

## **Clinical Decision Support Systems – Critical Health IT Tools for Interoperable Health Information Exchange**

### **A Tool to Improve HIEs for Medicaid and SCHIP Agencies: An Overview of Core Characteristics, Components, and Approaches**

#### **Presented by:**

**Eta S. Berner, EdD** - Professor, Health Informatics, University of Alabama at Birmingham, School of Health Professions, Department of Health Services Administration

**Rachel Nelson, MHA** - Office of the National Coordinator for Health IT (ONC)

# Overview

- **Welcome** — Erin M. Grace, MHA, Senior Manager, Health IT, Agency for Healthcare Research and Quality (AHRQ)/National Resource Center
- **Before We Begin** — Erin M. Grace, MHA
- **Introductions** — Erin M. Grace, MHA
- **Presentations**
  - *Clinical Decision Support Systems*
    - Presented by Eta S. Berner, EdD - Professor, Health Informatics, University of Alabama at Birmingham, School of Health Professions, Department of Health Services Administration
  - *Clinical Decision Support Government Collaboratory*
    - Presented by Rachel Nelson, MHA - Office of the National Coordinator for Health IT (ONC)
- **Question and Answer** — Erin M. Grace, MHA
- **Closing Remarks** — Erin M. Grace, MHA

# Before we begin...

- Please note, all participants were muted as they joined the Webinar.
- If you wish to be unmuted, choose the “raise hand” option to notify the host.
- If you have a question during the presentation, please send your question to **all panelists** through the chat. At the end of the presentation, there will be a question and answer period.
- Please e-mail Nicole Buchholz at [nbuchholz@rti.org](mailto:nbuchholz@rti.org) if you would like a copy of today’s presentation slides.
- We are currently in the process of posting all of the TA Webinar presentation slides to the project website.

# ■ Listserv Registration

- Please register for the listserv to receive announcements about program updates and upcoming TA Webinars.
- To register go to <http://healthit.ahrq.gov/Medicaid-SCHIP>
- Click on “Medicaid-SCHIP Fast Facts” on the left-hand side of the screen.
- There are two ways to register for the listserv:
  - 1. Click the link “[Click here to subscribe to the listserv](#)” which will open a pre-filled e-mail message, enter your name after the text in the body of the message and send.
  - 2. Send an e-mail message to: [listserv@list.ahrq.gov](mailto:listserv@list.ahrq.gov).  
On the subject line, type: **Subscribe**.  
In the body of the message type: **sub Medicaid-SCHIP-HIT** and **your full name**. For example: sub Medicaid-SCHIP-HIT John Doe.  
You will receive a message asking you to confirm your intent to sign up.

# Clinical Decision Support Systems

## **Presented by:**

Eta S. Berner, EdD - Professor, Health Informatics, University of Alabama at Birmingham, School of Health Professions, Department of Health Services Administration

# Objectives

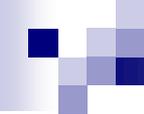
1. Understand the purpose and scope of clinical decision support (CDS) systems
2. Identify and understand the core functional components and features of CDS
3. Understand the types of CDS
4. Describe the impact and challenges of implementing CDS

# Definition\*

- *Clinical decision support (CDS)* provides clinicians, staff, patients, or other individuals with knowledge and person-specific **information**, intelligently **filtered** or **presented at appropriate times**, to **enhance health and health care**.

\* Osheroff J, et al. A Roadmap for National Action on Clinical Decision Support, June 2006

<http://www.amia.org/inside/initiatives/cds/cdsroadmap.pdf> .



