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Testimony
of the
American Hospital Association
before the
Adoption and Certification Workgroup
of the
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I am Chantal Worzala, director of policy at the American Hospital Association (AHA). On behalf of the AHA's more than 5,000 member hospitals and health systems and our nearly 40,000 individual members, I thank you for the opportunity to speak here today about hospitals' experiences with usability of electronic health records (EHRs).

My comments today are informed by consultation with health care organizations with considerable experience in deploying, testing, modifying and using EHRs. My comments today represent a synthesis of perspectives from within hospitals, including: informatics, physician experience, and nursing and allied health.

THE IMPORTANCE OF USABILITY

EHR usability encompasses the extent to which EHR products help clinicians and others complete care delivery tasks well, efficiently and in a way that is satisfactory to the user within the real-life context of health care delivery. As others have noted, usability is an important factor in the pace of EHR adoption and has been identified as a barrier to increased adoption.[i] Put simply, if a system is not easy to use, it is less likely to be used.

The AHA appreciates the Work Group's emphasis on better understanding and improving the usability of EHRs and related products. Improvements will increase adoption, improve efficiency, and promote the safest, best possible care.

We also note that hospitals actively engage in supporting usability within their own installations. As noted by National Institute of Standards and Technology (NIST) in its recent report on usability, "Vendors strive to deliver an application with an outstanding user experience 'out of the box.' However, each hospital or health system may modify the 'out of the box' application to suit its needs. In-house groups must ensure user performance is optimized."[ii] My remarks will briefly characterize such efforts.

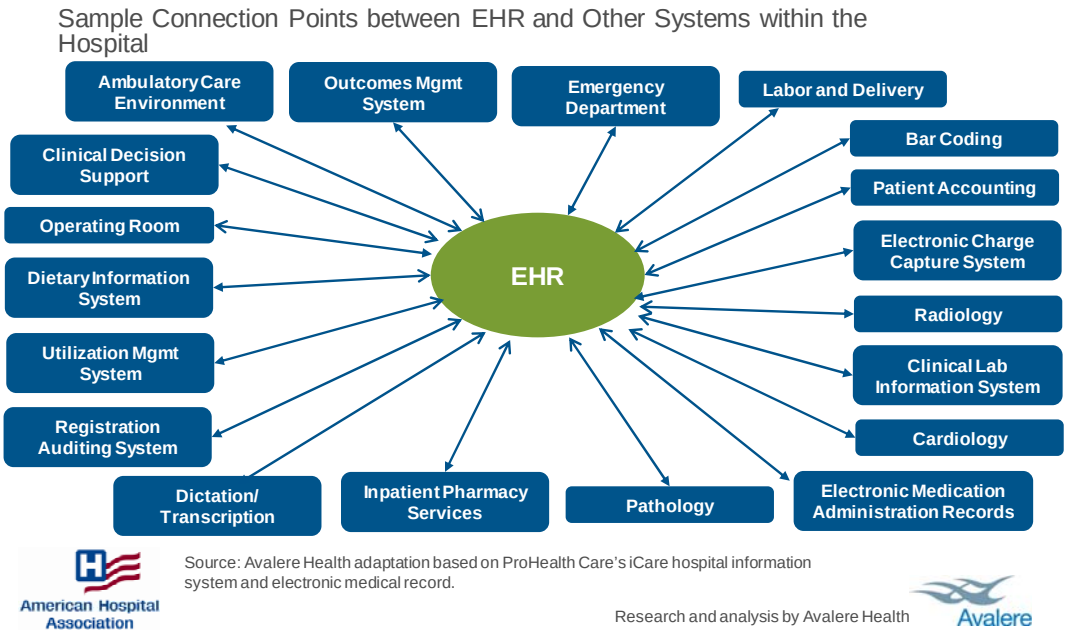
USABILITY IN THE HOSPITAL CONTEXT

For EHR products deployed in hospitals, two levels of usability should be considered: usability of the individual product and usability of the system as a whole. This means that, as EHR vendors look to improve usability, they must look at both the use of their individual product and how their product fits into a hospital's broader information systems. In addition to attributes such as workflow, navigation, screen layout, interaction and visual design, the ease of connectivity with other pieces of the total system should be considered.

The hospital context is complex and demanding. During a hospital stay, many different individuals will access and enter electronic data into a patient's health record. Therefore, in the hospital context, EHR usability should address the needs of physicians, nurses and many different allied health professionals. In addition, hospital systems are "always on," as care is provided around the clock. And increasingly, remote access to hospital systems is possible. These factors make for a complicated system that must consider usability across numerous individuals and situations, from a nurse conducting an intake assessment in the emergency department, to an anesthesiologist in the operating room, to a therapist providing respiratory or other treatments, to a case manager making arrangements for care after discharge. And, of course, various physicians seeing patients at admitting, during the course of care, and at discharge will also consult and enter information into the patient's record.

Ease of integration with other parts of a hospital's information system will also affect usability. Hospitals have noted that their clinicians most value EHR systems where all relevant data are easily accessible. More advanced uses of EHRs, such as clinical decision support, require availability of data from multiple systems. As depicted in the figure below, the hospital EHR system is not a single technology product. Hospitals must integrate dozens of disparate information systems to bring all relevant patient information together at the point of care. This includes departmental systems, such as those installed in the emergency department or operating room, as well ancillary systems, such as those in hospital laboratories, pharmacies and radiology departments. Therefore, the developers of EHRs and related products should consider ease of integration as part of usability.

