

The use and overlap of AED and general practice services by patients registered at two inner London general practices

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SUMMARY

Background. The improvement of general practitioner (GP) availability has been suggested as a factor influencing the rise in attendance rates at accident and emergency departments (AEDs) in the United Kingdom,⁹ particularly in inner-city areas. However, previous studies suggest that only 3–6% of patients attempt to contact their GP before attending the AED,² and measures of the availability of appointments in the surgery are not associated with AED self-referral rates.¹⁰

Aim. To examine the overlap of services between general practice and AEDs, and the characteristics of patients who attend at both sites.

Method. A prospective observational study, set in east London, of all AED attendances from two group practices located within two kilometres of the Royal London Hospital, over a seven month period in 1994.

Results. Of 1785 attendances analysed, 80% were self referrals. Rates of hospital admission (18.1%) and outpatient referral (9.5%) reflect national figures. There was a significantly higher proportion of attendances from those of white ethnicity among children under 16. Using the Sheffield process-based classification, 43% of adult attendances were categorized as primary care attendances. Within this category the rate of attendance declined with age. Twenty-five point eight per cent of primary care attendances occurred between 10.00 pm and 8.00 am. Among self-referrals to the AED, 16% were seen by their GP in the previous two weeks for a similar problem. Frequent attendance at the AED was associated with a significantly higher consultation rate at the GP surgery ($F = 19.6$, $df = 5$, $P < 0.0001$). Less than 2% of attendances were recalled to the AED for follow-up. A minority (14%) of attendances resulted in a communication with the GP. The seven-month AED attendance rates for the two practices were significantly different (72 per 1000 (95% CI 67–78) and 111 per 1000 (95% CI 105–116), despite similar practice organization and markers of social deprivation.

Conclusions. AED attendance rates were below the national average. GP referral and admission rates to AEDs from inner urban practices mirror national rates. High rates of primary care attendance occurred in younger age groups, with more than expected occurring out of hours. The reduction in case follow-

up within the AED must be supported by improvements in communication with GPs, and an expansion of practice-based nursing. Practices that are geographically close, and with similar sociodemographic features, may have different AED attendance rates. This has important implications for resource allocation in primary care.

Keywords: accident and emergency services; general practice; attendance rates.

Introduction

ATTENDANCE rates at AEDs in the United Kingdom have risen from 10.5 per 100 population in 1961 to 24.1 per 100 in 1991.^{1,2} This increase has been most acute in inner-city areas,^{1,3} where the decision to attend an AED is common,^{4,5} owing to factors such as proximity to the AED, social deprivation, and perceptions of illness severity.^{6,7,8} Improving GP availability has been suggested as a factor influencing attendance rates,⁹ but previous studies suggest that only 3–6% of patients attempt to contact their GP before attending the AED,² and measures of the availability of appointments in the surgery are not associated with AED self-referral rates.¹⁰

Purchasers of health care, whether GPs or health authorities, have an interest in attendance rates as they predict the use of other hospital services. One in five attenders will be admitted and one in 10 referred to outpatients.¹¹ Within inner London and elsewhere, the majority of patients (over 80%) are self referred and proportions of GP, referred patients are similar (12%).

In central London, increased attendance rates have coincided with the closure of AEDs and the concentration of hospital services on fewer sites.⁹ Responses to the increase in demand include encouraging GPs to work within hospitals, for which there is good evidence of cost effectiveness.^{12,13} There is less evidence that improving the provision of local primary care will deflect work from the hospital setting.⁷

This study linked the GP and the AED record to examine AED attendances in relation to GP surgery consultations. The aims of the study were to:

- estimate the prevalence of AED use within a general practice population,
- use linked records to identify characteristics of patients who attend AEDs in addition to, and as an alternative to, their GP,
- identify the primary care component of local AED work.

