Using Patient-Centered Technological Design in an Electronic Toolkit for Inpatient Fall Prevention

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Introduction/Background

Falls are a serious patient safety issue. In 2009 we demonstrated a 22% reduction in fall rate by using HIT to link routine fall risk assessment with evidence-based interventions and research showed that patients and family also needed to be more engaged in fall prevention planning.[1] Therefore in our current study we conducted usability testing on our web and mobile applications which allow patients and family to complete the fall risk assessment with the nurse at the bedside. This abstract describes the process of achieving patient-centered design of the technological applications to improve patient safety in the hospital.

Methods

We used a participatory design to engage nurses, patients, patient and family advisors to provide feedback on an initial design through informal interviews. Programmers developed the applications based on the refined mock up. As soon as functional prototypes for both applications were available, BWH researchers conducted usability testing with patients and nurses, which included task scenarios, a quantitative usability survey, and a qualitative survey. Their feedback helped iteratively refine the applications.

Results

Usability testing is ongoing but testing and products will be finalized by April 2016. A summary of results is provided in Table 1. A 5-point Likert scale is used for the usability survey, where 1 equals "strongly disagree" and 5 equals "strongly agree" with the statement.

Table 1. Usability Testing Feedback

	Mobile Application (n=4)	Web Application (n=5)
Task scenarios	All three given "above average easy" ratings to complete	One of five scenarios received "average" for easiness
Major Comments	"Simple to use", "arrow for next wasn't obvious"	"How to move forward to next risk isn't clear", "edit plan' button's purpose isn't clear."
Usability survey	Score of 4.25 for "I would like to use this system frequently"	Score of 3 for "I thought the system was easy to use"

Discussion/Conclusion

Our first round of testing provided valuable qualitative and quantitative feedback for continuous refinement of our applications. A 2015 study found that one third of EHR vendors failed to conduct a user-centered design process as required by law, and 63% of vendors engaged fewer than 15 participants in end user testing.[3] Another study found that usability testing is critical to the success of clinical information systems when the clinician is an end-user.[4] We theorize that the same is true when the end-user is a patient and believe that this study will offer insights into best practices.

References

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