NIHR Service Delivery and Organisation programme

NHS National Institute for Health Research

SDO Protocol - project ref: 10/1008/10
Version: v1
Date: 06/12/2010

The work, workforce, technology and organisational implications of the '111' single point of access telephone number for urgent (non-emergency) care

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Funder	NIHR SDO programme
NIHR Portfolio number	10885
ISRCTN registration (if applicable)	NA

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1. Aims/Objectives:

The study is designed to examine the work required to deliver the 111 urgent care service, the types of workforce and skill mix required, the interlinked technologies that will be brought into use, and the wider organisational implications of the introduction of this new service. This represents a large scale and fundamental change to the delivery of urgent care. The research questions will be addressed by using a comparative mixed methods case study approach to understand the implications of the following interrelated aspects of the new service to inform the organisation and delivery of modern health services.

RESEARCH QUESTIONS

1. WHAT IS THE WORK OF 111? Describing the everyday work tasks and activities to understand the work involved in delivering the services and the integration of multiple providers implicated in 111; exploring information sharing and knowledge across the full range of services integrated by 111 to examine how trust and knowledge transfer varies;
2. WHAT IS THE 111 WORKFORCE? Looking in detail at the workers to examine the experience and skill sets of this new workforce, identifying education and training needs and how this workforce might be developed and maintained, describing role differentiation and division of labour (e.g. how tasks are divided formally and informally between staff);
3. WHAT IS THE TECHNOLOGY FOR 111? Exploring the technologies underpinning the service to understand the complex socio-technical interaction required to bring them into use, looking at configuration, anticipated and actual use of these technologies (both computer decision support systems and wider implicated information and communication technologies).
4. WHAT IS THE ORGANISATIONAL CONTEXT OF 111? To situate questions 1-3 we will examine the organisational effort and environment, to compare and describe structures, practices and service integration within the wider political, sectoral and organisational settings (within 111 sites and the wider network of providers).

2. Background:

The English NHS provides a wide range of services including GP out-of-hours services, minor injuries units, NHS Walk in centres and NHS Direct. The Next Stage Review (Department of Health 2008) proposed the development of a 3 digit telephone number (111) to provide a single point of access to urgent care services to reduce public confusion about where to seek help, to coordinate and integrate services and improve access. The need to integrate urgent care services has long been recognised (Department of Health 2000; 2008). In 2009 the Department of Health (DH) announced a 1 year pilot of a 111 service

as a precursor to a national single point of access service which would provide a central hub to integrate and co-ordinate care. The White paper 'Equity and excellence: Liberating the NHS', in 2010, suggested a continued commitment to developing an integrated 24/7 urgent care service incorporating GP out-of-hours services across England. The potential roll out of 111 services nationally would represent a significant change to service provision that requires long term commitment and substantial financial investment at a time when there is pressure on public funding. The DH commissioned a NIHR Policy Research Programme (PRP) funded evaluation of four pilot 111 pilots (University of Sheffield, 01/03/2010-30/11/2011) to examine activity (implementation, service use, call and referral patterns and impact on local health economy) and patients' perspectives (satisfaction, experience and demand). Our project is deliberately designed to complement this work by answering key questions about the work and workforce, and the technological and organisational context underpinning the new 111 service.

The use of new technologies like Computer Decision Support Systems (CDSS) to support new services is consistent with the NHS mission to use appropriate technology to benefit patient care and improve service delivery, but the history of the implementation of new technologies in health care demonstrates that the deployment is not always successful. Previous research shows the importance of attending not only to technological feasibility but also to the complex, dynamic processes through which technologies come into use or, more often, fail to do so (Berg 2001; May et al 2005; Heeks 2006; Haux 2006). By focussing on work, workforce, technologies and organisation our study will capture these important processes.

The CDSS NHS Pathways has been identified as an underpinning technology to support the 111 service. This CDSS was the focus of our previous NIHR SDO study (08/1819/217, completed August 2010) and has shed light on the 'work' and effort required to bring a CDSS into successful use in a similar service setting. We have demonstrated the complex relationship of expertise and experience required for using CDSS on a day to day basis. This project aims to examine the work required to deliver 111 nationally, the different types of workforce implicated (clinical and non-clinical), the deployment of computer technologies to support this service and the particular organisational settings and configurations surrounding it.

