The Ulster Medical Journal, Volume 58, No. 1, pp. 29–35, April 1989.

Primary medical care in a paediatric accident and emergency department

M C Stewart, J M Savage, M J Scott, B G McClure

Accepted 4 January 1989.

SUMMARY

The characteristics of a random sample of 853 children who attended the accident and emergency department of the Royal Belfast Hospital for Sick Children were studied prospectively to determine the extent to which the department was being used to provide primary medical care. Direct parent referrals accounted for 69% of all attendances with a further 21% referred by the family doctor. Parental preference and accessibility were the main reasons given for choosing to attend the department with the latter significantly higher among out-of-hours attendances. However, only 37 of the 585 parent referrals had made an attempt to contact the family doctor.

Overall, 33·9% of children were felt to be inappropriate attenders, i.e. were neither accident nor emergency cases, and the proportion was highest among the parent-referred groups.

The present financial restraints facing the National Health Service make it uneconomical to provide primary medical care at both hospital and community level. However, the level of demand for the accident and emergency department, together with the attitudes of those who attend, make it unlikely that a more rational use of resources will be achieved in the foreseeable future.

INTRODUCTION

It has been estimated that approximately 2,000,000 children attend accident and emergency departments throughout the United Kingdom each year.[1] Although the characteristics of adults who present in this way have been scrutinised extensively since the 1950s, there is little comparable information about paediatric patients. In the United States, the recognition of the increasingly widespread demands for paediatric 'emergency rooms' has led to extensive research into the services which they provide and the characteristics of the families who use them.[2, 3, 4, 5] The Royal Belfast Hospital for Sick Children has the only specific paediatric accident and emergency department in Northern Ireland. The district around the hospital (North and West Belfast) has a total childhood population of 62,456. It is typical of many inner city areas with high unemployment, an over-representation of social classes IV and V, and a considerable proportion of single-parent families.

The Nuffield Department of Child Health, The Queen's University of Belfast, Institute of Clinical Science, Belfast BT12 6BJ, and The Royal Belfast Hospital for Sick Children, Belfast BT12 6BE.
Moira C Stewart, MD, MRCP, Senior Registrar.
J M Savage, MB, MRCP, DCH, Consultant Paediatrician and Senior Lecturer in Child Health.
B G McClure, MB, FRCP, Consultant Paediatrician and Reader in Child Health.
Department of Community Medicine, The Queen's University of Belfast, Institute of Clinical Science, Belfast BT12 6BJ.
Maureen J Scott, MD, MFCM, MFCMI, Senior Lecturer in Community Medicine.
Correspondence to Dr Stewart.

A prospective study of the medical and social characteristics of a random sample of 22,617 children who presented at the accident and emergency department over a 12-month period from 2 December 1984 was undertaken. One of the objectives of the study was to assess the extent to which the department was being used to provide primary medical care and to determine the possible reasons.

MATERIALS AND METHODS

Data relating to new attendances at the accident and emergency department over the preceding five years were used to predict the number of children who might be expected to attend during the study. It was estimated that a random sample of 862 patients (4% of the predicted attendances) would provide statistically valid data. From 2 December 1984, patients were allocated a sequential research number on arrival at the department. Study patients were therefore easily identified. A questionnaire for each selected patient was completed by the first author with the consent and co-operation of the parents. The parents of children who attended when she was unavailable were informed of the study by the nursing staff, and consent obtained for subsequent contact at home by the same researcher.

Information about the child's social background, past medical history and the present attendance was included in the questionnaire. Each attendance was assessed as appropriate or inappropriate, using criteria given in Table I. Where there was difficulty in assigning an attendance to either the appropriate or inappropriate group the decision was made jointly with two consultant paediatricians, borderline cases being placed in the 'appropriate' category.

