Agency for Healthcare Research and Quality
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Partners HealthCare Information Systems

Clinical Decision Support Consortium: How far have we come?

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June 3, 2010

Introduction

Clinical Decision Support Consortium (CDSC)

AHRQ Contract #: 290-08-10010

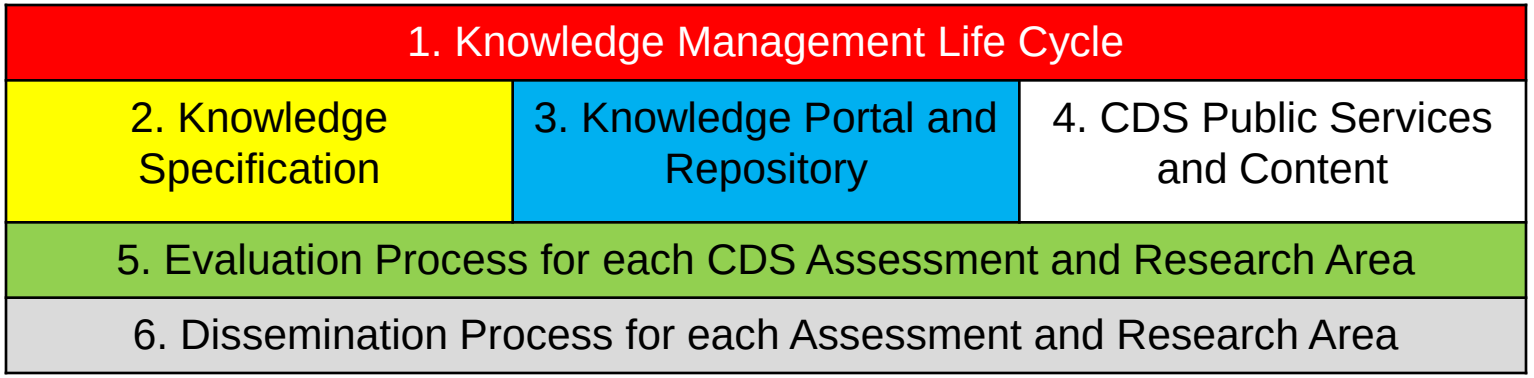
Participating Organizations:

Partners HealthCare	NextGen
Regenstrief Institute	UMDNJ
Siemens Medical Solutions	MVIPA
Veterans Health Administration	Mayo Clinic
Kaiser Permanente Center for Health Research	GE Healthcare
University of Texas School of Health IS	OHSU

