



# Clinical Decision Support Technical Expert Panel Meeting

- May 6, 2010
- 10:00 AM - 12:00 PM ET
- Facilitator: Scott Finley

# Agenda



- Welcome
- Review of February's TEP Meeting
- Contractors' Status Reports
  - CDSC
  - GLIDES
- Discussion
- Open Discussion
- Recap



# Welcome



# Review Of February's TEP Meeting

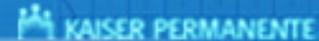
# Status Reports



# Clinical Decision Support Consortium Technical Expert Panel

## Accomplishments, Challenges and Questions

May 6, 2010



# Accomplishments (1 of 5)

*end of the Base Year 2, update since the February TEP*

## **KMLA (Knowledge Management Lifecycle Assessment)**

- Completed site visit to UptoDate on March 25, 2010 and continued analysis of transcript data from previous site visits.
- Submitted to the American Medical Informatics Association (AMIA) 2010 Fall Symposium: “What is Clinical Decision Support?”
- Conducted the following meetings at the Healthcare Information and Management Systems Society (HIMSS) 2010 conference:
  - Meeting with EHR vendors to re-assess their CDS and KM capabilities
  - Meeting with content vendors to re-assess their CDS and KM capabilities
  - Meeting with EHR and clinical content vendors to discuss CDSC progress to date and gather more information on planned activities for year 3



# Accomplishments (2 of 5)

## KTS (Knowledge Translation and Specification Team)

- Completed technical report on the multi-layered knowledge representation framework and evaluation
- Continued development of advanced features for Level 3 editing tool (e.g., user interface improvements, schema mapping editing, etc.).

## KM Portal (Knowledge Management Portal Team)

- Formally announced that the CDSC KM portal is live, and loaded initial set of CDS content to the portal.
- Summary statistics to date for the KM portal:
  - Number of CDSC documents uploaded: 35
  - Unique IP address logins: 76
  - Most viewed document (320 views): 2009 PHS Level 1 Diabetes Guidelines
- Submitted a paper to Fall AMIA: “Development of a Legal Agreement to Enable Sharing of Clinical Decision Support Knowledge across Institutional Boundaries”.

# Accomplishments (3 of 5)

## Recommendations Team

- Submitted to the Journal of the AMIA (JAMIA): “Comparison of Knowledge Management Capabilities of EHR vendors with Leading internally-developed EHR systems”.
- Completed edits of final recommendations for the Healthcare Information Technology Standards Panel (HITSP) and the Certification Commission for Health Information Technology (CCHIT).

## CDS Services Team

- Continued bi-weekly conference calls with Regenstrief on the upcoming integration with Enterprise Clinical Rules Service (ECRS).
- Continued trial of ECRS in the Partners Longitudinal Medical Record (LMR).
- Signed the Data Use Agreement between Brigham and Women’s Hospital (BWH) and Regenstrief Institute, which is the first step in obtaining access to ECRS for Regenstrief.
- Signed the Service Level Agreement with LMR

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# Accomplishments (4 of 5)

## CDS Services Team (cont.)

- Enhanced ECRS capabilities for health check monitoring, log monitoring, and alerting support (via pager and email)
- Met with the Help Desk to establish triaging any ECRS LMR issues
- Began data collection for the ECRS evaluation trial

## Demonstrations Team

- Continued monitoring demonstration of CDS Services in LMR.
- Continued to engage with Regenstrief to coordinate integration activities
- Completed “Lessons Learned” documentation describing initial takeaways from the implementation of CDS Services.

## Dashboards Team

- Continued work on CDS Dashboard analysis and evaluation plans.
- Received and reviewed list of clinicians to grant access and send CDS Dashboard Dissemination Letter.
- Prepared the second draft of a pre-implementation assessment tool.

# Accomplishments (5 of 5)

## Evaluation Team

- Completed detailed analysis plans including sample tables for CDS Services and Demonstration teams. Analysis plan for Dashboards is in progress.
- Began discussion with Regenstrief on evaluation activities for their demonstration of the CDS Services.

