A Computerized Asthma Decision Support Tool
Integrated into an Electronic Health Record:
Putting Guidelines into Action

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NO DISCLOSURES
eAAP Development: The HIT Asthma Project

- September 2004: IAAP launched by MN Dept of Health; recognized as a top interactive asthma tool.
  - Web or desktop application only
  - Based on NAEPP 2002 Guidelines
- May 2007: Agency for Health Research & Quality requests proposals to demonstrate Quality Improvement uses of Health Information Technology (HIT)
- September 2007: AHRQ awards contract to the Center for Urban Health and Hennepin County Medical Center
  - *Improving Asthma Care in an Integrated Safety Net with a Commercially Available Electronic Medical Record (HIT Asthma Project)*

Improving Asthma Care (NHLBI-EPR-3)

- Guideline-based practice will improve and standardize the quality of care given to people with asthma
- “Provide all patients with a written asthma action plan for daily treatment and self-management of worsening asthma symptoms” (p93)
- “Asthma self management education is essential to provide patients with the skills needed to control asthma and improve outcomes” (p93)
- “Develop, implement and evaluate system-based interventions to support clinical decision-making.” (p95)
How can Providers Improve Asthma Care?

- NAEPP EPR-3 guidelines recommend:
  - Use a standardized approach
    - Assess asthma control at each visit
    - Prescribe/adjust daily medications to maximize asthma control
  - Give patients a written asthma plan:
    - What to do every day
    - What actions to take in case of distress

Clinical Guidelines: How are they Integrated into Practice?

- Easier said than done....guidelines are:
  - Often very complex
  - Typically have multi-step algorithms
  - Written in text by large committees
  - Difficult to operationalize as clinical decision support
NAEPP Asthma Guidelines

- Most recent release in 2007 (EPR-3)
  - Lengthy written document
    - 417 pages of narration & references
  - Organized by topic rather than workflow
  - Recommendations difficult to summarize resulting in barriers to implementation
HIT Asthma Project: Primary Goal

- To improve the quality and patient-centeredness of ambulatory asthma care for children and adults at Hennepin County Medical Center’s outpatient primary care clinics, by providing easy access to a clinical decision support tool (CDST) that would be integrated into the patient care process.
HIT Asthma Project: Secondary Goal

- CSDT application to produce an asthma registry for ongoing quality improvement
- Produce a modular CDST application that can be easily launched from the electronic health record (Epic) at HCMC.

Assessing Asthma Control

- The medical interview (history) is the “major medium of medical care” (1)
- Global questions overestimate asthma control (2)
- Symptom specific questions improve control assessment (2)

References:
1. Lipkin, M., S. Putnam, and A. Lazarre, The Medical Interview: Clinical Care, Education, and Research. 1995, New York: Springer-Verlag
Assessing Asthma Control is Only the First Step....

- Is there a way to help integrate asthma control assessment (impairment and risk) and corresponding treatment decision support into a patient visit?
- Can an Asthma Action Plan be generated with the same tool?

e-AAP:
Asthma decision support from EHR

- Translated complex algorithm from guidelines into executable code (CDST)
- Launched during patient encounter from EHR
- Facilitates:
  - Focused patient-provider communication
  - Treatment plan/medication selection
- Produces:
  - Written (English or Spanish) chronic care document (Asthma Action Plan)
  - Joint Commission compliant
  - Note for provider documentation
Information brought in from Epic via URL
Choose Daily Controller Medications

Merry Deere
ID: 444 | Age: 40 | Female

Choose Quick Relievers

Merry Deere
ID: 444 | Age: 40 | Female

Choose Quick Relievers
Merry Deere

ID: 444 | Age: 46 | Female

Choose oral steroid (burst) medication
- Severe: Moderate Persistent
- Control: Not Well Controlled
- Selected Treatment Step: Step 4
- Selected Treatment Plan: Medium-dose Inhaled Corticosteroids AND Long-acting Inhaled Beta2-agonists Combination

For asthma exacerbations, treat with oral corticosteroids, 30 - 60 mg/day, as a single or 2 divided doses max 60 mg/day. Treat for 3-10 days.

