

# Paediatric consultation patterns in general practice and the accident and emergency department

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## SUMMARY

*The age, sex, source of referral and diagnosis of children brought to a paediatric accident and emergency department by their parents were compared to those consulting their general practitioner. A simultaneous, prospective review of these consultations was carried out over a six-week period in an inner-city paediatric teaching hospital and a group practice in a socially deprived urban area.*

*730 children less than 13 years of age who presented for a new consultation were seen. 629 (86%) presented initially to the general practitioner, who dealt with all but 25 (4.0%) without onward referral to the accident and emergency department. 127 consultations took place at the accident and emergency department, of which 104 (82%) were parental referrals. There was no sex difference in children seen by the general practitioner. There was a decreasing trend with increasing age in the proportion of children who consulted the general practitioner, perhaps due to the higher frequency of injury in the older children. Over three quarters (77%) of injured children were brought directly to the accident and emergency department, compared with only 4% of children without injuries ( $p < 0.0001$ ). Of 22 children with injuries who presented to the general practitioner, only 4 (18%) required onward referral.*

*General practitioners met the great majority of the paediatric workload generated by the practice. Audit between primary and secondary care gives a more reliable picture than data from only one source. Injured children are more likely to be taken to the accident and emergency department. Further study of the severity of injury in children is required to determine if there is potential to reduce parental referrals to accident and emergency departments.*

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## INTRODUCTION

Considerable attention has been given in the medical literature to the patterns of hospital referral by general practitioners. This has largely related to inter-doctor variation in rates.<sup>1-3</sup> The "gatekeeper" function of general practice has been studied, but attention has focused more on those who have been referred to hospital, with little attention being paid to those dealt with purely in primary care. Criticism has been levelled at general practitioners who have not been available when needed or have tended to refer too many, or too few, patients to hospital.<sup>4-8</sup>

It became clear during practice audit of referral patterns, that, although the general practitioners were seeing large numbers of children, there was also a considerable volume of parental referral to the local paediatric accident and emergency department. It therefore seemed appropriate to study both types of paediatric consultation simultaneously. The aim of this study was to determine whether or not those children whose parents sought medical attention from the accident and emergency department differed in any respect from those seen first by the general practitioner.

## METHODS

The study practice has three principals and one trainee and is based in a purpose built health centre. It is situated on the outskirts of West Belfast, in an area which has been affected by civil unrest, and in addition has social problems related to high rates of unemployment and single parent families. Because of such factors it attracts low deprivation payments on the modified Jarman Index.<sup>9</sup> Practice list size during the study was approximately 6,000, 42% of patients being under 13 years of age compared with 24% of the Northern Ireland population as a whole.<sup>10</sup>

The accident and emergency department of the Royal Belfast Hospital for Sick Children is situated three miles from the health centre in an inner city area which is similarly deprived. It has 25,000 new attendances annually, 14% of which result in hospital admission; all emergency admissions are made through this department. During the study period there were no relevant attendances at accident and emergency departments in other hospitals.

Prospective data collection by the trainee took place over the period 1 June to 15 July 1991 inclusive. All *new* primary health care attendances or visits, and all new accident and emergency department attendances involving children under 13 years of age were studied. Review consultations were not included. Details of the patient's age, sex, source of referral, diagnosis and disposal were recorded. The accident and emergency department employs a simple but novel diagnostic coding system (370 codes), which was adopted for use by the general practitioners for the purpose of this study.

Data were stored on Epi Info version 5<sup>11</sup> and analysed using the  $\chi^2$  test, Fisher's exact probability test and the  $\chi^2$  test for trend. Stratification was employed to adjust for potential confounding. All tests were conducted at the 5% level of significance. Confidence limits for proportions were also calculated.

