

Information Technology Implementation by Cognitive Engineering of Organizational Routines

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Organization:	University of Michigan at Ann Arbor
Mechanism:	RFA: HS08-270: Utilizing Health IT to Improve Health Care Quality Grant (R18)
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Summary Status as of:	December 2010

Target Population: Medically Underserved, Safety Net, Uninsured

Summary: Successful implementation of health information technology (IT) systems requires substantial attention to work flow processes. This project closely examines the change process that must occur for successful adoption of health IT and how to best reengineer workflows. The Department of Family Medicine at the University of Michigan is partnering with the Michigan Primary Care Association to identify three Federally Qualified Health Centers (FQHCs) to implement Cielo Clinic™, a commercial clinical quality management system developed by family medicine physicians at the University of Michigan. The use of the Cielo Clinic™ will be tailored to each participating FQHC's interest and priorities. Through an iterative process, each clinic will choose the screening, prevention, chronic disease management, and outreach components of the Cielo Clinic™ software that best fit their quality improvement priorities.

This project closely examines the change process that must occur for successful adoption of the quality management system using an advanced set of tools called cognitive task analysis to guide the implementation and reengineering work. Each practice included has an existing electronic health record (EHR), and practices vary in their use of different functional components of their EHR. Implementation will focus on training the site staff to work as teams in understanding and modifying organizational routines using the Cielo Clinic™. Clinics will work iteratively on implementation until they achieve success, or until several Plan-Do-Study-Act cycles without progress make it clear that implementation will not succeed. Practices will be evaluated to determine whether the Cielo Clinic™ clinical system increases adherence to evidence-based practice and whether cognitive task analysis-guided implementation is advantageous to the health centers. The study will use a mixed-methods stepped-wedge research and evaluation design to allow analysis of data across time within sites and to make across-site comparisons. The project will collect qualitative data on the implementation process, including the barriers and facilitators encountered, which will provide information to health care leaders on how to best implement new technology in the ambulatory safety net environment.

Specific Aims:

- Identify the barriers and facilitators to implementing clinical quality management systems in safety net ambulatory care settings. **(Ongoing)**
- Measure the impact of using cognitive engineering tools during implementation of a clinical quality management system (Cielo Clinic™). **(Upcoming)**

2010 Activities: Two of the three planned FQHCs began their planned project activities in 2010. The project team completed cognitive task analysis interviews at each of these health centers with the goals of understanding organizational operations such as roles and responsibilities, current communication mechanisms, and areas of comfort and discomfort with organizational change. This information was used by the research team to develop an initial map of the health center's current organizational routines that may be affected by implementation of Cielo Clinic™. At both of these sites, Cielo Clinic™ was installed. Further, the research team began to work with each clinic to identify the priority areas for quality improvement and the quality metrics they may use to measure progress. The third clinic slated for implementation of the Cielo Clinic™ and cognitive task analysis was in the final stages of review and identification at the conclusion of 2010 and will begin implementation in 2011.

Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010): The project team is on track with all project milestones, and the budget spending is on target.

Preliminary Impact and Findings: The results of cognitive task analysis interviews were presented to the clinic leadership. The process of cognitive task analysis was successful in discovering areas of reliance on tacit knowledge that have potential for significant implications for implementing health IT. For example, the cognitive task analysis revealed differing assumptions and expectations among providers who believed they were in agreement about guideline implementation.

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: Knowledge Creation