendances from 850 to 1246, respectively. Total A and E attendances remained relatively constant over the time period (average 6117). There was a significant reduction in the proportion of under 2s admitted for less than 24 h as inpatients (49–40%, p 0.015); 72% of children admitted were under 4 years in 1997 cf 58% in 2001. There was no significant increase in proportion of longer ward stays (p 0.08), with no significant change in ICD diagnoses categories. Number of transfers of patients to other hospitals in the time periods fell from 44 to 9 (0.08 to 0.02%). The unscheduled reattendance rate was nationally comparable and reflected safe practice.

**Conclusion:** This model of service has resulted in significant reductions in both total numbers and proportions of young children under 4 years admitted to inpatient beds since opening. Further studies are required on parental acceptability of such a model and detailed cost benefit analysis.

### G54 ONE STOP DISPENSING IMPROVES PROVISION OF DISCHARGE MEDICATION

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**Introduction:** Patient focused redesign of the short stay general medical paediatric ward has highlighted pharmacy discharge prescription dispensing to be a contributing factor to delaying patient discharge. One stop dispensing refers to the practice of combining inpatient and discharge dispensing into a single supply labelled for discharge. This is facilitated by having pre-labelled original packs of medicines suitable for paediatrics available at ward level and also incorporates the use of patient's own medicines. Our hypothesis is that implementing one stop dispensing is a more efficient system to provide discharge medications to paediatric patients.

**Method:** An audit was undertaken to investigate the effectiveness of one stop dispensing. Activity of dispensing discharge medications was reviewed over a 4 week period pre and post implementation of one stop dispensing system.

**Results:** See table.

**Conclusion:** One stop dispensing has improved availability of discharge medications. These results suggest that pharmacy discharge dispensing is no longer a contributing factor to delayed patient discharge and it may be possible to reduce length of inpatient stay within an acute general medical paediatric ward by an average time of at least 1 h per patient. This is currently being monitored.

#### Abstract G54, Comparison of discharge prescriptions pre and post implementation of one stop dispensing system

	Pre	Post
Number of prescriptions	86	104
Number of discharge medications items	163	220
Average pharmacy turnaround time (min)	97	33
Prescriptions available within 30 min (%)	15%	74%

### G55 DEVELOPMENT OF A SIMPLE MODEL TO PREDICT SERIOUS ILLNESS IN CHILDREN

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**Introduction:** Recognition of serious illness in acutely unwell children is challenging. A small number of illness severity scores in children have been published but are little used and cover narrow age bands.

**Aims:** To develop and test an acute illness severity score for all childhood ages and all presentations in a general paediatric unit.

**Methods:** Existing scores were reviewed and a modified scale applied to all paediatric admissions. Data were prospectively collected on every child admitted over a 6 month period to a DGH with around 3000 paediatric annual admissions. Five observations: colour, response to social overture, state variation, hydration, and respiratory effort were recorded together with temperature, respiratory rate, heart rate, and capillary refill time. For each child the admitting SHO also recorded their subjective overall assessment of illness severity. Cases for analysis were chosen randomly, but were stratified by discharge diagnosis, so as to include children who were likely to be in the ill category. The end outcome, presence of serious illness, was defined by consensus by a panel of three consultant paediatricians.

**Results:** Analysis was conducted on 88 patients: 60 not/mildly ill patients and 28 patients in the ill category. Logistic regression showed that four variables had significant and independent correlation with presence of a serious illness. Heart rate:  $p < 0.013$  OR 14.4 (95% CI 1.76 to 117.7); colour:  $p < 0.003$ , OR 16.6 (95% CI 2.57 to 106.9); response:  $p < 0.016$ , OR 23.9 (95% CI 1.81 to 316.7); and respiratory effort:  $p < 0.055$ , OR 13.2 (95% CI 0.95 to 183.8). These four variables had coefficients of correlation similar enough to be added together to form a severity index. A predictive model using these variables showed 92% specificity with 82% sensitivity for more severe illness. The SHOs correctly identified all of the not ill patients but only identified 11 of the 28 ill patients (sensitivity 39%, specificity 100%).

**Conclusion:** The results of this small scale pilot support the importance of the use of simple clinical signs in assessment of acutely ill children and that clustering of signs may provide useful signals to less experienced staff. The analysis indicates the need for studies on larger numbers of children.

#### G56 STILL MISSING THE POINT? PENICILLIN USE IN SUSPECTED MENINGOCOCCAL DISEASE

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**Introduction:** New developments are promising exciting advances in the management of established meningococcal disease in the future. Until then, early recognition and prompt administration of antibiotic therapy remain the cornerstones of treatment.

**Method:** A retrospective casenote audit was performed to determine whether the current pre-hospital guidelines recommending antibiotic therapy at the earliest opportunity are being followed, and then looking at the "ceftriaxone needle time"—the emergency department's earliest intervention.

**Results:** 33 cases of suspected paediatric meningococcal disease were notified to North Hertfordshire's public health service between 1999 and 2003. Seven casenotes could not be obtained. Of the remaining 26 patients, 46% had been referred by their GP. 25% (3/12) of the GP

referred children had received intramuscular (IM) benzylpenicillin in the currently recommended age appropriate dose. None of the children that presented directly to the emergency department received IM benzylpenicillin. Throat swabs were sent in 34% (9/26) of cases and 44% (4/9) were positive. 2 of the 3 children given IM benzylpenicillin had positive throat swabs. The average hospital ceftriaxone needle time was 117 min.

**Conclusion:** The exceptionally low rate of pre-hospital antibiotic usage is a cause for concern and needs to be addressed. As a result, a local GP survey has been commenced to identify possible clinical concerns, in order to improve their usage. Prefilled syringes might be part of the solution but would require further research and product development from the pharmaceutical industry. A single "one size fits all" dosage might even be possible. Due to prolonged ceftriaxone needle times, there may even be a case for junior emergency staff to initially use IM benzylpenicillin in the emergency department.

#### G57 MOVING PAEDIATRICIANS OUT OF A&E: IMPACT ON "DOOR TO NEEDLE TIME" IN MENINGOCOCCAL DISEASE

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**Objectives:** Opening a paediatric assessment unit (PAU) may mean paediatricians are in accident and emergency departments (A&E) less often. This study aimed to assess if this affected the promptness of antibiotic treatment for children with meningococcal disease.

**Methods:** Door to needle time was recorded for antibiotic treatment of confirmed or probable meningococcal disease (MCD) in 84 children; June 1995–April 1999. In May 1999 an exclusive paediatric assessment unit was opened, geographically separate from A&E. Door to needle time was subsequently recorded in a further 68 children with MCD from May 1999–December 2002.

**Results:** More children with MCD presented directly to A&E after PAU opened (40/84 (48%) v 43/68 (63%)). Median ages (1.9 v 2 years) and mortality was similar in the two time periods (7/84 (8%) v 3/65 (5%)). Median door to needle time increased for children presenting to A&E after PAU opened, from 45 to 65 min. The proportion with typical, non-blanching rashes presenting to A&E who waited more than 60 min for antibiotics also increased, from 17% to 26%. Of 18 children with non-blanching rashes presenting to A&E after PAU opened, 12 were given their first dose of antibiotic by an A&E doctor, compared to only 2 of 21 presenting with an atypical rash.

**Conclusion:** Opening PAU occurred at a time when an increasing proportion of children with MCD were presenting to A&E. The majority of those with typical rashes were treated promptly by A&E doctors, but not those with atypical rashes. Strategies to improve immediate treatment of MCD should continue to include education of A&E staff, especially when PAU is geographically separate from A&E.