Asthma Update

- Asthma Coalition of Los Angeles County
- April 28, 2014
- Los Angeles, CA

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Outline

1. Review of asthma statistics.

2. Discuss the National Institutes of Health criteria for diagnosing asthma.

3. Understand how to use an asthma questionnaire to measure asthma control.

3. Identify the causes of uncontrolled asthma in children.
Far-Reaching Effects of Asthma in Children

- Most common chronic disease of childhood (9.6%)  
- 7.1 million children  
- Most frequent cause of school absenteeism  
  - 14 million days  
  - 60% missed ≥1 school day  
- $3 billion dollars in costs
Asthma Statistics in Children

• 52% with an asthma attack in last 12 months

• 7,500,000 ambulatory visits for asthma per year
  • 60% of children with asthma

• 640,000 ED visits for asthma per year
  • 7.5% of children with asthma

• 157,000 hospitalizations per year
  • 1.4% of children with asthma

• 186 deaths per year

LJ Akinbami Vital & Health Statistics Dec 12, 2006;381
Diagnosis

http://www.nhlbi.nih.gov/guidelines/asthma/
• What are the NIH diagnostic criteria for asthma?
KEY POINTS: DIAGNOSIS OF ASTHMA

To establish a diagnosis of asthma, the clinician should determine that (EPR—2 1997):

- Episodic symptoms of airflow obstruction or airway hyperresponsiveness are present.
- Airflow obstruction is at least partially reversible.
- Alternative diagnoses are excluded.

Recommended methods to establish the diagnosis are (EPR—2 1997):

- Detailed medical history.
- Physical exam focusing on the upper respiratory tract, chest, and skin.
- Spirometry to demonstrate obstruction and assess reversibility, including in children 5 years of age or older. Reversibility is determined either by an increase in FEV$_1$ of $\geq$12 percent from baseline or by an increase $\geq$10 percent of predicted FEV$_1$ after inhalation of a short-acting bronchodilator.
- Additional studies as necessary to exclude alternate diagnoses.
# Key Indicators to Diagnosis of Asthma

**Box 3-1. Key Indicators for Considering a Diagnosis of Asthma**

Consider a diagnosis of asthma and performing spirometry if any of these indicators is present.* These indicators are not diagnostic by themselves, but the presence of multiple key indicators increases the probability of a diagnosis of asthma. Spirometry is needed to establish a diagnosis of asthma.

- **Wheezing**—high-pitched whistling sounds when breathing out—especially in children. (Lack of wheezing and a normal chest examination do not exclude asthma.)

- **History of any of the following:**
  - Cough, worse particularly at night
  - Recurrent wheeze
  - Recurrent difficulty in breathing
  - Recurrent chest tightness

- **Symptoms occur or worsen in the presence of:**
  - Exercise
  - Viral infection
  - Animals with fur or hair
  - House-dust mites (in mattresses, pillows, upholstered furniture, carpets)
  - Mold
  - Smoke (tobacco, wood)
  - Pollen
  - Changes in weather
  - Strong emotional expression (laughing or crying hard)
  - Airborne chemicals or dusts
  - Menstrual cycles

- **Symptoms occur or worsen at night, awakening the patient.**

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*Eczema, hay fever, or a family history of asthma or atopic diseases are often associated with asthma, but they are not key indicators.

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**UCLA Health**
Breathmobile Screening Questionnaire
Strongly consider asthma if any response is “yes”

- During the past 1 – 2 years, has your child had repeated episodes of coughing, wheezing, chest tightness or trouble breathing?
  - YES  NO  NOT SURE

- Does your child have coughing, wheezing, chest tightness, or trouble breathing when they play or exercise?
  - YES  NO  NOT SURE

- In the last year has your child missed school because of coughing, wheezing, chest tightness, or trouble breathing?
  - YES  NO  NOT SURE

- In the past month has your child had coughing, wheezing, chest tightness, or trouble breathing in the daytime?
  - YES  NO  NOT SURE