3. Need:

HEALTH NEED: By informing the evaluation of the new service and filling the research gaps by explaining the work, workforce, organisation and technology of 111 we will enable a more holistic understanding of this new way of delivering and accessing urgent care and see how it contributes to health care. This project will inform the work, organisation and delivery of urgent care services to the whole population, and will also speak to the wider issues surrounding the implementation and use of technologies like CDSS to meet health needs.
SUSTAINED INTEREST AND INTENT: The roll out of 111 services nationally represents a significant change to service provision that requires long term

commitment and substantial financial investment at a time when there is pressure on public funding. The use of CDSS to support new services is consistent with the NHS mission to use appropriate technology to benefit patient care and improve service delivery. However the history of the implementation of new technologies in health care demonstrates that the deployment is not always successful. It is therefore imperative that such technologies are thoroughly understood.
GENERATING NEW KNOWLEDGE: We do not know enough about the work and organisation of this kind of service at national scale nor do we fully understand how new workforce and new technologies are brought into use and sustained. Our current project has shed light on the 'work' and effort required to bring a CDSS into successful use in a similar service setting, showing the potential for CDSS to intensify the work of call-handling, and demonstrating the complex relationship of expertise and experience required for using CDSS on a day to day basis. No research has been commissioned to examine the work required to deliver 111, the different types of workforce implicated in this service, the particular organisational settings and configurations surrounding it or the deployment of computer technologies to support this new service. It is essential to fill these knowledge gaps to ensure effective and efficient roll out of this particular service, and to inform wider debates about service development and technologies in use.

4. Methods:

a. Setting
Four initial pilot sites were commissioned by the Department of Health and the 111 service was launched in the pilot sites in 2010. In addition, several 'second wave' sites are due to ‘go live’ later in 2011. Four sites will be chosen from on the basis of including a range of different organisational models, service providers and geographical areas.

b. Design and data collection
We will use both quantitative and qualitative methods that include: 1) Rapid ethnographic observation and 2) Focus groups. 3) A survey of staff. 4) Integrative multidisciplinary workshop.

Ethnographic case study
Rapid ethnographic (observational and informal interview) case studies will provide a detailed description of the work, workforce, organisational context and the technologies used and will address all four research questions. Our previous research will inform this part of the study and we will use a similar approach to undertaking observation in this study. An orientation visit by two or more research team members will be undertaken at the outset of the study to outline the project and talk with key management personnel, and to make initial contact with local service managers in order to negotiate access to the study sites and the staff. Observation of call handling and the wider integration of services will be undertaken (e.g. call centres, urgent care centres) to look at interactions between staff, technologies in use, and the settings, including networks and relationships, routines, everyday processes, and workload and content. Observation at each site will be designed to capture activity at

different times of day/days of the week, including day shifts, evenings, nights and weekends, conducted by the research fellow and the named investigators. The total number of observation hours at each site will vary depending on the complexity of local organisation and work practices. A maximum of two researchers will undertake observation at any one time but typically only one researcher will be present.

The observation will consist of two main components. Firstly, the researchers will closely observe what staff do in their everyday work, and how they interact with each other and the technology. The researcher, with permission, will typically focus on one member of staff (sometimes this is called shadowing) or will watch a team (e.g. discussing a problem with the software) working. The researcher may discuss their work informally or join in conversation. In our previous study, typically the researcher sat alongside 3-4 different staff (a period of two hours per staff member) on a given shift to observe what they do – and during quieter shifts engaged the call-handler about their work, if it was appropriate to do so (e.g. if the call handler was not busy; if the call-handler wanted to talk). The research team are mindful that on busy shifts there is not always the opportunity to engage staff in conversation. Care will be taken to ensure that the researcher does not disrupt the productivity and work patterns of staff in any way. Secondly, because there is typically some opportunity to talk informally with staff at quieter periods, these informal conservations will augment and help to understand what is being observed. The purpose of these conversations are i) to enable the researcher to check with, and clarify with staff that they have accurately understood / interpret what they have observed ii) to understand the nature of the everyday 111 work – this will be particularly focused on their use of NHS Pathways.

Observation will be performed without audio or video recording. Detailed notes will be taken during the observation period and transcribed soon afterwards. Fieldnotes will describe the everyday work of the staff involved in delivering 111, as well as opinions about 111, and any other relevant background information. Notes will for the most part, be taken overtly in the setting, forming an outline from which more detailed notes will be written up later.

Focus groups

Up to 8 focus groups (2-3 per site) will be undertaken with staff and key stakeholders from across the 111 service network. Focus groups will particularly address research questions 2 and 3, examining how work is distributed across the integrated service (division of labour), the role of technology, barriers and facilitators of 111 for work, workforce and organisation. Focus group interviews explicitly use group interactions as part of the data collection process; we would expect the group to consist of about 8 individuals. The precise focus of the focus groups will be further informed by the observational work. A topic guide has been prepared for facilitating the focus groups but will be flexible to allow exploration of issues that might arise from the participants. Potential participants (staff and key stakeholders) will be identified after undertaking some periods of observation at the sites. They will reflect a range of staff in different job roles and from different parts of the integrated care network, to fully understand work and organisation across the

urgent care system. We would expect each focus group to last approximately two hours. Two members of the research team will conduct the focus group (one as moderator / facilitator, one as an observer / assistant).

