

# **Evaluating changes to emergency and urgent healthcare in England**

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## Abstract

The work presented here is for the degree of PhD by publication. I have selected seven papers for consideration, published in high quality academic journals between 2002 and 2011. I am the lead author on four papers and joint author on three. These papers derive from projects undertaken during my fifteen year research career at the School for Health and Related Research (ScHARR), University of Sheffield.

Whilst the services I evaluated varied in scope, my research forms a coherent body of work informing the evidence base on policy driven initiatives implemented within emergency and urgent care. I have contributed to the evidence base around three key aspects of evaluation: acceptability (patient, carer, and workforce), effectiveness, and equity with respect to three of the most significant recent changes within emergency and urgent healthcare in England: telephone delivered healthcare, new roles within the workforce and, extended access and patient choice. Specifically, I have identified:

- Telephone delivered healthcare did not significantly change demand for services: patient reported data suggested that NHS Direct was ineffective in reducing demand for other health services across the whole system of emergency and urgent care.
- Inequity in the use of new telephone triage services: those from poorer socioeconomic groups or with communication difficulties were less likely to have used NHS Direct than other groups.
- Problems with acceptability within a newly established workforce: although the majority of NHS Direct nurses were satisfied with this new way of working, a minority of staff found the work to be monotonous, posing a challenge to the retention of staff.
- Clinical effectiveness of new roles within the workforce: a community based service utilising paramedics with extended skills demonstrated that paramedics can be trained to safely assess and treat older people with minor conditions which in turn led to a reduction in the need for attendance at an emergency department.
- Patient and carer acceptability of new roles within the workforce: whilst minor acute health episodes do impact on patients and carers, initiatives such as

utilising paramedics with extended skills in the community have a positive impact on the lives of these groups. Indeed, both groups reported high levels of satisfaction, and carers reported needing to provide less input with physical caring activities as a result of this new role being implemented.

- Where patients choose to seek care and their satisfaction with this care during an emergency and urgent care episode: the majority of patients use multiple services on their care pathway, a daytime GP as their access point to emergency and urgent care, and are satisfied with their overall care during an episode.

My work has demonstrated both the strengths and limitations of the policy related initiatives which I have evaluated. In particular my evidence regarding NHS Direct indicated some limitations regarding this telephone based service. Policymakers must take note of this given their plans for the national roll out of the non-emergency healthcare telephone service 'NHS 111', and if the telephone is considered as the medium for a single point of access to emergency and urgent care in the future. In contrast, the evidence that I have provided regarding paramedics with extended skills was overwhelmingly positive. Policymakers should support, and commissioners should explore, this model of service delivery when considering how to utilise emergency care practitioners within a locality. As policymakers continue to move forward with a vision for integrated emergency and urgent care healthcare attention must be directed towards the potential impact this has on users of the emergency and urgent care system.

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## **1. Aim of thesis**

There has been rapid transformation in the commissioning, organisation and delivery of emergency and urgent care in England over the 15 years spanning my research career. I have published sixteen journal articles over this period and my focus has been primarily on policy driven innovations within emergency and urgent care. The aim of this thesis is to show the body of knowledge I have contributed towards in the evaluation of changes implemented within emergency and urgent healthcare in England. Throughout this thesis I demonstrate my ability to conduct original investigations, and place this work within the context of government policy and the contributions of my academic peers.

## **2. The original research and submitted publications**

The work presented here is for the degree of PhD by publication. During the fifteen years in which I have undertaken health services research, I have actively pursued a research career in emergency and urgent healthcare evaluation. During this time I have contributed to the publication of 16 journal articles with an emergency and urgent care focus. For the purpose of this thesis I have selected seven papers published in peer-reviewed journals which represent both a coherent body of work within the evaluation of changes to emergency and urgent health care and which have made a significant contribution to the knowledge base in this area. All of these papers derive from projects on which I have worked during my research career at the School for Health and Related Research (ScHARR), University of Sheffield.

At this point I must acknowledge that health services research is a team exercise, and very rarely undertaken by a single researcher. Therefore I not only identify the papers below but also describe my individual role in undertaking the research and writing the paper. Of the seven papers I have selected, I am the lead, and corresponding, author of four papers and joint author of three. With respect to the three papers which I have co-authored, a written statement has been provided by each of the lead authors acknowledging my contribution. (See Appendix)

The submitted papers derive from three projects. Here I provide details of the funded projects, my role in delivering the research, the papers deriving from these projects, and a summary of my role in producing each paper.

***2.1 Project: An evaluation of costs and effectiveness of first wave NHS Direct pilots, and their impact on emergency care services.***  
***Funded by the Department of Health, 1997-2002.***

My research career was at an early stage when this evaluation began. Aware that colleagues within the Medical Care Research Unit (Professor Jon Nicholl and Dr James Munro) had been funded to carry out this evaluation, I approached Professor Nicholl directly and expressed my interest in joining the team to evaluate this innovative nurse led service. I was subsequently employed to lead the work on the population surveys as part of the national evaluation of NHS Direct. The population survey was utilised to highlight any potential impact that NHS Direct had on the patient journey through the emergency and urgent care system. Whilst I joined the team after the research design had been finalised, I contributed to the design of the questionnaire,

including the addition in 2002 of socio-economic questions to determine the equity of use of NHS Direct. Conducted annually over a five year period in up to four sites, I took responsibility for data collection. I took a keen interest in interpreting the data and worked closely with Professor O'Cathain and Dr Munro in the analysis of this data. For this thesis I submit two papers emerging from the analysis of the population surveys, and provide a description of my specific role in producing the papers:

**Knowles E, Munro J, O'Cathain A, Nicholl J.** Equity of access to health care. Evidence from NHS Direct in the UK. *Journal of Telemedicine and Telecare* 2006; 12: 262-265.

My contribution to this paper:

- Contributed to the design of the questionnaire
- Managed the data collection
- Conceived the idea for the paper
- Undertook the analysis
- Wrote the first, and final, draft of the paper for publication

O'Cathain A, **Knowles E, Munro J, Nicholl J.** Exploring the effect of changes to service provision on the use of unscheduled care in England: population surveys. *BMC Health Services Research* 2007; 7:61.

My contribution to this paper:

- Contributed to the design of questionnaire
- Managed the data collection
- Contributed to the analysis
- Contributed to the interpretation
- Commented on drafts of the paper

As a junior researcher, the opportunities to publish papers during the course of a five year evaluation are limited. However, working on a long term evaluation at the beginning of my career provided an opportunity to learn, develop, and strengthen my research skills particularly in undertaking large scale surveys. I have found this experience to be invaluable in the evaluations that I have since worked on.

During the course of the national evaluation of NHS Direct, an opportunity to become involved with an evaluation of the NHS Direct workforce arose. Led by my colleague, Dr Jane Morrell, the study attempted to describe the NHS Direct nursing workforce. Initially, my role on the workforce evaluation was limited due to my commitment to managing the population survey aspect of the national evaluation. To this end, I was able to comment on the drafts of the NHS Direct nursing workforce questionnaire. Whilst the questionnaire was structured with closed question responses, nurses were given the opportunity to provide free text comments at the end of the questionnaire. When data collection was complete, my colleague Professor Alicia O'Cathain noted how interesting these comments were and having read some of them I suggested that they would make an informative paper. I wanted to take a lead on this because I had started to develop an interest in workforce issues when I had evaluated pharmacists and NHS Direct (Knowles, 2002; Munro, 2003). In total, 462 nurses provided comments on their completed questionnaire yielding 1525 comments. I read the comments and designed an initial coding framework for the analysis. I worked closely with Professor O'Cathain on this because it was a large data set and we needed to undertake double coding, I wrote the first draft of the paper. This was one of the most rewarding papers to write because the study had provided an opportunity for NHS Direct nurses to express, in their own words, their opinions, and experiences of this new role.

**Knowles E, O'Cathain A, Morrell J, Munro J, Nicholl J. NHS Direct and nurses – Opportunity or monotony. International Journal of Nursing Studies 2002; 39,8: 857-866.**

My contribution to this paper:

- Contributed to the design of questionnaire
- Designed the coding frame for the analysis
- Undertook the analysis
- Wrote the first, and final, draft of the paper for publication

**2.2 Project: A randomised controlled trial to evaluate the effectiveness of community Paramedic Practitioners managing older people calling 999 with minor conditions.**

**Funded by The PPP Foundation, 2003-2005.**

Following on from the evaluation of NHS Direct, I went on to project manage a randomised controlled trial of a local intervention utilising a new role within the workforce: paramedics with extended skills in the community. The study was led by Professor Suzanne Mason and was designed and funded before I joined the team. Having had no previous experience of working on a trial based evaluation the learning curve was steep, but rewarding. I was responsible for the day to day management of the trial, working closely with Professor Mason to contribute to decisions about the project. My project management skills were effective in attaining the patient recruitment ( $n=3018$ ) within the pre-defined recruitment period (56 weeks). This involved weekly monitoring of patient recruitment and timely administration of user questionnaires throughout the duration of the trial. In addition I contributed to the drafting and piloting of the patient reported questionnaires, assisted with the methodological and analytic design with regard to both the patient reported and routine data, and undertook the preliminary analysis of this data. I also contributed to a draft of a cost-effectiveness paper (Dixon, 2009).

I specifically led the development of the carer aspect of the evaluation, building on the brief section pertaining to this in the original proposal to deliver a peer reviewed journal article. I designed the carer questionnaire with input from Professor Mason, and undertook the analysis of the data.

For this thesis I submit three papers from the evaluation of community paramedic practitioners and provide a description of my specific role in producing the papers:

**Knowles E**, Mason S, Colwell B. An initiative to provide emergency healthcare for older people in the community: the impact on carers. Emergency Medicine Journal 2011; 28: 316-319.

My contribution to this paper:

- Significant contribution to the research design
- Led this aspect of the evaluation
- Designed the questionnaire
- Managed the data collection
- Undertook the analysis
- Conceived the idea for the paper
- Wrote the first, and final, draft of the paper for publication

Mason S, **Knowles E**, Freeman J, Snooks H. Safety of Paramedics with Extended Skills. Academic Emergency Medicine Jul 2008; 15: 607-612.

My contribution to this paper:

- Contributed to the research design
- Managed the collation of the data
- Undertook the first stage of analysis
- Commented on drafts of the paper

Mason S, **Knowles E**, Colwell B, Dixon S, Wardrope J, Gorringe R, Snooks H, Perrin J, Nicholl J. Effectiveness of paramedic practitioners in attending 999 calls from elderly people in the community: cluster randomised controlled trial. BMJ Nov 2007; 335: 919.

My contribution to this paper:

- Project managed the trial
- Contributed to the design of the patient questionnaires
- Contributed to the design of the analysis
- Contributed to the interpretation
- Commented on drafts of the paper

**2.3 Project: Emergency and Urgent Care System programme of work.**

**Funded by the Department of Health, 2006-2010.**

More recently I have contributed to the programme of work commissioned by the Department of Health, led by Professor Jon Nicholl and colleagues at the Medical Care Research Unit. This five year programme focused on the emergency and urgent care system. I joined the programme team in 2008, after returning from maternity leave. My role centred on the development of a methodology and a toolkit to facilitate the evaluation of the emergency and urgent care system from a population perspective. I assisted in the testing and refining of this methodology, and took the lead in adapting the initial data collection instrument in light of our findings. Following the testing of this methodology, I have gone on to show how this methodology can be utilised to describe the patient perspective of the emergency and urgent health care system:

**Knowles E, O'Cathain A, Nicholl J. Patients' experiences and views of an emergency and urgent care system. Health Expectations March 2011; 14: 1.**

My contribution to this paper:

- Undertook the analysis
- Conceived the idea for the paper
- Wrote the first, and final, draft of the paper for publication

Following this I took the lead in developing, and producing a toolkit. The toolkit provided a step by step approach to monitoring the patient perspective of the emergency and urgent care system, and it was envisaged that this would enable commissioners of emergency and urgent care services to undertake annual monitoring of their system (Nicholl et al, 2011).

### **3. Background**

In this section, I define emergency and urgent care, summarise the challenges facing emergency and urgent care, outline recent policies affecting emergency and urgent care in England, describe the development of emergency and urgent healthcare delivery in response to this policy, and introduce an established approach to evaluating changes to healthcare.

Whilst acknowledging that there is an international context for evaluating changes within emergency and urgent care, my work has been specifically involved with emergency and urgent care in England and within the remit of this thesis I will focus on this national perspective.

#### **3.1 A definition of emergency and urgent care in England**

The Department of Health define urgent and emergency care as "the range of healthcare services available to people who need medical advice, diagnosis and/or treatment quickly and unexpectedly" (Department of Health, 2011a). It is often the first point of contact with the NHS that a person has when faced with an unexpected health problem. Care is provided by both primary and secondary care services, and by a range of staff. Services falling within the scope of urgent and emergency care include both long established services such as same day access to general practice, emergency departments, and 999 ambulance services alongside services that have been introduced nationally over the last 15 years, for example NHS Direct, urgent care centres (including walk-in centres and minor injuries units), and the expansion of GP out-of-hours services.

#### **3.2 Challenges facing emergency and urgent care**

With regard to emergency and urgent care, there are three key factors that challenge emergency and urgent care: the ageing of the population, the increased demand for healthcare, and societal changes.

The population in the UK is ageing. In the last 25 years, there has been a 1% increase in the population over the age of 65 (Office for National Statistics, 2010). Projections suggest that this trend is likely to continue with a further 7% increase in the population aged 65 or over by 2034, making up 23% of the total UK population. Older age groups make more use of emergency departments than any other age group (Gruneir, 2011) and by virtue of their age, they often present with more complex

clinical needs, requiring the use of more resources. This presents both workload and economic challenges to services within emergency and urgent care.

The NHS has faced increasing pressures on healthcare in recent years, particularly for emergency care. In the year 2009/10 7.87 million emergency and urgent calls were received in ambulance control rooms throughout England, an increase of 5.2% on the previous year. These calls resulted in 4.7 million patient journeys, a rise of 4.2% on the previous year (The NHS Information Centre, 2010). The increase in patient journeys has also contributed to rising attendances at emergency departments, from 19.5 million in 2008/9 to 20.5million in 2009/10 (Department of Health, 2011b). Evidence suggests that a significant proportion of users of emergency care do so inappropriately and either do not require any care or access a higher level of care than they need (Lowy, 1994; Victor, 1999). Many of the patients arriving at the emergency department by ambulance are discharged without referral (Volans, 1998) and therefore may not have required the services of either a fully equipped ambulance or emergency department.

Society is also changing. Over the past decade the internet has transformed how and when the population access services and goods, but it has also revolutionised access to information, including health related information. One could argue that this may also lead to increasing expectations amongst the general population regarding access to health services.

### **3.3 Emergency and urgent care health policy in England**

Given the issues facing emergency and urgent care services in England, as outlined above, the challenge faced by policymakers has been to meet increasing demand, whilst maintaining user satisfaction and ensuring that services are delivered in an effective and efficient way. My work has been driven by policy related initiatives and I highlight some of the key emergency and urgent care policy documents that have emerged during my research career.

A change in government typically leads to a change in policy. Kick started by a change in government in 1997, emergency and urgent care health policy has since focused on improving access to care, the integration of services, and at the very heart of this, promoting a patient centred NHS.

Setting out a vision for the NHS, the 'new' labour government published the white paper ***The New NHS: modern, dependable*** (Department of Health, 1997).

Focussed on 'modernising' the NHS, it conveyed a vision for a system of integrated care; *at home* delivering improved access to advice and information within the home via the telephone (NHS Direct), *in the community* with GPs working closely with other members of the health and social care workforce to deliver extended services in practices, and *in hospital* working closely with community GP services ensuring that entry into secondary care services was seamless and timely. ***The NHS Plan*** (Department of Health, 2000) went on to pledge 'a health service designed around the patient', providing more opportunities for patients to exert more influence in the workings of the NHS. In addition, new roles for NHS staff, such as nurses and ambulance service staff, were envisaged to further the modernisation process.

Shortly after the publication of The NHS Plan, ***Raising Standards for Patients: New Partnerships in Out-of-Hours Care*** (Department of Health, 2000) reported the findings from a review of GP out of hours services and highlighted that the patient journey during the out of hours period was often complicated and involved multiple service providers. Following on from earlier policy, ensuring effective integration and patient centred care was a key message of this report. The report suggested that there should be increased integration amongst emergency and urgent care services to facilitate a less complicated patient journey. It proposed that services needed to be more flexible to the needs of the patient: models of service development should meet the needs of patients rather than patients fitting in with the service model.

Focusing specifically on emergency care, ***Reforming Emergency Care*** (Department of Health, 2001) recognised the problems encountered by people using emergency services and proposed a range of new operating models designed to ensure that patients were seen by the most appropriate service and health care professional. It was hoped that developing these models could help reduce rising waiting times in Emergency Departments, and reduce hospital admissions. The models proposed included nurse-led co-located minor injuries units and role substitution within emergency departments. Whilst policymakers had earlier raised concerns regarding the complexity of the out-of-hours pathway for patients, *Reforming Emergency Care* went further by acknowledging that the emergency care system was 'fragmented'. This fragmentation resulted in patients waiting longer than they should at each stage of their care in the emergency care system. New Emergency Care Networks were to be introduced within localities, co-ordinating all aspects of the local emergency care system with the intention of providing a more cohesive and streamlined system. Progress on this overhaul of emergency care was provided in 2004 in ***Transforming Emergency Care*** (Department of Health, 2004). Although the term "system" had

been used in earlier policy documents, *Transforming Emergency Care* took a much more explicit system focus and highlighted the need to take a “whole system” approach to emergency care. Improvements were noted across the “whole system”, and were attributed to: developing minor injuries units and walk-in centres, integrating out-of-hours health provision, improving ambulance service response times and the range of interventions offered to patients, increasing the number of staff working within emergency care, and expanding roles within the nursing and allied health professions, such as the introduction of the Emergency Care Practitioner. The report closed by outlining six principles for the future of patient centred emergency care: 1) personal, individual, high quality service; 2) no unnecessary delays; 3) simple access; 4) convenience; 5) emergency prevention; 6) integrated whole system care. Taking these principles, the focus was very much on how the different parts of the emergency and urgent care system could work together both to improve patient healthcare but also to improve the patient pathway during an episode of emergency healthcare.

The wide ranging review of the NHS: ***High Quality Care For All: NHS Next Stage Review*** (Department of Health, 2008) acknowledged rising patient expectations regarding care. It set out a vision for urgent and unplanned care that focused on the need for patients to be at the very centre of care, echoing the words of The NHS Plan published eight years earlier, and that measurement on quality of care should include patient views of success and quality of their experience. In order to relieve pressure on emergency care services and reduce duplication and inefficiency in the emergency and urgent care system, the report identified the need for patients to have available to them better information on how to access appropriate urgent care and indicated that a new three digit number should be considered to help people locate local services when faced with urgent unplanned health problems. In a further attempt to improve access to urgent care and primary care, the report also announced the launch of a GP-led health centre in each primary care trust to supplement existing services.

The first white paper delivered by the recently formed coalition government, ***Equity and excellence: liberating the NHS*** (Department of Health, 2010) maintained a patient centred approach in its commitment to providing a “coherent 24/7 urgent care service in every area of England that makes sense to patients when they have to make choices about their care”, suggesting that the integration of services is key to the delivery of this pledge. The white paper confirmed the commitment to developing a single telephone number to access non-emergency care, first highlighted by Lord

Darzi in *High Quality Care For All*. This policy development has resulted in the piloting of the non-emergency telephone service, NHS 111.

Policymakers have been challenged with addressing the rising demand for emergency and urgent care whilst considering the changing demographic population profile in the last 15 years. I would contend that the main focus for policy during this time has been to improve patient access to and experience of care and promoting new ways of working that provide care closer to the home. Central to achieving these policy objectives has been to work towards the integration of services within the emergency and urgent care health system. Given that these objectives have been re-iterated throughout various policy documents in the past 15 years, this would suggest that these policy objectives have been challenging to meet.

### **3.4 Changes made to emergency and urgent care**

In line with the direction of policy, the delivery of emergency and urgent care has changed considerably over the past 15 years. I would argue that the most significant changes, on a national scale, have been:

- Extended access to care, and patient choice
- The emergence of telephone delivered healthcare
- The development of new roles within the workforce

#### **3.4.1 Extended access to care, and improved patient choice**

There has been an increasing expectation by policymakers that healthcare should not only be accessible within the traditional in hours period (weekdays between the hours of 8am and 6.30pm) but it should be just as accessible outside of these hours. The introduction of the GP contract in 2004, whereby GPs were able to 'opt out' of providing out-of-hours care gave PCTs the responsibility for ensuring the provision of out-of-hours urgent care. This led to commissioners seeking alternatives for urgent care provision out-of-hours. Whilst access to GPs may have been reduced, and recent evidence suggests that this led to increased emergency department attendances (Thompson, 2010), other services with extended access hours were introduced. As I referred to earlier, society has changed, with patients expressing a need to be able to access services quickly (Department of Health, 2006). Policymakers introduced extended patient access to care and choice in the establishment of 'walk-in' services operating outside of the traditional in hours period (walk-in centres/urgent care centres) in addition to extending the opening hours of existing services such as

general practices. Establishing new services and developing established services has meant that the traditional definition of the time period attributed to 'out of hours' care (i.e. weekends and weekdays between 6.30pm and 8am) may be less appropriate as the move to provide consistent care across a 24 hour period continues.

More recently further GP-led health centres have been opened, following the policy directive *High Quality Care For All*. Primary Care Trusts were asked to provide one centre in their locality that was to be operational between 8am and 8pm each day. By providing more appointments and more convenient opening hours, policymakers hoped to provide greater choice and flexibility for patients (Department of Health, 2008). Each health centre offers both appointments and a walk-in service, with a doctor or nurse, for patients regardless of whether the patient is registered with another GP practice. In addition to providing GP services, all centres are also able to offer vaccinations, prescriptions, and family health advice. PCTs are able to decide if they can offer further services such as dentistry or physiotherapy.

### **3.4.2 Emergence of telephone delivered healthcare**

In the white paper *The New NHS: modern, dependable*, the government committed itself to establishing NHS Direct, a nurse led telephone information and advice line. The telephone as a medium for providing health related advice had been used for specific conditions but had not previously been utilised on a national level for general health advice. Operational around the clock, the purpose of NHS Direct was 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". Other specific objectives for NHS Direct included providing health related information, encouraging self-care at home and reducing unnecessary demand on other NHS services. Although the Chief Medical Officer suggested that a simple three digit number should be implemented (Calman, 1997), a longer number of '0845 4647' was used. NHS Direct was innovative in two ways: a national service providing advice over the telephone, and operated by highly experienced nurses utilising computer decision support software. Set up in three pilot sites in England in March 1998, the service expanded rapidly in successive waves to cover the whole of England and Wales by November 2000.

In 2008, the Department of Health announced the proposal of a new telephone based service, utilising a three digit number (as Calman had earlier suggested) '111', to access non-emergency NHS health care. The underlying aim of NHS 111 was to direct patients requesting urgent medical attention to the 'right service first time'. Setting up

such a service could have a positive impact on reducing demand for emergency care if it were able to meet this objective. Although it may appear that NHS Direct and NHS 111 are essentially the same service, NHS 111 differs in that there is no cost to the public when dialling, calls are handled by non-clinical staff, patients can be directed to the most appropriate service available locally using a Directory of Services, and NHS 111 is able to make real time links with some other NHS organisations such as Urgent Care Centres so that appointments can be booked for patients at the time of their call. Pilot sites went 'live' in 2010, with the intention of rolling out nationally in 2013.

### **3.4.3 New roles within the workforce**

As demand for healthcare has increased, there has been a need for policymakers to explore opportunities to utilise the existing NHS workforce in effective and efficient ways. *The NHS Plan* provided the first policy indication of the greater opportunities that would become available to NHS staff by way of advanced and extended roles. With regard to emergency and urgent care the focus has been to extend the roles of nursing staff and paramedics. Nursing staff have been utilised in nurse-led walk-in centres, and encouraged to undertake telephone triage, not only via NHS Direct, but also in general practice settings (Lattimer, 1998).

Historically in the English health system, an emergency ambulance was sent out in response to every 999 ambulance call. In 1998, the Audit Commission questioned whether a fully crewed ambulance was the most appropriate response for all 999 calls and suggested that ambulance services should be allowed to decide how to respond to each type of emergency with a view to treating some patients at home without transfer to hospital (Audit Commission, 1998). In response, local initiatives were developed by ambulance services in order to deploy their workforce in innovative ways. For example, in South Yorkshire, a scheme was developed utilising 'paramedic practitioners'. Further details of this role are provided in section 4.2. This role was a pre-cursor to the Emergency Care Practitioner (ECP). The Emergency Care Practitioner is a nationally identified role that was created as a more appropriate response to meeting the needs of patients requiring emergency or urgent care. ECPs were drawn from paramedic roles but also from the emergency and community nursing workforce. ECPs received additional training that would enable them to undertake assessment and treatment of minor injury and illness. Initially, it was envisaged that ECPs would be utilised in the community responding to non-emergency ambulance service calls (and meet a policy directive in providing care closer to the home), although in practice ECPs have been employed across acute settings (emergency departments, minor injury units, walk-in centres) and in primary care (GP out of hours, GP home visits).

### **3.5 Evaluating health care**

Prior to describing my contribution to the evidence base around evaluating emergency and urgent care services I will first highlight some principles of health service evaluation, as defined by Crombie (1996), which have informed my research. Whilst health services research covers a broad area, and there are differing traditions within health services research, there are common principles. Crombie defined health services research as seeking to find answers which will contribute to the improvement of health care, and highlighted that it should address: *the health professional, the delivery of care and the wellbeing of the patient.*

Crombie collated definitions, proposed by others, to identify what the requirements of good health care should be, and their extension to any evaluation of health services:

- *Efficacious*: can an intervention work under ideal conditions
- *Effective*: does an intervention work in practice
- *Efficient*: does an intervention provide value for money
- *Equitable*: does the population have equal access to an intervention
- *Acceptable*: is an intervention acceptable to the service user

Dieppe, cited by Bowling (2005) confirms that other authors agree with Crombie in applying these requirements to both healthcare and health services research, although the term 'efficacious' is often defined under the heading of 'effective'. Whilst recognising the importance of measuring the efficacy and efficiency of changes made to health care, the nature of my work has led to contributions in the areas of effectiveness, equity and acceptability.

## **4. Evaluating changes in emergency and urgent care**

The work submitted for this thesis draws on the seven peer reviewed journal articles identified in section 2. I have contributed to the evidence base around three key aspects of evaluation: acceptability (patient/carer/workforce), effectiveness, and equity with respect to three of the most significant recent changes within emergency and urgent healthcare in England: telephone delivered health care, new roles within the workforce, extended patient access and choice. The evidence will be presented chronologically; appraising the evidence which was published before my own contribution, describing my contribution, and finally reflecting on what my work has added along with other evidence to emerge following the publication of my work. Throughout this section, I will also discuss the evidence in relation to the policy aims that pre-empted the introduction of these changes to emergency and urgent care.

### **4.1 Telephone delivered healthcare: NHS Direct**

The Medical Care Research Unit at the University of Sheffield was commissioned by the Department of Health to evaluate the three NHS Direct first wave sites launched in 1998. Prior to this evaluation there was evidence of the safety and effectiveness of *nurse* telephone triage, but little evidence regarding the impact that *nurse led* telephone services had on demand for other health care services in the emergency and urgent care system. Lattimer (1998) looked at the use of telephone triage by nurses working in a primary care GP co-operative. Using a randomised controlled trial, Lattimer found that patients using this service had faster access to health information and advice, reduced the out-of-hours GP workload, 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. Given that NHS Direct was to be *nurse-led*, these findings were encouraging with respect to the effectiveness of nurses providing telephone triage.

The introduction of NHS Direct provided an opportunity to expand the research evidence base on telephone triage. There was considerable interest in the evaluation internationally as other countries such as Canada and Australia considered establishing a similar service.

As there was no research evidence regarding NHS Direct itself it was important to undertake descriptive, as well as, evaluative research. The evaluation included describing each of the sites in terms of the physical environment of NHS Direct and the population demographics, characterising the health problems that were presented

to NHS Direct, monitoring critical events, and describing call activity. More evaluative tasks were concerned with the effectiveness of the service, and its impact on the wider emergency and urgent care system, the acceptability of this new service both to users and stakeholders, efficiency, user compliance with advice, and variation in caller advice and triage outcomes.

