

Improving Referrals to Tertiary Care – Oxford Acute Referral System (OARS)

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Keywords. Referrals, user-centred design, healthcare, information technology.

1. Introduction

It is recognised that the communication interface from secondary to tertiary care represents an unsafe point in patient care. Communication is typically conducted via telephone with referral information documented in unstructured paper notes. This situation represents an unsafe and inefficient system for a number of reasons: shift rotation of staff can mean poor continuity of referrals, documented referral details can be ambiguous and there are often delays making telephone contact due to the high demand on hospital switchboard systems.

A project at Oxford University Hospitals (OUH) Foundation Trust is seeking to improve the local situation through the development and implementation of an electronic referral system. The Oxford Acute Referral System (OARS) is a web-based application that can be accessed on the NHS secure network across different hospitals in the region. Electronic referral systems have great potential to improve the quality and reliability of referrals.

The project was initiated by the John Radcliffe Hospital neurosurgery department with support of the university research department. The project is currently in progress with the development phase almost complete and plans to implement into use by the end of 2015. The system is being implemented at a regional level, initially to handle only neurosurgery referrals but with the potential to extend to other specialities.

The system provides three key functions: 1) The system provides a common and comprehensive record of the referral that can be viewed by both referrer and advising specialist, 2) It supports a text-based conversation and record of questions/advice between the two hospitals. 3) It encourages clinicians to take active ownership of patient referrals by providing an audit of the referral decisions.

2. Method

The development of the system has followed a user centred design process. Discussion with target end users was used to develop a description of user roles and their associated referral tasks. A task analysis captured the principle decision points and task flow between roles. User stories were also used to generate and explore functions. The task analysis and user stories were central to discussions with the developers and other stakeholders.

Development was conducted by an external software company using the agile development process in which short cycles of work were used to iteratively develop application functions, architecture and user interface (UI) design solutions. Close customer and user involvement was maintained throughout.

In the first phase a mock-up of the UI was created that allowed the workflow to be demonstrated and user feedback to be sought. Following an initial software release user trials were conducted at referring and specialist hospital sites. These consisted of instructing representative users (i.e. referring and advising specialist doctors) to conduct

a series of tasks using pre-defined patient scenarios. Verbal protocol analysis and observation were used to record user behaviours and comments. These were categorised by function, usability impact and frequency to inform subsequent development work.

As the system will shape the hospital work system a risk management process is in place. Risks have been generated using process steps and system models (Systems Engineering Initiative for Patient Safety, Risk and Safety Framework, Vincent et al) as prompts. These risks have been categorised by severity and where possible mitigated through design requirements.

In order to establish the impact of implementing OARS a set of qualitative and quantitative data is being collected for periods both prior to and post system launch. Clinicians' experiences and perceived risks with the referral process will provide a qualitative evaluation. Process measures will be provided by recording time intervals on the referral timeline, for example the time between an initial attempt to make contact with specialist department and being able to speak with a Specialist. The completeness of referring patient demographic information (such as date of birth) is also being collected.

Hospital department metrics such as length of stay and 30 day mortality rate whilst subject to many variables other than the referral process will provide a broader picture of patient outcomes. Application usage (such as the proportion of specific referral fields utilised, role of user recording the referral) will be collected prospectively to inform potential further development.

3. Results

The OARS system will be launched in early 2016 and post-implementation data will be collected in the following four months. Pre-implementation data has been collected to provide an understanding of the baseline situation.

We anticipate that the most significant impact of introducing the system is that referrals will be more comprehensive, thereby providing all clinicians involved with the referral a fuller and more reliable picture of the situation. Other changes are anticipated regarding expediency of referral decisions, specialist centre awareness of referral demand and improved governance regarding recommendations and decisions.