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# Electronic Health Records: Patient Matching and Data Standardization Remain Top Challenges

## Overview

Since 2009, hospitals and physicians have rapidly moved from paper patient records to electronic ones. These technologies have helped to foster safer, higher-quality, and more coordinated care.[1] But electronic health records (EHRs) have not yet reached their full potential. This is partly because hospitals and doctors' offices still face challenges in sharing data about the same patient. The inability to link patient records among different health systems, and to format the data in a way that can be easily exchanged, prevents patients and their doctors from having the information they need to make appropriate decisions.[2]

## Barriers to interoperability

Patients often see multiple health care providers, including primary care doctors, medical specialists, and hospital-based and outpatient care. In each of these settings, clinicians conduct physical examinations and order laboratory tests, storing their findings in an EHR. To more effectively and efficiently treat patients, hospitals and health care providers should be able to both retrieve the relevant data from their own copies of patients' records and access information stored in other providers' EHRs. Unfortunately, they can't do that now. This obstacle—referred to as poor interoperability—leads to redundant services, errors in patient care, unnecessary

hospitalizations, delays in treatment, and wasted provider time, all of which raise health care costs.

A recent Government Accountability Office report found that the main reasons for inadequate interoperability are problems accurately matching patients to their health records and the limitations of health data standards.[3]

## Patient matching

When a patient arrives at a doctor's office or hospital, the staff attempts to locate his or her medical records, both those within the facility and those held by other health care providers. To match people with their prior medical records, health care providers use a variety of nonstandardized approaches that include different data and algorithms. Many providers attempt to match records based on an individual's last name, date of birth, address, and phone number, among other demographic data. Often, an automated algorithm in the facility's EHR system evaluates multiple data fields and generates an overall likelihood of a match.

This method produces relatively high error rates. One in 5 matches within an organization can be incorrect, and up to half happen when providers seek data from other facilities.[4] The errors occur because data in patients' EHRs may be missing or incorrect, and because there is no consensus within the health care industry on the best way to match patients across institutions. As a result, when one hospital sends information to another health care facility, the recipient cannot reliably link it to the patient's existing profile.

Errors within the same health care facility can occur if staff match a new patient's record with that of another person with the same name. Alternatively, they may create a new record for a patient already in the system. For example, the Harris County health system, which includes Houston, has 2,488 records with the name Maria Garcia, of which 231 have the same birth date.[5] Hospital staff also may not be able to locate a patient's record, for example, because demographic information was incorrectly entered or the patient moved.

These duplicate records and mismatches can jeopardize patient safety. In one survey, 20 percent of hospital chief information officers reported that at least one patient had been harmed at their facilities in the past year because of mismatched records.[6] Another survey found that patients with duplicate electronic records were more likely to have abnormal laboratory results overlooked by their clinician.[7] Managing IT systems to address these problems is expensive: Resolving a single duplicate record can cost hospitals approximately $1,000.[8]

## Data standards

Aside from the inability to accurately match patients, EHR systems store health data in different ways, making it difficult for hospitals and clinicians to easily integrate information they receive from another health care provider into their records. For example, some EHRs classify a medication reaction as an allergy, while others record it as a side effect.[9] These types of discrepancies could result in errors at the point of care, such as a patient receiving the wrong dose of a medication or one that causes a serious reaction.

Federal criteria for documenting and exchanging EHR data prioritize flexibility for the manufacturers of these systems, giving them considerable latitude in how to interpret and meet regulations. Compounding this problem is insufficient transparency about the standards each EHR system employs. As a result, health care providers often cannot readily exchange data without building costly customized interfaces between each platform. Therefore, even when hospitals can match patients, their data are often not easily and effectively exchanged across providers.

# Fixing interoperability

The ability to share health data should be a fundamental part of a health care system that provides patients with reliable, high-quality, coordinated care. A number of possible solutions have been proposed to address the challenges to interoperability, such as a creating a voluntary national approach to uniquely identify each patient and strengthening the standards that govern how EHRs store data. The federal government, hospitals, clinicians, EHR vendors, and other stakeholders should work together to overcome interoperability challenges so that individuals are matched with their records, and physicians can use that data to improve patient health.

# Endnotes

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9   Government Accountability Office, *Electronic Health Records: HHS Strategy to Address Information Exchange Challenges Lacks Specific Prioritized Actions and Milestones* (March 2014), http://www.gao.gov/assets/670/661846.pdf.

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