This evaluation made a significant contribution to research evidence regarding this innovative service. The early findings showed that although NHS Direct may have halted the increasing demand for GP out-of hours services it did not impact on demand for other services within the emergency and urgent care system (Munro, 2000; Munro, 2005). In terms of the population accepting this new service as part of their emergency and urgent health care, NHS Direct was well received, with our work identifying high levels of user satisfaction (O'Cathain, 2000).

### **Contribution to the evidence base**

Following the evaluation of the NHS Direct first wave sites, myself and colleagues continued to be involved in extending the NHS Direct evidence base. I contributed to research papers regarding the consistency of triage outcomes across NHS Direct (O'Cathain, 2003) and assessing the use of referral to pharmacy as a disposition (Munro, 2003; Knowles, 2002). I made a significant contribution to the knowledge base about NHS Direct, and telephone helplines in general, by publishing in three specific areas:

- Effectiveness: demand on other health services within the emergency and urgent care system
- Equity: patient perspective
- Acceptability: workforce perspective

#### **4.1.1 Effectiveness: demand on other health services within the emergency and urgent care**

*O'Cathain A, Knowles E, Munro J, Nicholl J. Exploring the effect of changes to service provision on the use of unscheduled care in England: population surveys. BMC Health Services Research 2007; 7:61.*

The introduction of NHS Direct provided the UK with the first national telephone helpline designed to be used by the general population. Policymakers anticipated that NHS Direct would have a positive impact on reducing the demand for other services within the emergency and urgent care system. In introducing NHS Direct it was hoped that those with minor health problems could either manage the problem themselves or be directed to the most appropriate healthcare provider (Department of Health, 1997). It was difficult to predict if this new medium of accessing healthcare, over the telephone, would be acceptable to the general population and therefore be used by them as an appropriate alternative to more traditional health services, such as GPs, or whether NHS Direct would provide an additional 'extra step' within the emergency and urgent care system.

### **What was already known on this subject?**

US based literature regarding the effects of telephone helpline access to clinical advice for patients with specific health conditions such as diabetes and cardiac problems suggested that condition specific telephone helplines *could* reduce demand for other health services (Balas, 1997). However, it was not clear how transferable this might be to a general health telephone helpline. As part of the evaluation of NHS Direct, we approached the subject of whether NHS Direct could impact on the demand for health services in two ways: 1) by monitoring activity data for services within the emergency and urgent care system, 2) by measuring changes in the general population's self-reported help-seeking behaviour when faced with an unscheduled health care problem. It was important to identify the general population's self-reported behaviour as routine activity data was not available for some health services (such as GP in hours consultations and pharmacy visits).

### **Summary of study methods and findings**

As part of the evaluation team, I focused on measuring self-reported help seeking behaviour amongst the general population, and the impact that NHS Direct was having on the wider emergency and urgent care system. In order to do this, I undertook a cross sectional population postal survey that was administered annually over a five year period (1998 to 2002) in two of the geographical areas covered by first wave NHS Direct sites. In order to understand the impact that NHS Direct had on other services it was important to understand how the population used services before NHS Direct was introduced. Therefore the survey undertaken in 1998 was

administered prior to the launch of the service. Each year, a four page questionnaire, in the form of a booklet, was sent to 5000 members of the general population. The survey was described as a 'health care survey for the NHS', rather than being labelled as a 'NHS Direct survey'. The questionnaire itself asked respondents if they had sought help for an unplanned health problem in the previous four weeks, and if so, to provide further detail about their care pathway resulting from their most recent health problem. The response rate to the survey was 69% (33,602/48,883). During the study period, 16% (5223/33,602) of the population reported an unscheduled health event within the previous four weeks, and this remained stable over time. Given that NHS Direct was introduced within the study period, it was predictable that we found the population reporting an increased use of telephone helplines over the five year period (1% vs. 2%, odds ratio: 2.47,  $p=0.008$ ). However, there was no change in the reported use of traditional health services over this time period: for example use of a 'usual GP' remained stable (11% vs. 9%, odds ratio: 0.92,  $p=0.763$ ). The survey was able to provide some evidence about where people seek help when faced with an unscheduled health event. The results from the 2002 survey indicated that the general population mainly sought help from a GP (59%, 551/887), family and friends (47%, 421/887), or a pharmacist (41%, 368/887) when faced with an unscheduled health problem.

### **What this study added**

With a large sample and a good response rate, this paper shows that four years after the introduction of NHS Direct the general population did not appear to have changed their use of traditional health services. This is further supported by our findings derived from routine data sources (Munro, 2000; Munro, 2005), and therefore was not delivering a policy objective in reducing demand across other emergency and urgent care services.

The introduction of NHS Direct provided a new medium for accessing healthcare and advice not previously experienced by the general population. Twelve years later, in 2010, the use of the telephone helpline has become firmly established within the UK healthcare system and there is now a pilot of the NHS 111 telephone helpline, designed to provide non-emergency healthcare and advice. As part of the team undertaking the evaluation of the NHS 111 telephone helpline, I have taken the opportunity to build on my contribution to the telephone helpline evidence base by assessing the impact of NHS 111 on the emergency and urgent care system. I am a co-applicant on the NHS 111 evaluation providing survey expertise in emergency and

urgent care, and am leading two components: examining the impact of NHS 111 service the general population's use of and satisfaction with the emergency and urgent care system, and the acceptability of this new service to users (Turner, 2011).

Whilst searching for evidence for this thesis, I have been unable to find any other publication in a peer-reviewed journal taking a general population perspective of the use of the emergency and urgent care system and believe that I am the only researcher to have contributed to this evidence base. Given that policy has indicated taking a 'system' approach to emergency and urgent care I feel that my contribution was an important first step in understanding how the population use the emergency and urgent care system and how a change (i.e. *the introduction of NHS Direct*) to the system affects the behaviour of the general population. This paper was my first attempt to explore care pathways and provided me with an indication of the complexity of care pathways within emergency and urgent care.

#### **4.1.2 Equity: patient perspective**

**Knowles E, Munro J, O'Cathain A, Nicholl J. Equity of access to health care. Evidence from NHS Direct in the UK. Journal of Telemedicine and Telecare 2006; 12: 262-265.**

Ensuring equitable access to healthcare is fundamental to the ethos of the NHS. The notion that those in equal need should have equal access to healthcare regardless of gender, age, ethnicity, socio economic background is therefore a key aspect to consider when introducing a new service within the emergency and urgent care system. This was particularly so for NHS Direct which was established to improve access to healthcare to *all* patients, by providing a service that operated 24 hours a day (Department of Health, 1997).

#### **What was already known on this subject?**

The research community were quick to respond to the question about whether NHS Direct provided equitable access, and evidence began to emerge in 2001. Payne (2001) was the first author to report evidence suggesting a variation in use of NHS Direct by different groups of the population. The paper described the first twelve

months activity data from a single site (South East London), indicating that a quarter of the NHS Direct calls received concerned children aged 0-5, suggesting there may be some inequity in use of NHS Direct. A further single site study (Burt, 2003) found that calls to NHS Direct rose with increasing deprivation, but declined at levels of severe deprivation. Another ecological study (Cooper, 2005) also found that demand for NHS Direct was highest where deprivation was at or just above the national average. Extreme deprivation increased call rates amongst adults but reduced call rates amongst children.

Having identified in earlier evidence that carers of children under the age of five years were high users of NHS Direct, Ring (2004) sampled this age group and compared the health status of users versus non users of NHS Direct in order to assess if the service was used by those with the greatest health needs. Similar to Payne's earlier findings, Ring found that use of NHS Direct was widespread amongst carers of children aged between 0 and 5 years. However, there was some evidence to suggest that those from ethnic minorities, lower socioeconomic groups, and those with established ill health may not access the service as frequently as others.

To summarise, prior to the publication of my work there was growing evidence to suggest that the use of NHS Direct did not appear equitable across different groups within the population.

### **Summary of study methods and findings**

Published in 2006, my work focused on whether there were particular socioeconomic characteristics associated with the use of NHS Direct. My work expanded that of others, by taking a large sample ( $n=15,004$ ) across four discrete geographical areas where NHS Direct had been operational for up to four years (between 1999 and 2002). A postal survey was undertaken, asking respondents about recent use of unplanned healthcare, use of NHS Direct, difficulties in using the telephone and questions related to socio economic status. The adjusted response rate to this survey was good (60%, 8750/14,516), given that this was a survey regarding recent use of emergency and urgent care and not necessarily salient to potential responders. In total, a quarter (26%) of the population had previously used NHS Direct. Similar to earlier research evidence, I also discovered that use of NHS Direct was not consistent across different groups of the population. Respondents were *more* likely to have used NHS Direct if they were female (30%, odds ratio: 1.63, 95% confidence interval 1.47 to 1.80), had access to a car (26%, odds ratio: 1.44, 95% confidence interval 1.26 to

1.65), or had left full time education aged 19+ (34%, odds ratio: 3.42, 95% confidence interval 2.72 to 4.30). Respondents were *less* likely to have used NHS Direct if they were aged 65 years or over (13%, odds ratio: 0.22, 95% confidence interval 0.17 to 0.28), did not own their own home (24%, odds ratio: 0.89, 95% confidence interval 0.79 to 1.00), did not have the use of a telephone at home (19%, odds ratio: 0.66, 95% confidence interval 0.45 to 0.99), had hearing difficulties (12%, odds ratio: 0.35, 95% confidence interval 0.24 to 0.52) or had English language difficulties (18%, odds ratio: 0.62, 95% confidence interval 0.29 to 1.34).

### **What this study added**

Whilst NHS Direct had made efforts to ensure the service was accessible to different groups of the population, including those who did not speak English or had hearing impairments, my paper concluded that disadvantaged groups were under-represented amongst NHS Direct service users. My work also confirmed the concerns raised by the National Audit Office (2002) four years earlier that those from ethnic minorities, people with disabilities, and those on low incomes might use NHS Direct less than those in better off groups. It also confirmed Foster's findings that older people were reluctant to use the telephone to access out-of-hours care. Older people also indicated that they preferred contact with their own GP and were less trusting of telephone advice, particularly if provided by nurses (Foster, 2001).

Following the publication of my paper, further evidence emerged relating to the under-representation of some population groups. Bibi (2008) looked in more depth at differences in use within ethnic minority groups in one geographical area. Females from the white ethnic group used NHS Direct more than expected, but females from all ethnic groups used it less than predicted. High usage amongst males was found in Indian and Pakistani groups. Whilst NHS Direct was being under-utilised amongst some ethnic groups, there were also gender differentials in usage within ethnic groups.

Analysing a large dataset (20,421 participants) from the 2004-05 General Household Survey, Shah (2008) described household use of NHS Direct in the past 12 months. Shah's findings mirrored that of my own; NHS Direct use was lower in households with older residents, low income, no access to a car, head of household was employed in a manual occupation, or from an ethnic minority group. Shah also expressed concerns that increasing investment in telephone services would benefit more affluent groups.

In order to use a service, the population first have to be aware of its existence. The most recent paper to be published regarding equity and NHS Direct looked at awareness and use amongst patients at an outpatient clinic (Larner, 2009). Larner reported awareness to be at 60% amongst this patient group. Although this suggests increasing awareness of NHS Direct, ten years after the introduction of the service a significant proportion of patients using secondary healthcare were not aware of this nationally available service.

Whilst policymakers envisaged a service that would deliver improved access to healthcare for all patients, the overwhelming evidence suggests that NHS Direct has failed to do so for particular population groups. However, we should consider that this may be attributable to the medium of accessing the service rather than the service itself: a telephone accessed service may be less well utilised by groups within the population who are less technologically aware. There is further evidence to support this: Gerard (2004) found that younger people preferred accessing services via the telephone rather than face to face contact with health services. At the time of writing my paper, I expressed concerns regarding views that NHS Direct may, in time, become the first point of contact with the healthcare system (Pencheon, 1998). My view is justified, given my own evidence and that of others, presented here.

#### **4.1.3 Acceptability: workforce perspective**

NHS Direct provided a unique opportunity for highly skilled nurses to provide clinical care whilst operating in the non-clinical setting of a call centre. It was envisaged that NHS Direct would attract a large number of experienced nurses from existing NHS services. However, it was unknown the impact on nurses' job satisfaction of working in this unfamiliar environment alongside computer decision support software, and without the visual clues used when assessing patients in a clinical setting.

#### **What was already known on this subject?**

Pettinari (2001) was the first author to present evidence regarding how nurses were adapting to this new way of delivering care. Semi structured interviews took place with NHS Direct nurses following their initial training period and then six months later. Nurses developed skills to circumnavigate the absence of visual clues. This included interactional activities that helped the patient describe their problem with more

accuracy. Also important to the telephone consultation was the ability to manage the emotional aspects of a consultation over the telephone – building rapport and trust was key. The nurses developed these skills on an ad hoc basis and drew on their past experiences of face to face nursing to facilitate this.

Colleagues within the Medical Care Research Unit were interested in finding out more about this new workforce and found that NHS Direct recruited highly experienced nurses particularly from emergency nursing (Morrell, 2002). However, this was estimated to have had little detrimental impact on the staffing on any other NHS specialty. It was also the case that, rather than 'draining' the workforce in other NHS specialties, NHS Direct had provided opportunities for nurses, to some extent, who might otherwise have been unable to continue their nursing career through disability.

As evidence emerged that new roles in nursing did not necessarily lead to job satisfaction (Collins, 2000), and the problems associated with working in a call centre environment (Belt, 2000), it was important to establish how nurses *felt* about working in this new role.

### **Summary of study methods and findings**

Publishing in 2002, my work utilised the free text comments nurses had provided on the postal questionnaire administered earlier by colleagues (Morrell, 2002). By extracting and analysing these comments I was keen to describe the experience of working within NHS Direct using nurses' own words. All 17 NHS Direct sites operational at the time of the study were invited, and accepted our invitation to take part in the study. NHS Direct nurses who had been in post for at least one month were eligible to receive a questionnaire. In total 74% (682/920) of nurses returned a completed questionnaire and written comments were made by 67% (460/682). In total, 1525 comments were coded: 833 were negative comments, 559 were positive, and 133 were identified as neutral. Whilst NHS Direct provided opportunities for the nurses employed and offered a great deal of job satisfaction, my work was the first to publish evidence suggesting that some nurses were not satisfied in this role, citing long shifts, high workload, lack of on-going training, lack of feedback, poor management, and monotonous work as reasons for their dissatisfaction. Some of the reasons for job dissatisfaction are not limited to NHS Direct nurses, and apply to nursing in general (Blegan, 1993). However, working in a call centre environment no doubt contributed to the strong negative language used to describe the role by a small

group of nurses, drawing on analogies such a “supermarket checkout girl”, “battery hen”, and “sweat shop”.

### **What this study added**

NHS Direct provided a high level of job satisfaction but the role of the NHS Direct nurse advisor was potentially monotonous if nurses spent long shifts answering similar types of calls. I recommended in my paper that NHS Direct nurses should be encouraged to undertake regular clinical placements and continued training and have flexible shift patterns, or work part time in order to ensure staff retention would not become a problem.

Following the publication of my work, Snooks (2008) looked at the impact of telenursing from a general nursing and NHS Direct nurse perspective within Wales. A mixed method approach was used incorporating structured questionnaires and focus groups. Respondents were drawn from a range of specialties and were highly educated. Similar to Morrell’s findings six years earlier, Snooks found that nurses were drawn to NHS Direct with the expectations of increased salaries and flexible working. Re-iterating the findings from my own work, two-thirds of respondents reported an increase in job satisfaction when compared to their previous nursing roles. However, nurses reported that their nursing skills were affected by the use of the computer decision support software and the remote consultation. Snooks provided an insight into the views of the general nursing workforce with the finding that non-NHS Direct nurses raised concerns about whether telenursing constituted ‘real’ nursing. The authors felt that such tensions needed to be addressed for NHS Direct to function as part of an integrated health system.

It appeared that NHS Direct nurses were aware of the cynicism expressed by their nursing colleagues in the wider NHS. Snelgrove (2009) reported how NHS Direct nurses construct a nursing identity within a call centre setting and observed how they defended their role and their identity as nurses, rather than call centre workers. Interestingly, this ‘identity’ was drawn not solely from their role as a NHS Direct nurse but from their previous experience of nursing in other settings and their own perception of providing ‘holistic nursing’.

Ten years on from my contribution to the NHS Direct workforce evidence base, it appears that whilst the majority of nurses experience job satisfaction, a degree of job dissatisfaction has continued to persist within the workforce, and scepticism of the NHS Direct nurse advisor role is evident amongst the wider NHS nursing community.

To date my paper has been cited by fourteen other peer-reviewed journal articles, including internationally by researchers assessing telephone nursing in Sweden (Ernesäter, 2009), Canada (Stacey, 2005), and Holland (Van Charante, 2006). It was also graded as the highest quality study in a recent meta-ethnography of nurses' experiences with telephone triage and advice (Purc-Stephenson, 2010).

My interest in the workforce perspective within emergency and urgent care has continued: pursuing this in an evaluation of Emergency Care Practitioners (Mason, 2009) and a pilot study of violence directed towards staff in the emergency department (Knowles, 2010).

## **4.2 New roles within the workforce: paramedics with extended skills**

In 2003, colleagues at the Medical Care Research Unit were funded by The PPP Foundation to look at the impact of community paramedic practitioners. A local initiative, the paramedic practitioner in older people's support (PPOPS) scheme was developed in response to rising emergency department attendances and an ageing population. Evidence had already suggested that an alternative to a fully crewed emergency ambulance would be beneficial in terms of improving patient experience, whilst reducing emergency healthcare demand, if targeted at older patients with minor health conditions (Snooks, 2001; Marks, 2002). *The NHS Plan* had earlier identified opportunities to extend the skills of NHS staff, including those operating within the ambulance service whilst *Reforming Emergency Care* had highlighted new ways of working that involved paramedics performing simple procedures in patients' homes. In the PPOPS scheme, seven experienced paramedics were given extended theoretical and practical training enabling them to provide community based clinical assessment, and treatment to patients aged over 60 years requesting an emergency ambulance. Assessment and treatment were carried out in the patient's home, where possible, and a number of referral pathways were open to the paramedics should the patient have required further assessment or treatment.

### **Contribution to the evidence base**

In addition to contributing to a further journal article originating from this study regarding the cost effectiveness of paramedic practitioners (Dixon, 2009), I have also contributed to a paper assessing the effectiveness of Emergency Care Practitioners (Mason, 2011 *in press*). I made a significant contribution to the knowledge base of paramedics with extended skills by publishing in three specific areas:

- Effectiveness: clinical effectiveness
- Effectiveness: safety of the service
- Acceptability: carer perspective

#### **4.2.1 Effectiveness: clinical effectiveness**

*Mason S, Knowles E, Colwell B, Dixon S, Wardrope J, Gorringe R, Snooks H, Perrin J, Nicholl J. Effectiveness of paramedic practitioners in attending 999 calls from elderly people in the community: cluster randomised controlled trial. British Medical Journal Nov 2007; 335: 919.*

### **What was already known on this subject?**

Despite the policy drive towards the implementation of extending the role of paramedics to Emergency Care Practitioners (Department of Health, 2000; Department of Health, 2004), there was a paucity of evidence regarding the utilisation of paramedics with extended skills, particularly from the UK. Previous evidence suggested that paramedics with extended training could be utilised to assess and treat, or refer, patients with specific clinical conditions such as wounds (Hale, 2000), hypoglycaemia (Lerner, 2003), falls, and epistaxis (Snooks, 2004). However, others were sceptical about the safety, feasibility, and cost effectiveness of paramedics assessing and treating minor conditions within a community setting (Kamper, 2001; Wolford, 1996).

### **Summary of study methods and findings**

My first contribution to the evidence base regarding paramedics with extended skills was published in the BMJ in 2007. This paper reported on both the clinical effectiveness of the paramedic practitioners, and user satisfaction with this new service. A cluster randomised controlled trial was designed to evaluate the effectiveness and safety of the PPOPS scheme. Weeks were randomised to the paramedic practitioner scheme being active (intervention) or inactive (control) whereby the PPOPS scheme was not operational and patients were given the standard ambulance despatch and transfer to the emergency department following a 999 call. 3018 eligible patients were recruited into the trial over a period of 56 weeks. Routine data was collected from emergency department and ambulance service records, with patient reported data collected via a postal questionnaire administered at three days post incident. The study found that patients who had been assessed in the community by a paramedic with extended skills were less likely to attend an emergency department (63% vs. 88%, relative risk: 0.72, 95% confidence interval 0.68 to 0.75),  $p<0.001$  or require hospital admission (40% vs. 47%, relative risk: 0.87, 95% confidence interval 0.81 to 0.94,  $p<0.001$ ) between day 0 and day 28, experienced a shorter total episode time (235.07 min vs. 277.8 min, 95% confidence interval -59.5 to -25.0,  $p<0.001$ ), and were more likely to indicate that they were very satisfied with the care they had received (86% vs. 74%, relative risk: 1.16, 95% confidence interval 1.09 to 1.23,  $p=0.001$ ). Additionally, there were no differences in 28 day mortality between the two groups (relative risk: 0.87, 95% confidence interval 0.63 to 1.21,  $p=0.41$ ).

### **What this study added**

It had earlier been acknowledged that there was a paucity of randomised controlled trials in pre-hospital care (Callaham, 1997). I successfully managed the recruitment of patients during this randomised controlled trial in this methodologically challenging environment demonstrating that this methodology could be utilised. Whilst acknowledging that this evaluation was conducted in a single site, impacting on the generalisability of the findings, this study demonstrated strong evidence regarding the clinical effectiveness of paramedics with extended skills working in the community, and the acceptability of this new service amongst patients in this particular setting.

The success of the initiative, as determined by our evaluation, not only informed the development of the Emergency Care Practitioner role in the UK but also informed the development of similar initiatives in Australia (Australian Resource Centre for Healthcare Innovations, 2009) and New Zealand (Swain, 2010). It has also led to invitations to present this work orally at conferences in North America where this work has been seen at the forefront of evaluating a pre-hospital initiative. The quality of this evaluation was acknowledged at the 999 EMS conference in 2006, where following an oral presentation of my findings I was awarded the Department of Health award for the highest quality research. Accompanying the award was an invitation to deliver my paper at a partner conference in the USA or Australia.

#### **4.2.2 Effectiveness: safety of the service**

*Mason S, Knowles E, Freeman J, Snooks H. Safety of Paramedics with Extended Skills. Academic Emergency Medicine Jul 2008, 15: 607-612.*

Paramount to evaluating a new role or the extension of an existing role is determining that this 'new' workforce can operate safely. Historically in England, the Department of Health encouraged ambulance services to despatch an ambulance and transfer a patient to the emergency department for assessment and treatment by doctors following a 999 call. However, with the advent of paramedics with extended skills operating in the community it was important to establish if the PPOPS scheme, and workforce, could operate as safely as medical staff in emergency departments who had previously dealt with this patient group.

### **What was already known on this subject?**

Previous evidence from the United States suggested that paramedics without extended training could not safely determine which patients could be left at home (Silvestri, 2002). Pointer (2003) also suggested that even following a brief period of training, ambulance crews were not able to triage patients accurately. Whilst our research had established that there were no significant differences in mortality between the intervention and control group (Mason, 2007), we undertook further evaluation to assess the safety of the clinical decisions made and appropriateness of care provided by the paramedic practitioners operating within the PPOPS scheme.

### **Summary of study methods and findings**

All patients assessed by a paramedic practitioner (intervention) or in the emergency department (control) during the randomised controlled trial were eligible for inclusion in the safety aspect of the evaluation. The safety of the clinical management of patients was assessed using emergency department records. The record of any unplanned emergency department attendance that occurred within 7 days of the index incident was extracted. A cut off point of 7 days was used as it was felt that any potentially serious incident that had been overlooked during the initial assessment would have become apparent within this time period. Patients who were admitted to hospital during the initial episode were excluded from this analysis as it was felt it would be more difficult to determine if an unplanned emergency department attendance was related to their initial inpatient stay or the clinical decision making at the time of their initial consultation either by a paramedic practitioner, or in the emergency department.

The paper record from the initial assessment and subsequent unplanned emergency department were first examined by myself. I checked the record to establish if there was a possible link between the initial assessment and the subsequent presentation. If I felt unsure whether the incidents were related, these were passed to an emergency department consultant for assessment and a final decision. In addition, a random sample of records was reviewed by the emergency department clinician to check for agreement. Following this initial activity, notes from any subsequent related presentations were checked to determine if the subsequent emergency department attendance could have been avoided. This process was undertaken by two emergency department clinicians who worked independently. Where possible, the clinicians were blinded to the service the patient had received during the initial assessment. Both

clinicians were asked to complete a pro-forma following their notes review to indicate their view of whether the patient had received sub-optimal care during the initial episode.

After excluding patients who were admitted at their initial episode, there were 2,025 patients eligible to be included in the analysis of safety. 219 (10.8%) patients went on to have an unplanned emergency department attendance in the seven days after their initial episode, and of these 162 (74.0%) presented with a clinical condition that appeared related to their initial episode. For five patients, paper notes were not available and these patients were excluded from further analysis. Therefore, 157 cases were analysed.

A significant difference was found in the proportion of patients subsequently attending the emergency department for an unplanned visit (intervention 12% vs control 10%,  $p=0.049$ ), but no differences in the proportion returning with a related condition (intervention 9% vs control 7%,  $p=0.052$ ). In total there were 42/2,025 (2%) cases where at least one of the clinicians felt there was suboptimal care during the index incident, but there were no significant differences between the intervention and the control group (intervention 27% vs control 27%,  $p=0.94$ ) despite a higher proportion of intervention patients subsequently attending the emergency department for an unplanned visit. Agreement was reached by the clinicians, in terms of whether sub-optimal care was apparent, in 131/157 (83.4%) of cases which indicates 'moderate' agreement. (Altman, 1991)

The measurement of appropriateness and clinical decision making is not straightforward, and at the time of this analysis there were no agreed criteria in place. A pragmatic approach was taken in this study and a more robust approach would have been to convene an expert panel to assess failures of care. In addition, it would have been desirable to explore the records of all services within the emergency and urgent care system to ascertain any attendance in the seven days after the initial episode. However this would have been an enormous undertaking and the resources were not available within this evaluation. I would argue however, that any serious incidents would have become apparent within the emergency department and therefore collected for the notes review. It is also possible that if the cut off point for subsequent unplanned emergency department attendance was extended beyond seven days then the findings presented here would be different. Again, I would suggest that a period of seven days provides a sufficient period after the initial episode for any related episode to become apparent. Although I am not directly involved with further research in this area, I am aware of other academics currently

building on this model for assessing safety and clinical decision making in emergency and urgent care research.

### **What this study added**

As policy has continued to encourage the extension of workforce roles, particularly those of the paramedic, this paper indicated an important clinical finding: that paramedics with extended skills working in this particular setting were able to appropriately assess, treat, and refer within this patient group.

#### **4.2.3 Acceptability: carer perspective**

*Knowles E, Mason S, Colwell B. An initiative to provide emergency healthcare for older people in the community: the impact on carers. Emergency Medicine Journal 2011;28:316-319*

### **What was already known on this subject?**

Prior to embarking on this evaluation, anecdotal evidence suggested that the paramedic practitioner operating within a community setting could have a positive impact on older people requiring emergency care for minor problems. However I was unclear how the scheme would impact on the carers of these patients. Within the UK there has been a move to provide care in community-based settings and away from institutional care. To facilitate this, the role of the informal carer has become more important. Evidence suggests that being an informal carer for an older person can be problematic for aspects of the carers' life, such as social and family life (Jones, 1992). The impact of caring for people with chronic illness and cognitive decline has been documented (Kim, 2008). However, prior to the publication of my paper there was no evidence relating to the carer experience of those requiring care from the ambulance service or in the emergency department following a minor acute health episode. My paper aimed to describe the impact of a minor acute health episode on carers, in addition to evaluating the impact, on carers, of the PPOPS scheme when compared to the standard response of ambulance despatch and transfer to an emergency department following a 999 call.

