

## Enabling Health Care Decisionmaking Through the Use of Health Information Technology

---

<b>Principal Investigator:</b>	Lobach, David, M.D., Ph.D., M.S.
<b>Organization:</b>	Duke University
<b>Contract Number:</b>	290-07-10066-I
<b>Project Period:</b>	September 2009 – February 2011
<b>AHRQ Funding Amount:</b>	\$405,000

---

**Summary:** Access to and utilization of knowledge, information, and clinical data via health information technology (IT) can facilitate clinical decisionmaking and communication. While the use of clinical decision support systems (CDSS) has the potential to make evidence-based practice guidelines available to clinicians at the point of care, there is uncertainty and concern about workflow disruption, usability in practice, and utility of content.

Duke University's Evidence-based Practice Center (EPC) developed a synthesis report summarizing the evidence on the use and effectiveness of CDSS across clinical settings. The report is one of three reports summarizing the state of the evidence on medication management using health IT, decision support tools, and consumer health informatics applications and their respective effect on the quality of care. The Duke EPC report focuses on facilitating health care decisionmaking with health IT. As part of the work, they convened a technical expert panel to advise them on the key questions and state of the evidence. The EPC conducted the comprehensive systematic literature search, reviewed and analyzed the existing evidence, and identified gaps in knowledge. The final report synthesizes key knowledge gaps and existing peer-reviewed research to provide critical information on developing and using electronic knowledge management, defined as any electronic system based on the distillation of primary literature used at the point-of-care to inform decision making and CDSS.

### Project Objectives:

- Identify what evidence-based study designs can be used to determine the effectiveness of CDSS. **(Achieved)**
- Identify what contextual factors and features influence the implementation and use of electronic knowledge management and CDSS. **(Achieved)**
- Identify the impact of introducing electronic knowledge management and CDSS. **(Achieved)**
- Identify what generalizable knowledge can be integrated into electronic knowledge management and CDSS to improve health care quality. **(Achieved)**

**2011 Activities:** The focus of 2011 was dissemination of results. The [final report](#) for the project was completed at the end of March. A manuscript describing the results, [Effect of Clinical Decision-Support Systems: A Systematic Review](#), was written and accepted in 2011 and published in the *Annals of Internal Medicine* in April 2012. Dr. Lobach participated in a national Web conference, Findings from the Evidence-Based Practice Centers for Health IT, hosted by the National Resource Center for Health IT at AHRQ in July, which featured the results and findings from the three EPCs.

**Impact and Findings:** The literature search identified 13,752 articles, from which 131 randomized

control trials (RCTs) were selected for inclusion. These RCTs comprised 49 percent of the comparative studies on CDSS or electronic knowledge management. The project team determined that both commercially and locally developed CDSS deployed in many venues effectively improve process measures related to performing preventive services, ordering clinical studies, and prescribing therapies. Of the 14 CDSS features assessed in this review, the meta-analyses identified four new factors and features that correlated with the success of CDSS across all endpoints: 1) integration with charting or order-entry system to support workflow; 2) promotion of action rather than inaction; 3) elimination of additional clinician data entry; and 4) local user involvement in the development process. The project team identified only 25 RCTs assessing the impact of CDSS on clinical outcomes, 20 assessing costs, and two assessing electronic knowledge management on any outcomes.

This review found strong evidence that CDSS improve process measures across diverse academic and nonacademic settings using both commercially and locally developed systems. Evidence for the effectiveness of CDSS on clinical outcomes and costs and electronic knowledge management on any outcomes is minimal, and more studies are needed in these areas.

---

**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

---