

What problems do patients present with outside normal general practice surgery hours? A prospective study of the use of general practice and accident and emergency services

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Abstract

Background This study was designed to address some current issues concerning the use of general practice and accident and emergency (A & E) services outside normal surgery hours.

Method Six general practices in Nottingham (with a combined population of 46 698 patients) were recruited to take part in the study. Over a six month period, data were collected on patient contacts with general practice services and the local A & E department outside normal surgery hours.

Results General practice services dealt with 63 per cent of first contacts over the course of the study. There were 3181 (136 per 1000 patients per year) contacts with general practitioners and deputizing service doctors (of which 1009 (31.7 per cent) were dealt with by telephone alone) and 1876 (80 per 1000 patients per year) attendances at the A & E department. There were marked differences in the distribution of problems that patients presented to the two types of service. The proportion of presentations dealt with by telephone alone by general practice services varied with the type of presentation. However, the use of the telephone was not particularly high, even for problems such as a sore throat.

Conclusions Given the differences in presentations to both general practice and A & E services there may be limited scope for altering patients' consulting patterns without making significant changes to service provision. However, there may be scope for increasing the proportion of general practice contacts dealt with by telephone alone.

Keywords: consultation rates, family practice, emergency services, night care

Introduction

The provision of primary care outside normal surgery hours is currently a topic of considerable research interest.¹ Two issues requiring further investigation are how patients utilize services provided by general practice and accident and emergency (A & E)

departments,² and whether the increasing use of telephone advice^{3–5} is a cause for concern.¹

There have been a variety of studies looking at out of hours consultations carried out by general practitioners (GPs), deputizing services and general practice co-operatives.^{2–5} However, only two UK studies have looked at first contacts outside normal surgery hours for a defined population across the different types of service including A & E.^{6,7} There is a need to obtain further information about the current utilization of services to help inform changes in service provision. Also, information on the types of out of hours contacts that are dealt with by telephone is important in considering the safety of this type of care⁸ and the training needs of triage staff.^{9,10}

In this study we have obtained detailed information on the use of first contact care outside normal surgery hours for a population of 46 698 over a six month period. The objectives of the study were: (1) to determine the patterns of use of general practice and A & E services outside normal surgery hours; (2) to compare the problems presenting to both types of service; (3) to determine how the proportion of calls dealt with by telephone alone in general practice varied with the type of presenting problem.

Method

Six general practices in Nottingham were recruited to take part

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in the study. These practices were chosen because they covered a defined area with variable sociodemographic characteristics,¹¹ they varied in their use of a commercial deputizing service, and all the 34 GPs were willing to keep detailed information on out of hours contacts. Two of the practices were in the inner city and four were suburban. Three of the suburban practices did all of their own out of hours calls, whereas the other used a commercial deputizing service for most calls. Patients in the inner city practices were covered by a mixture of their own GPs and the deputizing service.

Data were obtained on out of hours contacts for patients from participating practices during a six month period (1 January 1996–1 July 1996). Out of hours was defined as 7 p.m. to 7.59 a.m. on weekdays; noon on Saturdays to 7.59 a.m. on Mondays, and all bank holidays.

In common with a recent study,⁷ we used a combination of routine data collection sources and specially prepared data collection sheets. After piloting, each of the GPs involved in the study was asked to fill in a form for every out of hours patient contact (including telephone calls). The form was designed to create a carbonless copy for filing in the patients' notes so that doctors did not have to duplicate their consultation notes. In addition, data were collected from the carbonless copies of patient record slips kept by the deputizing service. Also, using the computerized database of the sole A & E department in Nottingham we obtained information on 'first contact' attendances by patients from the study practices outside normal surgery hours; patients who had been referred from general practice were excluded from the numbers used for analysis of A & E contacts to avoid counting these patients twice and to limit the sample to patients' first contact with out of hours services. The distance of every patient in the study from the A & E department was calculated from their postcode,

from which an Ordnance Survey grid reference was derived; distances were then calculated using Pythagoras' theorem (this information not included in the current paper). From each data source it was possible to determine the time of first contact, the age, sex and postcode of patients, up to two presenting complaints and up to two diagnoses made. For the purposes of this paper, we have focused on presenting complaints rather than diagnoses as the former represent the symptoms for which patients decide to make contacts with out of hours services. To ensure consistency in recording, the GPs were asked to follow the same procedure as staff at the A & E department and the deputizing service, and record information at the time of the contact and to write down the 'presenting complaint' as given by the patient (rather than a putative diagnosis). It was not possible to obtain information on either telephone contacts with the A & E department or attendances at Nottingham's eye casualty.

