

## Information Technology Implementation by Cognitive Engineering of Organizational Routines

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<b>Organization:</b>	University of Michigan at Ann Arbor
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**Summary:** Successful implementation of health information technology (IT) systems requires substantial attention to workflow processes. This project 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 and the Michigan Primary Care Association have identified 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™ is being tailored to each participating FQHC's interest and priorities. Through an iterative process, each clinic is choosing the screening, prevention, chronic disease management, and outreach components of the Cielo Clinic™ software that best fit their quality improvement priorities.

This project examines the change process needed for successful adoption of the quality management system using an advanced set of tools as part of cognitive task analysis to guide the implementation and reengineering work. Each practice included has an existing electronic health record (EHR), but EHR functional component use varies. Implementation focuses on training site staff to work in teams to understand and modify organizational routines using the Cielo Clinic™. Clinics are working 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 is using 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 help health care leaders implement new technology in ambulatory safety net settings.

### 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)**

**2011 Activities:** Each of the three clinical sites implementing Cielo Clinic™ is in a different stage of the process. The first site has installed the Cielo Clinic™ software and the research team is currently analyzing transcripts from their site visits. They are doing full transcription of the interviews to produce rich qualitative data. The second site plans to go live with the Cielo Clinic™ software early in 2012. Once the implementation

date is scheduled, the research team will visit the clinic. The third site is about to begin and the project team is scheduling their first meeting with them for early 2012. The third site is unique because before participating in this research grant they attempted to implement Cielo Clinic™ and failed. The research team will help them work through the failure points in the previous implementation process.

As last self-reported in the AHRQ Research Reporting System, project progress is mostly on track and the project budget funds are significantly underspent. The implementation process of Cielo Clinic™ has been delayed at all three clinical sites for various reasons. The principal investigator is working with each site to overcome these challenges and is documenting these challenges as part of the research process.

**Preliminary Impact and Findings:** The results of cognitive task analysis interviews were presented to the clinic leadership. The cognitive task analysis discovered 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.

The research team plans to write several papers describing the safety net environment for health IT. One specific component of the discussion will be the implementation of health IT by a safety net provider in comparison to an organization that has money for in-house consultants and Lean process thinking coaches. Other paper topics include description of the change management process and methodological approach of the research team.

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**Target Population:** Medically Underserved, Safety Net, Uninsured

**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

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