Patient Weight: 65 kg
Recommended: 30 - 60 mg/day

<table>
<thead>
<tr>
<th>Steroid</th>
<th>Dose (mg)</th>
<th>Administered</th>
<th>Days</th>
<th>Daily Total (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prednisone Tablet</td>
<td>15</td>
<td>Twice a day</td>
<td>5</td>
<td>75.00</td>
</tr>
</tbody>
</table>

Next Visit Info
- Follow up in ___ days
- Follow up in ___ weeks
- Follow up in ___ months

Clinic and phone for followup
- PCMC General Medicine: 612-673-2100
- PCMC Internal Medicine: 612-347-7338
- Adult Pulmonary Clinic: 612-673-2300
- Northfield Care North: 612-673-8000
- Northfield Care South: 612-798-8260
- Family Medical Center: 612-545-9090
- Northfield Family Care - EastLake: 612-673-6100
- North Port Health and Wellness: 612-545-2500
- PCMC Imaging: 612-673-2428
- PCMC Pediatrics: 612-347-6620
- Northfield Care South: 612-798-8260
- Other

Patient's primary clinic (and phone)
- PCMC General Medicine: 612-673-2100
- PCMC Internal Medicine: 612-347-7338
- Adult Pulmonary Clinic: 612-673-2300
- Northfield Care North: 612-673-8000
- Northfield Care South: 612-798-8260
- Family Medical Center: 612-545-9090
- Northfield Family Care - EastLake: 612-673-6100
- North Port Health and Wellness: 612-545-2500
- PCMC Imaging: 612-673-2428
- PCMC Pediatrics: 612-347-6620
- Northfield Care South: 612-798-8260
- Other

Name of the person who will receive the Asthma Action Plan
- The patient

Electronic signature on Asthma Action Plan
- Provider Name: Brottman
- Credential: MD
e-AAP Implementation at HCMC

- 8 Primary-Care clinics in intervention
- Implementation divided into 2 phases:
  - Before “go-live” focused presentations to key opinion leaders and at staff meetings
  - After “go-live” group trainings and individual provider instruction initiated
    - “Tip sheets” and “Quick step” pocket cards created for providers
  - Ongoing “circle-back” individual instruction offered

HCMC Asthma CDST Implementation Experience

- e-AAP launched June 18, 2009
- From July 1, 2009 through January 31, 2010, 5117 patients believed to have asthma had at least one office visit at one of the eight clinics in which the eAAP was introduced.
  - ED and/or inpatient hospitalizations not included
- Of these 5117 patients, 897 had at least one electronic asthma action plan created for them (17.5%)
HCMC Asthma CDST Implementation Experience

- Implementation challenges:
  - Variable provider comfort with EHR
  - Infrequent eAAP application users:
    - Internists aap use low to non-existent prior to our study
    - Forgot the launch sequence
    - Took longer to complete eAAP
  - Time issues during visits with patients with multiple complex medical problems
  - Providers expected the eAAP to be “tailored” specifically for their patient population

Asthma Control Assessment Implementation Challenges:

- Perception that asthma control documentation and writing AAP’s is just “another piece of paper” that needs to be reported
  - This really IS about improving patient care!
- Identifying and testing better workflows to help streamline the asthma care visit
- Using electronic tools to help with documentation and data collection
Summary

- e-AAP: A novel technology that brings clinical guidelines to the point of care
- Implementation of a CDST continues to be a challenge, even when incorporated into the EHR
- Clinics need to look for innovative ways to incorporate asthma control assessment into the clinical workflow
- **For more information about the e-AAP go to the website: www.e-aap.net**

HIT Asthma Team

**Prime contractor: Denver Health and Hospital Association.**
**Subcontractor: Minneapolis Medical Research Foundation.**
Project site: Hennepin County Medical Center, Mpls MN
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