ORIGINAL ARTICLE

Review of a paediatric emergency department observation unit

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Aim: To review the function of an emergency department paediatric observation unit.**Method:** A retrospective observational study reviewing the activity of the observation unit for 12 months**Results:** During 12 months, 4446 children were admitted to the observation unit and 76% were discharged home: usually within 8 hours. The average admission rate was 12 children in 24 hours. The commonest causes for children being admitted to the observation unit were respiratory problems and gastroenteritis or dehydration.**Conclusion:** The emergency paediatric observational unit was used to assess and treat children with a variety of conditions. This enabled many children to be managed in the emergency department rather than being admitted to the paediatric wards.

Many emergency departments in the United Kingdom have observation or assessment wards.¹ The British Association of Accident and Emergency Medicine has recommended that every department should have a short stay bed for every 5000 attendances.² The government has also supported the development of short stay beds incorporated into the emergency department (ED);³ however, children are not usually admitted to these areas as there is not appropriate staffing and environment.

Some children need to be observed for a period of time before deciding the severity of their illness and their management. This is partly because of their inability to communicate certain symptoms and they can clinically deteriorate rapidly as they have less physiological reserve. An ED has time constraints set by the government. Children needing a longer time of observation have been traditionally admitted onto a paediatric ward. These usually have a ward round once or twice a day and do not always have a high turn over of the children admitted for observation. An alternative is to assess these children in an observation unit that is part of an ED.

The Birmingham Children's Hospital (BCH) has an observation unit that is incorporated into the ED. It is open 24 hours a day, 7 days a week, with six beds/cots, and is staffed by an ED nurse. The number of children admitted is occasionally increased to eight but an extra nurse is also required to work in the unit. To be admitted children have to be haemodynamically stable, with a Glasgow coma scale of greater than 13, and oxygen saturation greater than 92% in oxygen. Senior house officers are required to discuss the case with a consultant or middle grade prior to admission of a child. When the nurse on the unit notices a change in the child's condition they ask the medical team to review the plan. There is consultant cover in the department until at least 11 pm. There is also middle grade cover until 1 or 2 am. Children with the following conditions may be admitted to the unit: asthma, respiratory tract infection, gastroenteritis, poor fluid intake, fever, rash, minor head injuries or trauma, abdominal pain, seizures, accidental poisoning, intoxication, post procedure sedation, and waiting for investigations or transfer. The admitting medical team is responsible for the child's care and the admission should be less than 8 hours. BCH is a secondary centre for general paediatrics for south Birmingham and receives general practitioner referred

children in the ED. It is a tertiary centre for the West Midlands. It has about 43 000 attendances in the department per year.

There are not many paediatric observation units in the United Kingdom and relatively little has been published concerning their work. We think the BCH observational unit is valuable in assessing and managing certain children and reducing the number of admissions to the paediatric wards. We therefore collected data about the observation unit on numbers, length of stay, diagnoses, and outcome to see if we could support this idea.

METHOD

We retrospectively collected the data from the admission book of the observation unit from 1 May 2003 to 29 February 2004. The following information was recorded: date and time of admission and discharge, diagnosis category, which may be more than one, admitting speciality, and outcome.

RESULTS

In the 12 months, 4446 patients were admitted. This is 10% of all attendances (43 000) to the ED. There was a marked seasonal variation with 505 children admitted in December and 246 children admitted in June.

The two main categories for admission to the observation unit were respiratory problems, such as wheeze, gastroenteritis, and dehydration

The outcome was available for 4289 children, with 3252 (76%) being discharged and 1037 (24%) being admitted. Admission and discharge dates and times were available for 4070 children (fig 1). Of these, 1974 children (49%) stayed less than 3 hours, 1760 (43%) stayed between 3 and 8 hours, and 336 (8%) stayed more than 8 hours. When we looked at the subgroup of children discharged home, for whom we had all the time data (3071), 1514 (49%) stayed less than 3 hours, 1343 (44%) stayed between 3 and 8 hours, and 214 (7%) stayed more than 8 hours. The admitting speciality data were available in 4311 cases: 2608 (61%) under the care of accident and emergency and 1434 (33%) under the care of general paediatrics. Other specialities, such as surgery, orthopaedics, and haematology/oncology admitted the rest (fig 2). The

Abbreviations: BCH, Birmingham Children's Hospital; ED, emergency department

Figure 1 Diagnostic codes

Figure 2 Time spent in the observation unit

busiest time was between 12 noon and 12 midnight when 71% of the admissions and 65% of the discharges took place.

DISCUSSION

Many paediatric admissions are short and it is safe to discharge these patients within 24 hours,⁴ but the traditional ward round system is not very suitable for faster turnover. A systematic review of hospital based alternatives to acute paediatric admissions found 62–99% of patients admitted to accident and emergency assessment units were discharged.⁵ This is comparable with our discharge rate of 76%.

Most of the assessment or observation wards or units have a maximum stay of up to 24 hours,^{6–8} which makes them function more like an acute paediatric ward. However, in our unit the maximum stay is 8 hours, although 336 patients (8%) stayed longer than 8 hours of which 54% were admitted. This is partly because of a shortage of general paediatric beds. Some children stayed on the unit longer than 8 hours as a decision was taken not to discharge in the middle of the night.

We cannot definitely tell how many ward admissions were avoided; however, we know that 1343 patients were discharged from the observational unit after 3–8 hours. This is an average of four patients a day who were not admitted as an inpatient. Other centres have found that

observational units have reduced the number of ward admissions.^{9–10} The bed/cot occupancy is also high, with an average of 12 patients entering a day (16 per day in December and 8 per day in June). The high turnover is possible as the unit is part of the ED and senior doctors can easily review the patients when the nursing staff notice any change in the child's condition. A small number of children (22) deteriorated and had to be taken to resuscitation bay for stabilisation and monitoring. As the observation unit is part of the ED they could be rapidly transferred.

The department does not have a policy of admitting patients to the unit to stop them breaching the 4 hour target. However, if a child is going to be admitted they do usually wait in the observation unit as it is more comfortable for the child and parents and it frees up cubicles in the main department. Of the 49% who spent less than 3 hours in the unit, 12% were admitted. The largest diagnosis group that spent less than 3 hours in the unit was gastroenteritis/rehydration (29%), as many of these children were discharged when it was clear that they were tolerating oral fluids well. Certain diagnostic groups were noted to have a higher chance of admission, such as abdominal pain (38%), and others a lower chance of admission, such as gastroenteritis (7%).

CONCLUSION

Our ED paediatric observational unit has a valuable role in assessing and managing children with a variety of conditions. There is a high turnover of patients through the unit. It enables many children to be managed in the ED instead of being admitted to the paediatric wards.

Any ED that has a large number of paediatric attendances should consider having a paediatric observation unit. They would need appropriate senior medical and nursing staff as well as cooperation with the general paediatric department.

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