## **Summary of study methods and findings**

Carers of patients recruited into the randomised controlled trial were invited to take part in the study. 561 informal carers were recruited and sent a postal questionnaire. The questionnaire asked about the level of care they provided both before and after the health episode and about their own satisfaction with the care received from health services during the episode. Carers were also asked about the impact that the patient episode had had on them, both in terms of physical and non-physical aspects of care.

A total of 401 carers (72%) returned a completed questionnaire; n=234/401, 58% in the intervention group versus n=167/401, 42% in the control group. Overall, care recipients in both groups were similar in terms of age, sex, and presenting complaint. Carers were also similar in terms of age, sex, and the level of care provided prior to the episode. Statistically significant differences were found between the two groups in that in the intervention group fewer carers were family members (80% vs. 92%, 95% confidence interval 4.7 to 18.1,  $p=0.001$ ), and fewer care recipients were admitted to hospital following their health episode (27% vs. 51%, 95% confidence interval 13.9 to 32.7,  $p<0.001$ ). Carers were more likely to report higher levels of satisfaction with their impression of care (92% vs. 62%, 95% confidence interval 21.2 to 40.1,  $p<0.001$ ) and staff attitude towards themselves (92% vs. 57%, 95% confidence interval 24.6 to 44.4,  $p<0.001$ ) if the care recipient had been assessed by a paramedic practitioner. Overall, carers reported an increase in the level of care provided after the episode, more so if the care recipient had received their initial assessment in the emergency department (61% vs. 42%, 95% confidence interval 6.1 to 29.6,  $p=0.003$ ). Overall, carers reported feeling more anxious about providing care following the episode, and indicated that there had been a restriction on their work/leisure time, post episode, with a minority reporting that the episode had also had a negative impact on other family members. In addition, carers in the control group reported increasing the amount of help they provided with bathing (56% vs. 30%, 95% confidence interval 11.4 to 38.8,  $p<0.001$ ), cooking (63% vs. 41%, 95% confidence interval 7.3 to 34.7,  $p=0.003$ ), and dressing (56% vs. 34%, 95% confidence interval 7.5 to 35.2,  $p=0.003$ ) to the care recipient post incident.

Although the patient data used in this analysis was collected for the purposes of a randomised controlled trial, the carer aspect of the study was opportunistic and was based on a convenience sample. The analysis included carers who were present at the time of the patient episode, and it is not clear how many carers were present but declined to take part and the characteristics of this group. Carers of

nursing/residential home patients were also excluded from this analysis as it was felt that formal carers' experiences were different to that of an informal carer.

### **What this study added**

Carers are a relatively under-researched group within health services research and I was the first author to provide any evidence relating to this group with respect to emergency and urgent health care. Prior to journal publication, my work was presented orally at the 2009 annual UK College of Emergency Medicine conference and was selected in the top four scoring abstracts at the conference. This recently published paper provided evidence to show that this particular community based scheme, whilst reducing the need for ambulance transfer to the emergency department and utilising an alternative workforce model, did not have a detrimental effect on the lives of carers. The publication of this paper also has international impact. Academics at Monash University, Australia, have recently approached me to discuss collaboration on a project they are developing involving carers and emergency care.

#### **4.3 Extended access to care, and patient choice: the emergency and urgent care system**

As discussed in section 3, policymakers continue to develop emergency and urgent care services, introducing new health services and therefore increasing patient choice. An increase in patient choice may add to confusion in how, and where, to access healthcare (O'Cathain, 2008). Added to this, policymakers are explicit in encouraging integration between services. Ineffective integration of health services within a locality may provide challenges for the patient journey, in what may already be considered a complex and diverse health system. Given this, it is becoming increasingly important to evaluate not only the changes in service delivery, but also to understand more about the system in which these changes take place. The term 'health system' can be defined in various ways. However, the definition of an 'emergency and urgent care health system' which I have adopted in my work is pragmatic and collectively describes the services involved in the delivery of emergency and urgent health care.

The Medical Care Research Unit was commissioned by the Department of Health to undertake a programme of work exploring the emergency and urgent care system. This five year programme explored the use of networks to manage the system, developing population indicators for measuring the performance of the system, and developing survey methodology for measuring the patient perspective of the system. Within this programme of work I took a particular interest in evaluating the emergency and urgent care system from the patient perspective.

##### **Contribution to the evidence base**

In addition to contributing to peer reviewed journal articles regarding some of the methodological issues in undertaking emergency and urgent care system research (O'Cathain, 2010; O'Cathain, 2011), I have published work focusing on the acceptability of the system from a patient perspective.

##### **4.3.1 Acceptability: patient perspective**

*Knowles E, O'Cathain A, Nicholl J. Patients' experiences and views of an emergency and urgent care system. Health Expectations March 2011; 14: 1.*

### **What was already known on this subject?**

In O'Cathain, Knowles, et al (2007) we established that patients often consult more than one service, or consult the same service more than once, when dealing with an unscheduled health care episode. For example, they may call a GP out of hours, visit an emergency department, and then be advised to contact their own GP. Although each of the services may work effectively in isolation, the services may not operate effectively as part of a system of care which may impact on the patient experience during an unscheduled healthcare episode. Little was known about how patients experience these care pathways. I attempted to describe the patient reported journey through the emergency and urgent care system, and satisfaction with care pathways.

### **Summary of study methods and findings**

Undertaking this research in one geographical area, a market research company was enlisted to administer a telephone survey using random digit dialling aiming to identify 1000 respondents who were representative of the demographic profile of the system population in that area. It was anticipated that between 100 and 350 recent users of the system would be identified by using this approach. The Urgent Care System Questionnaire, developed following a qualitative study of system users (O'Cathain, 2008), was used to capture patient experience and satisfaction.

In order to find 1000 respondents who met the age and sex quota, a total of 18,091 telephone calls were made. After adjusting for unobtainable telephone numbers and caller ineligibility, a response rate of 9% (1000/11,604) was achieved. Such a response rate is not untypical when undertaking a random digit dialling approach to telephone methodology and adopting quota sampling. (Rubin, 2009; Rubin, 2007) 15% of the sample (151/1000, 95% confidence interval 13 to 17) reported that they had used the emergency and urgent care system within the previous three months. One might have assumed system use to be higher given that my earlier work had suggested system use for unscheduled care at 16% within a *four week* time frame (O'Cathain, 2007). 145 respondents went on to provide details of their most recent emergency or urgent care episode and form the basis for the analysis within my paper.

Patients entered the system through a range of services, with a daytime GP as the first point of entry into the system for the majority of users (59%, 85/145). A minority of respondents (10%, 14/145) entered the system through NHS Direct, with

8% visiting the emergency department in the first instance. About a quarter (24%, 34/144) of first contacts with emergency and urgent care took place during the out of hours period. The majority of system users (68%) used more than one service for their most recent episode. Whilst longer care pathways may indicate more complex clinical needs, we should also consider that they may be indicative of confusion about the system, and dissatisfaction with the system. Respondents were asked their reasons for contacting further services following contact with the first service on their pathway. The main reasons for contacting additional services were that a service had told the respondent to do so (88%, 86/98) or that the health problem changed (18%, 18/98). However, other reasons were given which may be indicative of a lack of satisfaction: not satisfied with a service (6%, 6/98), wanted another opinion (10%, 10/98), or felt that there was no access to the service which they wanted (2%, 2/98).

In addition to describing their experience, respondents were also asked to report on their satisfaction with the system. Similar to service level satisfaction found in walk-in centres (Salisbury, 2002), GP out of hours services (Thompson, 2004), and NHS Direct (O'Cathain, 2000), system users also appeared satisfied: 88% (128/145) felt that their case had been managed with sufficient urgency, 90% (130/145) felt that they had contacted the right number of services, and 78% (113/145) reported that their overall satisfaction with the system on this occasion was 'very good' or 'excellent'. Psychometric testing had earlier identified three discrete domains of satisfaction (O'Cathain, 2011): *entry into the system, patient convenience of the system, and progress through the system*. Within each domain a mean score was calculated where scores varied between 1 and 5, where 5 indicated higher satisfaction. The mean score for *patient convenience* (3.9, 95% confidence interval 3.79 to 4.03) was lower than the other domains of *entry into the system* (4.3, 95% confidence interval 4.19 to 4.44), and *progress through the system* (4.1, 95% confidence interval 4.01 to 4.27).

### **What this study added**

This recently published paper was the first to report the views of emergency and urgent care system users in England. It not only described health seeking behaviour of emergency and urgent care system users but, for the first time, their experiences and views of the *system* rather than of the individual services within it. This study showed that despite policymakers attempts at increasing the choice of entry points into the emergency and urgent care system the majority of users continue to access the system using a GP, the most well established service within a system, and appeared highly satisfied with this entry point. The majority of users had more than

one contact on their care pathway, and therefore experienced a *system* of care. This further highlights the need to consider a system perspective in evaluation of emergency and urgent care.

I have adopted this methodology in a 'before and after' assessment of large changes to four emergency and urgent care systems in England to further the understanding of how change impacts on the system as a whole. This work has recently been completed and I presented it orally at the SDO/HSRN annual conference in 2010. I am in the process of preparing a journal publication in order to disseminate my findings more widely. In addition, I am currently leading part of the evaluation of NHS 111, adopting this same methodology, in assessing if the introduction of further patient choice (NHS 111) affects system user views.

## 5. Conclusion

In conclusion I will summarise my contribution to knowledge and highlight the methodological strengths and limitations of my work. I will also discuss the policy implications of my work and highlight priorities for future research as I see them. Before doing so I will discuss my interpretation of the word 'evaluation' that forms the basis of this thesis and also consider other definitions of quality of care used within healthcare.

### **Evaluation**

Evaluation is the use of the scientific approach, and the methodical collection of research data to assess the effectiveness of organisations and services (e.g. health service interventions) in achieving its objectives, and is therefore central to health services research (Bowling, 2002). My work has been to evaluate changes, including changes to services, within the emergency and urgent care system whilst utilising research methodology to do so. That is, that research methodology has clearly been embedded within the evaluations which I have undertaken.

### **Evaluating quality in healthcare**

Throughout my research career, there has been an increasing focus on quality of health care. In addition to Crombie, other academics (Donabedian, 1988; Maxwell, 1984), organisations (Institute of Medicine, 2001) and policymakers (Department of Health, 2008) have proposed differing definitions and models of healthcare quality. However, all agree that quality is multi-dimensional rather than something that can be based on a single measure.

Given that my research is rooted in emergency and urgent care within the NHS, the definition of quality of care proposed by Darzi (Department of Health, 2008) is of particular interest. Darzi proposed that quality of care within the NHS comprises of three dimensions: clinical effectiveness, patient safety, and patient experience. This patient centred approach to quality of care is in contrast to earlier measurements of quality within the NHS, predominantly focussing on targets and waiting times. This sets it apart from Crombie's definition: Crombie did not base the measurement of quality solely on patient care, but extended it to include the workforce and the delivery of care. This is useful when assessing the quality of an intervention as a whole (the delivery of the intervention, the impact on the workforce, and on the patient). Whilst much of my work has been concerned with assessing patient

experience this has often been within the context of a service evaluation, assessing the strengths and limitations of the service in its entirety, rather than from the patient's perspective alone. However there is significant overlap between Darzi's definition and the one proposed by Crombie. Both definitions include patient experience/acceptability and effectiveness. Whilst Crombie is not explicit in highlighting 'safety' as a dimension of quality, my interpretation has led me to include this within Crombie's dimension of 'effectiveness': *does an intervention work in practice*, as I have highlighted in 4.2.2. My view is that if an intervention is working in practice, then it should follow that it is operating safely. Darzi's definition omits the dimension of 'equity'. This omission is surprising given that the NHS is built on a principle of ensuring that those in equal need should have equal access to care, regardless of personal characteristics, and is a fundamental dimension of quality of care models supported by others (IoM, Maxwell, Donedian, Crombie). Equity of access to care is a key dimension to consider given my own evidence regarding patient inequity in accessing healthcare.

### **Contribution to knowledge**

Whilst the services I have evaluated have varying scopes and address different aspects of emergency and urgent care, my research forms a body of high quality evidence on the evaluation of changes to emergency and urgent healthcare. I have contributed to understanding the acceptability (patient/carer/workforce), effectiveness, and equity of three key policy driven changes made to emergency and urgent healthcare in recent years: telephone delivered healthcare, new roles within the workforce, and extended access to care and patient choice. More specifically my contribution has been:

- To report evidence, often for the first time, regarding new models of emergency and urgent health care delivery in England, such as NHS Direct and paramedics with extended skills, which have since become embedded within the emergency and urgent healthcare system. I have built on the existing research evidence base with regards to acceptability, effectiveness, and equity of these emerging models of service delivery. With respect to telephone delivered healthcare, I have shown that those from poorer socioeconomic groups or with communication difficulties were less likely to have used NHS Direct than other groups. There were also problems with this newly established workforce. I reported that whilst the majority of NHS Direct nurses were satisfied with this new way of working, a minority of staff found the work to be monotonous which posed a challenge to the retention of staff. NHS Direct was

also ineffective in impacting on demand for other health services across the wider emergency and urgent care system. As my work has shown, use of NHS Direct was low in comparison to other health services and therefore the service was limited in terms of the impact it was able to have on the emergency and urgent care system overall. My work has shown that new roles within the workforce are effective. Paramedics can be trained to safely assess and treat older people with minor conditions, and reduce the need for attendance at an emergency department, whilst providing a service that patients were highly satisfied with. It has been acknowledged that the workforce effect of extended roles within the NHS is an under-researched area (Sibbald, 2004). Whilst my work did not assess the impact of acquiring this higher level of skill competency on paramedics themselves, I feel there are unintended consequences. Evidence emerging from the emergency care practitioner role suggests that job satisfaction amongst staff in this role was diminished when the role did not meet their expectations in terms of enhanced skill utilisation or providing a positive impact on patients (Mason, 2009). The PPOPS scheme was locally developed, implemented, and funded. Therefore the scheme was at risk of being withdrawn if further funding did not become available. This may have had implications for the workforce in terms of their future role given that these staff may not have any further opportunities to use their extended skills and would therefore been at risk of diminished job satisfaction.

- To provide an insight into a relatively under researched group within emergency and urgent health care. Whilst there is much evidence reporting the impact of caring with people with long term conditions, I was keen to show evidence of the impact that an acute minor condition has on the life of a carer for an older person and if carers were accepting of an alternative way in delivering care. My paper showed that whilst acute minor conditions do impact on carers, initiatives such as utilising paramedics with extended skills in the community had a more positive impact on carers than traditional ambulance responses. Indeed, carers reported needing to provide less input with physical caring activities as a result of this service being available.
- To develop and utilise a methodology that was able to provide the first evidence describing the patient reported journey through an emergency and urgent care health system, capturing experiences and satisfaction. My work has demonstrated that patients report a *system* of care rather than single service care, often accessing care from more than one NHS provider.

Policymakers have introduced new services and roles within emergency and urgent care over the past 15 years and it should be considered that any such changes may impact on another part of the system and therefore impact on patient experiences. Whilst my work shows patients to be satisfied with emergency and urgent care their views of a changing system are an important outcome in assessing the overall success of any service level change implemented.

### **Methodological considerations**

Throughout this thesis I have demonstrated a range of methodological approaches used within my work: randomised controlled trial, quantitative approaches (postal and telephone survey), combined qualitative and quantitative approaches (analysis of survey free text comments) and the use of secondary data (analysis of emergency care records).

A research career involves on-going reflection and appraisal of the work that one undertakes. I find that reflection on methodologies utilised is an important learning exercise – evaluating what worked or did not work so well. Throughout the thesis I have highlighted particular strengths and limitations of the methodologies used with regard to each paper. Whilst confident of the methodological approaches I chose, I am able to reflect on some of the limitations of the processes I adopted and consider how this may affect my future research practice.

One example is the carer satisfaction paper; an opportunistic piece of work, based on a convenience sample. The analysis included only the carers who were present at the time of the patient episode. I did not capture how many carers were present but declined to take part, and the characteristics of this group. If I were to undertake this study again, I would ensure that basic demographics (age/sex/relationship to patient) of every carer approached was collected in order to estimate any recruitment, and questionnaire non response bias.

The work which I have undertaken with respect to use of the emergency and urgent care system also demonstrates my ability to reflect and learn from my experiences. As with all postal surveys, the impact of non-response bias must be considered. The response rate to the survey exploring the impact of demand on the emergency and urgent care system following the introduction of NHS Direct was good (69%). This survey utilised random sampling. When compared to the local authority census data the survey respondents were less likely to be male, less likely to be children and young adults, more likely to be middle aged, more likely to be home owners, and more likely to own two or more cars. Therefore, despite a good response rate it may

be claimed that my findings are not representative of the population under study. One way to improve representativeness would be to undertake quota sampling which I did in my most recent paper looking at patients' experiences of an emergency and urgent care system. Using quota sampling enabled me to obtain a sample which was more representative of age, gender, and minority ethnic communities when compared with a random sampling method. Reported demand for NHS Direct was relatively small in comparison to demand for other emergency and urgent care health services and therefore may have been limited in the influence it was able to have on use of other parts of the system. Researchers may suggest that the impact of demand should have been measured when NHS Direct was highly utilised and therefore *could* potentially have an impact across the emergency and urgent care system. Considering that evaluation is to assess an intervention at a particular point in time, this methodology was entirely appropriate – at that point in time NHS Direct was not able to affect demand for other healthcare services. However, given that I am continuing with my interest in assessing changes in demand for services, the optimum timing of assessing such change is something that I am keen to consider in the future.

### **Priorities for research**

I intend to continue developing and undertaking high quality and internationally recognised research in the evaluation of emergency and urgent health care. This thesis has provided me an opportunity to reflect on my work and that of others publishing in the field of emergency and urgent care research. In consolidating this work, I have identified areas of emergency and urgent care that require further exploration.

#### **'NHS 111': equity**

The recent introduction of NHS 111 indicates that policymakers are supporting the use of the telephone for access to, and information about, healthcare. Telephone based healthcare is clearly more difficult to access for groups of the population where English language skills are limited or those with hearing difficulties. Using the example of NHS Direct, my work and that of others, has shown that this particular telephone service did not meet the policy objective of 'improving access' for *all* groups in the population. Given the prominence that NHS 111 will have in the emergency and urgent care health system following the national roll out in 2013 it is important to ascertain if the issues regarding equity and NHS Direct are relevant to NHS 111. My role evaluating the evolving NHS 111 telephone service will enable me to actively pursue this further. I am undertaking a general population survey in each of the four

pilot NHS 111 sites, asking respondents about their use of NHS 111 and socio demographic characteristics. I hope to establish if the challenges previously faced by telephone accessed healthcare in reaching all groups of the population persists.

#### *'NHS 111': workforce*

A key difference between NHS Direct and NHS 111 is the skill level of the workforce. NHS Direct employed highly experienced nurses to triage calls. NHS 111 utilises non clinically trained staff to triage calls, with handover to a nurse advisor if required. My work suggested that whilst NHS Direct provided high levels of satisfaction for most nurses, a significant minority of nurses found that the role did not provide the job satisfaction that they had anticipated. I am not clear if the decision to employ non clinical staff to triage NHS 111 calls was evidence based, but my evidence expressed a need for caution in employing highly skilled nurses in a call centre environment. It will be interesting to assess if the issues raised by the NHS Direct workforce are relevant to staff working within NHS 111.

#### *Emergency and urgent care evaluation: system perspective*

As I have described earlier, policymakers have become more explicit in their vision for emergency and urgent care to become integrated and operate as a 'system' of care. It is therefore not surprising that academics in the field of emergency and urgent care are also referring to healthcare as part of a system of care: commentary papers referring to both the *urgent care system* (Salisbury, 2010) and *emergency care system* (Bell, 2010) have recently been published and it's likely that emergency and urgent care research evidence explicit in its use of the term 'system' will become more prevalent in the future.

It is important to consider what we understand by the term 'system'. General systems theorists have suggested that a system can be understood as an arrangement of parts and their interconnections that come together for a purpose (von Bertalanffy 1968). This has a clear parallel with the emergency and urgent care system: a range of services operating to restore and maintain the health of the population. A system approach has been summarised by Mingers and White (2010) and I feel it can be usefully applied to our understanding of emergency and urgent health care systems:

- *Viewing the situation holistically, as opposed to reductionistically, as a set of diverse interacting elements within an environment; ie all the services contributing to the provision of emergency and urgent healthcare.*
- *Recognising that the relationships or interactions between elements are as important as the elements themselves in determining the behaviour of the*

system; i.e. the interactions between services as they 'move' patients around the emergency and urgent care system.

- *Recognising a hierarchy of levels of systems and the consequent ideas of properties emerging at different levels, and mutual causality both within and between levels*; i.e. within emergency and urgent care there are systems within systems. For example, the emergency department operates within the larger system of an acute NHS trust. How these differing systems operate will impact on each other.
- *Accepting, especially in social systems that people will act in accordance with differing purposes or rationalities*; ie recognition that emergency and urgent care services and the workforce may have differing priorities which are at odds with each other.

One aspect of systems theory that has been applied to emergency and urgent care is system dynamics. Systems dynamics is used for understanding the behaviour of complex systems and is based on the principle that the structure of the system determines its behaviour (Brailsford, 2012). That is, the way that different parts of the system relate to and impact on each other will determine the behaviour of the system as a whole. Brailsford (2004) and Lattimer (2004), using a systems dynamics approach, have made a significant contribution in our understanding of how a change made within the emergency and urgent care system can impact on the rest of the system. The authors investigated ways in which the flow of patients through the emergency and urgent care system could be improved. In constructing a conceptual map of the system, the authors were able to use simulation techniques and apply scenarios within the model to assess how the system *would* react (Lattimer, 2004). The authors concluded that the model had the potential to make a significant contribution to the improvement of emergency and urgent care delivery. Whilst Brailsford and Lattimer's work contribute to informing the re-modelling of emergency and urgent care systems my work complements this in evaluating the impact of a system re-model.

An important methodological consideration when evaluating health systems is how the boundaries of the system are defined. This is particularly challenging for evaluation of the emergency and urgent healthcare system in that it is a virtual entity – there is no one organisation that represents *the* entirety of the emergency and urgent care system. Therefore the researcher has to clearly define this. A starting point might be to take the Department of Health's definition of urgent and emergency care: "the range of healthcare services available to people who need medical advice, diagnosis

and/or treatment quickly and unexpectedly" (Department of Health, 2012). Although a good starting point, one would need to identify the range of services sitting within the emergency and urgent care system umbrella. Lattimer did this within a defined geographical area, first sketching the 'front doors of the emergency and urgent care system, and then building on this through interviews with clinicians, planning and commissioning managers, and operational staff involved with patient records to create a 'picture' of the emergency and urgent care system. This resulted in the identification of NHS Direct, NHS Walk-in centres, NHS and commercial GP services, acute trusts involved in handling emergency admissions, the ambulance service and A&E department as being part of the emergency and urgent care system within that particular locality (Lattimer, 2004). In addition, I would suggest adding 'pharmacy' to this list, given that my work suggests around 17% of the population make contact with a pharmacy during an urgent health episode (Nicholl, 2011). Any researcher embarking on emergency and urgent care *systems* should, in the initial phases of the study, consider what aspects of the system are to be included and excluded.

My work has focused on how patients *experience* a system of care. I would suggest that any research looking at the re-configuration of services or the introduction of a new service within emergency and urgent care also involves a wider system perspective within the evaluation. Certainly my current work evaluating NHS 111 is explicit, and comprehensive, in determining any impact this service has on the wider emergency and urgent care system and its users.

### **Policy implications**

My work has demonstrated both the strengths and limitations of the policy related initiatives which I have evaluated. In particular my evidence regarding NHS Direct indicated some limitations regarding this telephone based service. Policymakers must take note of this given their plans for the national roll out of the non-emergency healthcare telephone service 'NHS 111', and if the telephone is considered as the medium for a single point of access to emergency and urgent care. In contrast, the evidence that I have provided regarding paramedics with extended skills was overwhelmingly positive. Policymakers should support, and commissioners should explore, this model of service delivery when considering how to utilise emergency care practitioners within a locality. As policymakers continue to move forward with a vision for integrated emergency and urgent care healthcare attention must be directed towards the potential impact this has on users of the emergency and urgent care system.

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## **Appendix**

To whom it may concern

Re: Emma Knowles

In relation to the papers:

1. Mason S, Knowles E, Freeman J, Snooks H. Safety of Paramedics with Extended Skills. *Academic Emergency Medicine* Jul 2008, 15: 607-612.

Ms Knowles assisted in designing the study, undertaking the data collection and analysis, reviewing and contributing to drafts of the paper and the final publication following external peer review in conjunction with co-authors.

2. Mason S, Knowles E, Colwell B, Dixon S, Wardrope J, Gorringe R, Snooks H, Perrin J, Nicholl J. Effectiveness of paramedic practitioners in attending 999 calls from elderly people in the community: cluster randomised controlled trial. *BMJ* Nov 2007; 335: 919.

Ms Knowles acted a project manager for this trial and as a result was responsible for the conduct of the trial on a day to day basis, drafting data collection instruments, overseeing data collection, data cleaning and data analysis, synthesis of the results for the paper, drafting the paper and the final publication following external peer review in conjunction with co-authors.

Yours Sincerely



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To whom it may concern

Re: Emma Knowles

In relation to the paper:

O'Cathain A, **Knowles E**, Munro J, Nicholl J. Exploring the effect of changes to service provision on the use of unscheduled care in England: population surveys. *BMC Health Services Research* 2007; 7:61.

Emma contributed to the design of the data collection instruments, managed the data collection process and contributed to the data analysis, interpretation of the results, and drafts of the paper in conjunction with co-authors.

Yours sincerely

Alicia O'Cathain

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## **The publications**

**Knowles E, O'Cathain A, Nicholl J.** (2011) Patients' experiences and views of an emergency and urgent care system. *Health Expectations*, 14, 1.

# Patients' experiences and views of an emergency and urgent care system

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## Abstract

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**Keywords:** emergency and urgent care, health care quality assessment, health care systems, patient satisfaction

**Background** Surveys of patients' experiences and views of health care usually focus on single services. During an unexpected episode of ill health, patients may make contact with different services and therefore experience care within an emergency and urgent care system. We developed the Urgent Care System Questionnaire and used it to describe patients' experiences and views of an emergency and urgent care system in England.

**Methods** A market research company used quota sampling and random digit dialling to undertake a telephone survey of 1000 members of the general population in July 2007.

**Results** 15% (151/1000) of the population reported using the emergency and urgent care system in the previous 3 months. Two thirds of users (68%, 98/145) contacted more than one service for their most recent event, with a mean of 2.0 services per event. Users entered the system through a range of services: the majority contacted a daytime GP in the first instance (59%, 85/145), and 12% (18/145) contacted either a 999 emergency ambulance or an emergency department. Satisfaction with all aspects of care diminished when four or more services had been contacted.

**Conclusions** This is the first study to describe patients' experiences and views of the emergency and urgent care system. The majority of patients experienced a system of care rather than single service care. There was an indication that longer pathways resulted in lower levels of patient satisfaction. Health care organisations can undertake similar surveys to identify problems with their system or to assess the impact of changes made to their system.

## Introduction

In recent years policymakers in England have proposed changes to both emergency<sup>1,2</sup> and urgent care,<sup>3</sup> defining urgent care as 'the range of responses that health and care services provide to people who require – or who perceive the need

for – urgent advice, care, treatment or diagnosis'. Patients seeking emergency and urgent care may not consult or attend a single service. Instead they may make several contacts with the same or different services.<sup>4</sup> For example, they may contact a general practitioner (GP) out-of-hours, be directed to an emergency department, and then

consult a GP in hours. Each service may be effective but together may not operate as a system ensuring the smooth transfer of patients along their care pathway. Systems, and the services within them, are frequently re-modelled to meet the needs of the population. Changes in one part of the system may impact on another part of the system. Therefore there is a need to measure the performance of systems as well as the individual services within them, and the effect of changes made to them. Patients' experiences and views of a system should be an essential component of performance measurement. This study seeks, for the first time, to describe the patient reported journey through an emergency and urgent care system and satisfaction with that journey.