- In the past month has your child had coughing, wheezing, chest tightness, or trouble breathing at nighttime or with sleep?
  - YES  NO  NOT SURE

- Have you ever been told by a doctor that your child has asthma?
  - YES  NO  NOT SURE

- Have you ever been told by a doctor that your child has bronchitis?
  - YES  NO  NOT SURE
Assessment
The goal of every clinical encounter with an asthma patient is to answer the question:

• Is Asthma Controlled?
Uncontrolled asthma common despite type of visit (n = 2,429 children at 29 practices)

- All Visits: 46%
- Resp. Visit: 54%
- Non-Resp Visit: 35%

Uncontrolled asthma (ACT <19)
How can we reliably completely assess asthma control?
• Use validated asthma questionnaires

• When?
• At every clinical encounter (e.g., well child care, sick visit)

• Why?
  • Better information
  • Consistent approach
  • Efficient retrieval of information
  • Reimbursement (HPI elements; time counseling)
  • Focus on other important tasks
### Pediatric Asthma Control & Communication Instrument

#### Asthma Symptoms

7. Over the **past week**, how many days has your child had asthma symptoms? For example:

<table>
<thead>
<tr>
<th>Days</th>
<th>0</th>
<th>1-2</th>
<th>3-6</th>
<th>Every day (not all day long)</th>
<th>Every day (all day long)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cough</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest tightness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shortness of breath</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sputum (spit, mucous, phlegm when coughing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficulty taking a deep breath</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheezy or whistling sound in the chest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Reliever use

8. Over the **past week**, how many days have you had to give your child medicine to quickly relieve asthma symptoms? For example:

<table>
<thead>
<tr>
<th>Days</th>
<th>0</th>
<th>1-2</th>
<th>3-6</th>
<th>Every day (not all day long)</th>
<th>Every day (all day long)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuterol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhaler</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nebulizer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Attacks

9. Over the **past week**, how many days did your child have an asthma attack? For example:

<table>
<thead>
<tr>
<th>Days</th>
<th>0</th>
<th>1</th>
<th>2-3</th>
<th>4-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>When it is harder for your child to breathe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When you give your child more asthma medicine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When the asthma medicine does not work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Activity Limitation

10. Over the **past week**, how much has asthma limited your child’s activities?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Very much</th>
<th>Completely</th>
</tr>
</thead>
</table>

#### Nighttime Symptoms

11. Now for this question, please answer about the past 2 weeks.

How many nights did **your child’s asthma** keep your child from sleeping or wake him/her up in the past 2 weeks?

<table>
<thead>
<tr>
<th>Nights</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3-7</th>
<th>8-14</th>
</tr>
</thead>
</table>

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**For clinician use only – Asthma Control Assignment**

Assign patient’s current level of asthma control by looking at box checked farthest to the right on questions 7-11 and match color of this box to level of asthma control in this section and circle and/or document in patient’s chart.
### Pediatric Asthma Control & Communication Instrument

#### Asthma Symptoms

1. **Sum Score**: $4 + 2 + 0 + 2 = 10$
   - Higher score = worse control

2. **Problem Index**: $1 + 1 + 0 + 1 = 4$
   - Higher count = worse control

3. **NHLBI categories**
   - **Severe persistent asthma**

4. **Controlled or Not Controlled**

#### Reliever use

#### Attacks

#### Activity Limitation

#### Nighttime Symptoms

<table>
<thead>
<tr>
<th>For clinician use only – Asthma Control Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign patient’s current level of asthma control by looking at box checked farthest to the right on questions 7-11 and match color of this box to level of asthma control in this section and circle and/or document in patient’s chart</td>
</tr>
</tbody>
</table>
Is Asthma Controlled?

• Yes—do nothing or step-down treatment
  • Follow-up in 1 – 6 months

• No—work through causes of uncontrolled asthma
  • Follow-up in 2 – 6 weeks
What are the causes of uncontrolled asthma?
What are the causes of uncontrolled asthma?

