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How the New Electronic Health Record Reporting Program Could Improve Patient Care

Public data provide an opportunity to enhance technology safety

Over the past decade, electronic health records (EHRs) have improved the quality, safety, and efficiency of patient care, but minimal data exist on the differences among technologies, which could inform purchasing decisions and identify areas for enhancement.[1] For example, EHRs differ in their usability—how doctors, nurses, and other staff interact with them—and that can introduce burdens on clinicians and contribute to medical errors.

Through the bipartisan 21st Century Cures Act, Congress tasked the Office of the National Coordinator for Health Information Technology (ONC) with developing a reporting program to gather and release data on several different aspects of EHR performance, including usability. To implement this directive, ONC contracted with the Urban Institute to create the program and solicit feedback from stakeholders on what data to collect. In response, a broad range of groups, including those representing physicians, nurses, and children's hospitals, called for the program to place a greater focus on how usability can affect patient safety.

Greater transparency can fuel advances in patient care

Poor EHR usability can lead to clinician confusion and patient harm.[2] Challenges can result from how EHRs are designed by vendors and customized by facilities, as well as unique workflows and the training users received.[3] Usability-related safety problems can emerge due to confusing interfaces, the need to develop workarounds, an overabundance of unnecessary alerts, and other issues.

In an analysis of 9,000 medication safety events at three health care systems, EHR usability contributed to approximately one-third of the occurrences. In one case, a clinician entered a child's weight in pounds when the EHR was configured for kilograms.[4] The misunderstanding effectively doubled the child's actual weight, resulting in the patient later receiving twice the appropriate drug dose. In another instance, the EHR defaulted

to ordering a drug to prevent organ rejection in the morning, resulting in a transplant patient not receiving the necessary medication for 12 hours. To understand how best to improve the usability of EHRs first requires more transparency; the EHR reporting program could provide that.

When other industries have faced their own safety challenges, they've been able to improve the safety of their products by taking a similar transparency-centered approach. In 1966, in response to public pressure to improve automobile safety, Congress passed legislation creating a series of offices that would eventually become the National Highway Traffic Safety Administration. The agency crash tests vehicles and releases safety rankings, which in turn helps inform consumer choices when purchasing automobiles.[5] These rankings have also led to advances in automobile design that have contributed to steady declines in passenger vehicle deaths.[6] Public information about how EHRs perform and their effect on patient safety could be just as transformative.

With the 21st Century Cures Act, Congress sought to apply those lessons to health IT and created the EHR reporting program to do so. In particular, Congress mandated that ONC include criteria on security, interoperability (the ability of different systems to share data with one another), usability and user-centered design, conformance to certification testing, and other categories to measure the performance of EHRs. In addition, ONC will release the data it collects on its website, and adherence to the reporting program's criteria by EHR developers would be a requirement for their systems to meet federal criteria for health information technology.

Government can focus on EHR safety in transparency effort

However, as ONC develops the EHR reporting program, the agency will have to address factors for health records that are not analogous to other industries. For example, hospitals and doctor's offices may request specific changes to an EHR to suit their workflow; these alterations could lead to setting-specific usability problems. For the program to be effective at identifying ways to improve EHR usability, ONC would need to consider both the design of systems and how they are implemented.

Similarly, health care reporting programs can place burdens on clinicians, limiting the time they can spend on patient care. ONC can leverage passive data collection, much like how a smartwatch collects data on an athlete's performance, to reduce reporting burdens on clinicians. For example, EHRs can collect data on where clinicians spend the most time in the health record and what actions they perform, which in turn can help determine where improvements are needed.

ONC could also focus on the processes that EHR developers take to design their systems. For example, the incorporation of end users—such as doctors and nurses—in the testing of technology can help identify potential opportunities for patient harm.

Conclusion

The establishment of the EHR reporting program marks the next phase in the oversight of digital health records and affords ONC an opportunity to prioritize the safety of patients. Having effective data to improve the usability and safety of EHRs will encourage technology vendors to address gaps in these systems, give providers better information about different systems, and offer clear insights about the effects of customizations on usability.

Endnotes

1   J.M. Walker et al., "EHR Safety: The Way Forward to Safe and Effective Systems," *Journal of the American Medical Informatics Association* 15, no. 3 (2008): 272-7, https://www.ncbi.nlm.nih.gov/pubmed/18308981.

2   Request for Information Regarding the 21st Century Cures Act Electronic Health Record Reporting Program, Fed. Reg. 42913-19 (Aug. 24, 2018), https://www.federalregister.gov/documents/2018/08/24/2018-18297/request-for-information-regarding-the-21st-century-cures-act-electronic-health-record-reporting.

3   The Pew Charitable Trusts, "Improving Patient Care Through Safe Health IT" (2017), https://www.pewtrusts.org/en/research-and-analysis/reports/2017/12/improving-patient-care-through-safe-health-it.

4   The Pew Charitable Trusts, "Poor Usability of Electronic Health Records Can Lead to Drug Errors, Jeopardizing Pediatric Patients" (2019), https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2019/04/poor-usability-of-electronic-health-records-can-lead-to-drug-errors-jeopardizing-pediatric-patients.

5   B.H. Vrkljan and D. Anaby, "What Vehicle Features Are Considered Important When Buying an Automobile? An Examination of Driver Preferences by Age and Gender," *Journal of Safety Research* 42, no. 1 (2011): 61-5, https://www.ncbi.nlm.nih.gov/pubmed/21392631.

6   C.M. Farmer and A.K. Lund, "Trends Over Time in the Risk of Driver Death: What If Vehicle Designs Had Not Improved?" *Traffic Injury Prevention* 7, no. 4 (2006): 335-42, https://doi.org/10.1080/15389580600943369.

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