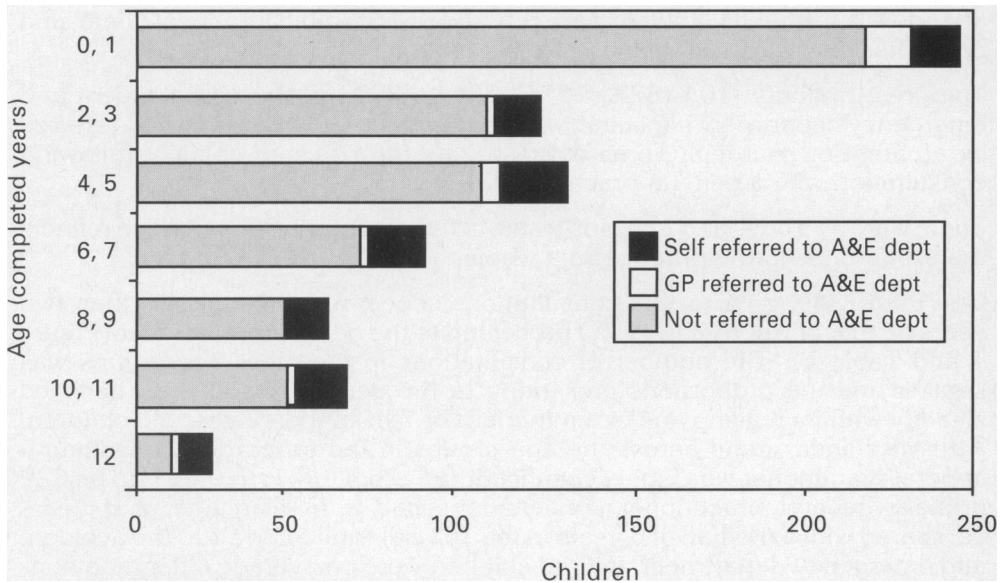


Figure 1 Initial consultation and referral patterns at general practice and the accident and emergency department, by age group in 730 children.

#### General practitioner consultations

| Age<br>(completed years) | Yes                    |                    | No                      |            |
|--------------------------|------------------------|--------------------|-------------------------|------------|
|                          | Not referred<br>to A&E | Referred to<br>A&E | Self referred<br>to A&E | Total      |
| 0, 1                     | 216                    | 15                 | 18                      | 249        |
| 2, 3                     | 107                    | 1                  | 12                      | 120        |
| 4, 5                     | 106                    | 4                  | 19                      | 129        |
| 6, 7                     | 68                     | 2                  | 17                      | 87         |
| 8, 9                     | 45                     | 0                  | 13                      | 58         |
| 10, 11                   | 47                     | 2                  | 15                      | 64         |
| 12                       | 15                     | 1                  | 7                       | 23         |
| <b>TOTAL</b>             | <b>604</b>             | <b>25</b>          | <b>101</b>              | <b>730</b> |

TABLE 1 (data for Figure 1)

#### RESULTS:

There were 730 children eligible for the study, giving rise to 756 consultations (629 in general practice, 127 in the accident and emergency department). The majority, 629 patients, (86%, 95%CI 84% to 89%) were seen first by a general practitioner. From these consultations, 25 patients (4.0%, 95%CI 2.4% to 5.5%) were referred to the accident and emergency department, all but two of whom

attended. A further 31 children were referred to a hospital outpatient clinic, and no further reference will be made to this group.

The great majority, 104 (82%, 95%CI 75% to 89%) of the 127 accident and emergency department consultations resulted from children being self-referred by a parent or guardian. Three of these were for a second opinion, following consultation with a general practitioner.

There were 375 boys and 355 girls (male to female ratio 1.06 : 1), which reflects the proportions in the practice as a whole.

