AUDIT

Determining the common medical presenting problems to an accident and emergency department

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Abstract

All accident and emergency (A&E) attendances over a one year period were prospectively studied in order to determine common medical presenting problems. Data were collected on children (0–15 years) attending a paediatric A&E department in Nottingham between February 1997 and February 1998. A total of 38 982 children were seen. The diagnoses of 26 756 (69%) were classified as trauma or surgical, and 10 369 (27%) as medical; 1857 (4%) could not be classified. The commonest presenting problems reported for "medical" children were breathing difficulty (31%), febrile illness (20%), diarrhoea with or without vomiting (16%), abdominal pain (6%), seizure (5%), and rash (5%). The most senior doctor seeing these patients in A&E was a senior house officer (intern or junior resident) in 78% of cases, paediatric registrar (senior resident) in 19%, consultant (attending physician) in 1.4%, and "other" in 2.6%. Guidelines developed for A&E should target the commonest presenting problem categories, six of which account for 83% of all medical attendances, and be directed towards senior house officers.

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National Health Service utilisation in the UK is steadily rising.[1] Attendance at accident and emergency (A&E) departments is rising by at least 2% per year.[2] There has also been a rise in hospital admissions for all specialties[3] including paediatrics.[4] Child attendance at A&E has risen but not been quantified accurately, with few data available. The Royal College of Paediatrics and Child Health working party on A&E services for children[5] estimated an annual paediatric attendance rate to A&E of 3.5 million in 1998/99 compared to an estimate of 2–2.5 million in 1988.[6] Data acquisition is neither standardised nor complete. Such data are required to monitor and plan services, develop training programmes for the spectrum of illnesses seen, and develop guidelines for common conditions.

UK studies in A&E[7–10] have not examined presenting problems. Prince and Worth[11] conducted a study in paediatric A&E concentrating on "inappropriate" attenders, social class, distance travelled, and reasons for attendance without describing presenting problems. One study reported diagnoses in a sample of 27 medical attenders to a children's A&E department in Belfast, when comparing attendance patterns with those in a local general practice.[12] Studies from Canada[13] and the USA[14 15] mainly describe final diagnoses in a different health care setting and are not directly applicable to UK practice.

Clinical guidelines, when introduced in the context of careful evaluations, can improve clinical practice.[16] We report the first and second aims of a series of studies we are undertaking in A&E to: (1) determine the nature and frequency of problems in children presenting with medical conditions; (2) determine the grade of medical staff involved in managing these children; (3) develop guidelines for the commonest paediatric presentations; and (4) test whether their use would improve paediatric medical care.

Patients and methods

The study was conducted in the paediatric accident and emergency department, located within the adult department (which sees approximately 120 000 cases per year) at the Queen's Medical Centre, Nottingham. This is a 1300 bed general and tertiary referral hospital that serves the whole of the population of the city of Nottingham and the surrounding area (approximately 745 000, of which children under 15 make up approximately 136 000). All acute child attenders aged 0–15 years, whether self or general practitioner referred, are seen within the paediatric A&E department. The department is staffed by one and a half whole time equivalent paediatric A&E consultants, and all permanent nursing staff are registered children's nurses. On average, half of the senior house officers (SHOs) working in the department have had previous paediatric experience.

Data on all 0–15 year olds attending paediatric A&E were collected prospectively over a one year period from 7 February 1997 to 6 February 1998. Demographic details at pres-

Table 1 Presenting problems of medical patients (3802 in 3434 children)

Presenting problem	*Number (percentage)*
Breathing difficulty	1164 (31%)
Febrile illness	764 (20%)
Diarrhoea +/− vomiting	617 (16%)
Abdominal pain	239 (6%)
Seizure	178 (5%)
Rash	190 (5%)
Other	650 (17%)
Total	3802

entation were recorded on the patient administration system (PAS). Clinical details were recorded by clinicians on a standard A&E sheet and entered onto the PAS at time of discharge. Nursing staff and senior house officers were asked to complete an additional form on all medical attenders, detailing the presenting problem and grade of the most senior doctor involved with the case. These data were merged with the PAS data at the end of the study. In order to check the validity of these additional data, 16% of the forms were checked against the medical record. Univariate analysis was conducted using non-parametric techniques, χ^2 for categorical data and Mann–Whitney U for continuous data, as these were not normally distributed.

Results

A total of 38 982 children (58% boys) aged 0–15 years were seen during the study year. The trauma/surgical group numbered 26 756 (69%) (subsequently referred to as the "trauma" group); categories included were: accident, assault, surgical, orthopaedic, and obstetrics and gynaecology. The "medical" group numbered 10 369 (27%) and included children classified as "self inflicted", non-accidental injury, psychiatric, and medical. Of the remaining children, 356 did not wait to see the doctor, 185 were classified as "other", and in 1316 (3.4%) data on classification were not completed. These last three unclassified groups were excluded from subsequent analysis.

AGE PROFILE

The median age of medical attenders was 2.8 years (mean 4.6 years, mode 2 years).

FREQUENCY OF ATTENDANCE

A total of 7889 children with medical problems attended 10 369 times. Of those, 6530 (83%) attended once only, 962 (12%) twice, 232 (3%) three times, 80 (1%) four times, 43 (0.5%) five times, and 42 (0.5%) six or more times, with one patient attending 26 times over the year.

