

Clinical Decision Support Town Hall Meeting

Summary Report

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Background

This summary report describes the Clinical Decision Support (CDS) Town Hall meeting convened during the 2008 American Medical Informatics Association (AMIA) Annual Symposium specifically devoted to a discussion of CDS and the potential role of the federal government in furthering its implementation. CDS encompasses a variety of approaches for providing clinicians, staff, patients, and other individuals with timely, relevant information that can improve decisionmaking, prevent errors, and enhance health care. Although CDS has been shown to improve patient care processes and outcomes in a small set of institutions where it has been implemented and studied, overall, uptake within the larger health care community has been limited.

Prior activities related to CDS that have been organized by AMIA include a workshop in October 2005 on advancing CDS capabilities to promote improved health and care delivery outcomes, convened at the request of the Office of the National Coordinator for Health Information Technology (ONC) and the Agency for Healthcare Research and Quality (AHRQ). In 2006, AMIA released a Roadmap for National Action on CDS, which called for a coordinated agenda to address impediments to widespread adoption of CDS.

At AHRQ's request, AMIA convened a CDS Town Hall Meeting, on November 10, 2008. The meeting aimed to stimulate a discussion of the current CDS environment and options for future efforts to promote CDS adoption.

Town Hall Meeting on CDS

The Town Hall meeting focused on CDS projects and activities currently funded by AHRQ and other Federal agencies. The intent was to review the current environment with respect to CDS; identify barriers to the successful implementation of CDS; and suggest strategies for overcoming these barriers. The initial goals of this effort were as follows:

- Discuss challenges to implementing CDS, as well as approaches to overcoming these challenges.
- Explore what additional Federal Government activity is needed to further stimulate CDS adoption and uptake.
- Suggest future directions for AHRQ funding for future CDS research.

In general, AHRQ was interested in AMIA members' reactions, input, and assessment about the existing state of CDS and feedback about potential next steps for AHRQ.

Proposed discussion questions included:

- What additional Federal Government activity is needed to further stimulate CDS implementation, adoption, and uptake?
- What are the greatest challenges faced when implementing CDS?
- What are the most promising approaches for overcoming these challenges?
- What are the key barriers to successful and more widespread adoption of CDS? (Technical/technological/architectural; legal and regulatory; workflow; business and financial; behavioral; organizational readiness; workforce skills; infrastructure; current state of the art of CDS)
- How can we identify best approaches for deploying CDS in different settings?
- What remains to be done to further drive adoption and successful use of CDS?

Carolyn Clancy, Director, AHRQ and Jon White, Health IT Director, AHRQ, provided introductory remarks. (Note that David Bates, AMIA Chairman, and Don Detmer, President and CEO, AMIA did not provide opening remarks as listed on the original agenda). Tom Payne of the University of Washington facilitated the session. The meeting agenda is included as an Appendix.

This report is divided into two sections:

1. **Summary of Discussion** describes key meeting discussion points and themes, including the need for CDS, real-world experience with CDS, the role of the health care team with respect to CDS, and CDS adoption challenges.
2. **Conclusions and Recommendations** focuses on strategies to overcome challenges and offers suggestions for Federal support and additional research for CDS.

Summary of Discussion

Below are the key discussion themes and comments of the participants.

Need for CDS remains high. Participants stressed that the demand for CDS may be greater than is commonly believed. Medical progress is often thought of as “all breakthrough, no follow through;” CDS can help translate clinical research findings into practice.

Real-world experience reported. Most clinicians do not know what is meant by the term “CDS.” Another important issue is the “signal to noise” problem: in many CDS systems, multiple alerts can lead to “alert fatigue,” with some practitioners turning off all or many alerts. On the other hand, participants noted that when physicians at certain facilities (e.g., Veterans Health Administration) were asked if getting reminders bothered them, they answered no, because they were incentivized to respond to them. Participants

reported instances of prominent organizations that are experiencing significant challenges with CDS implementation. It was also mentioned that some organizations have implemented CDS without computerized provider order entry (CPOE).

CDS and roles of the care team and patients. Participants discussed the roles and responsibilities of the entire care team, not just the physician, with regard to CDS. For example, to ease the physician's workload, they considered whether there is a role for other clinical professionals and/or clerical staff in following up on alerts, e.g., ordering specific tests such as mammograms, CBCs, and chest x-rays. Participants differed in their opinions about this and commented that the answer may be different for ambulatory and inpatient environments. The concept of completely automated CDS, i.e., saving time by having recommendations executed without human intervention, was discussed with some participants opposing the idea. Participants also discussed the role of patients in the CDS processes, for example, enabling patients to order tests such as HgA1c, or cholesterol when 'the system' decides such tests are needed.