## Content Governance Committee (CGC)

- Continued work with KTS team on defining minimum required metadata elements for submission of guideline content to the KM portal.
- Progress on legal agreements:
  - The agreement that KM portal visitors see and must accept before accessing content has been finalized and added to the portal (EULA).
  - The agreement that KM portal publishers must sign in order to submit content to the portal is in progress. PHS has signed its agreement and will begin publishing documents shortly (content contributor indemnification).

# Next Steps (1 of 3)

## **KMLA (Knowledge Management Lifecycle Assessment)**

- Continue data analysis working on publications.
- Work on revision of paper on CDS Governance and submit to JAMIA for review.

## **KTS (Knowledge Translation and Specification Team)**

- Continue development of L3 editing tool as a stand-alone desktop application.
- Submit manuscript of KTS multi-layered knowledge representation approach to an informatics journal.
- Continue defining minimum required metadata elements with CGC for use in the KM portal.

## **KM Portal (Knowledge Management Portal Team)**

- Continue with KM portal maintenance and support as required.

# Next Steps (2 of 3)

## Recommendations Team

- Continue analyzing data from clinical content vendors on which the team will base future recommendations.

## CDS Services Team

- Continue working on services enhancements to enable Regenstrief integration with ECRS.
- Obtain a service access account for Regenstrief and access for Regenstrief to ECRS through the PHS firewall.
- Develop an appropriate strategy to map CDSC SNOMED subset codes with those of Regenstrief's to ensure that Regenstrief can correctly call ECRS.

## Demonstrations Team

- Continue coordinating initial work on demonstrations for CDSC implementation at Regenstrief.

# Next Steps (3 of 3)

## Dashboards Team

- Send out dissemination letter to clinicians to inform them of the CDS Dashboard and distribute pre-implementation assessment tool.
- Review initial feedback on CDS Dashboards.

## Evaluation Team

- Continue to serve in the “consultant” role as each team completes its evaluation.

## Content Governance Committee (CGC)

- Continue to discuss minimum required metadata elements for guideline specification submission to the portal.
- Continue work on legal documentation and obtaining sign-off from CGC members.

# Team Challenges

## KTS (Knowledge Translation and Specification Team)

- Due to legal issues with content ownership and liability, the architecture of the editing tool has been revised. The plan is to now develop a Level 3 (L3) editing tool as a stand-alone desktop application instead of a server-based one. This option will allow users to manage their own content, create, edit, and save documents locally.

