62 clicks to order Tylenol? What happens when EHR tweaks go bad

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Organizational decisions regarding configuration or customization of electronic health record (EHR) systems can create an outsized impact on the ease, efficiency and error rates of physician users, according to research that tracked clinician EHR experience at four hospitals.

"The results of this study reveal wide variability in task duration, clicks, and accuracy when completing basic EHR functions across EHR products from the same vendor and between products from different vendors," says the study, commissioned by the AMA. "The results highlight the variability that can be introduced from local site customization, given that products from the same vendor resulted in vastly different performance results."

The research, "A usability and safety analysis of electronic health records: a multi-center study," was published in the *Journal of the American Medical Informatics Association.*

The study results are striking, finding an average of a ninefold difference in time and eightfold difference in clicks for certain tasks.

The Tylenol order test came in second on an even more troubling measure—error rate. It ranged from an average of 30 percent to zero, across four test sites. The highest error rate was on an oral prednisone taper—an average of 50 percent at one hospital and 16.7 percent at lowest.

The researchers tracked keystrokes and mouse clicks—and even video recorded—12 to 15 emergency medicine physicians, of varying years of clinical experience, at each of four hospitals. Six typical tasks were selected—two diagnostic imaging orders, two lab orders and two electronic prescriptions.

The scenarios were real, but the patients were not. Two top hospital EHRs were used—systems from Cerner and Epic, vendors that together hold more than half the hospital EHR market—at two hospital sites apiece. MedStar Health's National Center for Human Factors in Healthcare, the AMA and others

conducted the study.

"The variability in time, clicks and errors highlight critical challenges with EHR usability and safety," the researchers found.

Too many choices the culprit?

The research casts doubt on practices that have been a traditional point of pride in the EHR industry—customization and configuration choices for purchasers. Customization is work done by the vendor for a purchaser, while configuration entails built-in settings over which the purchaser has control.

The Office of the National Coordinator (ONC) of Health Information Technology requires that EHR vendors follow a user-centered approach during design, development and testing.

''All of the products examined in this study were usability tested by Cerner or Epic Corporations, and certified by the ONC's accrediting bodies,'' the study's authors acknowledged.

The authors also note that EHR "products go through vastly different implementation processes with variations in customization and configuration, physician training, and software updates. The differences in vendor testing, ONC accrediting body certification review, and implementation processes, as well as other factors, all contribute to the variability demonstrated in this study."

The AMA has long given voice to physician concerns about EHRs, and its advocacy includes compiling eight priorities to improve EHR usability. Among them is emphasizing the importance of user input in product design and post-implementation feedback.

"Our findings reaffirm the importance of considering patient care and physician input in the development and implementation of EHRs," said study co-author Michael Hodgkins, MD, the AMA's chief medical information officer. "There are multiple variables impacting the end-user experience that contribute to physician burnout, a diminished patient-physician relationship, and unrealized cost savings.

"While design can be an important factor," he said, "so too can implementation choices made onsite. Increased collaboration between vendors, information technology purchasers and physicians is needed to optimize experiences and address current needs."