

Opportunistic Decision Making Information Needs and Workflow in Emergency Care

Principal Investigator:	Zhang, Jiajie, Ph.D.
Organization:	University of Texas Health Science Center - Houston
Mechanism:	PAR: HS11-198: Understanding Clinical Information Needs and Health Care Decision Making Processes in the Context of Health Information Technology (IT) (R01)
Grant Number:	R01 HS 021236
Project Period:	September 2012 – July 2016
AHRQ Funding Amount:	\$1,942,272

Summary: Emergency departments (ED) in hospitals are complex, time sensitive, and information intensive environments. ED clinicians monitor constantly changing needs, respond to unpredictable circumstances, and communicate with people as issues arise. ED activities are governed by local rules in which the structure of the system is determined by interaction rather than top-down structure. In this high-risk setting, managing information needs and supporting clinical decisionmaking is critical for patient safety and health care quality. Opportunistic decisionmaking—the unplanned switching in the middle of a task or across multiple tasks—can lead to suboptimal performance. The over-arching objective of this project is to study information management and decisionmaking in the ED and develop interventions to reduce cognitive burden, improve communication, and reduce error. A Work Domain Ontology (WDO), or formal definition and description of the basic abstract structure of work conducted by a system and its users, will be developed for the emergency department. The project will explore ED workflows and decisionmaking processes via focus groups, interviews, and observation of human movement patterns generated by radio identification tags. The study team will develop visualizations as a cognitive intervention and evaluate its impact on human performance and clinical outcomes.

Specific Aims:

- Develop and validate the Work Domain Ontology (WDO) of the emergency department. **(Ongoing)**
- Identify the information needs and understand the mechanisms and impacts of opportunistic decisionmaking. **(Ongoing)**
- Develop visualizations for increasing situation awareness and supporting decisionmaking. **(Upcoming)**
- Evaluate the impact of the visualization as cognitive interventions. **(Upcoming)**

2012 Activities: The investigators received approval from the institution review boards (IRBs) at two of the three study sites. For the third site, which is community-based instead of an academic site, the IRB approval and relationship building is in process.

Data for eight attending physicians for a total of 16 sessions has been collected at the first site to study changes since the initial pilot study (including implementation of an electronic health record system for documentation and computerized physician order entry.) The study team has also conducted surveys and focus groups to validate findings on information needs and communication practices. These efforts will

continue over the coming quarters.

Dr. Zhang and his team are working to update the WDO created from previous data collection by incorporating changes that have occurred in the ED workflow. The WDO will now include the roles of trainees and nurses. As last self-reported in the AHRQ Research Reporting System, project progress and activities are completely on track and project budget funds are slightly underspent due to minor delays in the grant contract process and hiring of study personnel.

Preliminary Impact and Findings: Initial findings suggest some changes in the ED workflow with the implementation of an electronic health record system. Among these changes was a decrease in opportunistic decisionmaking. This decrease, although not statistically significant, is likely triggered by the anchoring of physicians to work stations resulting in a reduction of overall movement.

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: Knowledge Creation