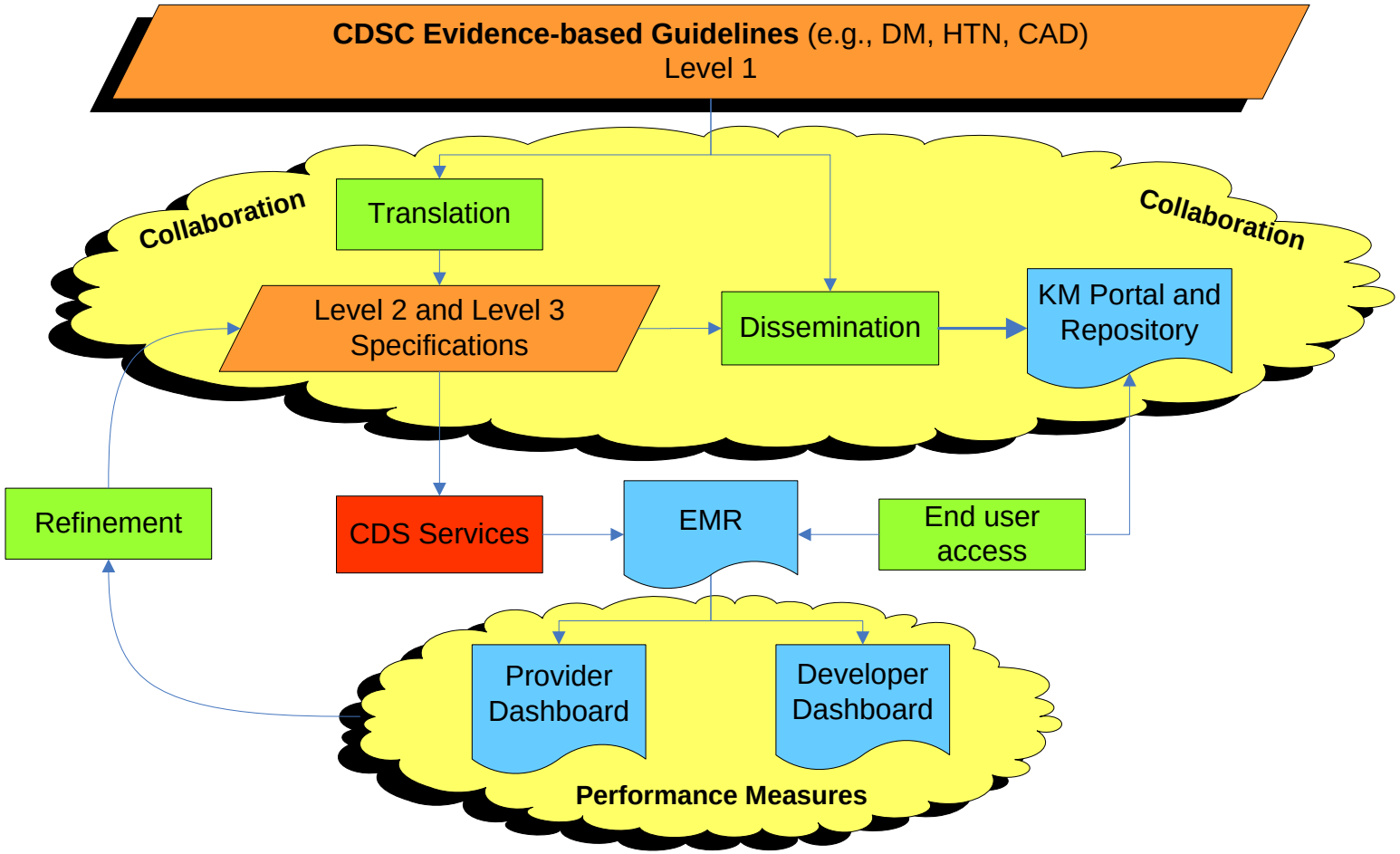
CDSC Goal and Significance

Goal: To assess, define, demonstrate, and evaluate best practices for knowledge management and clinical decision support in healthcare information technology at scale – across multiple ambulatory care settings and EHR technology platforms.

Significance: The CDS Consortium will carry out a variety of activities to improve knowledge about decision support, with the ultimate goal of supporting and enabling widespread sharing and adoption of clinical decision support.



CDSC Conceptual Approach



KMLA: CDS/KM Best Practices

Tools and techniques that should have high priorities in organizations interested in developing successful CPOE and CDS implementations:

1. External repository of clinical content with web-based viewer
2. Online, collaborative, interactive, Intranet-based tool to facilitate content development
3. Enterprise-wide tools to maintain controlled clinical terminology concepts
4. A multidisciplinary team responsible for creating and maintaining clinical content

Sittig DF, Wright A, Simonaitis L, Carpenter JD, Allen GO, Doebbeling BN, Sirajuddin AM, Ash JS, Middleton B. The state of the art in clinical knowledge management: an inventory of tools and techniques. Int J Med Inform. 2010 Jan;79(1):44-57.

KMLA: Vendor Capabilities

Representatives of 9 ***commercially-available, CCHIT-certified*** clinical information systems (CIS) were interviewed to evaluate their CIS capabilities' along 4 functional axes:

1. **Triggers:** events that invoke a CDS rule.
2. **Input data:** data elements used by a rule to make inferences.
3. **Interventions:** possible actions a CDS module can take.
4. **Offered choices:** choices given when an event triggers.

Trigger, input data, and intervention axes are generally well covered by major CIS's, **but offered choices are not**.

Dramatic system-by-system variability was found. CCHIT should include all features measured in this study in their future certification criteria.

