

Unintended Consequences: Identifying and Mitigating Unanticipated Issues in EHR Use

By Genna Rollins

A federal guide alerts users to unanticipated and undesired effects of EHR use and offers approaches to avoiding and remedying them.

Electronic health records hold the promise of better care coordination, improved patient safety, and more accurate documentation and coding; however, as anyone who either uses an EHR or has been involved in implementing one knows, the road to realizing those benefits can be fraught with barriers and unexpected twists and turns. In recognition of the challenges associated with using EHRs, the Agency for Healthcare Research and Quality (AHRQ) funded research into the unintended consequences of EHRs and published a guide on avoiding them.

Developed by researchers at RAND Corporation in cooperation with Kaiser Permanente of Colorado and the AHIMA Foundation, the guide is designed to help organizations anticipate, avoid, and address problems that can occur when implementing or using an EHR. Based on research literature, practical guides for EHR implementation and use, and input from individuals and institutions that have implemented EHRs—including about 200 AHIMA members—the guide is a compilation of known best practices, according to one of the authors and principal investigators, Ross Koppel, PhD, a professor of sociology at the University of Pennsylvania.

"There was a desire by AHRQ to have something that would help people identify, predict, and alleviate unintended consequences of EHRs," Koppel says. "The systems are expensive and implementations arduous, and that was the impetus to produce this guide—to help organizations be more successful and realize all the potential of their technologies."

What Are Unintended Consequences?

The guide defines unintended consequences as unanticipated and undesired effects of implementing and using EHRs. Although occasionally there are unintended positive benefits, for the most part the unintended EHR-related consequences negatively impact the work place. Some of the most common unintended consequences include increased work for clinicians, unfavorable workflow changes, ongoing demands for system changes, and conflicts between electronic and paper-based systems.

Unintended consequences also can result in unfavorable changes in communication patterns and practices and foster negative user emotions when physicians and other caregivers become frustrated with hard-to-use software.

In addition, unintended consequences can generate new kinds of errors and shake up the power structure in an organization; for example, certain departments can gain an edge by requiring compliance with EHR features such as clinical decision support alerts.

Finally, unintended consequences can lead to overdependence on technology that only comes to light when the system goes down. For example, physicians dependent on clinical decision support systems may have trouble recalling standard dosages or formulary recommendations.

According to Koppel, unintended consequences are ubiquitous across EHRs, regardless of the software vendor or care setting.

"They're a constant, so that to think you can avoid them altogether is like avoiding pain in life—it's impossible," he says. "Seventy percent of implementations fail. That doesn't mean they're complete failures. It could mean it takes twice as long and costs four times more than planned, or that not all departments are up or that only some of the intended functions are implemented."

Unintended consequences, Koppel says, are a byproduct of interactions between technology and the complex healthcare environment, interactions made more challenging by the fact that EHRs are implemented in active care settings.

"Healthcare organizations have to bring up these systems while they're operating 24-7. It's like building an airplane while you're flying at 35,000 feet," he explains. "Doctors and nurses are under extraordinary pressure and want to get their work done. If the technology is in the way, they're brilliant at workarounds that get embedded, and no one even notices them. Sometimes [the workarounds are] very effective, but often they expose patients to harm and are inefficient."

If that assessment seems bleak, Koppel emphasizes that the guide offers all kinds of EHR implementation specialists, including HIM professionals, help in anticipating trouble and exploring ways to minimize the impact.

"We hope HIM staff and other IT types will review the guide in general, and if they suspect problems with their EHRs, they'll go to specific sections of the guide to find targeted advice," says Koppel. Separate sections of the guide address challenges and considerations for current EHR users as well as those planning implementations.

The Importance of Metrics

The guide also recommends that current EHR users track metrics to assess how their EHRs are being used and to identify potential unintended consequences and areas where functionalities can be improved. For example, the percentage of alerts triggered in a given period will provide a sense of the utility and sensitivity of the alerts.

