Health Information Technology Initiative

Pew's health information technology initiative focuses on advancing the interoperable exchange of health data and improving the safe use of electronic health records (EHRs).

The transition from paper to electronic records gave rise to the promise that clinicians, anywhere and at any time, could access patients' full, accurate medical history and obtain insights from digital systems to improve care quality, such as through alerts when prescribing medications to which individuals are allergic. However, key gaps still exist—namely: safety challenges associated with the design and implementation of systems; inadequate patient matching, which refers to the ability to link the same person's records across facilities where that individual seeks care; and the effective exchange of clinical data, such as medication lists and clinical notes.

While progress on these challenges are necessary nationwide, some rural and underserved facilities may lack the expertise or resources to prioritize solutions to these issues.[1] ONC in 2016 found that rural hospitals engaged in electronically finding, sending, receiving, and integrating patient information at half the rate of urban and suburban hospitals.[2] The study also indicated that a third of small, rural, and critical access hospitals had the ability to integrate summary of care records into their EHRs compared to 43 percent of suburban and urban facilities. Government actions—including from the Centers for Medicare & Medicaid Services (CMS)—can help address these challenges so that patients obtain safer, more coordinated care.

Hospitals should implement best practices to improve safety

Patient safety challenges can arise due to—in part—EHR usability, which refers to whether clinicians can efficiently and effectively interact with the technology. Usability challenges can result from the initial design of systems, how they are customized by facilities, unique workflows, user training, and other factors. Usability-related safety problems can emerge due to confusing interfaces to complete tasks, the need to develop workarounds, an overabundance of unnecessary alerts, and many other issues given the central role that EHRs increasingly have in helping clinicians order procedures, review health information, and obtain decision support.

For example, research published last year in *Health Affairs* showed that EHR usability contributed to approximately a third of 9000 medication errors examined across just three health care organizations that care for children; 609 of these usability related events reached the patients.[3] In one case involving the birth of newborn twins, clinicians could not create a record for one of the infants, which delayed a necessary blood transfusion that was ultimately ordered for the sibling as a workaround. In another case, a clinician entered a child's weight in pounds when the EHR was configured in kilograms, doubling the child's weight and resulting in the patient receiving twice the appropriate medication dose.[4]

To address these usability and safety challenges, Pew, the American Medical Association, and MedStar Health identified best practices that hospitals and EHR developers can implement to detect and mitigate potential errors.[5] For example, hospitals should justify any high-risk customizations they make and develop plans to monitor those functions for safety problems. However, some hospitals, including ones that treat rural or underserved populations, may need incentives or directives—such as from CMS, through its Promoting Interoperability Program, or hospital accreditation organizations like the Joint Commission—to prioritize adoption of these best practices.

Better patient matching can ensure record linkage

Patient matching refers to the ability to link records for the same patient across different sites of care. Presently, up to half of the information exchanges made by health care organizations may fail to accurately match records for the same patient. To connect records held at different health care facilities, organizations typically compare patients' names, dates of birth, and other demographic data to determine if records refer to the same individual. Health care facilities use algorithms to conduct these matches, and also employ staff to manually review records. This process often fails to accurately link records because of: typos entered into the system; similarities in names, birth dates or addresses among different patients; changing information, such as when individuals move or get married; among other reasons.

Ineffective patient matching can have patient safety and cost ramifications. Patients may receive inappropriate care and face the possibility of medical errors if information used for treatment is missing or inaccurate; one in five hospital chief information officers surveyed said that patient harm occurred within the last year due to a mismatch. In an extreme example, the care for an 11-month-old twin was documented in her sister's record, resulting in the failure of the health system to recoup $43,000 in costs from the insurer.[6]

Poor patient matching can significantly affect patients in rural and underserved communities, where individuals may have to travel to see specialists or obtain care unavailable in their own community. Pew research identified two opportunities to improve patient matching in the near-term.

1. In Pew-funded research published, experts at Indiana University studied whether the standardization of different data elements improves patient matching rates. The research revealed that the standardization of address to the standards employed by U.S. Postal Service (USPS)—which details the preferred abbreviations for street suffixes and states, for example—would improve match rates by approximately 3 percent.[7] An organization with a match rate of 85 percent could see its unlinked records reduced by 20 percent with standardization of address alone. One technology developer indicated that this would help their system match an additional tens of thousands of records per day.