Methods

The study was based in two group practices (Wapping Health Centre and Steels Lane Health Centre) with a combined practice population of 18 387. Both practices are within the east London borough of Tower Hamlets, less than two kilometres from the Royal London Hospital (RLH). Practice location (bounded by the Thames to the south, and by the City of London to the west) dictates that most AED attenders go to the RLH. Some use of a specialist children's hospital in Hackney was expected; atten-

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dance data on 49 cases were collected from that site. Written reports of 29 attendances at other AEDs were noted.

The study practices were chosen for their apparent similarity, as population characteristics and distance from the AED are known to be determinants of attendance rates.^{7,15} During the study period, both practices ran a full appointment system and an internal practice rota for out-of-hours work, with use of deputizing services between 11.00 pm and 7.00 am. The practices were comparable in their levels of organization, staffing, and practice nursing hours. Steels Lane was a training practice, with two GP registrars in post during the study period.

All AED attendances from the study practices between June and December 1994 were identified from the computerized hospital patient administration system. Demographic details, attendance, and outcomes were recorded on an Excel spreadsheet. To identify the component of AED attendances that could be managed in general practice, we used a process-based classification developed in Sheffield.¹⁴ This retrospective classification of adult attendances is based on the mode of arrival at AED and the associated investigations, treatment, and outcomes (contact the authors for details of data collection). Using this method, adult attendances were classified either as primary care attendances or 'true' AED attendances.

The general practice notes (manual and computer) for each AED attendance were examined. Consultations for the same problem in the two weeks prior to the attendance and three weeks following the attendance were recorded. The number of consultations with the GPs and practice nurses in the two years leading up to the index attendance were recorded. The inclusion of the practice nurses ensured that consultations for wound care follow-up were recorded.

Within the practice populations, the major ethnic group (other than white) was South Asian (largely Bangladeshi), with smaller groups of Afro-Caribbean origin, and others. In the absence of ethnic monitoring it is only possible to estimate the distribution of ethnic groups within populations. Ethnicity was assigned to AED attenders using names. This method is accurate for the attribution of South Asian ethnicity, but underestimates Afro-Caribbean ethnicity.¹⁶ The distribution of ethnic groups in the practice populations was estimated from a random sample of adults and children at each practice site. Ethnicity was assigned using names, and each GP checked the ethnicity of the sample taken from their registered list.

Of 1885 attendances, 100 could not be matched at both the GP and AED site. Analysis of the remaining 1785 attendances was undertaken in SPSS.

Results

AED attendance patterns and outcomes

Ninety per cent of attendances attributed to the study practices were from currently registered patients; the remainder being temporary, never registered, or ex-patients. A small group (3%) of registered patients gave a different address at the AED to that recorded by their GP.

The annual AED attendance rate at the RLH from the two practices was 163 per 1000 population. Age specific rates of attendance for the seven-month study period were calculated using computerized practice age-sex registers. Annual rates were extrapolated on the assumption that attendance rates remained constant over time; data collection included summer and winter months. The two practices had different rates of attendance, particularly for young children. Both illustrate the high rates among infants and the elderly (Table 1). Eighty per cent of all attendances were self referrals, 12.4% were GP referred; 19.7% of all attendances

occurred out of hours (between 10.00 pm and 8.00 am), and only 14% of attendances were followed by a notification letter.

Table 2 illustrates the younger age profile of the minority ethnic groups in the practice populations; 26.7% of children were South Asian, but only 7.1% of adults. The ethnic profile of practice lists was compared with that of all AED attendances (Table 2). There was no difference in the ethnic profile of adult attendances at AED compared with practice lists. There was a significant difference in the ethnic profiles of those aged under 16, with a greater proportion of attendances from the white population and lower proportions from the South Asian and Afro-Caribbean populations (comparing whites to other groups, $\chi^2 = 27$, $df=1$, $P<0.0001$).

The outcomes for all attendances from both practices mirror the national rates, with 18.1% being admitted and 9.5% referred to outpatients (Table 3). Less than 2% of patients were recalled to the AED for follow-up. When outcomes are examined by referral category, over half of GP referrals were admitted to hospital, compared to only 14% of self referrals (Table 3).

