Evaluation of NHS Direct first wave sites

First interim report to the Department of Health

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December 1998

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1. EXECUTIVE SUMMARY

In December 1997 the Government published the White paper *The New NHS: Modern and Dependable* in which it committed itself to establishing *NHS Direct*, "a new 24 hour telephone advice line staffed by nurses." The service will be available in all parts of England by the end of 2000.

The objectives of the service are:

- to offer the public a confidential, reliable and consistent source of professional advice on healthcare, 24 hours a day, so that they can manage many of their problems at home or know where to turn to for appropriate care;

- to provide simple and speedy access to a comprehensive and up to date range of health and related information;

- to help improve quality, increase cost-effectiveness and reduce unnecessary demands on other NHS services by providing a more appropriate response to the needs of the public; and

- to allow professionals to develop their role in enabling patients to be partners in self-care, and help them to focus on those patients for whom their skills are most needed.

NHS Direct has been operational since March 1998 in three first wave sites. These are based in Lancashire, Milton Keynes and Northumbria. At this pilot stage, there is variation between the sites in terms of population coverage, physical arrangements, staffing and software triage systems. Such variation provides opportunities for exploring the benefits of different organisational arrangements.

In this report we present initial findings of our independent evaluation of *NHS Direct*. Because of the limited data currently available, these findings and conclusions are inevitably provisional.

NHS Direct has, in general, made a very encouraging start:

- caller satisfaction with the service is high, with 97% of callers surveyed saying that they had been "satisfied" or "very satisfied" with the service;

- while call volumes have been lower than originally expected, they have been growing steadily, and the service is now handling a substantial number of calls;

- current patterns of use suggest that *NHS Direct* is especially used as an out-of-hours service, with call rates highest during evenings and weekends; and

- the service appears to have been of great benefit to parents, since about one in four calls is about a child of five or under.

The comments of callers paint a picture of a prompt service, run by friendly and

professional staff who offer helpful advice and reassurance and which is seen to alleviate pressure on other health services.

So far, there is no evidence of adverse clinical events nor of any impact, adverse or otherwise, on other services. The future impact of the service will clearly depend upon the way it is used by callers, and on the way calls are handled by sites.

The aim is to provide a service of uniform high standard across the country. However, both utilisation and call handling may be strongly influenced by local factors, in particular the pattern of existing service provision for emergency or unexpected health problems. If this does turn out to be the case, then the overall impact of *NHS Direct* may vary from locality to locality depending on what other services are available.

A small number of issues require further work:

- there is some variation between sites in the outcomes of the calls they handle, principally in the way the sites handle urgent calls, which may be explained by service organisation, staffing, software and other services available;

- there is a marked variation between sites in the population call rate, from 23 to 148 calls per 1000 population per year;

- a small number of callers did express some dissatisfaction with what was seen as inadequate publicity for the service and the length of time taken to speak to a nurse;

- some callers were not happy with the large number of questions asked during a call, although in some cases, this may be necessary for accurate assessment of a health problem; and

- there have been fewer calls than expected from people over 65, although the underlying reasons for this are not yet clear.

In summary, *NHS Direct* is handling substantial call numbers and achieving high levels of user satisfaction. On both counts it compares well with other health-related telephone helplines.

2. INTRODUCTION

2.1 Policy background

In December 1997 the government published the white paper *The New NHS: modern, dependable* in which it committed itself to establishing *NHS Direct*, "a new 24 hour telephone advice line staffed by nurses". The purpose of this new service would be to provide "easier and faster advice and information for people about health, illness and the NHS so that they are better able to care for themselves and their families".[1] More specific objectives for *NHS Direct* included providing health related information, encouraging self care at home and reducing unnecessary demand on other NHS services.

The proposal for *NHS Direct* was a development of the recommendations of the Chief Medical Officer's report *Developing Emergency Services in the Community*, published in September 1997.[2] This report reviewed out-of-hospital emergency care services, and identified three fundamental issues:

- the need to co-ordinate the provision of emergency care so that a system of appropriate assistance is accessible to patients 24 hours a day;

- the need to ensure that people can recognise emergencies, deal with them and know where to turn to for professional help; and

- the need to research into the viability of other models of access to emergency care, in particular the evaluation of a free telephone helpline for emergencies.

The CMO's report recommended that the idea of an emergency telephone helpline should be further developed, piloted, and evaluated.

2.2 Development of first wave sites

In the light of this recommendation, the Department of Health undertook a competitive tendering exercise which resulted three providers (all of which were NHS ambulance services trusts) being commissioned to establish a "pilot" *NHS Direct* service for a defined local population, for an initial period of two years. Each provider was asked to ensure its capacity to handle a minimum of 75,000 calls per year.

Each site began taking calls from the public from 2 March 1998, although the "official launch" of the sites was not until 23 March 1998. The public was informed about the existence of the new service initially through press coverage of the preparation for and launch of the sites, and through limited advertising in local newspapers in each area. In subsequent months, publicity was broadened to include advertising on local radio, insertion of leaflets in local papers, and house-to-house distribution of leaflets.

2.3 <u>Existing evidence</u>

While the opportunities for *NHS Direct* to improve the appropriateness of care and to support the Health Information Service are clear, the possibility that it will reduce unnecessary demand is open to debate.

In assessing the costs and effectiveness of helplines, two sets of issues need to be distinguished. First, there are questions about the safety and effectiveness of telephone consultations, triage, advice and information for individuals who telephone the service. Second, there are questions about the impact of a telephone service on the volume, nature, and appropriateness demand for other health care services, and the costs and cost consequences of telephone helpline services.

Nearly all of the literature which is available has addressed the first of these questions (and much of this concerns paediatric care and is from the US). It has been comprehensively reviewed by Lattimer,[3] who concluded that

- the literature on the safety and effectiveness of telephone help for individuals is limited;

- many studies point to the inadequacy of telephone consultations.

However, the empirical evidence on safety is more reassuring than this. For example, Poole *et al* report no adverse clinical outcomes following 108,000 paediatric telephone consultations over four years in Denver,[4] and Marsh *et al* report that during a period of 1 year, telephone consultations with GPs in the UK led to no 'detriment' to patient's health.[5]

Lattimer's own recent study concluded that telephone triage carried out by nurses working in a primary care GP co-op led to faster access to health information and advice, was not associated with an increase in the number of adverse events, and was safe and effective compared to contact with a conventionally operated GP out-of-hours co-operative.[6]

There is little useful empirical literature on the effects of introducing a telephone helpline on the *nature and volume of demand* for health care. One American study has examined the literature on the effects of helpline access to clinical advice for existing patients with specific conditions, such as osteoarthritis, diabetes, and cardiac problems.[7] They found that telephone access could often significantly reduce the use of other health service resources. However, there was no evidence on the effects of a public access telephone helpline on the overall demand for health care.

There is evidence from the UK that in the short term telephone consultations can substantially reduce GP workload,[8] but whether this effect is true for NHS services generally and in the longer term is unknown.

2.4 Evaluation of pilot services

Immediately accessible advice 24 hours a day might help people to manage minor problems themselves or to use services other than those which are more appropriate for major emergencies such as A&E departments and the 999 ambulance services. This possibility however, also raises the spectre of the opposite effect. People who previously would have managed minor problems themselves (whether appropriately or inappropriately) could start to telephone the helpline. When this happens the obvious uncertainties in telephone consultations about the true clinical picture might mean that more people are referred to health services than previously.

Plainly, the actual effects of a telephone helpline on the volume and distribution of demand for healthcare cannot be predicted, and it was recognised in the CMO's review that such a development would therefore have to be piloted and thoroughly evaluated.

Consequently three pilot *NHS Direct* services in Northumbria and Newcastle, Preston and Chorley, and Milton Keynes were commissioned in March 1998. The Department of Health also commissioned an independent evaluation from the Medical Care Research Unit at the University of Sheffield.

The principle aims of the evaluation are to determine whether NHS Direct is able to achieve the policy objectives of encouraging safe and appropriate use of health services in a prompt manner, and to determine its effect upon a range of other relevant emergency and out-of-hours services. In particular, the research objectives are:

1. To describe the 3 pilot *NHS Direct* sites, and their operation.

2. To describe the activity of the pilot sites in terms of numbers of calls, timings, referrals etc.

3. To evaluate the impact of the new service on:

   a) the volume of demand for first contact emergency care, and its distribution between A&E, GP, and other health care providers (e.g. emergency dental services, pharmacies, minor injury units);

   b) the speed and appropriateness of access to first contact care;

   c) processes and outcomes for patients with selected potentially serious conditions;

   d) caller satisfaction with the helpline.

4. To monitor and report on any major system failures.

5. To establish the views of operators, and local patient and professional groups on the contribution of *NHS Direct* to out-of-hours emergency care in the first wave

pilot sites.

6. To measure the operating and other immediate direct cost consequences of the service.

3. THE RESEARCH DESIGN

3.1 Introduction

The Medical Care Research Unit at the University of Sheffield has been commissioned to undertake a two year evaluation of *NHS Direct*. This research project began in December 1997 and will be completed in December 1999. The evaluation was to focus primarily on assessing the effects of the service on patient "pathways" to care, and the impact on other urgent and emergency NHS services.

We describe below the scope of the full evaluation. It should be noted that the results we present in this report are restricted to those parts of the research for which data are currently available, and that it is not yet possible to present any findings from a number of elements of the overall research design, as Table 3-1 will make clear. These will be presented in future reports, as appropriate.

3.2 The design of the evaluation

The research aims to evaluate the effects of the new service both on individual callers' access to appropriate care, and on the wider demand on NHS emergency services. The study has a mixed design (see Table 3-2), but the core is a before-and-after study using population surveys to investigate how, when, and where people obtain immediate care. A population survey has been chosen, in addition to the collection of routine data, in order that changes in self-care, or other minority service provider usage, can be measured.

The population surveys are used to examine the effect of *NHS Direct* on the volume and distribution of the demand for emergency care. In addition four groups of patients with different characteristics are being followed up in order to assess the effect of *NHS Direct* on the quality of care. Further assessment of the quality of the advice lines is being made through a caller satisfaction survey; interviews with a sample of callers; identification of any system failures; interviews with advice line staff and local emergency care professionals.

These various elements of the research are summarised in Table 3-2 (page 9).

3.3 The research timetable

The evaluation began in December 1997, and the first population survey was carried out in February/March 1998, before the first wave sites went live. The caller satisfaction survey was carried out in October 1998. The follow-up population survey will be carried out in February/March 1999, followed by further analysis of pathways to care taken by callers. The timing of the research in relation to the roll-out of *NHS Direct*, and the availability of results, is shown in Table 3-1, below.

Table 3-1: Timing of research activity

	1997	1998	1999
Service roll-out			
First wave sites		▓▓▓	▓▓▓▓
Second wave sites			▓▓▓▓
Research protocol			
Site activity		▓▓▓	▓▓▓▓
Impact on other services	▓▓▓▓	▓▓▓▓	▓▓▓▓
Population surveys		▓	▓
Pathways analysis		▓	▓
Outcomes analysis			▓
Caller views		▓	
Stakeholder views		▓	▓
Economic analysis			▓

In addition to the current interim report, an updated interim report will be submitted to DH in June 1999. The final report to DH will be in December 1999.

3.4 Results included in this report

This document should be seen as a preliminary report of our findings. It includes the *early* results which are emerging from the evaluation: the description and analysis of the service configurations, initial demand for the service, views of callers, variation between sites in advice given to callers and impact on other NHS services.

It does *not* include results from the "before" part of the before-and-after study of appropriateness, pathways to care and outcomes in selected conditions. These data will be analysed when the "after" survey is completed, and will not be available until the final report is published. For similar reasons, the economic analysis and the qualitative study of service providers' views are *not* included in this report.

Because of the limited nature of the data currently available and the analysis which has been possible, the findings and conclusions below are tentative ones which are intended to be helpful to the current development of policy and practice as *NHS Direct* is rolled out to cover the whole of England. However, they may be subject to revision as the research progresses.

Table 3-2: The design of the evaluation of *NHS Direct*

Study	Purpose of study	Type of subject	Source of subjects	'Outcomes' being assessed	Method of assessment	Source of data
1.	**Service description**	*NHS Direct* services	3 first wave sites	Structure of the services	Descriptive	Documentation to describe in detail how they're run and some observation and interviews
2.	**Monitoring activity**	All Calls	*NHS Direct* records in statistical summary	Processes of care: numbers, types, timings, outcome of calls, relationships to publicity etc.	Descriptive statistics	*NHS Direct* records
3.	**Volumes of care**	All unplanned contacts with services in intervention and control area	Routine ambulance service, co-op, A&E, and other HA data sources, other health advice and information services.	Volumes of emergency activity before and after *NHS Direct*	Time series analysis	Routine data
4.	**Quality of care for health problems**					
a.	Distribution of care	All patients with unplanned (emergency) health problems.	Before-and-after population surveys in intervention areas.	Appropriateness of first contact <u>carers</u>.	Assessment by panel, blind to actual 1st contact, against criterion: 'known most cost-effective option'.	responses on the population surveys.
b.	Pathways to definitive care	Patients with a limited list of health problems (or social problems relating to health) in which best pathways to care vary.	Before-and-after population surveys in intervention areas.	Appropriateness of <u>pathways</u> to definitive care. Timings and referrals are included.	Assessment by expert panel blinded to whether before or after the *NHS Direct* development.	Survey responses, *NHS Direct* records, patient administrative databases.
c.	Outcomes are maintained or improved	Patients with a limited list of serious health problems whose outcome might be affected by delay in reaching definitive care.	A&E department records (plus any in the surveys).	Length of stay, admission to ICU (timing, duration), survival as well as appropriateness of pathways as for 2.	Factual assessment of outcome and assessment of appropriateness of pathways as above.	PAS records etc.
d.	No disasters	Major system failures.	*NHS Direct* records, newspapers scans, hospital admission records for key conditions (meningitis).	Appropriateness of pathways. *NHS Direct* response.	Panel assessment of *NHS Direct* responses	*NHS Direct* records. Interviews with *NHS Direct* operations.
5.	**Perceptions of patients and other users**	Sample of all callers contacting *NHS Direct* for any problem.	*NHS Direct* records.	Satisfaction with and attitudes to *NHS Direct*.	Analysis of survey responses	Postal survey with standard satisfaction instruments and some caller interviews.
6.	**Perceptions of health care professionals and operators**	Local GPs, A&E staff, ambulance staff, other service providers, CHC and purchasers, other health advice or information services	Local services used by *NHS Direct* for referrals.	Effect on services and their capacity.	Qualitative assessment.	Stake holder interviews.
7.	**Economic evaluation**	*NHS Direct* services	3 first wave sites	Costs and cost consequences of the services	Cost-consequence analysis	Financial records and service use data

4. SERVICE PROFILES

4.1 Introduction

In this chapter we describe similarities and differences between the three first wave sites in terms of population covered, organisation, staffing, information technology, and relevant local agencies.

4.2 Population

Table 4-1 shows characteristics of the geographical areas and population served by each site. Lancashire provides an urban/rural mix, Milton Keynes is predominantly urban and Northumbria is, geographically, a vast site with extremes of urban and rural.

Table 4-1: Coverage of first wave sites

	Lancashire	Milton Keynes	Northumbria
Population size	370,000	185,000	757,000
Area covered	Preston, Chorley, and South Ribble borough councils	Most of Milton Keynes district council, small areas of Aylesbury Vale, Mid Bedfordshire and South Northamptonshire	Northumberland county council, Newcastle and North Tyneside borough councils
Population type	Urban/rural mix. Large concentration of population in urban areas of Preston	Mainly urban with outlying villages	Inner city and surrounding conurbation, and sparsely populated rural areas

4.3 Organisation

Table 4-2 indicates the provider and the physical organisation of the helpline in each site. The helplines in each site are provided by the ambulance service NHS trust. The "pilot" commissioning of the service covered an initial period of two years, and when the service began it was not clear to providers whether or not they would be expected to make longer term plans for *NHS Direct*. This provisional nature of the service is reflected in some of the arrangements made, particularly for accommodation.