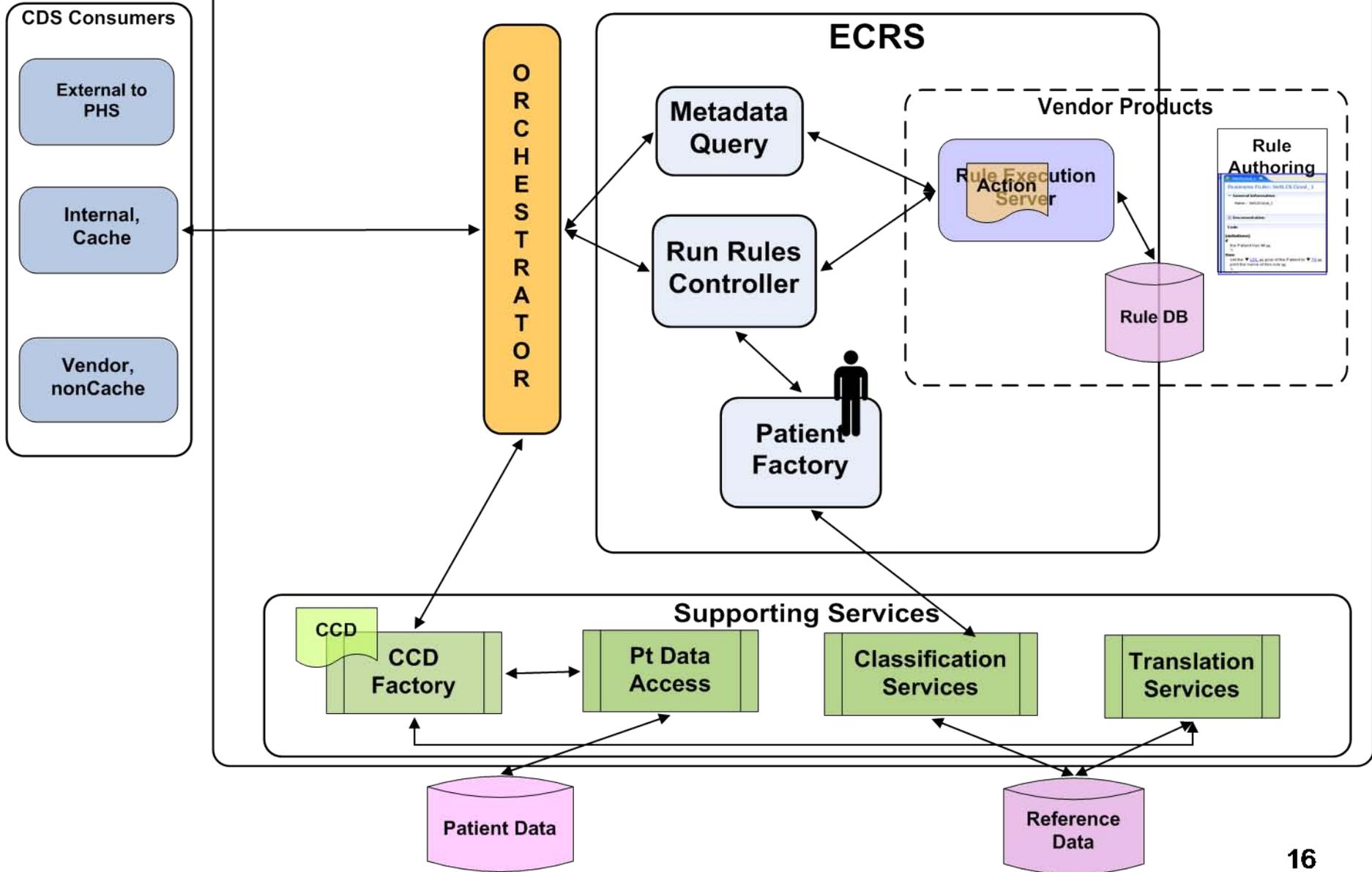
## CDS Services and Demonstrations Teams

- The ECRS decision support service was recently turned off due to an issue with medication translation services (RxNorm codification). Technical issue was resolved in the same day, however, to turn the intervention back on, we must seek permission from the participating practices and reconfirm the on-call support procedures.

## CGC (Content Governance Committee)

- It has been a challenge to identify the right individuals from each institution to review legal documents, gather their comments, coordinate meetings to resolve their requests, and then identify and follow-through with signatures. Much of this legal work is new territory, and scarce funds had been allocated for legal consultation.