# Knowledge

- General Knowledge

- Disease, diagnosis, medications, treatments
- Formularies, guidelines, requirements

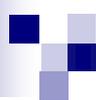
- Patient-Specific Knowledge

- Patients' signs, symptoms
- Allergies
- Lab results



# Filtered

- For the particular clinician
- Usable form
- Context sensitive
- Tailored to patient



# Appropriate Time

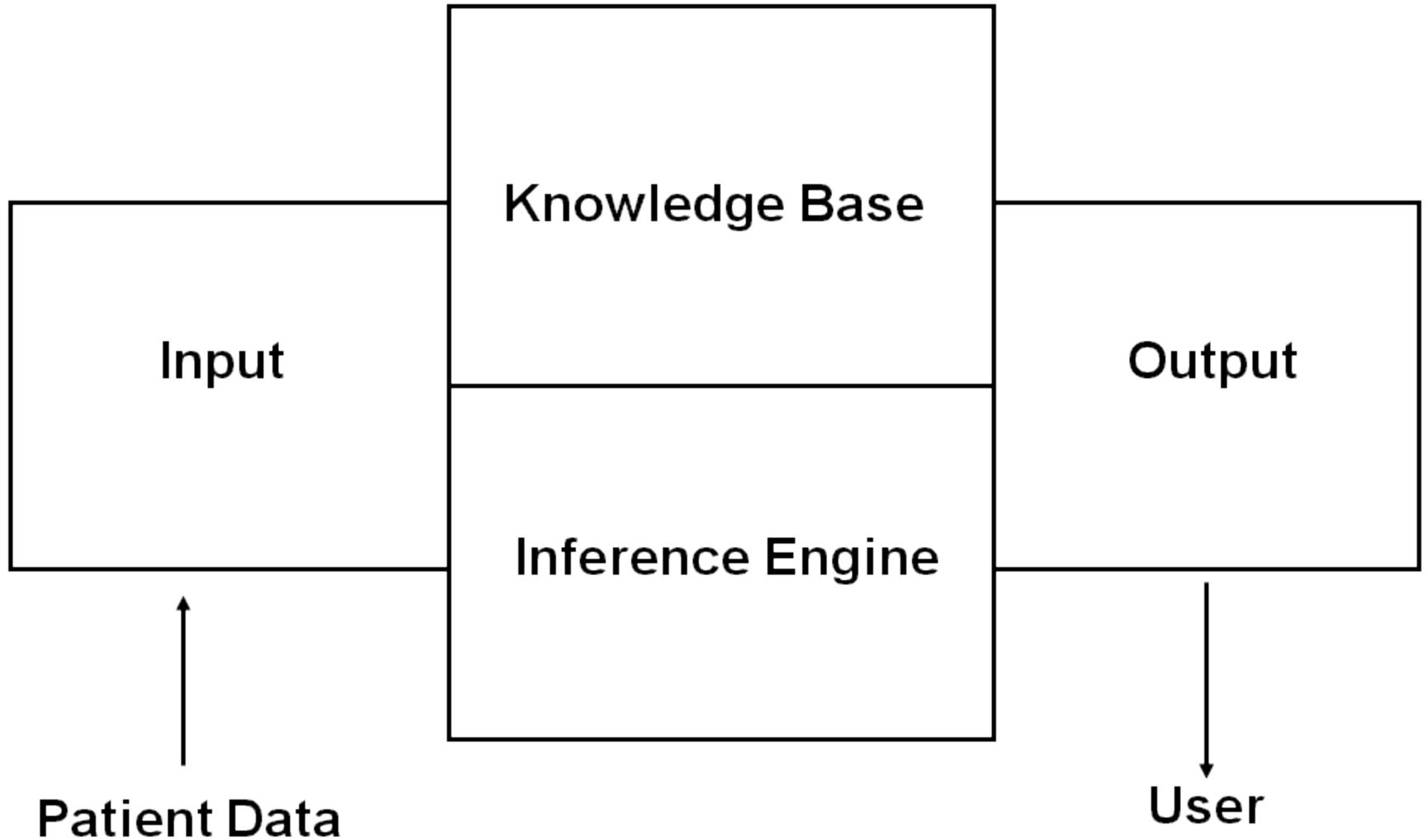
- At the point of decision making
- When new data arrives
- To stop dangerous decisions
- When clinician requests it
- Appropriate frequency