## Methods

### Setting

An Urgent Care Network Board in central England agreed to host our study. Emergency and Urgent Care Network Boards vary from region to region but typically include representation from primary, acute, and community NHS Trusts, social services and ambulance services. Meeting on a regular basis, the purpose of most networks is to develop an area wide strategic plan for the delivery of a system of emergency and urgent care. The Urgent Care Network Board hosting this study covered an area in England with one major city, a number of large towns and large rural areas. The socio-demographic profile of the area was similar to England with the exceptions of a lower proportion of ethnic minority communities and a higher proportion of home ownership. The emergency and urgent care system consisted of an ambulance trust, two acute hospitals with emergency departments, minor injuries units, NHS Direct the 24 h nurse-led telephone help line, day time general practice, GP out-of-hours, an NHS walk-in centre, and a range of other services offering urgent treatment for specific health problems e.g. dentists.

### Data collection

A survey was used to measure patients' experiences and views of the system. The process of undertaking a survey of a *system* is challenging. There is difficulty in identifying users of an emergency and urgent care system because there is not a single entry point at which to capture them. Identifying system users by accessing the records of all component services within a system would be difficult given the large number of services involved and the probability of double counting multi service users. Therefore, a general population survey was chosen as an appropriate approach to identifying system users, by screening for recent users of the emergency and urgent care system and then asking for details of their most recent use of the system. The strength of using this approach is that all parts of the system can be included, and it includes anyone who attempted, but failed, to use the system.

A market research company was engaged to undertake a telephone survey of the general population. They undertook random digit dialling during July 2007, with one attempt to contact a landline telephone number, aiming to identify 1000 respondents representative of the age/sex profile of the system population. Random digit dialling involves generating random telephone numbers, and therefore has the advantage of including numbers that may not be listed in the telephone directory. Standard market research procedures were followed to identify an adult to speak to within a household who was aged 16 and over. An adult or a child in the household was selected as the focus of the interview in line with meeting the quota sample.

This methodological approach was compared with a postal survey of a random sample of the general population based on GP lists and was found to yield a sample more representative of age, gender, and minority ethnic communities, be more accurate in assessing the use of different services in the system, more cost effective to undertake, and had fewer missing values.<sup>5</sup>

## Questionnaire

The Urgent Care System Questionnaire was used. This was developed using qualitative research with recent users of an emergency and urgent care system.<sup>6</sup> All respondents were asked a screening question about use of emergency and urgent care and some socio-demographic questions. If they had attempted to contact emergency or urgent care services in the previous 3 months they were asked to complete the remaining parts of the questionnaire about their most recent event. They described their most recent pathway of care, gave details of the first three services in the pathway and then answered a number of satisfaction items about system use.

## Sample size

The expected proportion of system users identified by the population survey was unknown. However there was an expectation that a sample of 1000 members of the general population would identify between 100 and 350 recent system users, offering a large enough dataset for description of system experiences and views.

## Analysis

Data were analysed using SPSS version 12 (IBM, Somers, NY, USA). ANOVA was used for comparison of means and the chi-squared test for comparison of proportions. Confidence intervals (95% CI) were calculated for key statistics.

The study was approved by the local NHS Ethics Committee and gained full approval from local research governance organisations.

## Results

### Response rate

A total of 18 091 telephone calls were made, of which 5215 numbers were unobtainable. 1286 callers were not eligible to complete the survey because the quota had been filled. Of the remaining 11 604 calls, 1000 people completed

the survey, achieving a response rate of 9% (1000/11 604) from people who were contactable and eligible for inclusion.

### Estimate of use of urgent care system

15% (151/1000, 95% CI: 13,17) of the sample reported using emergency and urgent care in the previous 3 months, of which 145 provided details of their experiences and views of the system and form the basis of the following results. This was at the lower end of our expectations and this smaller number of system users had implications for the precision of our estimates and statistical power of any comparisons made. There appeared to be some variation in the proportion of people making use of the emergency and urgent care system in different socio-demographic groups but these were not statistically significant (Table 1).

### System experiences

Just over a half of users entered the system with an illness (56%, 80/144), with less than a fifth (17%, 24/144) reporting an injury as their reason for using the system. The remainder reported having an 'other problem' (28%, 40/144). Although about a third of users (37%, 54/145) contacted a service immediately after

**Table 1** Reported urgent care use in past 3 months by socio-demographic characteristics

Characteristic	%	n	N = 1000	P value
Age				
0–15	○	30	175	0.166
16–44	11	43	380	
45–64	16	44	275	
65+	16	28	170	
Sex				
Male	14	72	500	0.930
Female	15	73	500	
Ethnic group				
White	15	141	958	0.510
Other	10	4	42	
Accommodation type				
Owner	14	114	840	0.059
Rented/other	19	31	160	

thinking the health problem was urgent, 29% (42/145) waited more than a day before making contact with a service. About a quarter (24%, 34/144) of first contacts took place out-of-hours, defined as weekends and before 08:30 and after 18:00 on weekdays in our study.

### Pathways

Patients entered the system through a variety of routes. A daytime GP was the first contact for the majority of system users (59%), with one in ten (10%) users opting to call NHS Direct in the first instance, and 8% opting to make their first contact with the emergency department (Table 2). The majority of system users (68%) had more than one service on their pathway (Table 3), indicating the importance of consid-

ering pathways and systems rather than use of individual services, with 8% contacting four or more services.

The most common service on a pathway was GP 'in hours' (Table 3); 70% of system users made contact with this service. 15% of system users visited an emergency department, and 5% made use of the 999 ambulance service. The most common pathways were GP 'in hours' only (14%, 21/145), and GP 'in hours' to pharmacy (14%, 21/145).

### Reasons for moving along a pathway

Ninety-eight multi service users provided their reasons for moving along a pathway. Multiple reasons could be given and the main reasons for using another service were that a service told the user to do so (88%, 86/98) or that their health problem changed (18%, 18/98). However, people also moved along a pathway because they were unhappy with other services in the system: some were not satisfied with a service (6%, 6/98), wanted another opinion (10%, 10/98), or felt there was no access to another service they wanted (2%, 2/98).

### Satisfaction with the system

System users were asked for their views on the extent to which care was given with sufficient urgency, the number of services they had needed to make contact with, overall care received, and specific aspects of the system (Table 4). Psychometric testing had identified three discrete domains of system satisfaction<sup>7</sup>: *entry into the system*, *patient convenience of the system*, and *progress through the system* (Box 1). Response options were provided on a five point scale ranging from strongly agree to strongly disagree. Domain scores were calculated by scoring individual items from 'strongly agree = 5' through to 'strongly disagree = 1' for positive statements, with reversal for negative statements. The mean score in each domain was calculated so that scores varied between 1 and 5, where 5 indicated most satisfaction.

**Table 2** First contact on a pathway (n = 145)

	First contact % (n)
GP in hours	59 (85)
NHS Direct	10 (14)
Emergency Department	8 (12)
GP out-of-hours	6 (9)
999 ambulance service	4 (6)
Walk-in centre	3 (5)
Pharmacist	3 (5)
Other	6 (9)

**Table 3** Pathway experience (n = 145)

	% (n) of system users
Number of services on a pathway	
1	32 (47)
2	40 (58)
3	19 (28)
4+	8 (12)
Mean (SD)	2.0 (1.1)
Range	1–9 services
Services involved in pathway*	
GP in hours	70 (102)
Emergency Department	14 (21)
NHS Direct	14 (21)
GP out-of-hours	10 (14)
Walk-in Centre	7 (10)
999 ambulance	5 (7)
Minor Injuries Unit	1 (1)

\*Sums to more than 100% because more than one service on pathway

**Table 4** Satisfaction by number of services on the pathway ( $n = 145$ )

	One ( $N = 47$ ) %	Two ( $N = 58$ ) %	Three ( $N = 28$ ) %	Four or more ( $N = 12$ ) %	All ( $N = 145$ ) %	P value
Did you think your case was managed with sufficient urgency?						
Definitely/yes	85 (40)	95 (55)	93 (26)	58 (7)	88 (128)	0.003
Definitely not/no	15 (7)	5 (3)	7 (2)	42 (5)	12 (17)	
How do you feel about the number of services contacted?						
The right number	91.5 (43)	91 (53)	96 (27)	58 (7)	90 (130)	0.002
Too many/Too few	8.5 (4)	9 (5)	4 (1)	42 (5)	10 (15)	
Overall, how would you rate the care you received?						
Excellent/very good	77 (36)	81 (47)	82 (23)	58 (7)	78 (113)	0.342
Good – very poor	23 (11)	19 (11)	18 (5)	42 (5)	22 (32)	
Domains of satisfaction						
Entry, mean 95% CI	4.4 (4.2, 4.63)	4.3 (4.12, 4.52)	4.3 (4.03, 4.61)	3.9 (3.37, 4.46)	4.3 (4.19, 4.44)	0.259
Progress, mean 95% CI	4.1 (3.87, 4.38)	4.2 (4.05, 4.43)	4.2 (3.96, 4.44)	3.6 (2.86, 4.29)	4.1 (4.01, 4.27)	0.076
Patient convenience, mean 95% CI	4.0 (3.77, 4.22)	4.0 (3.85, 4.19)	3.8 (3.5, 4.07)	3.3 (2.78, 3.85)	3.9 (3.79, 4.03)	0.014

The majority of system users felt that their case had been managed with sufficient urgency (90%), that they had contacted the right number of services (88%), and reported their overall care as excellent or very good (78%). The mean score for *patient convenience* (3.9, 95% CI: 3.79, 4.03) was lower than the other domains of *entry into the system* (4.3, 95% CI: 4.19, 4.44), and *progress through the system* (4.1, 95% CI: 4.01, 4.27).

#### Satisfaction by length of pathway

Views about whether their case had been managed with sufficient urgency ( $\chi^2 = 13.825$ , d.f. = 3,  $P = 0.003$ ) and whether they had contacted the right number of services ( $\chi^2 = 14.435$ , d.f. = 3,  $P = 0.002$ ), differed by the number of services they had used in a pathway (Table 4). People who used four or more services reported lower levels of satisfaction. There was also evidence of this for overall care although this was not statistically significant ( $\chi^2 = 3.342$ , d.f. = 3,  $P = 0.342$ ). The score for each system satisfaction domain remained fairly constant when up to three services had been used, falling when four or more services had been contacted (Table 4). This was statistically significant for the domain *patient convenience* [ $(F(3, 141) = 3.681, P = 0.014)$ ].

#### Box 1 Summary of study designs

Entry into the system includes items:

I did not know which service to go to about this problem  
I felt that the first service I tried was the right one to help me

I felt sometimes I had ended up in the wrong place

Progress through the system includes items:

My concerns were taken seriously by everyone  
I was made to feel like I was wasting everyone's time

I had to push to get the help I needed

I moved through the system smoothly

It took too long to get the care needed

I felt that no one took responsibility and sorted out my problem

I saw the right people

I felt I was given the wrong advice

Services did not seem to talk to each other

At each stage I was confident in the advice services gave me

Patient convenience of the system includes:

Travelling to the services I needed was easy

I was told how long I'd have to wait

Services had the information they needed about me

I had to repeat myself too many times

Services understood that I had responsibilities, like my need to look after my family

#### The role of services within the system

The diversity of pathways through a system makes it difficult to undertake any analysis at an individual pathway level in a survey of this size. However, it is possible to study pathways another

way – by considering pathways which involve a particular service. For example, any pathway that includes the emergency department could be compared with any pathway including GP out-of-hours. Formal analysis is problematic because the pathways are not independent of each other. This is further compromised by the small number of users of some services. However, this type of analysis can provide an indicator of services appearing to operate less well than others in the context of a system. We looked at satisfaction with the system when individual services were on a pathway (Fig. 1). Although statistical testing was not possible, we have shown that a change of around 0.3 in a domain score would indicate a 'clinically significant' change in satisfaction.<sup>7</sup> The data indicates that pathways with the GP out-of-hours service and NHS Direct tended to have lower mean scores than other services for all three satisfaction domains. This was particularly the case for *entry into the system*. The emergency department and ambulance service appeared to receive higher mean scores than other services for *entry into the system*. However, numbers were small and these observations should be treated with caution.

## Discussion

This study describes the health seeking behaviour of emergency and urgent care *system* users and, for the first time, patients' experiences and views of the system rather than of the indi-

vidual services within it. Users are not a homogeneous group: they enter the system using different health services, at different times, and with different care needs. We found that the majority of patients experience a *system* of care and reported diminishing satisfaction if more than three services were contacted for a health event.

Use of the emergency and urgent care system was estimated as 15% in a 3 month period during July 2007. In a previous study using population postal surveys to explore the use of unscheduled care, 16% of the population had used unscheduled care in the previous 4 weeks.<sup>4</sup> The focus of our work here was urgent rather than unscheduled care but there is a considerable overlap between these two forms of care and therefore we would have expected higher use in 3 months than we obtained. We validated reported use of key services in the system and our estimates were accurate.<sup>5</sup>

The Healthcare Commission recently acknowledged the need to deliver co-ordinated emergency and urgent care and thereby reduce the problems experienced by patients who are transferred between services.<sup>8</sup> Users of emergency and urgent care tend to be *system* users with two-thirds of users contacting two or more services in the process of obtaining definitive care. Longer pathways may be an indicator of more complex clinical need but they may also be indicative of patient confusion about where to

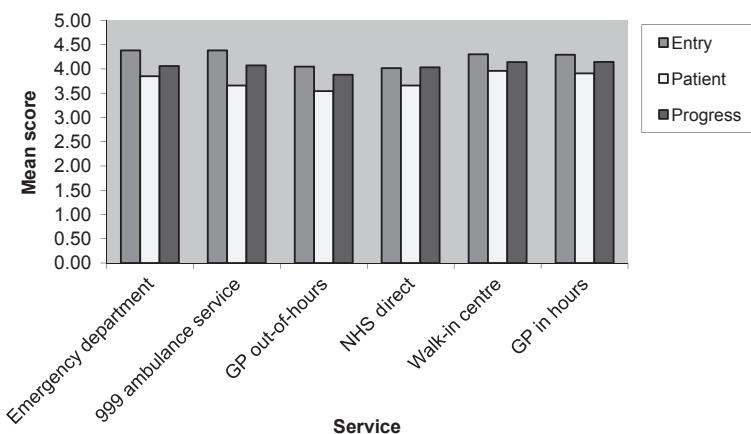


Figure 1 Domains of satisfaction by service on a pathway.

access appropriate services, service availability, and patient dissatisfaction with early services on their pathway.<sup>6</sup> System users in this study exhibited diminishing satisfaction levels when more than three services were used. It is therefore important that services work together as a *system* to reduce pathway length where this is problematic, ensuring efficient patient movement and transfer of information between services.

Policymakers have taken a system perspective of emergency and urgent care,<sup>3</sup> and recommended the establishment of 'networks' of system stakeholders to ensure that services are coordinated within local systems.<sup>9</sup> Although there is considerable variation in the organisation of networks, a common feature of all networks is the focus on a 'whole systems' approach to emergency and urgent care delivery with the network providing the organisational means of introducing change and achieving appropriate policy initiatives. Our previous work confirms that networks are designing and implementing service changes aimed at improving cross boundary working and therefore attempting to improve emergency and urgent care delivery.<sup>10</sup>

The Next Stage Review<sup>11</sup> highlighted the need to reduce the variation in the quality of care provided in the NHS, and acknowledged the rising expectations of NHS users. Improving access to services was an overriding feature of the review and has led to the introduction of a GP-led health centre with extended opening hours in each primary care trust, in addition to 100 new general practices in areas with the poorest provision. We found that patients were satisfied with their entry into the system suggesting that access in this particular system was already good. It would be interesting to undertake further studies to assess if any future improvements in patient satisfaction are evident following the implementation of new access and equity driven changes to the system.

Previous studies looking at patient satisfaction tend to report high levels of patient satisfaction with specific emergency and urgent

health services.<sup>12-15</sup> We found good levels of satisfaction with the system overall. We were also able to identify specific services within the system which appeared to affect overall satisfaction with the system. In the system in this study, the emergency department and 999 ambulance service performed well in terms of entry into the system and progress through it. Patient access to these services does not require an appointment, the services are available 24 h a day 7 days a week, and they are long established services familiar to the population. In addition, both of these services have national targets: emergency departments have a target of 95% of patients spending no longer than 4 h in the department from arrival to discharge, and 999 ambulance services have a target of responding to 75% of life threatening calls within 8 min. Patient perceptions of waiting times impact on satisfaction,<sup>16</sup> so it will be of interest to see how the removal of the emergency department 4 h target impacts on patient satisfaction ([http://www.dh.gov.uk/en/MediaCentre/Pressreleases/DH\\_116863](http://www.dh.gov.uk/en/MediaCentre/Pressreleases/DH_116863), accessed 5 July 2010). In this study there was also some indication that users of the GP out-of-hours service and NHS Direct seemed less satisfied than users of other parts of the system. Both services are accessed via the telephone. There is evidence that some telephone based health services are risk averse.<sup>17,18</sup> In this geographical setting there was also some overlap between the two because NHS Direct provided the call handling for some GP out-of-hours calls. Other studies have found patient satisfaction with GP out-of-hours<sup>14,19</sup> and NHS Direct<sup>15</sup> to be high. However, evidence suggests that whilst GP out-of-hours patients were generally satisfied, those receiving telephone advice are less satisfied compared with those receiving other types of GP out-of-hours contact.<sup>14,20</sup> In addition, both services are available during the traditional out of hours period when other services may not be available, to ensure immediate movement along a pathway. Such a delay in moving through the system could be a factor in reduced satisfaction levels.

### Strengths and limitations

This is the first survey of users of the emergency and urgent care system. The survey was administered during the month of July. System use is likely to fluctuate due to seasonal variation and it is possible that if the survey was administered over the winter months, the use of the system would be higher than reported here.

Although considered low when compared to a postal survey, a response rate of 9% is not untypical when using a quota sampling and random digit dialling approach to telephone survey methodology.<sup>21-23</sup> Using this approach provided a more representative sample in terms of socio-demographic characteristics of the population and accurate estimation of use of services within the system.<sup>5</sup> However there is still likely to be underrepresentation of some groups, for example people with hearing or speech difficulties.

The study area was not selected to be representative of England. However, the socio demographic profile of the area was generally similar to the rest of the country. Even so, there are areas throughout England that have populations with higher levels of deprivation than the area here and patient experiences and views may differ considerably from those found here. Service provision differs throughout the world and it may be that our findings are not transferable to emergency and urgent care systems in other countries. Finally, the size of the sample in terms of numbers of system users was small and thus offered limitations to precision and power. Nonetheless the dataset was large enough to describe key issues about use and views of the system with the small sample size mainly affecting statistical comparisons.

### Implications for practice

Taking both a service specific and a system level approach are essential when trying to improve patient care within the emergency and urgent care system. The service perspective can determine where service improvements can be made, but by its very nature cannot capture the pathway experience of a patient moving between services.

Given the policy focus on improving the integration of services across a patient centred NHS, understanding how the patient negotiates their way through the various emergency and urgent care services, and streamlining this journey, is important. We would argue that taking a broader system perspective is the key starting point in identifying ways to ensure the emergency and urgent care system works for patients.

In a patient centred NHS, patients' perspectives become increasingly important when both developing and monitoring services. This survey could be used in two ways by those organising emergency and urgent care. It could be used when planning emergency and urgent care re-design to detect problems with a system from patients' perspectives. For example, an organisation may identify a large proportion of users with long pathways or a service which appears to perform poorly in the context of the system. The survey could also be used to assess the impact on patients' experiences and views of any changes made to an emergency and urgent care system by undertaking this survey before and after the change. For example we are assessing the impact of the introduction of the '111' non emergency telephone service on system users' experiences and views using the same approach, albeit with a larger sample size.

### Conclusions

This is the first study to describe patients' experiences and views of the emergency and urgent care system, rather than the individual services within it. Our study indicated that the majority of patients experience a system of care rather than single service care. In this particular system there was an indication that longer pathways resulted in lower levels of patient satisfaction.

Health care organisations can undertake similar surveys to identify problems with their system or to assess the impact of changes made to their system.

### Conflict of interest

None.

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## An initiative to provide emergency healthcare for older people in the community: the impact on carers

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# An initiative to provide emergency healthcare for older people in the community: the impact on carers

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## ABSTRACT

The increase in the size and age of the UK older population has had a major effect on emergency services. Many older people will visit the emergency department but not necessarily require significant clinical intervention. The Paramedic Practitioner in Older People's Support (PPOPS) scheme was set up to provide community-based clinical assessment of older patients contacting the emergency services with minor acute conditions as an alternative approach to emergency department transfer. Patient carers were followed-up to evaluate the impact of this scheme when compared with standard transfer to the emergency department. Postal questionnaires, including items on the level of care provided, satisfaction with care received and carer impact, were administered to 561 carers. The overall response rate was 71.5% (401/561). The carers were predominantly female, approximately 60 years of age and family members, with more than three-quarters providing some form of physical care before the patient episode. Overall, carers did report an increase in the level of care provided before episode, significantly more so in the emergency department group ( $p=0.003$ ). These increases related to more input needed in supporting physical activities. The carers in the PPOPS group were more likely to report greater satisfaction with their impression of care and staff attitude and would prefer treatment at home for the patient than those in the emergency department group ( $p<0.001$ ). A minor health event does impact on the life of a carer. However, community-based schemes, such as PPOPS, do not increase the burden on carers and have high levels of satisfaction among this important group of the community.

## BACKGROUND

In recent decades, there has been a considerable shift surrounding the provision of care for older people from institutional to more community-based care, and over the coming decades, it is likely that there will be an increasing reliance on the provision of informal care to help keep older people in the community. Being an informal carer for an older person can be both physically and emotionally demanding and can disrupt aspects of the carers' lives such as social and family life.<sup>1</sup>

It is well known that the older population in the UK is growing.<sup>2</sup> This increase in the size and the age of the older population has had a major effect on emergency services within the UK, and this may provide even greater pressure in the future. Many older people will have illness or injury that will necessitate calling the emergency services, resulting in a visit to the emergency department (ED), but

which require very little clinical intervention. A systematic review of older adults in the ED found that older adults constitute between 12% and 21% of visits to the ED; they are more likely to arrive at the ED by ambulance, when compared with younger people, and more likely to be admitted to hospital from the ED,<sup>3</sup> adding more pressure to already strained healthcare resources. Increasing demand for emergency healthcare has prompted policy makers and healthcare organisations to look at ensuring that services are delivered in an efficient manner and have looked to alternative ways of delivering services closer to home.<sup>4 5</sup> Studies suggest that an alternative approach to a standard emergency ambulance response would have the greatest chance of improving the patient experience and potentially reducing workload on EDs and hospitals if targeted at older patients with minor conditions.<sup>6 7</sup>

Increasing demands on emergency healthcare in the UK were a factor in the redesigning of emergency healthcare provision such as the Paramedic Practitioner in Older People's Support (PPOPS) scheme developed by the South Yorkshire Ambulance Service.<sup>8</sup> The scheme used seven experienced paramedics who completed a training course to enable them to provide community-based clinical assessment of older people contacting the emergency services with minor acute conditions. Initial assessment and, where appropriate, treatment were delivered within the patients' residence by a paramedic practitioner (PP) who responded to these calls in a single-manned vehicle. Where the PP deemed it necessary, patients were transported to the ED for further assessment or treatment. Operational between the hours of 0800 and 2000 each day, the service was activated by a '999' or a general practitioner urgent call to the ambulance control room or by an ambulance crew attending a suitable patient. Referral pathways open to the PPs included the ED, the ear, nose and throat department and community social services. It was unclear how this scheme would impact on the carers of patients being treated by PPs.

The new service was evaluated as a cluster randomised controlled trial.<sup>9</sup> As part of this study, we aimed to describe the impact that a minor acute health episode has on a carer in addition to evaluating the impact on carers of the new PPOPS service (intervention) compared with the standard service of 999 ambulance response and transfer to the local ED (control).

## METHODS

In this study, a *carer* was defined as someone who provided physical or emotional support to the patient and was present at the time of the episode.

## Original article

## Box 1 Study inclusion criteria

Care recipient presented to the ambulance service

- between 1 September 2003 and 26 September 2004;
- between the hours of 0800 and 2000;
- aged  $\geq 60$  years;
- with a call originating from a Sheffield postcode;
- with a presenting complaint that fell within the scope of practice of the PP.

Carers were eligible to participate in the study if the study inclusion criteria were met (box 1). Written consent was obtained after recruitment at the scene of assessment/treatment (intervention) or in the ED (control). Healthcare professionals employed within nursing or residential homes were excluded from this study. The study was approved by the local research ethics committee.

## Survey instruments

During the development of the questionnaire, interviews were undertaken using the questionnaire as a guide, with carers of patients who had recently been assessed by a PP and/or in the ED. This approach was used to ensure that the questionnaire was relevant to carers and their experiences and was straightforward for comprehension and completion. The questionnaire asked carers about the level of care provided by them both before and after the patient episode and about satisfaction with the care received from health services during the episode. Carers were also asked about the impact that the patient episode had had on them, regarding both physical and non-physical aspects of care.

Postal questionnaires were administered to the carer 7 days after the initial patient episode, accompanied by a covering letter and business reply envelope. Non-responders were sent a postal reminder approximately 14 days after the initial mailing.

## ANALYSIS

Data were entered into an Access database and exported to SPSS V12.0 for statistical analysis. The  $\chi^2$  test and independent samples t test were used to detect differences between respondents in the intervention versus the control group. Levels of significance were taken as  $p < 0.05$ .

## RESULTS

## Response rate

Five hundred and sixty-nine carers were identified as eligible and consented to take part in the study. Carers who withdrew

consent or notified us of their care recipient's death were not contacted for follow-up. Of 569 carers, 561 (98.6%) were sent a questionnaire (n=329/561, 58.6% intervention group vs n=232/561, 41.4% control group). The overall response rate was n=401/561 (71.5%): n=234/401, 58.4% in the intervention group versus n=167/401, 41.6% in the control group.

Table 1 describes the carers and the care recipients in each group.

Overall, care recipients in both groups were similar in terms of age, sex and presenting condition. Carers were predominantly female, approximately 60 years of age and family members, with more than 75% providing some form of care before the initial health episode. Significant differences between the two groups were found in relation to the proportion who received care from a family member ( $p=0.001$ ) and the proportion of patients who were subsequently admitted to hospital after their initial health episode ( $p < 0.001$ ): in the intervention group, fewer carers were family members, and fewer recipients of care were admitted to hospital after their care episode.

## Carer satisfaction

Carers in the intervention group experienced assessment by a PP in the home. Carers in the control group experienced care that may have been provided by clinical and non-clinical staff in the ED. Carers were asked to report their satisfaction with the care given at the time of the health episode using a scale that included the responses 'good', 'satisfactory' or 'poor'. These results are shown in table 2.

Where care recipients had received their care at home with a PP, carers were more likely to report greater satisfaction with their impression of care and staff attitude towards the carer than those receiving assessment in the ED ( $p < 0.001$ ). Forty-two per cent (42/100) of the carers in the control group reported that carer facilities in the ED were 'good', with fewer (21%, 21/102) reporting that they were happy with the waiting time in the ED. Another indicator of satisfaction was where carers would prefer care recipients to receive care. The carers were asked if they had a preference for at-home versus at-hospital care. Carers in the intervention group were more likely to express a preference for care to be delivered in the patients' home ( $p < 0.001$ ).

## Impact of the healthcare episode on carers

The carers were asked about the overall impact of the health episode on themselves. They were asked to omit responding to questions on changes in physical care provided if care recipients were in hospital at the time the questionnaire was being completed. Table 3 shows these results.