CDS adoption challenges. CDS designers, implementers, and users face challenges as outlined below.

- **Lack of a common understanding of CDS and varied CDS-related terminology.** A clear and common understanding as to the overall purpose, benefits, and challenges of CDS is lacking. This lack of understanding leads to confusion and uncertainty among practicing clinicians regarding CDS function and how CDS can help them do their work without increasing their workload. Some of this confusion arises because of the disconnect between how various stakeholders perceive CDS: practicing clinicians are not typically involved in creating systems developed by vendors or in-house informaticians. This confusion is reflected in the varying definitions and interpretations used by stakeholders for key CDS terms (guidelines, standards, reminders, tools, and rules). More consistent definitions and application of terminology could go a long way to reducing the confusion.
- **Variability and lack of adaptability of CDS systems.** CDS applications and functions vary across vendors and systems. The depth and breadth of the specific CDS tools, functions, and clinical areas is not necessarily consistent. Participants reported that it is difficult to compare or share CDS rules between systems or across provider organizations, and collaboration on CDS rules is challenging. Further, it is not easy to adapt existing CDS systems for use in specific environments such as specialty providers, rural hospitals, or pediatric practices.
- **Challenges in expressing medical knowledge in CDS systems.** Participants noted that CDS is only as good as the data on which it is based, and it is a challenge to organize data in a standardized manner for use with CDS applications. Knowledge needs to be translated into a form usable for routine practice. Agreement is lacking on the best ways to express medical knowledge contained in CDS.

- **Obstacles in health care system culture.** Some within the health care system view computer-driven tools as disruptive to the art and science of medicine.
- **Lack of financial incentives.** Financial incentives to encourage providers to use CDS is lacking.

Conclusions and Recommendations

Following a lively discussion about the current environment of CDS implementation and challenges to adoption, participants focused on ways to overcome challenges and offered recommendations for Federal support and additional research.

Suggestions to address these challenges are as follows.

- **Clarify the potential role of CDS within the overall health care system and within efforts to transform that system.** While CDS has the potential to improve health care, it is important to understand that CDS is not an end itself: it is a vehicle for the provision of high-quality health care, and exists within the health care delivery system or enterprise. CDS is a tool among an array of technological tools that can help the health care system improve quality and safety.
- **CDS developers should improve the usefulness and usability of CDS applications.** Currently, physicians are overworked and perceive CDS as giving them more things to do; they are overwhelmed with unfiltered, vendor-supplied, drug-drug interaction rules—information “written by lawyers for lawyers.” CDS must be devised to help practitioners do their work, rather than give them more work to do.
 - CDS developers need to improve approaches to developing CDS systems that meet users’ needs. It is necessary to determine the problems that providers, provider organizations, and patients experience that could be alleviated by the use of CDS. It is recommended that developers provide additional opportunities to involve users in the application design and development processes. It was suggested, for example, that developers observe workflow staff at community hospitals and in office practices to build more usable CDS systems.
 - CDS applications that help workflow or work in conjunction with other tools to help workflow will be better accepted. Developers should better prioritize and present CDS components (e.g., the number of guidelines and drug-drug interactions) and design new features that move beyond drug-drug interactions.
 - Additional research is needed to explore how users could adapt existing CDS applications to their own situation.

- There is a need to filter the most important/relevant messages out of all possible CDS messages. Some participants suggested that relatively simple forms of CDS should be promoted first (e.g., default values for orders).
- **Share information about CDS activities.** Efforts are needed to leverage lessons learned across CDS implementations; for example, a central resource with shareable CDS would be helpful. The recent CDS Wiki is one possible approach. Participants also noted that while a CDS repository would be useful, workflow design and human factors are the aspects of CDS that are the most difficult to address and input on them would not come from a rule repository.
- **Define stakeholders' roles in CDS development and implementation.** The roles of various stakeholders in the development and use of CDS need to be clarified; stakeholder groups include researchers, policymakers, informaticians, practicing clinicians, health care teams, patients, vendors, data sources, standards-setting organizations, and government.
- **Provide financial support such as incentives.** In addition to the need for staff with the skills and experience required for CDS design, development, implementation, operation, and maintenance, participants noted that CDS deployment is costly and requires financial resources. Financial incentives may be one option to encourage practitioners to adopt and use CDS. For example, pay-for-performance could be used to help motivate clinicians to use CDS; if CDS helps clinicians improve the quality of care, payments may increase. Options should be explored for financing the inclusion of CDS in various CMS demonstration projects.

