



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



July 2021 CDS Connect Work Group Call



CDS Connect

Agenda

Schedule	Topic
• 3:00 - 3:02	• Roll Call, Michelle Lenox (MITRE)
• 3:02 - 3:05	• Review of the Agenda, Maria Michaels (CDC)
• 3:05 - 3:50	• Lessons Learned with CDS Connect: CDS for Asthma Management Guidelines (NHLBI and Elimu Informatics)
• 3:50 - 3:55	• What's New with CDS Connect This Month (MITRE)
• 3:55 - 4:00	Open Discussion and Close Out, Maria Michaels (CDC) <ul style="list-style-type: none">• Open discussion and announcements• Concluding comments, review next steps and adjourn

Objectives

- Share new features and resources available for CDS Connect
- Share lessons learned in the development of CDS for asthma management guidelines
- Discuss topics of interest to members relating to opportunities for CDS Connect

LESSONS LEARNED WITH CDS CONNECT: CDS FOR ASTHMA MANAGEMENT GUIDELINES

Susan T. Shero, RN (NHLBI)

Randolph Barrows, MD (Elimu Informatics)

Outline

- Asthma guidelines – 2020 Focused Updates
- CDS effort to support guideline implementation
- CDS Connect Authoring Tool feedback
- Questions and Discussion

Expert Panel Report 3

2020 FOCUSED UPDATES TO THE Asthma Management Guidelines

Released on Dec 1, 2020



National Heart, Lung,
and Blood Institute

2020 Focused Updates to the Asthma Management Guidelines

A Report from the National Asthma Education and Prevention Program
Coordinating Committee Expert Panel Working Group

nhlbi.nih.gov/AsthmaGuidelines

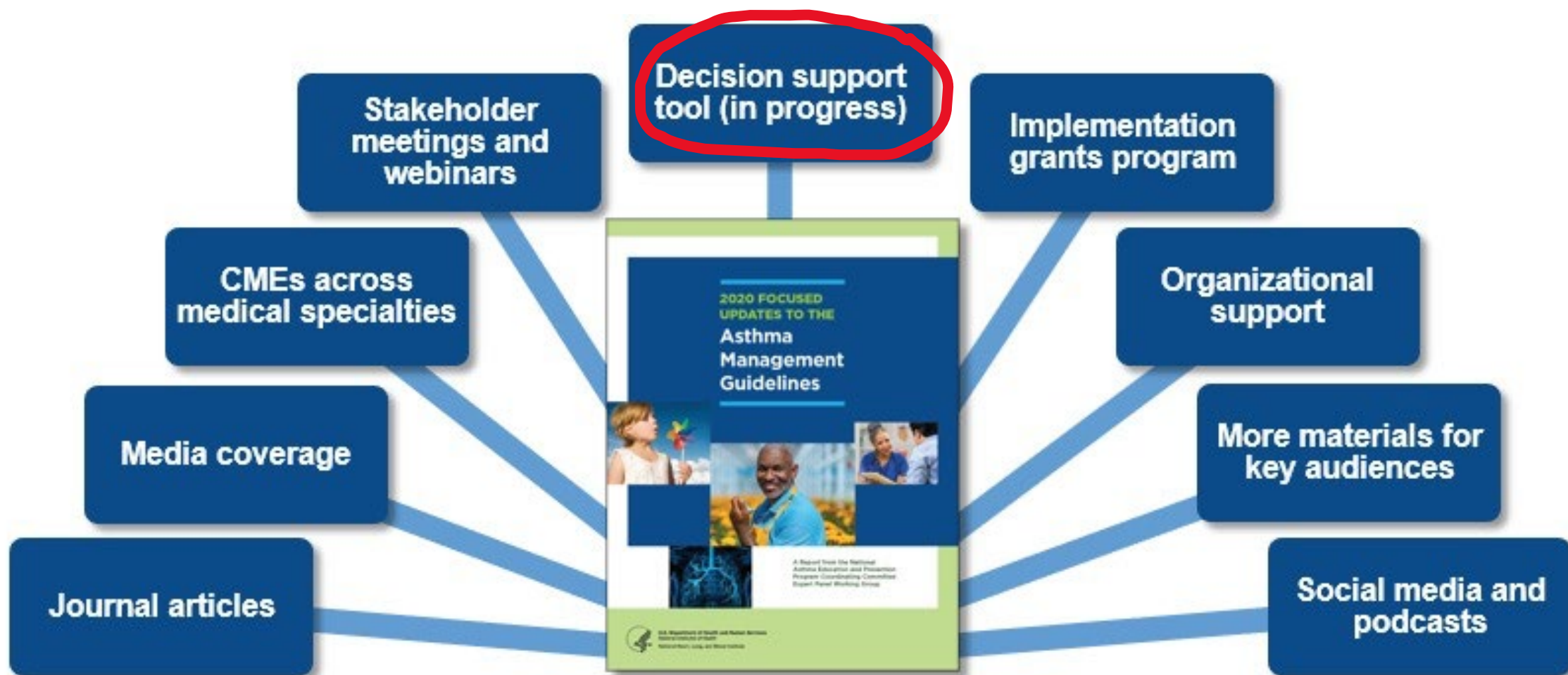
Focused Updates, Not Complete Revision of 2007 Guidelines