Overall, the carers did report an increase in the level of care provided after episode, more so if the care recipient had received their initial assessment in the ED ( $p=0.003$ ). These differences

Table 1 Description of carers and care recipients

	Intervention: initial assessment by PP	Control: assessment in the ED	95% CI of difference	p Value
Carer, female, % (n)	75.2 (173/230)	68.9 (111/161)	-15.4 to 2.6	0.171
Care recipient, female, % (n)	70.9 (166/234)	74.9 (125/167)	-5.0 to 12.5	0.387
Carer age, mean (years)	60.83 (n=226)	59.41 (n=160)	-1.4 to 4.2	0.315
Care recipient age, mean (years)	82.84 (n=234)	80.86 (n=167)	0.4 to 3.5	0.012
Provider of care, family member, % (n)	80.3 (184/229)	92.0 (149/162)	4.7 to 18.1	0.001
Care recipient presented after a fall, % (n)	84.6 (198/234)	87.4 (146/167)	-4.3 to 9.5	0.286
Care recipient admitted to hospital after the episode, % (n)	27.4 (64/234)	50.9 (85/167)	13.9 to 32.7	0.000
Carer provided some physical care to care recipient, % (n)	79.6 (179/225)	76.2 (125/164)	-11.9 to 4.9	0.432

**Table 2** Satisfaction with care

	Intervention: assessment by PP, % (n)	Control: assessment in ED, % (n)	95% CI of difference	p Value
Impression of care: 'good'	92.1 (210/228)	61.5 (72/117)	21.2 to 40.1	0.000
Staff attitude towards carer: 'good'	91.8 (180/196)	57.3 (63/110)	24.6 to 44.4	0.000
Preferred location of care: at home	57.6 (125/217)	21.1 (34/161)	26.9 to 45.0	0.000

related to increased input needed in supporting physical activities such as bathing patients ( $p<0.001$ ), cooking for patients ( $p=0.003$ ) and dressing patients ( $p=0.003$ ) among carers in the control group.

Although not statistically significant, more than half of the carers in both groups reported that they had felt anxious about providing care and that there had been a restriction of their work/leisure time since the episode, with a significant minority also reporting that the episode had a negative impact on other family members.

## DISCUSSION

The impact of caring for people with chronic illness and cognitive decline are documented.<sup>10</sup> This study has enabled some insight to be gained into the impact that a minor health episode has on the life of a carer for an older person and provides evidence to suggest that community schemes such as PPOPS, which reduce the requirement for transfer to the ED, do not have a detrimental effect on the lives of carers.

Overall, care recipients in intervention and control groups were similar in terms of age, sex and presenting condition. Most of the care recipients were not admitted to hospital, and so it is likely that their carers took responsibility for providing any post-episode care, with family members at the centre of this.

There is increasing evidence of a policy drive towards the development of new types of responses by emergency care services to provide a more flexible approach to service delivery and using extended practitioner skills.<sup>11</sup> Ambulance services within the UK have investigated the use of alternative responses for non-life-threatening 999 calls through numerous different schemes.<sup>12</sup> An evaluation of the PPOPS scheme found it to be beneficial to patients for shorter episode times, fewer ED attendances and increased patient satisfaction.<sup>9</sup> In addition, the study suggested that appropriately trained paramedics with extended skills treating older people with minor acute condi-

tions in the community are as safe as standard ambulance transfer and treatment within the ED.<sup>13</sup>

One of the risks of increasing the amount of care provided at home for patients is that those responsible for caring for them will bear an increased burden of care as a result of patients being treated and left at home. However, patients experiencing and carers observing clinical assessment in a familiar environment (the home, with a sole practitioner) may feel more confident in asking questions and obtaining advice and influential in decision making, which may be beneficial when providing aftercare. Evidence suggests that some carers report feelings of satisfaction because they themselves are able to provide care and avoid any adverse consequences for the people they are caring for.<sup>14</sup> Findings from a hospital at home study also suggests that caring at home avoids difficulties with hospital visits and that a patient's own satisfaction with home care may positively influence carer perceptions of burden,<sup>15</sup> which may ring true in our study.

Interestingly, the patients who were reported by carers to require increased care after their episode received their treatment in the ED and were more likely to be admitted to hospital. For the care recipient, being treated at home rather than in the ED may help keep the healthcare episode in perspective. It may be the case that they do not perceive the episode as serious and are also able to maintain the level of functioning and, therefore, care received before the health episode rather than placing extra demands on the carer. The increased disruption caused by an older person attending the ED may, in turn, place an increased burden on the carer.

Carers experiencing at-home assessment reported that they preferred this type of patient assessment compared with those receiving care in the ED. This may imply that the carers of those receiving care in the ED were satisfied with their ED experience. However, when asked specifically about their experience, carers of the ED patients were less enthusiastic regarding their impressions of care and the attitude of staff compared with those who experienced care in the home by PPs. Carers in this

**Table 3** Change in level and nature of care provided after health episode

	Intervention: initial assessment by PP, % (n)	Control: assessment in ED, % (n)	95% CI of difference	p Value
Increase in level of care provided	42.3 (69/163)	60.6 (66/109)	6.1 to 29.6	0.003
Non-physical care				
More anxious about being able to provide care	56.5 (109/193)	63.3 (95/150)	-3.6 to 17.0	0.199
More arguments with patient	12.7 (22/173)	11.4 (16/140)	-8.5 to 6.3	0.729
Restriction of work/leisure time	56.0 (89/159)	64.3 (92/143)	-2.7 to 19.1	0.139
Negative impact on other family members	34.4 (54/157)	37.0 (50/135)	-8.3 to 13.6	0.638
Physical care				
More help getting patient to feet	66.7 (74/111)	76.7 (66/86)	-2.7 to 22.1	0.122
More help with bathing	29.8 (31/104)	55.6 (45/81)	11.4 to 38.8	0.000
More help with cooking	41.2 (42/102)	62.8 (54/86)	7.3 to 34.7	0.003
More help with dressing	33.7 (35/104)	55.6 (45/81)	7.5 to 35.2	0.003

## Original article

study were approximately 60 years of age, and evidence suggests that older age groups are more likely to use established and familiar forms of healthcare, such as a general practitioner, rather than more recent additions, such as NHS Direct.<sup>16</sup> This may be because of habit or a sense of security and familiarity in using services that they already have experience of. This is supported by the fact that the carers in the ED group, having had no experience of at-home assessment, were less likely to report this as a favourable option in the future.

The priority of the PPOPS scheme was to improve the care experience of the older person having a minor illness or injury. However, the carer's emotional and physical well-being and acceptance of such schemes must also be considered if they are to continue to play an increasingly crucial role in keeping older people out of the ED and in the community.

## STUDY LIMITATIONS

The data presented in this paper were collected during a randomised controlled trial and was not the primary research objective. This was an opportunistic study based on convenience sampling; hence, no comment can be made on whether the findings are subject to type 2 error owing to the study being inadequately powered. Not all carers were present at the time of the patient episode or chose to take part in the study. We are unclear of how many carers declined to take part and the characteristics of these carers. It is also not clear if the carers who took part were the main carers of the patients, although most of the respondents reported providing some physical care to the patient before the episode, indicating that those who considered themselves as a carer were included.

Carers of nursing/residential home patients were excluded from the analysis because it was felt that the carer burden faced by formal carers was different from that of an informal carer.

Although we highlight these limitations, the statistical significance associated with many of the results reported here suggests that we can be confident in our findings.

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**Competing interests** None.

**Ethics approval** This study was conducted with the approval of the Sheffield local research ethics committee.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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# Safety of Paramedics with Extended Skills

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## Abstract

**Background:** The role of paramedics with extended skills is evolving, enabling them to assess and treat patients in the community. A United Kingdom service led by extended-role paramedic practitioners (PPs) is aimed at managing minor acute illness and injury among older people in the home when appropriate, avoiding unnecessary transfer to the emergency department (ED).

**Objectives:** The objectives were to evaluate the safety of clinical decisions made by PPs operating within the new service.

**Methods:** As part of a cluster-randomized controlled trial, patients aged >60 years contacting the emergency medical services (EMS) with a minor injury or illness were included in the study. The safety of the new PP intervention was compared with standard practice of EMS transfer and ED treatment. Outcomes included unplanned ED attendance within 7 days of the index episode. Clinical records were rated independently by two senior ED clinicians to identify related episodes, avoidable subsequent episodes, and suboptimal care.

**Results:** Of the 2,025 patients included in this analysis, 219 (10.9%) went on to have an unplanned ED attendance within 7 days. Of these, 162 (74.0%) re-presented with a condition related to their index episode. The independent raters agreed on suboptimal care 83.4% of the time. There were 16 agreed upon episodes related to suboptimal care (0.80%). No significant differences were found between intervention and control groups in relation to re-presentation at hospital within 7 days for a related condition or rates of assessed suboptimal care.

**Conclusions:** This study suggests that appropriately trained paramedics with extended skills treating older people with minor acute conditions in the community are as safe as standard EMS transfer and treatment within the ED.

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**Keywords:** paramedics, extended skills, safety

**P**revious studies have shown that paramedic skills can be enhanced to assess and treat certain conditions in the community, such as wounds,<sup>1</sup> cervical spine injury,<sup>2</sup> and stroke.<sup>3</sup> One UK study has evaluated the use of “treat and refer” protocols for minor conditions by ambulance staff.<sup>4</sup> This allowed them to leave patients on-scene with a referral or self-care advice.

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In the United Kingdom, the Department of Health's strategy has been to encourage the increased use of nonmedical staff to carry out assessments and treatments traditionally carried out by doctors.<sup>5</sup> The introduction of new models of care, including further assessment, triage, and treatment skills for paramedics, has been recommended to help manage ever-increasing demands for health care and in particular for emergency and unscheduled care.<sup>5–7</sup> However, current research evidence concerning the safety of these changes in practice is lacking.<sup>4</sup>

Measuring clinical outcomes in emergency medicine is challenging. It is essential that major service change is accompanied by an evaluation of the quality of patient care. As a minimum, care should be as safe as the previously existing service. This means that some measure of the appropriateness and safety of making clinical decisions is necessary. Despite repeated calls for developing methods for assessing appropriateness, there is no agreed upon criterion standard. However, studies using inpatient medical record review to detect

adverse events have devised a two-step method of screening and clinical review of medical records.<sup>8,9</sup> Previous studies have shown that this methodology can be modified to detect adverse events in an emergency department (ED).<sup>10</sup> Although it is widely accepted that definitive outcomes such as survival are valuable, when evaluating non-life-threatening conditions, it is not always an appropriate measure, nor does it tell us anything about the process of care.

In 2003, the South Yorkshire Ambulance Service (SYAS), United Kingdom, developed the Paramedic Practitioner Older People's Support (PPOPS) scheme that set out to deliver patient-centered care to older people calling emergency medical services (EMS) with conditions triaged as not immediately life-threatening. Paramedic practitioners (PPs) were trained in extended skills to assess and, where possible, treat older people in the community. Alternatively, patients were assessed and referred to the ED with a plan for further management.<sup>11</sup> The training program consisted of a 3-week lecture-based program, followed by 45 days of supervised practice in emergency and unscheduled care settings. Seven PPs were selected after open competition within the SYAS to undergo training for this role. Operational between the hours of 08:00 and 20:00 each day, the service was activated by a call to the EMS or by an ambulance crew attending an eligible patient. Ongoing clinical support and continuing professional development for the PPs was provided by medical staff within the ED on both an informal and a formal basis. This article aims to present results related to an evaluation of the safety of the clinical decisions made and appropriateness of care provided by the PP working within the new service.

## METHODS

### Study Design

This study was a part of a cluster-randomized controlled trial evaluating a new EMS service.<sup>12</sup> Local research ethics committee approval was obtained for the study from the UK North Sheffield Research Ethics Committee.

### Study Setting and Population

Patients were eligible for inclusion into the trial if they presented to the EMS with a call originating from a UK Sheffield zip code between September 1, 2003, and September 26, 2004; the call was made between 08:00 and 20:00 hours; the patient was aged 60 years or over; and they had a presenting complaint that fell within the scope of practice of the PPs working within the scheme. Cluster randomization was used for the main trial to reduce the risk of contamination, because it was considered likely that the presence of a PP would influence practice in relation to patients who were eligible to be seen. In addition, cluster randomization allowed for evaluation at the service level rather than the individual patient level. Weeks were randomized using computer random number generation before the start of the study (to allow for scheduling of the PPs) to the PP scheme either being active (intervention) or being inactive (control) when the standard EMS response was

provided (the cluster analysis therefore used "week" as the unit of analysis). This consisted of EMS crew assessment and transport to the nearest ED, unless the patient refused to travel. The roster was concealed from other members of the emergency services. During inactive weeks, the PPs were removed from operational duties within the ambulance service and undertook research duties for the trial.

### Study Protocol

During each week, a PP based in the EMS control room identified calls eligible for PP assessment by presenting complaint and notified a PP in the community (intervention weeks) or in the ED (control weeks). All identified patients were approached face-to-face for written consent to follow-up. Patients who had more than one eligible episode during the trial period were recruited for their first episode only. Subsequent episodes were logged, but patients were not rerecruited for trial purposes.

**Data Collection.** Clinical data, including investigations, treatment, diagnoses, and outcome, relating to the initial patient episode were collected by the research team from the ED, PP, or EMS records. Information about unplanned ED attendances in the 7 days after the index episode was collected from hospital records.

**Assessment of Safety.** The safety of clinical management was assessed using clinical records available for the study from the ED. These were the only clinical records that the study had received ethical approval to review. Retrospective assessment of the records was undertaken where patients had an unplanned ED attendance within 7 days of the index incident. It was felt that most serious conditions missed at the index episode would have been identified within 7 days. Patients who were admitted to the hospital during their initial episode were excluded from the analysis, because it was not possible to distinguish if any subsequent hospital attendance was related to their initial inpatient stay rather than the clinical decision-making during their initial assessment.

Hospital records were checked for subsequent unplanned ED attendance. A hospital attendance was identified as unplanned when patients did not have a planned review indicated in their index incident records or did not have a subsequent "booked" attendance. Records were sought for the first subsequent attendance in the ED after the index incident and examined to determine if the subsequent unplanned attendance was clinically related to the original episode or the subsequent unplanned attendance could have been avoided (i.e., there was suboptimal care provided on the index day).

Records from the index incident and subsequent attendance were first examined by a nonclinical member of the research team to elicit if the subsequent visit to hospital was related to the initial visit. A random sample of these records was checked for agreement by an ED clinician. In cases where it was unclear if the episodes were related, these were passed to the ED clinician for clarification and a final decision.

Notes that indicated an episode was related to the index incident were then checked to assess if the subsequent episode could have been avoided. This was undertaken by two senior ED clinicians (each with more than 10 years' experience working in the ED); the ED clinician leading the research (RC) and an ED clinician independent from the study (IC). Notes were reviewed by both ED clinicians independently to determine if there had been suboptimal care during clinical management at the index incident. As far as possible, the two reviewers were blinded to which service the patients had received during their index assessment by deidentification of patient records. Clinicians reviewing the records were asked to complete a proforma indicating if there had been suboptimal care during the clinical assessment at the index incident and, if so, to provide their reasons for reaching that decision.

### Data Analysis

The level of agreement of RC and IC was assessed using Cohen's kappa statistic. Differences between the intervention and control groups in the percentage of patients reattending the ED (in total and for a condition related to their index incident) and the percentage assessed as a failure of care were compared using a cluster-adjusted chi-square test using "week" as the unit of cluster analysis. The main trial recruited patients over 56 weeks, and therefore the analysis was based on 56 clusters.<sup>13</sup>

## RESULTS

### Main Trial Results<sup>12</sup>

A total of 3,018 older patients calling EMS were included in the trial over a 56-week period ( $n = 1,549$  intervention,  $n = 1,469$  control). Table 1 provides demographic and incident details of the recruited trial patients. There were no differences between recruited patients in the intervention and control groups in terms of patient demographics or presenting complaint. Overall, patients in the intervention group were less likely to attend the ED (relative risk [RR] 0.72, 95% CI = 0.68 to 0.75) or require hospital admis-

sion within 28 days (RR 0.87, 95% CI = 0.81 to 0.94) and experienced a shorter total episode time (235.07 min vs. 277.8 min, 95% CI of difference -59.5 to -25.0). Patients in the intervention group were more likely to report being highly satisfied with their health care episode (RR 1.16, 95% CI = 1.09 to 1.23). There was no statistically significant difference in 28-day mortality (RR 0.87, 95% CI = 0.63 to 1.21).

### Selection of Patients for Safety Study

Of the 3,018 patients recruited into the trial, 993 (32.9%) were admitted to the hospital at the index episode and therefore excluded from this analysis. Of the remaining 2,025 patients, 219 (10.8%) went on to have an unplanned ED attendance in the 7 days after discharge from care at the index episode (Figure 1). Of these, 162 (74.0%) presented with a clinical condition that related to their index episode. For the intervention group, 100 (75.2%) unplanned admissions were related to the index episode, whereas for the control groups the number was 62 (72.1%). The clinical notes were not available for 5 patients; therefore, 157 cases (7.8%) were analyzed. Figure 1 shows the trial profile and distribution of patients for the safety study between intervention and control groups.<sup>14</sup>

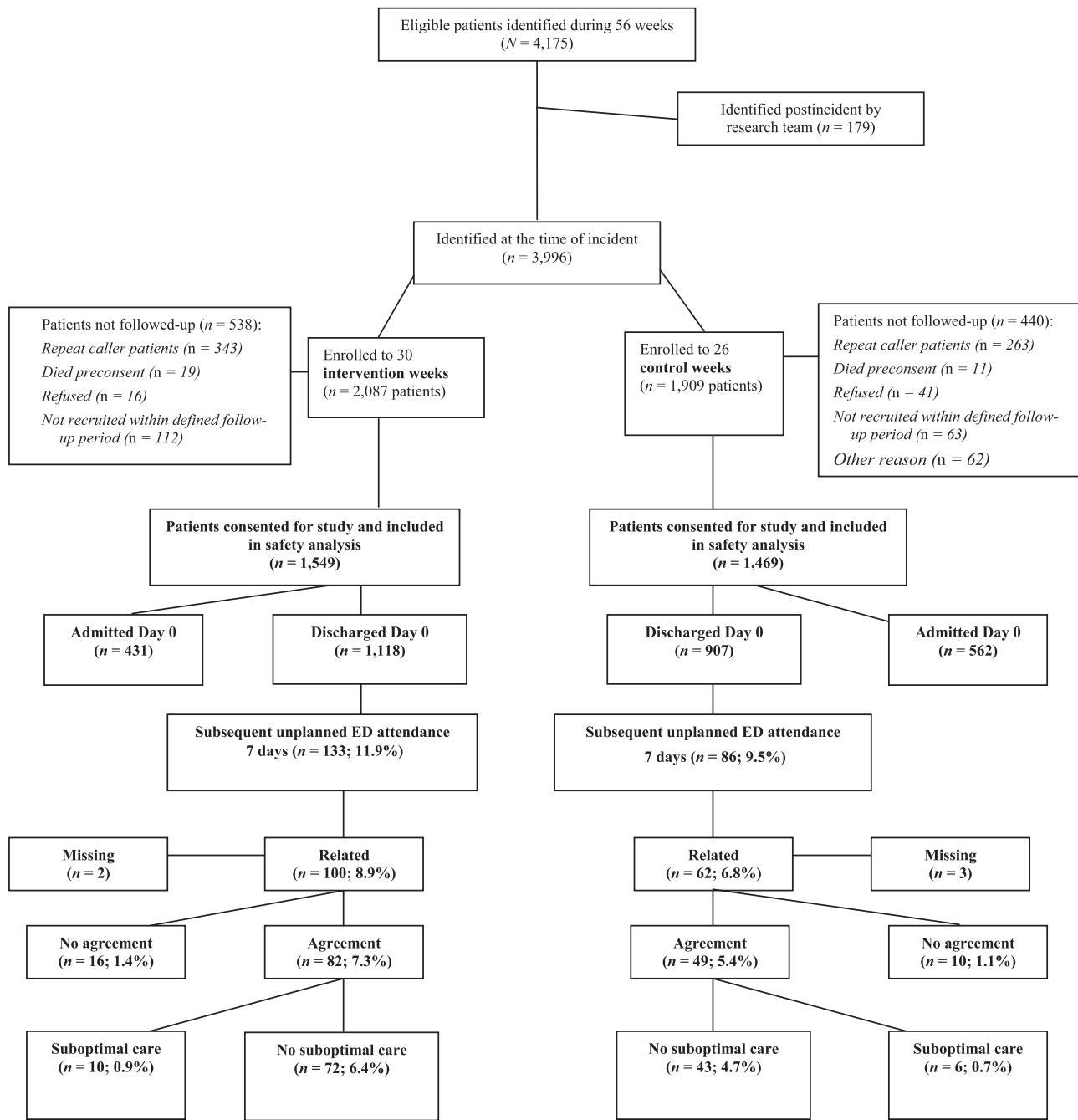
A significant difference was found in the proportion of patients returning as an unplanned ED visit between the intervention and control groups (11.9 and 9.5%, respectively; cluster-adjusted  $\chi^2(1) = 3.89$ ,  $p = 0.049$ ). However, there was no significant difference in the proportion returning with a related condition, either as a proportion of the total included (intervention 8.9% vs. control 6.8%; cluster-adjusted  $\chi^2(1) = 3.76$ ,  $p = 0.052$ ) or as a proportion of returning patients (intervention 75.2% vs. control 72.1%; cluster-adjusted  $\chi^2(1) = 0.21$ ,  $p = 0.64$ ).

### Agreement in Assessment of Care

Records of those patients where the subsequent reattendance was related to the clinical condition on the index attendance were reviewed by the two ED clinicians. Agreement between the two ED clinicians, as to whether or not there was suboptimal care, was found in 131/157 (83.4%) cases (see Table 2). The kappa

**Table 1**  
Baseline Characteristics of Patients Recruited for Main Trial<sup>12</sup>

	Arm of Trial		
	Intervention ( $n = 1,549$ )	Control ( $n = 1,469$ )	Total ( $N = 3,018$ )
Female (%)	1,115 (72.0)	1,077 (73.3)	2,192 (72.6)
Mean age (yr) ( $\pm$ SD)	82.6 (8.3)	82.5 (8.3)	82.6 (8.3)
Living in own home (%)	1,209 (78.1)	1,139 (77.5)	2,348 (77.8)
Incident occurred at usual residence (%)	1,336 (88.4)	1,234 (88.1)	2,579 (88.3)
Presenting complaint			
Fall (%)	1,369 (88.4)	1,313 (89.4)	2,682 (88.9)
Hemorrhage (%)	93 (6.0)	78 (5.3)	171 (5.7)
Acute medical condition (%)	86 (5.6)	78 (5.3)	164 (5.4)
SD = standard deviation.			



**Figure 1.** Trial profile, presented according to CONSORT flow diagram guidelines.<sup>14</sup>

statistic for these data was 0.46, indicating moderate agreement.<sup>15</sup>

In the majority of cases, both clinicians felt that there had not been suboptimal care during the index episode (n = 115). Of the patients included in this analysis, both clinicians agreed that 16/2,025 (0.80%) experienced suboptimal care during their index episode.

#### Assessed Suboptimal Care

As evident in Table 2, there was a difference in judgment of suboptimal care between RC and IC, with the RC judging more cases to have had suboptimal care

during the initial episode, 35 cases versus 22 cases. The assessors were only asked to record the reason for making their decision when they judged care to be suboptimal. Thus, it was not possible to compare reasons for their decisions for all cases, but only for those where both RC and IC concluded there had been suboptimal care.

In total, there were 42 cases where at least one clinician felt there had been suboptimal care. Table 3 shows these by trial arm. There were no significant differences in suboptimal care between intervention and control groups (26.5% vs. 27.1%, respectively; cluster-adjusted  $\chi^2(1) = 0.006$ ,  $p = 0.94$ ).

**Table 2**  
Agreement between Research Clinician (RC) and Independent Clinician (IC) about Suboptimal Care

RC	IC		
	Suboptimal Care	No Suboptimal Care	Total
Suboptimal care	16	19	35
No suboptimal care	7	115	122
Total	23	134	157*

\*Five incomplete records.

**Table 3**  
Suboptimal Care Identified by either Research Clinician (RC) or Independent Clinician (IC) by Trial Arm

	Intervention	Control	Total
Any suboptimal care	26 (26.5)	16 (27.1)	42 (26.8)
No suboptimal care	72 (73.5)	43 (72.9)	115 (73.2)
Total	98 (100.0)	58 (100.0)	157 (100.0)

Data are reported as *n* (%).

## DISCUSSION

This trial evaluated the management of older people calling EMS with minor acute conditions. It compared assessment and treatment by paramedics with extended skills (PPs) with the standard UK EMS response of assessment and transfer to the local ED. The results presented here were for patients who were not admitted to the hospital at their index episode. Of these, there was an overall 10.8% return visit rate at the ED within 7 days of the index episode. Although there were more return visits to the ED in the intervention group patients, the proportion returning with a related condition in both groups was not found to be significantly different. The main trial also found no differences between the two groups in relation to mortality at 28 days.<sup>12</sup>

Two ED clinicians independently reviewed the records of patients returning to the ED with related conditions to assess for suboptimal care at the index episode. Their level of agreement on suboptimal care was moderate. Suboptimal care was judged by either or both clinicians to have occurred for 2.1% of the patients not admitted after their index episode. There were no significant differences between intervention and control groups with respect to suboptimal care.

Although more unplanned return visits were identified in the intervention group (see Figure 1), this did not translate into an increased number of cases identified as having received suboptimal care at the index episode. It may be that more reattendances in this group are to be expected, because the main trial found that there were fewer ED attendances and hospital admissions after the index episode than in the control group (Table 4).

Studies in the United States that have evaluated triage decisions have mainly involved the utilization of

**Table 4**  
Paramedic Practitioner Scope of Practice

Presenting complaint
• Falls
• Lacerations
• Epistaxis
• Minor burns
• Foreign body-ENT
Practical skills
• Local anesthetic techniques
• Wound care and suturing techniques
• Principles of dressings and splinting
Special skills
• Joint examination
• Neurologic, cardiovascular, and respiratory system examination
• ENT examination
• Protocol led dispensing: simple analgesia, antibiotics, tetanus toxoid
• Mobility and social needs assessment
Additional referral and investigation request options
• Radiograph requests
• Referral processes: ED, general practitioner, district nurse, community social services

ED = emergency department; ENT = ear, nose, or throat.

protocols or guidelines. Silvestri et al.<sup>16</sup> also previously concluded that paramedics could not safely determine which patients could be left at home without additional training. They found that subsequent ED attendance and hospital admission rates were unacceptably high in those patients triaged to be left at home. Pointer et al.<sup>17</sup> found that after a brief training session and review of a study workbook, ambulance crews were not able to triage patients accurately, with a 9.6% undertriage rate. Schmidt et al.<sup>18</sup> found a similar 9% undertriage rate. Other U.S. studies have discussed the difficulties in identification by ambulance crews of cases eligible for community treatment.<sup>19,20</sup> In addition, the relative merits of an out-of-hospital practitioner have been discussed with respect to certain geographic areas such as rural locations, in fulfilling a broader public health and primary care outreach role in the local community.<sup>21</sup>

In the United Kingdom, significant changes have occurred with guidance from the National Health Service (NHS) Plan, which outlined greater opportunities for NHS staff to extend their roles.<sup>5-7</sup> It has been suggested that the development of out-of-hospital care pathways may represent a way in which the increasing skills of paramedics could contribute to the ever-increasing demands for emergency health care.

## LIMITATIONS

The approach taken here to evaluate rates of suboptimal care is simple. A more robust approach could have taken the opinion of an expert panel in deciding on failures of care. However, there is growing evidence that a records-review approach is sufficiently accurate in identifying events.<sup>22</sup> Equally, a more thorough investigation of all possible sources of care that patients could access following their initial health care episode (such as primary care services) may have revealed differences between the two groups. However, we have no reason

to suspect that the patients in the two groups would access services differently, and the resources available to the trial and ethical approval received would not allow for clinical records from other services to be subject to this safety review.

This study also only evaluated unplanned return visits within a 7-day period after the initial episode for those patients not initially admitted to the hospital. This cutoff point was felt to be reasonable to capture most of the significant related conditions representing due to possible failures in care. However, it is possible that the results would be altered if a longer time period was assessed.

This trial evaluated the delivery of a community-based service to older people by seven paramedics who have received extended skills training. The paramedics were experienced in their existing role and were selected for extended training through a robust application and interview process. In that sense, they were highly motivated and enthusiastic about the new service they were delivering. The trial was undertaken after the PPs had been operational for about 12 months. The timing of the trial coincided with the availability of funding. The trial was not focused on long-term viability of the service. However, it is possible that patient care may be compromised over time, which could affect the outcomes measured.

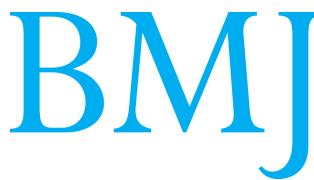
## CONCLUSIONS

These findings indicate that paramedics trained with the appropriate skills working in the community assessing and treating older people with minor acute conditions are doing so in a manner that is at least as safe as the standard care provided by EMS and the ED. Their decisions to treat patients and leave them at home or transfer them to the ED appeared to be, in the most part, safe and did not lead to a significant increase in reattendance rates or death of these patients, representing a very important clinical finding.

