Office Management of Pediatric Asthma in 2012

Putting Guidelines into Practice

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October 3, 2012
Conflicts of Interest

• None
Outline

• Asthma – Focus on the Control of Inflammation
• Asthma Epidemiology
  – Disparities in outcome
• National Asthma Guidelines
  – “GIP Priorities”
• Case Presentations
Asthma and You

Healthy Tube
- Smooth Muscle
- Epithelium

Mild Asthma
- Smooth Muscle
- Inflammation

Severe Asthma
- Smooth Muscle
- Inflammation
- Mucus

Impact DC

Learning Resources Online: A New Barbara of Health
Conceptual Model of Asthma

Child With Asthma

Individual & Social Factors
- Genetics
- Physical conditioning
- Socioeconomic status
- Stress
- Hormone levels

Environmental Factors
- Allergen sensitization and exposure (dust, mold, roach, mice, pollen…)
- Viral infections
- Weather changes
- Air quality (irritants)

Medical Care Factors
- Access to care
- Quality of care
- Medication plan
- Adherence
- Technique
- Immunizations

Level of Asthma Control
- Good
- Low Morbidity
  - Few Symptoms
  - Few school absences
  - Few Unscheduled Visits
- Poor
  - High Morbidity
  - Many symptoms
  - Many school absences
  - Many Unscheduled Visits
Challenging Groups

• Young patient with wheezing
  – Virally induced

• Adolescent patient
  – Difficult to control
  – Non-adherent
  – Poor perceivers

• Obese patient with asthma
  – Adipose tissue as inherently inflammatory
  – Perceive symptoms as worse
Importance of Correct Diagnosis

- All that wheezes is not asthma
- Red flags
- Clinical patterns
The straight-forward child with straight-forward asthma!
National Experience with Pediatric Asthma

• 7.1 million children <18y living with asthma in the US in 2009*
  – 3.4 million ambulatory visits (2% of total)
  – 640,000 ED visits***
  – 157,000 hospital admissions***
  – 10.5 million annual lost school days*

*National Health Interview Survey
**National Ambulatory Medical Care Survey
***National Hospital Medical Care Survey
Prevalence of Pediatric Asthma

MMWR. December 2011

Prevalence (%) vs. Year

- 0-17 years
Prevalence of Asthma, 2004-2005

0-17y, inclusive

• US
  • 8.9%

• Maryland
  • 10.8%

• DC
  • 10.3%

• Virginia
  • 8.7%
Prevalence of Asthma, 2004-2005

0-17y, inclusive

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>12.8%</td>
</tr>
<tr>
<td>White</td>
<td>7.9%</td>
</tr>
<tr>
<td>Native American</td>
<td>9.9%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>7.8%</td>
</tr>
<tr>
<td>Puerto Rican</td>
<td>19.2%</td>
</tr>
<tr>
<td>Mexican</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

Pediatric ED Visits for Asthma

0-17y, inclusive

Rate per 10,000

Pediatric ED Visit Rates for Asthma

0-17y, inclusive

IMPACT DC, 2012.
Pediatric ED Visit Rates for Asthma

0-17y, inclusive

IMPACT DC, 2012.
Pediatric ED Visit Rates for Asthma

0-17y, inclusive

IMPaCT DC, 2012.
>10 fold Difference in Rate
NIH Guidelines
NIH Guidelines 2007 (EPR-3)

- (Almost) no new medications
- Restructuring into “severity” and “control”
- Domains of “impairment” and “risk”
- Six treatment steps (step-up/step-down)
- More careful thought into the ongoing management issues

Summarizes the extensively-validated scientific evidence that the guidelines, when followed, lead to a significant reduction in the frequency and severity of asthma symptoms and improve quality of life
Moving from Evidence to Action