- Intended to improve asthma management and support informed, shared decision making between patients and their providers.
- Offer new guidance in **six key areas** of asthma diagnosis, management, and treatment, selected through a comprehensive literature review, consultation with experts, and soliciting comments from the public.
- Updates offer **19 recommendations** and include new features to help clinicians engage with patients.
- At-a-Glance resource available at: <https://www.nhlbi.nih.gov/health-topics/all-publications-and-resources/at-glance-2020-focused-updates-asthma-management-guidelines>

Topic Areas

1. Intermittent Inhaled Corticosteroids
2. Long-Acting Muscarinic Antagonists
3. Indoor Allergen Mitigation
4. Immunotherapy in the Treatment of Allergic Asthma
5. Fractional Exhaled Nitric Oxide Testing
6. Bronchial Thermoplasty

Potential Activities



Overarching Goal of CDS Activities

- Develop CDS components/tools to help make the guidelines more useful for clinicians by incorporating them into EHRs and other point-of-care decision support tools in a way that is shareable, standards-based, publicly-available, and patient-centered
- Part of the overall implementation approach for guidelines

Collaborative Effort

- NHLBI
- Westat
- Elimu Informatics
- Asthma Experts
- Federal Partners
 - ▶ CDC Adapting Clinical Guidelines for the Digital Age
 - ▶ AHRQ CDS Connect

Vernacular

- ICS – **I**nhaled **C**ortico-**S**teroid
 - ▶ Flovent (fluticasone)
- SABA – **S**hort-**A**cting **B**eta **A**gonist
 - ▶ Ventolin (albuterol)
- LABA – **L**ong-**A**cting **B**eta **A**gonist
 - ▶ Serevent (salmeterol)
- LAMA – **L**ong-**A**cting **M**uscarinic **A**ntagonist
 - ▶ Spiriva Respimat (tiotropium)
- Combo – ICS-LABA, etc.
- SMART – **S**ingle **M**aintenance **A**nd **R**eliever **T**herapy
 - ▶ Symbicort (ICS-LABA budesonide/formoterol)

Asthma Guideline Recommendations

- E.g., Recommendation #12 (L1)
 - ▶ “In individuals aged 4 y and older with moderate to severe persistent asthma, the Expert Panel recommends ICS-formoterol in a single inhaler used as both daily controller and reliever therapy compared to either higher-dose ICS as daily controller therapy and SABA for quick-relief therapy or same-dose ICS-LABA as daily controller therapy and SABA for quick-relief therapy.”
- Some content tabular/semi-structured (~L2)

