

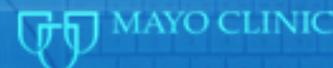
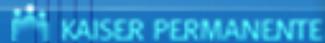
Technical Expert Panel

Assessing the Usability and Accessibility of Clinical Decision Support

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3:55 pm – 4:15 pm



Need Many Kinds of CDS

- Medication dosing support
- Order sets & order routing
- Charting templates
- Information resources
- Alerts
- Protocols
- Expert systems

Assessing the Usability of CDS



A new sociotechnical model for studying health information technology in complex adaptive healthcare systems

Sittig et al. Qual Saf Health Care. 2010 Oct;19 Supply 3:i68-74

Hardware/Software

- System response time: < 3 seconds
- System reliability: 100%

Sittig et al. AMIA Annu Symp Proc. 2007 Oct 11:671-5

Clinical Content

- Interface terminology
- Top 50 common admitting conditions
- Top 25 common procedures
 - common order sets
 - documentation templates
- Usage rates of alerts & information resources related to key quality measures
- Firing rates of alerts

Wright et al. AMIA Annu Symp Proc. 2010 Nov 13;2010:892-6

User Interface

- Alert override rate
- Ability to modify order from alert screen
- Explanation of alerts

People

- Need to get right information to right people at right time
- Training required to use system
- Involvement of users in CDS design

Communication/Workflow

- Is CDS at the “right point” in the workflow...
- Is there a right place for the CDS you have?
- Is there a method to notify clinicians of new data?

Internal Policies, Procedures, Culture

- Customization can increase usability but can also create maintenance problems or even undermine other aspects of CDS
 - Should you be able to customize Drug Drug Interaction (DDI) checks by turning them off entirely?
- Clinical representation on CDS oversight committee
- Ability to override alerts
- Ability to review data used to generate quality measurements

Wright et al. J Am Med Inform Assoc. 2011 Mar 1;18(2):187-94

External Policies Procedures

Rules against using certain types of CDS to improve efficiency (i.e. Automatic charting, suggestions of clinical reasons for specific procedures, scope of work issues with Registered Nurse and Nurse Practitioner?)

Assessing the Accessibility of CDS



Clinical Content Available

- Role of clinical content vendors, government, user groups (based on Electronic Health Records (EHRs) vendor)
- Standard formats:
 - Syntax – able to import into EHR
 - Semantics – common vocabularies

EHR has Capability to Use the Content

- CDS must fit into the right place in the workflow
 - Does the EHR have the right functionality to deliver the CDS in the workflow, is it actionable
- Access to coded data, triggers, notify clinicians, provide action items

Wright et al. [J Am Med Inform Assoc.](#) 2007 Jul-Aug;14(4):489-96

- Current limitations are NOT due to technical limitation of EHR vendors

Sittig et al. [BMC Med Inform Decis Mak.](#) 2011 Feb 17;11:13

Clinicians must have the skills, knowledge and access to hardware/software required to utilize the content

- Clinicians can access internet-based information resources
- Clinicians have been educated re: need for coded data entry
- Clinicians understand limitations of current CDS interventions

Discussion

Thank You!

Questions

- What we mean when we say Clinical Decision Support (CDS) accessibility?
- How do we define CDS usability?
- What are the major aspects of usability?
 - Sociotechnical challenge
 - Hardware, software, user interface
 - Clinical content
 - People, communication
 - Workflow
 - Processes/procedures/culture
 - Externalities
- How much this overlaps with accessibility?
 - Availability of clinical content
 - Its representation (syntax and semantics)
 - Its conceptual relationship to the clinician users mental model
 - Conceptualization of this information need
 - The functional ability of the Electronic Medical Records (EMR) to utilize and render the content
 - Clinicians capability in using technology

Physician Information Needs

- Medical literature doubling every 19 years
 - Doubles every 22 months for AIDS care
- 2 Million facts needed to practice
- Covell study of LA Internists
 - 2 unanswered clinical questions for every 3 patients
 - 40% were described as questions of fact
 - 44% were questions of medical opinion
 - 16% were questions of non-medical information

Covell DG, Uman GC, Manning PR. Ann Intern Med. 1985 Oct;103(4):596-9

Clinical Questions are Common

- Types of questions:
 - 40% were described as questions of fact
 - 44% were questions of medical opinion
 - 16% were questions of non-medical information
- Difficulties encountered:
 - textbooks too old and inadequately indexed
 - full text journals rare and costly
 - lack of knowledge of appropriate source
 - no time to look up the desired information

Covell DG, et. al. Ann Intern Med 1985; 103:596-9