Student:

Debbie Wood

Supervisor

Dr Niall Sheehy

Assistant Supervisor

Dr Lucy Hederman

Title

Collaborative design and evaluation of a patient safety checklist app

Abstract

The purpose of this study was to design and evaluate a patient safety checklist app in terms of the usability and acceptance of the app among clinical users. The app was used on tablet devices in an academic teaching hospital, and the suitability of the tablet device for use in a clinical environment was also evaluated. The aims of this study were to:

- Design and construct the mobile application.
- Pilot the use of the application for a month in an academic training hospital.
- Evaluate the suitability of the tablet, and the usability and acceptance of the application among the clinicians involved.

The app was built using the eXtreme Programming (XP) software development methodology involving the use of wireframes, prototyping, usability engineering and usability testing among the end user population of nurses, and user training. The application checklist content was also adapted for the local hospital practice using an iterative model during the development of the app.

A mixed methods approach was then used to explore the suitability, usability and acceptance of the application as experienced by 6 Interventional Radiology nurses and five Specialist

Registrars (SpRs) in Interventional Radiology during a month long pilot study. Two tablet computers were used, and 134 checklists were entered into the application. The time taken to complete checklists was under 1 minute in 68.2% (n=75), and under 5 minutes in 83.7% (n=102) of cases, with only 12 checklist items skipped out of a total of 1404 checklist items offered. As the tablet was never used within the sterile field no clinicians had concern about device sterility or infection control. Nurses and SpRs observed that completion was faster and easier on the tablet than when completed on paper, and remarked on the user friendliness, the mobility and multitasking afforded by the tablet computer. Clinicians could see great potential for the application if it were integrated with existing hospital information systems. The electronic nature of the data captured allowed for reporting on the completed checklists and refinement of the checklist content and could allow for the provision of checklists specific to procedure types. The study established that mobile applications are usable and accepted among clinicians working in radiology procedures in the study site. In terms of suitability, the type and size of physical device matters when it is being carried around and used in several rooms, rather than being shared by several nurses in one room.