Clinical Decision Support: Marrying Technology and Policy

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AXIS Research Seminar
November 15, 2011
**Health IT Policy – Creating Movement**

- **2004:** Goal of “most” Americans having EHR by 2014
  - Office of the National Coordinator for HIT (ONC) established
- **2005:** Certification Commission for HIT (CCHIT)
- **2008:** MIPPA → Medicare bonuses for e-prescribing
- **2009:** HITECH Act (ARRA)
  - Medicare, Medicaid bonuses for “meaningful use” of EHR
    - ~ $30 billion
  - Regional Extension Centers to assist with implementation
  - State-level Health Information Exchanges
  - HIT Workforce development grants
- **2010:** Accountable Care Act (PPACA)
  - Focus on incentive systems
Clinical Decision Support

• CMS (Meaningful Use regulation)
  – HIT functionality that builds upon the foundation of an EHR to provide persons involved in care processes with general and person-specific information, intelligently filtered and organized, at appropriate times, to enhance health and health care

• HIMSS
  – A process for enhancing health-related decisions and actions with pertinent, organized clinical knowledge and patient information to improve health and healthcare delivery.
Need for Decision Support

Protocol-based computer reminders, the quality of care and the non-perfectability of man

[McDonald, NEJM 1976]

• Reminders Printed with encounter note
  – e.g. “BP elevated, suggest med change”

• Effective (but no learning)
  – 22% adherence without reminder
  – 51% adherence with reminder
  – Return to baseline when reminder off
Types of CDS

• Alerts and Reminders
  – A pop-up window, highlighted text, etc., to call provider attention to missing or unwise treatment plan

• Order Sets
  – Orders grouped for a particular condition.

• Relevant Data Displays
  – Aggregation of information highly relevant to the decision-making process at hand. (e.g. overlay of med admin on chart of VS)

• Infobuttons
  – Link to provide the user with information about a given item (e.g. disease names) upon request.

• Documentation Templates
  – Form to capture clinical data, often related to a guidelines
Some Major Successes for CDS

• Alerts at BWH
  – Increased use of the recommended H2-blocker (nizatidine) from 15.6% to 81.3% of orders (P<.001).
    • [Teich, et al., Arch Int Med 2000]

• Meta-regression
  – 68% of 70 studies showed improvement in practice
    • Independent predictors
      – Automatically part of clinician workflow
      – Computer-based
      – Provides recommendations rather than just assessments
      – Provided at time and location of decision-making
    • 94% of the 32 having all 4 showed significant improvements
      • [Kawamoto, et al., BMJ 2005]
“Advancing Clinical Decision Support” (ACDS)

• Funded by the U.S. Office of the National Coordinator for Health Information Technology (ONC) to address the major barriers to widespread use of clinical decision support (CDS)

• Sub-parts
  – Distill best practices and produce tools for CDS design and implementation
  – Produce an online CDS knowledge sharing platform
  – Develop a “clinically important” drug-drug interactions list
  – Develop CDS process encompassing specialties

• Emphasis on aligning CDS with needs for meeting "meaningful use" standards
Key Lessons in CDS Design and Implementation: Personnel

PHS Team:
TL: D. Johnston, MTS (Westat)
• D. Bates, MD, MSc
• C. Byrne, PhD (Westat)
• S. Emani, PhD
• H. Goldberg, MD
• T. Hongsermeier, MD, MBA
• J. Horsky, PhD
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• A. Vincent, MPP (Westat)
• A. Wright, PhD

RAND Team:
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• P. Davis, PhD
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• E. Schneider, MD, MSc
• R. Shanman
• J. Timbie, PhD
• S. Wu, PhD (USC)

Consultants:
Bentzi Karsh, PhD (U. Wisconsin)
Jerry Osheroff, MD (Thomson-Reuters)
ACDS Design and Implementation Products

Comprehensive Reports:
- Key Lessons in Clinical Decision Support Implementation (Westat report)
- Key Lessons in Clinical Decision Support Design (manuscript)

Implementation Resources and Tools:
- ‘How-to’ Guides for CDS Implementation
- References and Resources for Best Practices in CDS Implementation and Design
- Compendium of Exemplary Implementation Profiles
- CDS Starter Kits
  - Tobacco cessation clinical reminders
  - Diabetes follow-up care clinical reminders
- “Strength in Numbers — Shared Resources for Implementing Clinical Decision Support in the Small Practice” (manuscript under review)
CDS Sharing Approaches

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**RAND Team:**
- D. Bell, MD, PhD
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Initial evaluation results: Structured recommendation (L3) was considered *more implementable* than the semi-structured recommendation (L2). *(JAMIA 2011)*
CDS Knowledge Sharing

• Specify CDS knowledge sharing service (CDS-KSS)
  – Focus - “Level 3” sharing: Computer-interpretable specifications
    • Requisite architecture and features
    • Specifications for downloading artifacts into EHR systems
    • Specifications for others to produce CDS-KSS instances

• Determine component elements, formats, standards needed
  – Review relevant standards from HITSP, HL7, other SDOs
  – Identify gaps in existing standards
    • Where standards don’t exist, develop draft formats
    • Submit to relevant standards development organization

• Create implementation of the proposed CDS-KSS
  – Populate with 20 new Level 3 CDS artifacts targeting MU
  – Develop XSL style sheets for EHR import and human readable views

• Demonstrate use of the CDS-KSS instance
Knowledge Portal and Repository

http://cdsportal.partners.org/cdscsearch.aspx