The work, workforce, technology and organisational implications of the ‘111’ single point of access telephone number for urgent (non-emergency) care: a mixed-methods case study

Joanne Turnbull,¹* Catherine Pope,¹ Alison Rowsell,¹ Jane Prichard,¹ Susan Halford,¹ Jeremy Jones,¹ Carl May¹ and Valerie Lattimer²

¹Faculty of Health Sciences, University of Southampton, Southampton, UK
²School of Nursing Sciences, University of East Anglia, Norwich, UK

*Corresponding author

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Scientific summary

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Background

NHS 111 is a new, telephone-based service, available through a three-digit number (111), that allow callers to access urgent health care 24 hours a day. It offers clinical telephone assessment (triage), advice and referral when necessary to an appropriate health-care provider. To date, all NHS 111 services are underpinned by a single computer decision support system (CDSS) called NHS Pathways. Trained non-clinical call advisers answer telephone calls to the service and use this technology to support questioning to assess a patient’s symptoms, provide health-care advice or direct the patient to the appropriate local service. The NHS 111 service represents a large-scale and fundamental change in the way that urgent care is delivered. It is predicated on the use of new digital technologies and significant labour substitution, in particular the greater use of non-clinical staff to deliver health services. It seeks to integrate a range of different health services in the context of an increasingly complex landscape of health services and significant increases in demand for health care.

Our previous National Institute for Health Research Service Delivery and Organisation programme project ‘Ethnography and survey analysis of a computer decision support system in urgent out-of-hours, single point of access and emergency (999) care’ (reference no. 08/1819/217), published in 2011, highlighted the importance of effective workforce planning, management and training in the successful implementation and continued use of the CDSS that underpins NHS 111. It shed light on the ‘work’ and effort required to bring a CDSS into successful use in a similar service setting. The current follow-on project extends what we have learnt in the context of the roll-out of the NHS 111 service. The study was designed to complement the Policy Research Programme-funded University of Sheffield evaluation of NHS 111 and to focus on how the NHS 111 service changes the organisations that deliver it and the wider organisation of health care, notably the implications for work, workforce configuration and training.

Objectives

NHS 111 has provided a timely opportunity to empirically investigate four core features of health-care innovation and change, namely the way in which work and workforce is organised for this new service and how both the technology and the organisational context shape the way in which services are delivered. The aim of our project was to understand the implications of these inter-related aspects for the organisation and delivery of modern health services and inform workforce planning and organisation.

1. What is the work of NHS 111? This examined the everyday work tasks and activities involved in delivering the services and integrating care provision.
2. Who is the NHS 111 workforce? This examined the experience and skill sets of this new workforce and identified education and training needs of workers and how this workforce might be developed and maintained; and examined role differentiation and division of labour (e.g. how tasks are divided formally and informally between staff).
3. What is the technology for NHS 111? This explored the technologies underpinning the service and the complex sociotechnical interactions required to bring them into use, including configuration and use of these technologies.
4. What is the organisational context of NHS 111? In order to situate questions 1–3, this examined the organisational effort and environment, to compare and describe structures, practices and service integration within the wider political, sectoral and organisational settings (within NHS 111 sites and the
wider network of providers); explored the extent to which integration has been achieved; identified how information and knowledge are shared across the full range of services integrated by NHS 111; and examined how trust and knowledge transfer varies across the NHS 111 health economy.

**Methods**

We addressed these research questions by undertaking a comparative mixed-methods case study in five NHS 111 sites. The different NHS 111 providers were characterised by differences in organisational size, form and ethos and in the type of workforce employed and professional roles and skill mix within it.

Our case study sites were:

- An established emergency call-handling service provided by an ambulance trust (site 1) for two primary care trust areas. Urgent care centres (UCCs) were provided by a separate organisation.
- An established out-of-hours call-handling service run by a general practitioner (GP) out-of-hours service. Local partners operate an integrated UCC (site 2).
- An established emergency call-handling service provided by an ambulance trust (site 3). A local trust operated an integrated emergency department, walk-in centre and out-of-hours centre.
- An established out-of-hours organisation providing both call-handling services and UCCs (site 4).
- A commercial organisation providing call-handling services. Two UCCs were operated by two separate organisations (site 5).