The age, sex and postcodes of all patients on the lists of the six practices were obtained from Nottingham and Southern Derbyshire Health Authorities. The data were anonymized, coded¹² and entered on computer. For presentations to the A & E department a code for 'accidents and injuries' has been used to cover a range of specific accidents and injuries. Data were analysed using SPSS for Windows.

Results

The sample

The characteristics of the patients registered with the study practices are shown in Table 1. The age and sex distribution of the sample is similar to that of patients registered with GPs in the Nottingham Health Authority area and the population of England and Wales.

Table 1 Age and sex of patients registered with the six study practices compared with figures for Nottingham Health Authority and England and Wales

	Patients in the study practices		Patients registered with GPs in the Nottingham Health Authority area		Population of England and Wales 1995*
	No. of patients	%	No. of patients for mid-year 1996	%	%
<i>Sex</i>					
Male	22 635	48.5	319 300	49.4	49.1
Female	24 049	51.5	327 500	50.6	50.9
Missing	14	<1			
<i>Age bands (years)</i>					
0–4	2856	6	45 700	7	7
5–14	5435	12	81 100	12	13
15–44	20 785	45	279 700	43	42
45–64	10 422	22	140 800	22	23
65+	7191	15	98 500	15	16
Missing	9	<1			
Total patients	46 698		646 800		

*Office for National Statistics. *Population trends 87*. London: The Stationery Office, 1997.

Table 2 Patients registered with the study practices and their first contacts with out of hours services by age and sex over the course of the six month study period

	Patients on lists of the practices		Calls to general practice services		Attendances at A & E		All first contacts with both general practice services and A & E	
	No of patients	% of patients	No. of contacts	% of contacts	No. of attendances†	Rate* attendances	No. of contacts	Rate* contacts
Sex								
Male	22 635	48	1381	43	1078	122	2459	95
Female	24 049	52	1796	56	781	149	2577	65
Missing	14	<1	4	<1	17		21	<1
Age bands (years)								
0-4	2856	6	870	27	202	609	1072	141
5-14	5435	12	375	12	299	138	674	110
15-44	20 785	45	982	31	869	94	1851	84
45-64	10 422	22	332	10	249	64	581	48
65+	7191	15	619	19	256	172	875	71
Missing	9	<1	3	<1	1		4	<1
Total	46 698		3181		1876	136	5057	80

*Rates calculated as: (numbers of contacts over 6 months × 2/total numbers of patients within each age or sex band) × 1000.

†Excluding 145 patients who had been referred from general practice.

Patients' contacts with out of hours services

During the six month data collection period, there were 5057 contacts with GPs from the six practices ($n=2114$ (42 per cent of all contacts)), the deputizing service ($n=1067$ (21 per cent of all contacts)) or the A & E department ($n=1876$ (37 per cent of all contacts)). The number of patients that GPs and the deputizing service dealt with by telephone alone was 638 (30 per cent) and 371 (35 per cent), respectively (32 per cent for both services combined). On the basis of these figures the total rate of out of hours contacts for the population studied was 217 per 1000 patients per year. This was made up of 136 calls per 1000 patients to GPs or the deputizing service and 80 attendances per 1000 patients to the A & E department.

Table 2 shows the gender and age of patients using out of hours services. There was no significant difference between males and females in their overall use of out of hours services. However, males had relatively fewer contacts with GPs and the deputizing service than women (1381/2459 vs 1796/2577, odds ratio 0.56, 95 per cent confidence interval (CI) 0.50–0.63; $p<0.0001$). Further analysis has shown that males and females were equally likely to have out of hours contacts dealt with by telephone alone (430/1381 vs 579/1796, odds ratio 0.95, 95 per cent CI 0.81–1.11, $p=0.51$).

Out of hours call rates varied between the different age groups. For example, children aged under five years old were over six times more likely to generate an out of hours contact than people aged between 45 and 64 years. There were some differences when comparing general practice services with A & E services. For example, the rate of calls to general practice services for children aged under five years was over four times greater than the rate of attendances at the A & E department. In contrast, almost half of patients attending the A & E department were in the 15–44 years age group compared with less than a third of patients contacting general practice services.

Problems presenting to general practice services and referrals to hospital

Those problems presenting to GPs and the deputizing service that individually accounted for 1 per cent or more of the total presenting problems are shown in Table 3 together with the proportion of these problems dealt with by telephone alone. Regarding presentations that are likely to have been associated with minor illnesses (e.g. earache and sore throat) it can be seen that the proportion of calls handled by telephone alone was only slightly higher than for presentations of a potentially more serious nature (e.g. abdominal pain).

