Decisionmaker Brief

Computerized Provider Order Entry

AHRQ's Health IT Portfolio. AHRQ's health information technology (health IT) initiative is part of the Nation's strategy to put information technology to work in health care. By developing secure and private electronic health records for most Americans, and making health information available electronically when and where it is needed, health IT can improve the quality of care, even as it makes health care more cost-effective. Since 2004, AHRQ has invested over $260 million in contracts and grants to over 150 communities, hospitals, providers, and health care systems in 48 States to promote access to and encourage the adoption of health IT. These projects constitute a real-world laboratory for examining health IT at work.

Computerized provider order entry (CPOE) holds promise to improve the safety and efficiency of medication and test ordering processes by reducing order entry errors. Order entry errors can occur, for example, when providers order medications that adversely interact with medications the patient is already taking or when duplicate tests or procedures are ordered due to incomplete information in a patient's medical record. CPOE, if implemented and used correctly, can automatically check for many such potential errors, helping to avoid potentially hazardous drugs or unnecessary tests and procedures. In contrast, verbal and written order entry processes, without systematic integration of patients' medical information, may result in order entry errors that pose a serious threat to patient safety and reduce health care efficiency.

This report focuses on findings from AHRQ health IT grantees that are implementing various CPOE applications in 11 states (California, Georgia, Illinois, Indiana, Iowa, Massachusetts, Missouri, Ohio, Oregon, Utah, and Wisconsin), including several projects in low-income and rural areas and areas with high percentages of patients enrolled in Medicare and Medicaid.

Leadership is critical at the institutional and practice levels. This lesson was a common theme among the AHRQ-funded projects. Leadership is critical from the very start of the project and must be maintained for the entire life of CPOE.

- At the institutional level, strong and stable leadership, executive-level staff like the Chief Nursing Officer and senior-level physicians with a commitment to CPOE implementation and use, was crucial to success. Also essential was an environment committed to CPOE implementation and use, including dedicated resources and funding. At the practice level, the involvement of physician champions, respected clinicians who have embraced health IT, was more effective in persuading resistant colleagues to adopt CPOE than the efforts of others.

Health IT knowledgeable personnel are scarce, especially in rural communities. Qualified personnel, meaning individuals knowledgeable in both clinical care and IT, improve the chances of success in planning for, implementing, and evaluating health IT. Such personnel are scarce in general, and even more scarce in rural areas.

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- One rural AHRQ-funded project lacked local talent, which required the project to hire an expensive outside consultant; another project reported difficulty filling vacant health IT positions due to a lack of competitiveness with the corporate sector.
- Several AHRQ projects provided health IT training and education to clinical staff so they could acquire the skills necessary to lead a health IT project. Some projects pushed back their implementation timetable to accommodate the need to train internal staff.

Many of the AHRQ-funded projects spent vast amounts of time developing order sets. This was a painstaking process that required the participation of many stakeholders.

- Several AHRQ projects spent 6 to 8 months developing order sets. Many projects did not expect it to take as long, resulting in implementation delays.
- A few AHRQ projects recommended the development of a national, open repository of standardized order sets. This would allow institutions to download and choose order sets when implementing CPOE, saving precious time and resources.

Implementing CPOE is not easy. AHRQ-funded projects reported implementation delays ranging from 6 to 18 months. Much of this was due to delayed product deliveries from vendors, but several projects reported problems integrating products with other systems and errors when products were turned on; considerable customization and debugging is often required. Another common theme among AHRQ-funded projects was the importance of clinician buy-in.

- CPOE system selection took up to 6 months for some projects.
- Projects should anticipate an extended preparation schedule. Even projects using an all-at-once implementation spent 2 to 3 years planning for the 24 to 48 hours of implementation.
- One AHRQ-funded project was implemented in an environment that already had clinician buy-in; the principal investigator indicated this was important for success.

Interpret measurements of the impact of CPOE on patient care with caution due to the rapidly changing health care environment. After CPOE implementation, there can be a tendency to attribute changes in clinical care to the tool. However, the United States has a rapidly changing health care environment; caution in interpreting changes is prudent.

- One AHRQ-funded project noted significant changes in patient blood pressure and low density lipid cholesterol levels after CPOE implementation; however, such changes were also noted in control practices that did not have CPOE. The recent emphasis on clinical guideline adherence may have contributed to improvements across the board, independent of CPOE.

The AHRQ-funded portfolio of health IT projects is producing valuable, informative lessons for the Nation. The projects are making contributions to the use of health IT in solving the national challenge of improving patient safety and reducing health care costs. The lessons to date enhance understanding of various IT applications and the challenges involved when implementing them in a wide variety of clinical settings. Outcomes from these projects have the potential to change the U.S. health care system and offer valuable insight for others who look to use health IT applications in their own organizations.

For More Information:

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