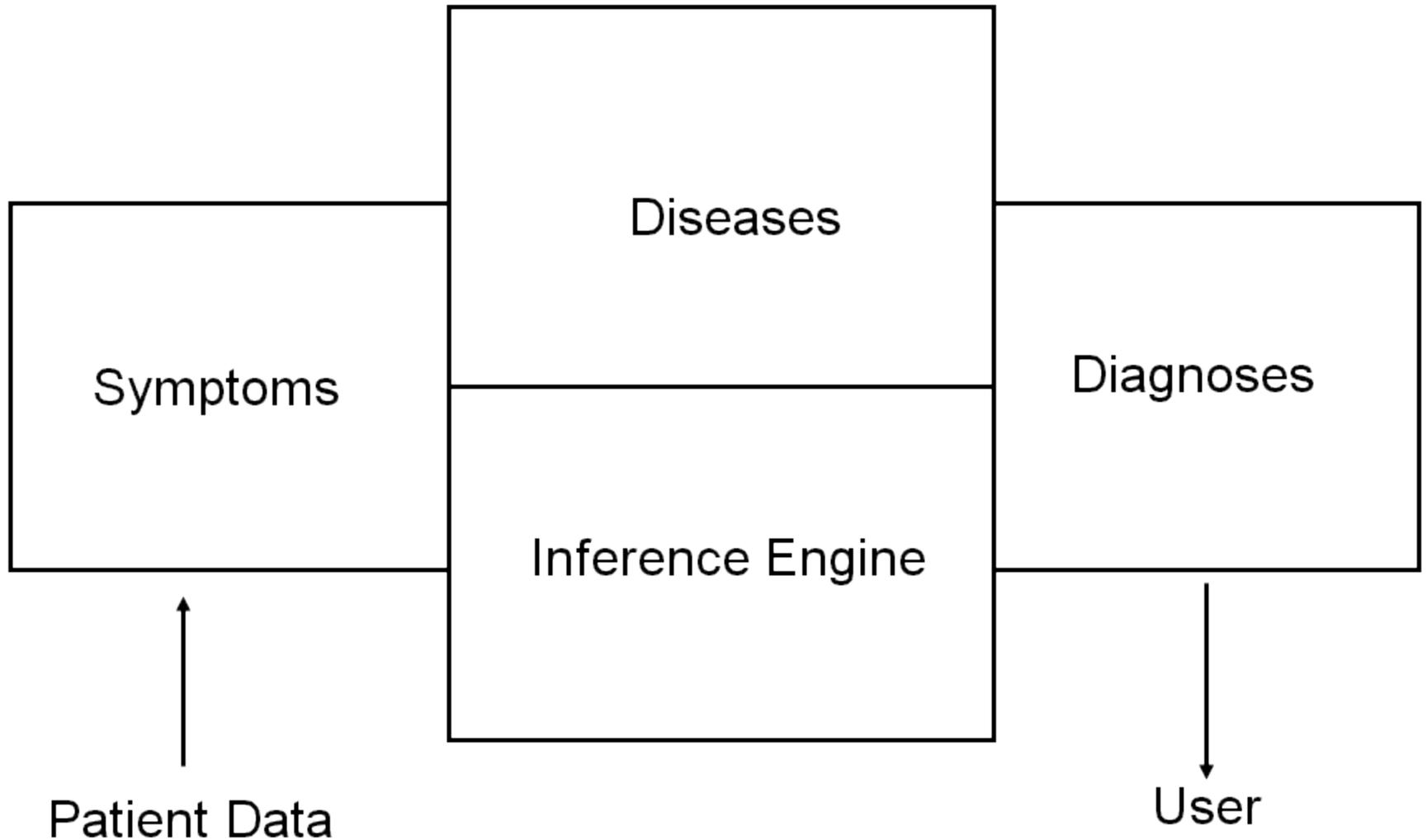
# Structure of CDS

- Knowledge Base
- Inference Engine
- Communication Mechanism

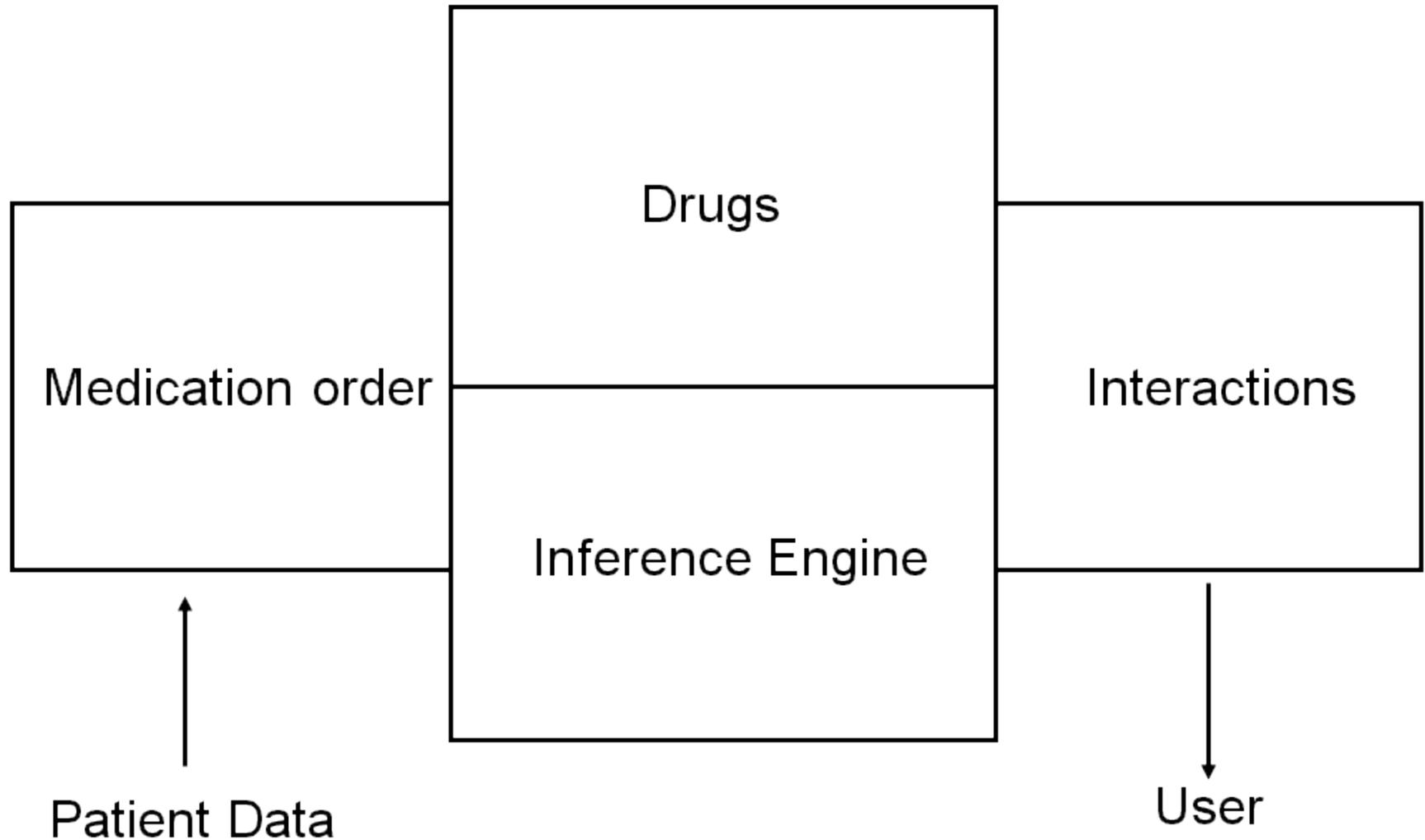
# CDS Systems



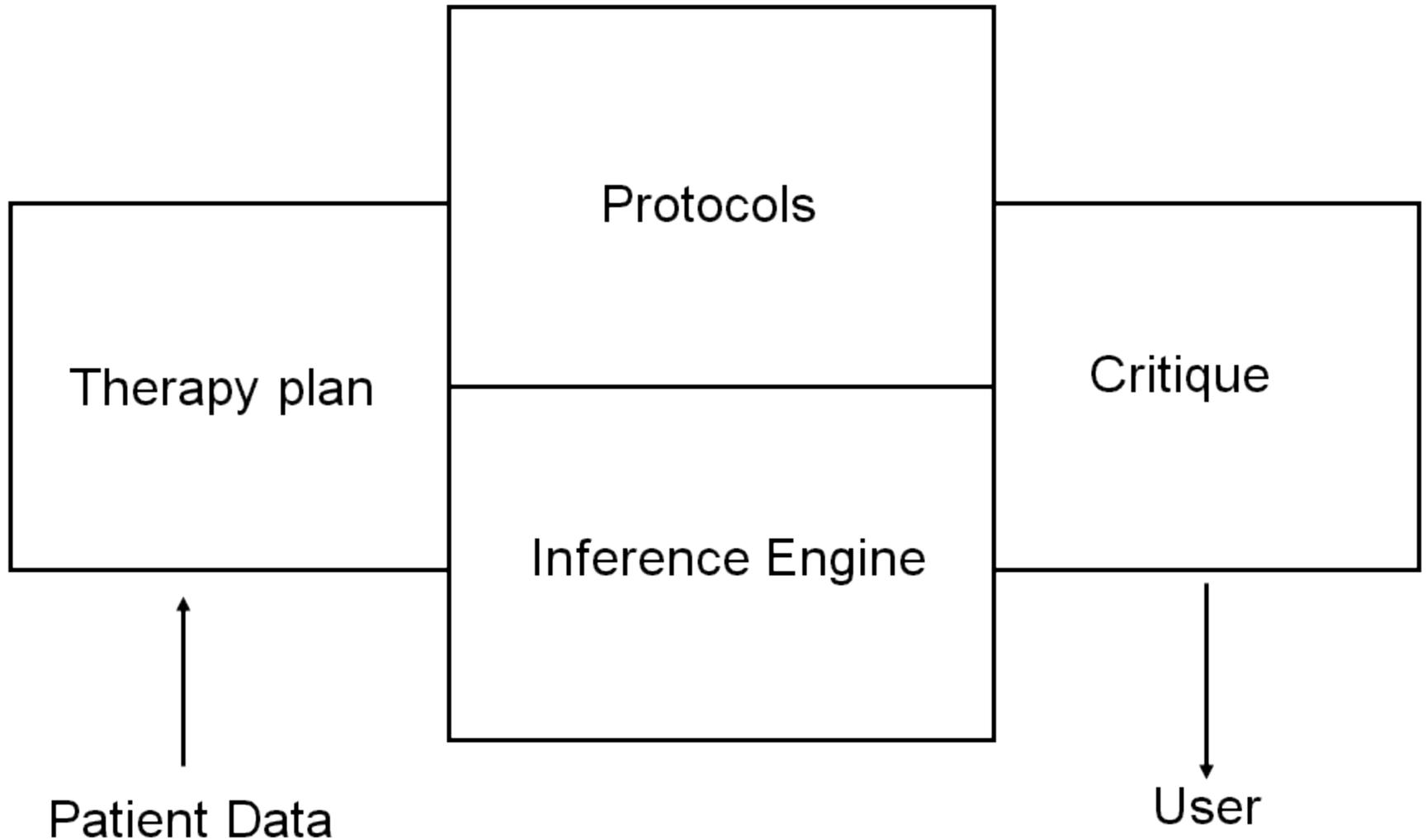
# CDS Systems



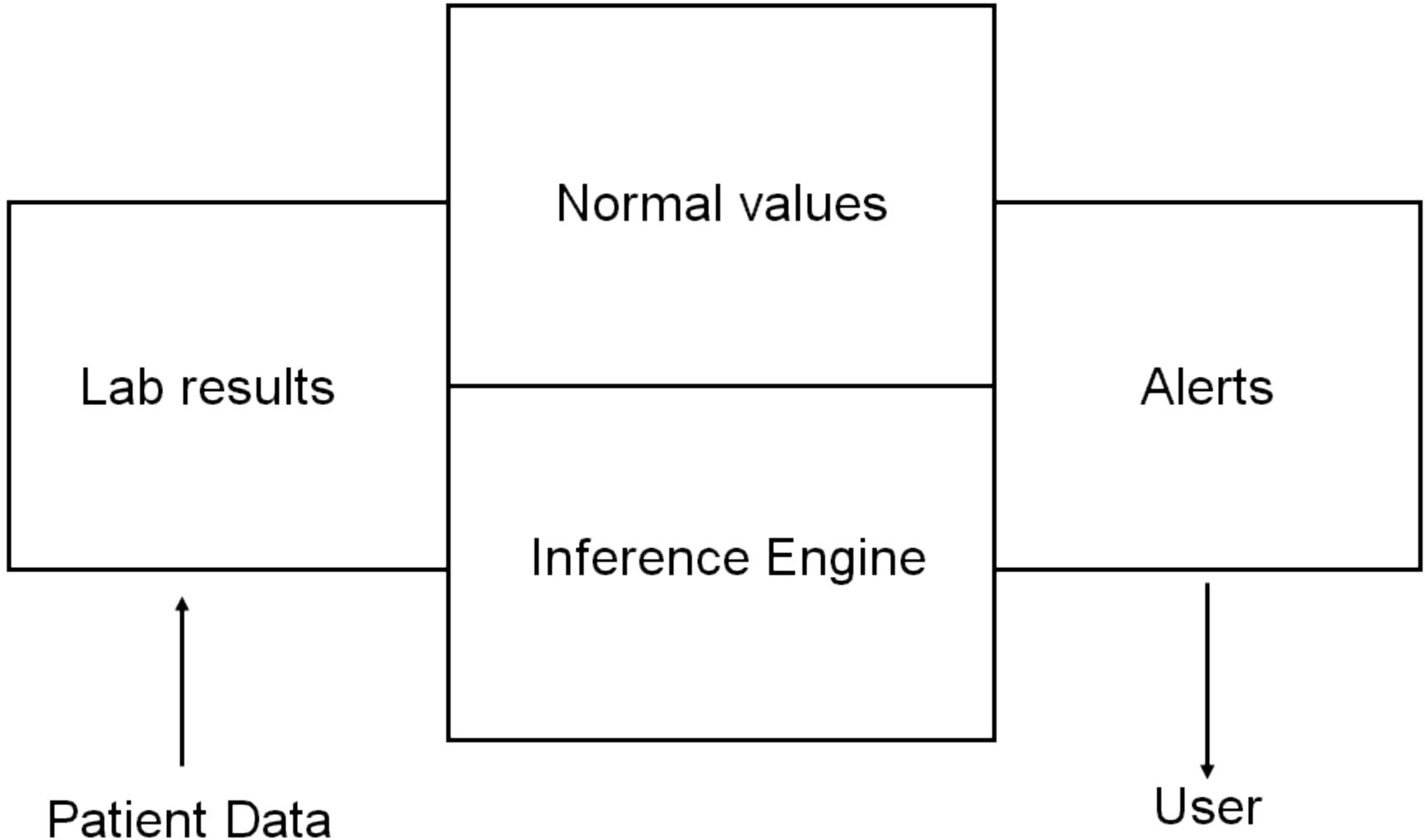
# CDS Systems



# CDS Systems



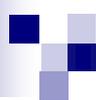
# CDS Systems



# Categorizing CDS

- Taxonomy of interventions\*
- Purpose of interventions
- Clinician role

\* Slater B and Osheroff J. Clinical Decision Support. In Carter J. *Electronic Health Records* (2<sup>nd</sup> ed), 2008.



# Taxonomy of Interventions

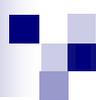
- Documentation forms/templates
- Relevant data presentation
- Order creation facilitators
- Time-based checking/protocol, pathway support
- Reference information and guidance
- Reactive alerts and reminders

# Purpose

- Efficiency
  - Documentation forms/templates
  - Relevant data presentation
  - Order creation facilitators
- Standards
  - Time-based checking/protocol, pathway support
  - Reference information and guidance
- Safety/Quality
  - Reactive alerts and reminders

# Clinician Role

- **Initiate** decision support request
  - Reference information and guidance
- **Respond** to decision support
  - Reactive alerts and reminders
- **Both or either** initiate or respond
  - Documentation forms/templates
  - Relevant data presentation
  - Order creation facilitators
  - Time-based checking/protocol, pathway support



# Impact of CDS

- Improve adherence to protocols
- Avoid diagnostic/therapy errors
- Minimize problem severity
- Prevent complications