- National Asthma Control Initiative
  - Aims to use recommendations of EPR-3
  - Use Guidelines Implementation Panel (GIP) Report
  - 6 priority messages
<table>
<thead>
<tr>
<th>GIP Priority Messages</th>
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<tbody>
<tr>
<td>1. Assess asthma severity</td>
</tr>
<tr>
<td>2. Use inhaled corticosteroids</td>
</tr>
<tr>
<td>3. Assess and monitor asthma control</td>
</tr>
<tr>
<td>4. Control environmental exposures</td>
</tr>
<tr>
<td>5. Use asthma action plans</td>
</tr>
<tr>
<td>6. Schedule follow up visits</td>
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Core quality measures for Asthma Learning Collaborative
Once a diagnosis of asthma is made, asthma severity should be classified based on impairment and future risk.
Severity & Control: Two Domains

- **Impairment (present)**
  - frequency and intensity of symptoms
  - functional limitations = quality of life

- **Risk (future)**
  - asthma exacerbations (utilization)
  - progressive loss of pulmonary function (lung growth in children)
  - risk of adverse reaction from medication
### Classification of Asthma Severity and Initiating Treatment in Children 0-4 Years of Age

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<tr>
<th>Components of Severity</th>
<th>Classification of Asthma Severity</th>
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</tr>
<tr>
<td>SABA use for sx control</td>
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</tr>
<tr>
<td>Interference with normal activity</td>
<td>none</td>
</tr>
<tr>
<td><strong>Risk</strong></td>
<td>0-1/year</td>
</tr>
<tr>
<td>Exacerbations (consider frequency and severity)</td>
<td>Frequency and severity of may fluctuate over time</td>
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<table>
<thead>
<tr>
<th>Recommended Step for Initiating Treatment</th>
<th>Step 1</th>
<th>Step 2</th>
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<tr>
<td>In 2 -6 weeks, evaluate asthma control that is achieved and adjust therapy accordingly</td>
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<td></td>
<td>Consider short course of oral steroids</td>
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- Classify asthma severity and initiating treatment in children 0-4 years of age.
- Symptom management:
  - Nighttime awakenings: 0
  - SABA use for symptom control: <2 days/week
- Exacerbation frequency:
  - 0-1/year
  - >2 exacerbations in 6 months requiring oral steroids, or >4 wheezing episodes/year lasting >1 day AND risk factors for persistent asthma
- Interference with normal activity:
  - None
  - Minor limitation
  - Some limitation
  - Extremely limited
- Recommended steps:
  - Step 1: In 2 -6 weeks, evaluate asthma control that is achieved and adjust therapy accordingly
  - Step 2: Consider short course of oral steroids

### Components of Severity

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<td>Lung Function</td>
<td>Normal FEV₁ between exacerbations: FEV₁ &gt; 80% FEV₁/FVC &gt; 85%</td>
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### Risk

- Exacerbations (consider frequency and severity):
  - 0-2/year
  - > 2/year
  - Frequency and severity may vary over time for patients in any category

### Recommended Step for Initiating Treatment

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</tr>
<tr>
<td>Impairment</td>
<td></td>
</tr>
<tr>
<td>Normal FEV&lt;sub&gt;1&lt;/sub&gt;/FVC</td>
<td>8-19 yr 85%</td>
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### Classifying Severity for Patients Currently Taking Controller Medications

<table>
<thead>
<tr>
<th>Lowest level of treatment required to maintain control</th>
<th>Classification of Asthma Severity</th>
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<tbody>
<tr>
<td></td>
<td>Intermittent</td>
</tr>
<tr>
<td>Step 1</td>
<td>Mild</td>
</tr>
<tr>
<td>Step 2</td>
<td>Step 3 or 4</td>
</tr>
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</table>
Why does classification matter?