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## Effectiveness of paramedic practitioners in attending 999 calls from elderly people in the community: cluster randomised controlled trial

Suzanne Mason, Emma Knowles, Brigitte Colwell, Simon Dixon, Jim Wardrobe, Robert Gorringe, Helen Snooks, Julie Perrin and Jon Nicholl

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## Effectiveness of paramedic practitioners in attending 999 calls from elderly people in the community: cluster randomised controlled trial

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### ABSTRACT

**Objective** To evaluate the benefits of paramedic practitioners assessing and, when possible, treating older people in the community after minor injury or illness. Paramedic practitioners have been trained with extended skills to assess, treat, and discharge older patients with minor acute conditions in the community. **Design** Cluster randomised controlled trial involving 56 clusters. Weeks were randomised to the paramedic practitioner service being active (intervention) or inactive (control) when the standard 999 service was available. **Setting** A large urban area in England. **Participants** 3018 patients aged over 60 who called the emergency services (n=1549 intervention, n=1469 control). **Main outcome measures** Emergency department attendance or hospital admission between 0 and 28 days; interval from time of call to time of discharge; patients' satisfaction with the service received.

**Results** Overall, patients in the intervention group were less likely to attend an emergency department (relative risk 0.72, 95% confidence interval 0.68 to 0.75) or require hospital admission within 28 days (0.87, 0.81 to 0.94) and experienced a shorter total episode time (235 v 278 minutes, 95% confidence interval for difference -60 minutes to -25 minutes). Patients in the intervention group were more likely to report being highly satisfied with their healthcare episode (relative risk 1.16, 1.09 to 1.23). There was no significant difference in 28 day mortality (0.87, 0.63 to 1.21).

**Conclusions** Paramedics with extended skills can provide a clinically effective alternative to standard ambulance transfer and treatment in an emergency department for elderly patients with acute minor conditions.

**Trial registration** ISRCTN27796329.

### INTRODUCTION

The UK Department of Health's strategy has been to encourage the increased use of non-medical staff to carry out assessments and treatments traditionally carried out by doctors.<sup>1</sup> The introduction of new models of care, including further assessment, triage, and

treatment skills for paramedics, has been recommended to help manage ever increasing demands for health care.<sup>2</sup> Current evidence concerning safety, effectiveness, and costs to support these changes in practice, however, is lacking.<sup>3</sup>

Paramedics can be trained to assess and treat or refer patients with a range of conditions such as wounds,<sup>4</sup> hypoglycaemia,<sup>5</sup> falls, and epistaxis.<sup>6</sup> The merits of a pre-hospital practitioner working in certain geographical areas such as rural locations in fulfilling a broader public health and primary care outreach role in the local community have also been discussed.<sup>7</sup> Other authors, however, have cast doubt on the safety, feasibility, and cost effectiveness of paramedics assessing and treating apparently minor problems in the community.<sup>8,9</sup>

Elderly people make 12–21% of visits to emergency departments. Many of them attend after an accident or fall.<sup>10,11</sup> Recently completed studies suggest that an alternative approach to an emergency ambulance response would have the greatest chance of improving patients' experience, as well as potentially helping to reduce demand, if it was targeted at elderly patients with minor complaints.<sup>12,13</sup>

The South Yorkshire Ambulance Service developed the paramedic practitioner in older people's support (PPOPS) scheme to deliver patient centred care to elderly people who call the emergency services with conditions triaged as not immediately life threatening. Practitioners underwent a three week full time theory based course with lectures from specialists in emergency medicine or care of the elderly. They spent a period of 45 days in supervised practice.

Seven experienced paramedics were selected through open competition and completed the training course to enable them to provide community based clinical assessment for patients aged over 60 who contacted the emergency ambulance service with minor acute conditions. Initial assessment and, when appropriate, treatment was delivered within the patient's residence by an individual paramedic practitioner who responded to emergency calls. When the

paramedic practitioner deemed it necessary, patients were transported to an emergency department for further assessment or treatment such as radiological investigation.<sup>14</sup> The box outlines the scope of practice.

Operational between the hours of 8am and 8pm each day, the service was activated by a 999 call or an urgent call from a general practitioner to the ambulance control room or from an ambulance crew attending an eligible patient.

We conducted a cluster randomised controlled trial to evaluate the effectiveness and safety of this new service.

## METHODS

Patients were recruited from 1 September 2003 to 26 September 2004. Patients aged 60 and above were eligible for inclusion when the call to the ambulance service originated from a Sheffield postcode between 8am and 8pm, with a presenting complaint that fell within the scope of practice of the paramedic practitioners. We used cluster randomisation to reduce the risk of contamination (practice in the control group being influenced by the presence of the paramedic practitioner in the community) and to allow service level, rather than individual patient level, evaluation of the intervention. Weeks were randomised before the start of the study (to allow for rostering of the paramedic practitioners) to the paramedic practitioner service being active (intervention) or inactive (control), when the standard 999 service was available. The forward roster was concealed from other members of the emergency services. During inactive weeks, the paramedic practitioners were removed from operational duties

### Scope of practice of paramedic practitioners

#### Presenting complaint

- Falls
- Lacerations
- Epistaxis
- Minor burns
- Foreign body in ear, nose, or throat

#### Practical skills

- Local anaesthetic techniques
- Wound care and suturing techniques
- Principles of dressings and splintage

#### Special skills

- Joint examination
- Examination of neurological, cardiovascular, and respiratory system
- Examination of ear, nose, and throat
- Protocol led dispensing: simple analgesia, antibiotics, tetanus toxoid
- Assessment of mobility and social needs

#### Additional options for referral and requesting investigations

- Requests for radiography
- Referral processes: emergency department, general practitioner, district nurse, community social services

within the ambulance service, and undertook research duties including obtaining patients' consent and follow-up. Randomisation of weeks was undertaken by computer random number generation.

Before the trial we carried out a four week pilot study to establish the number of weeks needed to complete recruitment and to test data collection methods.

Principal outcomes in the study protocol were attendance at emergency department and hospital admission between 0 and 28 days, interval from time of call to time of discharge, and patients' satisfaction with the service received. Secondary outcomes were investigations and treatments prescribed, subsequent use of health services within 28 days, and health status and mortality at 28 days.

#### Recruitment of patients

During each week, a paramedic practitioner based in the ambulance control room identified eligible calls by the presenting complaint and notified a paramedic practitioner in the community (during intervention weeks) or in the emergency department (during control weeks). All identified patients were approached face to face either in the community or in the emergency department for written consent to follow-up. To avoid unnecessary burden on participants, patients who had more than one eligible episode were recruited only for their first episode.

If patients were unable to complete questionnaires—for example, because of cognitive impairment or who were unable to read English—we obtained consent for follow-up by review of clinical records only.

The research team independently checked the ambulance service call database at the end of each month for any additional eligible calls not identified by the paramedic practitioners at the time of the incident. We noted patients identified retrospectively to check for selection bias but did not follow them up.

#### Data collection

##### *Routine data*

The research team used the emergency department or ambulance service records to collect clinical data, including investigations, treatment, diagnoses, and discharge from the service, relating to the initial patient episode. Total episode time was derived by calculating the interval between the time the initial call was received in the ambulance control room to the time that the patient left the emergency department, was admitted to hospital, or, if the patient was discharged into the community, the time that the paramedic practitioner or ambulance crew left the scene. These times therefore included any time spent waiting for assessment in the emergency department.

We used hospital records to collect information about unplanned hospital attendances or admissions within Sheffield in the 28 days after the initial episode and mortality at 28 days. Information relating to subsequent ambulance requests was collected from the local ambulance service. Attendance at an emergency department or hospital admission on day 0 was

combined with any unplanned attendances at an emergency department or admissions in the 28 days that followed to provide information on overall unplanned use of hospital services.

#### Survey of patients

Follow-up was by postal questionnaire at three and 28 days after the incident. The three day questionnaire asked patients about examinations, treatments, advice, and satisfaction with the service they had received. One of our primary outcome measures of patients' satisfaction was based on one question asking about overall satisfaction with the care received during the initial episode and was measured on a five point scale.

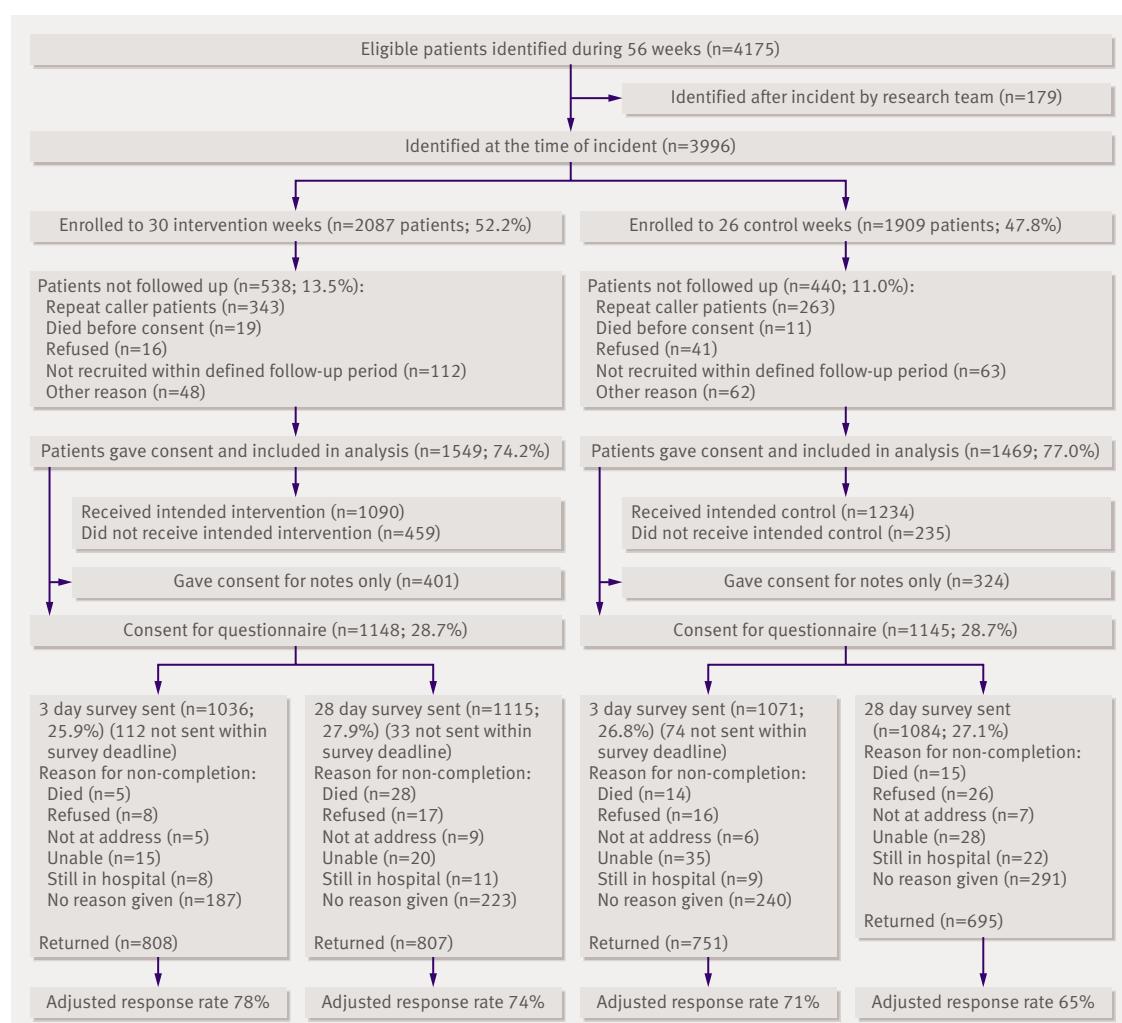
The 28 day questionnaire contained items on subsequent use of health services relating to the incident and perceived change in physical health and included the general health status measure, the EQ-5D.<sup>15</sup>

#### Sample size

We calculated our sample size on the basis of four primary outcomes: satisfaction with care, attendance at

emergency department, hospital admission, and total episode time. The number of primary outcomes reflects the importance of considering different aspects of the impact of service delivery on patients and services in a pragmatic multi-dimensional study. If, as we expected, there is no clustering of data in relation to these outcomes within weeks, we needed about 1100 patients in each group to have an 80% chance of detecting as significant at the 5% level a 5% change in the proportion of "very satisfied" patients. If there is clustering, with an intraclass cluster correlation of 0.02 and 40 patients per cluster, this sample size gives 80% power to detect a difference of 75% versus 82%. If we ignore the clustering, this sample size also gives 80% power to detect a change of 4% in the proportion of patients attending the emergency department, a change of 6% in the proportion of patients admitted, and a difference of 20 minutes in the mean total episode time (assuming an SD of 180 minutes).

On the basis on the results of the four week pilot study, to recruit two sets of 1100 patients to follow-up we randomly allocated 52 weeks, later extended to



Trial profile, presented according to CONSORT flow diagram guidelines<sup>19</sup>

**Table 1** Baseline characteristics of all patients identified

	Identified by paramedic practitioner (n=3996)	Not identified by paramedic practitioner (n=179)	Total (n=4175)
Women (%)	2877 (72.0)	123 (68.7)	3000 (71.9)
Mean (SD) age (years)*	82.52 (8.38)	79.17 (9.14)	82.37 (8.44)
Presented after fall (%)	3529 (88.3)	156 (87.2)	3685 (88.3)

\*P&lt;0.001.

56 weeks, to achieve the sample size. The 56 weeks were randomly allocated in an unrestricted design into control (n=26) and intervention (n=30) weeks.

#### Statistical analysis

Analysis was by randomisation, on an intention to treat basis, irrespective of the actual service received. During the intervention weeks, identified patients should have received an assessment by a paramedic practitioner in the community. This was not always possible if a paramedic practitioner was busy assessing another case when an eligible call was received. Such patients were attended by a standard emergency ambulance response and, according to ambulance service protocols, should have been taken to the emergency department by ambulance unless they refused transport. During the control weeks, identified patients were attended and treated according to standard practice as described above.

SPSSv.12 was used for initial statistical analysis of baseline differences between groups. Data were then exported to STATAv.8.0 to enable analysis at a cluster level.<sup>16</sup> Generalised estimating equations were used to correct the standard errors of control and intervention comparisons for the effect of any correlation within weeks. To allow for a proper estimation of a relative risk, we used a Poisson error distribution with a robust standard error.<sup>17 18</sup>

## RESULTS

#### Trial numbers

During the trial, the paramedic practitioners identified 96% (3996/4175) of all eligible calls at the time of the incident (figure). There were no significant differences in terms of sex and presenting complaint between those identified by the paramedic practitioner and those identified retrospectively by the research team. Those identified by the paramedic practitioner, however, were a little older than those who were not identified (table 1).

Of the 2087 patients identified during the intervention weeks and 1909 during the control weeks, 978 patients did not consent to participate, resulting

in the inclusion of 3018 patients into the trial. The figure shows details of why patients did not take part. There was a small difference in recruitment rates between intervention (74%) and control (77%) weeks, but no significant differences between the baseline demographics of those who were recruited and those who were not (table 2).

During intervention weeks most patients (n=1090) received the intended service (assessment by a paramedic practitioner). The other patients received the standard ambulance response and were (n=390) or were not (n=69) transported to the emergency department. During control weeks all patients received a standard ambulance response (1234), although 235 were not transported to the emergency department.

There were no differences between groups in terms of demographics or presenting complaint (table 3). The presenting complaint was identified as the primary complaint allocated by the call taker to the call that initiated the ambulance response.

#### Primary outcomes

Patients in the intervention group were less likely to have attended an emergency department either during the initial episode (day 0) or in the next 28 days (62.6% v 87.5%, P<0.001). They were also less likely to have required a hospital admission during the same time period (40.4% v 46.5%, P<0.001) (table 4). Respondents in the intervention group were more likely to report being “very satisfied” than those in the control group (85.5% v 73.8%, P<0.001). On average, patients in the intervention group experienced a shorter total episode time by around 42 minutes (235 v 278 minutes, P<0.001).

#### Secondary outcomes

Investigations received by patients during the trial included radiography, blood and urine tests, and electrocardiography. Patients in intervention weeks were less likely to undergo some form of investigation (49.7% v 67.9%, P<0.001) but were more likely to receive some form of treatment, including advice (81.3% v 72.8%, P<0.001).

Patients in the intervention group, however, were more likely to have subsequent unplanned contact with secondary care services, such as the ambulance service, emergency department, or hospital admission, in the 28 days after their initial episode (excluding the initial contact on day 0) (21.3% v 17.6%, P<0.01). They were also less likely to report that their physical health had worsened compared with those in the control group (21.7% v 25.6%, P=0.13). The EQ-5D revealed no significant differences in health outcomes between the two groups.

In the 28 days after their initial episode 142 (4.7%) patients died. There were no significant differences between the two groups in terms of mortality.

## DISCUSSION

This randomised controlled trial evaluated the impact on processes and outcomes of paramedics with

**Table 2** Baseline characteristics of patients identified by paramedic practitioner at time of incident

	Recruited (n=3018)	Not recruited (n=978)	Total (n=3996)
Women (%)	2192 (72.6)	685 (70.0)	2877 (72.0)
Mean (SD) age (years)	82.55 (8.32)	82.43 (8.57)	82.52 (8.38)
Presented after fall (%)	2681 (88.9)	848 (86.7)	3529 (88.3)

**Table 3** | Baseline characteristics of recruited patients. Figures are numbers (percentages) of patients unless stated otherwise

	Intervention (n=1549)	Control (n=1469)	Total (n=3018)
Women	1115 (72.0)	1077 (73.3)	2192 (72.6)
Mean (SD) age (years)	82.6 (8.3)	82.5 (8.3)	82.6 (8.3)
Living in own home	1209 (78.1)	1139 (77.5)	2348 (77.8)
Incident occurred at usual residence	1336 (86.2)	1234 (84.0)	2570 (85.5)
Presenting complaint:			
Fall	1369 (88.4)	1313 (89.4)	2682 (88.9)
Haemorrhage	93 (6.0)	78 (5.3)	171 (5.7)
Acute medical condition	86 (5.6)	78 (5.3)	164 (5.4)

extended skills managing patients with acute minor conditions. The service conveyed considerable benefits for patients and the NHS in terms of reduced overall attendances at an emergency department and hospital, shorter episode times, and higher levels of satisfaction among patients. The new service also seems to be safe in that we identified no differences in mortality or health outcomes after 28 days.

More than a quarter (29.6%, n=459) of patients in the intervention group did not receive the paramedic practitioner service. These patients therefore received the “normal service” but were still included in the “intervention” group as the results were analysed on a pragmatic intention to treat basis, reflecting the outcomes that could be expected were the intervention to be introduced more widely, and standard for the reporting of the results of health services research.<sup>20</sup> This had the effect of considerably weakening the impact of the intervention.

The patients in this trial were categorised as having “minor” conditions at their initial contact with the emergency services. The most common presenting complaint was a fall. Within 28 days of the initial call, however, over 40% had required a hospital admission and 5% had died. This highlights the high risk nature of

this group of patients. None the less, the service seemed to manage the risk appropriately and identify a group of patients who benefited from management at home.

There is increasing strategic pressure within the NHS to extend this type of approach. In 2003, the changing workforce programme, part of the NHS modernisation agency and the Department of Health, set up 17 initial emergency care practitioner pilot sites. These practitioners are mainly paramedics who receive extended skills training, as did the paramedic practitioners in this study (although for a shorter time period). More work is required to enable identification of patients who can benefit from this level of care rather than a full assessment in an emergency department.<sup>21 22</sup> Some emergency care practitioner schemes are targeted at different populations and operate in different ways and thus the results of this study may not be fully transferable.

#### Limitations

This large open pragmatic trial has some limitations because of differences in recruitment of patients and response rates to follow-up questionnaires between the groups. In particular, the measurement of patients’ satisfaction depended on receipt of a three day follow-up questionnaire. Of the 3996 patients randomised to the trial, only 2293 agreed to receive a questionnaire. This was mainly because of the proportion of patients with cognitive impairment, who we excluded from this part of the study. Of the 2293 patients, 1482 (64.6%) responded, which is less than the number we calculated we needed (n=2200). The effects on the primary outcomes (hospital attendance and admission, episode times, and satisfaction), however, were all significant and sufficiently large for us to be confident that the effects are real.

The study was conducted in one large urban area of the UK. Therefore the generalisability of these results

**Table 4** | Primary and secondary outcomes in patients seen by paramedic practitioners or not. Figures are numbers (percentages) unless stated otherwise

	Intervention weeks	Control weeks	Relative risk (95% CI)	P value	ICC
<b>Primary outcomes</b>					
ED attendance 0-28 days (n=3018)	970 (62.6)	1286 (87.5)	0.72 (0.68 to 0.75)	<0.001	0.00
Hospital admission 0-28 days (n=3018)	626 (40.4)	683 (46.5)	0.87 (0.81 to 0.94)	<0.001	0.00
Very satisfied with care (n=1482)	656 (85.5)	528 (73.8)	1.16 (1.09 to 1.23)	<0.001	0.00
Mean (SD) total episode time (min) (n=2968)	235.1 (183.3)	277.8 (182.6)	-42.2 (8.8)* (-59.5 to -25.0)	<0.001	—
<b>Secondary outcomes</b>					
Investigation at initial episode (n=2946)	754 (49.7)	971 (67.9)	0.73 (0.69 to 0.78)	<0.001	0.00
Treatment initial at episode (n=2946)	1233 (81.3)	1040 (72.8)	1.11 (1.06 to 1.17)	<0.001	0.00
Subsequent unplanned contact with secondary care after initial episode (n=3018)	330 (21.3)	259 (17.6)	1.21 (1.06 to 1.38)	<0.01	0.00
Physical health worse (n=1430)	166 (21.7)	170 (25.6)	0.85 (0.69 to 1.05)	0.13	0.00
Mortality at 28 days (n=3018)	68 (4.4)	74 (5.0)	0.87 (0.63 to 1.21)	0.41	0.00

ICC=intraclass correlation; ED=emergency department.

\*Difference (SE).

**WHAT IS ALREADY KNOWN ON THIS TOPIC**

Paramedics can be trained to manage certain medical conditions outside hospital  
They have also been trained to make triage decisions

**WHAT THIS STUDY ADDS**

Paramedics can be trained to see and treat elderly people with acute minor conditions and reduce the need for emergency department attendance by almost 25%  
Patients find this approach more satisfactory than attending the emergency department

should be treated with some caution. We think that there is nothing unique about the patients or presenting complaints. Other health communities could replicate this model, and we are aware of similar services being set up in the UK and abroad. This does require major cooperation between organisations and considerable training and operational costs.

We acknowledge that there may have been some clustering at a practitioner level. Though our study was designed specifically to assess clustering by week, statistical software does not allow for cluster analysis of two variables simultaneously so we could not analyse clustering at a practitioner level.

**Summary**

Paramedics with extended skills working in the community can provide a clinically effective alternative to standard ambulance transfer and treatment in an emergency department for elderly patients with acute minor conditions.

**Contributors:** SM and JW initiated and designed the study. EK oversaw the data collected by BC. JN provided advice on design and statistical advice. SM and EK analysed the data. All authors contributed to the advancement of the project by providing specialist knowledge at study meetings and provided input in re-drafting the manuscript. SM drafted the first manuscript and wrote the final version, which was seen and approved by all of the authors. SM is guarantor.

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Research article

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## Exploring the effect of changes to service provision on the use of unscheduled care in England: population surveys

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### Abstract

**Background:** Unscheduled care is defined here as when someone seeks treatment or advice for a health problem without arranging to do so more than a day in advance. Recent health policy initiatives in England have focused on introducing new services such as NHS Direct and walk in centres into the unscheduled care system. This study used population surveys to explore the effect of these new services on the use of traditional providers of unscheduled care, and to improve understanding of help seeking behaviour within the system of unscheduled care.

**Methods:** Cross-sectional population postal surveys were undertaken annually over the five year period 1998 to 2002 in two geographical areas in England. Each year questionnaires were sent to 5000 members of the general population in each area.

**Results:** The response rate was 69% (33,602/48,883). Over the five year period 16% (5223/33602) 95%CI (15.9 to 16.1) of respondents had an unscheduled episode in the previous four weeks and this remained stable over time ( $p = 0.170$ ). There was an increased use of telephone help lines over the five years, reflecting the change in service provision ( $p = 0.008$ ). However, there was no change in use of traditional services over this time period. Respondents were most likely to seek help from general practitioners (GPs), family and friends, and pharmacists, used by 9.0%, 7.2% and 6.3% respectively of the 5815 respondents in 2002. Most episodes involved contact with a single service only: 7.0% (2363/33,602) of the population had one contact and 2% (662/33602) had three or more contacts per episode. GPs were the most frequent point of first contact with services.

**Conclusion:** Introducing new services to the provision of unscheduled care did not affect the use of traditional services. A large majority of the population continued to turn to their GP for unscheduled health care.

### Background

Much health care use in the United Kingdom (UK) is provided at less than 24 hours notice. This can be termed 'unplanned', 'unscheduled' or 'urgent' care. There are numerous health services which people can access for

unscheduled care in the UK, in particular general practice, the emergency ambulance service, and accident and emergency departments. Concerns have been expressed about the ability of these traditional health services to deal with rising demand for unscheduled care [1]. Recent UK health

policy initiatives have focused on introducing new services into the system of unscheduled care, either to provide care or to guide patients to the most appropriate traditional service. In particular NHS Direct is a 24 hour telephone assessment service offering self care advice and direction of callers to other services, and was introduced in 1998 with expansion to the whole of England in 2000; walk in centres offer treatment and advice from nurses without the need for an appointment, and were introduced in 19 geographical areas in England in 1999 with expansion to 82 centres by 2004. The expectation of policy makers was that these new services would reduce demand for traditional services [2], by facilitating self care, directing people to more appropriate services, and in the case of walk in centres by offering treatment. These changes to service provision even led to the suggestion that general practitioners could no longer claim to be the gatekeepers of the National Health Service (NHS) [3].

Little is known about how people use unscheduled care because research has tended to focus on general use of health services [4] rather than considering scheduled and unscheduled care separately, or research has focused only on unscheduled care used outside normal working hours, [5] when it is used both in and out of hours. The increasing number and type of services offering unscheduled care has led policy makers and researchers to consider the services offering unscheduled care as a system [6]. Routinely available data has been used to explore the dynamics of this system, with the limitation that data are only available for some parts of the system [6]. There has also been an emphasis on health services when informal and self care is a hidden part of the supply of health care which can act as both an alternative and a supplement to formally provided care [7]. A survey of the general population offers an alternative approach to exploring the use of unscheduled care which allows for the study of a wide range of services and informal care.

The aims of this study were to use population surveys to explore the effect of changes to the provision of unscheduled care on the use of a range of traditional services, and to explore the use of unscheduled care to increase understanding of this issue.

## Methods

We undertook population surveys in the three geographical areas where NHS Direct was first introduced in 1998. These areas included a town in the south of England, a mixed urban and rural area in north west England, and a city and rural area in north east England. A walk in centre opened in the third area in 1999/2000. We undertook the first survey in 1998, immediately before the introduction of NHS Direct, and repeated it annually for the five year period up to 2002. In each year, we selected a random

sample of 5,000 individuals (of all ages) from the NHS register in each area. In the city in the north east, the health authority would not provide a population sample, so we selected 3,000 names randomly from the local electoral roll (which includes only those aged 18 and over) and added these to the sample of 2,000 provided by the health authority for the adjacent rural area. The health authority covering the city in the south of England provided a population sample for the first three years only and therefore was excluded from the analysis. The local health authority, or the research team for the electoral roll sample, posted a questionnaire and covering letter, with up to two reminders to non-respondents at fortnightly intervals. The intention was to post the survey in February each year but because of difficulties in obtaining samples this occurred up to June in some years. Guardians and parents were asked to complete questionnaires on behalf of children.