One third (249, 34%) of the consultations concerned children less than two years of age, of whom 231 (93%) presented to the general practitioner (Figure 1 and Table 1). The number of consultations in the other age groups was smaller and the proportions presenting to the general practitioner declined steadily with increasing age to a minimum of 70% in the 12 year old children. A test for linear trend across the age groups in the proportion consulting a general practitioner was highly significant ( $\chi^2= 26.4$ ,  $df=1$ ;  $P<0.001$ ). The 629 primary general practitioner consultations had a median age of 3 years compared with a median of 6 years in the 101 parental referrals to the accident and emergency department. Injured children were on average older than non-injured children (median ages 6 and 3 years, respectively). Stratification by diagnosis (injured/non-injured) of the test for linear trend across age groups ( $\chi^2= 0.20$ ,  $df=1$ ;  $P<0.66$ ) indicated that most of the trend with age observed in the proportions consulting a general practitioner could be explained by the larger proportions of injuries occurring in the older age groups. The general practitioner was significantly more likely ( $\chi^2= 6.07$ ,  $df=1$ ;  $P=0.014$ ) to refer a child aged less than two years to the accident and emergency department (15 out of 231, 6.5%) than one aged two years to twelve years (10 out of 398, or 2.5%).

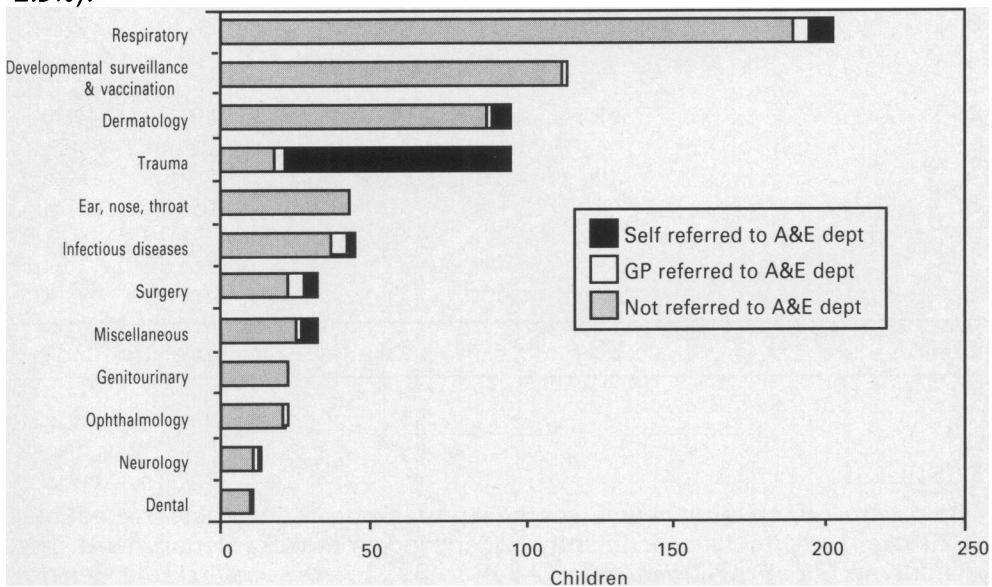


Figure 2 Initial consultation and referral patterns at general practice and the accident and emergency department, by diagnosis in 730 children.

## General practitioner consultations

| Age<br>(completed years)                   | Yes                    |                    | No                      |            |
|--|------------------------|--------------------|-------------------------|------------|
|  | Not referred<br>to A&E | Referred to<br>A&E | Self referred<br>to A&E | Total      |
| Respiratory                                | 193                    | 5                  | 8                       | 208        |
| Developmental surveillance,<br>vaccination | 113                    | 2                  | 0                       | 115        |
| Dermatology                                | 91                     | 1                  | 5                       | 98         |
| Trauma                                     | 18                     | 4                  | 74                      | 96         |
| Ear, nose, throat                          | 42                     | 0                  | 0                       | 42         |
| Infectious diseases                        | 38                     | 4                  | 2                       | 44         |
| Surgery                                    | 24                     | 4                  | 5                       | 33         |
| Miscellaneous                              | 27                     | 1                  | 5                       | 33         |
| Genitourinary                              | 21                     | 0                  | 0                       | 21         |
| Ophthalmology                              | 18                     | 2                  | 0                       | 20         |
| Neurology                                  | 9                      | 2                  | 1                       | 12         |
| Dental                                     | 10                     | 0                  | 1                       | 11         |
| <b>TOTAL</b>                               | <b>604</b>             | <b>25</b>          | <b>101</b>              | <b>730</b> |