The physical arrangement of the helpline is different in each site. In Milton Keynes and Northumbria, call operators and nurses are located together in the same room, within speaking distance of one another. Northumbria's call centre is situated in a separate building from the ambulance control room. In Milton Keynes the call centre is based in an open plan room which is adjacent to, and partially separated from, the ambulance control room.

The Lancashire service is based on split sites. Call operators are based in a prefabricated accommodation at ambulance headquarters. Nurses at the Royal Preston Hospital occupy a curtained bay within the 'walking wounded' area in A&E, while nurses at Chorley & South Ribble District Hospital are located in a dedicated *NHS Direct* 'office' within the A&E department.

Table 4-2: Physical arrangements

	Lancashire	Milton Keynes	Northumbria
Provider of helpline	Lancashire Ambulance Service NHS Trust	Two Shires Ambulance Service NHS Trust	Northumbria Ambulance Service NHS Trust
Physical organisation	Call operators in prefabricated accommodation at Ambulance HQ Nurses in A&E at Royal Preston Hospital and Chorley & South Ribble DG Hospital	Call operators and nurses located together, in a room adjacent to ambulance control	Call operators and nurses located together, in a separate building

4.4 Staffing

Table 4-3 describes the staffing arrangements in each site.

All sites employ similar numbers of nurses. In Milton Keynes fewer call operators are employed than in the other sites. Each site employs different shift patterns. The grades of nurses employed by *NHS Direct* differs. Lancashire uses predominantly E, F & G grade nurses with the exception of an extremely experienced D grade nurse. Two Shires employs F grade equivalents and Northumbria employs G grade equivalents.

Table 4-3: Staffing arrangements

	Lancashire	Milton Keynes	Northumbria
Numbers	8 call operators 7.5 nurses	7 call operators 7 nurses	10 call operators 8 nurses
Nurse Grades	E/F/G	F	G
Shifts	Call operators - 12 hour & 4 hour shifts Nurses - regular A&E shift	Call operators & nurses - 8 hour shifts	Call operators & nurses - 12 hour shifts

4.5 Local agencies

Table 4-4 indicates relevant NHS emergency and out-of-hours provision in each area.

Table 4-4: Other services

	Lancashire	Milton Keynes	Northumbria
A&E departments	Royal Preston Hospital Chorley & South Ribble DG Hospital	Milton Keynes General Hospital	Royal Victoria Infirmary Newcastle GH North Tyneside DGH Wansbeck DGH Morpeth GH Berwick Infirmary GP casualty departments at Blyth & Alnwick
GP co-ops	**Preston Primary Care Centre** - based at RPH **Chorley & District Medical Services Ltd** - based at Euxton	**MKDOC**: Milton Keynes Doctors On Call - covers central Milton Keynes area and is based at Hilltops Medical Centre, Milton Keynes	**NDUC**: Northern Doctors Urgent Care - covers 60-70% of Northumberland population and is based at Ashington GH **NEDS**: Newcastle Emergency Doctor Service - covers West of City. This service closes at midnight, at which time calls are transferred to Healthcall. North Tyneside/East of City covered by GPs and Healthcall
Number of GPs	171	125	476

4.6 IT facilities

Table 4-5 indicates the software used in each site and the facilities provided for callers with particular needs. Milton Keynes and Northumbria opted for US-developed systems whereas Lancashire chose a UK-developed system (more detailed information on software variations is discussed in Advice to callers, page 44).

The needs of callers with communication disabilities and callers whose first language is not English can be met, but this may require the call to be re-directed to another site. Lancashire does not provide a service for callers whose first language is not English, and states that to date there has been no demand for such a facility.

Table 4-5: Triage software and facilities

	Lancashire	Milton Keynes	Northumbria
Software	UK-developed system - Telephone Advice Systems	US-developed system - Centramax	US-developed system - Personal Health Advisor
Software provider	Plain Software Ltd	HBO & Company	Access Health Inc.
Callers with disabilities	deaf callers are routed to Milton Keynes	TypeTalk and Minicom	Minicom
Callers whose first language is not English	No facility	Agency facilities for foreign languages	Working with the interpreting service for Health and Social Services

4.7 Referral routes

Table 4-6 indicates sources of referral to *NHS Direct* other than through press and radio publicity. Lancashire and Milton Keynes receive calls that have been re-directed from A&E departments. All sites receive calls as a result of the *NHS Direct* number being given out on some GP answerphones.

Table 4-6: Referral routes to *NHS Direct*

	Lancashire	Milton Keynes	Northumbria
GP Practices	*NHS Direct* telephone number is given on some GP answerphones	*NHS Direct* telephone number is given on about 60% of GP answerphones	*NHS Direct* telephone number is given on some GP answerphones
Hospitals	Calls to previously established A&E telephone triage lines now re-directed to *NHS Direct*	Calls referred from A&E and hospital switchboard	Calls are not re-directed from A&E departments

4.8 Practical operation of call handling

During November/December 1998 a researcher from the Medical Care Research Unit visited each site for two days to observe the practical operation of the call handling process. Information was collected through direct observation of call handling and through interviews with nurses on duty (six nurses in Lancashire, three in Milton Keynes and three in Northumbria). In addition, the time taken to handle each element of a call (i.e. personal details, triage and outcome) was recorded for a sample of calls.

The researcher's observations are reported here. These represent the nature of the facilities and processes of call handling at the time of observation, and the views of individual nurses who were interviewed. These observations have been relayed to site managers in advance of this report, and are being used by the sites to inform their quality improvement and service development programmes.

4.8.1 Lancashire

Call takers are accommodated in prefabricated accommodation at the ambulance headquarters. Nurses are located in the two local A&E departments at the Royal Preston Hospital and the Chorley & South Ribble District General Hospital.

The software moves through the following screens: nature of problem, demographics, assessment, summary.

4.8.1.1 Call operators

Initially the call operator asks the patient what the problem is and is given a choice of medical descriptions from the software, such as "abdominal", "musculo-skeletal", etc. A verbatim description of the caller's problem is then entered.

The call operator then has the option to transfer the call for nurse advice, for health

information (using the *Healthwise* health information provider) or to provide other information themselves. Call operators have the authority to transfer a call directly to the 999 service. If nurse advice is required the caller and patient details are entered and calls are transferred turn by turn to a nurse located at Preston or Chorley A&E departments. If the nurse is unable to take the call, the call is "stacked" on the operator's terminal.

4.8.1.2 Nurses

At Preston, the terminal is located in a curtained bay in the 'walking wounded' section of A&E (see photo), although the curtain is kept open. At Chorley, the terminal is located in a room dedicated to *NHS Direct* (see photo), adjacent to A&E reception. The room has two doors which are closed when a call is taken.

The *NHS Direct* telephone alerts the nurse to a call. Once the call has been transferred in line with hand-over protocols, the nurse confirms the caller/patient's name and telephone number.

The nurse moves onto the assessment screen which contains various check boxes for different symptoms. The nurse will then decide a line of questioning using their own judgement about what is appropriate. While the software prompts the nurse to ask certain questions, the nurse does not have to ask them. The nurse may only have to ask a handful of questions before they move onto the summary screen. The summary screen shows all the details that the nurse has entered, with anything potentially worrying highlighted in a red box.

4.8.1.3 Outcome

The nurse uses guidelines and, depending upon the severity of the problem, decides which is the most appropriate pathway to care. The caller is given the advice and the call completed.

4.8.1.4 Views of nurses

The nurses interviewed felt they had adequate training: 2 days intensive for key trainers, with training cascaded to others, including one-to-one tuition and supervision. However, they felt that call operators were not transferring appropriate cases straight to 999 and potentially they saw this as a problem.

Both sites felt that the computer system could be slow at times (but perhaps this is because they are used to working in the fast pace of A&E). At Chorley nurses had to log off after every call which was time consuming, especially when calls were coming in. The software had been 'freezing' from time to time and not letting the nurses log back on. This was not seen as a barrier to taking calls as the nurses would take the call triage using their own clinical knowledge and then document it on the system later.

The nurses reported that some patients were annoyed at having to tell the call operator about their problem and then having to go through it again with the nurse.

Not all clinical categories are listed on the software. For example, if a patient calls with a plaster problem (e.g. their cast has cracked), nurses will use their own knowledge rather than the software as they know the software does not have the ability to deal with that particular problem.

The A&E departments were very busy and some nurses felt guilty at having to sit waiting for a call whilst their colleagues were obviously busy.

4.8.1.5 Researcher observations

At the time of visiting the sites, both A&E departments were short staffed due to sickness and leave and were in the process of recruitment. If the departments were fully staffed, nurses would be dedicated to the terminal and would not carry out other A&E duties at the same time. During site visits in November 1998, nurses were carrying out duties in A&E while also being on duty for *NHS Direct*.

The physical arrangements at Preston were not conducive to quiet concentration. Nurses were situated in a cramped curtained bay within A&E. The curtain in the bay was never closed as the nurses, understandably, found this claustrophobic. The 'walking wounded' were constantly passing the bay, which was physically and audibly distracting.

Nurses did not rely on the software. They used it as a structure for advice, rather than a dictator of advice: "It doesn't dictate to us and it shouldn't do". Nurses said that they used it in the same way as the A&E triage line they used to operate, but instead of recording calls manually in a book, they can now do so electronically.

4.8.2 Milton Keynes

Call takers and nurses sit alongside each other in an open plan room adjacent to, and partially separated from, ambulance control.

The software moves through the following screens: Demographics, Triage, Problem & Nursing Assessment, Outcome.

4.8.2.1 Call operators

Calls come in to the operator who asks what the nature of the problem is. They then decide if the call needs the attention of a nurse. If the caller is seeking information only, or if the call operator feels that the patient needs the emergency services, the call will be dealt with solely by the operator.

The call operator takes the basic details of the patient and the caller (name, address, date of birth, telephone number and symptoms (if any) of the patient), and then

verbally asks the nurse if they are ready to take the call. If they are not, the caller's name, telephone number and symptoms are written on paper and passed to the nurse. While there is a facility to "stack" the calls on computer, it was not in use at the time of our observation.

4.8.2.2 Nurses

To retrieve the caller's details the nurse types the caller/patient's surname or telephone number into their own terminal and selects the appropriate call. If a surname is typed in and previous callers have the same surname or the caller has called before, the computer will display all callers/patients with that surname.

The nurse confirms the caller's name and telephone number. The nurse will then run through the 'triage' (diagnosed problems, medication, past medical history) and 'problem/nursing assessment' (presenting problem information) screens. The nurse does not have to answer all the pointers that are on the screen.

If the nurse is having trouble finding an appropriate algorithm but knows what the outcome will be she may terminate the call and finish the software documentation later.

4.8.2.3 Outcome

Once the nurse has chosen the most appropriate algorithm, the software displays some further questions about the severity of the problem before the outcome and advice is given to the patient. Nurses have some autonomy in this part of the call in that they can decide the severity of the problem and thereby influence the outcome.

4.8.2.4 Views of nurses

Most nurses felt that they had received adequate training on the software, consisting of three days intensive training.

Nurses expressed concern about the transfer of calls from the operator to the nurse using a paper system. Some nurses were worried that patients details could be mislaid using this system.

Nurses felt that the software would ensure that they could not miss vital questions. They liked the prompts given on screen and felt that "it protects you". They felt that it was a very secure system as long as the nurse follows the guidelines, and that only if they deviate from them can problems happen. Some nurses felt that the software could be rigid at times but they could get around this by asking additional questions.

Some nurses acknowledged that finding the appropriate algorithm could be a problem and that some of the guidelines should be updated.

4.8.2.5 Researcher observations

The researcher found the noise levels and physical activity in ambulance control very distracting, and felt that the entry of patient details could be more efficient, although it was not clear whether changes were needed in the software or the mode of use.

At the time of observation the software did not offer the facility to "stack" patients on the system if the nurse is busy, rather than having details written on paper and passed to the nurses' desk, which seemed to be an inefficient and potentially insecure way to work. In addition, the retrieval of recent calls was a lengthy and potentially confusing process as nurses often had to ask the operator whether a particular caller was the right one.

There was a need to add more algorithms to the system. The researcher witnessed one nurse having difficulties trying to find an algorithm to fit a very specific case. Eventually the call was terminated and an algorithm was found after 15 minutes and discussions with other staff.

4.8.3 Newcastle

Call takers and nurses are accommodated in the same room adjacent to each other.

The software moves through the following screens: demographics, patient documentation, symptom information, clinical content, outcome.

4.8.3.1 Call operators

Calls come in to the operator who takes personal details of the patient and the caller (name, address, date of birth, telephone number). The patient's GP and hospital outpatient details are also taken.

The symptom information screen allows the call operator to record the patient's symptoms in free text, after which the operator verbally checks that a nurse can take the call and gives the nurse a brief summary of the symptoms before transferring the call. If a nurse is unable to take the call, the call is "stacked" on the nurse's terminal.

Call operators have the autonomy to order an emergency ambulance if they feel that a patient warrants this. If a caller is ringing for information only the operator will deal with this and end the call.

4.8.3.2 Nurses

Once the call has been transferred to the nurse, all the details that the operator has already taken appear on the nurse's screen. The nurse confirms the name of the caller and the patient and the caller's telephone number. The caller/patient name and age stays on screen at all times.

If the nurse decides that the patient needs an ambulance they will end the call and

alert an ambulance, finishing the software documentation later. If not, the nurse chooses an appropriate algorithm and then begins the 'clinical content' section. During this, the nurse must ask a series of questions as determined by the software. The software does not allow the nurse to leave any questions unanswered. Questions are displayed in lay language as well as clinical terminology.

4.8.3.3 Outcome

Once the triage is complete the software will indicate the single most appropriate pathway to care. However, if the nurse is unhappy with the suggested outcome they can change the algorithm to one which will provide a different outcome. If the answers given are inconsistent, the software will prompt 'on-call provider'. The nurse will then telephone a GP (who is on call to *NHS Direct*) and ask for their opinion. However, if two nurses are working on a shift together they can decide, between them, what is the most appropriate action for the patient. The caller is then given the advice and the call is ended.

4.8.3.4 Views of nurses

The nurses felt that they had sufficient software training, having spent 2 weeks with the software supplier and also having a one-to-one mentor during the first 'live' week of *NHS Direct*. There were initial teething problems with the software crashing and calls being lost on transfer but these have been rectified.

They felt that the software had plenty of 'safety nets' and prompts which provided a good back up to their clinical knowledge. They felt that the software would not allow potential problems to be overlooked or mistakes to happen. However, they also felt that more algorithms should be added to the system, since sometimes they had difficulty in finding one that matched the patient's problem.

Although the system was developed in the US and some of the terminology is American, the nurses did not find this a problem, even though some of the outcomes relate to how US healthcare providers would handle a problem rather than how it might be managed in the UK. For example, the syringing of ear wax would prompt "self-care" on this system but the nurse would advise the patient to see a healthcare professional.

4.8.3.5 Researcher observations

The atmosphere in the call centre appeared to the researcher relaxed and calm. The researcher felt that the software operated very smoothly during the initial entry of patient details and the transfer between call operator and nurse. Call operators did transfer some calls to 999 and seemed confident in doing so.

The software sometimes asked the caller to perform various actions to gather information, for example to physically check a child for signs of meningitis. This may

have an impact on the length of calls.

4.9 **Conclusions**

Our observations of the first wave sites in action indicates that they each have their own characteristics, with physically different environments and different software leading to different modes of operation.

Milton Keynes and Northumbria both work with US-developed software and base their triage on algorithms, whereas Lancashire uses a UK-developed system. Our researcher felt that of the three, Lancashire seemed to be more nurse-led than the other two sites. This may partly be due to the software, and partly to the nurses perceiving *NHS Direct* to be a development of their previous A&E triage telephone lines.

