Guidelines into Decision Support

Principal Investigator: Shiffman, Richard N., M.D., M.C.I.S.
Organization: Yale University
Contract Number: 290-08-10011-20
Project Period: March 2008 – April 2012
AHRQ Funding Amount: $2,500,000

Summary: The Guidelines into Decision Support (GLIDES) project supports the development, implementation, and evaluation of demonstrations that advance the understanding of how to incorporate computerized clinical decision support (CDS) into health care delivery at ambulatory care sites. A centerpiece of the GLIDES strategy is the Guideline Elements Model (GEM). GEM is a knowledge model for guideline documents that incorporates a set of more than 100 tags to categorize guideline content. The overall goal of the project is to recommend methods to assist clinical organizations across the country with the efficient and effective implementation of CDS. GEM provides a bridge between the process of knowledge discovery and synthesis and CDS implementation, and forms the backbone of tools that translate narrative guidelines into structured knowledge that can be implemented consistently. A combination of quantitative and qualitative evaluation methods are being used to determine the project's results and major findings.

GLIDES is led by Dr. Shiffman and staff from the Yale School of Medicine's Department of Pediatrics and the Center for Medical Informatics, and is assisted by clinical and information technology (IT) staff from Yale New Haven Hospital. Yale's implementation partners include The Children's Hospital of Philadelphia, Geisinger, and Alliance of Chicago. The GLIDES team also collaborates with a number of guideline developers including the American Academy of Pediatrics, the American Academy of Otolaryngology, the American Urological Association, and the American Society for Clinical Oncology.

The GLIDES project team is exploring the possibility of providing GEM-parsed content to the National Guidelines Clearinghouse. To date, GLIDES CDS demonstration tools have been integrated at selected primary and specialty clinics within the Yale New Haven collaborators' systems.

Project Objectives:

- Implement evidence-based guideline recommendations that address prevention of pediatric obesity and chronic management of asthma. **(Achieved)**
- Apply the GEM and associated tools that facilitate the development of executable code to systematically and replicably transform the knowledge contained in these guidelines into a computable format. **(Achieved)**
- Deliver the knowledge via CDS to ambulatory sites that employ the Centricity electronic health record (EHR) at Yale and EpicCare EHR at Nemours. **(Achieved)**
- Evaluate the fulfillment of these goals and the effectiveness of the decision support tools in improving the quality of health care. **(Achieved)**
- Disseminate the findings and lessons learned via a variety of modalities. **(Ongoing)**

2011 Activities: After many of the initial project objectives were achieved, the GLIDES team established

additional objectives to be completed in a 12-month no-cost extension period. These are: 1) use systematic and replicable processes; 2) continue to design, develop, implement, and demonstrate guideline-based CDS; 3) focus on new guidelines and implementation partnerships; 4) enhance and improve the CDS already produced at Yale and Nemours; 5) recognize the critical importance of transparently developed and clearly stated guideline recommendations for effective implementation and work closely with guideline developers to provide tools and guidance to improve guideline development and reporting processes; 6) update the GEM and increase GEM adoption nationally and internationally; and 7) continue evaluation of both existing and newly-developed CDS implementations.

To meet these objectives, the GLIDES team continued to work with several national guideline development organizations, including the American Academy of Pediatrics and American Academy of Otolaryngology-Head and Neck Surgery, to design, implement, and pilot processes and tools intended to make guidelines clearer and easier to implement. In earlier phases of the project, four separate CDS applications for obesity and asthma were designed, built, and implemented in primary care and specialty settings. The CDS applications were enhanced at Yale and Nemours. At Yale, this included a formal evaluation of usability and the piloting of an iPad-enabled data capture front-end system for their specialty CDS system. This is a major and potentially transformative change to the way CDS is delivered for Yale pulmonologists, and it will be pursued further in 2012.

Based on feedback and input from GLIDES partners and other CDS contractors, GLIDES designed and implemented improvements to GEM and its related guideline implementation tools. Lastly, the project team participated in a range of dissemination activities, meetings, and presentations, and published nine academic papers that detailed GLIDES results in various areas.

Preliminary Impact and Findings: The experience of GLIDES' four implementation partners demonstrates that transitioning from recommendations expressed in statement logic to functional decision support is a complex and multi-faceted process. Several groups offered guidance for successful implementation, and an evolving set of considerations represents the current approach.

Among the preliminary findings, the GLIDES team discovered the importance of making sure that processes, methods, and tools intended to aid implementation of CDS operate within the context of an organization's in-place infrastructure when designing and implementing IT-enabled capabilities. CDS-specific processes, methods, and tools must be adaptable to an organization's in-use system. Each GLIDES implementer took a slightly different approach to bridging the structured knowledge specification outputs from GEM to their own processes and tools for designing changes to EHR systems. The varied techniques reflect differences in the guidelines being implemented, in the systems development practices of each organization, and in the technical infrastructure being used for the EHR.

Effective implementation planning is key to adoption and adherence. Stand-alone guideline implementation projects do not work well, but should be part of a broader and well-supported quality-improvement effort, potentially integrated with maintenance of certification or the Centers for Medicare and Medicaid Service's Meaningful Use requirements. When planning for adoption, implementers should also consider incentives, feedback loops, site-based guideline "champions", and integration of performance measurements. Implementers should also include evaluation of adherence and outcomes in CDS design up-front, since ensuring access to appropriate and granular data for outcomes reporting is a key challenge.

Target Population: Chronic Care*, Obesity, Pediatric*

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decision-making through the use of integrated data and knowledge management.

Business Goal: Knowledge Creation

This target population is one of AHRQ's priority populations.