- Guides treatment decisions
- Most important distinction is intermittent vs. persistent disease
- Severity in children often changes over time: RE-ASSESS FREQUENTLY!
Case # 1

A 6-year old male currently not on any asthma medications has visited your practice 2 times in the past year for acute wheezing, each episode requiring an oral steroid burst. In between episodes, his mother reports nighttime cough that awakens him about 4 nights per month and minor activity limitation. This patient’s asthma severity can be BEST classified as:

A. Intermittent (Step 1)
B. Mild Persistent (Step 2)
C. Moderate Persistent (Step 3)
D. Severe Persistent (Step 3)
E. I would not diagnose this child with asthma
### Components of Severity

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</tr>
<tr>
<td>interference</td>
<td>none</td>
</tr>
<tr>
<td>Normal FEV₁</td>
<td>&gt;80%</td>
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<tr>
<td>FEV₁/FVC</td>
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### Risk

- **Step 1**: Normal FEV₁ between exacerbations
- **Step 2**: FEV₁ >80%, FEV₁/FVC > 80%
- **Step 3 or 4**: FEV₁=60% - 80%, FEV₁/FVC=75% - 80%
- **Step 3**: FEV₁ <60%, FEV₁/FVC <75%

### Recommended Step for Initiating Treatment

- **Step 1**: Consider short course of oral steroids
- **Step 2**: In 2-6 weeks, evaluate asthma control that is achieved and adjust therapy
- **Step 3 or 4**: Consider short course of oral steroids
A 6-year old male currently not on any asthma medications has visited your practice 2 times in the past year for acute wheezing, each episode requiring an oral steroid burst. In between episodes, his mother reports nighttime cough that awakens him about 4 nights per month and minor activity limitation. This patient’s asthma severity can be classified as:

A. Intermittent (Step 1)
B. Mild Persistent (Step 2)
C. Moderate Persistent (Step 3)
D. Severe Persistent (Step 3)
E. I would not diagnose this child with asthma
Treatment Strategies

• Gain Control!!!
  – Aggressive, intensive initial therapy to suppress airway inflammation and gain prompt control

• Maintain Control
  – *Frequent follow-up*
  – Therapeutic modifications depending on severity and clinical course
  – “Step down” long-term control medications to maintain control with minimal side effects
Quality Measure #2

Use Inhaled Corticosteroids

• Long term control medication should be taken to achieve and maintain control of persistent asthma

• ICS are the most potent and consistently effective long term control medication
ICS Choice Considerations

- Age of child
- Available formulations – medication, delivery device
- Insurance coverage
- Daily vs. episodic use
- Evidence of benefit
- Risk of side effects short/long-term
Other Controller Options

- ICS-LABA combination agents (Advair)
- Leukotriene modifiers (Singulair)
- Anticholinergics (Atrovent)
- Immunomodulators (Xolair)
- Allergy immunotherapy
STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 0 - 4 YEARS OF AGE

Intermittent Asthma

Persistent Asthma: Daily Medication
Consult with asthma specialist if step 3 or higher care is required
Consider consultation at step 2

Stepwise Approach:

**Step 1**
Preferred: SABA prn

**Step 2**
Preferred: Low-dose ICS
Alternative: LTRA Cromolyn

**Step 3**
Preferred: Medium-dose ICS

**Step 4**
Preferred: Medium-dose ICS
AND
either LTRA Or LABA

**Step 5**
Preferred: High dose ICS
AND
either LTRA Or LABA

**Step 6**
Preferred: High dose ICS
AND
either LTRA Or LABA
AND
Oral Corticosteroid

Assess Control

Step up if needed (check adherence, environmental control)

Step down if possible (asthma well controlled for 3 months)

Patient Education and Environmental Control at Each Step
STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 5-11 YEARS OF AGE

Patient Education and Environmental Control at Each Step

Intermittent Asthma

Persistent Asthma: Daily Medication
Consult with asthma specialist if step 4 or higher care is required
Consider consultation at step 3

Step 1
Preferred: SABA prn

Step 2
Preferred: Medium-dose ICS
Alternative: LTRA, Cromolyn, Theophylline

Step 3
Preferred: High-dose ICS + LABA
Alternative: High-dose ICS + either LTRA or Theophylline

