PREHOSPITAL MEDICINE

Do callers to NHS Direct follow the advice to attend an accident and emergency department?

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Emerg Med J 2003;**20**:285–288

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Accepted for publication 29 July 2002

Objectives: To provide an objective assessment on callers' compliance with NHS Direct advice to attend an accident and emergency (A&E) department.

Methods: A representative three week period in May 2000 was investigated. During this period there were no health scares, major health campaigns, or bank holidays that may have affected the call rate. NHS Direct callers who were advised to attend A&E were identified. Data from the four A&E departments for the same three week period and two additional days were searched and matched to NHS Direct data by surname, date of birth, and post code. This process created three groups: (1) callers triaged to A&E who attended, (2) callers triaged to A&E who did not attend, (3) callers with different triage outcome who attended A&E. The age, sex, relationship of caller, time of call, and distance to nearest A&E were compared for groups (1) and (2).

Results: Just less than two third of callers triaged to A&E attended with the same presenting complaint. There were no statistically significant differences between group (1) and (2) in terms of age, sex, relationship of caller, time of call, and distance to A&E. A small number of callers (2.4%) were identified as being given other advice and attending A&E for the same presenting complaint. This group took significantly longer to attend A&E than group (1) (χ^2 =139.01, df=7, p<0.001).

Conclusions: Assessing levels of compliance is difficult. These findings suggest that NHS Direct may have comparatively high levels of compliance compared with other similar services. However, using the single triage outcome as the means of identifying the advice given may oversimplify the range of possible advice given. The delay in attending A&E for the group of callers who were given other advice may indicate they had tried other actions. Further larger studies are needed to assess the appropriateness of referrals through investigation of clinical outcomes.

NHS Direct was set up in 1998 to advise callers on self care and re-direct them to the most appropriate health care provider.[1] Since November 2001, the service has covered the whole of England and Wales and takes 500 000 calls per month (England only).[2] At the end of the telephone consultation with the nurse, the advice given is categorised and recorded as triage outcome. This includes advice to attend accident and emergency (A&E), contact a general practitioner (GP), contact other services, or to use self care.

Considerable discussion has been generated regarding the potential effects on other services.[3] One study demonstrated that NHS Direct had reduced the number of telephone calls for advice to A&E.[4] Information on referrals from NHS Direct via ambulance services to A&E suggest that severity of illness was equally well assessed by patients themselves as by NHS Direct.[5] However, there is little reliable information on callers' subsequent actions after their contact with NHS Direct.

Callers to NHS Direct are known to be highly satisfied with the service they receive and report a high level of compliance with the advice they are given.[6 7] Two studies suggest that between 75% to 85% of callers report complying with all advice and a further 13% follow some. [6 7] This compares well with other patient reports of compliance rates with telephone consultations.[8–10] However, objective measures of callers' compliance with telephone advice are more varied,[10–12] although measuring patients' compliance with advice has been shown not to be a straightforward comparison of what professionals record as the advice given and what callers' report as their actions.[9]

The aim of the study was to collect objective data about callers' compliance with NHS Direct advice to attend A&E. We also sought to identify the proportion of callers who were given other advice and went to A&E with the same presenting complaint. Furthermore, did callers' characteristics, such as age, distance to nearest A&E, relationship of caller to patient, and call factors, such as time of call, influence callers following the advice? The study was undertaken in NHS Direct Southwest London, covering a population of some 1.3 million and serviced by four A&E departments.

METHOD

At the time of the study, NHS Direct Southwest London used the Telephone Advice System (TAS) software. The system permits the recording of one triage outcome although a range of advice may be given. For example, a nurse may give the patient advice on how to care for the problem themselves but to attend A&E if the symptoms deteriorate. This is most likely to be recorded as self care although a combination of advice was given. See table 1 for a summary of triage categories.

Local ethics committee approval was obtained for access to summarised A&E attendance data in July 2000.

A representative three week period in May 2000 (6 to 26 May) was investigated. This time period was chosen to provide a sample of 193 callers that we calculated would give 95% confidence intervals of +/- 5% for the proportion following advice based on previous work.[6 7] The time period was chosen, as there were no bank holidays, health scares, or major health campaigns that might have influenced the call rate to NHS Direct. This time of year is not normally subject to peaks and troughs in contact rates and therefore considered representative.