The study combined ethnographic and survey methods. The ethnography used non-participant observation conducted at both NHS 111 call centres and their linked UCC(s). These data comprise 356 hours of observation undertaken between 2011 and 2012. We also conducted six focus groups with 47 call advisers, clinicians and organisational managers.

An online survey, administered to call centre and UCC staff, asked staff about their views of NHS 111 and information transfer and communication and assessed staff trust in NHS Pathways. Three e-mail reminders were sent 2 weeks apart. A total of 216 call centre staff responded to the survey (529 surveys were distributed), giving a response rate of 41%. Site 1 was unable to tell us how many staff the survey was administered to at the UCCs and site 5 did not administer the survey to UCC staff. Excluding these two sites our response rate for UCC staff, based on the other three sites, is 35%.

Ethnographic data were coded independently, analysed jointly in data clinics and imported into Atlas.Ti 6.2 (Scientific Software Development GmbH, Berlin, Germany). We examined data within each setting and then across settings structured around our research questions. We used a mixture of analytical approaches including thematic analysis and matrix/charting techniques to facilitate comparison.

Survey data were exported to IBM SPSS Statistics version 19 (IBM Corp., Armonk, NY, USA). Descriptive statistics were calculated and univariate analysis of variance was applied to the data.

**Results**

The NHS 111 service receives calls about a broad range of physical and mental health problems as well as social issues, from life-threatening illnesses to requests for health information. The types of calls received by NHS 111 shape the everyday work for call advisers, clinical advisers and UCC clinicians working within NHS 111 care provision. The everyday work of these groups of staff is distinctive in each site.
Work
Building on our previous study, NHS 111 call-handling work involves high levels of communication (including negotiation, communication and translation) and ‘emotion’ work (for the management of potentially life-threatening events and diseases and to establish rapport with the caller, as well as managing their anxiety and distress). In summary, call advisers engage in a range of everyday work activities that extend beyond being simple users of a CDSS to assess calls.

The everyday work of clinical advisers varied from site to site. At all sites (except site 2 where clinical advisers were based at a separate organisation) these staff support call advisers in clinical assessment and they also play an important role in managing and sanctioning dispositions, notably emergency ambulance dispositions. Call supervisors at some sites also played a key role in supporting the call advisers and providing expert NHS Pathways advice. Levels of trust at an organisational level appeared to influence patterns of working so that some call-handling organisations engendered a more autonomous call-handling workforce. Clinicians at UCCs provide further assessment and a consultation, either on the telephone or face to face (at an UCC or at home), and their work is shaped by call advisers, clinical advisers and call supervisors working at the call centre, who determine how many patients are seen, who is seen and how quickly patients are seen by clinicians.

Workforce
All sites were required to expand their workforce to provide the NHS 111 service, employing new staff and/or reorganising staff to undertake new roles. Commitment to their work was high amongst call advisers and many took particular pride in the health-care nature of their work. At some sites, NHS Pathways and NHS 111 offered the opportunity for career development roles or activities (such as a supervisory, training or auditing role) for non-clinical and clinical workers. Although formal roles exist in each organisation, the boundaries between roles are often blurred. Although call advisers lack clinical training, there is consistent evidence of them performing complex health-care work, albeit supported by the technology. We observed that clinical knowledge gathered from the system and from clinical staff becomes internalised in call advisers who then draw on this knowledge when handling calls. Despite this there are clear beliefs amongst the workforce that input from clinical staff is essential not only for supporting call advisers but also to allow them to take clinical responsibility for more complex calls.

Participation in training can be challenging for call advisers and requires considerable commitment in relation to the amount that they have to learn and also the times that training sessions are run. Ongoing formal and informal coaching was provided at all of our sites through buddying systems, support from call supervisors and clinical staff and feedback from the audit process. However, there is considerable variation across sites in how these activities are performed and by whom, which raises questions about the standardisation of service delivery.

Technology
We examined the core technologies implicated in the delivery of the NHS 111 service. These included the CDSS used to assess and manage calls and the Directory of Services (DoS) used to locate appropriate services for onward referral when indicated. The DoS is key to the delivery of NHS 111 as it provides call advisers with information about services including location, opening hours and remit. However, the delivery of the services requires additional technologies (such as case record and case management systems and booking systems) and a range of what might be considered peripheral information and communication technologies (ICTs) (including the internet).