Opportunities for Federal investment and support. Participants recommended that the federal government continue to take an active role in sponsoring additional research and evaluation to help clarify the purpose and components of CDS systems; establishing consensus around CDS terminology; guiding the future development of CDS systems; helping users understand the types of products and services available; and furthering CDS adoption. Further dissemination of lessons learned and best practices for CDS development, design, implementation, and use are other examples of areas for Federal action.

Research agenda. Participants suggested a variety of avenues for additional research:

- **Electronic Health Records (EHRs) and CDS.** Research should be conducted to assess and categorize the current state of EHR/CDS development and deployment: (1) how EHRs with CDS support at the point of care can improve health care delivery; (2) key functionalities of EHRs needed to assess and support clinical care using CDS. Additional research is needed to study the ongoing use of CDS to help transform patient care, assist in quality care measurement, and support other Federal initiatives such as pay-for-performance.

- Evaluate ways for CDS rules generated in one setting for pilot implementation and evaluation in other settings and systems.
- Continue to fund work about how to apply CDS rules into EHRs. Continue to fund research to demonstrate which CDS rules have the most the capacity for offering significant improvements in safety and quality through EHR decision support. Such evaluation could include testing for ease and feasibility of implementation and potential for broad scalability. Other components could include: developing best-practice recommendations with respect to ‘how-to implement CDS (including usability designs and developing practical CDS implementation guides).
- **Workflow studies.** Collaborative efforts that incorporate user input are needed to learn the best ways to implement CDS as part of the workflow of health care delivery services, including customization of CDS for specific clinical situations/settings and specialty providers.
- **Success factors for CDS implementations.** Research is needed to determine the factors that lead to successful CDS implementations and identify characteristics of an overall health care environment that foster successful use of CDS. For example, participants noted that it would be useful to assess the impact of CDS on the quality of care delivered by the Veterans Health Administration system.
- **Application of data standards in CDS systems.** With the growth in the volume and complexity of available data, studies are needed on the use of different data sources in CDS systems and on methods of achieving accurate, consistent expression of medical knowledge in CDS systems.

Summary

Almost 3 years have passed since the release of the Roadmap, and in that time, significant effort has been devoted to CDS by numerous stakeholders, including Federal agencies, national organizations, health care systems, and individual researchers. AHRQ and others have funded various types of CDS-related grants, contracts, and demonstration projects. These include: The GLIDES (Guidelines into Decision Support) project, a collaborative venture between the Yale School of Medicine, Yale New Haven Health, and Nemours Health System and the Clinical Decision Support Consortium, based at Partners Healthcare in Boston, MA. Nevertheless, additional and continued research about effective CDS design, development, and implementation is warranted.

Appendix: Original Agenda

AMIA CDS Town Hall Meeting
November 10, 2008
Washington, DC

5:00 pm Meeting Opening – David Bates, AMIA Chairman and Don Detmer, President and CEO, AMIA

Purpose of this Session

Opening Remarks and Introductions - Carolyn Clancy, Director and Jon White, Health IT Director, AHRQ

5:30 pm Facilitated Discussions- Tom Payne, Medical Director, IT Services, UW Medicine

- What additional federal government activity is needed to further stimulate additional CDS implementation (adoption and uptake)?
- What are greatest challenges faced when implementing CDS?
- What are the most promising approaches for overcoming these challenges?

Ongoing During Meeting- Flip Charts around the Room for Participant Comments:

- What are the key barriers to successful and more widespread adoption of CDS? (Technical/technological/architectural; legal and regulatory; workflow; business and financial; behavior; organizational readiness; workforce skills; infrastructure; current state of the art of CDS)
- How can we identify best approaches for deploying CDS in different settings?
- What remains to be done to further drive adoption and successful use of CDS?

6:45 pm Summary, Next Steps, and Closing- Tom Payne

- Key Meeting Themes and Take Aways
- Possible Recommendations and Action Items

7:00 pm Adjourn