All the nurses, in all of the sites, were happy with the software they were using, but as they had not worked with the other sites' software could not comment on which they preferred. All the systems seemed to work well for the nurses, and any problems that were encountered were usually resolved after discussions with one another. Teething problems had been ironed out, but nurses at Chorley were still having problems with the system failing to let them log on at times.

Nurses in all sites felt that the software afforded them a great deal of flexibility and autonomy, but those in Lancashire felt that their software gave them more autonomy than the other two sites (even though they did not have first-hand experience of the other sites' software).

As discussed earlier, the physical environment of each site was distinct. Our researcher felt that the arrangement in Northumbria appeared to work well. A room dedicated to *NHS Direct* meant no physical or audible distractions from other agencies, unlike the A&E departments in Lancashire or the emergency control centre in Milton Keynes. Some nurses in these sites did find their work surroundings distracting at times, but felt that most of the time they were focused on the call in progress and could forget about background noise.

5. DEMAND FOR *NHS DIRECT*

5.1 <u>Introduction</u>

In this section we undertake a simple descriptive analysis of call numbers and rates to first wave *NHS Direct* sites, by time, place and person. These analyses are based mainly upon the data collected by call handlers and nurses during each call. In principle, this is a rich data set which can form the basis of a much wider range of analyses, including analyses of the problems which present to the service, the geographical (and hence socio-economic) distribution of demand, the triage decisions made during the course of each call, and others.

While we hope to undertake such analyses for future reports, we have not included them here for practical reasons: because each site uses a different computer system for recording and triaging calls, bringing data from each together in meaningful ways is a substantial and time-consuming task.

5.2 <u>Data sources and their limitations</u>

5.2.1 <u>Call data</u>

The primary data source for the analyses in this chapter is the triage software used in each *NHS Direct* site to record and manage the process of each call. Each of the programs in use captures the personal and clinical information provided during each call, in the process of guiding the nurse through a series of questions which lead to a recommended course of action. Each site uses a different triage program (see chapter 4) and therefore the information recorded, the order and completeness of data entry, the coding systems in use, and the discretion allowed to the nurse differ between sites.

With the assistance of the software companies concerned, each site has provided files containing selected data items for each of the calls logged by the software, and these form the basis of the following analysis.

In the light of this, there are a number of important points to bear in mind when interpreting the results, as follows:

- Some callers to *NHS Direct* may hang up before their call is answered: these calls are not included in the current analysis;

- Some callers may have their call dealt with by the provision of simple information, and in these circumstances the call taker or nurse may feel it inappropriate to keep the caller on the line to provide detailed personal information: such calls may not be recorded at all by the triage software, or if they are then the call data is likely to be incomplete;

- A small proportion of calls recorded by the software in each site are outgoing calls:

these have been removed from the current analysis.

5.2.1.1 Milton Keynes data

The Milton Keynes site uses triage software from HBO & Company. In this system, calls which are passed from the call taker to the nurse create two records in the call log, one for each part of the call. The actual number of calls to the site is therefore very much lower than a simple count of logged calls would suggest. The system does not automatically record which calls are primary contacts and which are secondary, i.e. passed across from the call taker to the nurse, although call handlers and nurses do have the option to record when this occurs.

In the data available to us this option is coded inconsistently and is potentially misleading. Therefore, for the purposes of the current analysis, we defined a secondary call to be a call logged within 15 minutes of a previous primary call from the same patient. Such a definition is reasonable but may not accurately identify all secondary calls, so there is still some possibility of double counting. Only primary calls identified in this way have been included in the analysis here.

5.2.1.2 Lancashire data

The Lancashire site uses the TAS system from Plain Software Ltd. In the logging of activity in this system, individual calls are linked to callers though a "caller number", since any caller may call on multiple occasions. In the data provided to us, this caller number is zero (i.e. no caller details exist) for about 300-400 call records per month. These call records may represent real calls to *NHS Direct*, which may have been handled very briefly with no caller details entered on the system. Alternatively, they may simply be artefacts of the way the software is used, and indeed some proportion of them may be real and the remainder artefactual.

In view of this uncertainty, they have been retained in the analysis, but it should be borne in mind that the call numbers and rates we report below may overestimate the true figures by up to 16%.

5.2.2 Population data

Population data from the 1991 census have been used to calculate rates. The population coverage of each service is determined by telephone dialling codes rather than local or health authority boundaries. Nonetheless, a list of electoral wards in which *most* of the population has access to *NHS Direct* has been defined in consultation with each site, and census data for each ward has been aggregated to provide population estimates for each site as a whole, by age and sex.

5.3 <u>Call activity</u>

5.3.1 <u>Total call rates</u>

Overall call numbers to first wave sites, by site and month, are shown in table 1, and show a gradual increase in activity since the start of the service in March 1998. These data are also shown graphically in Figure 5-1, below.

While sites are broadly comparable in terms of the *numbers* of calls received, the call *rates* per 1000 resident population per year in each of the areas show wide differences between the sites, as Table 5-2 shows.

Because of the contrast between the densely populated urban areas of Newcastle and North Tyneside and very sparsely populated rural Northumberland, we have attempted to identify calls from these areas separately to calculate the population call rates in Table 5-3. These show that the call rate for Newcastle and North Tyneside is consistently 20-30% higher than that for Northumberland.

Table 5-1: Call numbers by site and month

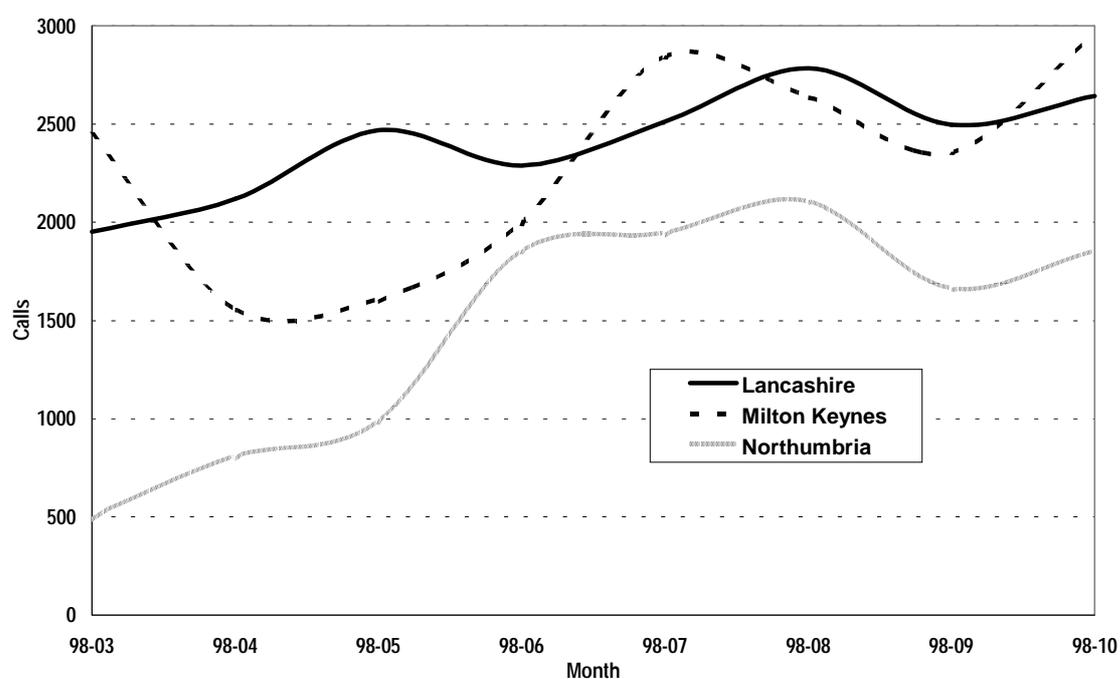| Month	Lancashire	Milton Keynes*	Northumbria
98-03	1951	2459	489
98-04	2120	1554	796
98-05	2468	1595	970
98-06	2289	1979	1837
98-07	2514	2829	1934
98-08	2785	2634	2099
98-09	2497	2341	1655
98-10	2644	2940	1840
Total calls	**19268**	**18331**	**11620**

* Estimate after excluding duplicate records

Figure 5-1: call numbers to *NHS Direct* sites, March to October 1998

Table 5-2: Call rates per 1000 resident population per year

Month	Lancashire	Milton Keynes*	Northumbria
98-03	63.24	159.24	7.76
98-04	68.72	100.64	12.63
98-05	80.00	103.29	15.39
98-06	74.20	128.16	29.14
98-07	81.49	183.20	30.68
98-08	90.27	170.58	33.29
98-09	80.94	151.60	26.25
98-10	85.70	190.39	29.18
Overall rate	78.07	148.39	23.04

* Estimate after excluding duplicate records

Table 5-3: Call rates per 1000 resident population per year, Northumbria

Month	Newcastle & North Tyneside	Northumberland
98-03	8.5	6.7
98-04	13.4	11.5
98-05	18.0	11.5
98-06	33.2	23.1
98-07	34.2	25.4
98-08	35.7	29.7
98-09	28.1	23.6
98-10	30.6	27.0
Overall rate	25.2	19.8

5.3.2 <u>Call rates by age and sex</u>

Calls rates by age and sex, derived from call records to all sites for the period March to October 1998, are shown in Figure 5-2, below.

In all, 57% of calls relate to female patients and 43% to male patients. One in four calls relates to a child of five years old or under, and two-thirds to people under 35 years old.

Figure 2 shows relatively high call rates in under-5s and young women (20 to 34 years old), a distribution which is very similar to patterns of use of GP services.[9] However, there is also an important difference, in that rates of use in older adults (over-65s) are lower than would be expected from their use of other health services.

Figure 5-2: Call rates per 1000 resident population per year, by age and sex
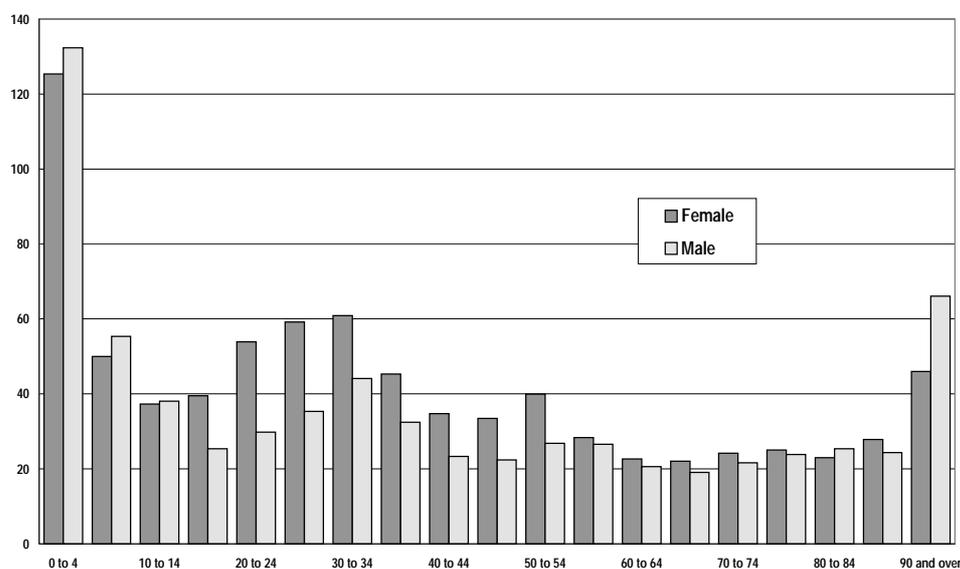
5.3.3 Call rates by time of call

The mean number of calls per hour to all sites combined over the first 8 months of the service is shown in Figure 5-3, by time of day. Overall, 71% of calls are out of hours (i.e. occur before 8am or after 6pm, or at weekends). This figure did not differ between sites.

Figure 5-3: Hourly call rate, by time of day
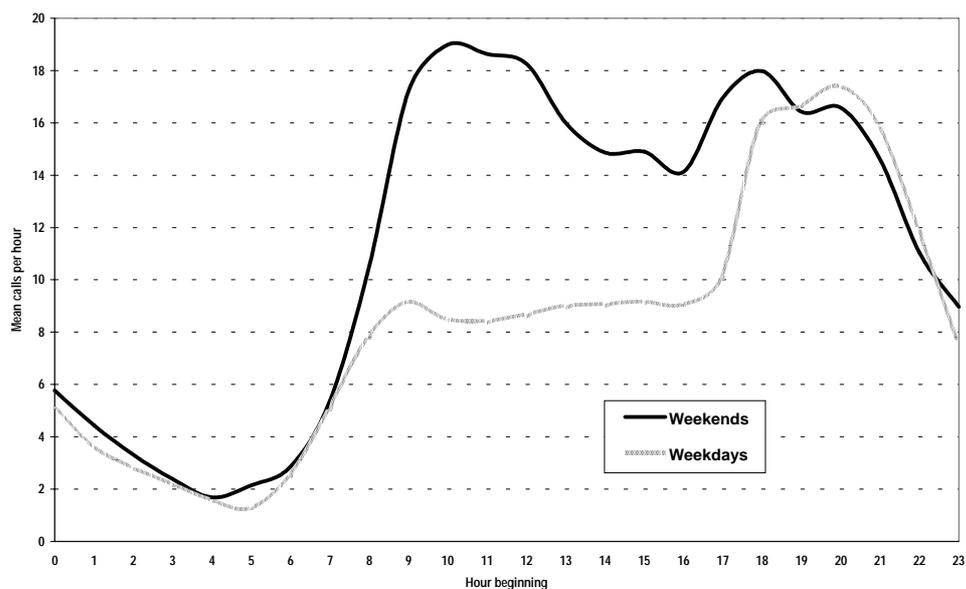
The overall pattern of low numbers of calls overnight, an early morning peak and a second peak in early evening is a familiar one. A similar time distribution is seen in 999 calls to ambulance services and in attendances at A&E departments,[10] suggesting that

NHS Direct is being used as an out-of-hours service. Day time call rates are higher at weekends than during the week.