From the 3181 contacts with general practice services outside normal surgery hours 165 (5 per cent) resulted in a referral to the A & E department and 213 (7 per cent) in a referral to a hospital team. Presentations that were most likely to be associated with a referral to hospital were: chest pain, 47/121 (39 per cent); accident or injury, 45/123 (37 per cent); antepartum bleeding, 13/42 (31 per cent); shortness of breath,

Table 3 Presenting problems associated with the 3181 contacts with GPs and the deputizing service outside normal surgery hours (numbers, with percentages given in parentheses)

Presenting problem	Problems	Problems dealt with by telephone alone
Fever	396 (10)	108 (27)
Vomiting (without diarrhoea)	248 (6)	88 (35)
Diarrhoea (without vomiting)	116 (3)	41 (35)
Diarrhoea and vomiting presenting together	105 (3)	51 (49)
Abdominal pain	329 (8)	64 (19)
Cough	172 (4)	38 (22)
Shortness of breath	160 (4)	17 (11)
Headache	156 (4)	44 (28)
Earache	133 (3)	40 (30)
Accident or injury	123 (3)	51 (41)
Chest pain	121 (3)	28 (23)
Sore throat	98 (2)	23 (23)
Advice regarding medication	93 (2)	83 (89)
Generalized rash	88 (2)	39 (44)
Back pain	86 (2)	22 (26)
Excessive crying in an infant	79 (2)	26 (33)
Localized rash or erythema	64 (2)	22 (34)
Vertigo or dizziness	49 (1)	18 (37)
'Head cold' (upper respiratory tract infection)	45 (1)	16 (36)
Neck pain (excluding headache)	43 (1)	12 (28)
Other general symptoms in infants, e.g. 'not eating'	42 (1)	12 (29)
Antepartum bleeding	42 (1)	21 (50)
Death	40 (1)	0 (0)
Other*	1234 (30)	405 (33)
Total	4062 (100)	1269 (31)

*Problems that individually accounted for <1 per cent of all problems are classed as 'other'.

34/160 (21 per cent); abdominal pain, 49/329 (14.9 per cent). In contrast, none of the presentations with earache and only two (2 per cent) of the presentations with sore throat were associated with referral to hospital.

Of the patients dealt with by telephone alone 49/1009 (5 per cent) were referred to hospital. The presentations most commonly associated with referral were: chest pain, 12/28 (43 per cent); shortness of breath, 6/17 (35 per cent); accident or injury, 13/51 (25 per cent).

Problems presenting to the A & E department

Those problems presenting to the A & E department that individually accounted for 1 per cent or more of the total are shown in Table 4. It can be seen that accidents and injuries accounted for half of the presentations. Few of the other common presentations to the A & E department were for 'minor' problems and the distribution of these other presentations was markedly different from that seen in Table 3 for general practice services.

Discussion

This study provides information on patterns of use of out of hours services. In conjunction with another recent study⁷ this

information is likely to be useful to planners of out of hours services. Also, the data on telephone contacts may be helpful to general practice out-of-hours co-operatives, deputizing services and individual GPs, particularly if they are involved in telephone triage. However, before going on to discuss the results, it is worth commenting on the methods used in this study.

This study was based in a single city and therefore the results may not be generalizable to other areas. Nevertheless, the population studied was similar to that of England and Wales in terms of age-sex structure. Also, there are many similarities between our results and those of Brogan *et al.* from Buckinghamshire,⁷ and this increases the likelihood that the results from both studies may be applicable to other areas of the country.

Our study took place over a six month period between January and July. It is possible that the results for the second half of the year would have been significantly different. However, we believe that this is unlikely given that parts of winter and summer were included in the data collection period.

We are confident about the accuracy of recording of demographic data on the patients used in this study. However, it is possible that there were differences in recording of presenting complaints between the different services. We

Table 4 Problems presenting to A & E department outside normal general practice surgery hours (numbers, with percentages given in parentheses)

Presenting problem	
Accidents and injuries	1048 (53)
Other presenting complaints	
Chest pain	93 (5)
Fainting or syncope	78 (4)
Shortness of breath	64 (3)
Suicide attempt	61 (3)
Abdominal pain	54 (3)
Other general symptoms	48 (2)
‘Still troubled’*	38 (2)
Vomiting	27 (1)
‘Asthma’	27 (1)
Convulsions or seizure	26 (1)
Local swelling, papule, lump or mass	21 (1)
Fever	20 (1)
Symptoms or complications of mouth, tongue or lip	20 (1)
Other†	356 (18)
Total	1981

*‘Still troubled’ means patient returning to A & E department with same complaint as at an earlier attendance.