Another means of assessing the functionality of an existing EHR is to make it easy for users to provide feedback or report errors, and likewise, for the organization to respond to such reports, the guideline emphasizes. The VHA, which was consulted in preparing the guide, has taken a comprehensive approach, says Gail Graham, deputy chief officer for healthcare information management.

"We've adopted the airline industry model of notification of near misses, not only when there are bad outcomes. We also report circumstances where, for example, updates are changing some aspects of the EHR that may be confusing," she explains. "Sometimes things look like they're isolated incidents. But this is a way to build a picture across the enterprise to identify whether things are working as designed or if there are flaws in the system."

Graham emphasizes that an issue log does not have to be a sophisticated software application. It could be maintained in a simple spreadsheet. The guide provides a detailed example of such a spreadsheet, which covers a description of the problem, where and by whom it was discovered, the impact and cause of the problem, and the tracking and remediation steps taken to address it.

Regardless of the tracking system used, the facility should have a method for staff to easily report incidents, near misses, and even subtle issues that could lead to problems down the road.

"You want people to report frustrations with the system so they're not ignored and workarounds don't become pernicious," according to Koppel.

While HIM staff would be a natural choice to maintain an issue log, Koppel notes that the department or individuals doing so should have the authority to act on the information and provide unbiased reporting of any problems. "You need a somewhat neutral person because there's a tendency to identify problems as user errors," he says. "You need someone to take a broader view."

Graham suggests that "those who know healthcare and the systems of healthcare probably are the best to track problems." The VHA utilizes a multidisciplinary team to analyze log reports and compare them against standards.

"When you have that kind of process, it doesn't matter who takes the lead," she says.

Addressing the Problems

As the guide points out, identifying, reporting, and understanding the causes of EHR problems is half the solution to unintended consequences. Equally important is determining the most appropriate corrective actions, which typically fall into broad categories including software changes, training for IT staff or end users, configuration changes, custom programming, care process changes, and policy changes.

Since most organizations do not have unlimited resources or the ability to implement multiple changes simultaneously, the guide outlines a series of factors to consider in determining which unintended consequences to address in which order.

Examples include analyzing who is affected by the unintended consequence, what issues (e.g., safety, productivity, financial) the unintended consequence creates, the types of activities or areas affected, and the downstream processes involved.

The guide also recommends evaluating how extensive and serious the effects of the unintended consequence are and how urgently remediation is needed. It includes a template adapted from the remediation planning process used by Kaiser Permanente of Colorado.

Guidance for Implementers and Future Users

While much of the guide focuses on issues around unintended consequences of EHRs that current users might face, a section also is devoted to considerations for those who have not yet implemented a system.

The guide discusses how to determine whether an organization is ready to implement an EHR and raises the importance of identifying objectives. It also provides a case study of three orthopedic practices that ran into unintended consequences in the form of costly customizations that were not covered in their original EHR contract.

In addition, the guide links to several resources designed to help organizations assess their workflows prior to implementing an EHR. As the guide observes, an EHR "will not magically improve your processes; in fact, preexisting problems can spread and worsen if they are not addressed prior to implementation."

If AHRQ's guide contains many words of caution, it also provides ample resources to help sites plan their implementations to minimize and manage unintended consequences. It also offers encouragement in the form of success stories from organizations that have adopted EHRs, and in that it may be a valuable resource, according to Graham.

"I hope this will educate the 50 percent of healthcare organizations that haven't adopted EHRs so that they're ready to purchase and have thought carefully about what they'll need to include in an implementation," she says.

Reference

S.S. Jones, R. Koppel, M.S. Ridgely, T.E. Palen, S. Wu, and M.I. Harrison. *Guide to Reducing Unintended Consequences of Electronic Health Records*. Prepared by RAND Corporation under Contract No. HHSA290200600017I, Task Order #5. Agency for Healthcare Research and Quality (AHRQ). Rockville, MD. August, 2011. www.ucguide.org.

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