



# Clinical Decision Support Technical Expert Panel Meeting

- August 15, 2012
- 3:00 PM - 5:00 PM Eastern Time
- Facilitator: Scott Finley

# Agenda



- Welcome & Introductions
- Review of May's TEP Meeting
- From demonstrations to standard practice - part 4: CDS myths and pitfalls
  - GLIDES
  - CDSC
- TEP round table on meeting theme
- TEP wrap-up and next steps
- Recap & contract transition



# Welcome



# Review Of May's TEP Meeting



# From demonstrations to standard practice - part 4: CDS myths and pitfalls.

# From demonstrations to standard practice - part 4:





# CDS Perils and Pitfalls (P<sup>2</sup>)

## Technical Expert Panel Teleconference, August 2012

# GLIDES PROJECT

## GuideLines Into DEcision Support

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# Today

## **CDS perils and pitfalls**

- What are common mistakes CDS developers make?
- What are common mistakes CDS implementers make?
- How can we minimize the impact?
- List is NOT comprehensive

# P<sup>2</sup> in Guideline Development

- Biases due to COI, insufficient breadth of expertise, inadequate literature review
- Multiple rating systems for evidence quality and recommendation strength
  - Recommendation Strength is construct of most interest to implementers, but it is irregularly provided
- Vagueness, underspecification, and frank ambiguity are rampant
- Recommendations require translation into encodable constructs
- Knowledge maintenance is a challenge
- Question of how much can be specified centrally (by developer) and how much adaptation must take place (locally by implementation teams)
- Many guideline development organizations are attempting to comply with IOM standards for trustworthy guidelines
- BRIDGE-Wiz software standardizes development process



# BRIDGE-Wiz



## Building Recommendations in a Developer's Guideline Editor

- Formalizes a process for writing implementable recommendations
- Focuses discussion
- Incorporates prompts based on COGS to improve guideline quality
- Controlled natural language
  - Offers verb choices based on action-type
  - Traps and disallows use of “consider”
  - Discourages “statement of fact” masquerading as recommendation
  - Limits boolean connectors to all ANDs or ORs in a statement
- Incorporates decidability and executability checks
- Requires systematic appraisal of evidence quality and benefit-harms
  - Suggests appropriate obligation term (deontic modal)
- Output includes a high-level “rule” and a recommendation profile

# P<sup>2</sup> in Implementation

- Specifying guideline logic correctly is important, but will not solve the problem of local factors
- Successful implementation hinges on “local factors” which vary substantially from site to site
- Resources, workflow, engagement of local clinicians, clinical policies, EHR functionality

# Developers Fail To Consider Implementability (Barriers to Implementation)

- GuideLine Implementability Appraisal
  - Executability
  - Decidability
  - Validity
  - Flexibility
  - Effect on the process of care
  - Measurability
  - Novelty/innovation
  - Computability



# P<sup>2</sup> in Implementation

## **Failure To Consider User Needs Effectively**

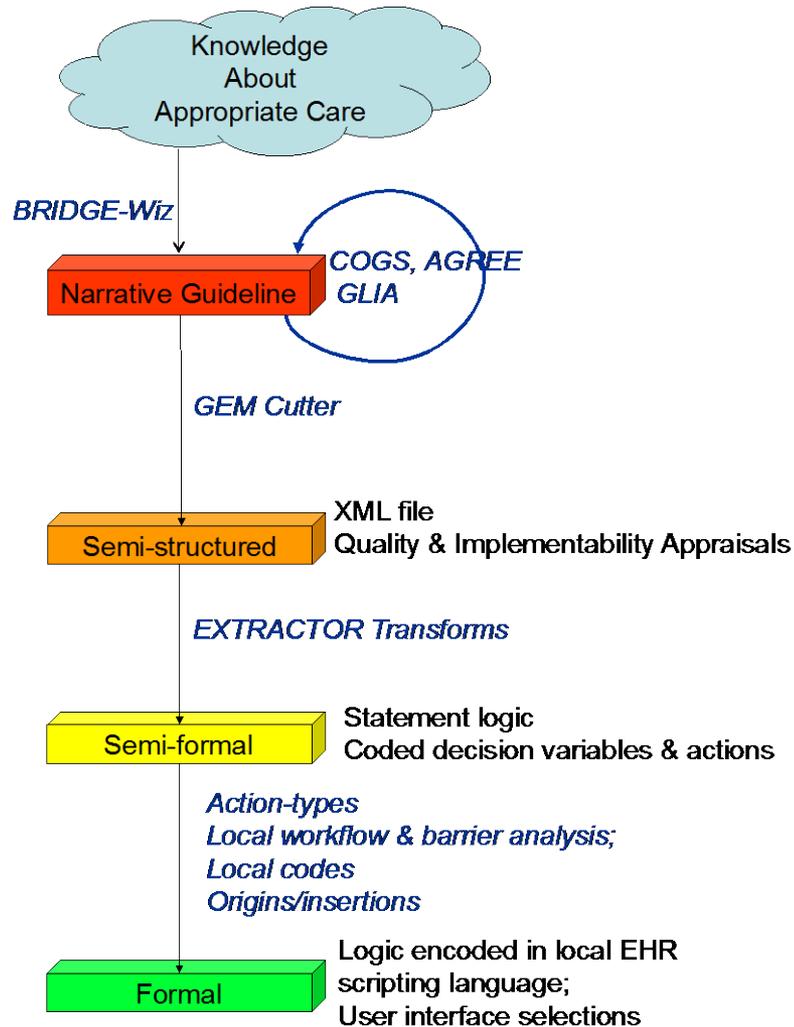
- Consider needs of different user groups
  - Specialists vs primary care clinicians
  - Non-clinician users
  - Levels of experience/comfort with EHR
- Understand what is realistic in terms of user data entry
- Consider different intervention techniques for different groups
  - Mandate vs guideline
  - Prescriptive vs critiquing

