

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

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<b>Principal Investigator:</b>	Lobach, David, M.D., Ph.D., M.S.
<b>Organization:</b>	Duke University
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<b>Summary Status as of:</b>	December 2010

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**Target Population:** Not Applicable

**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 the content.

In 2009, Duke University's Evidence-based Practice Center (EPC) was awarded a contract to develop a synthesis report summarizing the evidence on the use and effectiveness of CDSS across clinical settings. The report is part of a three-report series on the Agency for Healthcare Research and Quality's (AHRQ's) Health IT Portfolio's strategic goals. The report focuses on the portfolio's goal of facilitating health care decisionmaking with health IT. As part of the work, the EPC convened a technical expert panel to conduct a comprehensive systematic literature search, review and analyze the existing evidence, and identify gaps in knowledge. The final product will be a report that 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 decisionmaking, 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)**

**2010 Activities:** The project team completed the literature search and the subsequent review and analysis of the existing evidence. 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 several new factors and features that were correlated with the success of CDSS across all endpoints: integration with charting or order entry system to support workflow, promotion of action rather than inaction, elimination of additional clinician data entry, and local user involvement in the development process. Three previously identified successful features of CDSS were also confirmed. 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.

The results were synthesized in a draft report that was submitted and posted for public review in December 2010. The final report is planned for March 2011.

**Preliminary Impact and Findings:** Strong evidence now shows that CDSS are effective in improving 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. Four features of CDSS that correlate with a successful impact of clinical decision support were newly identified, and three previously identified features were confirmed.

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**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