

## 7 EHR usability, safety challenges—and how to overcome them

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At their best, electronic health records (EHRs) give physicians data and tools to care for their patients more efficiently and thoroughly than ever before. But sometimes, EHR design, customization or configuration can contribute to patient harm.

A report from the AMA, Pew Charitable Trusts and Medstar Health, *Ways to Improve Electronic Health Record Safety*, identifies shortfalls with EHR usability, implementation and testing and outlines how to improve usability and safety across the continuum—from development to the post-implementation of EHRs.

The three organizations reviewed the medical literature and convened an expert panel of physicians, nurses, pharmacists, EHR vendors, patients and health IT experts. As a result of the panel's work, leaders from the three organizations are calling on developers and health care organizations to voluntarily adopt the criteria and asking oversight organizations such as the Joint Commission to drive providers and vendors to incorporate the recommendations and adhere to the best practices throughout an EHR's life cycle.

The criteria include several factors such as safety culture, product design and development, acquisition, customization and configuration, implementation and system upgrades, and training and provides EHR developers and health care providers with specific areas of opportunities for improvement within each EHR life cycle stage. For example, health care providers should “develop clear justification and use cases for why customizations should be made” and “allow clinicians and subject-matter experts to shape usability and safety design and testing.”

They also said the Office of the National Coordinator for Health Information Technology can recognize elements of the voluntary certification as alternatives to its current approach.

“Adherence to these recommendations by EHR developers and health care providers can reduce the likelihood of unintended patient harm from clinician use of this technology,” the report said.

## 7 challenges outlined

After analyzing 557 reports that clinicians submitted, researchers identified seven safety and usability challenges physicians should be on the lookout for when they use EHRs in their practice.

**Data entry.** A clinician's work process may make it hard or impossible to appropriately enter the desired EHR data. One case researchers analyzed showed that a clinician chose the wrong frequency for a drug to be administered because the clinician didn't realize that the order in which the options were populated into the EHR had changed.

**Alerting.** EHR alerts or other feedback from the system are sometimes inadequate because they are absent, incorrect or ambiguous. For example, a report showed that even though a patient's gelatin allergy was listed in the EHR, a clinician wasn't alerted to the allergy while prescribing a medicine.

**Interoperability.** Communication of information in an EHR may be hindered because interoperability is inadequate within components of the same EHR or from the EHR to other systems. In one case, clinicians couldn't access labs for a hospital patient from records held in a different part of the hospital.

**Visual display.** Clinicians may find it hard to interpret information because EHR displays are confusing, cluttered or inaccurate. For example, a clinician tried to order 3.125 mg of a medication, but the EHR listed only a 6.25 mg prescription, with a 3.125 mg dose listed in small print, confusing the clinician.

**Availability of information.** Clinically relevant information is hindered because it is entered or stored in the wrong location or is otherwise inaccessible in the EHR. For example, a hospital lab staffer couldn't access a section of a patient's health record where the clinician ordered diagnostic tests; consequently, the tests weren't performed.

**System automation and defaults.** The EHR automates or defaults to information that is unexpected, unpredictable or not transparent to the clinician. For example, a clinician ordering an anticoagulant tried to start the dosing at a set time, but the date automatically defaulted to the following day.

**Workflow support.** The EHR workflow is not supported due to a mismatch between the EHR and the end user's intent. In one case, a physician ordered diagnostic tests and included instructions for the lab in a special instructions field, not knowing that the lab staff couldn't see that information. Consequently, the tests weren't conducted.

## Test your organization's EHR

The report recommends that health care providers and EHR developers use safety-based, rigorous test case scenarios that are outlined in the report to detect and correct problems and help avoid patient safety issues similar to those reported above.

An appendix to the report includes 14 cases that tackle the seven usability issues. Each usability issue has a basic scenario that evaluates one aspect of the clinical workflow and an advanced scenario that tests a more detailed aspect of the clinician's workflow, including activities like teamwork and communication with other clinicians.

Physicians and others also can create their own rigorous test cases based on their individual needs. The report says a rigorous test case needs to be representative; contain concrete goals and measures, test areas of risk or inefficiency and define the audience.

For more details on this analysis by researchers at MedStar Health's National Center for Human Factors in Healthcare, read their *JAMA* study, "Electronic Health Record Usability Issues and Potential Contribution to Patient Harm."