From this period, all callers living in the NHS Direct Southwest area and advised to attend one of the four local A&E departments were selected. This sample was compared with all callers to NHS Direct for the three week period to identify

Table 1 Telephone Advice System (TAS) main triage outcomes

Triage category	Explanation
A&E	Callers are advised to seek urgent medical attention from their nearest A&E department.
GP Urgent	Callers are advised to contact a GP within 2 to 4 hours
GP Routine	Callers are advised to contact the GP for the next available appointment.
Self care	Callers are advised to care for themselves in their own home. This may include advice to take over the counter medication and/or to contact a GP or A&E, should the symptoms persist or deteriorate.

Table 3 TAS triage outcome for callers given other advice and attended A&E

Call triage outcome	Number	Percentage
Self care	34	34.3
GP urgent (between 2 to 4 hours)	32	32.3
GP routine (next available appointment)	15	15.2
Unknown	5	5.1
Primary care centre	2	2.0
Minor injury unit	4	4.0
Call abandoned	2	2.0
Refer to agency	4	4.0
GP cooperative	1	1.0
Totals	99	99.9

demographic differences between callers as well as types of calls directed to A&E.

Data from the four A&E departments, for the same three week period and two additional days, to allow patients time to attend A&E, were searched and computer matched to NHS Direct data by surname, data of birth, and postcode. The matched records were checked by hand. Care was taken to ensure the attendance at A&E took place after the call to NHS Direct and was related to the same presenting complaint. The matching process created three groups:

(1) Callers triaged to A&E who attended

(2) Callers triaged to A&E who did not attend

(3) Callers with different triage outcome who attended A&E.

The age, sex, relationship of caller, time of call, and distance to the nearest or attended A&E were compared for groups 1 and 2. Time taken to attend A&E was compared for groups 1 and 3.

Presenting complaints were coded using the International Primary Care Classification.[13] Categorical data were analysed using the χ^2 test.

RESULTS

During this period there were 4493 calls to NHS Direct, of which, 8% (n=358) were recorded as being advised to attend A&E. Once callers residing out of the area had been excluded a sample of 193 patients directed to A&E was obtained.

Women aged between 26 and 45 years old accounted for the largest proportion of patients in the sample (table 2). Half of the 193 patients called NHS Direct on their own behalf and a quarter were parents. Most (80.8%) calls to NHS Direct by the sample were out of hours (defined as 6 pm to 8 am weekdays and the weekend). The most common presenting complaints were musculoskeletal problems closely followed by digestive, neurological, and eye complaints. This sample was compared with all calls to NHS Direct for the three week period and no statistically significant differences were found in terms of age and sex of the patients and relationship of caller to patient. Whether the call was in hours or out of hours did not affect the A&E triage outcome.

Callers triaged to A&E and attended (group 1) and did not attend (group 2)

We found that just under two thirds of callers (64.2%:124 of 193) followed the advice given by NHS Direct and went to an A&E department with the same presenting complaint. It is possible that a small number of callers may have gone to A&E outside the area, increasing the compliance rate. Callers who followed the advice were compared with non-compliant callers (group 2) for age, sex, relationship of caller, time of call, and distance from A&E. No statistically significant differences were found. Because of the small number of patients with each presenting complaint it was not possible to undertake any analysis to explore whether the nature of the presenting complaint affected compliance.

Of those following the advice to attend A&E, three quarters (75.8%: 94 of 124) did so within two hours of their contact with NHS Direct and 90.4% within 12 hours. Time taken from call to attendance ranged from 12 minutes to 3 days. The outcome of attendance was examined from the summary information available from the A&E departments. Most (66.9%: 83 of 124) patients were sent home without further referral. However, 10 were referred on within the hospital and seven were admitted.