COMPLETENESS OF DATA

The additional data collection form was completed for 3434 (33%) medical attenders, rising from 26% at the start of the study period to 41% after measures to encourage compliance were put in place. When compared to all medical attenders, the data collection patients tended to be younger (mean age 3.8 years versus 4.6 years, Mann–Whitney U, $z = 12$, $p < 0.001$), were more likely to be male (56.6% versus 54.8%, $\chi^2 = 6.2$, 1 df, $p = 0.01$), and arrived earlier in the day (mean time of arrival 13:46 versus 14:39, Mann–Whitney U, $z = 9$, $p < 0.001$) when the department was less busy.

Table 2 Most senior doctor involved in medical patients' care (n = 3350)

Grade of doctor seen	*Number (percentage)*
Senior house officer	2624 (78.3%)
Paediatric registrar	614 (18.3%)
Consultant	49 (1.5%)
Clinical assistant	40 (1.2%)
A&E registrar	23 (0.7%)
Total	3350

PRESENTING PROBLEMS

A total of 3802 presenting problems were recorded. In 3143 (92%) children, one problem only was recorded; in 291 (8%), two or more were recorded. Six common presenting problems accounted for 83% of the total (table 1). The validity of the presenting problem recorded on the form was checked against the clinical record in 16% of cases, and in only one of 567 (0.2%) was an error noted.

SENIORITY OF DOCTOR

A total of 78% of cases were reported as dealt with by the SHO as the most senior medical member of staff involved in their care (table 2). This result was checked and was incorrect in 16 of 567 cases (2.8%), mostly because of failure to record that a more senior doctor had been involved. Senior staff were less involved with children seen out of hours, but were more frequently involved with children with more serious or urgent problems, amounting to 16% of all children attending (χ^2, 2 df, $p < 0.001$).

Discussion

This paper gives the first detailed description of presenting problems (rather than diagnoses) of children attending a UK paediatric A&E department. Children with medical complaints made up 27% of the total attendances and the majority of these attended once only during the year (83%). A total of 83% of medical attenders were in one of six categories of the commonest presenting problems.

The additional forms for data collection on medical cases were completed for only one third of medical attenders, which we speculate was because SHOs were too busy. The subset of medical cases on which further data were completed tended to be younger than the whole medical group (by approximately 10 months), which may influence the results towards presenting problems more prevalent in this age group.

Data collected in a Canadian emergency room on paediatric diagnoses[13] showed 34% "respiratory", 15% "otitis media", 14% "gastroenteritis", 7% "abdominal pain", 8% "rash", 5% "fever", and 1.6% "seizure". These show a similar spectrum of disorder to our data but differ in the inclusion of otitis media, as this is a discharge diagnosis. Data from a USA emergency room[15] also found a similar range of presenting problems but in differing proportions: febrile illness in 21%, respiratory distress in 12%, vomiting in 10%, abdominal pain in

7%, rash in 6%, and seizures in 2%. Classifications used and a different health care system offer possible interpretations.

Similar presenting problems were found in paediatric admission data from five Yorkshire hospitals,[17] though in different proportions. In that study admissions for diarrhoea and vomiting were 9%, for abdominal pain 3%, and for seizure 16%. This is in contrast to the percentages presenting to A&E in our study (table 1) where a higher proportion of children appear to attend for relatively minor conditions than are admitted.

In Nottingham, 78% of children (the majority with minor illness) were seen by an SHO alone. After correction for error, this would be about 75–76%; registrars, consultants, and clinical assistants were involved in 20%, 2%, and 2% of cases respectively. Consultant workload within this department is primarily in the A&E follow up clinics (not included in this data set), and for resuscitation calls, administration, and teaching. SHOs are therefore exposed to many children with common acute illness, and presenting problem based guidelines would provide a framework in which they can consolidate their experience and from which they can learn. Six such guidelines would cover over 80% of presentations.

These data are from one A&E department and may not be totally generalisable to all units. According to a survey conducted by the Children in A&E Special Interest Group in 1997,[18] of 204 questionnaires returned from the 268 A&E departments in the UK, 15 reported separate children's departments (nine being within a children's hospital), and 142 reported a separate area for children within the all age department. In Nottingham, all general practitioner and self referrals are seen within this unit and many of the staff have specialist training in paediatrics; however, it is situated close to the city centre and is attended by children with higher deprivation scores than for the Nottingham Health District population,[11] in keeping with adult A&E attendance studies.[7 8] As such, it is not comparable to a "children's hospital" where the proportion of medical patients among attenders may be higher.

Trainees manage many acutely ill children in NHS hospital practice at present. In our A&E the complete episode of care for many was provided solely by SHOs. The NHS intends that in future the service should be delivered by fully trained medical and dental staff,[19] but it will still be important to offer experience for trainees in clinical assessment and decision making aided by guidelines. As only one third of children with medical problems attending A&E are admitted,[20] and only one quarter have investigations undertaken (Armon, unpublished data), many children could be managed in the community or by primary care teams where the ratio of fully trained doctors to trainees is much higher than in hospital. We found that a higher proportion (47%) of children referred by general practitioners were admitted than children seen after self referral (25%), suggesting a degree of clinical selection prior to attendance. Some children (with minor self limiting illness or an established diagnosis) may not need to see a doctor at all and, potentially, could be managed or triaged by a telephone advice service such as NHS Direct, community pharmacists, or emergency nurse practitioners.[19 21]

CONCLUSION

For children with medical complaints attending a paediatric A&E in a busy general hospital, six presenting problems were found to cover 83% of all attendances: breathing difficulty, feverish illness, diarrhoea and/or vomiting, abdominal pain, seizure, and rash. Initial management decisions were made by an SHO in 78% of cases without consulting a more senior colleague. Guidelines for these common presenting problems should be developed, tested, and agreed for use in A&E by all grades of staff and be particularly aimed at those in training.

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