TABLE 2 (data for Figure 2)

The most common reason for attending the general practitioner was respiratory illness, especially upper respiratory tract infections which accounted for 198 (31%) of the 629 consultations (Figure 2, Table 2). A total of 115 children (18%) attended the general practitioner for developmental surveillance or vaccination, two of whom were referred to the accident and emergency department. The next most common reason was a skin disorder (15%). In contrast, the most common reason for attending the accident and emergency department was injury, which accounted for 60% (78 out of 127) of all consultations. Of the 96 consultations following injury, 74 (77%) presented directly to the accident and emergency department, compared with 27 (4%) of 634 in non-injured children ( $\chi^2 = 370.9$ ,  $df = 1$ ;  $P < 0.0001$ ). Although the coding system used in this study did not permit grading the severity of trauma, it was evident that many of the injuries presenting first to the accident and emergency department were of a minor nature. Seven of the eight children who sustained a fracture attended the accident and emergency department directly.

There were 492 general practitioner consultations with medical or surgical disorders (excluding those for developmental surveillance/vaccination); 19 (4%) of these led to accident and emergency referral. By comparison, of the 22 injured children who consulted a general practitioner four (18%) were referred to the hospital. Thus a significantly larger proportion of injured children seen by the general practitioner were referred to the accident and emergency department than those with a medical or surgical disorder (Fisher's exact test  $P = 0.013$ ).

## DISCUSSION

In order to gain a fuller understanding of clinical activity at the interface between primary and secondary health care, it is essential to collect prospective information simultaneously from both. There are considerable difficulties in drawing valid conclusions based upon data from one source, including cross boundary referral, inaccuracy in identifying the referring doctor, and the difficulty in obtaining information on private referrals.<sup>12</sup>

To have conducted this study solely from the accident and emergency department would have resulted in the conclusion that 82% of those who attended did so without having consulted their general practitioner. This would have overlooked the fact that during the study period such patients constituted only 14% of the total practice paediatric workload. It might not have been appreciated that of the 730 patients 83% were managed solely by the general practitioner, nor would it have been possible to compare the age or diagnosis-related patterns of attendance at primary and secondary care. Such comparisons are extremely helpful as they could form the basis of schemes to improve service delivery, particularly in primary care.

There has been much discussion about the choice of numerator and denominator for the production and interpretation of general practitioner referral rates.<sup>13</sup> Little attention has been paid, however, to the choice of a suitable denominator for self or parent referral rates to accident and emergency departments. Adjustment for the composition of the population from which accident and emergency attenders are drawn is important in view of the numbers of children in certain practices, such as the one under study. This is also relevant as 60% of the study consultations followed injury, although the equivalent figure for injuries in the overall workload of this accident and emergency department is only 35%.

As far as this study is concerned, parental referral to the accident and emergency department was high following injury (77%), which has also been found in a recent study where the figure was 85%.<sup>14</sup> On the other hand, 82% of those who attended the general practice with trauma did not require hospital referral. Caution must be exercised in the interpretation of this figure for two reasons; firstly the numbers involved are small, and secondly there appeared to be an element of parental selection according to the severity of the injury as seven out of eight children with fractures were brought directly to the accident and emergency department. It would have been desirable to have graded all of the minor trauma cases to determine whether this apparent selection applied to all trauma cases.

The topic of self, or parental, referral to hospital is a sensitive and complex issue. As over 75-80% of the attendances at this accident and emergency department are parental referrals, further study is required, which should involve other practices over a longer period of time.

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