Hospital EHRs integrate many diverse information components.



In the context of hospital information systems, usability is also affected by the physical device being used (fixed PC, rolling cart, mobile device, etc.) and how data and user interfaces are displayed on those devices. Clinicians and other hospital personnel are generally very mobile, moving between patients and units, and the type of device used can affect ease of use. Most hospitals offer a range of options for clinicians that include wall-mounted computers, rolling carts and laptops, tablets or other mobile devices. Taking a device along as clinicians move between patients can negatively affect efficiency, and the type of device can affect the interaction between the patient and physician. For example, many clinicians do not like to have a computer between them and the patient, nor do they want to turn their back on the patient to interact with a computer. Consideration of software usability should include usability on numerous devices.

Clinician views of usability. "Make the right thing to do the easy thing to do." This phrase from a hospital chief information officer pretty much sums it up. More specific attributes of a usable system from the hospital clinical perspective include:

- Speed;
- Reliability;
- Efficiency;
- Accuracy;
- Intuitiveness;
- Stability of design; and

- Support for workflow.

The **speed** of a system affects how quickly tasks such as entering notes or orders can be accomplished and affects clinicians' satisfaction with the system. Slow and cumbersome processes involving multiple screens and clicks create frustration and invite workarounds. For some clinicians, typing is an issue because it slows them down. They prefer solutions that can build on speech recognition, which are improving but can be costly. There is a tension between speed and use of structured data, which generally requires more time and effort to enter than free text. Speed is also affected by processing time and by the number of system log-ins that may be required to access different kinds of data or to comply with good security practices, such as auto-log-offs.

The need for **reliable systems** that are always available is heighted as reliance on EHRs grows. Once clinicians convert to electronic systems, they become essential tools, and disruptions are challenging to manage. Disruptions can be caused by unstable software products, as well as network or other issues. In some hospital contexts, such as trauma cases or operating rooms, seconds really do count and the situation cannot accommodate a system that is unreliable.

Efficiency speaks to many aspects of hospitals' EHRs, such as ensuring that data are entered once but used multiple times and providing tools to quickly filter and find needed data. EHRs must be designed to facilitate the management of significant volumes of data, but in a given context present only the pertinent data in a form that is easy to understand and act on. Users should be able to tailor data presentation (tables, graphs, text, etc.) to their needs and easily access longitudinal information. The display of data should be clear and uncluttered. For example, screens indicating the status of orders placed by the clinician must be unambiguous.

Accuracy can pertain to the data in the system, or features of the system, such as alerts. Accuracy is crucial to support good clinical decision-making. For example, finding the right balance for what clinical scenarios trigger an alert will determine whether clinicians find the alerts useful or ignore them.

Intuitiveness speaks to whether the EHR "make sense" to the clinician. Are features located in the expected places? Can you interpret interfaces easily? An intuitive system will be more usable and easier to learn.

Stability of design features over time and across products lessens the learning curve when systems are changed. If system upgrades involve a radically new "look and feel," more time is needed to come up to speed with a new version. One hospital emphasized the growing importance of this point, as many changes are being made in a short period of time to achieve meaningful use.

Support for workflow. Clinicians follow processes when caring for patients. If the EHR adds unneeded steps, or puts activities out of order, it is creating workflow rather than supporting or, ideally, streamlining workflow.

Specific needs of disabled physicians in using EHR systems. Hospitals do tailor systems for clinicians with disabilities. For example, use of color-coding may be minimized to accommodate physicians who are color blind or screen reader software may be deployed for those with impaired vision. Additional work is likely needed in this area.

Mission critical usability issues versus ease-of-use usability issues. Usability becomes mission-critical when it has an impact on the safety and quality of patient care. Any of the attributes of usability can become mission-critical in the right context. However, hospitals report that ensuring the accuracy and completeness of clinical data, as well as the accuracy of systems used to support clinical decision-making are most important.

How hospitals address usability. Hospital IT staff actively consider and promote usability of clinical information systems in collaboration with clinical teams. For example, IT staff may shadow clinicians to ensure that those responsible for the IT systems better understand the clinical process. They also involve clinical staff in designing IT systems and use iterative, user-centered design processes to incorporate the needs and feedback of the users as systems are rolled out. As clinicians learn to use systems, hospitals provide intensive training and support on an ongoing basis to lessen learning curves and increase use.

When computerized provider order entry (CPOE) systems are used, hospitals often pay special attention to development of order sets, to ensure that best practices and physician preferences are built into the system. This step can be time-consuming as clinicians work together to sort through evidence and develop order sets, but bears positive results in standardizing care. Some hospitals also look carefully at decision-support systems to ensure that support is delivered at the right time and place. They also look at the parameters for when alerts will be given to prevent alert fatigue. In some instances, hospitals will create formal usability labs. They also work with their software vendors to provide feedback on usability. Continued improvements in usability will facilitate accelerated adoption and greater use of EHRs.

Thank you for the opportunity to present today. We greatly appreciate your focus on usability of EHRs and look forward to working with the Adoption and Certification Workgroup and the full Health IT Policy Committee to better understand and address this critical issue.

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[i] Agency for Healthcare Research and Quality Electronic Health Record Usability : Interface Design Considerations (HRQ Publication No. 09(10)-0091-2-EF, October 2009).

[ii] National Institute of Standards and Technology. NIST Guide to the Processes Approach for improving the Usability of Electronic Health Records (NISTIR 7741, November 2010).