When electronic health records are hard to use, patient safety may be at risk: Study

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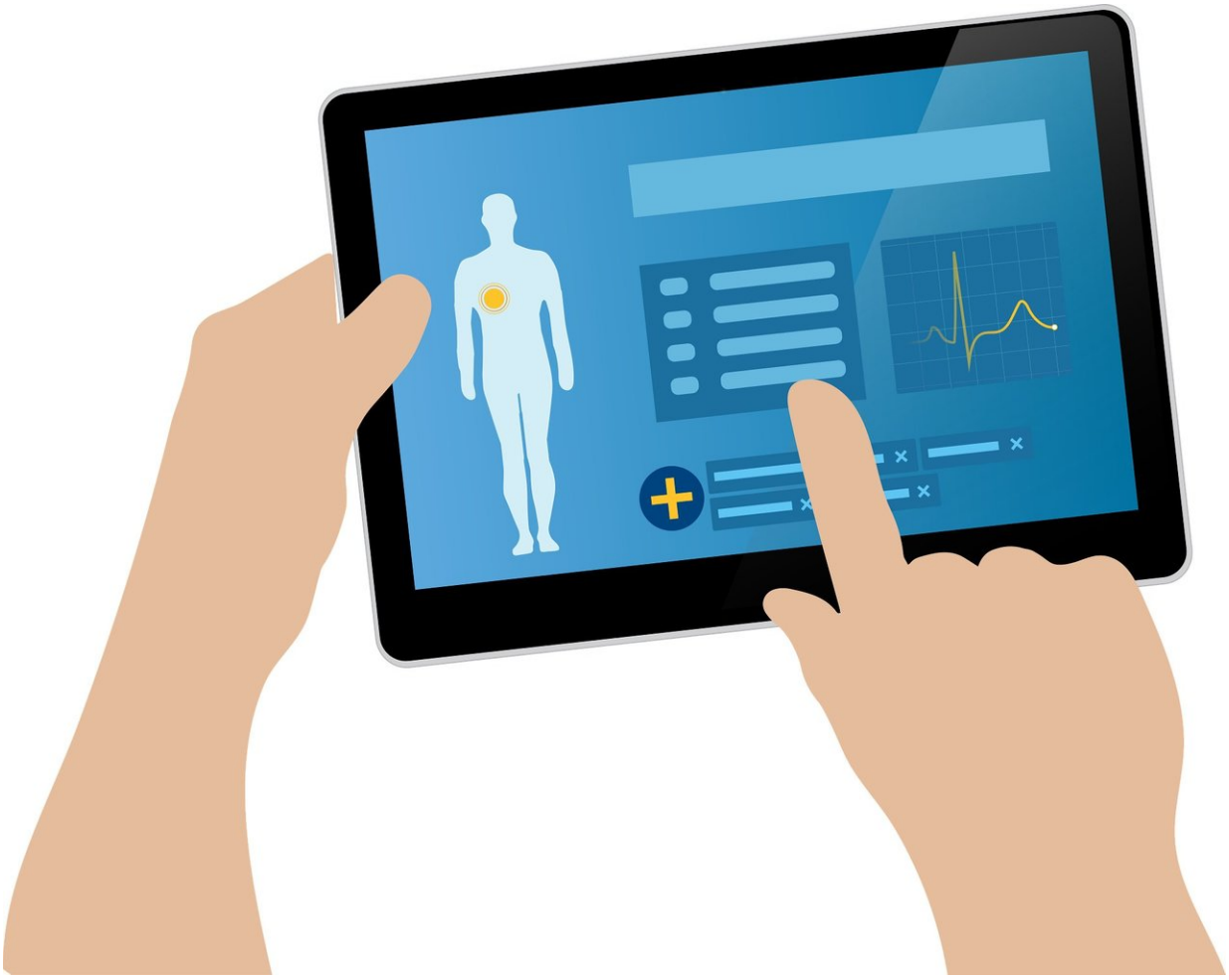

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New research suggests that hospital electronic health records (EHRs) that are difficult to use are also less likely to catch medical errors that could harm patients.

As clinicians navigate EHR systems, alerts, reminders, and clinical guidelines pop up to steer decision making. Yet a common complaint is that these notifications are distracting rather than helpful. These frustrations could signal that built-in safety mechanisms similarly suffer from suboptimal design, suggests the new study. Researchers found that EHR systems rated as being difficult to operate did not perform well in safety tests.

"Poor usability of EHRs is the number one complaint of doctors, nurses, pharmacists, and most health care professionals," says David Classen, M.D., the study's corresponding author and a professor of internal medicine at University of Utah Health. "This correlates with poor performance in terms of safety."

Classen likens the situation to the software problems that led to two deadly Boeing 737 MAX airplane crashes in 2018 and 2019. In both cases, pilots struggling to use the system foretold deeper safety issues.

"Our findings suggest that we need to improve EHR systems to make them both easier to use and safer," Classen says. He collaborated on the study with senior author David Bates, M.D., at Brigham and Women's Hospital and Harvard T.H. Chan School of Public Health, and scientists at University of California San Diego Health; KLAS Enterprises, LLC; and University of California, San Francisco.

The research appears in the September 11 issue of *JAMA Network Open*.

Experts estimate that as many as 400,000 people are injured each year from medical errors that occur in hospitals. Medical professionals

predicted that widespread use of EHRs would mitigate the problem. But research published by Classen, Bates and colleagues in 2020 showed that EHRs failed to reliably detect medical errors that could harm patients, including dangerous drug interactions. Additional reports have indicated that poorly designed EHRs could be a contributing factor.

To investigate further, the research team studied EHR systems in 112 U.S. hospitals. They compared results from an EHR experience survey taken by 5,689 clinicians with outcomes from an EHR safety evaluation tool. The Leapfrog CPOE EHR safety test examines whether medication orders that could potentially harm a patient properly triggers alert systems.

The study found that user experience strongly correlated with EHR safety. When users rated EHRs poorly, they said the systems were difficult to operate, hard to learn, slow, or inefficient.

In cases where clinicians experienced those troubles, those EHR systems were less likely to flag drug-drug interactions, a patient's allergies to drugs, duplicate orders, excessive dosing or other harmful medication errors.

One explanation behind the link is a lack of quality control, Classen explains. Individual hospitals modify EHR operability to meet their specific needs. Some of these changes may be at the expense of safety. What's more, despite the fact that there are many EHR systems, currently there are no standards for usability and safety.

"Hospitals and health systems have spent more than $100 billion on EHRs over the last decade, and most believe that these systems are completely safe and usable but that is not necessarily the case," Classen says. "Hospitals should annually perform a safety check on their system to assure it is safe."

Improving EHR systems in the long term may need a different approach, Classen explains. Just as the Federal Aviation Administration, airline manufacturers, and airlines jointly monitor and improve airline software, a similar collaborative effort with EHR vendors, hospitals and clinicians may be what's needed to optimize EHR software for user satisfaction, safety performance and to ultimately reduce medical errors.

More information: David C. Classen et al, Inpatient EHR User Experience and Hospital EHR Safety Performance, *JAMA Network Open* (2023). DOI: 10.1001/jamanetworkopen.2023.33152

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