Step Therapy for Management of Asthma (Age 12+)

Recommendations presented in tabular form

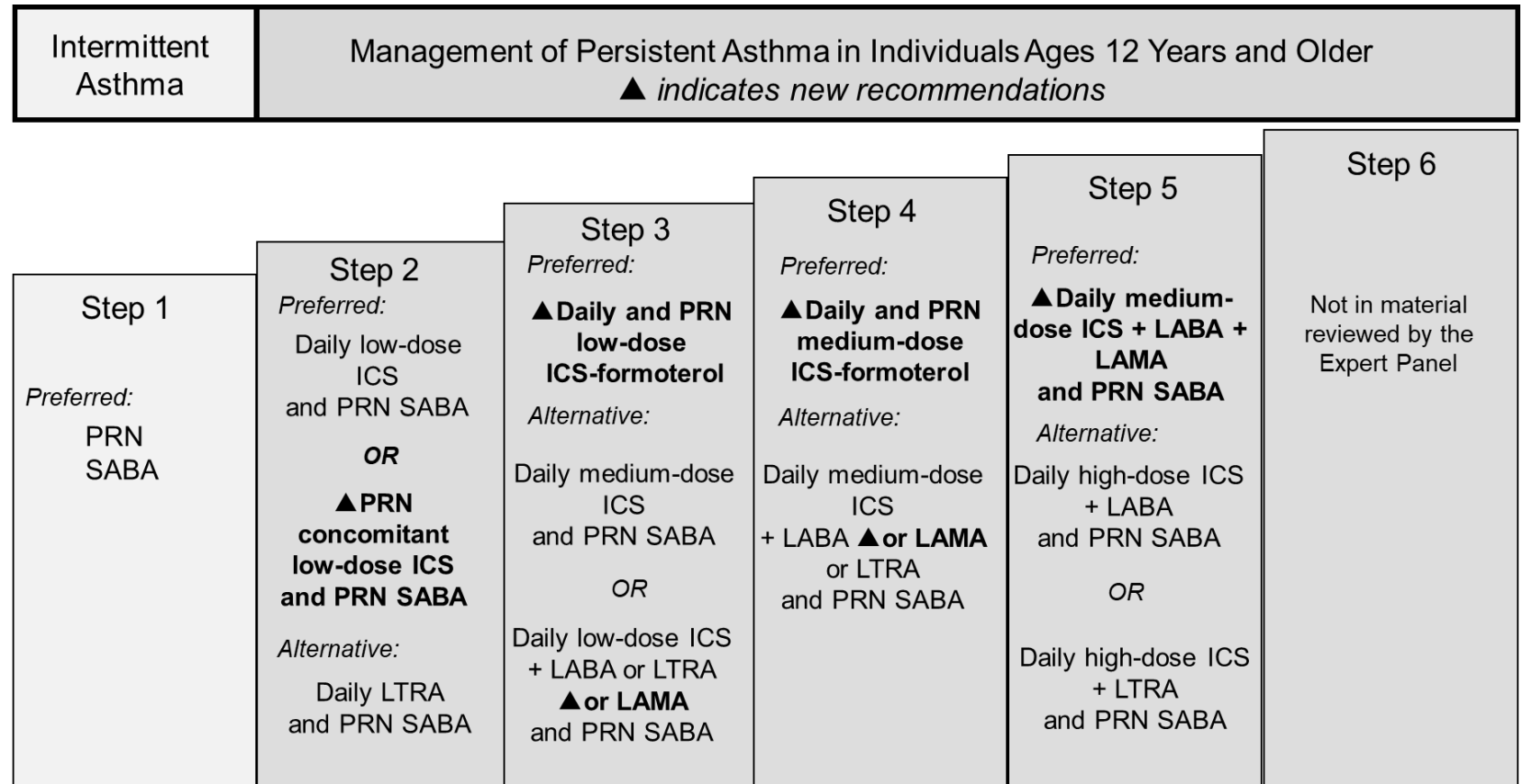
- Patients can be categorized as having intermittent or persistent asthma with level of severity
- Each Step identifies preferred and alternative therapies
- Goal of Step therapy is control of asthma symptoms, with escalation to next Step of care only as needed