Step 4
Preferred: Medium-dose ICS + LABA
Alternative: Medium-dose ICS + either LTRA, or Theophylline
Consider Olanzimab for patients with allergies

Step 5
Preferred: High-dose ICS + LABA + oral Corticosteroid
Alternative: High-dose ICS + either LTRA or Theophylline + oral Corticosteroid
AND
Consider Olanzimab for patients with allergies

Step 6
Preferred: High-dose ICS + LABA + oral Corticosteroid
Alternative: High-dose ICS + either LTRA or Theophylline + oral Corticosteroid
AND
Consider Olanzimab for patients with allergies

Assess Control

Step up if needed (check adherence, environmental control and comorbidities)

Step down if possible (asthma well controlled for 3 months)
STEPWISE APPROACH FOR MANAGING ASTHMA IN YOUTHS > 12 YEARS AND ADULTS

Intermittent Asthma
- Persistent Asthma: Daily Medication
- Consult with asthma specialist if step 4 or higher care is required
- Consider consultation at step 3

Step 1
- Preferred: SABA prn

Step 2
- Preferred: Medium-dose ICS
- OR
- Low-dose ICS + LTRA
- Alternative: Cromolyn, Theophylline, Or Zileutin

Step 3
- Preferred: Medium-dose ICS + LABA
- OR
- Medium-dose ICS + either LTRA, LTRA, Theophylline, Or Zileutin

Step 4
- Preferred: High dose ICS + LABA
- OR
- Consider Olamizumab for patients with allergies

Step 5
- Preferred: High-dose ICS + LABA + oral Corticosteroid
- AND
- Consider Olamizumab for patients with allergies

Step 6
- Preferred: High-dose ICS + LABA + oral Corticosteroid
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Assess Control
- Step up if needed (check adherence, environmental control and comorbidities)
- Step down if possible (asthma well controlled for 3 months)

Patient Education and Environmental Control at Each Step
Case # 2

A 7-year old male presents to your clinic in November complaining of daily nocturnal cough for 2 months. He denies symptoms of GE Reflux. He has visited the emergency room twice in the past year where he received albuterol with good symptomatic relief. The BEST choice of treatment would be to:

A. Start fluticasone 44 mcg 2 puffs twice daily for 4-6 weeks and then reassess
B. Start fluticasone 110 mcg 2 puffs twice daily for 4-6 weeks and then reassess
C. Start a leukotriene modifier as you suspect his symptoms are likely due to post-nasal drainage from allergic rhinitis
D. I cannot feel confident at this time that this patient should be treated with asthma medications
### Classification of Asthma Severity

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<td>&lt;2 days/week</td>
<td>Persistent Mild</td>
</tr>
<tr>
<td>&gt;2 days/week not daily</td>
<td>Persistent Moderate</td>
</tr>
<tr>
<td>Daily</td>
<td>Persistent Severe</td>
</tr>
<tr>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td><strong>Nighttime Awakenings</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;2x/month</td>
<td></td>
</tr>
<tr>
<td>3-4x/month</td>
<td></td>
</tr>
<tr>
<td>&gt;1x/week</td>
<td>Often nightly</td>
</tr>
<tr>
<td>not nightly</td>
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<td><strong>SABA use for sx control</strong></td>
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<td>Severe</td>
</tr>
<tr>
<td>FEV&lt;sub&gt;1&lt;/sub&gt; &lt; 60%</td>
<td>Extremely limited</td>
</tr>
<tr>
<td>FEV&lt;sub&gt;1&lt;/sub&gt;/FVC &lt; 75%</td>
<td></td>
</tr>
<tr>
<td>FEV&lt;sub&gt;1&lt;/sub&gt;/FVC = 75%-80%</td>
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**Recommended Step for Initiating Treatment**

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In 2-6 weeks, evaluate asthma control that is achieved and adjust therapy.
**STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 5-11 YEARS OF AGE**

- **Intermittent Asthma**
  - Persistent Asthma: Daily Medication
  - Consult with asthma specialist if step 4 or higher care is required
  - Consider consultation at step 3