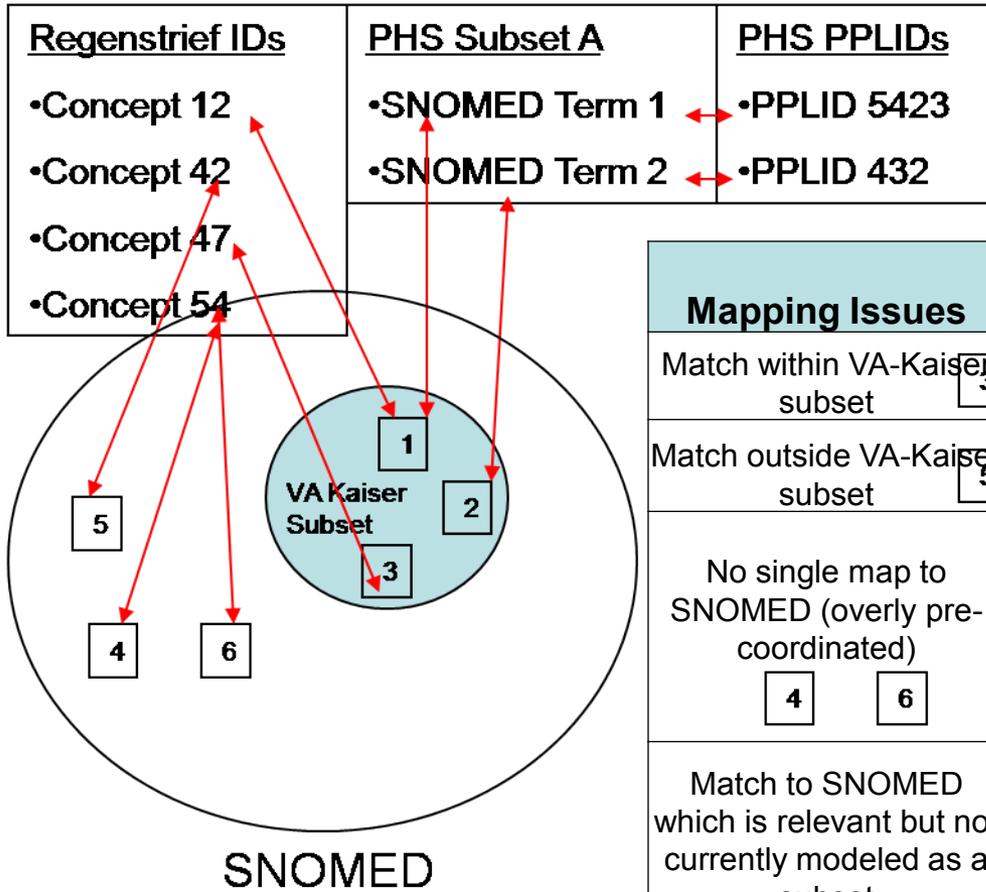
# Enterprise CDS Framework



# Regenstrief Adoption Challenges

1. Mapping a consumer's local proprietary codes to standard terminologies
2. Restricting the mappings above to a mutually agreed upon subset of the standard terminologies (ex. VA-Kaiser subset of SNOMED).
3. Ensuring that the entire breadth of a consumer's codes that are relevant to ECRS rules are indeed included on the subset definitions.
  1. Consumer to conduct such analysis
  2. Both teams work on reconciliation of outliers
  3. In some cases the consumer and the service provider may simply do not agree
4. Ensuring consumers will perform necessary testing for complete and errorless adoption.
5. Making sure the terminology maps, subset definitions, classification rules, and management rules remain accurate with respect to changes in the consumer's terminologies, changes in the standard terminologies, and changes in knowledge.
6. Putting the above responsibilities into a formal legal agreement that both parties would be willing to sign. This legal ground is a new territory.

# Example Adoption Scenarios



Issues now:

Ensuring that new consumers diligently analyze their mappings to standard terminologies

Mapping Issues	RI term	Closest SNOMED code	Action
Match within VA-Kaiser subset <span style="border: 1px solid black; padding: 2px;">3</span>	Renal insufficiency	236425005 (chronic renal impairment)	PHS adds to their subset
Match outside VA-Kaiser subset <span style="border: 1px solid black; padding: 2px;">5</span>	Dementia analysis	9345005 (dialysis dementia)	RI should consider map to closest VA-Kaiser term
No single map to SNOMED (overly pre-coordinated) <span style="border: 1px solid black; padding: 2px;">4</span> <span style="border: 1px solid black; padding: 2px;">6</span>	HTN renal disease, malignant, w/ renal failure	Either malignant HTN, or renal failure, but no term that means both simultaneously	RI must choose one or the other, and be aware of ramifications with other local decision support; or have infrastructure to handle one to many maps
Match to SNOMED which is relevant but not currently modeled as a subset	Uremia	Uremia	PHS must create/edit subset, and re-factor dependent classification and operational rules

# Questions to TEP (1 of 2)

## Governance

- Who should make the decision about what users receive research CDS content? Should we seek approval from each user? From their clinic? From a central authority?

## CDS Integration

- How closely must a CDS consumer abide by a recommendation for CDS implementation?
- How do we prioritize among all the various forms of CDS which is most important and impactful (Infobuttons, Order sets, clinical calculators, documentation templates, standardized quality dashboards, etc.)?