   Separately, standardizing last name in a specific way—while showing limited utility on its own—would further improve match rates when coupled with address standardization. The research indicated that standardizing last name in conjunction with address could improve match rates from, for example, approximately 81 to 91 percent, which would reduce the number of unmatched records by half.

2. The federal government currently requires EHRs to make some demographic data—such as name and birth date—available for matching. However, health records contain other demographic data routinely collected that aren't typically used or made available to match records. For example, research published in 2017 showed that email addresses are

> already being captured in more than half of patient records.[8] The documentation of email is likely higher today given the adoption of patient-facing tools, like portals, that often require emails to register. Greater use of data elements—like email address—could improve patient matching rates.

More uniformity on the data elements used for matching can improve rates, including for patients in rural and underserved communities that travel for care. CMS can encourage adoption of these strategies through its payment incentive programs—such as Promoting Interoperability—and by coordinating with the Office of the National Coordinator for Health Information Technology (ONC), among other actions.

More effective clinical data exchange can give patients, providers better information

Currently, when patients travel for care, they must often bring copies of their own records or the new health care providers they see may lack information on that person's care, such as laboratory results or images of a tumor. For EHRs to be used to their fullest potential, different systems must be able to easily exchange clinical data—such as medication lists, laboratory results, and physician notes—with one another.[9] Better data exchange—referred to as interoperability—will allow doctors and their patients to quickly access the information they need to make informed health care decisions.

In recent years, CMS has issued policies aimed at improving patient access to their health information and to promote greater interoperability. Efforts from CMS and ONC focused on the use of standard application programming interfaces (APIs), which are software tools that allow different technologies to more easily communicate. APIs are the foundation to the modern internet; they allow travel websites to aggregate fares from different airlines and personal financial applications to pull data from an individual's accounts, among countless other everyday uses. Congress, in the 21st Century Cures Act, issued a directive to integrate APIs into EHRs to bring that same seamless information exchange into health care, grant patients access to their data, improve communication between providers, and give clinicians additional decision support tools to enhance their ability to offer quality care.

While ONC has issued proposed regulations for EHRs to have standard APIs, adoption and use of these tools is still needed. CMS, for example, can encourage use of standard APIs through the Promoting Interoperability program and for data exchange between health care providers, including when patients travel for care outside their immediate community.

Responses to specific questions from the Committee

Given that these three policy areas have the potential to significantly impact the patient care of rural and underserved communities, we submit the following response to the Committee's inquiry:

Are there two or three institutional, policy, or programmatic efforts needed to further strengthen patient safety and care quality in health systems that provide care to rural and underserved populations?

The Task Force, working in conjunction with CMS, can take the following steps to address the health care needs of rural and underserved populations:

1) *Safety:* Encourage CMS to incorporate safety into its Promoting Interoperability program, an approach that the agency recently expressed interest in pursuing. For example, CMS can provide bonus points to the Promoting Interoperability score for health care providers that adopt best practices, such as testing their systems for safety. Additionally, CMS could encourage use of the Safety Assurance Factors for EHR Resilience (SAFER) Guides—which document a series of best practices for health care organizations to self-assess their medical record systems.
2) *Patient matching:* Push CMS to support greater standardization of demographic data used to match records located in different facilities—such as adding patient matching explicitly to the Promoting Interoperability program or as part of conditions of participation in Medicare. Similarly, CMS could establish a cross-agency memorandum of understanding with ONC and USPS to prioritize patient, including through use of the postal standard for address.
3) *APIs:* Urge CMS to provide encourage health care providers to accelerate adoption of standards-based APIs both for patient access to data and the exchange of information among providers. CMS can provide incentives for rapid provider adoption of APIs—such as in Promoting Interoperability—and can develop pilot projects to measure and test the use of these tools for data exchange between health care organizations.

Conclusion

Rural Americans have not reaped the same benefits from health care modernization as their urban counterparts.[10] The Task Force and CMS have the opportunity to advance safety in EHRs, incorporate additional data for patient matching, and promote the use of APIs. These steps can help health care providers better use EHRs to improve the safety and coordination of care for all Americans, including those in rural and underserved communities.

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