The time distribution of demand is different for children (0-14) and adults (15 and over), as Figure 5-4 and Figure 5-5 show. For children, the pattern is dominated by an early evening (4pm-9pm) peak in demand, with very low night time rates and low day time rates during the week. For adults, weekday day time rates are higher, with a later evening peak. Weekend rates are very much higher, with a marked day time morning peak. Again, these patterns are broadly similar to those seen in A&E attendances.[10]

Figure 5-4: Hourly call rate, by time of day: children (0-14)
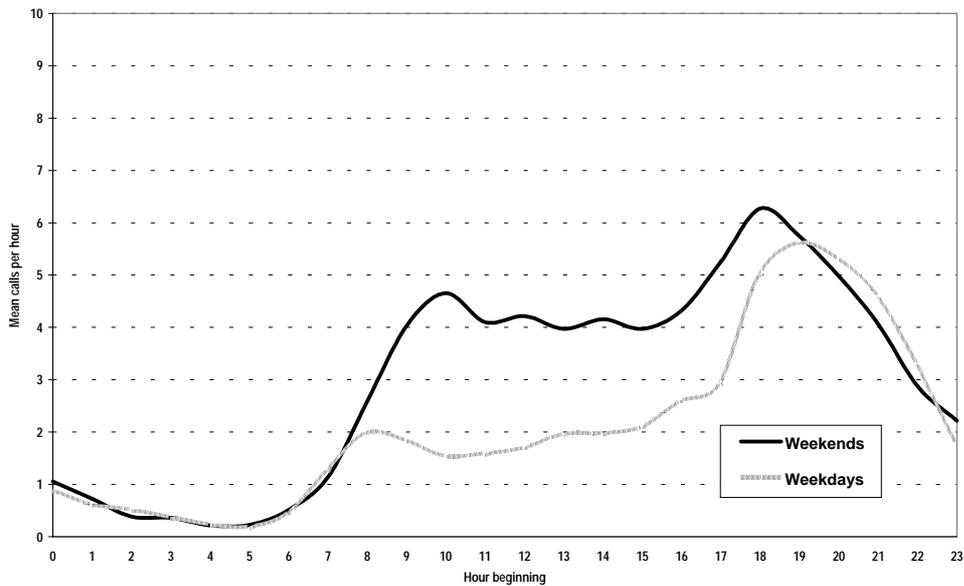

Figure 5-5: Hourly call rate, by time of day: adults (15 and over)
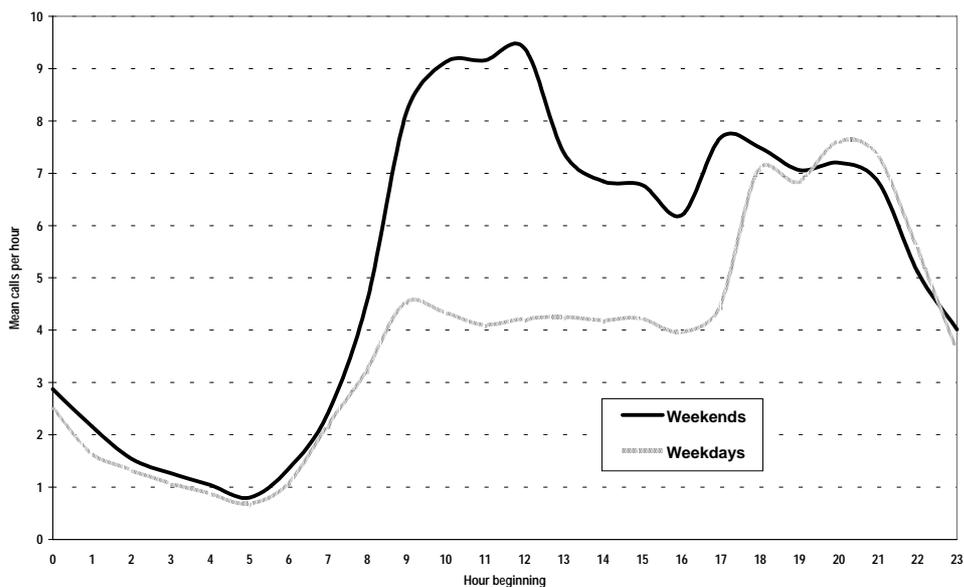
Note that these charts show the hourly call rate, but are not adjusted to take any

account of the size of the adult and child populations.

5.3.4 Relationship of callers to patients

While many users of *NHS Direct* call on their own behalf, many call on behalf of a family member, friend, work colleague or other person. In Figure 5-6 the proportion of calls made on behalf of the caller or others is shown. This data relates only to those calls for which the relationship between caller and patient has been recorded, which is about half of all calls.

As the figure shows, 44% of callers were seeking advice on their own behalf, and a further 34% on behalf of their child.

Figure 5-6: Person on whose behalf calls were made
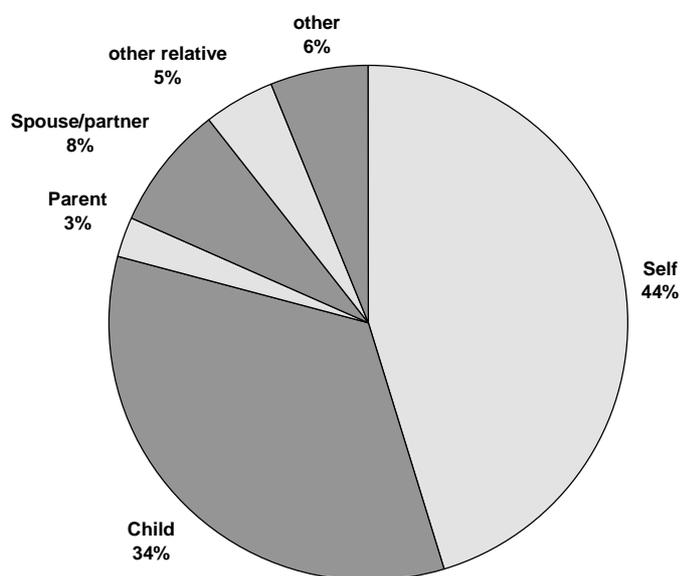
5.4 Conclusions

Overall calls rates to *NHS Direct* in the first 8 months have been lower than the capacity required of sites when the service was originally commissioned. While each site was asked to tender for a minimum call volume of 75,000 calls per year, in fact only about 50,000 calls have been made in the first 8 months to all sites combined, equivalent to a mean of 25,000 calls per site per year.

On average, the population call rate across all sites for the first 8 months was 56 calls per 1000 resident population per year. In Table 5-4 we compare this with telephone call rates to other health services, using figures cited in a recent report from the College of Health.[11]

Table 5-4: Population call rates to health services

Service	Estimated call rate per 1000 population per year	Reference
Out-of-hours GP co-operative	100	12
Pharmacist	75	12
999 ambulance	73	13
NHS Direct	**56**	
Daytime GP telephone consultation service	50	14
Out-of-hours community nursing and community mental health	40	11
A&E department	12 - 30	12
Health information service	9	11

Comparison of *NHS Direct* use with these figures suggests that perhaps the service has, after all, got off to a better start than might have been judged from comparison with the original tender specification. Indeed, given that the service is new and unfamiliar to the public and, so far at least, has received little publicity, we would judge activity over the first 8 months to be encouraging for the future.

The distribution of calls by age and sex is similar to that for use of GP services, with the notable exception of older adults, whose relative call rates are much lower than might be expected. A range of explanations may account for this finding.

First, older adults may have lower awareness of the service from local publicity. Second, access to a telephone may be lower, although our population survey of 5,000 individuals in each *NHS Direct* area in fact revealed no important difference in access to a telephone between over-65s and under-65s (about 95% in both groups). Third, older people may be less inclined to use a telephone because of physical, sensory or mental disability, or other practical difficulty, although again our survey suggests that this is a problem for only a few per cent of callers. Fourth, older people may be less inclined to use the telephone in general, in seeking either health care or other services. It will be important to continue to monitor the use of *NHS Direct* by older adults, to determine whether this apparent under-use persists as the service develops further, and particularly as the scope of the service widens.

6. ACCEPTABILITY OF *NHS DIRECT*: CALLERS' VIEWS

6.1 <u>Introduction</u>

A structured survey was chosen as the method for assessing the acceptability of *NHS Direct*. In response to criticisms of this approach, the questionnaire covered some experiences as well as views of the service and telephone interviews were undertaken with a subsample of respondents to explore their views in more depth.[15] [16] [17] In addition, users were given the opportunity on the questionnaire to make free-text comments about the aspects of the service with which they were particularly satisfied or dissatisfied. This had the potential to address the disadvantages of taking either a purely quantitative or purely qualitative approach by allowing large numbers of people to express their opinions outside a structured format without the large resource implications of qualitative methods.

A further issue with satisfaction surveys is determining whose opinion to seek. It is possible to seek the views of potential users or actual users, and with *NHS Direct*, there is also the option of obtaining the views of the caller or the patient for whom the call was made. A survey was undertaken of callers to *NHS Direct*, rather than the general public or the patient, to obtain the views of people who had experienced the service through direct contact.

6.2 <u>Methods</u>

During one week in September 1998, each of the three *NHS Direct* sites sampled 350 consecutive callers, giving a total of 1050 callers. The sampling period covered weekends and weekdays. A questionnaire was posted to the sample within one week of the call, with two reminders at two weekly intervals. To safeguard the confidentiality of names and addresses held by *NHS Direct*, questionnaires were posted by personnel in the three *NHS Direct* sites and respondents returned completed questionnaires directly to the research team. The questionnaire covered socio-demographic details; experiences and views of making the call, getting advice from the nurse and getting information from the operator; satisfaction with different aspects of the service; and space for free-text comments about the aspects of the service with which they were particularly satisfied or dissatisfied. The section of the questionnaire relating to satisfaction with different aspects of the service was taken from an instrument used previously in an evaluation of a telephone triage service,[6] which itself was based on a validated instrument of patient satisfaction with out of hours primary medical care.[18]

Telephone interviews were undertaken with a small sample of respondents to the questionnaire. A purposive sample of 10 callers from each site who had not taken the opportunity to exclude themselves from further contact with the research team were

followed up with telephone interviews. The sample was selected to include both sexes, a range of ages and different levels of satisfaction. One researcher undertook the telephone interviews with the aim of assessing the effectiveness of the questionnaires in measuring satisfaction. The critical incident technique was applied to the process of using *NHS Direct*, with encouragement given to express both positive and negative comments on specific aspects of the service.[19] At least three attempts were made to contact people, once in the daytime, once in the evening and once at the weekend. Interviews were taped, with the callers permission, and transcribed verbatim.

6.2.1 Analysis

The χ^2 test was used to test for differences between sites for the quantitative data. Comparisons were made between data from the questionnaire and data from the telephone interview by reading the questionnaire and transcript for each individual who had participated in both and identifying extra information elicited during the interview.

6.3 Results

6.3.1 Response rates

Of the 1050 questionnaires mailed, 710 of the 1018 which reached the callers were completed. This overall response rate of 70% varied by site: 65% in Lancashire, 80% in Northumbria and 63% in Milton Keynes. Although refusal rates were similar in all three sites, reasons for the questionnaires not reaching the specified caller differed between sites. Return to Senders were specific to Lancashire and callers receiving two questionnaires for one call was specific to Milton Keynes.

Thirty callers were selected for telephone interviews, ten from each site. Twenty three interviews were undertaken from this sample. Three people were unobtainable after three attempts to contact them, two telephone numbers did not exist (Northumbria only), one person worked overseas and one person had called *NHS Direct* from a phone box. One interview was unusable due to the interviewee's communication difficulties, leaving 22 usable interviews. There was a lack of younger and older men in the responding sample and therefore a further four callers were sampled from these age-gender groups. All four men were successfully interviewed, giving a total of 26 usable interviews.

6.3.2 Description of respondents

Respondents were similar for all three sites in terms of gender, age, educational status and use of a telephone (Table 6-1). However, Milton Keynes were more likely to have callers from minority ethnic communities (χ^2=19.8, df=2, p<0.001) and Northumbria were more likely to have callers without the use of a car (χ^2=20.2, df=2, p<0.001).

Table 6-1: Socio-demographic variables by site

Socio-demographic variable	Lancashire	Northumbria	MKeynes	All sites
% female	83%	80%	77%	80%
% 55 years or older	13%	19%	14%	16%
% left school aged 16 or under	55%	61%	54%	57%
% white***	97.2%	99.6%	92.4%	97%
% use of a car***	82%	64%	75%	72%
% use of a telephone	98%	99%	99%	99%
% no difficulty using a telephone	96%	96%	92%	95%
Total= 100%	212	279	211	702

*** $p < 0.001$

For the telephone interviews, there were at least six respondents from each site, gender, age and satisfaction group (Table 6-2).

Table 6-2: Description of respondents to telephone interviews

Variable	Number of respondents
Site	Lancashire (9) Northumbria (7) Milton Keynes (10)
Gender	Male (9) Female (17)
Age group	Under 35 (11) Between 35 and 54 (9) 55 or over (6)
Satisfaction group	Very satisfied (9) satisfied (6) some dissatisfaction (11)

6.3.3 The telephone call

6.3.3.1 Finding the number for making the call

Callers were asked where they had found the telephone number for NHS Direct when making their call. A variety of sources were used (Table 6-3). Efforts to publicise the service through newspaper advertisements and leaflets appear to have made an impact, with one third of callers accessing the service through advertisements and leaflets. A further 3% of callers used the 'other' option to say that they had put the sticker from the leaflet onto their telephone. The importance of 'word of mouth' is apparent given that 14% of callers used family or friends. It is worth noting here that some callers may not have known about the service prior to contacting it. They accessed it by trying to contact the Accident and Emergency Telephone Helpline or by trying to contact their GP out of hours. Answerphone messages from these two sources route callers to NHS Direct in some of the sites.

Table 6-3: Methods of finding the telephone number for *NHS Direct*

Method	Callers (%)
Newspaper advert	17
Family or friend	14
Leaflet	14
Directory enquiries	13
GP answerphone	10
GP	7
Hospital	6
Accident and Emergency Telephone Line	6
Radio/TV	6
Poster	1
Other e.g. sticker (3%), own address book (1%)	7
All methods: n = 707	100

The method through which callers accessed *NHS Direct* differed by site (Table 6-4). In Northumbria, callers were more likely to have accessed it through publicity efforts or word of mouth than through services routing callers to *NHS Direct* (χ^2 =121.9, df=8, p<0.001). In Lancashire, 14% of callers accessed the service through the Accident and Emergency Telephone Helpline and in Milton Keynes, 20% of callers accessed the service through GP answerphones.

Table 6-4: Method of accessing *NHS Direct* by site

Method	Lancashire	Northumbria	Milton Keynes
Publicity	28%	48%	33%
Family or friend	10%	21%	11%
Through hospital	26%	1%	13%
Through general practice	20%	6%	26%
Other, including directory enquiries	16%	23%	17%
Total =100%	213	280	214

6.3.3.2 Reason for making the call

Details of the problem about which the callers phoned were not sought. Callers were asked whether they were seeking advice, information about a problem, or information about health services. The vast majority of callers telephoned for immediate *advice* about a problem (92%), only 5% called for *information* about a problem, and still fewer for information about services available (1%). This reflected the fact that NHS Direct publicity has focused on the "advice" rather than the "information" aspect of the service.

A further 4% gave another reason for calling: either they gave details about a specific health problem (e.g. "about my angina") or gave very general reasons (e.g. "for help"). Four people said that they had phoned to request a doctor. There were no statistically significant differences between the sites.

6.3.3.3 *Contact with a service prior to NHS Direct*

Approximately one third of callers (32%) had contacted someone for information or advice about their problem before they contacted *NHS Direct*. This differed by site (Table 6-5). In Northumbria callers were less likely to have contacted someone (χ^2 =13.1,df=2, p<0.005). When callers had contacted someone, it was likely to be family or a friend, a GP, or an Accident and Emergency department. This was related to how callers had accessed the service. Some callers in Lancashire and Milton Keynes had been routed to *NHS Direct* when they called for a GP or called the A&E department.

Table 6-5: Contact with a service prior to *NHS Direct*

Contacted service	Lancashire	Northumbria	MKeynes	All sites
YES	38%	24%	36%	32%
Family or friend	12%	12%	12%	12%
GP	14%	7%	14%	11%
A&E	7%	1%	5%	4%
General practice staff	3%	1%	4%	3%
Other	7%	4%	11%	7%
Total =100%	209	277	205	691

6.3.4 The advice

6.3.4.1 *Speaking to the nurse*

96% of callers perceived that they had spoken to a nurse. This is not surprising given that the majority of callers wanted advice about a problem. It is interesting to note that 2% of people did not know whether or not they had spoken to a nurse. The proportion of callers who said they had spoken to a nurse differed between sites: 93% in Milton Keynes, 95% in Lancashire and 98% in Northumbria (χ^2 =8.5, df=2, p<0.05).

6.3.4.2 *Expectations*

When speaking to the nurse, over one third expected to be told how to manage the problem themselves, while others expected to be told to contact Accident & Emergency or a GP (Table 6-6). Expectations differed by site, with a higher proportion of callers expecting to go to A&E in Lancashire (χ^2 =45.2, df=10, p<0.001). This is not surprising considering that some callers in Lancashire had been routed to *NHS Direct* via a long-established Accident and Emergency Triage Line.

Table 6-6: Expectations of callers who spoke to a nurse

Expectations	Lancashire	Northumbria	Milton Keynes	All sites
Go to an A&E Dept	31%	13%	17%	19%
See a GP immediately	13%	22%	18%	18%
See a GP in next few days	13%	19%	17%	17%
Self care only	38%	42%	40%	40%
Don't know/other	10%	11%	14%	12%
Total = 100%	199	275	195	669

6.3.4.3 Advice given

Callers were given a variety of advice including to contact a service, wait and see, or to manage the problem themselves (see Advice to callers, page 44). Eight callers were put through to 999. The type of advice given differed by site (χ^2 =129.6, df=22, p<0.001). Lancashire were more likely to advise the caller to go to Accident and Emergency and less likely to advise them to contact a GP immediately. Northumbria were more likely to ask the caller to contact a GP at the next appropriate opportunity and more likely to ask the caller to call back if the problem did not improve.