Survey
A questionnaire about information sharing and knowledge, particularly addressing research questions 1 and 4, will be administered across the multiple services and range of staff implicated in 111, to understand trust and knowledge transfer in integrated services. This work will build on questionnaire development and analyses conducted for the previous SDO project, which was designed to capture two key aspects relating to staff; (i) the skills, experience and training of call handlers using NHS Pathways and (ii) call handlers trust in NHS Pathways and the work system in which it is embedded. This project will aim to develop these questionnaires to examine communication, knowledge-sharing and decision-making across the services integrated in 111. The questionnaire will consist of on-line questionnaires if possible, although our previous research has indicated that there may be practical difficulties in administering in this way (for example, some staff may not be allowed or not be able to access the internet whilst they are at work). In the event that on-line questionnaires are not feasible, a paper based questionnaire will be used instead.

Integrative multidisciplinary workshop
An integrative multidisciplinary workshop meeting will be undertaken towards the end of the study to bring together the findings from our work with the activity and economic costing analysis undertaken in the parallel study by the PRP funded team to extend what we know about the use of 111. This synthesis will particularly focus on how much the service is used, how much it costs – and what the implications might be for the work and workforce. Relevant service, research and policy stakeholders will be invited to the workshop to so that the findings are directly conveyed to these communities. This workshop will bring together all aspects of work, workforce, organisational context and technology with the findings from the PRP research team. The focus of the workshop will develop with the emergent findings of our research. We anticipate that this aspect of the study will require qualitative synthesis methods, economic and/or statistical approaches (e.g. Bayesian statistical approaches) to interrogate and integrate findings as appropriate. The health economist on the team will support this work.

c. Data analysis
For analysis of the qualitative data from the observation and focus groups, we will use our established data clinic approach to share and interpret data collectively, building from emergent themes to narrative and interpretive summaries (ethnographic and focus group data). Team members will initially read and open code a sample of fieldnotes and focus group transcripts. Regular data clinics will be used to ensure collective input and discussion of emerging codes, themes of interest and attention paid to contradictory cases. Data analysis will extend techniques used in the previous project, linking data to the research questions and to the Normalisation Process Theory (NPT),

generalizing patterns across cases, as well as drawing upon other sociological concepts and social theory. The analysis will include a mixture of traditional comparative analytical approaches, looking at themes, and matrix techniques using a grid informed by NPT as a broad framework for the analysis to facilitate comparison. To support the process of analysis, focus group transcripts and observational notes will be imported into a qualitative analysis software package, Atlas.Ti 6.1 which will be primarily used to code data and facilitate data management and data retrieval.

Survey analysis will concentrate on descriptive outputs, and will use statistics package PASW, (following double data entry using Excel).

Qualitative synthesis methods, economic models and/or statistical approaches will be used to integrate findings as appropriate in advance of the integrative workshop. We anticipate this aspect of the study will require economic and Bayesian statistical approaches.

Methods will be integrated primarily in two ways. First developmentally - the findings from one method will inform the design and analysis of subsequent components (e.g. ethnography informing the focus groups and vice versa; both of these will inform the survey development). Secondly, the analysis of the results will be integrated by exploring convergence and contradiction in the results derived from different methods - a process of ‘crystallisation' to provide a more comprehensive account than offered by a single method (O’Cathain and Thomas 2006).

5. Plan of Investigation:

The team will undertake some initial work before the study fully commences in August 2011, including initial meetings and/or contact with case study sites; ethical approval and research governance applications; invite and brief advisory group members. The chart below sets out a monthly timetable:

- Months 1-3: liaison with sites, initial visits; finalize ethical approval and governance; literature review; ethnography (site 1); initial survey design; initial team meeting
- Months 4-6: Team and advisory meetings; ethnography (sites 1-4), data clinics /analysis; brief progress report for SDO; focus group design /preparation
- Months 7-9: Ethnography (sites 1-4) data clinics/analysis, survey preparation; focus groups data collection, team meeting
- Months 10-12: Survey administration, team/advisory meetings; update of literature review; ethnography (sites 2-4), survey analysis, ethnographic data analysis; brief progress report for SDO;
- Months 13-15: Update of literature review; advisory and team meetings; integrative workshop with PRP funded study researchers; final report writing and paper writing