TABLE I

Appropriate and inappropriate attendances at the accident and emergency department

Appropriate		
Accidents	— injuries	
	— wounds	
	— poisoning	
Emergencies	— acute medical and surgical conditions referred by the family doctor (appendicitis, limp, meningitis, diabetes, etc.)	
	— respiratory difficulty	
	— altered level of consciousness	
	— non-accidental injury	
Inappropriate		
Family doctor unavailable		
Parent preference for the accident and emergency department		
Short-cut to out-patient clinics		
Family doctor referrals	(i) without examination of the patient	
	(ii) without contacting the accident and emergency department	
Rashes of long duration		
Duration of symptoms greater than 24 hours		
Infectious diseases referred by the family doctor. (These should go direct to the Northern Ireland Fever Hospital since no isolation facilities exist at the Children's Hospital).		

RESULTS

A random sample of 862 attendances was studied. The parents of two children refused to participate in the study; another three patients were excluded, being hospital staff, and a further four children arrived, were recorded in the attendance book but did not wait to be medically examined. The characteristics of the remaining 853 children were analysed.

The majority of children were referred by the family doctor or by their parents (Table II). Overall, more than two-thirds (68·6%) of the children were parent referrals arriving without any prior direct contact with primary medical care. In only five cases was this because the child was not registered with a family doctor. During the night, family doctor referrals accounted for only 8·8% of the children who attended, compared with 25·0% of day attendances and 18·2% of evening attendances. Conversely significantly ($p < 0·01$) more attendances from 5.00 pm to 9.00 am were direct parent referrals. The remaining patients were referred by other hospitals (2·2%), community medical officers (1·3%), or other sources such as health visitors, pharmacists etc (6·6%).

TABLE II

Time of arrival of patients attending the accident and emergency department analysed by source of referral

Source of referral	*Time of arrival*			
	9 am–5 pm	*5 pm–1 am*	*1 am–9 am*	*Total*
Family doctor	110 (25·0%)	69 (18·2%)	3 (8·8%)	182 (21·3%)
Parent	282 (64·1%)	274 (72·3%)	29 (85·3%)	585 (68·6%)
Other	48 (10·9%)	36 (9·5%)	2 (5·9%)	86 (10·1%)
Total	440	379	34	853

($X^2 = 10·18$, DF = 2, $p < 0·01$ between family doctor and parent referrals)

One-third (33·9%) of all attendances were considered to be inappropriate (Table III). Although significantly more parent referrals ($p < 0·05$) fell into this category, 28% of family doctor referrals were also thought to be inappropriate.

TABLE III

Number of appropriate and inappropriate attendances analysed by source of referral

	Source of referral			
	Family doctor	*Parent*	*Other*	*Total*
Appropriate	131 (72%)	374 (64%)	67 (78%)	572 (67%)
Inappropriate	51 (28%)	211 (36%)	19 (22%)	281 (33%)
Total	182	585	86	853

($X^2 = 4·00$, DF = 1, $p < 0·05$ between family doctor and parent referrals)

Parents of the children brought directly to the hospital were asked to say, in their own words, why they chose to attend the accident and emergency department rather than consult their family doctor. Overall, 20·9% did so because they thought the child would be referred to hospital by the family doctor, but the remaining 79·1% were brought for reasons other than a perceived need or likelihood of hospital referral. The answers given by parents varied significantly ($p < 0·05$), with the time of day, the accessibility of the hospital services accounting for a larger proportion of attendances between 5.00 pm and 9.00 am (39·3% compared with 31·6%) (Table IV).

TABLE IV

Reasons given by parents for choosing the accident and emergency department, by time of day