Table 2 Age and sex distribution of callers advised to attend A&E

	Men		Women		Total	
Age range (y)	Number	%	Number	%	Number	%
0–5	12	16.7	19	15.7	31	16.1
6–15	10	13.9	6	5.0	16	8.3
16–25	6	8.3	19	15.7	25	13.0
26–35	12	16.7	32	26.4	44	22.8
36–45	12	16.7	25	20.7	37	19.2
46–55	10	13.9	7	5.8	17	8.8
56–65	6	8.3	4	3.3	10	5.2
66–75	2	2.8	2	1.7	4	2.1
75+	2	2.8	6	5.0	8	4.1
Unknown	0	0	1	0.8	1	0.5
Total	72	100.1	121	100.1	193	100.1

Table 4 The 15 patients who were given other advice and attended A&E and were admitted

Time taken to contact A&E (hour:min)	Triage by NHS Direct	TAS summary
0:45	PCC	Contact with GP arranged by NHS Direct
1:55	GP urgent	Previously attended A&E and was sent home
2:22	GP urgent	Patient had been discharged from hospital. Worried as told not to attend A&E with presenting complaint. Therefore nurse advised to contact GP urgently
2:23	GP urgent	Advised to contact GP within 2 to 4 hours
2:51	GP urgent	Patient recently discharged from respite care with urinary tract infection, reduced mobility, and incontinent. Advised to contact GP urgently and request a home visit
3:16	GP urgent	Advised to seek urgent advice in 2 to 4 hours
3:41	GP routine	Pain after fatty foods. Patient had taken pain relief which helped. Advised to see GP in the morning but if pain increased to contact GP for urgent appointment
3:45	GP urgent	Advised urgent and to contact GP within 2 to 4 hours
4:02	GP routine	GP contacted but did not see patient. Patient suffers from Alzheimer's and admitted with confusion
4:18	Self care	Patient contacted by NHS Direct three times to assess condition. Third contact patient advised to contact GP urgently 2 to 4 hours
4:55	GP urgent	Had previously seen GP and been given antibiotics
5:20	GP co-operative	Advised urgent and seek GP advice in 2 to 4 hours
23:08	Call abandoned	Nurse tried to contact patient but there was no response
35:00	Self care	Self care advice and to call back if condition deteriorated
107:00	GP urgent	Previously attended A&E and sent home

Callers with different triage outcomes who attended A&E (group 3)

A comparatively small group of callers (2.4%: 99 of 4135) were identified as having attended A&E for the same presenting complaint as their contact with NHS Direct and had a recorded NHS Direct outcome as being given other advice. For this group of callers no statistical tests could be undertaken to identify variables that affect compliance as it is not known whether or not this group followed the advice provided by NHS Direct, as well as going to A&E. Therefore this group of callers could not be defined as "non-compliant" and compared with the other groups. However, they were broadly similar in terms of the age and sex distribution to the 193 patients triaged to A&E. There were a greater proportion of parents (36.4%) in group 3 than the callers directed to A&E. This group had a variety of triage outcomes. Over 50% of callers were advised to seek help from a GP or minor injury unit indicating a degree of urgency about their health problem. Table 3 gives a complete list.

This group took much longer to reach A&E than those who were advised to attend. Only 4% arrived in A&E within one hour of calling NHS Direct, compared with 42.7% of the group advised to attend. The difference in time taken between the two groups was statistically significant (χ^2=139.01, df=7, p<0.001) (fig 1). The outcome of attendance in A&E showed that a slightly lower proportion of this group of patients 60 (60.6%) were discharged with no further referral. Summary NHS Direct records for the 15 (15.2%) patients admitted were examined to explore the advice given more fully. Table 4 shows the recorded triage outcome and additional and contingent advice given; two thirds had been advised to contact their GP within the next two to four hours and the remainder were advised on the action to take should their condition deteriorate.

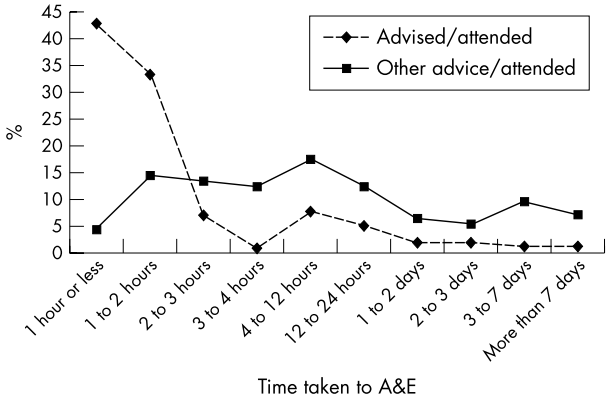

Figure 1 Time taken to attend A&E by group 1 and group 3.