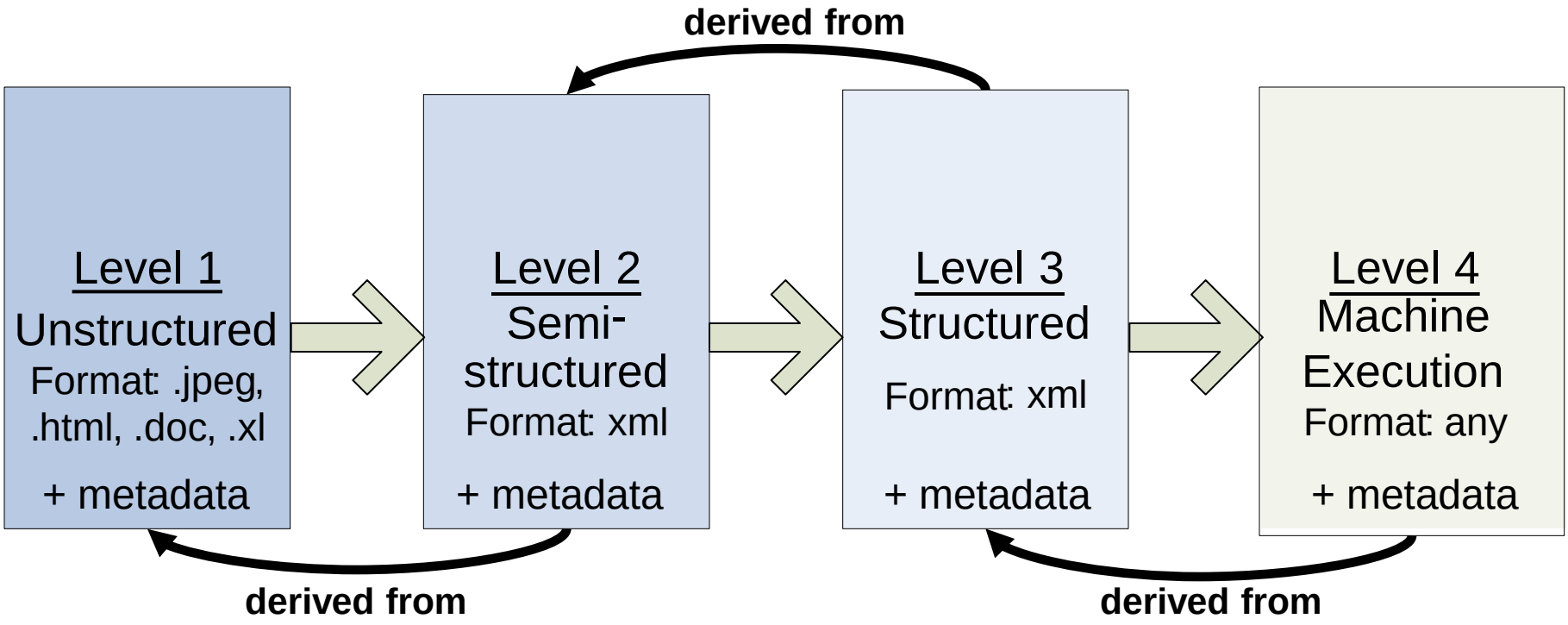
Wright A, Sittig DF, Ash JS, Sharma S, Pang JE, Middleton B. Clinical Decision Support Capabilities of Commercially-available Clinical Information Systems. J Am Med Inform Assoc. 2009 Jun 30.

KMLA: Recommendations

Recommendations for clinical guideline development organizations regarding CDS-related standards:

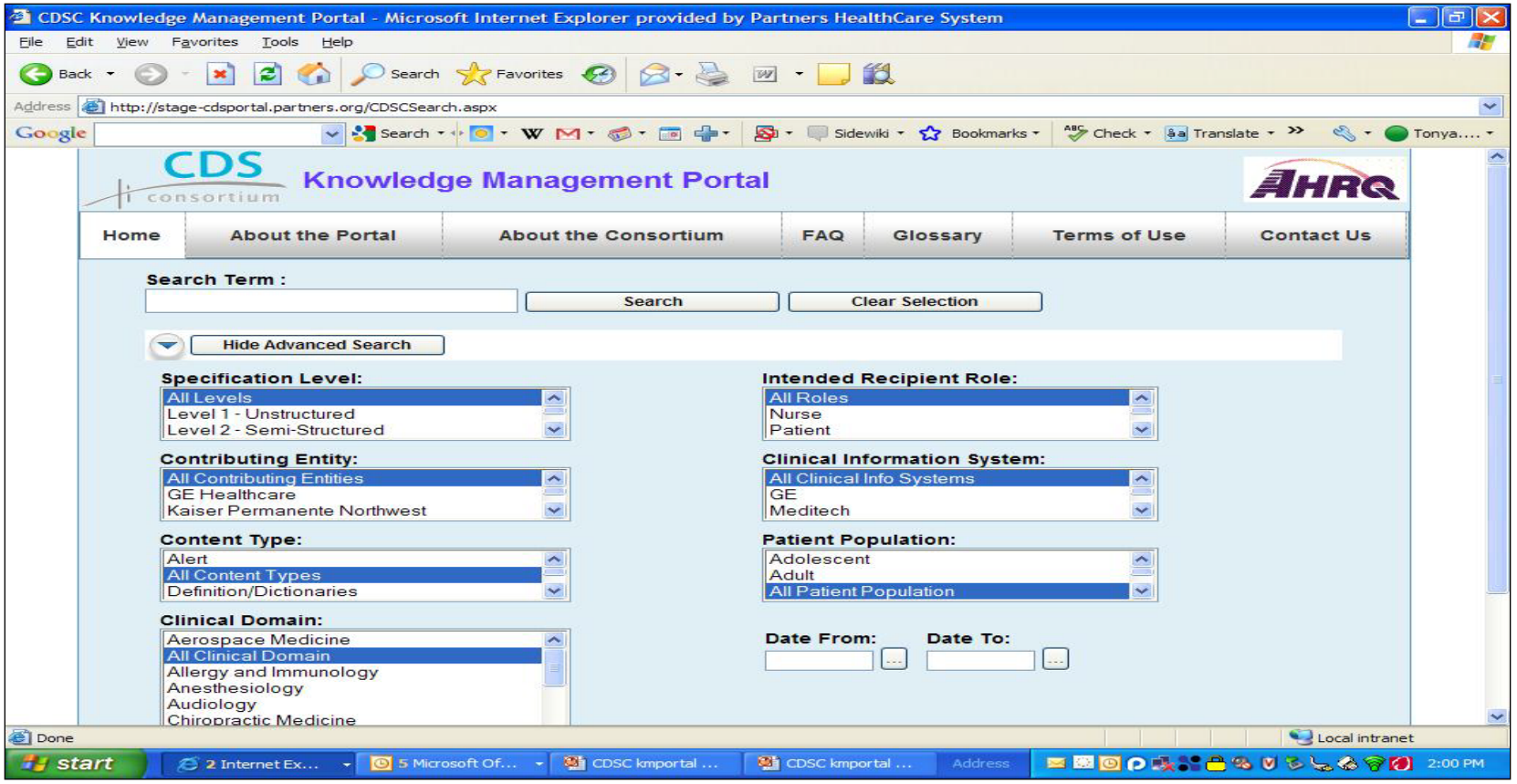
1. Identify **standard data triggers**
2. Work on increasing **clarity and internal consistency of clinical logic**
3. Suggest **appropriate personnel and best insertion points in clinical workflow** to deliver CDS interventions
4. Facilitate **selective filtering** with guidelines
5. Support the **HL7 InfoButton standard** in guidelines
6. Include **experienced and well-trained clinical informaticians** on all committees in guideline development groups