# Questions to TEP (2 of 2)

## EHR and Content Vendors

- What does the future “knowledge economy” look like?
- How do we interact appropriately with EHR and content vendors?
  - How can we get them to engage without feeling that their intellectual property is being threatened?
  - How can we get them to talk to each other (especially content vendors talking to EHR vendors)?



# Status Reports





# Update

## TEP Teleconference

### May 2010

# **GLIDES PROJECT**

## **GuideLines Into DEcision Support**

sponsored by

the Agency for Healthcare Research and Quality



Yale School of Medicine



# Overview

- Progress and accomplishments
- Adoption challenges at Yale
  - Clinic description
  - Review of electronic data
  - Review of qualitative data
  - Lessons learned
- Questions for the TEP
- Next steps

# Progress and Accomplishments

- Finalized project plans, deliverables and budgets for Option Year One work
- Initiated work for Option Year One
  - Short-listing/screening new implementation partners
  - Organizing collaborations with guideline developers
  - Organizing usability/cognitive science expert reviews of Yale CDS
  - Ready to ramp-up these initiatives once funding is confirmed
- Drafted evaluation and dissemination plans for Option Year
- Completed GLIDES 2009-2010 annual report



# GLIDES PROJECT

## GuideLines Into DEcision Support

sponsored by  
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# Option Year One Initiatives/Focus

- Build New Implementation Partnerships
  - Build partnerships and commence design work
- Enhance Existing Yale CDS
  - Improve Yale CDS, including workflow improvement
- Work With Guideline Developers
  - Improve implementation planning and focus
  - Implementation planning tools: guideline editor, GLIA, etc
- Improve GEM and GEM Adoption
  - New version of GEM, and plan for improved promotion
- Evaluation and Dissemination

GLIDES Status – May 2010 TEP

# **ADOPTION LESSONS LEARNED FROM THE SUBSPECIALTY CLINIC**

Ed Lomotan, MD

# Yale Pediatric Pulmonology

- First site for implementation
- “Fully” electronic
- Nine clinical providers
- Approximately 1800 visits/year for asthma
- Key members of clinical staff involved throughout design and implementation processes

# GLIDES

**Asthma Severity and Treatment5: GARY5-11 ZGLIDES**

**CLASSIFYING COMPONENTS OF ASTHMA SEVERITY AND INITIATING TREATMENT**

Impairment	Intermittent				Persistent		
	None	≤2days/wk	>2days/wk	Daily	All Day		
Cough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wheezing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chest tightness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shortness of breath	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nighttime awakening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SABA use (not for EIB)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduction in school/ play/work activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lung function FEV1 (predicted)	<input type="checkbox"/> >80%		<input type="checkbox"/> FEV1=60-80%		<input type="checkbox"/> FEV1<60%		
FEV1/FVC	<input type="checkbox"/> >85%		<input type="checkbox"/> >80%		<input type="checkbox"/> =75-80%		<input type="checkbox"/> <75%
<b>Risk</b>	<input type="checkbox"/> 0		<input type="checkbox"/> 1		<input type="checkbox"/> 2		<input type="checkbox"/> 3
Acute/ ER visit(s) due to asthma	in last year		in last year		in last year		in last year
Hospitalizations due to asthma	<input type="checkbox"/> 0		<input type="checkbox"/> 1		<input type="checkbox"/> 2		<input type="checkbox"/> 3
Exacerbations requiring oral systemic corticosteroids	<input type="checkbox"/> 0-1/year		<input type="checkbox"/> ≥2 exacerbations in last year		AND <input type="checkbox"/> Risk Factors		for persistent asthma
Treatment-related adverse effects	<b>Medication Adverse Effect</b> <input type="checkbox"/> Thrush <input type="checkbox"/> Palpitations <input type="checkbox"/> Jitteriness <input type="checkbox"/> Sleep Disturbances <input type="checkbox"/> Decreased Growth <input type="checkbox"/> Other			<b>Comments</b> <input type="text"/>			

*\*\*\* The purple font indicates selections where YNH has augmented NHLBI guideline.*