Primary care attendance at AED

Among adult self-referrals, 43% of attendances were categorized as primary care attendances, using the Sheffield process-based classification. The proportion of primary care attendances decreases with age; of those aged 16–44 years, 47% were classified as primary care attendances, and 45% in those aged 45–64. The proportion fell to 35% in the 65–74 age group, and 21% in those over 75 years. The South Asian and Afro-Caribbean groups have a younger age profile than the white population. After controlling for age, there was no difference in the rates of primary care attendance between ethnic groups.

Figure 1 compares the AED arrival time of primary care attendances with 'true' AED attendances: 19.6% of adult 'true' AED attendances and 25.8% of adult primary care attendances occurred out of hours. These differences are statistically significant ($\chi^2 = 5.90$, $df=1$, $P<0.015$).

Linking attendances between the AED and the GP surgery

Frequent attenders at the AED are also high users of their GP surgeries. The relationship between attendance at the AED and the GP surgery was examined by looking at the mean consultation rates in general practice by the number of AED attendances in the past 12 months (Table 4).

Those for whom this was their sixth AED attendance had twice as many GP consultations as those who attended for the first time ($F=19.6$, $df=5.1390$, $P<0.0001$). There was no evidence to suggest that frequent AED attendances were associated with a higher rate of admission than first attendances.

Among the 1272 self-referred AED attendances, 16% had consulted their GP in the two weeks prior to attending the AED. For all self-referred attendances, 29% were seen in the surgery during the following three weeks, many by the practice nurse. Of the 203 GP referrals, 59% had a GP consultation in the three weeks following the AED attendance.

Comparison of the two study practices

The study practices were geographically close and organizationally similar, but had some differences in population characteristics. Steels Lane had a higher proportion of children under 16 and a greater proportion of children of Afro-Caribbean ethnicity. Within the adult population, the ethnic composition was similar. The Jarman UPA scores¹⁷ calculated for the two practices, using 1991 ward census data and the post code distribution of practice lists, were almost identical (51.2 for Steels Lane, 52.0 for

Table 1. Seven month and annual attendance rates by age group/1000 patients from both study practices.^a

Age group	Steels Lane practice ^b		Wapping practice ^c		Combined annual attendance rate/1000 from both practices ^a
	Attendances	Seven month AED attendance rate/1000	Attendances	Seven month AED attendance rate/1000	
<1	55	433.1	10	106.4	504.2
1–4	107	186.1	47	82.5	230.6
5–14	168	135.6	64	181.8	250.0
15–44	499	91.7	262	59.6	132.6
45–64	191	86.3	64	57.8	131.7
65–74	101	108.1	43	90.7	175.4
75+	103	186.6	39	123	413.3
Total	1224	110.6	529	72.4	163.6

^aAssuming the attendance rate is constant over time, hence multiplying the seven month study period figures by a factor of 12/7. ^bSteels Lane: practice population 11,080; 18.4% under 16 years. ^cWapping: practice population 7307; 14.5% under 16 years.

Table 2. Comparison of the age and ethnicity distribution of the combined practice populations and all AED attendances.

	Afro-Caribbean	South Asian	White	Other
Children 0 to 16 years ^a				
Practice population ^b	7.4%	26.7%	62%	3.8%
AED attendances: under 16 (n = 460)	3.7%	15.9%	76.5%	3.9%
Adults over 16 years				
Practice population	4.4%	7.1%	85.1%	3.4%
AED attendances: adults (n = 1323) ^c	2.9%	9.1%	85.5%	2.5%

^a16.9% of the combined practice populations were aged 0 to 16. ^bEstimates of the distribution of ethnic groups in the practice populations were made

Table 3. Outcomes of AED attendances by referral category and by practice site.