The survey was described as a 'health care survey for the NHS' and remained unchanged throughout the study with the exception of the last page which covered different issues each year. Unscheduled care is defined here as when someone seeks treatment or advice for a health problem without arranging to do so more than a day in advance. Respondents were asked whether they had sought help or advice for a health problem in the previous four weeks, however minor (an 'episode'). Further details were sought for the most recent unscheduled episode. A list of people and services was provided and respondents were asked to report which ones they had contacted. Family and friends were included in this list to gain an understanding of use of informal care. Generic descriptions of services were given such as 'a family doctor (GP) from my usual practice', 'a family doctor (GP) not from my usual practice', 'a hospital accident and emergency department'. NHS Direct was not named because it did not exist in 1998; instead the category 'telephone help line' was used. An open option of 'someone else' was included where respondents could write the names of other professionals or services used; contacts with 'walk in centres' were captured here. Respondents were asked to indicate the order in which they sought help from any services contacted. Age and gender were collected each year, and in 2002 socio-economic variables were also collected. Approval was given by Trent Multi-centre Research Ethics Committee.

## Analysis

We used SPSS to analyse the structured data. A researcher (EK) read and coded responses to the unstructured option of the question about type of service or person contacted; when respondents used the specific name of a service in their locality we identified the service and allocated it to a generic type. We undertook logistic regression to examine

changes over time in the use of different services for unscheduled care. The dependent variable was whether or not members of the general population had contacted a specific person or service for unscheduled care in the previous four weeks. We adjusted for age and gender of respondents, month of response, and geographical area. We adjusted for the month in which the questionnaire was completed by each respondent because the incidence and type of health problems are likely to vary seasonally. Because of the large number of tests undertaken, we used a p-value of 0.01 to indicate statistically significant change.

## Results

### Response rates and description of respondents

The response rate overall was 69% (33,602/48,883) after 'return to senders' were removed from the denominator. Response rates were high in each year of the survey, at just above 70%, which is excellent for a general population survey (Table 1). The exception was 2002 when the response rate fell to 60%. In this year socio-economic questions were included in the questionnaire. These may have been perceived as sensitive questions by potential respondents, causing an adverse effect on the response rate [8]. The characteristics of respondents are shown in Table 1. Over time we noted a decreasing proportion of young adult respondents (18–34 years olds) and an increasing proportion of 35–64 years olds. All analyses of change over time have been adjusted for age and sex.

### Changes in the use of different services for unscheduled care

Taking all years together 37% (12277/33602, 95%CI 36.7, 37.3) of respondents reported that they had sought treatment or advice – scheduled or unscheduled – for any health problem, however minor, in the previous four weeks. 16% (5223/33602, 95% CI 19.1, 16.1) of respondents reported an episode of unscheduled care (Table 2). There was no evidence that these proportions changed over time for seeking any type of care ( $p = 0.519$ ) or for seeking unscheduled care ( $p = 0.170$ ). After adjustments, a statistically significant change was found only in the use of telephone help lines, which was likely to be the increasing use of NHS Direct over this time period. There was no indication of change in use of traditional services or informal care over time, although there was a possible reduction in use of dentists.

People may contact a number of services in any episode of unscheduled care. Given that a role of NHS Direct was to direct people to appropriate services, it is most likely that this new service affected the first contact that people made. Formal care only was studied in terms of which service was contacted first, how many services were contacted in each episode, and the most common pathways

taken through services by the general population. 89% (4665/5223) of respondents who had had an unscheduled episode provided data on the number and order of contacts with services for their most recent unscheduled episode. The increasing use of telephone help lines for first contact was evident but there was no indication of a change in use of traditional services for the first contact (Table 3). Using multinomial regression, with adjustments for potential confounders, the numbers of contacts per episode made in the population did not change over time ( $p = 0.201$ ).

### Exploring the use of unscheduled care

As reported above, 16% of respondents reported using unscheduled care in the previous four weeks. This proportion was not consistent across sub-groups of the population (Table 4). Children under 5 years old were twice as likely to seek unscheduled care as other age groups, women were more likely to seek unscheduled care than men, and people who did not own their own homes were more likely to seek unscheduled care than home owners. There was no difference in help-seeking behaviour by car ownership.

GPs and pharmacists were the commonest sources of help and advice for the most recent unscheduled episode (Table 2). People also made extensive use of informal care from family and friends. A considerable amount of unscheduled care took place in hours as well as out of hours: 49% (2572/5223) of unscheduled episodes occurred in hours, 40% (2086/5223) out of hours, and 11% (565/5223) of respondents did not give a time and day at which help was sought. As reported above, respondents were asked to give further details about contacts with services only. By far the most common first contact was the GP (Table 3). In 2002, when new services had been established for at least 3 years, the five main services contacted first in an episode of unscheduled care were the GP, the pharmacy, emergency care, telephone help lines, and general practice staff (Table 3).

Respondents reported between one and ten contacts with services, although a large majority reported three or fewer. Most episodes involved contact with a single service only: 7.0% (2363/33,602) of the population had one contact, 4.8% (1629/33,602) had two contacts, and 2% (662/33602) had three or more contacts per episode. Over the five year period, of those who had an episode of unscheduled care and reported the number of contacts with services, 51% (2363/4654) had one contact only, 35% (1629/4654) had two contacts, and 14% (662/4654) had three or more contacts during the episode. In 2002, when new services had been established for three years, by far the most common pathway of service use for unscheduled care was one contact with a GP (Table 5). It is interesting

**Table 1: Response rates and description of respondents to the population surveys by year**

	1998		1999		2000		2001		2002		Total		Census 2001 %
	%	n	%	n	%	n	%	n	%	n	%	n	
Responses	74	(7217)	71	(6907)	70	(6777)	70	(6886)	60	(5815)	69	(33,602)	
Sex													
Male	47	(3370)	45	(3095)	46	(3081)	45	(3089)	44	(2552)	45	(15,187)	48
Female	53	(3834)	55	(3800)	54	(3676)	55	(3774)	56	(3241)	55	(18,325)	52
Age													
0-4	4	(284)	4	(243)	4	(240)	4	(253)	4	(207)	4	(1227)	6
5-17	13	(905)	12	(808)	13	(882)	13	(877)	13	(748)	13	(4220)	16
18-34	22	(1566)	21	(1456)	19	(1311)	19	(1271)	17	(970)	20	(6574)	{ 57
35-64	42	(3036)	44	(3019)	44	(2948)	46	(3117)	46	(2669)	44	(14,789)	
65+	20	(1401)	20	(1366)	20	(1363)	20	(1339)	21	(1185)	20	(6654)	20
Home ownership													
Yes	-	-	-	-	-	-	-	-	79	(4494)	79	(4494)	66
No									21	(1229)	21	(1229)	34
Car ownership													
None	-	-	-	-	-	-	-	-	20	(1166)	20	(1166)	40
One									44	(2528)	44	(2528)	42
Two or more									37	(2120)	37	(2120)	18

to note that 'pharmacy only' and 'help line only' were common pathways, indicating the frequency with which the population dealt with minor illness without recourse to traditionally overloaded services. Telephone help lines featured at the start of a number of common pathways.

## Discussion

The distribution of use of unscheduled care and first contact with a service remained relatively stable over time despite the addition of new developments in unscheduled care provision, particularly NHS Direct and walk in centres. Expected reductions in the use of traditional services were not apparent. A study of the impact of NHS Direct on other services, using routine data, found no effect on ambulance services or accident and emergency, and a small effect on out of hours general practice services [9]

which persisted in the longer term [10]. Similarly, walk in centres have been observed to be associated with a small but non-statistically significant reduction in consultations at accident and emergency departments and general practices close to the walk in centres [11], and no change in the daily rate of emergency GP consultations and daily rate of attendances at out of hours services [12]. Taken together, these findings add some weight to the assertion that new developments in the provision of formal health services for unscheduled care have been associated with little or no measurable change in the overall volume of use of other NHS services [13]. This may be explained by the length of time it takes for new services to become established or by the 'low dose' of new services in a large and complex system – only 6% (49/789) of all first contacts with services for unscheduled care in 2002 were with telephone help

**Table 2: Changes in the use of different sources of unscheduled care in the previous four weeks (N = 33602 respondents)**

Service*	1998-2002 % (n)	1998 % (n)	2002 % (n)	Adjusted odds ratios**					P-value***
				1998	1999	2000	2001	2002	
Unscheduled care	15.5 (5223)	16.0 (1155)	15.3 (887)	1	1.06	0.95	0.99	1.05	0.170
Usual GP	9.7 (3245)	10.5 (758)	9.0 (521)	1	0.97	0.92	0.93	0.92	0.763
Family/friends	7.7 (2582)	7.7 (558)	7.2 (421)	1	1.12	1.02	0.99	1.00	0.341
Pharmacist	6.9 (2309)	7.5 (541)	6.3 (368)	1	1.02	0.91	0.92	0.99	0.373
A&E/999 ambulance	1.8 (605)	1.5 (105)	2.1 (120)	1	1.32	1.19	1.12	1.11	0.336
Telephone helpline	1.0 (339)	0.7 (47)	1.5 (88)	1	1.39	1.51	1.78	2.47	0.008
Someone else at GP practice but not a doctor	1.2 (417)	1.2 (89)	1.5 (87)	1	1.02	0.84	0.98	1.27	0.223
Outpatient clinic	1.2 (402)	1.1 (77)	1.3 (74)	1	1.23	1.26	0.85	1.06	0.112
GP, not usual GP	0.9 (296)	0.9 (66)	0.9 (51)	1	1.11	0.76	0.97	1.03	0.380
Hospital admission	0.7 (227)	0.6 (42)	0.8 (49)	1	1.45	1.07	0.94	1.20	0.260
Dentist	0.7 (250)	1.0 (70)	0.7 (42)	1	0.85	0.58	0.59	0.78	0.044
Complementary therapist	0.5 (157)	0.5 (35)	0.4 (22)	1	0.74	1.34	1.09	0.96	0.236
Physiotherapist	0.4 (148)	0.4 (32)	0.4 (21)	1	1.02	0.92	0.90	0.53	0.460
Walk in centre	0.1 (49)	0	0.3 (20)	-	-	1	1.78	1.80	0.293

\*ordered in descending order of number of contacts in population in 2002, only contacts of 20 or more in 2002 reported

\*\* adjusted for age, sex, area, and month of response

\*\*\* for change over time in odds ratios between 1998 and 2002

**Table 3: First contact services\* for unscheduled care in previous four weeks (N = 33602 respondents)**

Service	1998–2002 % (n)	1998 % (n)	2002 % (n)	Adjusted odds ratios					P-value*
				1998	1999	2000	2001	2002	
GP	8.1 (2690)	8.9 (632)	7.5 (427)	1	0.98	0.95	0.95	0.95	0.931
Pharmacist	2.2 (718)	2.3 (162)	2.0 (117)	1	1.15	0.88	1.03	1.13	0.182
A&E/999 ambulance	1.0 (323)	0.9 (67)	0.9 (54)	1	1.18	1.08	0.83	0.85	0.410
Telephone helpline	0.5 (176)	0.2 (16)	0.9 (49)	1	2.30	2.75	3.82	4.85	0.001
Practice staff	0.6 (195)	0.5 (36)	0.8 (45)	1	1.27	0.79	1.19	1.54	0.112
Dentist	0.5 (167)	0.7 (47)	0.5 (27)	1	0.79	0.59	0.67	0.82	0.288
Other	1.2 (385)	1.2 (82)	1.2 (70)	1	0.90	0.99	1.02	0.97	0.947

\* for change over time in odds ratios between 1998 and 2002

+ family and friends not included

lines. Having said this, telephone help lines – likely to be NHS Direct – had become one of the top five providers of formal unscheduled care in England and one of the main five first contact services for unscheduled care.

The proportion of people with an unscheduled care episode in the previous four weeks was estimated to be 16%. The relatively stable rate for contacting services for unscheduled care over time appears to contradict reports of increasing use of services in England. For example the proportion of adults and children who consulted a general practitioner in the previous 14 days increased in Britain from 12% in 1972 to 15% in 2002, with a peak in the mid 1990s [14]. However, the period between 1998 and 2002 was relatively stable compared with earlier time periods. Indeed a study of the emergency care system using routine data showed patient contacts did not

increase for traditional services between 1998 and 2001 [6].

The general population were most likely to turn to general practitioners, pharmacists, and family and friends for unscheduled care and make first contact with a service via GP, pharmacy and emergency services. The dominant role of the general practitioner in the provision of unscheduled care has been shown previously for out of hours services, where 45% of patient contacts were with general practitioners [5]. In another study where unscheduled care was measured in 1996, people were over four times more likely to seek help from a general practitioner than accident and emergency services, a similar ratio to the one found here [15]. Concerns about the loss of the gate-keeper role of the GP in the light of changes to the system of unscheduled care do not seem justified [3].

**Table 4: Proportion of respondents seeking unscheduled care in the previous four weeks, by age, sex, and socio-economic status 1998–2002**

Characteristic of respondents	%	n	N	p-value
Age				0.001
0–4	32	388	1227	
5–17	18	764	4220	
18–34	17	1099	6574	
35–64	14	2011	14789	
65+	14	941	6654	
Sex				0.001
Male	13	2041	15187	
Female	17	3174	18325	
Home				0.001
Owner	14	648	4494	
Not	18	225	1229	
Car				0.302
None	14	165	1166	
One	16	405	2528	
Two+	15	317	2120	
Total	16	5223	33602	

**Table 5: Commonest pathways for service use for unscheduled care in previous four weeks (N = 5723 respondents in 2002)\***

Contact 1	Contact 2	Contact 3	Number on pathway	% of N = 5723 respondents
GP			225	3.9
GP	Pharmacy		85	1.5
Pharmacy			65	1.1
GP	Other		39	0.7
A&E/999/ambulance			33	0.6
Other			29	0.5
Pharmacy	GP		22	0.4
Practice staff			20	0.3
Dentist			18	0.3
Other	GP		13	0.2
Helpline			10	0.2
Pharmacy	GP	Pharmacy	10	0.2
GP	Other	Other	9	0.2
Practice staff	Pharmacy		9	0.2
GP	GP		8	0.1
GP	Practice staff		8	0.1
Helpline	A&E/999/ambulance		7	0.1
Helpline	GP		6	0.1
GP	A&E/999/ambulance		6	0.1
Helpline	GP	Pharmacy	6	0.1
A&E/999/ambulance	Other		5	0.1
Other	Other		5	0.1

\* 5723 of 5815 respondents in 2002 gave details about the number and type of contacts made with services

#### **Strengths and limitations of this study**

Response rates to the surveys were good. No information was available about non-responders, but given that the salience of the topic increases survey response rates [8], people who used services in the previous four weeks were probably more likely to have responded, so it is probable that point estimates of service use are higher among the respondents than in the population at large. Census data for the local authority areas most closely matched to the populations included here showed that the survey respondents were less likely to be male, less likely to be children and young adults, more likely to be middle aged adults, more likely to be home owners and more likely to own two or more cars. It is unclear from this whether we have under or over estimated the use of unscheduled care but it is likely that the accuracy of the estimate is not as good as implied by the 95% confidence interval.

Generic terms for services were used on the questionnaire, such as 'telephone help line' rather than NHS Direct, and use of walk in centres was collected by respondents writing down which 'other service' they had used. This may have affected percentages of people estimated to have contacted these services. Service provision differs in areas of England, and this is highlighted by the fact that only one area of the two areas included here had a walk in centre available. The geographical areas were not selected to be representative of England and in fact both areas were in the north of the country. However, they are standard populations covering a mixture of urban and rural areas and

so the findings are likely to be generalisable to England. The findings may not be transferable to other health care systems.

A key limitation was the lack of control areas where new services were not introduced in this time period. Population surveys of this size are resource intensive and we did not have the resources to extend the survey into control areas. It was also the case that new services were developing at a rapid rate and there was a risk of establishing control areas which would quickly change status. NHS Direct became nationwide in 2000 and further waves of walk in centres were introduced over the time period of this study. It is also the case that changes have continued to occur in the formal provision of services for unscheduled care since 2002. Contacts with NHS Direct have increased from around 6 million calls in 2002 to 7 million calls in 2005 (House of Commons Hansard Written Answers) and changes have occurred to the role of GPs in the provision of out of hours care. Nonetheless the period studied here was one of considerable change, and yet GPs remained a key source of formal unscheduled care.

#### **Conclusion**

Recent changes to the provision of unscheduled care did not affect traditional providers of this care because, although this new service provision dealt with large numbers of people, the contribution was essentially 'low dose' in a large and complex system. General practitioners, pharmacists, and family and friends are key providers of

unscheduled care. The formal provision of unscheduled care is dominated by general practice and this has remained the case even with the recent introduction of new services into the health care system. Patients can take a variety of routes into, and through, services providing unscheduled care. In the future it will be important to explore patient satisfaction, patient outcomes, and impact on other parts of the health care system associated with these different routes through the system of unscheduled care.

### Competing interests

The authors declare that they have no competing interests.

### Authors' contributions

AOC analysed and interpreted the data, and wrote the paper. EK collected the data, and contributed to analysing and interpreting the data and writing the paper. JM and JPN conceived and designed the study, and contributed to analysing and interpreting the data and writing the paper. All authors read and approved the final manuscript. AOC acts as guarantor.

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# ► Equity of access to health care. Evidence from NHS Direct in the UK

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## Summary

In the UK National Health Service (NHS), NHS Direct, the national 24-h telephone helpline, has been available in England and Wales since 2000 and has been termed a 'single gateway' to health care. We conducted a population survey of 15,004 people in areas covered by the service, which included questions about NHS Direct use and socio-economic characteristics. After removing undeliverable questionnaires, the survey response rate was 60% (8750/14,516). In all, a quarter of respondents had ever used NHS Direct (26%, 95% confidence interval 25–27), ranging from 32% of the population in Preston/Chorley (888/2794) and Newcastle and North Tyneside (515/1621) to 17% (2215/8536) in Sheffield, which had introduced the service 20 months later. Logistic regression showed that those from poorer socioeconomic groups or with communication difficulties were less likely to have used the service than others. Overcoming this apparent bias against those likely to have the greatest need is an unsolved problem not confined to telemedicine.

## Introduction

NHS Direct, a national 24-h nurse-led telephone advice service has been available throughout England and Wales since 2000. A Scottish service was launched in 2002. The telephone service is regarded by the government as an important step towards improving access to health care.<sup>1</sup> Since its launch the service has expanded rapidly in scope so that, for example, it now handles less urgent calls made to the emergency ambulance service, and in some areas is the first point of contact for patients seeking out-of-hours primary care.<sup>2</sup> Some people see services such as NHS Direct as having the potential to develop much more broadly, becoming one element of 'interactive gateways to health and other welfare services', or perhaps even becoming the usual first point of contact with the health care system.<sup>3</sup>

However, the National Audit Office has expressed concern that less advantaged social groups, such as ethnic minority groups, people with disabilities and

those on low incomes, may use NHS Direct less than better off groups.<sup>4</sup> To date, the limited evidence about this is contradictory. Two ecological studies, examining call rates according to area deprivation measures, have suggested that use of NHS Direct tends to rise with increasing deprivation, but falls in the most deprived areas.<sup>5,6</sup> Conversely, a postal survey of users of primary care in London concluded that use of NHS Direct was *lower* among ethnic minority and less affluent groups.<sup>7</sup> We therefore analysed data from a large population survey of unplanned use of health care, at an individual level, in order to determine whether there are particular socioeconomic characteristics associated with the use of NHS Direct.

## Methods

In early 2002, we sent a postal survey on health care use to 15,004 people selected at random from health authority registers in three areas of England (Preston/Chorley, Sheffield and Northumbria) and from the electoral roll in a fourth (Newcastle and North Tyneside). Three areas had been served by NHS Direct since March 1998, and the remaining area (Sheffield) since November 1999. A pre-paid return envelope accompanied the postal survey and up to two

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reminders were sent to non-respondents. The health authority samples included all age groups in the population, while the electoral roll sample was limited to those aged 18 years and over. Questionnaires were addressed to the 'parent/guardian of' persons aged 16 years or under.

The survey comprised 16 questions on recent use of unplanned health care. Among these were items asking whether the respondent had ever used NHS Direct, any difficulties with using the telephone, and questions relating to socio economic status. We undertook logistic regression to determine whether use of NHS Direct was associated with respondent characteristics. We adjusted for differences in age group, sex and survey area. Approval for the study was granted by the appropriate ethics committee.

## Results

After removing undeliverable questionnaires, the survey response rate was 60% (8750/14,516). In all, a quarter of respondents had ever used NHS Direct (26%, 95% confidence interval 25–27), ranging from 32% of the population in Preston/Chorley (888/2794) and Newcastle and North Tyneside (515/1621) to 17% (2215/8536) in Sheffield, which had introduced the service 20 months later.

Use of NHS Direct was not uniform across the population, see Table 1. Respondents were less likely than others to have used the service if they were male, aged 65 years or over, lacked access to a car or telephone, did not own their own home, had difficulty in using the telephone due to a hearing problem or because English was not their first language, or had left full-time education at a younger age.

## Discussion

The results of this population survey indicate that, up to four years after its launch, about a quarter of those surveyed had ever used NHS Direct. There were also substantial differences between social groups in their use of NHS Direct. In particular, those from poorer socioeconomic groups or with hearing or English language difficulties were least likely to have used the service, confirming the concerns expressed by the National Audit Office.

In addition, the likelihood of having used NHS Direct was far lower among those aged 65 years or over compared to younger age groups. Other evidence shows that use of NHS Direct by people in this age group is also low compared with their high use of other

first contact care services such as general practice and hospital emergency departments.<sup>8</sup> This has been evident since the introduction of the service although the reasons for this, and indeed whether this should necessarily be viewed as a problem, remain unclear.

Our results are consistent with those from a smaller survey of parents of children under-five years in two north London practices, which also found that use of the service was lower among ethnic minority and lower socioeconomic status groups, and those whose first language was not English.<sup>7</sup> The findings of the two ecological studies seem to contradict these results.<sup>5,6</sup> The difficulties in interpreting ecological study results at individual level are well known, however, and it is possible for both our findings and those from earlier studies to be true.<sup>9</sup> For example, it may be the case that average call rates increase with deprivation due to increasing area-level average disease incidence, but that within any area the better off are more likely to use NHS Direct than are the worse off.

A similar finding, of higher use by the more affluent, has also been observed in the new NHS walk in centres.<sup>10</sup> Such a pattern of use is in marked contrast to that of 'traditional' first contact care services such as hospital emergency departments and general practice in and out-of-hours. Both of these services experience higher, not lower, rates of use by socially deprived population groups,<sup>11–13</sup> which is largely attributable to the poorer health status of such groups and a correspondingly greater need for care.<sup>14,15</sup> Seen in this context, the greater use of both NHS Direct and NHS walk in centres by more socially advantaged groups suggests that these new forms of first contact care may, at least at present, be widening rather than reducing inequality of access to care.

Although our response rate was encouraging for a general population survey, the potential impact of response bias must still be considered. If those least likely to use NHS Direct were also least likely to respond, this bias may have led us to over-estimate absolute levels of use. However, response bias is unlikely to have produced artificial relationships between social characteristics and use.

Since its launch, NHS Direct has made efforts to ensure that the service is accessible to diverse population groups, including people with hearing impairments and those who do not speak English.<sup>4</sup> Nonetheless, it is notable that this service still experiences a pattern of use in which disadvantaged groups are under-represented. Policymakers who envisage NHS Direct or similar services in other countries becoming the 'single gateway' to health care should be wary of assuming that they have necessarily overcome the old problem of ensuring equal access for equal need.<sup>16</sup> Overcoming this apparent bias against

**Table 1** Use of NHS Direct among different groups: (a) all respondents and (b) respondents aged 18 years and over

	Respondents	Ever used NHS Direct		Unadjusted odds ratio* (95% CI)	Adjusted odds ratio** (95% CI)
		n	%		
(a) All respondents	8555	2222	26		
Sex					
Male	3778	787	21	1	
Female	4745	1424	30	1.63 (1.47, 1.80)	
Age (years)					
0–4	347	141	41	1	
5–17	1169	223	19	0.34 (0.27, 0.45)	
18–34	1521	572	38	0.88 (0.69, 1.12)	
35–64	3792	1052	28	0.56 (0.45, 0.70)	
65+	1677	218	13	0.22 (0.17, 0.28)	
Number of cars and vans used by household					
0	1805	352	20	1	1
1	3798	983	26	1.44 (1.26, 1.65)	1.27 (1.09, 1.47)
2+	2948	887	30	1.78 (1.54, 2.04)	1.35 (1.17, 1.58)
Tenure					
Owner	6462	1716	27	1	1
Not owner	1968	480	24	0.89 (0.79, 1.00)	0.93 (0.82, 1.05)
(b) Respondents aged 18 years and over					
Age left education (years)					
12–14	845	112	13	1	1
15–16	3531	906	26	2.26 (1.82, 2.79)	1.12 (0.85, 1.47)
17–18	946	320	34	3.34 (2.63, 4.25)	1.39 (1.03, 1.87)
19+	1302	447	34	3.42 (2.72, 4.30)	1.46 (1.09, 1.96)
Use of telephone at home					
Yes	6825	1811	27	1	1
No	155	30	19	0.66 (0.45, 0.99)	0.58 (0.38, 0.89)
Difficulties reported in using a telephone					
No hearing difficulties	6729	1812	27	1	1
Hearing difficulties	261	30	12	0.35 (0.24, 0.52)	0.65 (0.43, 0.97)
No English language difficulties	6946	1834	26	1	1
English language difficulties	44	8	18	0.62 (0.29, 1.34)	0.49 (0.22, 1.08)

\*The odds ratio is a method of comparing the probability of having a particular characteristic, between two groups. An odds ratio of 1 implies that the characteristic is equally likely in both groups. An odds ratio greater than one implies that the characteristic is more likely in that group.

\*\*Adjusted for differences in age group, sex, and survey area

those likely to have the greatest need is an unsolved problem which will require sustained efforts from new, technologically driven services as well as services based on more traditional models of care.

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## NHS Direct and nurses—opportunity or monotony?

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### Abstract

NHS Direct, the 24-hour telephone helpline providing information and advice about health problems, is available throughout England and Wales. It was envisaged as a nurse-led service presenting a new opportunity for the nursing profession. Free text comments from a postal survey of NHS Direct nurses revealed that a large proportion of nurses were happy with working in NHS Direct, and that it presented some nurses with the opportunity of a new and challenging role. However, a minority found the work monotonous and felt that NHS Direct is likely to face the challenge of staff retention. © 2002 Elsevier Science Ltd. All rights reserved.

**Keywords:** NHS Direct; Job satisfaction; Staff retention; Call centres

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### 1. Introduction

NHS Direct is a 24-hour telephone helpline established to offer “easier and faster advice and information for people about health, illness and the National Health Service so that they are better able to care for themselves and their families” (Department of Health, 1997). It began in three pilot sites in England in 1998 and rapidly expanded to 23 sites covering the population of England and Wales in 2001, with a Scottish version under development. The general public telephone service for information or advice, and nurse advisors use computerised decision support software to triage callers to emergency care, primary care or self-care as necessary. NHS Direct is developing by expanding the range of services to which it relates, for example, the addition of pharmacy as a formal triage option, and strengthening relationships with other health services, for example, by triaging calls on behalf of general practice out-of-hours services (Department of Health, 1999).

#### 1.1. Telephone triage

Telephone triage services have been established in many countries; for example, general practitioners triage patients in their out-of-hours services in Denmark (Christensen and Olesen, 1998). Telephone triage is more commonly carried out by nurses than by doctors; examples include an out-of-hours service in primary care in the United Kingdom (Lattimer et al., 1998), an ophthalmic accident and emergency service in the United Kingdom (Marsden, 2000), an after-hours paediatric service in the United States (Poole et al., 1993), health maintenance organisations in the United States (Geraci and Geraci, 1994), and a province-wide helpline in Canada (Robb, 1996). However, in a global context, NHS Direct is innovative because it has been established on a national basis, is available 24 hours a day, and deals with all health problems in all age groups.