Callers' expectations were different from the advice given in approximately half of calls (Table 6-7).

Table 6-7: Comparison of expectation with advice given

| Advice | Expectation | | | |
	A&E Dept	GP immediately	GP in next few days	Self-care only
A&E Dept	**57%**	13%	10%	14%
See a GP immediately	12%	**50%**	20%	13%
See a GP in next few days	11%	28%	**57%**	21%
Self-care only	15%	8%	15%	**46%**
Total = 100%	131	120	112	269

Three quarters of callers found the advice very helpful (Table 6-8). This differed by site, with Northumbria callers more likely to find the advice very helpful (χ^2 =15.1, df=4, p<0.005). In addition, it differed by type of advice, with callers told to see a GP at the next appropriate opportunity less likely to find this advice very helpful and callers told to call back if the problem got worse finding it more helpful (χ^2 =39.6, df=22, p<0.05).

Table 6-8: Helpfulness of advice given

Helpfulness	Lancashire	Northumbria	Milton Keynes	All sites
Very helpful	69%	82%	74%	76%
Quite helpful	27%	14%	20%	20%
Not very /not helpful at all	4%	4%	7%	5%
Total= 100%	200	275	196	671

The 640 callers who had found the service helpful said that it was because they felt reassured and worried less (66%), it helped them to contact the right service (35%), they learnt how to deal with the problem themselves (23%), it helped them to realise that they did not need to contact any service (14%) and they learnt how to prevent the problem in the future (5%). The 31 callers who did not find the advice helpful (5% of callers in Table 6-8 said that they did not feel reassured (68%), they did not learn how to deal with the problem themselves (42%), it stopped them contacting a service (19%) and it did not help them to prevent the problem in the future (16%).

A small proportion of callers did not act on the advice given (3%).

6.3.5 <u>Satisfaction</u>

6.3.5.1 Satisfaction with different aspects of the service
Callers were asked to agree or disagree, on a five-point Likert scale, with 15 statements about different aspects of the service (Table 6-9). There were two problems with the completion of this section.

First, some aspects of the service were not applicable to all callers, which resulted in variable completion rates. For example, some callers could not comment on the content of any publicity for *NHS Direct* because they had been routed to the service when attempting to contact their GP or A&E Department and so may not have received information about *NHS Direct*.

Second, sometimes negative statements were not read as such and callers agreed with them in the process of agreeing to positive statements. Although this may have reflected their views in some cases, it was obvious from the comments made by respondents that sometimes these statements had been misread. Although negative statements are included in these types of instruments to determine acquiescent response rates, it seemed inappropriate to ignore all the views of respondents who had misread some statements. Thus the negative statements are not discussed further in this report.

Looking at positive statements only, some aspects of the service elicited poorer ratings

than others. Overall, 97% of callers strongly agreed or agreed that they were generally satisfied with the service. The proportion of callers expressing satisfaction by agreeing or strongly agreeing with positive statements was at least 90% for most of the statements. This was not the case for the two statements about publicity, where less than a third of callers felt that there had been enough publicity about the service. The other aspect which fared badly was whether the service could be improved upon. However, there was evidence that respondents found this item confusing and thus it may not be reliable.

Looking more closely at positive statements to which at least 90% of respondents agreed, it is worth noting the variation between them, albeit small. There seemed to be a small proportion of callers who were unhappy with the advice they received because it was not enough or it was not the right type of advice. These small pockets of dissatisfaction are illuminated by the written comments made by respondents.

6.3.5.2 Aspects of the service which callers were particularly satisfied with
76% of the 710 respondents commented positively about the service in the free text sections of the questionnaire. The picture generated by the comments was of a prompt service, run by friendly staff offering helpful advice, which gave callers reassurance and possibly alleviated pressure on other services.

157 callers commented on how satisfied they were with the service in general:

> *"I can't say how happy I am with this service."*

> *"I think the service is wonderful and very helpful. I would hate to see it stop."*

> *"Setting up the NHS Directline is a wonderful idea. Thank you."*

> *"I'm greatly impressed with this service - long may it continue."*

> *"NHS Direct appears to be a well organised and staffed service and is very much needed for times of concern i.e. medical difficulties. I think it is a shining example of how all NHS should be."*

Table 6-9: Percentage agreeing or disagreeing with statements about different aspects of the service (positive statements in bold)

Aspect	strongly agree/ agree	not sure	disagree/ strongly disagree	Total
PUBLICITY				
There has been enough publicity about *NHS Direct*	**27%**	**20%**	**53%**	**665**
The information given in the publicity reflected the service I received	**71%**	**19%**	**10%**	**608**
ACCESS				
It was difficult to get through on the telephone	5%	2%	94%	649
STAFF				
I think the operator was polite	**99%**	**1%**	**0.2%**	**689**
I think the nurse was polite	**99%**	**0.4%**	**0.6%**	**679**
ADVICE				
I was given exactly the right amount of advice needed	**92%**	**4%**	**4%**	**688**
I understood all the advice I was given	**98%**	**1%**	**1%**	**684**
The advice I was given worked well in practice	**90%**	**6%**	**4%**	**636**
I am satisfied with the explanation I was given	**93%**	**4%**	**4%**	**658**
I was given clear advice about when to get more help	**95%**	**3%**	**2%**	**634**
I was unhappy with the telephone advice I received	9%	2%	89%	626
GENERALLY				
I was generally satisfied with the service	**97%**	**1%**	**2%**	**688**
The service I received could not be improved	**64%**	**19%**	**17%**	**675**
I was made to feel I was wasting everyone's time	7%	2%	91%	639
I am not completely happy with the call	6%	2%	91%	630

224 callers made particular reference to the staff. 100 comments were complimentary of the staff in general, 120 made particular reference to the nurse and 66 to the operator. Staff were described as friendly, helpful, understanding and efficient.

> *"The lady on the other end of the phone was completely reassuring and her phone manner was excellent and understanding."*

> *"Nurse was very patient and understanding. She asked a lot of questions and I felt she understood the problem. She seemed to have time for me."*

199 callers commented that they found the advice helpful, clear and professional.

> *"Clear and informative advice. Several questions asked about the problem which gave me the confidence that the call was being taken seriously and avenues explored re diagnosis/advice."*

"The advice I was given was correct and any worries I had were dispelled."

147 callers felt that the service offered them reassurance

"The service and standard of info was excellent and I came away feeling settled in my own mind."

"It is reassuring to have this number."

"We called in the middle of the night and were quite worried about the medical condition. They put us at ease and our minds at rest that it was not so serious as first thought."

103 callers described the service as prompt.

"Prompt and polite. Sensible advice."

"Gave me relevant emergency number for emergency dentist I needed quickly and efficiently."

56 callers said that it meant they did not have to 'waste the time' of other services

"This is a valuable service, especially at night and over the weekend. It is good to have someone to talk to for advice as you feel you may be calling out the emergency doctor needlessly."

"The service helped me to decide whether or not I would be wasting the A&E Department's time before I went. "

Other positive comments were about the ease with which callers could talk to the service (35 comments), the convenience of the service (27 comments), the follow-up offered by nurses (26 comments), the time spent with them (20 comments), and its availability over the evening and weekend (17 comments). Twenty five respondents said that they had recommended the service to friends and 16 compared it favourably to general practice (16 comments).

6.3.5.3 Aspects of the service which callers were particularly dissatisfied with
19% of 710 callers made comments about aspects of the service which they felt could be improved or which they were unhappy with. Many of these comments were made alongside positive comments about the service.

44 callers commented on the lack of publicity for the service. They wanted more publicity because they felt the service was useful.

"I did not know this service existed until I rang my own GP to get the number of the emergency doctor to ring him for advice. I think it is an extremely useful service and should be promoted a lot more."

22 callers wanted more detailed advice

> *"Although it is fair that the nurse can't diagnose a problem over the phone, she could have tried harder to say what it might be instead of taking my address, which seemed irrelevant at such a worrying time."*

20 callers were concerned that the call was lengthy and that so many questions were asked. Four people were concerned that this would be a problem in an emergency.

> *"Although very pleased, thought that if it had been more a matter of life and death i.e. heart attack or stopped breathing - the time taken to explain to the operator who then decided to put me through to a nurse may have been important."*

17 callers were concerned about the delays involved in speaking to the service. The most common issue was that the nurse was busy with another patient and they had to wait a long time before the nurse called them back.

> *"With the length of time it took to speak to a nurse. It was about an hour after I originally rang up. I was told there was only one nurse on. I think that this is a bit daft seeing it was a weekend when most GP surgeries are not open."*

16 callers felt that the right advice had not been given

> *"...I am strongly in favour of this service but feel that it did not do its job in my case. It resulted in a totally unnecessary visit to my A&E Department - exactly what it is supposed to prevent."*

9 callers did not have confidence in the service

> *"I am not convinced a nurse can give an accurate advice when a chronic condition is exacerbated - a value judgement over the phone."*

A very small number of callers made comments which may be worth some consideration as the service develops. There was an indication that *NHS Direct* could be seen as an additional step when trying to contact a service and that it might act as a barrier to using other services if telephone calls to all services lead to *NHS Direct*.

> *"I had to make three phone calls to get the help I needed. 1. Doctor's out of hours answerphone to get number for nurse 2. Speak to nurse to get doctor's emergency number 3. Phone doctor myself."*

6.3.5.4 Satisfaction by site

The proportion of callers dissatisfied with different aspects of the service was so small that it was not possible to identify statistically significant differences between the sites. However, the proportion *strongly* agreeing with positive statements differed between

sites, with Northumbria having a higher proportion of callers strongly agreeing with positive statements about staff and advice than the other two sites. The free-text comments emphasised these differences between the sites: respondents from Northumbria were more likely to make positive comments about the staff, the advice given, and the reassurance offered, as well making comments generally supportive of the service. This difference altered little when callers' age, gender, ethnicity, educational status and source of finding out about *NHS Direct* were taken into consideration using logistic regression.

The response rate to the survey was higher in Northumbria than in the other two sites and it is worth considering whether this may account for the reported differences in the level of satisfaction between sites. Response rates may be dependent on the type or strength of feeling which people have about a service. For example, people may be reluctant to express dissatisfaction with a health service or they may not bother to respond if they have no strong feelings on an issue.

In this instance, if all three sites had achieved the response rate seen in Northumbria, then at least three-quarters of the "extra" respondents in Lancashire and Milton Keynes would have had to express high levels of satisfaction with NHS Direct in order to alter our finding. This seems unlikely and we conclude that the differences between sites cannot be attributed to differences in response rate.

6.3.5.5 Comparison with other telephone-accessed services

Care must be taken when comparing satisfaction levels between services because they are dependent on the type of service, how the research questions are phrased and the types of people who respond to the questionnaire.[20] Bearing this in mind, it appears that satisfaction levels with *NHS Direct* compare well with those of other telephone-accessed health services, as Table 6-10 shows.

Table 6-10: Satisfaction levels with other telephone-accessed services

Service	Percentage satisfied
nurse triage line in general practice[21]	80% of 85 callers satisfied with the nurse's help
accident and emergency advice line[22]	87% of 195 callers very satisfied or satisfied
nurse telephone triage[23]	87% of 30 users satisfied or highly satisfied with advice
telephone triage service in general practice[8]	88% of 192 users very or fairly satisfied
999 ambulance[24]	95% of 339 callers satisfied or very satisfied
accident and emergency telephone line[25]	96% of 100 callers fully satisfied
paediatric telephone triage system[4]	97% of 422 parents felt that the advice was helpful

A more direct comparison can be made with studies which have used the same instrument to measure satisfaction. The instrument used in this study was taken from a study of user satisfaction with triage in a GP Co-operative (SWOOP). In that study, concerns about confidentiality led to only one mailing and no follow-up reminder letters. A response rate of 37% was achieved, which raises the possibility of important response bias and makes comparisons difficult. In addition, although the instrument was the same, the service under study was very different from *NHS Direct*. A half of users of SWOOP were calling to request a visit from a doctor whereas this was true for only the small proportion of callers to *NHS Direct* who had been routed to the service via GP answer machines. If satisfaction is dependent on expectations of a service as well as the quality of the service offered, then differences in satisfaction levels will reflect differences in aspects of the services other than quality. The comparison of items used in both studies shows that *NHS Direct* fares at least as well as SWOOP for all the items (Table 6-11).

Table 6-11: Percentage strongly agreeing or agreeing with the following statements (positive statements are in bold)

Aspect	*NHS Direct*	SWOOP
It was difficult to get through on the telephone	4%	6%
I was given exactly the right amount of advice needed**	**92%**	**80%**
I understood all the advice I was given	**98%**	**97%**
The advice I was given worked well in practice**	**90%**	**77%**
*I was unhappy with the telephone advice I received****	*9%*	*14%*
I am satisfied with the explanation I was given**	**93%**	**85%**
I was given clear advice about when to get more help**	**95%**	**85%**
I was generally satisfied with the service**	**97%**	**90%**
*I was made to feel I was wasting everyone's time**	*7%*	*9%*
*I am not completely happy with the call****	*6%*	*16%*
The service I received could not be improved	**64%**	**59%**
Total N=100%	700 approx.	1500 approx.

* p< 0.05, ** p<0.005

6.3.5.6 The extent to which the questionnaire uncovered dissatisfaction

Telephone interviews were undertaken to test the validity of the questionnaire in eliciting both satisfaction and dissatisfaction. Callers who strongly agreed with the statement that they were 'generally satisfied with the service' could find nothing to fault the service except publicity - they were so happy with the service that they wanted more people to know about it. Callers who simply agreed with the statement that they were 'generally satisfied with the service' tended to be unhappy with one aspect of the service but happy with the service overall. Sometimes they made this known using the tick box section of the questionnaire and sometimes the free-text comments were the only source of this information. Callers either disagreeing or unsure about the statement that they were "generally satisfied with the service" were really unhappy with the service and had made this clear in the tick box section of the questionnaire. In general, the telephone interviews did not elicit further dissatisfaction. Two callers offered the extra information that they had had to wait for a nurse to call them back. However, they were not unhappy about this since they did not have to wait a long time.

6.4 Conclusions

The majority of callers to *NHS Direct* were satisfied with the service they received: 97% of respondents to a postal questionnaire expressed satisfaction with the service in general, with free-text comments generating a picture of a prompt service, run by friendly staff offering helpful advice, which gave callers reassurance and was seen to alleviate pressure on other services. Dissatisfaction was expressed mainly with the amount of publicity for the service. A small proportion of callers expressed

dissatisfaction with some operational issues such as being asked too many questions or having to wait a long time to talk to the nurse, and some outcome issues about the amount and type of advice. Follow-up telephone interviews with a small subsample of respondents revealed that the questionnaire was able to elicit both satisfaction and dissatisfaction with the service.

The proportion of callers expressing dissatisfaction did not differ between the three *NHS Direct* sites. However, more callers to Northumbria expressed high levels of satisfaction than the other sites, which was not fully explained by differences in population and casemix between the sites.

The proportion of callers satisfied with the service compared well with other telephone-accessed services.

7. ADVICE TO CALLERS

7.1 <u>Variation in outcome</u>

Table 7-1 shows the outcome of calls reported by respondents to the postal survey of callers' views. Four-fifths of patients reported that they were advised to seek care from professionals, and one fifth were given advice on self-care or were advised to "wait and see". Of those advised to seek professional help 8% also reported being given advice on self-care so that in total 22% of patients reported being given some advice on self-care.