During the three week (study) period, the number of callers advised to contact each of the four A&E departments was 22, 42, 47, and 82 respectively. The actual number attending was 39, 54, 70, and 70. The attendees comprised of those who complied with the advice to attend and those who were given other advice and went to A&E.

DISCUSSION

This study was designed to provide an objective assessment of compliance with NHS Direct advice to attend A&E. The results show that almost two thirds of callers followed the advice and did so quickly. Assessing an expected level of compliance is difficult, as there are limited published data from comparable services. However, our findings suggest that NHS Direct may have a comparatively high level of compliance compared with a rate of 44% with advice to attend A&E found for a nurse

telephone paediatric out of hours service in the USA, but lower than 92% for a paediatric A&E department in the UK.[11 12] However, both these studies relate to paediatric services and one might anticipate a higher level of compliance given parents' sense of moral responsibility for their child's welfare.[14] Our study included all ages and it is possible that callers to NHS Direct may have had different expectations compared with those calling an A&E department, which may in turn affect their compliance.

Furthermore, using the single triage outcome as the means of identifying the advice given to the patients may oversimplify the possible range of advice explored with and given to the patient. The reasons for calling NHS Direct and the process of the consultation are complex and consist of more than a single statement of advice.[15] The process of consultation is one of negotiation with the patient, working through their problems, and reaching an agreed course of action. During such discussions a range of options will be considered and explored with the patient, which they may interpret and re-interpret in the light of changing circumstances. There is also the very real possibility that their interpretation of the advice may be different from the nurses' perception of what was said.[9]

The group of callers who were given other advice and attended the A&E department is considerably smaller than found in another study, 2.4% compared with 41%.[10] However, more than would be anticipated, of this group, were advised to contact their GP[16] and they took longer to attend A&E than patients triaged to A&E. This could indicate that they tried to take other action, either self care or seeing their GP and attended A&E after failure of this action, deterioration in condition, or onward referral.

This study did not set out to examine the appropriateness of triage decisions but the 15 callers who were not advised to attend A&E and were subsequently admitted raise concerns about the quality of triage. This group were 0.3% of all callers in the study period and more detailed analysis of the (limited) data available to us provides some reassurance. Most had been advised to see their GP urgently and the remainder given advice contingent on the progress of their condition/symptoms.

The study is limited because out of area attendance was excluded and only two days at the end of the study period were included for patients to attend an A&E department. The observed compliance rate may therefore, be a slight underestimate. While this study currently provides the only objective data on compliance with advice from NHS Direct, it was restricted to one urban area. However, the call profile and rate of referral to A&E is similar to other sites, which suggests the results maybe generalisable to other London sites using TAS at the time of the study.[16] Since the study was conducted all NHS Direct sites have changed to CAS (Computer Assisted Software), which may result in different triage outcomes[6] and may affect compliance. Finally, we were not able to investigate the callers' understanding of the advice they received or the alternative actions they may have taken. As expected, the compliance rate found is lower than that reported by callers.[6 7]

Similarly, this study was not directly concerned with the impact of NHS Direct on A&E workload. However, the data suggest that there would be an average of between two and three patients per day per A&E department who had contacted NHS Direct. It is clear from the comparatively small numbers involved that the effects will be almost imperceptible in A&E. Even if NHS Direct were directing no patients away from A&E, which is unlikely, the impact would be minimal.

The value of this study lies in providing objective data on compliance with advice given by NHS Direct to attend A&E that has previously not been reported. It was beyond the scope of this local study, using routinely collected data, to assess clinical appropriateness. However, having demonstrated that at least two thirds of callers follow advice to attend A&E, further larger studies are needed to assess the appropriateness of referral through investigation of clinical outcomes. This research should also investigate callers' and nurses' understanding of the advice given.

ACKNOWLEDGEMENT

We would like to acknowledge Dr Agnelo Fernandes and NHS Direct South West London for initiating and supporting this project.

Contributors

Judy Foster contributed to the design of the study, supervised the collection and analysis of data, and led the writing of the paper. Lynda Jessopp planned the design of the study and contributed to the writing of the paper. Santo Chakraborti collected and analysed the data. Guarantor of the paper is Judy Foster

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Funding: this study received a grant from NHS Direct Central Team.

Conflicts of interest: none.

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