	Home/back to GP	Admitted	Outpatients	Reattend AED	Other	Not stated
All attendances (n = 1785)	1060 (59.4%)	323 (18.1%)	170 (9.5%)	20 (1.2%)	88 (5%)	121 (6.8%)
All self referrals ^a (n = 1421)	969 (68.2%)	200 (14.1%)	145 (10.2%)	14 (1%)	96 (6.8%)	11 (0.8%)
All GP referrals ^a (n = 222)	80 (36%)	119 (53.6%)	17 (7.7%)	0 (0%)	6 (2.7%)	0 (0%)
Steels Lane practice						
All attendances (1226)	58.9%	18.4%	10.0%			
Self-referrals (78% of attendances)	68.5%	14.1%	10.8%			
GP referrals (14% of attendances)	38.3%	50.9%	8.0%			
Wapping practice						
All attendances (529)	60.7%	18.4%	8.3%			
Self-referrals (84% of attendances)	69.4%	14.5%	9.1%			
GP referrals (8% of attendances)	27.9%	65.1%	7.0%			

^a Referral status not recorded in 142 attendances.

Wapping), indicating high levels of social deprivation.

Attendance rates from the practice populations were significantly different for both adults and children, with Steels Lane practice having higher rates for both groups. (Table 1: for adults $\chi^2 = 53.4$, $df=1$, $P<0.0001$; for children $\chi^2 = 12.8$, $df=1$, $P<0.001$).

Outcomes of attendances were examined by practice site and by referral category (Table 3). Steels Lane has a higher proportion of GP referrals than Wapping (14% compared to 8%, $\chi^2 = 13.30$, $df=1$, $P<0.001$). GP referrals from Wapping have a higher rate of admission, but overall the practice differences in outcomes are not statistically significant ($\chi^2 = 2.8$, $df = 3$, $P = 0.09$). The outcomes for the self-referred group are the same for both practices, even though there is a much higher attendance rate from Steels Lane.

Discussion

This study is based on linked attendance data between the AED and the GP record at two well-organized inner-city practices, and provides a different perspective to hospital studies which include AED attendances from all sources.

Patterns of attendance, and comparisons with other studies

High mobility within inner London, along with the homeless, commuter and tourist populations, contribute to high AED attendance rates.^{11,18} Attendance rates from the two study practices, at 163 per 1000 population, were low compared to previous studies, which have shown a mean adult attendance rate for east London practices of 176 per 1000⁷ and national rates of 241 per 1000 in

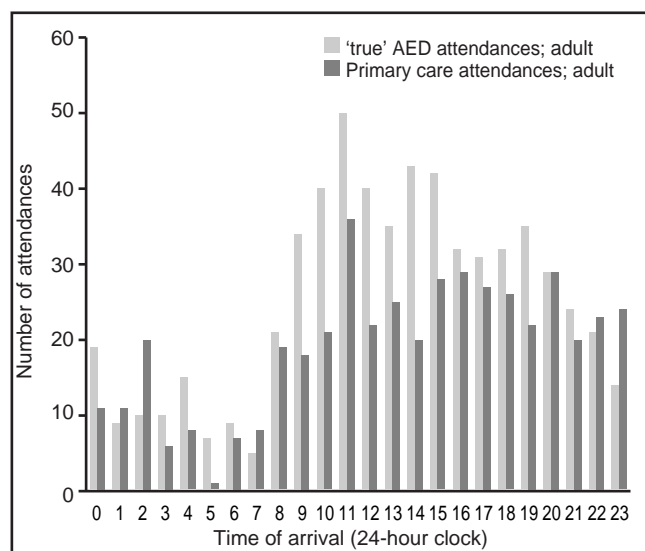


Figure 1. Comparison of time of arrival of 'true' AED attendances and primary care AED attendances; adults 16 and over.

Table 4. Two year general practice consultation rates by AED attendance (n = 1785, missing cases 389).

Number of AED attendances in past year (including current attendance)	Mean practice consultation rate/two years	Number of cases
1	10.3	765
2	11.8	359
3	13.2	139
4	17.3	54
5	16.8	28
6	21.5	51

Among all attendances, 19.7% occurred 'out of hours' (between 10.00 pm and 8.00 am). Looking in more detail, only 8.6% of GP adult referrals were out of hours, suggesting that many patients chose to go direct to AED rather than call their GP at night. The significantly higher primary care attendance out of hours (25.8%) also suggests a group of attenders who chose a '24 hour walk-in' primary care service.