KTS: Four-Layer Model and Evaluation

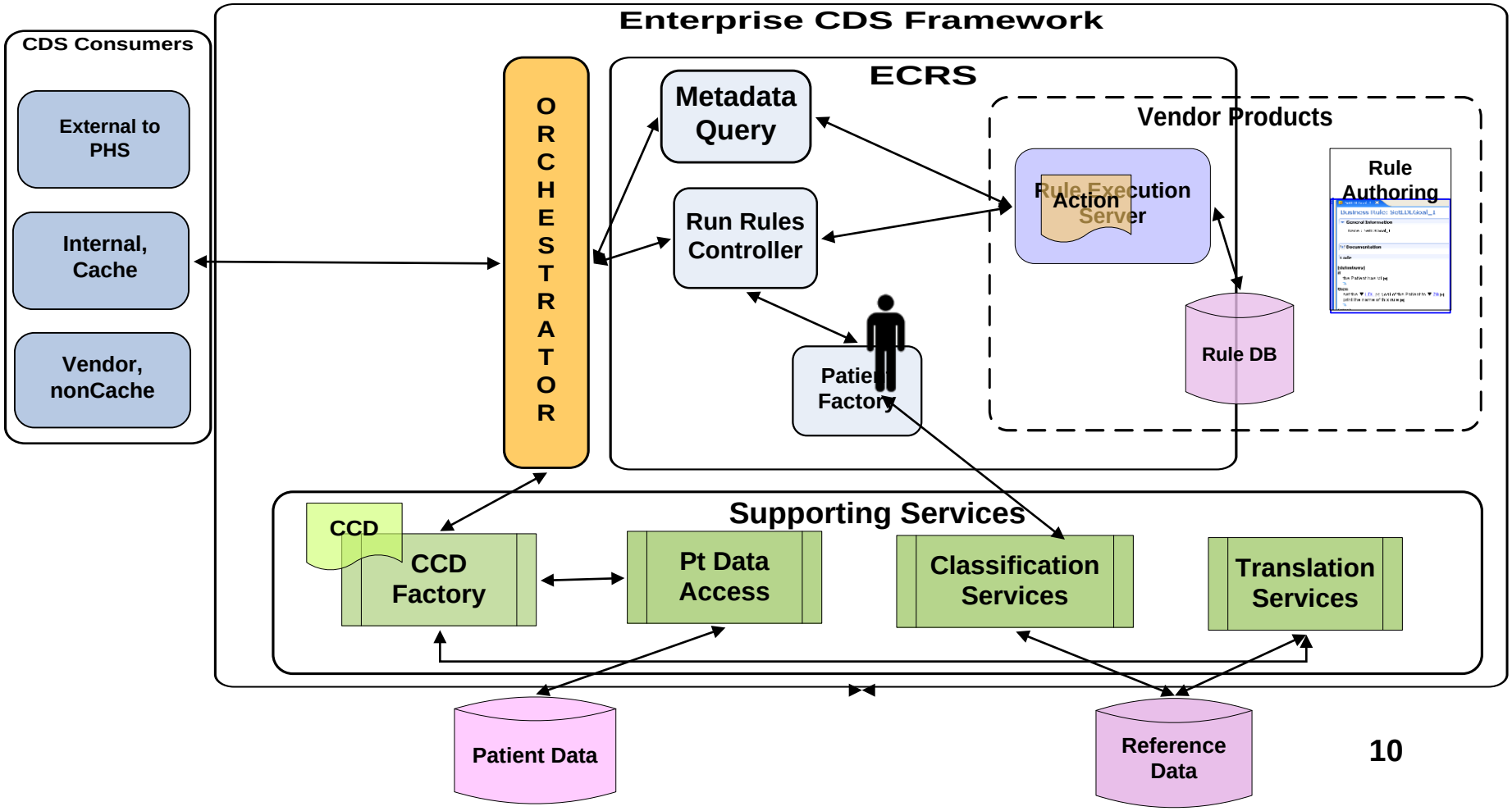


Initial evaluation results: Structured recommendation (L3) was considered *more implementable* than the semi-structured recommendation (L2).

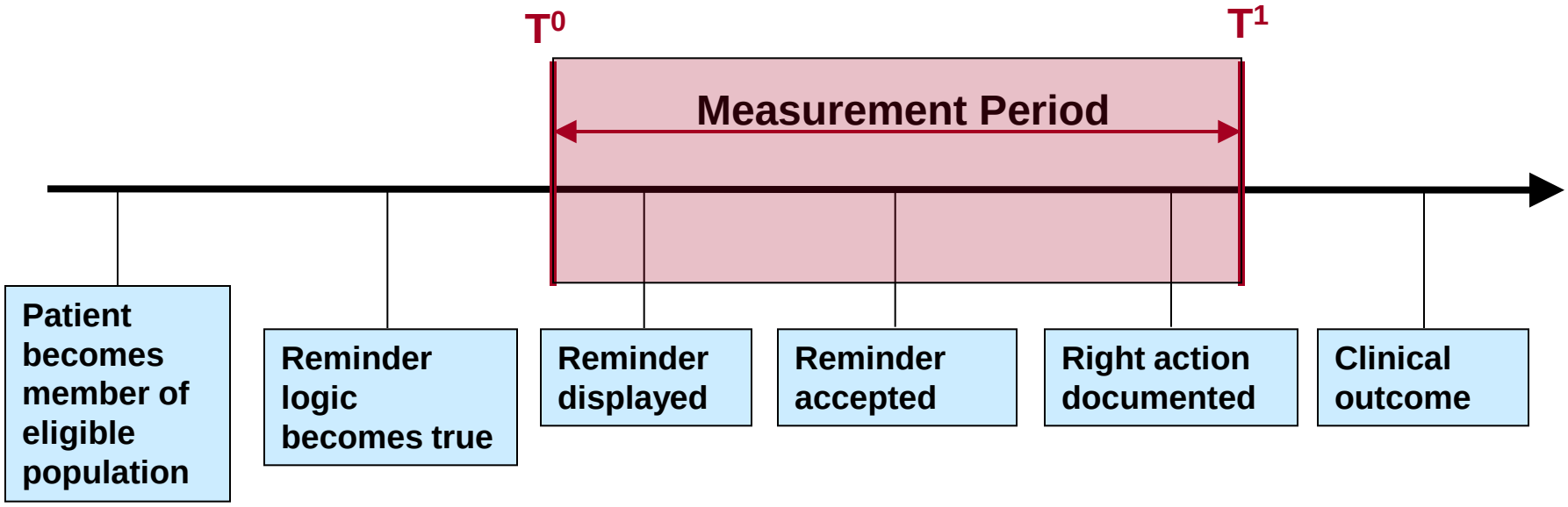
KM Portal: Gateway to Clinical Knowledge