Treatment	Intermittent Asthma	Management of Persistent Asthma in Individuals Ages 12+ Years				
	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6 [■]
Preferred	PRN SABA	Daily low-dose ICS and PRN SABA or PRN concomitant ICS and SABA ▲	Daily and PRN combination low-dose ICS-formoterol ▲	Daily and PRN combination medium-dose ICS-formoterol ▲	Daily medium-high dose ICS-LABA + LAMA and PRN SABA ▲	Daily high-dose ICS-LABA + oral systemic corticosteroids + PRN SABA
Alternative		Daily LTRA* and PRN SABA or Cromolyn,* or Nedocromil,* or Zileuton,* or Theophylline,* and PRN SABA	Daily medium-dose ICS and PRN SABA or Daily low-dose ICS-LABA, or daily low-dose ICS + LAMA, ▲ or daily low-dose ICS + LTRA,* and PRN SABA or Daily low-dose ICS + Theophylline* or Zileuton,* and PRN SABA	Daily medium-dose ICS-LABA or daily medium-dose ICS + LAMA, and PRN SABA ▲ or Daily medium-dose ICS + LTRA,* or daily medium-dose ICS + Theophylline,* or daily medium-dose ICS + Zileuton,* and PRN SABA	Daily medium-high dose ICS-LABA or daily high-dose ICS + LTRA,* and PRN SABA	
		Steps 2-4: Conditionally recommend the use of subcutaneous immunotherapy as an adjunct treatment to standard pharmacotherapy in individuals ≥ 5 years of age whose asthma is controlled at the initiation, build up, and maintenance phases of immunotherapy ▲			Consider adding Asthma Biologics (e.g., anti-IgE, anti-IL5, anti-IL5R, anti-IL4/IL13)**	

Step Therapy Framework: Updated EPR-3 Step Diagram

Focus of the CDS update effort was to make changes:

- Updating preferred treatments in 3 steps (Step 3, Step 4, Step 5)
- Adding in a new, second preferred treatment to 1 step (Step 2)
- Adding in alternative treatments in 2 steps (Step 3, Step 4)



Focus of CDS Activities

- Four Recommendations
 - ▶ New pharmacologic treatment approaches since EPR-3
 - ICS, “SMART” ICS-LABA, LAMA
 - ▶ Clinical relevance, strength of recommendation, certainty of evidence
- Artifact proposals reviewed with asthma Expert Panel members
 - ▶ L2s
 - ▶ L3s
 - Value sets, CQL logic, FHIR PlanDefinitions

Approach

- Scoping
 - ▶ No 2007 EPR3-only issues (AAP, risk factors, etc.)
 - ▶ No prompts to CDS consumers (providers)
 - ▶ No dependence on measures of control (peak flows, PFTs, ACT/ACQ, etc.)
 - ▶ No critiques of asthma management (use of “Alternative” Step care)
 - ▶ Assume asthma is adequately controlled unless clinician prescribes a medication to advance asthma care Step
- Guardrail approach
 - ▶ If treatment escalating → guide (when needed) to preferred therapy
 - Preferred therapy of same Step before advancing
 - Preferred therapy of next Step when advancing

Status of Asthma CDS Artifacts

Phase 1: L2 artifacts

- 8 proposed ECA rules
- Covering:
 - ▶ 2020 Focused Update Recommendations 10, 12, 13, 16
 - ▶ Treatment recommendations for Steps 2 – 5
 - ▶ Preferred medication-related recommendations for ages 5+ (4+ for SMART)
- Described by a clinical scenario, logic narrative, CDS target, patient applicability, trigger(s), condition(s) logic, action(s), and projected value set needs

