

Developing a Guide to Identifying and Remediating Unintended Consequences of Implementing Health Information Technology

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Summary: The use of new health information technology (IT) has been shown to enhance the quality, safety, and effectiveness of medical care. However, there are also unanticipated and undesired effects of health IT implementation—often called unintended consequences—that can be difficult to identify during a technical analysis or pilot test of the new technology. The RAND Corporation, in partnership with Kaiser Permanente of Colorado and the American Health Information Management Association (AHIMA), have developed, conducted user testing of, and disseminated the empirically-grounded Web-accessible *Guide to Reducing Unintended Consequences of Electronic Health Records*. This guide synthesizes the existing knowledge on types and causes of unintended consequences and presents strategies to avoid or address them.

The project was a collaboration of six major health care settings and groups representing a geographically diverse group of provider organizations that included inpatient and outpatient care delivered in academic and community settings. These organizations were either in the process of implementing a variety of health IT components from several vendors or were planning to do so in the near future. Depending on health IT implementation status and preferences, participants served either as laboratory sites to help develop the guide or as pilot sites to test it. The laboratory and pilot tests sites differed in settings (rural/urban), size (academic centers and solo physician practices), and scope of practice (inpatient/ambulatory), and therefore offered a range of perspectives and helpful feedback.

The guide will help organization leaders understand sociotechnical sources of unintended consequences and may help them avoid undesirable effects of health IT implementation. This knowledge will allow organizations to develop a process to diagnose and cope with emergent consequences. This process may even help prevent undesirable outcomes and provide opportunities for learning about and improving health care delivery. Examples of the target audience for the guide include regional extension centers, chief information officers, directors of clinical informatics, practitioners serving as champions of health IT, hospital and clinic administrators, and implementation oversight teams. Front-line health IT users, including physicians and nurses, should also find the guide useful.

Specific Aims:

- Synthesize the existing knowledge on types and causes of unintended consequences and strategies to avoid or address undesired consequences. **(Achieved)**
- Develop the draft version of the guide, and instructions for its use. **(Achieved)**
- Pilot test the guide at three additional sites to assess its usability and usefulness. **(Achieved)**
- Revise the guide and disseminate final version in a Web-accessible format through several

methods. **(Achieved)**

2011 Activities: The focus of activity was on completing and disseminating the final version of the guide. The guide had been pilot-tested at four sites in 2010 to assess its usability and usefulness. Revisions were made in 2011 in response to the feedback received. The project was completed in June 2011. The guide was prepared in a Web-based format and is now available at <http://www.healthit.gov/ucguide>. It represents a compilation of the known best practices for anticipating, avoiding, and addressing electronic health record-related unintended consequences. Because this area of research is still in its infancy, the guide is considered to be a work in progress.

Impact and Findings: Unintended consequences can undermine provider acceptance, increase costs, sometimes lead to failed implementation, and even result in harm to patients. Examples of unintended consequences include but are not limited to: more work for clinicians, unfavorable workflow changes, conflicts between electronic and paper-based systems, and overdependence on technology. If organizations learn to anticipate and identify unintended consequences, they will be in a better position to make effective decisions, clarify tradeoffs, and address problems as they arise.

Target Population: General

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Business Goal: Synthesis and Dissemination