	Time of arrival			
	1 am–9 am	*9 am–5 pm*	*5 pm–1 am*	*Total*
Anticipated referral	2 (6·9%)	56 (19·9%)	64 (23·4%)	122 (20·9%)
Better treatment at hospital	1 (3·5%)	55 (19·9%)	39 (14·2%)	95 (16·2%)
Always come to hospital	4 (13·8%)	35 (12·4%)	28 (10·2%)	67 (11·5%)
Wanted second opinion	4 (13·8%)	22 (7·8%)	12 (4·4%)	38 (6·5%)
Hospital more convenient	1 (13·5%)	29 (10·3%)	30 (10·9%)	60 (10·3%)
Too long to wait for family doctor	3 (10·3%)	31 (11·0%)	22 (8·0%)	56 (9·6%)
Too difficult to contact family doctor	5 (17·2%)	13 (4·6%)	15 (5·5%)	33 (5·6%)
Hospital always open	2 (6·9%)	9 (3·2%)	14 (5·1%)	25 (4·3%)
Did not want deputising bureau doctor	1 (3·5%)	7 (2·5%)	26 (9·5%)	34 (5·9%)
Patient attending for this condition	6 (20·7%)	19 (6·7%)	19 (6·9%)	44 (7·5%)
Patient attending hospital for other condition	0	3 (1·1%)	1 (0·4%)	4 (0·7%)
Missing information	0	3 (1·1%)	4 (1·5%)	7 (1·2%)
Total	29	282	274	585

($X^2 = 9·62$, DF = 4, $p < 0·05$ between parental preference, accessibility and miscellaneous group)

Of the 122 children whose parents had anticipated referral, 68 (55·7%) did not require a specific hospital resource (admission, X-ray, plaster of Paris or emergency treatment) compared with 59·4% of all other attendances ($p > 0·1$, NS). In only 37 (6·3%) of the 585 cases where children were parent referrals had attempts been made to contact the family doctor. While significantly more ($p < 0·001$) parents who cited the main reason for direct attendance as difficulty in contacting their family doctor, or the delay in obtaining a consultation, had attempted to contact the doctor (25·8% compared with 2·8% of those citing other reasons) three-quarters (74·2%) of these parents had not made any attempt to make such contact (Table V).

DISCUSSION

The main function of an accident and emergency department should be, as the name suggests, the treatment of accident and emegency cases. However, it is well recognised that a considerable proportion of patients who attend, especially in urban areas, do so to obtain primary medical care. In studies of adults, the reported level of self-referral varies from 43%[6] to 78%.[7] Recognised factors influencing the choice of an accident and emergency attendance compared with

TABLE V

Relationship of attempted family doctor contact to the reason for parental referral to the accident and emergency department

	Reason for choosing the accident and emergency department		
Attempted to contact family doctor	*Inaccessibility* of family doctor*	*Other*	*Total*
Yes	23 (25·8%)	14 (2·8%)	37 (6·3%)
No	66 (74·2%)	481 (97%)	547 (93·5%)
Not known	0	1 (0·2%)	1 (0·2%)
Total	89	496	585

($X^2 = 67·33$, DF = 1, $p < 0·001$)

*Includes 'too long to wait' and 'too difficult to contact'.

a family doctor consultation include the perception of the role[8] and the accessibility of the department.[9] An earlier study carried out in Belfast by the Queen's University Department of General Practice found that the patient's perception of his illness and the treatment required also affected this decision.[10] The importance of accident and emergency departments as an unrestricted source of medical care for children is widely accepted. However, inappropriate utilisation diverts resources from those children who do require the facilities, and has disadvantages both for the child and the family doctor in terms of continuity of care.

It has been estimated that between 20% and 25% of the childhood population attend an accident and emergency department each year.[11] During the 12 months of the study, 22,617 children attended the accident and emergency department of the Royal Belfast Hospital for Sick Children, i.e. more than one-third of the 62,456 children who live in North and West Belfast. The recent trend in accident and emergency attendances in this hospital is upwards, with additional demands on staff and facilities. At a time of financial restriction it is a questionable use of resources to provide primary health care at both community and hospital level. In this study, more parent-referred children were considered inappropriate attenders, and, since this group was more than three times the size of the group referred by the family doctor, its contribution to the inappropriate use of the department was correspondingly greater.