# Features that Predict Success of CDS\*

- CDS Systems integrated into physician workflow
- CDS Systems provide advice at time and location of decision making
- Inclusion of recommendation for action, not just assessment
- Using computer to generate decision support (automated, not user-initiated)

\*Kawamoto, K. et al., *BMJ*, 2005

# Evaluation of CDS

- Mostly inpatient systems evaluated, some outpatient
- Alerts, reminders effective; Process studied more than outcomes
- Diagnostic programs and clinical guidelines more mixed results, fewer trials in practice settings
- Evaluation must look at the impact on user, not just how the system performs
- CDS Systems that fit in the workflow more likely to be used

# CDS Challenges

- Integration into workflow
- Vocabulary
- Time to digest information and respond
- Maintenance of knowledge base
- Display of information/user interface
- Physician knowledge and skills
  - Nobody reads manuals!



# Challenges when clinician initiates

- Data entry
- Search/analytic algorithms
- Motivation for use

# Challenges when clinician responds

- Integration with existing information systems
- Alert fatigue
- Timing

# Five Rights\*

- Right information
- Right intervention format
- Right stakeholder
- Right channel
- Right point in workflow

\* Osheroff, JA, et al. Improving Outcomes with Clinical Decision Support: An Implementer's Guide. *HIMSS*, 2005.



**Thank You!**

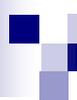
*Technical Assistance for Health Information Technology  
and Health Information Exchange in*  
**Medicaid and SCHIP**

# Clinical Decision Support Government Collaboratory

## **Presented by:**

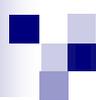
Rachel Nelson, MHA - Office of the National Coordinator for  
Health IT (ONC)

Funded by the Agency for Healthcare  
Research and Quality



# CDS Government Collaboratory

- Formed in March 2008 to coordinate CDS efforts
- Co-sponsored by ONC, AHRQ, and HHS Personalized Healthcare Initiative
- Builds on scan of federal agencies' activities
- Collaboratory meets at least Quarterly
- Forum for sharing of interests, perspectives, priorities



# Participation: 75+ Individuals

Representing multiple federal entities including:

DoD – Department of Defense

AHRQ – Agency for Health Care Research and Quality

CDC – Centers for Disease Control and Prevention

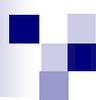
CMS – Centers for Medicare & Medicaid Services

FDA – Food and Drug Administration

The HHS Offices of:

The Assistant Secretary for Planning & Evaluation

The Assistant Secretary for Preparedness &  
Emergency Response



# Participation (continued)

HRSA – Health Resources and Services Administration

IHS – Indian Health Services

NIH – National Institutes of Health

ONC – Office of the National Coordinator for Health IT

OS – Office of the Secretary

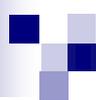
OSG – Office of the Surgeon General

VA – U.S. Department of Veterans Affairs



# First Quarterly Meeting – June 2008

- Guest speaker Blackford Middleton provided an update on the Clinical Decision Support Consortium (CDSC), funded by AHRQ
- Participants shared updates on federal CDS projects



# Current Activities/Next Steps

- Second Quarterly Meeting – September 2008
- Prioritize specific collaboratory “sub-projects”

# Collaboratory Sub-Projects

- Small, interagency groups will address collaboratively between meetings
- Designed to:
  - Address issues of common concern
  - Leverage knowledge across multiple domains
  - Accelerate CDS progress



Your Thoughts?

# Comments and Recommendations for Future Sessions

- Please send your comments and recommendations for future sessions to the project's e-mail address:

[Medicaid-SCHIP-HIT@ahrq.hhs.gov](mailto:Medicaid-SCHIP-HIT@ahrq.hhs.gov)

# Project Information

Please send comments and recommendations to:

[Medicaid-SCHIP-HIT@ahrq.hhs.gov](mailto:Medicaid-SCHIP-HIT@ahrq.hhs.gov)

or call toll-free:

**1-866-253-1627**

[Medicaid-SCHIP-HIT@ahrq.hhs.gov](mailto:Medicaid-SCHIP-HIT@ahrq.hhs.gov)

<http://healthit.ahrq.gov>