• Non-adherence
• Poor inhaler technique
• Environmental exposures
  • Tobacco smoke
• Co-morbidities
  • Allergic rhinitis
  • Obesity
  • Sinusitis
• Under-treatment (need to step-up treatment)
What can be done?
Adherence Solutions

Mistaken Non-adherence

• Provide & review written treatment plan at each visit
• Ask patient to repeat dosing instructions
• Review device technique
• Provide asthma education
• Encourage accessing social support
Respiratory Inhalers
At a Glance

Short-acting bronchodilators:
- ProAir® HFA
- Proventil® HFA
- Ventolin® HFA
- Xopenex HFA

Long-acting bronchodilators:
- Arcapta® Neohaler™
- Foradil® Asmilerz™
- Seretide® Diskus

Inhaled corticosteroids:
- Asmanex® Twisthaler®
- Alvesco® HFA
- Flornont® Diskus®

Combination medications:
- Advair® HFA
- Breo® Ellipta®
- Dulera®
- Symbicort® (HFA)

Anticholinergics:
- Atrovent® HFA
- Combivent® Respinat®
- Spiriva® HandiHaler®

Dosage forms:
- MDI
- DPI

Helping families breathe easier
saana.org 800.878.4403

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Erratic Non-adherence

- Query barriers & problem-solve
- Simplify & tailor regimen
- Behavioral strategies
  - Self-monitoring (e.g. diaries)
  - Cueing (e.g. toothbrush, pillbox)
  - Reminders (e.g., cell phone)
  - Linking to established habits or pleasurable activities
- Reinforcement
Intentional Non-adherence

• Include patient in decision-making
• Provide personalized feedback on relationship between adherence and health outcomes
• Provide asthma education
• Link therapy with personal goals
6. How often do you forget to give your child’s daily asthma medicine when he/she feels fine?

Daily asthma medicines include: Aerobid, Advair, Asmanex, Azmacort, Budesonide, Flovent, QVAR, Pulmicort, Singularair, Symbicort

<table>
<thead>
<tr>
<th>Forget to take medicine</th>
<th>My child is not supposed to take a daily asthma medicine</th>
<th>None of the time</th>
<th>Some of the time</th>
<th>Most of the time</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-2 days/week</td>
<td>3-4 days/week</td>
<td>5-7 days/week</td>
</tr>
</tbody>
</table>
Flovent adherence
= Observed fills / Expected fills
= Total fills / [(# of months of refill data) x (number of puffs per day /4)]
= 7 observed fills / 12 expected fills
= 58%