CC	Med Hx	ROS	Environ Hx	Family Hx
Phys Exam	Treat Plan	Test	Prescrip	Assessment
	Steps	Meds	Plan	

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**Asthma Steps and Plan: GARY5-11 ZGLIDES**

**Recommended Step for Asthma Management**

**\*\*\* Based on recorded symptoms the NHLBI Guideline step 2 is recommended. \*\*\***

Intermittent Asthma	Persistent Asthma: Daily Medication				
<b>Step 1</b>	<b>Step 2</b>	<b>Step 3</b>	<b>Step 4</b>	<b>Step 5</b>	<b>Step 6</b>
Preferred: SABA PRN	Preferred: Low-dose ICS Alternative: Cromolyn, LTRA, Nedocromil	Preferred: Low-dose ICS+ either LABA, LTRA, or COMBO OR Medium-dose ICS	Preferred: Medium-dose ICS+LABA, or COMBO Alternative: Medium-dose ICS+LTRA	Preferred: High-dose ICS+LABA, or COMBO Alternative: High-dose ICS+LTRA	Preferred: High-dose ICS+LABA, or COMBO+ oral systemic corticosteroid Alternative: High-dose ICS+LTRA + oral systemic corticosteroid
Consider consultation	Consult Asthma Specialist	Consult Asthma Specialist	Consult Asthma Specialist	Consult Asthma Specialist	Consult Asthma Specialist
<<<<<< Step down if possible (If asthma is well controlled at least 3 months)			Step up if needed >>>>>> (adherence, inhaler technique, and environmental control)		
<b>Patient Education and Environmental Control at Each Step</b>					
<b>Quick-Relief Medication for All Patients</b> * SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute interval as needed. Short course of oral systemic corticosteroids may be needed. * Caution: Increasing use of SABA or use >2 days a week for symptom relief (not prevention of EIB) generally indicates inadequate control and the need to step up treatment.					
<b>Comments/Reason for variance:</b> <input type="text"/>					
CC	Med Hx	ROS	Environ Hx	Family Hx	
Phys Exam	Treat Plan	Test	Prescrip	Assessment	Sev/Ctrl
		Assessment	Meds	Plan	

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# Electronic Data

- 445 visits for asthma in first five months
- Overall, clinicians entered enough structured data to trigger CDS in 397/445 (89.2%) of cases

# Direct Observation

- None of the clinicians used the computer in the exam room
  - Note: we performed a usage survey early in the design process, but this did not identify the extent of the problem
- During clinic, clinicians used smart forms in conference rooms to:
  - Review medications
  - Generate asthma action plans
  - Print prescriptions
- After clinic, clinicians used smart forms to:
  - Document
  - Create letters to referring physicians

# Qualitative Evaluation

- Performed semi-structured interviews of all nine clinicians
- Reviewed transcripts in teams
- Developed coding framework using “grounded” approach
- Generated themes using qualitative data analysis software (NVivo 8)

# Qualitative Results

- Factors contributing to low use
  - Clinical
  - Workflow-related
  - Social
- Themes
  - Computer use during general medical care
  - Computer use in a subspecialty setting

# Lessons Learned

- Subspecialty environments may require unique considerations
  - Subject matter expertise
  - Cognitive workflow split between patient care and communication to referring providers
  - Different patient expectations

# Lessons Confirmed

- End user involvement in CDS design is critical but insufficient
- Separating computer use from CDS use is not straightforward
- People's description of their use of a system and actual use may differ

# Questions For The TEP

- We are organizing new implementation partnerships
- Does the TEP have thoughts on how GLIDES can work with new partners to assess and measure the following factors, prior to scoping and planning the CDS initiatives:
  - Effectiveness of existing clinical workflows
  - Level of EHR use and maturity
  - Clinical leadership's commitment to change



# Discussion



## **Governance**

- Who should make the decision about what users receive research CDS content? Should we seek approval from each user? From their clinic? From a central authority?

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# TEP Questions for CDSC



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# Discussion



# TEP Questions for GLIDES

# Discussion



# Open Discussion



# Recap



# Thank You!