CDS Services: ECRS Functionality



Reminder Lifecycle



"Prevalence"	"Logic"	"Display"	"Acknowledged"	"Performance"	"Outcome"
Patients with Type2 DM	Overdue for A1C Test	Reminder displayed to user	User clicks on reminder and chooses coded response	A1C test result documented	A1C <=7.0

CDS Performance Dashboard:

CAD and no aspirin

Report: CDS Dashboard - Reminder Designer View
Report Run For: EINBINDER,JONATHAN SETH,M.D.,M.P.H.

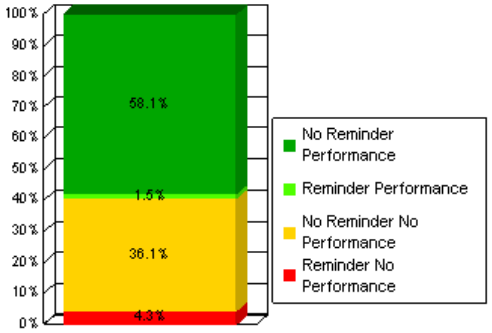
Single Month View For Month: 12/2009

Condition: CAD
Measure: Patient has CAD and aspirin is on the med list

Reminder: Patient has CAD-equivalent on problem list and aspirin is not on the med list. Recommend aspirin.

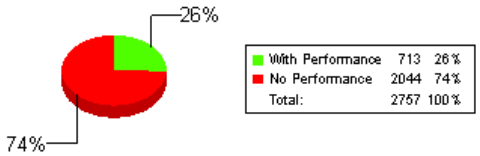
Date Range: 12/2009

Reminder Performance By Category
For 12/2009



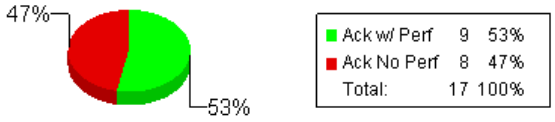
Total Acknowledged	**17**
NNTR - 1 X per month	**3.87**
NNTR - Total Reminders	**20.96**
Patients Where Reminder Displayed	**2,757**
Total Count Displays	**14,944**
Pts with Reminders & Perf	**713**
Pts with Reminders & no Perf	**2,044**
Pts with no reminders and no perf	17,262
Pts with no reminders and perf	27,763
Performing Total	28,476
N	47,782

Reminder Performance
For 12/2009



Reminder Acknowledgement
For 12/2009

Acknowledgement Performance
For 12/2009



CDSC Impact to Date

1. Disseminating recommendations on best practices for knowledge management and CDS to key stakeholders such as CCHIT, HITSP, and health IT vendors

2. Facilitating cross-institutional knowledge engineering collaboration via the CDSC KM portal and through refinement of the four-layer knowledge representation

3. Demonstrating interoperable CDS Services in the Partners LMR, and soon in the Regenstrief Institute

Next Steps: Optional Year 1

CDSC will build upon research efforts from the Base Years through the following activities:

1. **Revisit CDSC sites** after implementation of services to assess activities
2. Continue **refining multilayered knowledge representation**
3. **Support the KM Portal** to further facilitate collaboration
4. **Develop updated recommendations** on CDS best practices for health IT and content vendors, and regulatory/certification authorities
5. Provide **support and maintenance** for CDS Services and **demonstrate interoperability** at remote sites
6. Support **development of CDS Dashboards** at remote sites
7. **Evaluate activities** across all projects and **disseminate findings**

Acknowledgements

CDSC Website: http://www.partners.org/cird/cdsc/

KMLA/Recommendations: Dean F. Sittig, PhD

Knowledge Translation and Specification: Aziz Boxwala, PhD and Roberto Rocha, MD, PhD

KM Portal: Tonya Hongsermeier, MD, MBA

CDS Services: Howard Goldberg, MD

CDS Demonstrations: Adam Wright, PhD

CDS Dashboards: Jonathan Einbinder, MD

Evaluation: David Bates, MD, MSc

Content Governance Committee: Saverio Maviglia, MD, MSc