Task analysis of clinical staff activities during the introduction of mobile technology systems in acute care wards

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1. Introduction

This paper presents the results of a structured observation study. Clinical staff were observed during the initial deployment and first 4 months of mobile technology use for clinical observations in an acute care hospital.

In the UK the use of mobile technologies in healthcare organisations is gaining traction and schemes to replace paper based practices with electronic documentation are being trialled and implemented to varying degrees. Little is known about the impact of those technologies on staff experience and working practice, particularly during the early stages of deployment where they have to adapt to the new systems in place. The deployment of mobile technology for patient care in acute care environments is particularly complex. Staff have to deal with huge diversity in patients and their medical conditions and as such have to communicate with a wide range of other specialisations and departments in the hospital, in addition to managing some of the busiest admissions and diagnostic areas in the hospital. The introduction of new technology and the impact of this on working practices and clinical tasks is therefore an added challenge for staff in an already highly pressured job role and environment.

This paper presents a novel method for observation in complex acute care environments, utilising a pre-populated structured observation software application. It presents analysis of the tasks undertaken by staff within the ward, evaluating interactions with the new mobile technology systems and finally discusses the impact of the new technology against baseline data collected before deployment.

2. Methods

20 hours of clinical staff time was observed and recorded using the novel ‘observer tool application’. Participants were representative of a variety of roles and job grades working within the ward environment, including nurses, junior doctors and consultants (structured observations are still being carried out so final participant numbers are unavailable). Inclusion criteria for participants included experience of the paper based practices used prior to the technology deployment and prior experience in the ward being studied. Ethical approval was obtained from the local university ethics committee.

To ensure validity of the structured observation software to the acute care ward environment, the task and location lists were checked and additional items added so that the information was triangulated by three independent clinicians all with experience of working in acute care environments and familiarity of the new software to be deployed.

Structured observations were carried out in the acute care ward during regular day shifts and out of hours. The structured observations had to accommodate the clinical responsibilities of the participants and were sensitive to patient needs and confidentiality.

3. Results

The paper presents quantitative results of the structured observations of clinical shift work in the acute care ward. The findings report on the tasks carried out by clinical staff across and within job grades. The data reports on how much time is spent searching, time spent ‘travelling’ within the ward, how much time is spent interacting with patients and how much time staff spend interacting with the new handheld technologies.

Staff interaction with technology and associated tasks is presented in relation to timeframe; immediate deployment and use of the technology over 4 months for a short and long term view of the impact on the task. These results present the change in technology use over time as the system embeds itself in clinical working practice.
4. Discussion

This paper provides analysis of time spent on clinical tasks to understand the working practices in an acute care ward. It provides insight into the changes in working practices as a result of the introduction of mobile technologies in the ward and the move away from paper documentation.

This study helps to identify areas and tasks where the initial technology deployment has impacted working practices both negatively and positively. It also shows the change over time as familiarity with the system improves and the integration and use of the technology by staff progresses.

The process of evaluating the mobile technology use in the ward is ongoing and the results can inform future technology deployments in hospitals in addition to providing evidence which can be used in real time to improve working practices with the new technologies in the ward.

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