**Summary of Findings: Vendor UCD Processes**

Overview: A team of human factors experts including physicians visited nine different EMR vendors to learn about current user centered design (UCD) processes and to understand the challenges/barriers to incorporating usability in the EMR product development cycle. The vendors were of diverse size, both in terms of total employees and market share, and included both inpatient and ambulatory products.

UCD Processes: UCD processes vary significantly across the vendors with some vendors having no true UCD process in place while other vendors have a well developed UCD process with extensive usability experts on staff. We identified three general descriptive categories for vendors based on their UCD practices:

* **Vendors who have the misconception that responding to user’s feature requests and complaints constitutes UCD.** These vendors may have extensive methods to collect and respond to user feedback and believe that they are practicing good UCD by listening to users’ requests. These vendors do not have any human factors/usability experts on staff.
* **Vendors who have recently come to understand the importance of the UCD process and are currently working to refine their current UCD practices within their organization.** These vendors are beginning to understand the importance of usability design and analysis and are developing a well integrated UCD process.
* **Vendors who have a well developed UCD process including the infrastructure and expertise necessary to research user requirements, utilize an iterative design process, and conduct formative and summative testing on several different aspects of their product.** These vendors would likely be practicing UCD even in the absence of regulatory requirements.

Challenges in Developing a UCD Process: Vendors provided feedback on particular challenges they have encountered in their attempt at UCD and in meeting the Safety Enhanced Design (SED) certification.

* It can be difficult to find and recruit test participants for formative and summative usability studies. Many vendors rely on their current customers and this may not always be effective or feasible for smaller vendors.
* The development of robust and appropriate use cases to be used in formative and summative testing requires a large time commitment and clinical expertise, both of which may not always be available.
* Visual examples of good and bad design would be helpful. Design guidelines need to be more concise. Vendors consistently asked for ONC to produce examples to help demonstrate a benchmark for their expectations.

Vendor Perspectives on Meeting SED:

* **All of the vendors found the summative testing requirement to be a burden, but the majority of the vendors agreed with the intent of the SED regulation.** For most of the vendors the summative testing requirement consumed resources that they felt could be used to enhance their product in other more meaningful ways.
* The majority of the vendors felt that the results of summative testing were not used to modify and enhance their product because the results are produced too late in the product life cycle for changes to be feasible.
* Vendors who have a well-defined UCD process in place believe that meeting SED should be a byproduct of their current UCD process and that current regulations are geared toward the laggards in the industry. They feel that this puts an unnecessary burden on themselves and similar vendors. In other words, they would like to judged on the existence and integration of a UCD, rather than the product which it creates.

Issues with EMR Implementation: **Customization of the EMR during the implementation phase and training the end-users prior to going live are two critical components that shape usability.** During implementation, appropriate customization to fit the workflow of the end user can have a profound effect on overall usability and safety. Customization guidelines or other mechanisms to facilitate customization need to be explored, and there is a need to define responsibility in the customization process. There is also tremendous variability in training (video-based, live training, etc) the end-users and this training shapes the usability of the product.