Project timetable

	2011 Start						2012									End
Time (months)	M-J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
Project month	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
REC / R&D approval																
Team (T), advisory (A) meetings			T			T	A		T		A	T			T A	
Literature review																
*Ethnographic data collection**																
Site 1																
Site 2																
Site 3																
Site 4																
Focus groups																
Survey design (D), administration (A)	D						D				A					
Integrative workshop																
Data analysis																
Dissemination																
Progress (P)/final (F) reports							P						P			F
Writing papers																
End of project meeting																

6. Project Management:

The team combines disciplinary expertise in sociology and psychology and considerable experience of health services research. Turnbull will lead and supervise the project, manage the researcher, oversee ethics, governance and fieldwork/surveys, and lead the analysis and reporting. Pope and Halford will contribute to the ethnography and take lead roles in analysis and reporting. Prichard will supervise the surveys and take a key role in analysis and dissemination. Jones will provide expertise in economic modelling, statistical approaches and evidence review, for the integration of our findings with the parallel PRP funded project. May will contribute theoretical expertise, advise on the ethnography and analysis and will make a major contribution to dissemination of findings. Lattimer will support stakeholder liaison/site access, advise on the surveys and analysis of workforce planning implications.

7. Dissemination and user engagement

Research will be disseminated summatively through reports and journal articles and formatively to current and future user groups, to maximise the impact of our findings to the future planning and development of the workforce. Outputs will include final reports, and papers for relevant journals to inform the research and policy community in the range of disciplinary and practice fields implicated in this research (e.g. J Hth Serv Res & Policy; Soc Sci Med; Sociology; Work Employment & Society; BMJ; Lancet; Health Informatics J).

Building on work underway as part of our previous project we will seek to use emerging web technologies (the semantic web) to enable effective dissemination via the web to allow wider engagement. We will seek to disseminate to the health research and provider communities, as well as liaising with SDO network by presenting at service services research conferences (e.g. HSRN SDO Network annual conference, Organisational Behaviour in Health Care), in addition to other appropriate urgent/emergency care and sociology conferences. We will work closely with SDO and our advisory group to prepare findings that can be readily disseminated to target audiences of urgent care service providers, workforce planners, healthcare managers, policy-makers and users of new technologies. We would look to disseminate findings via the NHS Forum.

Relevant stakeholders were consulted (at the Department of Health and urgent care providers) to secure their involvement in developing the proposal. As this new service has potential to impact on the whole population our definition of 'user' is broad and includes patient / lay users of services, staff and organisations using CDSS, and key local and national stakeholders (e.g. CDSS developers, strategic planning/policy, clinical, and IT managers). We will include representatives of these in our advisory group and dissemination plans. The advisory group will meet 3 times during the project. In addition we plan to link the user engagement aspects of our project with the activities of the PRP project by holding at least two joint meetings where the user representatives from both projects meet to discuss the issues and findings from both strands of work.

We will also have links to, and support, of the Work Futures Research Centre at the University of Southampton via the newly formed special interest network on the health and social care workforce. This give us access to an interdisciplinary network of researchers, healthcare policy-makers and NHS managers concerned with innovation in working and organisational practices across health care in the 21st century. We hope to organise a joint workshop / seminar with WFRC to present and discuss our ongoing analyses to facilitate a broad exchange of knowledge and ideas surrounding the study.

In the research sites we will build on successful engagement mechanisms developed in our previous research linking to local R&D and strategic committees to facilitate and disseminate the research. We will also make effective use of regular electronic bulletins and feedback to ensure that staff and stakeholders are kept up to date with the project progress and findings.

9. References:

Department of Health. 2007. Our NHS, Our Futures: the next stage review. London: HMSO. Department of Health 2000.

Department of Health. 2000. Raising standards for Patients. New Partnerships in Out-of-Hours Care. London: HSMO.

Department of Health. Equity and Excellence: Liberating the NHS (White Paper) 2010

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_117353

Berg M. Implementing information systems in health care organizations: myth and challenges. International Journal of Medical Informatics. 2001;64:143-156.

May C, Mort M, Mair F, Finch T. Telemedicine and the Future Patient: risk, governance and innovation, ESRC End of Award Summary. 2005 www.york.ac.uk/res/iht/projects/l218252067/MayFinalRptSummaryRefs.pdf

Heeks R. Health information systems: failure, success and Improvisation. International Journal of Medical Informatics. 2006;75:125-137.

Haux R. Health information systems: past, present, future. International Journal of Medical Informatics. 2006;75:268-281.

This protocol refers to independent research commissioned by the National Institute for Health Research (NIHR). Any views and opinions expressed therein are those of the authors and do not necessarily reflect those of the NHS, the NIHR, the SDO programme or the Department of Health.