There were apparent differences in the pattern of advice between sites. For example, the proportion of respondents who reported that the call resulted in advice to contact A&E either as an emergency (via 999), or urgently but by their own arrangements varied between 39% and 10%, and the proportion that resulted in advice to contact a GP either immediately or later varied from 58% to 32%. These differences between sites in advice received and reported by callers and patients may have arisen for a number reasons:

1. Differences in the underlying clinical case-mix of the populations served.

2. Differences in the processes by which calls come to *NHS Direct* (e.g. re-directed from A&E telephone call centres or primary care GP Co-ops).

3. Differences in the context in which the *NHS Direct* call centres operate (which are based in ambulance services, and an A&E department, and could be based in GP Co-ops or other settings).

4. Differences between sites in availability or access to other services to which patients might be referred (such as A&E).

5. Differences in the level and nature of experience of the nurses (who range from D to G grade nurses, with A&E, general, and community nursing, and health visitor backgrounds).

6. Differences in the triage software used by the three centres (TAS, Centramax and Personal Health Advisor).

It is of course difficult to quantify the importance of these different effects. However, the relative importance of differences due to the casemix of calls and other reasons has been investigated by asking all three call centres to provide advice on the same set of calls, with the aim of comparing the advice provided and exploring any differences.

7.2 **Methods**

7.2.1 Call sample presented to *NHS Direct* centres

It was decided not to use actual calls made to the *NHS Direct* centres since this may have meant that the call information that was available, determined by the questions asked by the call centre staff, would be more likely to lead to the advice actually given.

Instead the calls used were calls about minor problems to three ambulance services. The calls used were all assigned the lowest priority category by the priority dispatch systems used by the services (CBD priority C,[26] and AMPDS priority alpha[27]). All of the patients included in the call sample were conveyed to hospital but none of the patients were admitted to hospital.

These calls had been collected as part of two reviews of priority dispatch system performance.[28] Where possible patient report forms (PRFs) completed by ambulance service crews, and A&E department notes, had been retrieved for these studies. In addition anonymised transcripts of the calls had been made from the recorded call logs.

For this study, all this information was collated into a single call record from which all personal and place names, locations, and dates were omitted.

7.2.2 Call presentation

A researcher presented each of these 120 calls to the *NHS Direct* call centre nurses. The calls were presented in person and not on the telephone. Each of the calls was introduced in the same way by telling the nurse the day and time of day of the call (e.g.. "this call is being made on Monday at 7.30pm"). Next the researcher introduced the problem about which they were calling using the description used by the original caller to the ambulance service.

The researcher then answered the questions asked by the *NHS Direct* nurse factually if information was available to establish what the actual answer should have been. When a question was asked for which no factual evidence was available the researcher invented an answer consistent with the overall history, and recorded this question and answer so that the same reply could be given to the same question when presenting the call to other *NHS Direct* call centres.

7.2.3 Analysis

At the end of the call the researcher recorded the advice given by the nurse using the same categories used in the survey of callers views. In addition information on the age and sex of the patient and caller, the place of occurrence and nature of the presenting complaint, and circumstantial details (time of day, etc) were recorded.

Agreement was measured as the proportion of all calls which were managed in the

same way by the sites, corrected for chance agreement (the κ statistic).

7.3 Results

One of the calls was discovered to have been made on the advice of a GP and this call was excluded from the analysis. Characteristics of the remaining 119 calls presented to the three *NHS Direct* call centres are summarised in Table 7-2. A small majority of the calls (53%) were from out-of-hours or at weekends, and most were for female patients (61%), but in contrast to *NHS Direct* calls only 14% were about children.

7.3.1 Agreement between sites

As might have been expected, there was more agreement between the sites in the advice given on managing this set of generally more serious ambulance service calls than between sites on managing their own calls. For example, whilst the proportions advising emergency or immediate attendance at A&E ranged from 10% to 39% for their own calls (Table 7-1), this ranged from 50% to 75% for these 119 calls (Table 7-3).

However, there was still some important residual disagreement. For example there was agreement among all three services in just 46/119 (38.7%) cases. Chance alone would have led to an expected 8/119 agreements and consequently $\kappa_3 = 0.34$. Although there is no reference range for this statistic it is clearly small and outside the range considered to represent moderate agreement for pairwise comparisons (i.e. 0.4 to 0.7)

Pairwise agreement also shows less concordance than might have been expected. While there was moderate agreement on the pattern of advice between Lancashire and Milton Keynes ($\kappa_2 = 0.43$), there were marked differences with Northumbria for calls needing urgent attention. (κ_2 (Lancs and Northumbria) = 0.33, κ_2 (Milton Keynes and Northumbria) = 0.32).

In Milton Keynes and Lancashire patients with urgent problems were nearly always advised to visit their local A&E department whilst in Northumbria such patients were advised to visit their A&E department or to contact their GP immediately with equal frequency. This difference mirrors that reported by respondents to the satisfaction survey.

For all three sites together, 42% of respondents to the survey reported that they were advised to seek immediate GP care or to attend A&E. But as Table 7-1 showed, of these calls resulting in advice to visit A&E or seek immediate GP care, 78% of callers in Lancashire were advised to attend A&E, 49% in Milton Keynes, and only 24% in Northumbria.

Similarly, for the set of 199 ambulance service calls analysed in Table 7-3, these

proportions were 91% in Lancashire, 88% in Milton Keynes but only 48% in Northumbria. Thus it seems that the differences reported by callers are primarily due to the way urgent calls are handled and not due to differences in the types of calls being made to each site.

7.4 __Discussion__

While the outcomes of calls clearly depend on the casemix of calls and the types of callers, we have found that a large part of the difference between the sites in the advice reported by callers appears to be due to how calls are handled locally, and presented with the same set of calls there are still considerable differences between sites. These differences mainly concern urgent calls which may be directed to attend an A&E department or may be advised to contact their GP immediately. Other differences between sites are small.

This difference in advice about handling urgent calls reported in the caller survey was not diminished by presenting all the sites with the same set of 'test' calls. Thus it seems that the differences do reflect the way in which the advice is provided, rather than the casemix. However, the difference may not reflect any difference in the software, but instead could reflect structural differences such as in the accessibility of A&E, or the preferences of the nurses providing the advice. Furthermore, since there is long-standing disagreement about which minor problems are appropriate for A&E care and which are appropriate for GP care, the differences between sites may simply reflect the diversity of opinion on appropriate care in these cases.

Table 7-1: *NHS Direct* advice reported by respondents to the postal survey

Advice	Lancashire	Northumbria	Milton Keynes
	%	%	%
Advised to seek professional care	**79.7**	**73.6**	**72.8**
GP immediately	10.0	28.6	21.9
GP later	22.4	29.7	19.4
A&E emergency (999)	3.0	0.4	0.5
A&E urgently	36.3	9.1	21.4
Other professional care	8.0	5.8	9.6
Not advised to seek professional care	**19.8**	**25.7**	**26.7**
Self-care only	8.0	7.6	11.7
Self-care and 'wait and see'	5.9	13.0	7.1
'Wait and see' only	5.9	5.1	7.9
Not known	**0.5**	**0.7**	**0.5**
All respondents (n)	201	276	196

Table 7-2: Characteristics of calls presented to the *NHS Direct* call centres

Characteristic	Value	n	%
Time of day	in-hours (0800-1759)	75	63.0
	out-of-hours	44	37.0
Day of week	weekday	81	68.1
	weekend	38	31.9
Caller	patient	11	9.2
	other	108	91.8
Patient age	child (0-14)	17	14.3
	adult	102	85.7
Patient sex	male	47	39.5
	female	72	60.5
Place of occurrence	home	72	60.5
	work	6	5.0
	school	5	4.2
	other	36	30.5

Table 7-3: *NHS Direct* advice on management of low priority ambulance service calls

Advice	Lancashire	Northumbria	Milton Keynes
	%	%	%
Advised to seek professional care	**79.8**	**84.1**	**89.9**
GP immediately	2.5	24.4	5.9
GP later	9.2	10.1	8.4
A&E emergency (999)	24.4	26.9	31.1
A&E urgently	43.7	22.7	43.7
Other professional care	0.0	0.0	0.8
Not advised to seek professional care	**20.2**	**16.0**	**10.1**
Self-care only	0.8	14.3	0.8
Self-care and 'wait and see'	16.0	1.7	7.6
'Wait and see' only	3.4	0.0	1.7
All calls assessed (n=119)	100	100	100

8. IMPACT OF *NHS DIRECT* ON OTHER SERVICES

8.1 Introduction

One of the aims of *NHS Direct* is to help callers to seek the most appropriate form of care for their health or other problem, and the issue of the appropriateness of first contact care for unplanned health problems will be examined in greater detail in the final report of this research. However, since it is possible that *NHS Direct* will change the overall demand for a range of services, or change the casemix of severity of the health problems that people present with, this research also monitors trends in demand for a range of services which may be affected. The early results of this monitoring are reported here.

8.2 Data sources

There is a very wide range of possible services which may be affected by the development of *NHS Direct*, and in principle it would be desirable to know something about all of them. However, in practice the limited availability of routine data in a form which can be analysed restricts the scope to relatively few services. Fortunately, those services which do collect computerised activity data routinely are also those which one might expect to be influenced to the greatest degree.

In this report, analysis is confined to examining trends in demand for ambulance services, A&E services and from GP co-operatives.

8.2.1 Ambulance data

Data relating to all emergency (999) calls and doctor's urgent requests for an ambulance were provided by each ambulance trust. Records were restricted to those calls originating within the first wave *NHS Direct* area, defined differently by each service, as the table below shows:

NHS Direct site	Ambulance service	Calls restricted to
Lancashire	Lancashire Ambulance Service	Defined postcode areas
Milton Keynes	Two Shires Ambulance Service	01908 numbers
Northumbria	Northumbria Ambulance Service	Northumberland and Newcastle & North Tyneside health authorities

8.2.2 A&E department data

Records of attendances at A&E departments were requested from each A&E department within the areas covered by the service. Unfortunately, at the time of writing only two trusts had been able to provide data in an analysable form as the table below indicates:

NHS Direct site	Trust/A&E department	Data provided
Lancashire	Preston Acute Hospitals	Yes
	Chorley & South Ribble NHS Trust	Not yet available
Milton Keynes	Milton Keynes Hospital	Not yet available
Northumbria	Royal Victoria Infirmary/Newcastle General Hospital	Not yet available
	North Tyneside Hospital	Not computerised
	Northumbria Healthcare NHS Trust (includes Wansbeck, Berwick, Alnwick, Blyth and Morpeth Hospitals)	Yes

8.2.3 GP co-operative data

Records of all patient calls to GP co-operatives were requested from the five co-operatives within the *NHS Direct* areas. Call records were limited to those within the area covered by the service. Again, not all co-ops were able to provide data by the time of analysis, as shown below:

NHS Direct site	GP co-operative	Data provided
Lancashire	Preston Primary Care Centre	Yes
	Chorley & District Medical Services	Not yet available
Milton Keynes	MKDOC	Yes
Northumbria	Newcastle Emergency Doctor Service	Not computerised
	Northern Doctors Urgent Care (Northumbria)	Yes

8.3 Ambulance services

8.3.1 Emergency and urgent calls

The number of emergency (999) and doctors' urgent calls to ambulance services from the three first wave areas for the 12 months before the start of *NHS Direct* and the first 5 months after the start are shown in Figure 8-1, Figure 8-2 and Figure 8-3. These suggest that, to date, calls to ambulance services have not been affected by the new service. However, it is arguable that, if *NHS Direct* were to have an impact upon the number of calls to ambulance services, then this would be expected to be most apparent in calls for relatively minor conditions, i.e. those for which *NHS Direct* might recommend self care or a non-urgent GP visit.

To examine this question, we have categorised calls using the priority dispatch code which ambulance operators have recently begun to assign routinely to all 999 calls. For the Criteria Based Dispatch (CBD) system these are calls assigned a C code, and for the Advanced Medical Priority Dispatch System (AMPDS) these are calls with category A or alpha codes. Trends in these least urgent "Category C" call numbers are shown for each site in Figure 8-4, Figure 8-5 and Figure 8-6.

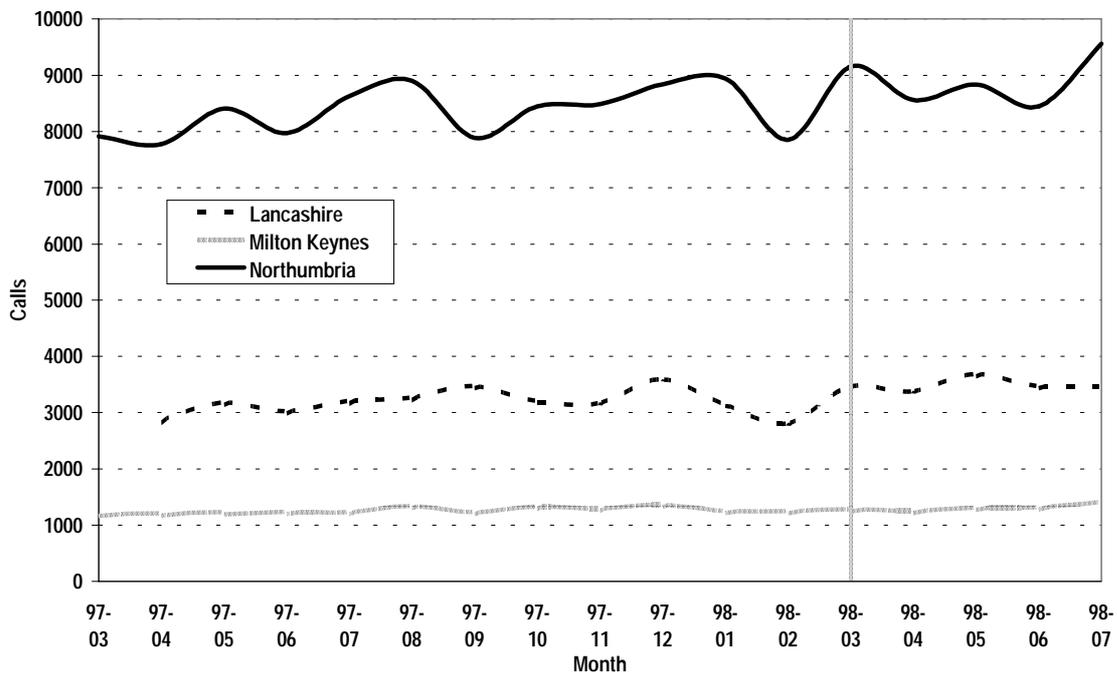**Figure 8-1: Monthly emergency and urgent ambulance calls, by site**

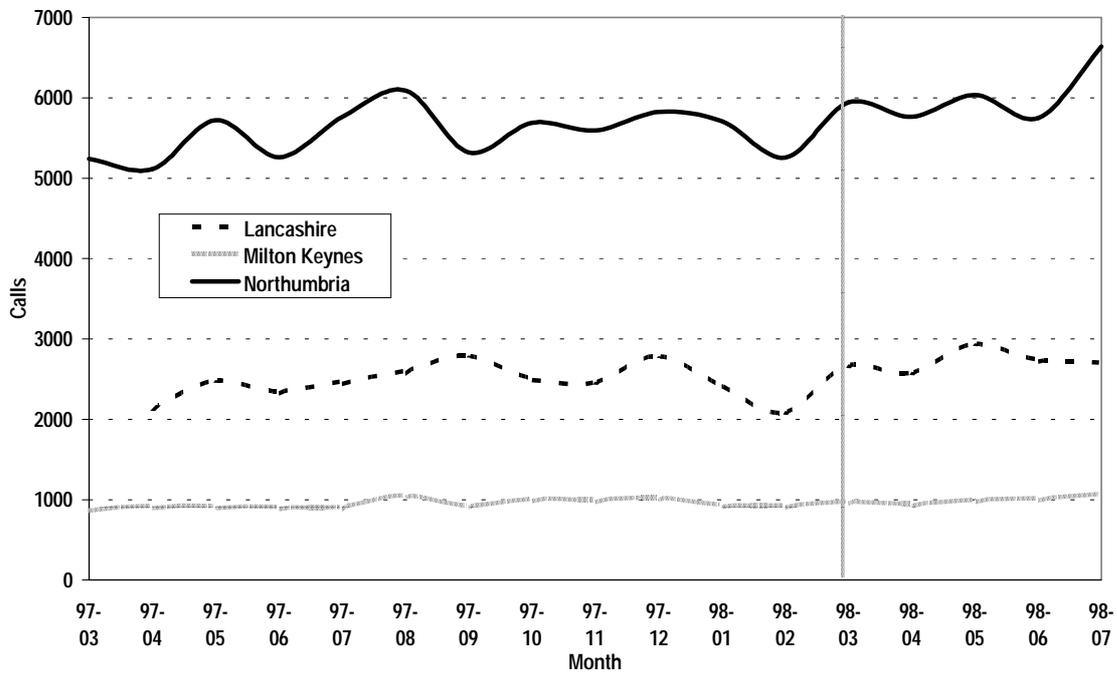**Figure 8-2: Monthly emergency ambulance calls only, by site**