An understanding of the factors influencing the parent-referred group in their choice might enable changes to be made in referral patterns. Parents who express a preference for a particular service may do so for one of two reasons. First, they have had previous contact both with the accident and emergency department and with other forms of primary care, and found the former more acceptable for a variety of reasons: included in this group are parents who say they always come to the hospital when their children are sick. This suggests a regular pattern of behaviour rather than a conscious preference but does imply that at an earlier stage the choice was made to use the hospital as a source of primary medical care. Second, parents may have made assumptions about the nature of investigations or treatment required, concluded that hospital facilities would be needed and therefore bypassed primary care. The largest single reason given by

parents for choosing the accident and emergency department was that the child would subsequently require referral to hospital. However, no more of this group did in fact receive a specific hospital service than those children in whom the parents did not anticipate referral. This suggests that although parents may be best at knowing when their child is sick[12] they are less proficient in determining the nature of the medical resources required and consequently the most appropriate place to find medical care. The greater proportion of direct parent referrals in the evening than at night is in keeping with the finding that more parents gave 'accessibility' as their reason at these times. Many parents were unaware that family doctors have 24-hour responsibility for their patients. Deputising services were also considered by some parents to be unacceptable substitutes for a family doctor consultation.

It may well be that there are actual as well as perceived problems in obtaining a consultation with a family doctor. A recent health profile carried out in one housing estate (Moyard), within the North and West Belfast district, found that there were no doctors' surgeries within the estate, and very limited telephone facilities.[13] Some parents may well find it more convenient to attend the hospital, rather than to contact their family doctor to arrange a visit or to make a future appointment. Even so, the finding that more than half of the parent-referred group did have their own telephone makes it unlikely that providing every home with a telephone would dramatically alter the pattern of referrals to hospital. Inappropriate utilisation is a difficult problem to resolve. The education of parents in the correct role of the accident and emergency department, and the co-operation of family doctors in improving their patients' knowledge about the nature and extent of the services which they provide, might reduce the number of direct parent referrals. However, the larger group who prefer to attend hospital are unlikely to have their attitudes changed, at least in the short term, by such measures. The real alternative to dissuading children from attending an inner city accident and emergency department may be to realise the demand for this form of health care and to allow for it when planning the best use of available hospital resources.

The authors would like to thank Dr Gilbert McKenzie for statistical advice, Lynda Thompson for secretarial assistance and the nursing and medical staff of the accident and emergency department, The Royal Belfast Hospital for Sick Children, for their co-operation in this study.

REFERENCES

1. Jackson RH. Children in accident and emergency departments. *Br Med J* 1985; **291**: 991-2.
2. Bergman AB, Haggerty RJ. The emergency clinic. *Am J Dis Child* 1962; **104**: 36-44.
3. Halperin R, Meyers AR, Alpert JJ. Utilisation of pediatric emergency services. *Pediatr Clin North Am* 1979; **26**: 747-57.
4. Kahn L, Anderson M, Perkoff GT. Patients' perceptions and uses of pediatric emergency room. *Soc Sci Med* 1973; **7**: 155-60.
5. Wingert WA, Friedman DB, Larson WR. Pediatric emergency room patient. *Am J Dis Child* 1968; **115**: 48-56.
6. Crombie DL. A casualty survey. *J Coll Gen Pract* 1959; **2**: 346-56.
7. Morgan W, Walker JH, Holohan AM, Russell IT. Casual attenders: a socio-medical study of patients attending accident and emergency departments in Newcastle upon Tyne area. *Hosp Health Serv Rev* 1974; **70**: 189-94.

8. Davies T. Accident department or general practice? *Br Med J* 1986; **292**: 241-3.
9. Wilkinson A, Kazantzis G, Williams DJ, Dewar RAD, Bristow KM, Miller DL. Attendance at a London casualty department. *J R Coll Gen Pract* 1977; **27**: 727-33.
10. Reilly PM. Primary care and accident and emergency departments in an urban area. *J R Coll Gen Pract* 1981; **31**: 223-30.
11. Wilson DH. The epidemiology of childhood accidents. In: Proceedings of the Symposium on Accidents in Childhood. London: Child Accident Prevention Trust, 1985. (Occasional paper No 7).
12. Spencer NJ. Parents' recognition of the ill child. *Prog Child Health* 1984; **1**: 100-12.
13. Moyard Health Survey Group. Moyard, a health profile. Belfast: Eastern Health and Social Services Board, 1985; 34.