Nurse telephone triage has been shown to be safe and effective in terms of reducing general practitioner workload (Lattimer et al., 1998), and has been received favourably by patients (Poole et al., 1993). These findings have been confirmed for NHS Direct in that it has halted the upward trend in demand for out-of-hours general practice (Munro et al., 2000), it has reduced the

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number of telephone calls for advice being dealt with by accident and emergency clinical staff (Jones and Playforth, 2001) although it has had no effect on attendances to accident and emergency services (Munro et al., 2000), and callers find the advice helpful and reassuring (O'Cathain et al., 2000). Other empirical research on NHS Direct has shown that emergency ambulance calls generated by NHS Direct have similar triage categories on arrival in accident and emergency departments as self-generated calls (Gaffney et al., 2001), and that collaboration between health professionals is an important aspect of this new service (Rosen and Pearce, 2000). However, there are many more aspects of this new service to explore such as the appropriateness of advice given by nurse advisors, the delivery and organisation of the service, and its impact on the nursing profession.

### 1.2. Working in call centres

The organisation of NHS Direct resembles that of commercial call centres, where employees sit at computer terminals, wearing headsets, and take calls from the general public regarding a range of issues. Over the last 10 years there has been a significant growth in commercial call centres for banking and insurance in Europe, America and Australia. This has led researchers to explore whether this new work practice offers employees new opportunities for skill development and career progression, or a highly routinised and de-valued area of work (Belt et al., 2000; Taylor and Bain, 1999; Knights and McCabe, 1998). The positive image of call centre employment is that it is highly skilled knowledge-intensive work. Indeed, employees themselves have recognised the skills needed in taking calls and the opportunities for women to move into managerial roles which was not necessarily available in their previous workplaces (Belt et al., 2000). However, criticism of call centres includes labels of "customer service sweatshops" and "sweatshops of the 21st century", resulting in high staff turnover (Taylor and Bain, 1999). Research has identified specific problems such as workers' desire to have breaks from taking calls due to the repetitiveness of the job, the emphasis on monitoring of calls, the need for more flexible family friendly working hours, and the flat organisational structure leaving little opportunity for promotion (Belt et al., 2000).

From the start, NHS Direct was envisaged as a nurse-led service, and health ministers suggested that this "new career direction" for nurses would encourage those who had left the profession to return (Dobson, 1999). It was seen as an important service development for nurses in a time of nurse shortages and disillusionment amongst nurses in the United Kingdom (Seccombe and Smith, 1997). However, in the light of evidence that new roles in nursing do not necessarily lead to job satisfaction

(Collins et al., 2000) and the problems highlighted around call centre working (Belt et al., 2000), we felt that it was important to study the views of nurses adopting this new role in NHS Direct in the United Kingdom.

## 2. Methods

During June 2000 we approached the 17 NHS Direct sites then in operation in England. In 15 sites, with the help of a local co-ordinator who provided a list of employed nurses, we sent a four page postal questionnaire to each NHS Direct nurse who had been in post for at least 1 month. In the remaining two sites a list of nurses was not provided and the questionnaire was handed out to nurses by managers. Nurses who had not responded after 2 weeks were reminded by the local co-ordinator. A second questionnaire was sent to non-respondents after 4 weeks. The questionnaire was developed following face-to-face meeting with NHS Direct nurses and modified in the light of two pilot studies. The questionnaire covered items on nurses' qualifications and previous clinical experience; reasons for working in NHS Direct; views of training, software, and use of clinical skills; and socio-demographics and disability status. At the end of the questionnaire, nurses were presented with an open question asking them to make any other comments about working for NHS Direct. This paper describes these written comments to give an understanding of how nurses feel about working in this innovative service.

### 2.1. Analysis

We undertook content analysis by reading a sub-set of the comments and devising an initial coding frame to describe the thematic content of the comments (Moser and Kalton, 1979). Two authors (EK and AOC) separately coded a further sub-set of comments and then adapted the coding frame. Both EK and AOC independently applied this final coding frame to all of the nurse comments. Coding disparities between the two coders were resolved by discussion. Each written comment received between one and nine codes. These were entered into SPSS alongside the data from the structured part of the questionnaire. A quantitative approach was taken to describe the views of nurses by counting the number of nurses raising each issue, as undertaken elsewhere in nursing research (Dawe et al., 2002) and social science research (Malin et al., 2001). The codes were grouped into the eight themes presented in this paper, and included all comments made by ten or more nurses. Verbatim comments have been displayed to illustrate the themes. They are accompanied by a unique identifier of the nurse who made the comment,

which is different from the identifier used in the data collection process in order to safeguard confidentiality.

### 3. Results

In all, 981 nurses were employed by NHS Direct sites at the time of the survey, ranging from 27 to 101 at each site. Of those able to reply, 74% (682/920) returned a completed questionnaire. In all, 6% (61/981) of nurses were unable to return a questionnaire during the survey period because 4% (38/981) had left the service, 1% (11/981) were on sick leave and 1% (9/981) were on maternity leave. The response rate by site ranged from 75% to 92%, apart from the two sites in which the questionnaire was handed out by managers: in these the response rates were 46% and 61%.

Written comments were made by 67% (460/682) of the nurses responding to the questionnaire, producing a total of 1525 coded comments. Of these comments, 833 were negative comments about NHS Direct or working at NHS Direct, 559 were positive, and 133 were neutral. However, more nurses were positive than negative about their job satisfaction at NHS Direct. A closed question, which asked nurses about how they felt their job satisfaction had changed since joining NHS Direct, showed that 78% (525/674) of nurses felt that their job satisfaction had improved or remained the same, with one-fifth feeling that it had worsened (see Table 1). The proportion of nurses making written comments varied by their job satisfaction levels, with nurses who felt that their job satisfaction had “not really changed” under-represented in the written comments and those who felt it had “worsened a lot” over-represented in the written comments (see Table 1). It was also the case that some nurses expressed positive views about NHS Direct overall but had negative views about specific aspects of the service.

#### 3.1. Opportunity—a challenging and satisfying job

NHS Direct has been hailed as a great opportunity for nurses (Hansard, 1999). Many nurses made comments in agreement with this vision (196 nurses), for example, expressing their enjoyment of working in NHS Direct (68 nurses), or that they found their job challenging, stimulating and full of opportunity (50 nurses).

NHS Direct has been the best career move I have made. I thoroughly enjoy the job. I feel I have been able to give more nursing care and help more people than I ever could in my role of A&E sister. (nurse 542)

I have found working for NHS Direct to be a stimulating and challenging experience. I now view

Table 1

The extent to which job satisfaction changed since joining NHS Direct by whether nurses made written comments

Job satisfaction	Comment		No comment		Total	
	%	(n)	%	(n)		
Improved a lot	36	(165)	34	(75)	36	(240)
Improved a little	27	(125)	25	(55)	27	(180)
Not really changed	12	(57)	22	(48)	16	(105)
Worsened a little	14	(65)	13	(29)	14	(94)
Worsened a lot	10	(44)	5	(11)	8	(55)
Total	100	(456)	100	(218)	100	(674)

$\chi^2$ : 12.9; df: 4; p: <0.012.

the future with optimism and excitement in meeting the many new challenges and change which I expect to meet in my current position. (nurse 316)

Other nurses went further by expressing a sense of pride at working in a new national service (22 nurses), and feeling that NHS Direct had brought some nurses back into nursing or kept them in nursing when they had been disillusioned, overworked or suffered poor health in their previous nursing job (17 nurses).

NHS Direct is the health care of the future and I feel privileged to be part of that (nurse 852)

I felt NHS hospital nursing had deteriorated to such an extent i.e. staff/equipment shortages, stress, low morale etc. that if I hadn't got a job with NHS Direct I do not think I would be nursing at all now. (nurse 89)

Nurses felt that NHS Direct provided a valuable and accessible service to the public, which some felt was of particular value during the provision of out-of-hours care (45 nurses).

I feel [NHS Direct] is providing an excellent easy access service for patients in relation to all aspects of health care. (nurse 287)

#### 3.2. Gaining and maintaining skills

NHS Direct involves nurses taking calls about a wide range of problems, and using computerised decision support software to offer both triage advice and self care advice to callers. Nurses felt that NHS Direct had broadened their knowledge base beyond the speciality in which they had previously practised, or were currently practising alongside NHS Direct. In addition, they felt that they had acquired a new set of skills in using computers, telephone triage, systematic patient assessment, and communication (51 nurses). Some of them saw working in NHS Direct as a “continuous learning curve” (11 nurses). Conversely, some nurses raised

concerns about the potential for being de-skilled; they were concerned about retaining their clinical skills (26 nurses) and felt that clinical placements in other parts of the NHS would help them to maintain their clinical skills (31 nurses). Nurses who continued to work part-time in other parts of the NHS felt that this helped them to maintain their clinical skills (18 nurses).

Whilst working for NHS Direct I have increased my skills and knowledge, something I worried about when taking this role on. My computer skills have gone from basic to fairly computer literate. My clinical knowledge has been enhanced because of guidelines from [the] clinical steering group and also from colleagues from other specialities. I would like now to have some 'hands on' care. This could be achieved by secondments to clinical areas. (nurse 722)

My clinical skills are compromised and I feel there isn't enough priority placed on clinical placements and flexible working hours. (nurse 608)

A request for clinical placements was expressed as part of a wider concern about a perceived lack of training (80 nurses). Nurses felt that there was a lack of professional development, clinical updating, ongoing training as well as their initial training, study leave, clinical supervision training, computer training, and courses. On the other hand, some nurses felt that they were encouraged to train and learn (30 nurses).

...we were offered clinical updates every 6 months but I've worked 13 months and there are not enough staff to allow us to undertake this, therefore our clinical skills are suffering. We need to be updated in areas we are not expert in i.e. mental health, A&E, paediatrics. (nurse 571)

Have received more training, support and development in two years with NHS Direct than in the other 17 years working with NHS in other roles. (nurse 596)

### 3.3. The new working environment

Individual NHS Direct sites are managed by ambulance services, hospitals, or general practice out-of-hours services. Many sites are located in purpose-built accommodation within business parks or ambulance service headquarters, with some nurses working in satellite areas away from the main site. Nurses usually work in large open plan offices alongside the call operators, sitting at individual computer terminals and wearing telephone headsets. The nurses commented on five aspects of this new working environment—their management, their colleagues, their physical workspace, the computerised decision support software, and their working hours.

#### 3.3.1. Management

Nurses offered both positive (34 nurses) and negative (59 nurses) comments about their management. Positive comments focused on the support nurses are given by their managers, with managers portrayed as good listeners who were encouraging and appreciative of their staff. Negative comments focused on poor communication skills, "dictatorial" management styles, inability to react to change suggested by nurses, and lack of support for staff. In one site, in particular, nurses' comments showed a fear of making mistakes because of the attitude of their management. Some nurses commented that management in sites run by ambulance services were "regimented", reluctant to develop new ways of managing nurses, lacked respect towards nurses, and placed too much emphasis on the quantity rather than the quality of NHS Direct calls. (13 nurses).

Working for NHS Direct has been like a breath of fresh air. Now feel supported and valued. Very pleasant proactive management style. (nurse 529)

The management style is poor, senior members of staff are heard to say things 'see what we have to put up with' when describing nurses. The fear of big brother tapping you on the shoulder are very great. People have made an error and are never seen again. (nurse 315)

#### 3.3.2. Colleagues

Nurses expressed appreciation for the support they received from their colleagues, who were willing to share knowledge from their specialty to broaden the knowledge base of other nurses, and were also supportive after traumatic calls (55 nurses). However, other nurses felt that there was little opportunity to interact with colleagues due to their busy workload and thus their inability to leave their desk, limiting the opportunity to offer support to each other (20 nurses). Of these 20 nurses, 14 felt lonely and isolated, and 11 worked in satellite sites.

Supportive working environment where people are willing to share their knowledge. (nurse 517)

I feel lonely a lot of the time despite being surrounded by people and noise. Too busy to interact much with colleagues. (nurse 288)

#### 3.3.3. Physical workspace

Although nine nurses commented on how comfortable their physical workspace was, 12 nurses felt that their workspace was too small or that a lack of windows made them feel claustrophobic, that their physical fitness might suffer from sitting at a desk for the duration of a shift, and problems with vision might be caused by spending long periods of time in front of a computer.

I am concerned about level of noise and distractibility as staff levels and workload increases as it is projected to do. I feel the premises we occupy are too small. I am concerned about my level of physical fitness so that I am involved in a job that ties me to the spot sitting down. I do not have sufficient desk area and am too close to the computer—which concerns me as a health issue and makes me uncomfortable as it makes it difficult to do other work tasks between calls. (nurse 523)

### 3.3.4. Software

NHS Direct nurses use computerised decision support software to aid their clinical decision-making and the self-care advice they give to callers. When we conducted this research, three different clinical decision support systems were in operation. Thirty-eight nurses commented on the software used at their site, making mainly negative comments (30 nurses). The most frequent concern regarding the software related to the perceived inappropriateness of the guidelines and dispositions advised by the software (15 nurses). Nurses felt that some of the guidelines were out-of-date, did not match the patients' symptoms, did not take chronic conditions into consideration, or gave inadequate rationale for advice given.

The current software unfortunately often states a disposition of 'see GP'—I feel this is often not required and that nurse would often suffice. (nurse 449)

### 3.3.5. Working hours

Some nurses commented that NHS Direct offered flexible working hours and a family friendly environment, where nurses are allowed flexibility to manage their work and home life simultaneously, something which had not been available to them in their previous nursing posts (20 nurses). However, 16 nurses felt that NHS Direct did not offer the flexible working hours they had been led to expect when interviewed for their NHS Direct post. Nurses also had problems with the shift work involved in NHS Direct, feeling that the length of shifts—up to 12 hour long—made it difficult to concentrate and possibly affected the quality of the service they provided (23 nurses). They felt that management did not plan shift rotas effectively, changing shift patterns at late notice and thus putting a strain on nurses' home lives. A further issue was the lack of unsocial hours payment (11 nurses).

Working for NHS Direct allows me to spend quality time with my children and husband through flexible shifts and not being exhausted through the demands on a ward etc. (nurse 062)

The shift patterns are a problem and not really flexible or family friendly as initially advertised when applied for post. I feel shift patterns are a major factor in retaining staff as many have now left due to this problem. (nurse 054)

### 3.4. Getting the right kind of feedback

Nurses reported that they received feedback about NHS Direct from a variety of sources—callers, other health care professionals, and the media. They enjoyed the positive feedback they received from callers, feeling that the majority of callers appreciated the service offered by NHS Direct because of the accessibility of the service, the length of time nurses spent with callers, the explanations given to callers regarding their health problems, and the reassurance offered by the nurse (35 nurses). They felt that this appreciation enhanced their own job satisfaction and made NHS Direct a "worth-while" service. However, nurses felt that feedback from the media and others in the health service was predominantly negative and that they found this negativity stressful and demoralising, especially since they felt that it was based on ignorance rather than experience of the service (38 nurses). Of these nurses, 16 felt that general practitioners were particularly negative towards NHS Direct, and perceived that some general practitioners felt threatened by NHS Direct rather than seeing it as a support for general practice. This led nurses to feel that NHS Direct was being led by politics and general practitioners rather than by nurses (11 nurses). They felt that improving communication between organisations was the key to the credibility of NHS Direct in the eyes of both the media and other health care professionals.

The callers appreciate the time we spend assessing them. Often state that NHS Direct is the first time anyone has bothered to explain their drugs/disease or medical problem. (nurse 285)

NHS Direct has been criticised from several angles i.e. press, other health professionals, etc. without being given a fair go. Everyone wanted instant perfection forgetting that we are all in a new and rapidly evolving workplace. The current NHS is over 50 years old and still hasn't perfected itself. How can we do it in 2 years. This is a brilliant move forward for nurses but we are still being hampered by doctors who want us to keep us in our place. (nurse 132)

Nurses wanted a different kind of feedback—feedback from the services they recommended callers to contact, such as accident and emergency and general practice, about the appropriateness of those referrals and the outcomes of patients (15 nurses). They found

the current lack of feedback in the system frustrating and detrimental to job satisfaction.

I do miss very much any feedback/knowing the outcome. It is quite an isolating role, you don't really know if you're 'getting it right.' (nurse 450)

### 3.5. Stress and pressure

Nurses expressed concerns about the stress and pressures of working in NHS Direct (74 nurses). They felt that the calls-to-staff ratio was high and that this left them stressed and exhausted (40 nurses). This was partly due to the popularity of the service and some site-specific problems with staffing levels. Nurses felt that this situation was restricting their opportunities to undertake clinical placements and additional NHS Direct training, and that such a high workload was detrimental to the quality of the service. In addition, nurses cited factors already reported in this paper as stressors including problems with shiftwork, the pressures from management, and negative feedback from other health care professionals (34 nurses). Two additional stressors were the role of NHS Direct in taking calls on behalf of general practice out-of-hours services, which increased workload and sometimes made callers abusive (14 nurses), and the rapid expansion of NHS Direct (16 nurses). Such stressors led some nurses to comment that low morale was evident in their site (18 nurses).

I find the work extremely stimulating but we are extremely short of nurse advisors in our call centre and the workload is just too much. Management is taking on new projects and areas for us to cope with without increasing the staff. Many of the staff are off sick. (nurse 194)

The service is busy and understaffed. Morale is probably the same as anywhere else in the NHS, which sometimes rubs off, lowering my morale at times. It can be a stressful job, dealing with unfamiliar situations. I expect to work hard, but at times it is so busy that I feel I am not giving the patients the best service available. I do 'enjoy' my work at times-maintaining good morale and team building would improve the working environment (and more staff!) (nurse 308).

However, some nurses felt that their previous job had been stressful and that NHS Direct had provided welcome relief from the pressures of nursing, particularly on hospital wards (15 nurses). In addition, some nurses felt that the rapid rate of expansion of NHS Direct was exciting (10 nurses) and nurses were eager to be part of a changing, developing and evolving service.

I am thoroughly enjoying working for NHS Direct. I am glad to be away from the stress and grind of a

busy A&E department. You can only have one call at a time. I feel much more appreciated. A&E had become a miserable place to work. Too many patients and not enough staff. NHS Direct has been like a breath of fresh air. Working here has made me realise how unhappy at my previous job I was. (nurse 866)

### 3.6. Monotony—battery hen or nurse?

In addition to the stress and pressures of working at NHS Direct, some nurses also found their work monotonous (40 nurses). They felt that the nature of their work was repetitive, answering calls for the duration of a shift, and that the nature of the calls could also be repetitive (16 nurses), particularly during outbreaks of influenza, say. This led to nurses feeling that their work did not present a challenge and was in the most part boring and mundane. They found it difficult to get used to such monotony having previously worked in busy and varied settings, with some nurses admitting that they missed "hands on" nursing (13 nurses). Some nurses who worked part-time at NHS Direct felt that they held a more favourable view of NHS Direct than their full-time colleagues, and that full-time nurses needed a greater variety of work at NHS Direct or clinical placements outside NHS Direct (37 nurses).

This is the most boring job I have ever done. To sit all day answering trivial calls is very boring. Only very few calls are satisfying and interesting.... I will be leaving to start new post very soon. (nurse 620)

Personally I believe to do NHS Direct job as full time and only job is difficult. Shifts can be very demanding when calls constantly come in. Not much time for reading up on areas where not very experienced. Miss having face-to-face contact with callers. Calls can be very routine and repetitive, therefore there is an unstimulating aspect to this job for some nurses at least. (nurse 241)

The monotony of the work was felt so extremely by a small group of nurses that it led them to use strong negative language to describe their work, drawing on analogies such as "supermarket check out girl", "battery hen" and "sweat shop" (11 nurses).

I feel I am just a 'work unit' and may as well be a supermarket checkout girl. This feels like the most dead end job I have ever had. (nurse 179)

...even canteen facilities are very factory like and it still feels as if you are in the call centre... very much like being a battery hen. (nurse 305)

### 3.7. The future for NHS Direct nurses—retention needs attention?

A small number of nurses made comments about the impact of NHS Direct on their careers. Twelve nurses felt that it was good for their careers, that NHS Direct offered the potential for developing skills and therefore for gaining promotion to higher grades, and enabled nurses to have a family and develop their career. However, a similar number of nurses felt that NHS Direct offered no career prospects, lacked a career structure, and offered no scope for promotion (14 nurses).

For the first time in a long time I am enjoying coming to work and feel this position has helped me balance my family life and career which are both very important to me. I was in a position due to grading where my career prospects were very limited. I feel NHS Direct has helped me widen my knowledge and hopefully allow me to re-direct my career when my children are older. NHS Direct was my lifeline! (nurse 508)

Nurses also commented on whether they were planning to remain at NHS Direct or leave. Although 9 nurses said that they intended to stay in NHS Direct, 18 nurses planned to leave, including two nurses who felt that NHS Direct had been beneficial to their career but were leaving to pursue other interests, and two who were prepared to take a drop in salary if necessary. However, more nurses commented that, although they themselves were not planning to leave, NHS Direct would have a problem in retaining staff in the future (31 nurses). They cited the negative issues described above as reasons for nurses leaving and felt that too little attention was paid to issues of retention by NHS Direct management.

I now feel my skills have not been utilised and I am becoming brain dead. I feel the Trust does not get value for money from me and I have sought employment back in the private sector (different hospital) where I have taken a drop in salary but I know I will get job satisfaction. (nurse 669)

Undoubtedly there is a high staff turnover rate in the call centre, main reasons being management style (345).

### 3.8. National service versus local provision

NHS Direct started in three geographical sites, with the number of sites increasing over time in a series of waves. Some nurses felt that there were differences between sites in terms of recruitment, pay, grading, and training, and that standardisation was needed across

sites (26 nurses). Standardisation of pay and grading were mentioned most frequently (17 nurses).

Many of the issues of dissatisfaction experienced by the staff within this site are related to some of the poor employment policies of the host NHS Trust. It would be beneficial if there were national agreements on salaries and terms and conditions as well as training programmes and ongoing support and development. (nurse 750)

These comments prompted us to explore whether the views expressed by nurses were consistent across sites and thus applicable to NHS Direct as a whole, or whether they were site specific and thus amenable to improvement through standardisation of site policies and work practices. There was evidence of differences between sites both from the closed question about job satisfaction ( $\chi^2 = 114$ , df = 48,  $p < 0.0001$ ) and the comments made by nurses. The proportion of nurses stating that their job satisfaction had improved a lot since joining NHS Direct varied between 15% and 64% for different sites. In three sites, at least one-third of nurses felt that their job satisfaction had worsened. These three sites were over-represented in complaints about management, training problems, staffing, shift work, and low morale. However, the problems identified by NHS Direct nurses were by no means isolated to these three sites. For example, monotony was highlighted as an issue for nurses in sites where nurses did not complain excessively about staffing, workload and management problems.

## 4. Discussion

Staffing levels at NHS Direct have to increase significantly to meet the demand for the service in the future (National Audit Office, 2002) and therefore it is imperative that NHS Direct is able to retain nurses. With nurse retention in mind it was encouraging that the picture emerging from NHS Direct nurses was generally one of satisfaction rather than dissatisfaction with their new role. The opportunity promised by NHS Direct had been fulfilled for many nurses, with the majority feeling that their job satisfaction had improved since moving to this new service. However, there was a sizeable proportion—one-fifth—of nurses who felt that their job satisfaction had worsened since joining NHS Direct. They cited problems with lack of on-going training, poor management, long shifts, high workload and monotonous work as reasons for their dissatisfaction. Levels of dissatisfaction seemed higher than for nurses and occupational therapists in other innovative roles, of whom 90% felt that their job satisfaction had been enhanced and only 8% that it had not been enhanced

(Collins et al., 2000). However, these nurses and occupational therapists cited similar reasons to NHS Direct nurses for dissatisfaction—lack of time, stress and pressure of work, and lack of utilisation of skills. In fact, many of the reasons given for dissatisfaction with NHS Direct have been found for nursing in general (Blegan, 1993)—and for work in general (Herzberg, 1966).

Salary and autonomy were two surprising omissions from nurses' comments about NHS Direct. Nurses expressed concerns about *differentials* in salaries across NHS Direct sites but did not comment about the level of their salary. This is likely to be because, in the structured part of the questionnaire, they cited increases in grade and salary as important reasons for joining NHS Direct and did not feel the need to comment further on salary (Morrell et al., 2002). Autonomy is an important component of nurses' job satisfaction (Finn, 2001) and although nurses did not mention autonomy explicitly, there were implicit references to a lack of autonomy within their workplace, for example their comments about autocratic management styles and the feeling that the service is led by politics and general practitioners rather than nurses. However, it may also be that nurses are happy with the degree of autonomy they have and therefore did not make an effort to comment about it. The issue of autonomy in NHS Direct deserves further exploration, particularly around the use of computerised decision support software by nurses.

Stress and retention were perhaps the least surprising issues to emerge, because stress is the strongest correlate of job satisfaction in nursing (Blegan, 1993) and turnover is related to job satisfaction in nursing (Borda and Norman, 1997). Retention is a problem within nursing (Seccombe and Smith, 1997), even for innovative roles, where over a quarter of nurses said they would leave the profession if they could (Collins et al., 2000). Job demands, such as time pressure and problems relating to shift work, have been found to be related to feelings of exhaustion; a lack of job resources, such as task variety, lack of feedback and social support have been found to be related to disengagement from work (Demerouti et al., 2000). There is evidence in our survey that some nurses escaped such stress by joining NHS Direct, and others acquired such stress by joining NHS Direct. It is important to address the issue of stress within nursing in general but it is also important to understand whether the problems of stress and retention are more or less prevalent in NHS Direct than in other nurse specialties.

As mentioned in the introduction, NHS Direct resembles commercial call centres, and the issues faced by nurses in NHS Direct seem similar to those faced by other call centre employees. NHS Direct has presented nurses with new opportunities for skill development and career progression (Belt et al., 2000) but it has also

raised the issues of the potential for de-skilling, and employee feelings of monotony, repetitiveness, stress and high staff turnover, all of which are present in the commercial centres (Knights and McCabe, 1998; Taylor and Bain, 1999). Although routinisation is present within nursing, and is associated with job satisfaction (Blegan, 1993), monotony was felt in the extreme by a minority of nurses who described their roles as equivalent to battery hens or supermarket checkout assistants, imagery similar to that used to describe commercial call centres—"sweatshops of the 21st century" (Taylor and Bain, 1999). Therefore, it is possible that the call centre aspect of NHS Direct may have introduced further stressors into the nursing profession. Although there are many similarities between NHS Direct and commercial call centres, NHS Direct is unique because it employs highly skilled clinical professionals and places them within a highly regimented environment. The effect of this on the nursing profession demands further exploration.

#### 4.1. Limitations

The response rate to the questionnaire was high but it is worth considering the potential effect of sample bias. Nurses might not have responded if they feared for the confidentiality of their responses (especially in the two sites where questionnaires were handed out by managers), or if they were due to leave NHS Direct. In fact, we made no attempt to include nurses who had left NHS Direct. Therefore, the survey may have overestimated levels of satisfaction. However, this was balanced by the fact that nurses who made written comments were more likely to be dissatisfied, and those least likely to comment were those who had little to say because job satisfaction had remained the same as in their previous job. Therefore, the comments were more likely to include the extremes of satisfaction and dissatisfaction. A standardised instrument of nurse job satisfaction was not used so we cannot make inferences about the prevalence of these views amongst NHS Direct nurses, or make comparisons with nurses working in other specialities. However, the paper describes the issues important to nurses in NHS Direct and indicates the minimum level at which they operate.

#### 4.2. Interpretation and implications

NHS Direct has presented many nurses with new and exciting opportunities within the national health service. It is clear from the comments made by nurses that many of them enjoy their work and feel that they are offering a worthwhile service. However, as with any workplace, there are issues which cause dissatisfaction. Although it is not possible to draw conclusions from this survey about the extent to which NHS Direct offers higher or

lower job satisfaction than other nursing specialties, it identifies some issues which, if addressed, might improve job satisfaction. There were differences in satisfaction levels between NHS Direct sites and eliminating these site differences would do much to improve job satisfaction overall in NHS Direct. However, dissatisfaction might also be caused by the inherent nature of call centre work. It appears that the role of nurse advisor is potentially monotonous if nurses spend long shifts answering similar types of telephone calls. This might be relieved by ensuring that nurses have responsibilities and interests other than answering the telephone, for example, that they take regular clinical placements, work part-time, undergo continuing training, or have flexible shift patterns. In addition to relieving boredom, NHS Direct nurses could also retain their clinical skills by rotating to other nursing specialties within the NHS, such as community nursing or A&E nursing. These professionals are in short supply and can choose to leave NHS Direct for other employment opportunities, making it imperative to address staff retention.

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