# P<sup>2</sup> in Implementation

## **Failure To Get Adequate Clinician Buy-in**

- Clinicians must agree that the issue being addressed is important and needs improvement
- CDS initiative should ideally be linked to an existing and important QI initiative
- Respected and visible “guideline champions” must be in place at each clinical location
- Must be aligned with existing governance structures

# Failure to use a systematic and replicable process for knowledge formalization



# P<sup>2</sup> in Implementation

## **Failure To Understand EMR Usage and Data Quality**

- Prior to commencing the CDS design, data requirements for CDS should be assessed and understood (completeness, consistency, timeliness, etc)
- Balance and accessibility of unstructured text vs structured data must be understood
- EHR system limitations must be considered in the CDS design (Wright et al.)

# P<sup>2</sup> in Implementation

## **Failure To Design Workflow Modifications**

- Include appropriate time/resources to tackle necessary workflow changes
- Engage clinicians closely in the workflow design
- Be prepared to attempt innovative and potentially risky changes to workflow and data capture

# P<sup>2</sup> in Implementation

## **Failure To Allow Time and Flexibility For Local Customization**

- Design and delivery architecture must enable controlled changes to
  - Vocabulary
  - Intervention logic
  - UI designs and screen flows
  - Technical EHR integration
- Governance and change control policies must be in place to control extent/process of localization

# P<sup>2</sup> in Implementation

Not designing CDS with a full palette of interventions



# P<sup>2</sup> in Implementation

## **Understanding time and temporal reasoning**

- Time is deceptively complex and can often result in the most challenging code and rules for CDS
- In pediatrics, the use of hours, days, weeks, months, years for age
- Concepts of before, after, during, etc.

## **Failure To Expect “Problem List Problems”**

- Ensure clinician agreement and consistent use and maintenance of the problem list for effective CDS triggering

# P<sup>2</sup> in Implementation

## **Failure To Incent User Adoption**

- Provider education
- Provider reminders
- Audit and feedback
- Financial, regulatory, or legislative incentives
- Formal training +/-CME and other credit
- Performance measurement

# Thank You!

[richard.shiffman@yale.edu](mailto:richard.shiffman@yale.edu)

<http://gem.med.yale.edu/glides>

# From demonstrations to standard practice - part 4:



# From Demonstration to Standard Practice

## Part 4: CDS Myths and Pitfalls

Blackford Middleton, MD, MPH, MSc  
Principal Investigator

August 15, 2012



# Agenda

1. What are the common misunderstandings when it comes to CDS?
2. What are the mistakes CDS developers usually make?
3. What are the mistakes CDS implementers usually make?
4. How can we minimize the impact of the common misunderstandings?

# What are the common misunderstandings when it comes to CDS?

- CDS is easy, can dramatically impact provider behavior, can be the same for various providers and various workflows
- Translating evidence into a well-formed rule is easy
- Picking appropriate terminology is easy
- Quality measures and CDS really are the same thing
- CDS can be easily shared between users of the same EMR
- CDS is equal to (limited to) alerts and reminders
- When CDS fails, it's the user's fault
- Adding an alert is the answer to all quality problems

# What are the mistakes CDS developers usually make?

- Mistaken interpretations of ambiguous guideline statements
- Fail to abide by the “10 Commandments” of CDS...
- Ask too much of the user
- Have an awkward user interface for CDS
- Fail to adequately accommodate exceptions and document reasons for ignoring CDS

# What are the mistakes CDS implementers usually make?

- Fail to fit into workflow – the “CDS moment”
- Fail to accommodate multiple forms of CDS, or just multiple alerts, acting simultaneously
- Make it difficult to get the right CDS (passive alerts)
- CDS that is not actionable
- CDS that is not aware of history or idiosyncrasies of my patient, or fails to account for multi-morbidities
- Fail to conduct a pilot deployment of their CDS
- Fail to monitor performance/effectiveness of CDS, e.g., by reviewing CDS system logs, reviewing clinical impact, and obtaining feedback from users.
- Fail to keep their CDS up to date

# How can we minimize the impact of the common misunderstandings?

- Define and adopt a common knowledge representation formalism for 5 cardinal types of CDS (rules, infobuttons, templates, data display, order sets).
- Develop standard methods for web-services calls for CDS
- Define common taxonomy and functional characteristics of workflow insertion points
- Define and adopt a standard data payload for remote CDS services
- Define and adopt standards for above bullets for CDS native in EMR
- Training for CDS implementers has a role
- Create a repository of CDS
- Create a venue for frank discussion of CDS successes and failure
- Increase the number of formally trained informaticians who have expertise in CDS

# Acknowledgements

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**CDSC Team Leads:**

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<http://www.partners.org/cird/cdsc/>



# Discussion

Thank You!



# TEP Round Table



# Recap and Next Steps



# Thank You!