Trust in the CDSS amongst call advisers is relatively high, particularly compared with UCC staff. There is some appreciation that the system is risk averse and awareness of some areas in which the pathways are less effective or useful (e.g. multiple symptoms). It appears that GPs and other external stakeholders are less positive about the CDSS than those who use it every day. Turning to the theme of technology failures we noted that the providers have established contingency plans for dealing with major faults, but we also noted that the staff in the call centres work hard to make the technology work, often developing
workarounds that enable this. The survey suggests that staff felt that the systems were largely reliable, although some problems with the DoS were particularly noted.

Organisational context
There is considerable variation in the organisation and delivery of NHS 111, which is shaped by the organisational history, dominant service ethic and professional culture of the varied contracted organisations. Call-handling organisations were motivated by different reasons when bidding for the NHS 111 contract. These reasons included entrepreneurial drivers (such as expanding the size of the business or to grow new business) as well as protective drivers (to defend against threats to existing business and the desire to keep call handling ‘in-house’).

There is an inherent tension within the NHS 111 service. On the one hand there is a push towards rationalisation and standardisation, but local service providers are strongly pulled towards designing services that are aligned with their service ethic and with their views about what is needed locally. Broadly, the commercial organisation (site 5) and ambulance service providers (sites 1 and 3) were more driven by rationing and systemising – by pursuing the NHS 111 vision of ‘right care, right place, right time’ – whereas out-of-hours services (sites 2 and 4) were heavily driven by an ethos of providing a service that is more in line with what they provided as out-of-hours organisations. The competitive nature of NHS 111 contracts has presented challenges for organisations delivering NHS 111, with the need to protect themselves against the potential loss of their business. Opportunities for sharing early best practice have been hampered as sites have been less willing to ‘open their doors’ to potential competitors for fear of giving away their competitive edge.

Conclusions
Each group of workers has a different but integrated role that enables NHS 111 to operate. This integration is not ‘seamless’ and there are clear frustrations in some areas about the use of non-clinical staff to perform clinical assessments. On the face of it, call centre work is characterised by operating in isolation – working one-to-one with the caller; however, the relationships between call advisers, call supervisors and clinical advisers are a crucial part of managing calls and the overall workload. The ability to engage in effective teamwork is also important both to support colleagues during calls and to provide advice and emotional support following difficult calls. There is some variation in training across sites and in who provides such training. This may have implications for the skills acquired by call advisers and for the degree of confidence that they have to complete calls effectively.

Underpinning NHS 111 with non-clinical workers offers significant opportunities for workforce reconfiguration. However, our findings suggest that there is not a simple substitution of labour (i.e. non-clinical staff replacing clinical staff). A significant organisational structure is in place to support and ‘keep in place’ the CDSS and the non-clinical workers that use it. The apparent advantage of a non-clinical workforce has to be set against the resources and structures needed to support these types of staff.

NHS 111 is primarily founded on a network of different organisations that provide different aspects of the service (call centre, UCC and so on) and this network is primarily enabled through technological integration (e.g. communication, information sharing). Technological integration is key to delivering NHS 111, most notably NHS Pathways being able to assess the ‘right time and right place’ for the patient and the DoS containing accurate information about the most appropriate service available locally. Technological integration has been achieved in NHS 111, albeit with staff effort in developing workarounds to ‘make the technology work’. However, successful integration requires trust and communication between different providers. Our study revealed that at some sites relationships between different providers in the NHS 111 network were poor and mistrust (of technology and of partner organisations) was high. Much of the communication between different NHS 111 providers was electronic,
with little personal contact between providers. We suggest that technological integration alone is not enough to sustain an integrated service.

Relationships were more harmonious in sites that were co-located and/or that had a history of working together. Time and effort is crucial in promoting shared communication and a more harmonious relationship between partner organisations. NHS 111 imposes an abstracted standardised system on the urgent and emergency health-care system, but our findings suggest that ‘place’ affects the way in which this standardised system becomes embedded in practice. The way in which NHS 111 has developed in different areas and the diversity of providers, which bring with them different values and history, suggests that NHS 111 is unlikely to be an entirely standardised service across England.

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