

Health Management Information Systems

Unit 5 Clinical Decision Support Systems

Objectives

- Understand the challenges and barriers in building and using clinical decision support systems
- Discuss the legal and regulatory barriers in the distribution of these systems
- Discuss the future directions for clinical decision support systems

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CDSS Challenges

- Achievement of the clinical decision support five rights
 - Requires communicating the
 - Right information
 - To the right person
 - In the right format
 - Through the right channel
 - At the right time

http://healthit.ahrq.gov/images/mar09_cds_book_chapter/CDS_MedMgmt_ch_1_sec_2_five_rights.htm

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CDS Five Rights Model

- Right information
 - Evidence-based, suitable to guide action, pertinent to the circumstance
- To the right person
 - Considering all members of the care team
- In the right format
- Through the right channel
- At the right time

http://healthit.ahrq.gov/images/mar09_cds_book_chapter/CDS_MedMgmt_ch_1_sec_2_five_rights.htm

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Challenges in Designing or Selecting CDSS

- Whose decisions are being supported?
- What information is presented?
- When is the information being presented?
- How is the information being presented?

http://healthit.ahrq.gov/images/jun09cdsreview/09_0069_of.html

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User Control

- User presentation
 - Automatically
 - On demand
- User reaction

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CDS Intent and Key Issues

CDS Intent	Match to User's Intention	Key Issues
Reminder of actions user intends to do, but should not have to remember (automatic)	High	Timing
Provide information when user is unsure what to do (on demand)	High	Speed and ease of access
Correct user's errors and/or recommend user change plans (automatic or on demand)	Low	Automatic: timing, autonomy and user control over response On demand: speed, ease of access, autonomy and user control over response

http://healthit.ahrq.gov/images/jun09cdsreview/09_0069_ef.html

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Challenges in Building CDSS

- Impact on Care Process and Patient Health Outcomes
 - Match of CDS to user intentions
 - User control, disruptiveness, and risk
 - Integration of CDS into work processes
- Impact on Structure

http://healthit.ahrq.gov/images/jun09cdsreview/09_0069_ef.html

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Barriers to Using CDSS

- Acquisition and validation of patient data
- Modeling of medical knowledge
- Elicitation of medical knowledge

Shortliffe, E., Biomedical informatics: computer applications in health care and biomedicine

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Barriers to Using CDSS

- Representation of and reasoning about medical knowledge
- Validation of system performance
- Integration of decision-support tools

Shortliffe, E., Biomedical informatics: computer applications in health care and biomedicine

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Legal Barriers

- Lack of detailed case laws for CDSS
 - Which category of law
 - Negligence law
 - Product liability law

Shortliffe, E., Biomedical informatics: computer applications in health care and biomedicine

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Legal Barriers

- Liability borne by
 - Physicians
 - Developers of systems

Shortliffe, E., Biomedical informatics: computer applications in health care and biomedicine

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Regulatory Barriers

- Prerelease regulations of medical software
- Data privacy and security

Shortliffe, E., Biomedical informatics: computer applications in health care and biomedicine

Legislative and Regulatory Efforts

- Better align efforts across various stakeholders
- Explore options to establish or leverage a public-private entity to facilitate collaboration
- Accelerate CDS development and adoption through federal government programs and collaborations

<http://www.himss.org/content/files/CDSFactSheet3-17-09.pdf>

Future Directions for CDSS

- ONC initiatives
- IOM studies
- Meaningful use objectives and measures

ONC Initiatives

- Major activities
 - Development of a Roadmap for National Action on Clinical Decision Support
 - Created CDS recommendations
 - Sponsored a Clinical Decision Support (CDS) Workshop
 - CDS Government Collaboratory
 - “Advancing CDS” contract
 - IOM study

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IOM Studies

- 1999 IOM study
 - To improve safety, health IT systems should be designed to make it “easy to do the right thing.”
- 2010
 - Launch of a new study on ensuring the efficacy of information technology in improving healthcare safety

To err is human: building a safer health system.
http://www.nap.edu/openbook.php?record_id=9728

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Stage 1 Meaningful Use

- ARRA/HITECH
 - Regulations
 - Meaningful Use Objectives
 - » Eligible Professional
 - » Hospital

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Summary

- Challenges and barriers in building and using clinical decision support systems
- Legal and regulatory barriers in the distribution of these systems
- Future directions for clinical decision support systems