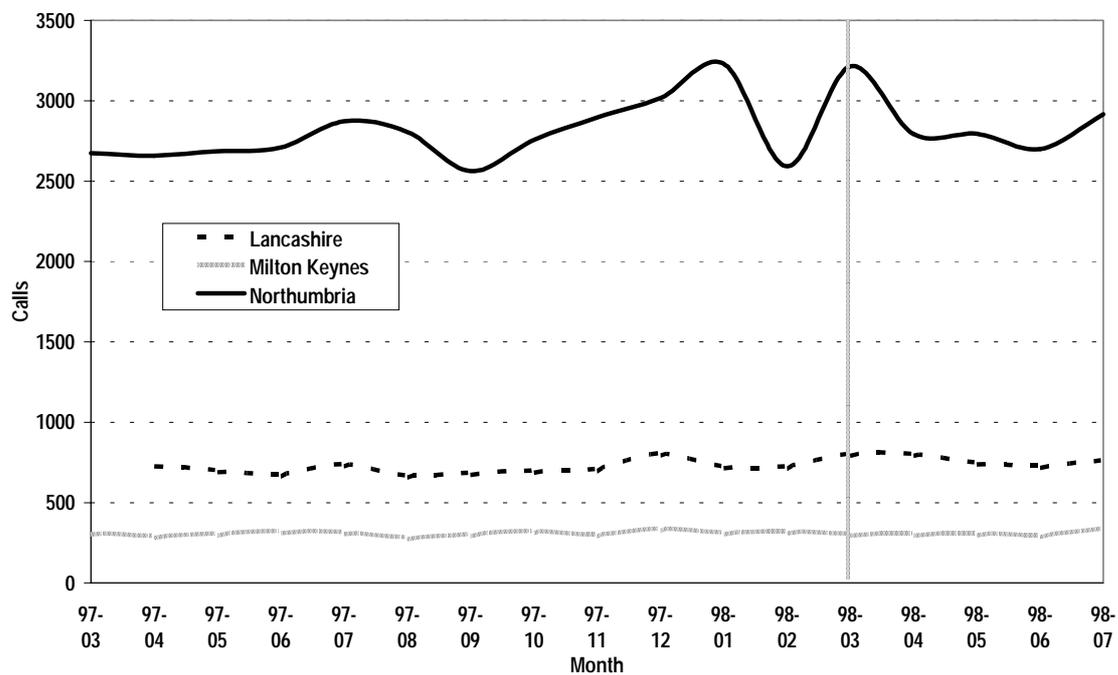**Figure 8-3: Monthly urgent ambulance calls only, by site**

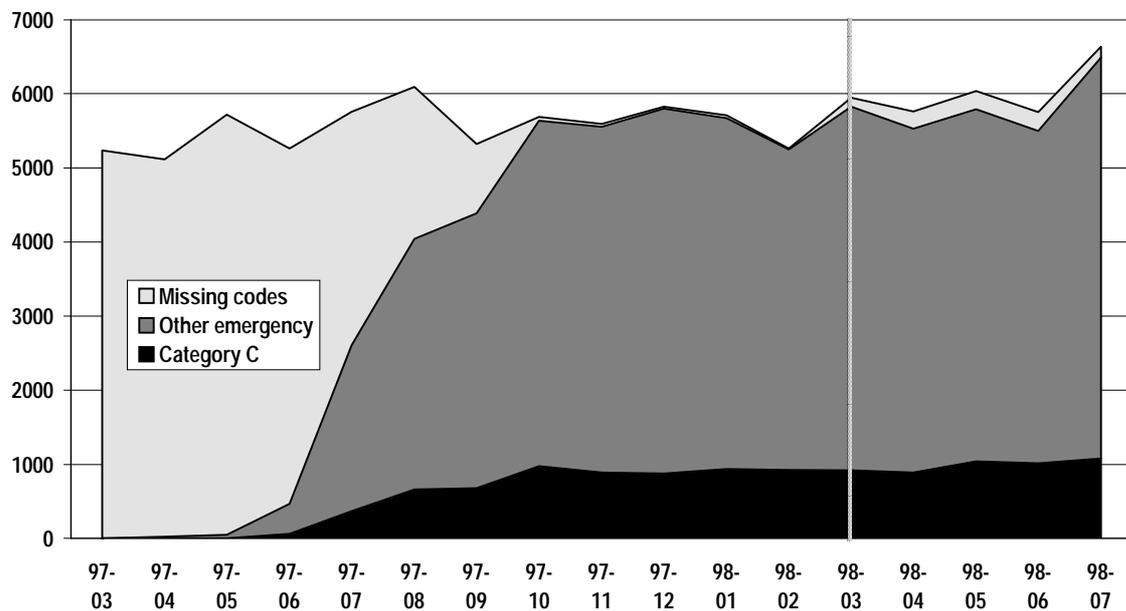**Figure 8-4: Emergency ambulance calls by category, Northumbria**

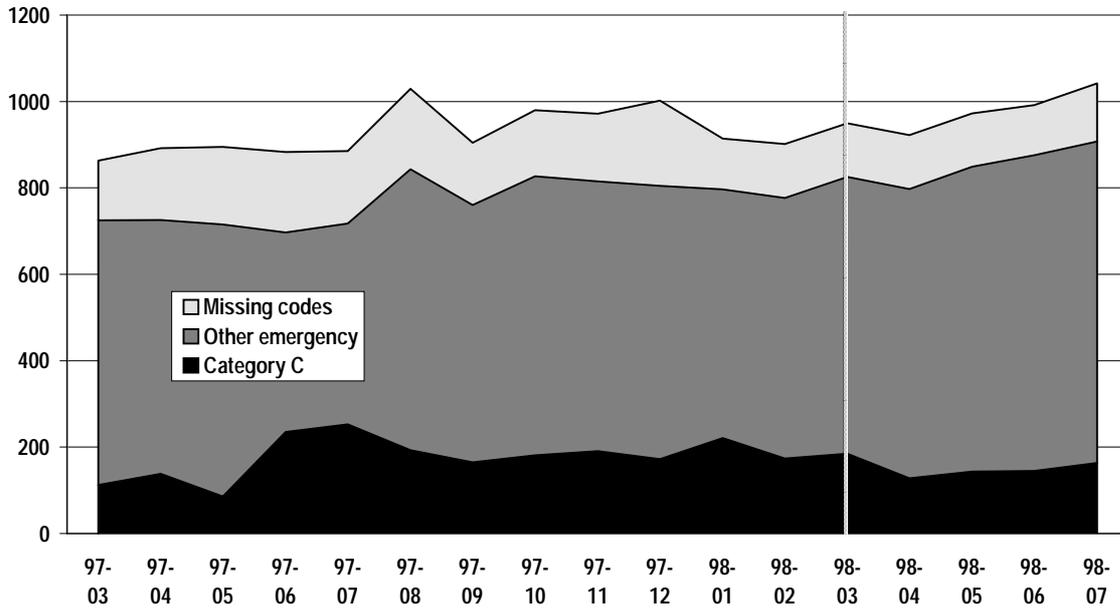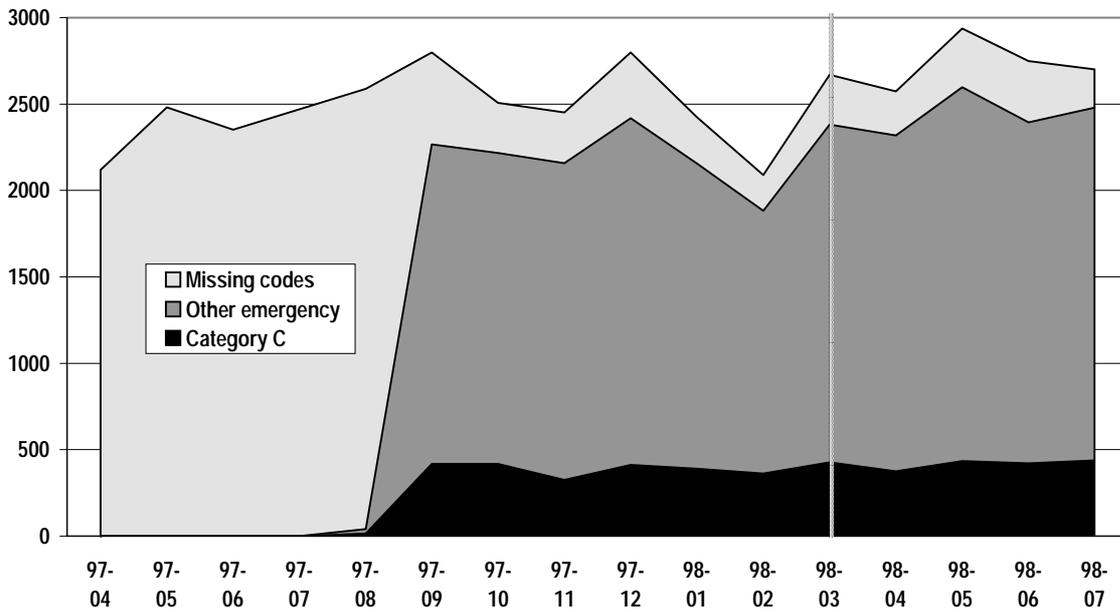**Figure 8-5: Emergency ambulance calls by category, Milton Keynes**

Figure 8-6: Emergency ambulance calls by category, Lancashire

8.4 A&E Departments

Trends in all attendances at those A&E departments for which data are currently available are shown in Figure 8-7. In Figure 8-8 and Figure 8-9 these are shown categorised by the triage code allocated by the department when the patient attends. Again, if *NHS Direct* were to redirect attenders with relatively straightforward problems to other services or to self-care, then one might expect an impact first on attendances categorised as least urgent ("standard").

There is a suggestion that the numbers of total attendances have been rising, mainly as a result of an increase in the numbers of the least urgent category of attenders. However, the increase has been apparent since the beginning of 1998, and does not appear to have directly coincided with the inception of *NHS Direct* in March 1998. Further, since there may be some seasonality in A&E attendances we cannot yet determine whether *NHS Direct* has had any effect.
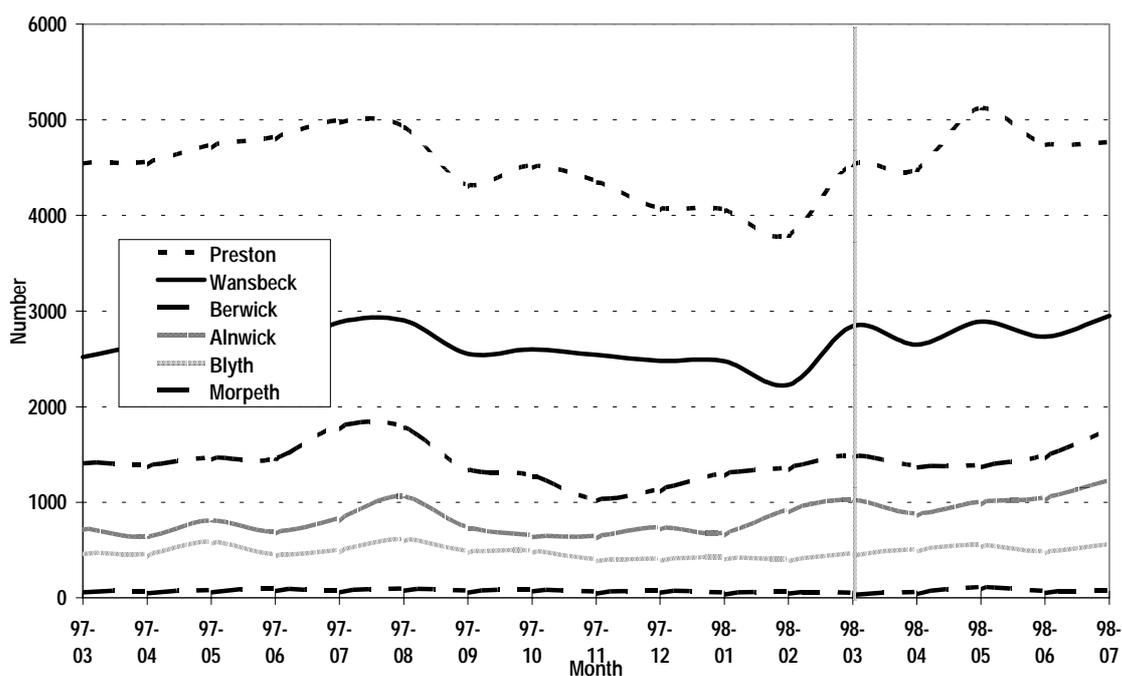
Figure 8-7: Total attendances at A&E departments

Figure 8-8: Attendances at Northumberland A&E departments, by triage stream
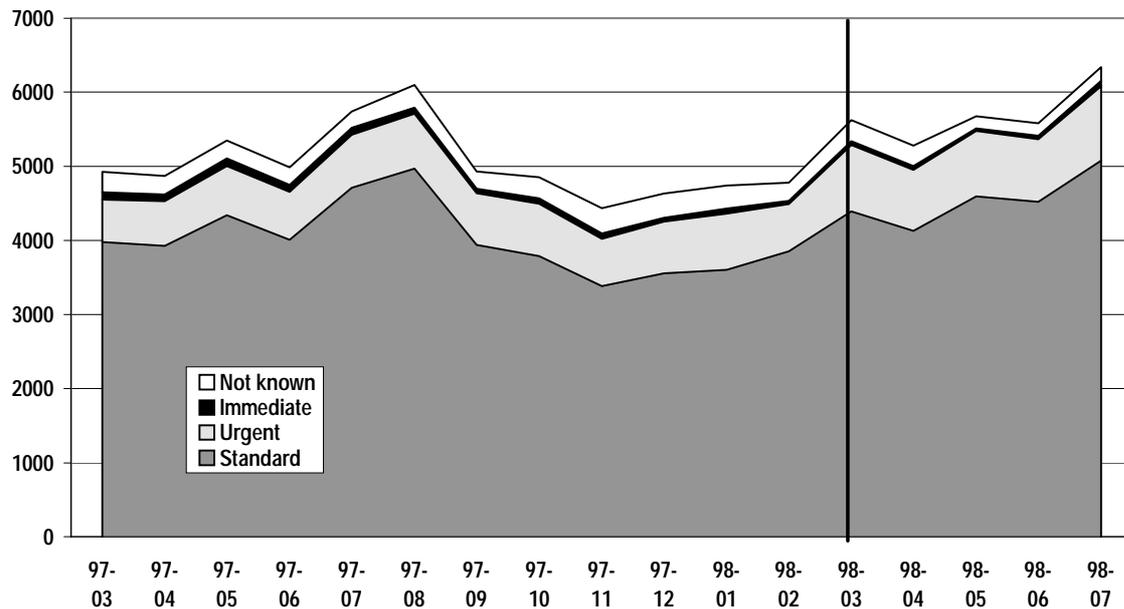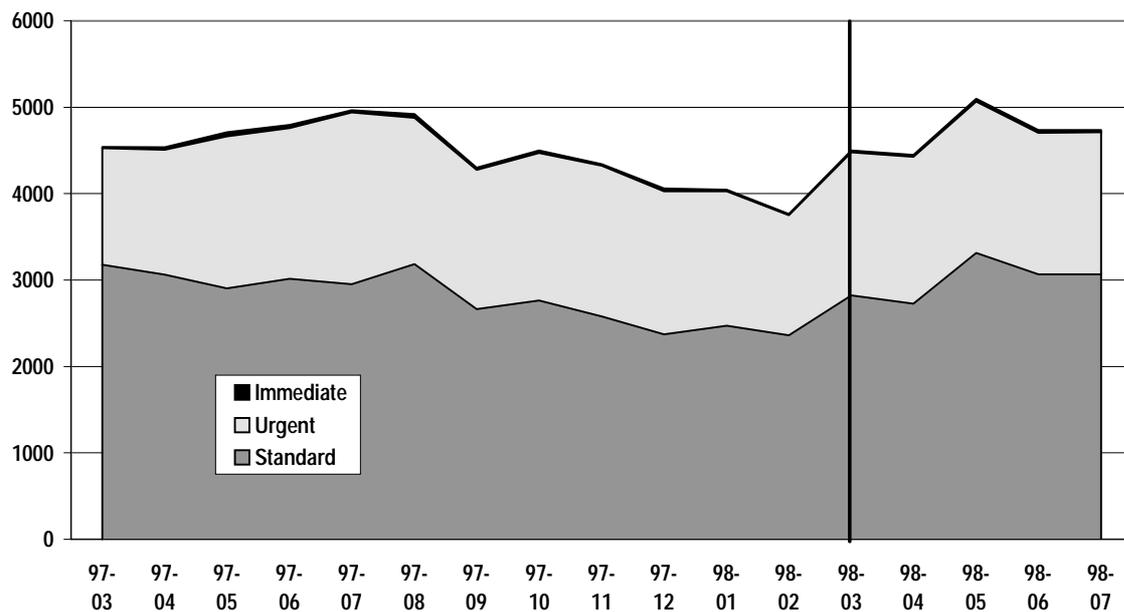