Phase 2: L3 artifacts

- Value sets in VSAC authoring environment
- Clinical Quality Language (CQL) logic (AT → Atom)
- Extensive unit testing (220+ test cases)
- FHIR Library and 8 PlanDefinition artifacts
- (plan to) Share via CDS Connect repository

Authoring Tool Feedback (1/5)

- Features appreciated
 - ▶ Learning
 - ▶ Non-programmer participation
 - ▶ No debugging of syntax and data type errors
 - ▶ FHIR Library export
 - ▶ Integrated testing

Authoring Tool Feedback (2/5)



Challenges/Barriers

- Only accesses published valuesets
 - ▶ No access to value sets pre-published in authoring environment
 - ▶ Does not support needed “agile” development
 - Needed value sets did not exist
 - Proxy value sets
 - Value set creation, update iterations
 - Logic vs. value sets solution exploration
 - Unit (logic) testing

Authoring Tool Feedback (3/5)



- Limited “Add Expression” options for filtering
 - ▶ “Status” values other than ‘Active’, ‘Confirmed’, etc.
 - ▶ Non-”Status” elements
- Parameters
 - ▶ Need list of <T>
 - ▶ Tuple types
 - ▶ Data model types (MedicationRequest)

Authoring Tool Feedback (4/5)

- GUI syntax & interaction semantics
 - ▶ vs. CQL “text” editor
 - ▶ Ease and speed for
 - novice vs. experienced
 - agile vs. planned coding/development
- Inclusions, Exclusions, Subpopulations, Base Expressions tabs
 - ▶ Oriented to eCQMs?
 - ▶ One CQL library per ECA rule vs a collection of rules

Authoring Tool Feedback (5/5)

- No way to “shape” retrieve expressions
 - ▶ E.g., “return” only medication element of MedicationStatement
- No way to filter data element (“Add Expression”) unless a value set or code is defined
 - ▶ E.g., retrieve all “Active” MedicationStatements within a time period but without regard to medication (no code or value set filter)
 - Use as a “Base Element” list for “Subpopulation” expressions that filter for drug class (valueset) membership
- Need Actions in addition to Recommendations

Summary and Next Steps

- Summary
 - ▶ L3 artifacts nearing completion
 - ▶ Next Steps
 - Complete packaging and documentation
 - Submit artifacts to CDS Connect
 - Would welcome guidance on process and timeline for submission

Discussion

Thank You

Comments/Questions/Discussion

WHAT'S NEW WITH CDS CONNECT

Dylan Mahalingam, MITRE

Updates and New Features

- **Authoring Tool**
 - ▶ New “Summary” tab that shows high-level overview of artifact logic (inclusions, exclusions, recommendations)
 - ▶ Context-sensitive help links to easily navigate to documentation relevant to an author’s current action
 - ▶ Clarified error messages, including suggestions to address the error (when applicable)
 - ▶ Ongoing work toward implementation of a “query builder” supporting more complex CQL queries
 - ▶ Bug fixes and continued updates to support reusability and maintainability
- **Artifacts**
 - ▶ Revised FAQ entry and new downloadable ‘at-a-glance’ overview of the artifact update and review process
- **Repository**
 - ▶ Updates to sign up form for requestors to indicate how they learned about CDS Connect
 - ▶ Taglines added to summary reports for enhanced findability
 - ▶ UI changes in progress
 - ▶ CPG-on-FHIR work continues
 - ▶ User documentation update continues
 - ▶ Software updates and security patches — In progress: Drupal 9 and Acquia Dev Desktop replacement
 - ▶ Technical support for Repository contributors

Link to CDS Connect: <https://cds.ahrq.gov/cdsconnect>

ANNOUNCEMENTS, OPEN DISCUSSION AND CLOSE-OUT

Maria Michaels

Office of Public Health Scientific Services
Centers for Disease Control and Prevention