<table>
<thead>
<tr>
<th>Fill Date</th>
<th>Drug Label Name</th>
<th>Pharmacy Name</th>
<th>Pharmacy State Abbreviation</th>
<th>Quant</th>
<th>Days Sup</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/5/2009</td>
<td>AMOXICILLIN 500 MG CAPSULE</td>
<td>WALGREENS 03046</td>
<td>FL</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>4/5/2009</td>
<td>PREDNISONE 10 MG TABLET</td>
<td>WALGREENS 03046</td>
<td>FL</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>4/28/2009</td>
<td>Fluticasone HFA 220 MCG INHALER</td>
<td>CVS PHARMACY 04214</td>
<td>MD</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>4/28/2009</td>
<td>PREDNISOLONE 20 MG TABLET</td>
<td>CVS PHARMACY 04214</td>
<td>MD</td>
<td>150</td>
<td>10</td>
</tr>
<tr>
<td>6/2/2009</td>
<td>Fluticasone HFA 220 MCG INHALER</td>
<td>CVS PHARMACY 04214</td>
<td>MD</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>6/2/2009</td>
<td>FLUTICASONE 10 MG TABLET</td>
<td>GIANT PHARMACY 0365</td>
<td>MD</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>6/4/2009</td>
<td>Montelukast 5 MG TABLET</td>
<td>GIANT PHARMACY 0365</td>
<td>MD</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>8/19/2009</td>
<td>Fluticasone HFA 220 MCG INHALER</td>
<td>CVS PHARMACY 04214</td>
<td>MD</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>9/8/2009</td>
<td>AZITHROMYCIN 200 MG/5 ML SUSP</td>
<td>GIANT PHARMACY 0365</td>
<td>MD</td>
<td>23</td>
<td>6</td>
</tr>
<tr>
<td>9/8/2009</td>
<td>IPRATROPIUM 1000 MG NASAL SPRAY</td>
<td>GIANT PHARMACY 0365</td>
<td>MD</td>
<td>150</td>
<td>21</td>
</tr>
<tr>
<td>9/25/2009</td>
<td>FLUTICASONE 10 MG TABLET</td>
<td>GIANT PHARMACY 0365</td>
<td>MD</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>9/26/2009</td>
<td>Fluticasone HFA 220 MCG INHALER</td>
<td>CVS PHARMACY 04214</td>
<td>MD</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>10/15/2009</td>
<td>PREDNISONE 10 MG TABLET</td>
<td>GIANT PHARMACY 0365</td>
<td>MD</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>10/15/2009</td>
<td>Oseltamivir 75 MG CAPSULE</td>
<td>CVS PHARMACY 04214</td>
<td>MD</td>
<td>58</td>
<td>5</td>
</tr>
<tr>
<td>11/12/2009</td>
<td>Fluticasone HFA 220 MCG INHALER</td>
<td>CVS PHARMACY 04214</td>
<td>MD</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>12/29/2009</td>
<td>Fluticasone HFA 220 MCG INHALER</td>
<td>CVS PHARMACY 04214</td>
<td>MD</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>2/9/2010</td>
<td>Fluticasone HFA 220 MCG INHALER</td>
<td>CVS PHARMACY 04214</td>
<td>MD</td>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>
Inhaler Technique
# Standardized Inhaler Assessment

## BAILEY – MDI USE ABILITIES

[STATE TO CAREGIVER/PATIENT]: Please show me how you use the inhaler.

<table>
<thead>
<tr>
<th>Desirable Behaviors</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caregiver/Patient shakes canister for 5 seconds</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Caregiver/Patient attaches spacer correctly</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Caregiver/Patient positions finger on the top of the medication canister and provides support</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient exhales normally</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Caregiver/Patient places the mouthpiece into the mouth between the teeth</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient closes lips around the spacer tube or mouthpiece</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Caregiver/Patient correctly presses down the top of the medication canister to release the medication</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient inhales medication deeply and slowly</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient holds the medication inside the lungs a minimum of 3 seconds before exhaling</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Possible Score: 9  
Patient’s Score: ______ out of 9
Cómo usar su inhalador y espaciador

1. Saque el tapón del inhalador.
2. Agite el inhalador.
3. Conectelo al espaciador.
5. EXHALE completamente.
6. Cierre los labios alrededor de la boquilla.
7. Apriete aquí hacia abajo.
8. INHALE LENTAMENTE
9. Aguante la respiración por 10 segundos, si puede. Después exhale lentamente.
10. Enjuague la boca con agua y ESCUPA.

Si necesita otra inhalación del medicamento, espere UN minuto. Después repita los pasos 5 a 9.
Summary

1. Diagnosis of asthma: episodic symptoms of airflow obstruction or bronchospasm: **cough**, wheeze, dyspnea.

1. Breathmobile Questionnaire to help with diagnosis

2. The goal of every encounter with an asthma patient is to determine if asthma is controlled
   a) yes: do nothing or step down
   b) no: identify causes

3. The common causes of uncontrolled asthma:
   - non-adherence to controller medications—screen systematically
   - poor inhaler technique—assess and review systematically
   - environmental exposures (tobacco smoke);
   - co-morbidities (allergic rhinitis; obesity);
   - under-treatment
Further Thoughts

• Asthma care is a “team sport”

• Plan improvements in asthma care based on the “health system” you work in (office, HMO, etc.)

• EHRs may be means of sustainably providing high quality asthma care
  • Automation
  • Decision support
  • Feedback on performance
Discussion/Questions