Figure 8-9: Attendances at Preston A&E department, by triage stream

8.5 GP Co-operatives

Trends in out-of-hours calls to GP co-operatives are shown in Figure 8-10. Because of the probable seasonal influence on such calls, it would be premature to judge whether there is any real change in the call rate.

In Figure 8-11 we restrict attention to calls made to co-ops on behalf of a child of 5 or under. Children of this age account for about one in four calls made to *NHS Direct*.

Finally, in Figure 8-12 we restrict attention further to those calls about 5-and-unders which were dealt with by telephone advice only, since these are likely to represent the least serious of such calls to co-ops. Again, these charts suggest that it is too soon to judge whether out-of-hours demand to GP co-ops has been influenced.

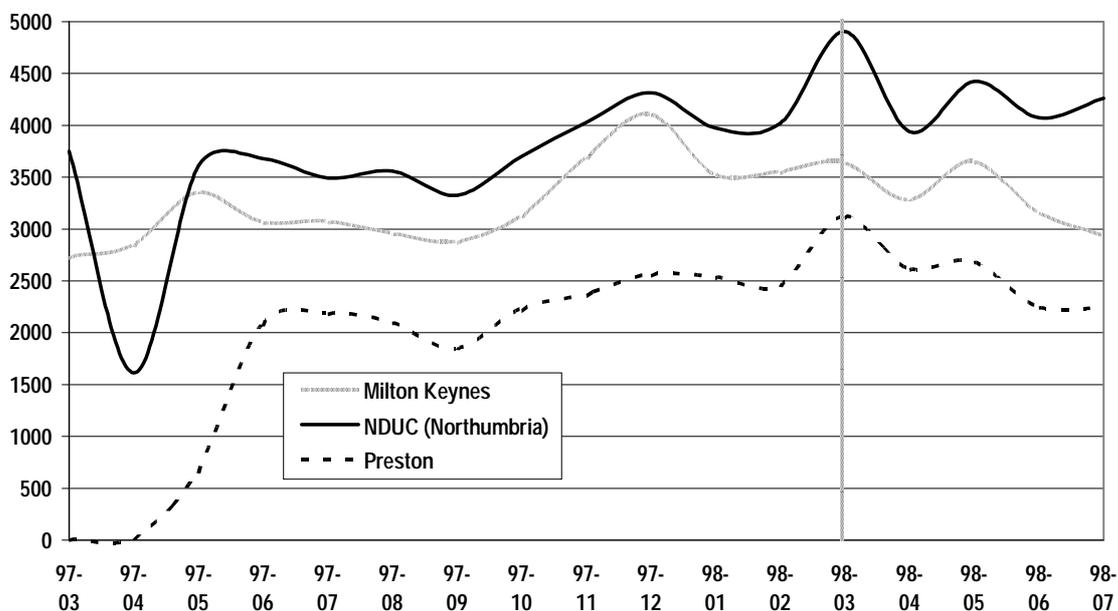**Figure 8-10: Out-of-hours calls to GP co-operatives**

Figure 8-11: Out-of-hours calls to GP co-operatives about children up to 5 years old
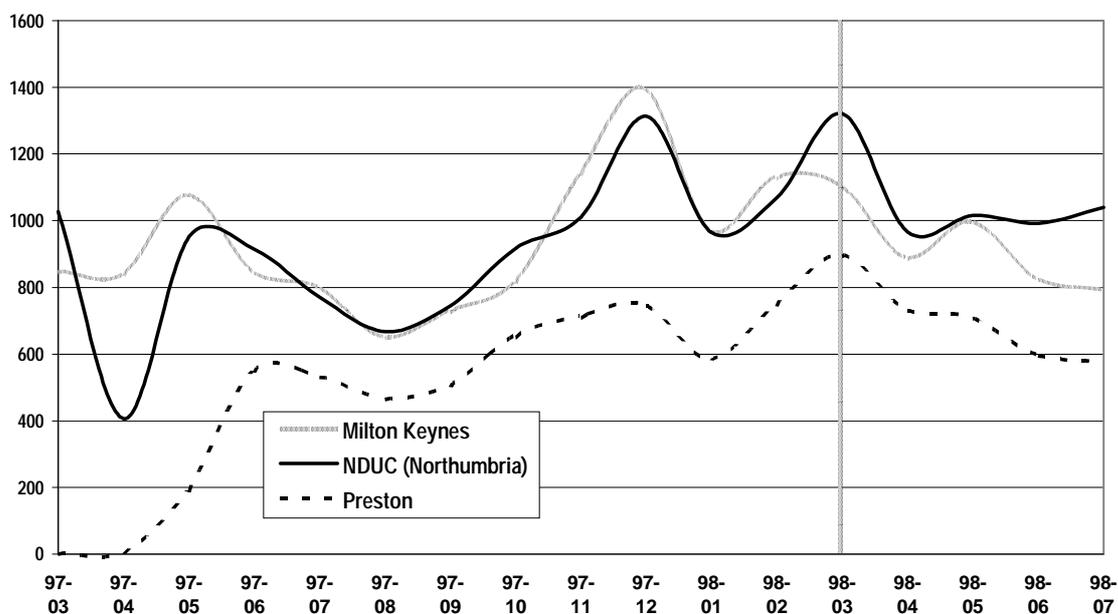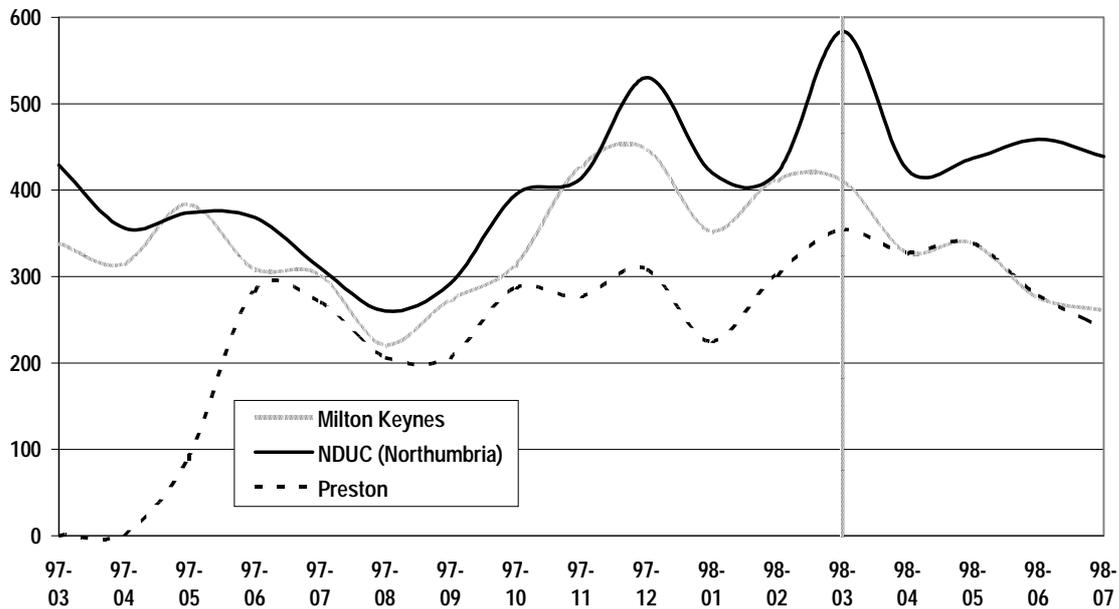
Figure 8-12: Out-of-hours calls to GP co-operatives about children up to 5 years old, dealt with by telephone advice only

8.6 Conclusions

Routine data from ambulance services, A&E departments and GP co-operatives does not yet show any convincing evidence that *NHS Direct* has had any impact on overall demand, or on demand by patients with the least serious conditions.

Given that these data cover only the first 5 months of the new service, during which overall call numbers to *NHS Direct* were low (and certainly very much lower than demand for emergency ambulances, A&E and out-of-hours primary care), this finding is unsurprising. However, it does suggest that reports in the medical press which claimed a large impact on GP co-op workload have been made before this could be judged reliably.

Nonetheless, it is clearly entirely possible that as call volumes increase there may be a significant change in demand for other services. An update of this analysis will therefore be included in the further reports of this research.

9. CRITICAL EVENT MONITORING

9.1 <u>Introduction</u>

It is clearly important that callers to *NHS Direct* are given advice which is safe and appropriate to their circumstances. However, it is possible that on occasion a patient may suffer an adverse health outcome after seeking advice from *NHS Direct*, and in such cases it will be important to know whether or not the advice given delayed appropriate action. The identification of such "critical events" for closer study is the focus of this section.

9.2 <u>Methods</u>

A number of approaches to identifying critical events are being taken in the current research, as follows:

- Surveillance of local press for all reports relating to *NHS Direct*, or to hospital admissions or deaths in which reference to *NHS Direct* is made;

- Liaison with local coroners to identify any unexpected death in which advice from *NHS Direct* was sought in the period before death;

- Identification of hospital admissions/A&E attendances for patients with index conditions (such as meningitis, suicide and parasuicide, non-accidental injury), and ascertainment of whether a call to *NHS Direct* preceded the admission/attendance.

9.3 <u>Results</u>

To date, local press reports and contacts with local coroner's offices have not revealed any untoward clinical event associated with *NHS Direct*.

Monitoring will continue for the duration of the current research. Further work will be undertaken in due course to identify patients with index conditions of interest through hospital data, and to link these records to *NHS Direct* call logs.

10. CONCLUSIONS

NHS Direct is clearly at an early stage in its evolution, and will undoubtedly develop in new ways as further sites become active. Similarly, this report represents the findings of research which itself is in progress, and our findings should be taken as preliminary rather than definitive. Nonetheless, a number of conclusions are possible on the basis of the evidence we have presented so far.

10.1 <u>Early demand for NHS Direct</u>

In their first 8 months of operation, each *NHS Direct* site was handling calls at a mean rate of about 25,000 calls per year. While this is a substantial number, and compares well with rates reported by a range of other health-related telephone services, it is low in comparison with rates envisaged in the initial planning of the service. There is currently no reason to suppose that call rates per head of population will not increase markedly as *NHS Direct* is rolled out to the whole country, especially given that access to far more powerful advertising media (i.e. television and national press) will then become practical.

Current patterns of use suggest that it is being seen as a out-of-hours service, with problems which might reach *NHS Direct* being taken elsewhere during the daytime on weekdays.

10.2 <u>Equity</u>

Population call rates indicate that current demand is particularly by or on behalf of children and young women. Older people are comparatively low users of the service. Since their access to a telephone is similar to other groups and their need for health advice probably greater, this may reflect an unwillingness to use the telephone as a primary route to health care or advice, or alternatively the possibility that they are already familiar with other sources of health care advice.

Other equity considerations will need to be addressed in due course, including social/geographical equity, and access for people whose first language is not English or for people with communication disabilities. It will be necessary for sites to collect some additional data in order to estimate call rates from these latter two groups. We expect to undertake an analysis of social/geographical equity in the coming months.

10.3 <u>Call handling issues</u>

Each site uses different triage software. Our observations suggest that each of these have their own strengths and weaknesses from the point of view of both use and audit. It may be worthwhile to undertake a rigorous review of the usability of the available software from the users point of view so that some of the current difficulties can be identified and addressed. From a research and audit viewpoint, software suppliers will

need encouragement to provide facilities for appropriate data export for monitoring purposes. Both of these issues will become increasingly important as the service develops.

10.4 Caller satisfaction

Caller satisfaction with the service is high, and compares well with other health-related telephone helplines. Nearly all callers are satisfied or very satisfied with the service.

Overall, the comments of callers paint a picture of a prompt service, run by friendly and professional staff who offer helpful advice and reassurance and which is seen to alleviate pressure on other health services. Advice given to callers differs from their expectations in about a half of cases. However, there was some dissatisfaction with what was seen as inadequate publicity, the length of time taken to speak to a nurse, and the number of questions asked during a call.

10.5 Variation between sites

There are a range of differences between the first wave sites in their structural features, processes of call handling, and outcomes in terms of advice to callers. While the pattern of use and access to the service is similar across the three sites, the rates of use and the outcomes of calls differ markedly. There are a number of reasons why population call rates might vary, including publicity, local experience of previous telephone helplines or triage lines, and the range of other services available and accessible to potential callers. We have not explored these issues in this report.

The variation in call outcomes is not primarily due to differences in case mix, but to differences in how urgent calls are handled. The differences may arise because of the differences in the nurses and the software they use, or differences in the availability of the services to which they can refer.

10.6 Impact on other services

The data available from ambulance services, A&E departments and GP co-ops over the first five months of the service show no changes which could be attributed to *NHS Direct.* However, this unsurprising given that it is very early days in the development of the service, and should not be taken to mean that no impact will become apparent over time. It is too soon to reliably judge how other services may be affected by *NHS Direct*, and to what degree.

It is also the case that while the overall *workload* of other services may not be changed, the *casemix* of patients may be altered, and this may be difficult to detect using routinely available data. It is, however, an important outcome since one policy objective of NHS Direct is to advise patients on the most appropriate source of advice

or care for their problem.

10.7 <u>Summary</u>

NHS Direct is handling substantial call numbers and achieving high levels of user satisfaction. To date there is no evidence of adverse clinical events nor of any impact, adverse or otherwise, on other services. These findings are encouraging.

The future impact of the service will clearly depend upon the way it is used by callers, and on the way calls are handled by sites. Although the aim is to provide a service of uniform high standard across the country, both utilisation and call handling may be strongly influenced by local factors, in particular the pattern of existing service provision for emergency or unexpected health problems. If this does turn out to be the case, then the overall impact of *NHS Direct* may be determined locally as much as nationally.

11. ACKNOWLEDGEMENTS

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