Different ethnic groups are known to have different patterns of disease and health service use.¹⁹ South Asians within ELCHA have a higher rate of GP consultation than other groups.²⁰ This study found higher rates of attendance at AEDs among white children than among other ethnic groups of the same age. This finding is 'masked' by the younger age profile of the non-white groups (Table 2). A false impression of higher use among the non-white populations occurs because the population is young, and attendance rates are high in the young. Reasons for differential attendance rates are unclear, but may include different thresholds for seeking emergency care and difficulties with language and communication within hospitals.

Primary care attendances in AED

By using the Sheffield process-based definition of a primary care attendance, we moved away from describing attendance as 'appropriate' or 'inappropriate'. In common with the primary care project at King's College hospital,²¹ we labelled them primary care and 'true' AED attendances. The King's College study used a *prospective* nurse-based triage system for classification, whereas this study used a *retrospective* system, based on the

mode of arrival and processes triggered by the attendance.

The criteria for primary care attendance was met by 43% of adult self-referrals in this study, compared with about 40% in the King's College study²¹ and 27% of urban attendances in the Sheffield study.¹⁴ Such differing rates might reflect sociodemographic differences in the populations or different methods of data collection. There is a clear association between primary care attendance and age. Nearly half of all self referrals in the 16–44 year olds are primary care attendances, but only one-fifth of those aged 75 and over.

Cross-sectional studies such as this cannot reveal whether the pattern of attendance at AEDs changes over the life cycle, or whether patterns are linked to changing views within society of the need for immediate medical attention. A practice-based study by Reilly in 1981²² reported high rates of self referrals in the 10–40 age group, suggesting an age-related effect, and in general this was supported by our study.

Outcomes of AED attendances

Despite similar characteristics, the study practices have different AED attendance rates. This effect persists when the differing age distributions are taken into account.

In spite of these different attendance rates, both practices had admission rates of 18% and outpatient referral rates of 8.3–10%, which mirror national figures (Table 3). Understanding the contributors to these large differences in practice AED attendance rates, but similar admission rates, may unmask important differences in practice populations not captured by routinely collected data. Possible explanations include population and environmental differences, or differences in practice culture affecting the threshold for consultation. It is also possible that important differences in case mix and severity exist between practices.

If casemix does vary between similar practice populations, this finding is of importance. Moves towards practice based budgets for general medical services (GMS) are based on population size, with the assumption of an even distribution of casemix between practices. This may not be the case. If so it is important to develop reliable markers of casemix and severity to contribute to the debate on resource allocation within primary care.

Communication and overlap between AEDs and GPs

One third of AED attendances were followed by a GP surgery visit, many to the practice nurse. This reflects a shift in workload from the AED to general practice. Previous studies have shown rates of AED follow-up as high as 40% among self-referred patients.²² In this study, less than 2% of patients were asked to reattend the AED. This suggests a welcome growth in knowledge of primary care facilities, but shifted work requires accompanying resources and adequate communication. Both study practices had nursing support, but this is not true throughout east London. In 1996, 25% of practices within ELCHA had no practice nurse.²³ The disappointing level of communication from AEDs (14% of attendances) meant that practice follow up was hampered by difficulties in accessing results of investigations, lack of information on referrals made and on drugs prescribed.

General recommendations

Self referral and primary care attendance at AEDs is unlikely to decline within the foreseeable future. As this study demonstrates, even where the patients' general practice is accessible and provides a wide range of services, 80% of AED attendances are self referrals. This project confirms that frequent attenders at AEDs are those who also consult their GP frequently and are likely to know about practice facilities.

In view of this, and other studies, the continuing development of primary care within AEDs is to be encouraged. Both GP-led services and the expansion of nurse practitioner roles have a place in managing the growth in demand for AED in a cost-effective way.^{24,25} These developments must be complemented by radical improvements in communication between these two providers of primary care to minimize unnecessary investigations and referrals, to facilitate medically urgent referrals, and to enable continuing care within the general practice setting.

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