

Patient-centered Design for a Personal Health Record System

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ABSTRACT

Our objective for this project was to design a user interface (UI) for a patient-centered personal health record system that models how patients view their health information. We assessed user needs, examined how patients label and categorize health information, and evaluated two user interfaces that we designed for the Patient-Centered Health Record (PcHR) system. Our design process focused on discovering useful content and ensuring that the UI was intuitive, easy to use, and helpful for users.

Introduction: The Patient-centered Health Record (PcHR) is an ongoing project of the Clinical Informatics Research Group at the University of Washington. The PcHR is intended to store health information important to patients, in a way that is useful to patients and reflects the way patients view and organize those data. Patient-centered design and usability issues are crucial to its success. The goals of this work are to 1) determine what type of health information is important and meaningful to the patients and 2) provide a user-friendly interface for patients to maintain this information themselves.

Methods: We began with a prototype user interface designed by a physician-investigator (WL), and then employed user-centered methods in a three-phase design process. In Phase One, we conducted user interviews and a usability study of the current interface. The interviews were used to determine how and when people organize health information, what information they organize, and how people feel about privacy and security issues in regard to electronic health records. In Phase Two we worked with our users to design the information architecture (IA) of the contents in PcHR. We used card sorting, topic maps and information taxonomies to guide our design of two possible interfaces. In Phase Three, we interviewed users to comparatively evaluate two new interface designs. User feedback from all phases contributed to the proposed design recommendations for the final implementation of PcHR.

Results: Five potential users of PcHR were recruited from a local clinic and hospital for the first phase interviews. We identified four different “personas” among these users, representing levels of user expertise, motivations, expectations, behaviors, and goals. We found that people organize their health information differently, but the types of health information coincided with the categories initially

defined in the PcHR prototype. Category names were reworded for clarity and users identified additional desirable features, such as uploading medical records, health progress reports, and appointment scheduling. The scenarios also revealed problematic jargon. Phase Two built on these results, using topic maps, card sorting and information taxonomies to produce a navigational scheme and a user-centered vocabulary to represent health information categories. With this information, we developed two prototypes for evaluation in Phase Three. Users preferred a fully expanded navigation menu, similar to a physical file-folder structure. They were able to complete the task scenarios with ease and provided positive feedback about the content and look of the interface, and critiqued the use of low contrast colors.

Discussion: The task scenarios and questionnaire used in the final evaluation phases helped identify intuitiveness and ease of use issues. They also helped refine instructions in our prototypes. Information architecture evaluation revealed how users organize and navigate their health information, and what vocabularies they use. For both of the prototype visual presentations, the IA design method produced useful results to inform further design. The user persona method helped us characterize the stakeholders of our system in the design process. We had some contradictory feedback on navigational layouts, which we will resolve by interviewing more users. We also intend to fully develop one of the prototypes and involve additional users to validate the design before we implement the final PcHR interface. Finally, we plan to develop a use-case testing plan for the final system implementation.

Conclusions: Iterative, user-centered design helped improve the PcHR, leading us to refine portions of the initial UI before exploring additional features suggested by the users. The IA model and user-defined vocabularies reflect the requirements discovered during the interviewing process. The UI will benefit from further evaluation using use-cases that represent uses by our user personas. Our findings will help develop a more user-centered electronic health record system much needed to help patients organize and maintain their health information at their own convenience and help them take control of their own health.

Further information:

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