Clinical Decision Support Consortium Overview

Background

Electronic health records (EHRs), when used effectively, can improve the safety and quality of medical care. For maximum benefit, however, EHRs must be paired with clinical decision support (CDS) systems to effectively influence physician behavior. CDS includes a variety of techniques designed to facilitate and guide doctors' decision making toward evidence-based practice. Common examples of CDS include computerized checks for drug interactions and electronic reminders for screening tests like mammograms and Pap smears.

While the evidence that CDS can be effective is clear, current use and adoption of CDS is limited. In fact, most of what we know about CDS comes from only four academic medical centers and integrated delivery networks. Wider adoption of decision support has been held back by a variety of issues, including:

♦ Difficulty translating medical knowledge and guidelines into a form that can be used by EHRs.

♦ Technical challenges in developing a standard representation for CDS content that could be shared across sites.

♦ Absence of a central knowledge repository where human readable and executable guideline knowledge can be shared and stored.

♦ Challenges in integrating decision support into the clinical workflow and other barriers to IT adoption

♦ Limited capabilities for clinical decision support in commercially available electronic health record (EHR) systems.

The AHRQ Clinical Decision Support Consortium

While these issues have been barriers for adoption of clinical decision support systems they are surmountable, as evidenced by a small number of sites where decision support is pervasive. We believe that the biggest challenge to fostering widespread adoption of clinical decision support is in documenting, generalizing, and finally translating the experience from these advanced sites to a broader community of care sites. To address this challenge, investigators from Brigham and Women's Hospital, Harvard Medical School, and Partners HealthCare (PHS), have formed the AHRQ Clinical Decision Support Consortium (CDSC) in collaboration with the Regenstrief Institute, the Veterans Health Administration, The University of Texas Health Science Center at Houston, Oregon Health Sciences University, Kaiser Permanente, Main Line Health System, Mount Sinai Medical Center, NextGen, newMentor Siemens Medical Solutions, GE Healthcare, Mayo Clinic, University of California, San Diego, Duodecim Medical Publications, Philips, Wolters Kluwer Health, Accenture, AT&T, Geisinger, MITRE, and the University of Utah Health Sciences Center. The WVP Health Authority (formerly MVIPA) and University of Medicine and Dentistry of New Jersey (UMDNJ) serve as corresponding sites using NextGen and GE electronic health records, respectively.

The goal of the CDSC is to assess, define, demonstrate, and evaluate best practices for knowledge management and clinical decision support in healthcare information technology (IT) at scale – across multiple ambulatory care settings and EHR technology platforms.

Our work is guided by a series of high-value research questions:

♦ How do we improve the translation of knowledge in clinical practice guidelines into actionable clinical decision support in healthcare information technology?

♦ How do we optimally represent knowledge and data required to make actionable clinical decision support content in human readable and machine readable and executable forms?

♦ How do we define and evaluate best practices in response to the above assessments and demonstrations? Evaluation must include an assessment of how to incorporate clinical decision support services at scale in a variety of vendor healthcare information technologies, as well as products developed in academic settings. Further, how do we deploy clinical decision support services in healthcare information technology in a manner that improves CDS impact?

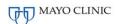♦ How do we broadly disseminate the lessons learned over the course of these investigations to key audiences, such as the academic informatics community, patient safety and quality groups, medical specialty societies, small office practice settings, and others?

Clinical Decision Support Consortium Activities

Over the past four years, the CDSC has:

♦ Conducted a broad and deep ethnographic study of CDS. This has led to a better understanding of technical and sociological issues related to decision support which has proved critical as we develop CDS content and carry out demonstrations across a variety of CDSC member sites and has also yielded important recommendations to key decision support stakeholders and policymakers.

♦ Developed a practical four-layer knowledge representation stack and Knowledge Authoring Tool for translating clinical guidelines from human readable into machine executable form for a variety of CDS modalities

♦ Developed and launched a publicly accessible, web-based Knowledge Management (KM) Portal for collating and browsing knowledge artifacts used in clinical decision support

♦ Constructed and tested novel web-based CDS services, and integrated them into two Electronic Health Records: the Partners HealthCare System (PHS) Longitudinal Medical Record (LMR) and the Regenstrief Institute (RI) CareWeb, and ran a six month pilot. We are now working with NextGen and GE to implement the services in their commercial EHRs

♦ Devised a novel measurement model for CDS which takes into account the myriad of ways that CDS can influence practice, as well as accounting for both the decision support process and ultimately clinical quality

♦ Developed legal agreements to support CDSC knowledge sharing and use of CDS services

♦ Built a robust clinical content governance process and tackled difficult issues relating to provenance, standardization, localization and versioning

♦ Disseminated our findings widely by making more than a dozen presentations at national and international meetings, and publishing papers at conferences and in journals

Along with these accomplishments, and just as critically, CDSC has assembled a broad coalition of consortium members and subcontractors, who share our goal to assess, define, demonstrate, and evaluate best practices for knowledge management and clinical decision support in healthcare information technology at scale – across multiple ambulatory care settings and EHR technology platforms. This coalition includes EHR vendors, academic researchers, healthcare providers, and clinical and technical experts in clinical decision support.

The CDSC is now in its fifth year, and our goals continue to be ambitious. Our key goal is to develop a transition plan and business model to sustain CDSC after its five years of AHRQ funding conclude. We will also work, in our fifth year, to add additional demonstration sites and to ensure that all of our lessons learned are documented and disseminated.

Conclusion

The CDS Consortium is confident that working together, with Agency for Healthcare Research and Quality (AHRQ) support, significant progress towards widespread adoption of clinical decision support can be made in a short period of time. More detailed information is available upon request. Please visit our public website for CDSC study at: http://www.partners.org/cird/cdsc.