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Each Spring, human factors professionals engaged within the health care industry gather from around the world at the International Symposium on Human Factors and Ergonomics in Health Care, organized by the Human Factors and Ergonomics Society (HFES). This year a growing volume of engineers and professionals will be presenting and showcasing their work on emerging issues and challenges facing the health care trade, along with examples of their work to exchange the knowledge of human factors with others. Much like this newsletter, we aim to gain knowledge from others and pass on what we have learned to help facilitate the latest breakthroughs in the science and exemplary best practices. Below you will find a synopsis of the items the VA Human Factors Engineering office will be sharing at this year’s Health Care Symposium as we encourage you to lean out to learn from others and share your real-world experiences.

**Evaluation of Mobile Tablet Computers for Use in the Veterans Health Administration**

Tablet computers offer much promise for impacting clinical care, such as improved efficiency, avoidance of patient care delays, improved patient–provider interaction, and increased time spent at patient bedside. The Veterans Health Administration (VHA) was interested in determining how mobile tablets may be perceived by clinicians for use in clinical settings. We conducted two studies to evaluate tablets for use in the VHA. For the first study, we performed a comparison of two leading tablet computers using a within-subject comparison with 32 clinicians at the Washington CD VA Medical Center. Participants rated one device significantly better than the other for questionnaire items related to ‘Access and Efficiency’, ‘Introduction into the Clinical Environment’, ‘Usability and Usefulness’, and ‘Desire to Use’. The second study investigated current and anticipated tablet use by interviewing 24 clinicians at the Indianapolis VA Medical Center. Although the VHA has deployed a large number of tablet computers in the last several years, little was known about how clinicians may use these devices with a newly planned electronic health record (EHR), as well as other clinical tools. The objective of this study was to understand the types of use that can be expected of tablet computers versus desktops. Our study generated several recommendations for the use of tablet computers with new health information technology tools being developed or purchased. Results from both studies form a picture on specific tablet computer preferences, barriers and facilitators to tablet use, as well as current and anticipated tablet use.

**Enhanced Operational Requirements Gathering Using a UX Design Studio Workshop**

User experience (UX) design studios are an efficient method to engage users, understand a problem, identify solutions and build consensus.  They help break through creative blocks by surfacing a wide range of ideas while also democratizing the project lifecycle and critical features.  Our human factors team conducted a design studio for the Portland VA Whole Health team.  Whole Health is a collaborative effort sponsored by the VHA Office of Patient Centered Care & Cultural Transformation.  It is a shift from clinician-driven, disease management and toward patient-defined outcomes and preventative care.  The Portland VA Whole Health team needed a web site for staff to introduce the Whole Health vision, showcase services, provide a hub for sharing ideas and promote best practices.  In a single two-hour meeting we crafted user stories, gathered cross-disciplinary perspectives and used visual thinking to explore a range of possibilities.  The output of the meeting established how the end-user would interact with the site, the major goals for the site, a feature set with backlog, and requirement specification for a development team.  Structured and unstructured feedback from the session indicated the Whole Health Design Studio met its stated goals and was well-received by participating stakeholders.

**Improving Clinical Experiences in Health Care with Journey Maps**

Veteran Health Administration (VHA) Emergency Departments (ED) play a critical role in providing access to mental health services for Veterans dealing with homelessness, substance abuse, psychiatric diagnosis, receipt of psychotropic and opioid prescriptions and more frequent use of outpatient mental health services (Doran et al., 2013). Some VHA facilities do not have specialized emergency psychiatric facilities and it can be difficult to place patients in inpatient Mental Health Services. ED staff spends more than twice as long seeking beds for these patients than those without psychiatric problems (McKenna, 2011).

VHA’s Human Factors Engineering team (HFE) developed a journey map detailing the pathway of a patient who presents to the ED and transitions to inpatient Mental Health Services, showcasing the experience of VHA emergency and mental health providers. The objectives for the journey map included identifying and documenting clinical user experiences, concerns, pain points and opportunities for improvement. Multiple user roles were depicted, which allowed for a cross-organizational review of user experience barriers and opportunities.

The final journey map portrayed transitions of care and care coordination, including touchpoints with mental health screening and assessment tools. Special regard was given to communication and hand-off barriers, such as the reliance on staff to assume a sitter role for each patient and other inefficiencies in the process which created delays. Improvement recommendations were outlined and included opportunities to enhance standardization to expedite services.

**Lessons Learned from Journey Mapping in Health Care**

Journey mapping is currently a popular tool in the User Experience (UX) community (Rosenbaum et al., 2016). Journey mapping use in health care has increased, as facilities seek to improve performance (McCarthy et al., 2016). At the Department of Veterans Affairs (VA), Veterans Health Administration (VHA), the Human Factors Engineering team (HFE) develops journey maps which showcase the experience of users of health services and technology systems. Journey maps can be utilized for communicating the current user experience, planning for future processes and understanding implications of new technology.

For our inaugural products, HFE followed UX industry guidance (Kaplan, 2017) for creating journey maps and found difficulties applying it to a health care environment. Since we expect other practitioners working in health care settings will encounter similar challenges, this presentation showcased our lessons learned for the benefit of others who will create this type of artifact.

In sum, Human Factors professionals should consider the following:

• Recruiting clinical participants can be difficult and there needs to be a viable data collection plan.

• Health care scenarios are complex and often require more detail than can be effectively represented in a journey map. A supplemental report may be needed.

• Teams should create and utilize a standard execution manual, rubric, and visualization template to create journey maps that reliably exhibit quality and value.

**Evaluation of the Veterans Crisis Line System Support**

This presentation reported on the results of a qualitative cognitive task analysis interview study that was completed to understand the barriers to use of a new technology system at the Veterans Crisis Line (VCL). The VCL provides a critical service in crisis intervention and suicide prevention for Veterans and other individuals who call, chat, or text to the hotline. Results revealed human factors issues, specifically related to workflow, system usability, as well as more cognitive requirements associated with the transition from an existing platform to a new customized platform. During the interviews, eight themes emerged as being highly relevant to achieving wide-spread implementation. The themes included: training concerns (desired additional training), roles differences and associated system workflows, required technology interactions when primary task should be on Veteran, perceived increase in the documentation burden, need to easily communicate and coordinate both synchronously and asynchronously, ability to easily access related Veteran tools and resources, e.g. homeless services, not showing required user path through system, and providing adequate transparency across the organization.

The results highlight the need to evaluate technology prior to system transition, and preferably before system design. This study identified and suggested way to mitigate potential risks of system use after implementation and during interim periods where thoughtful redesign may be necessary prior to widespread implementation. Finally, because the VCL is an around-the-clock operation careful and thoughtfully planned training for a new system implementation and user practice with that system should be considered.

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