†Problems that individually accounted for <1 per cent of all problems are classed as ‘other’.

believe that any differences are likely to have been small given the instructions that we gave to the GPs.

Our results underestimate total out of hours contacts made during the study period. For example, it is unlikely that all of the GPs involved in this study recorded all of their out of hours patient contacts. The lack of data on attendances at eye casualty and telephone contacts with the A & E department means that our study underestimates the total number of contacts with the A & E services. Also, it is likely that some of the study population would have visited an A & E department other than the one in Nottingham during the study period. For example, a very small proportion (0.5 per cent) of the sample lived at addresses in Southern Derbyshire, where attendance at the A & E department in Derby may have been more convenient.

Patterns of service use

It is clear from this study that general practice services dealt with the majority of first contacts with patients outside normal surgery hours. The proportion of calls dealt with by the A & E department was similar to that noted in previous studies by Williams *et al.*⁶ and Brogan *et al.*⁷ The differences between men and women in their use of services are to be expected,^{7,13–15} as are the findings that general practice services deal with a high proportion of first contacts with children under five years and the elderly.^{7,8}

Problems presenting to general practice and referrals to hospital

Table 3 shows that general practice services deal with a wide

variety of presenting complaints. Although the majority of these presentations are for minor illnesses that in many cases could be dealt with by telephone alone,⁸ GPs and triage staff⁹ need to be able to identify those patients with potentially serious diseases requiring either emergency treatment or a visit to undertake a more detailed assessment. It is not surprising to find that almost 90 per cent of patients with shortness of breath received a visit. This is because a physical examination is usually required to confirm or exclude serious illness. What is more surprising is that a relatively low proportion of calls for problems such as a sore throat were dealt with by telephone alone. Were doctors making visits to exclude serious diagnoses such as peritonsillar abscess? Or were they responding to patient demands for further assessment? A previous study has shown that a fairly high proportion (59 per cent) of out of hours calls can be dealt with by telephone alone without obvious detriment to patients.⁸ We believe that with competent assessment and advice giving it would have been possible for doctors in our study to have increased the proportion of calls dealt with by telephone alone without compromising patient safety.

This study has shown that a fairly high proportion of out of hours calls for chest pain and shortness of breath are associated with referral to hospital. This is to be expected given the potential seriousness of these symptoms. However, a blanket policy of referring all patients with chest pain would have increased hospital referrals by 74 (20 per cent). Accidents and injuries are also commonly referred to hospital. Although many of these presentations may have needed hospital care, previous studies have suggested that more accidents and injuries could

be managed in general practice^{14,16} especially if GPs had a greater interest in taking on this work.¹⁶

Problems presenting to the A & E department

The idea that GPs could deal with many of the problems that present to A & E departments^{14–18} might be offered further support by the finding that almost half of the presentations to the A & E department involved problems other than ‘accidents and injuries’. However, it can be seen from Table 4 that many of these other problems suggest potentially serious conditions. It appears that most patients were making reasonable choices when deciding which service to contact.^{15,19} This idea is supported by a comparison of the problems presenting to each service. Whereas fever, vomiting, diarrhoea, cough, headache, earache and sore throat make up over 35 per cent of presentations to general practice services, these problems account for less than 3 per cent of presentations to the A & E department. This has important implications for attempts to persuade people to contact their general practice service rather than the A & E department. To have any significant impact on A & E workload one would have to focus on accidents, injuries and potentially serious presenting complaints rather than minor illnesses. This might prove to be difficult and, therefore, the development and evaluation of alternative strategies might be considered.^{10,20,21} One option would be to increase the use of general practice trained doctors in A & E departments.²² Another would be to consider options for treating minor injuries outside major A & E departments.²³ However, the strategy that is likely to have the greatest impact is the introduction of ‘NHS direct’: a new advice and information service that is currently being piloted in the United Kingdom and may cover the whole country by 2000.²⁴ This nurse-led helpline may become the first point of contact for patients who have problems outside normal working hours. Patients might be offered advice only, or be directed to the most appropriate emergency service. In theory, ‘NHS direct’ will reduce direct contacts with emergency services. However, its introduction needs to be carefully evaluated to determine the risks, benefits and impact on use of services.²⁴

Conclusions

In this study, general practice services dealt with the majority of patient contacts outside normal surgery hours. On the basis of presenting complaints, it is likely that most of these contacts were for minor illnesses. In contrast, although almost half of presentations to the A & E department were for conditions other than accidents and injuries, most of these presentations were for potentially serious symptoms. There may be limited scope for transferring the work generated by these patients without major changes in service provision.

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