**Patient Education and Environmental Control at Each Step**

**Step 1**
- Preferred: SABA prn

**Step 2**
- Preferred: Medium-dose ICS
- Alternative: Low-dose ICS, LTRA, Cromolyn, Theophylline

**Step 3**
- Preferred: Medium-dose ICS
- OR
  - Low-dose ICS, either LABA, LTRA, or Theophylline

**Step 4**
- Preferred: Medium-dose ICS + LABA
- Alternative: Medium-dose ICS + either LTRA or Theophylline

**Step 5**
- Preferred: Medium-dose ICS + LABA + oral Corticosteroid
- Alternative: High-dose ICS + either LTRA or Theophylline + oral corticosteroid

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- Alternative: High-dose ICS + either LTRA or Theophylline + oral corticosteroid

- AND
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Assess Control

- Step up if needed (check adherence, environmental control and comorbidities)
- Step down if possible (asthma well controlled for 3 months)
A 7-year old male presents to your clinic in November complaining of daily nocturnal cough for 2 months. He denies symptoms of GE Reflux. He has visited the emergency room twice in the past year where he received albuterol with good symptomatic relief. The BEST choice of treatment would be to:

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C. Start a leukotriene modifier as you suspect his symptoms are likely due to post-nasal drainage from allergic rhinitis
D. I cannot feel confident at this time that this patient should be treated with asthma medications
Every patient who has asthma should be taught to recognize symptom patterns that indicate inadequate control.

- At planned follow-up, well, and sick visits
- Consider both impairment and risk
Monitoring Asthma Control

Ask the parent and patient…

• Has your child’s asthma awakened him/her at night?
• Has your child needed more quick-relief inhaler than usual?
• Has your child needed urgent care for asthma?
• Is your child participating in his/her usual or desired activities?
• What are your child’s triggers?
Childhood Asthma Control Test for children 4 to 11 years old.

Know the score.

This test will provide a score that may help your doctor determine if your child’s asthma treatment plan is working or if it might be time for a change.

How to take the Childhood Asthma Control Test

Step 1: Read the first four questions (1 to 4). If your child needs help reading or understanding the question, you may help, but let your child select the response. Complete the remaining three questions (5 to 7) on your own and without letting your child’s response influence your answers. There are no right or wrong answers.

Step 2: Write the number of each answer in the score box provided.

Step 3: Add up each score box for the total.

Step 4: Take the test to your doctor to talk about your child’s total score.

Have your child complete these questions.

1. How is your child today?
   - Very bad
   - Bad
   - Good
   - Very good

2. How much of a problem is your asthma when you run, exercise, or play sports?
   - It’s a big problem.
   - It’s a big problem, but it’s not that bad.
   - It’s a problem and I don’t like it.
   - It’s a little problem but it’s okay.
   - It’s not a problem.

3. Do you cough because of your asthma?
   - Yes, all of the time.
   - Yes, most of the time.
   - Yes, some of the time.
   - No, none of the time.

4. Do you wake up at night because of your asthma?
   - Yes, all of the time.
   - Yes, most of the time.
   - Yes, some of the time.
   - No, none of the time.

Please complete the following questions on your own.

5. During the last 4 weeks, on average, how many days per month do you have any daytime asthma symptoms?
   - Not at all
   - 1–2 days per month
   - 3–4 days per month
   - 5–7 days per month
   - Every day

6. During the last 4 weeks, on average, how many days per month did your child wheeze during the day because of asthma?
   - Not at all
   - 1–2 days per month
   - 3–4 days per month
   - 5–7 days per month
   - Every day

7. During the last 4 weeks, on average, how many days per month did your child wake up during the night because of asthma?
   - Not at all
   - 1–2 days per month
   - 3–4 days per month
   - 5–7 days per month
   - Every day

Please turn this page over to see what your child’s total score means.

Asthma Control Test™ for teens 12 years and older. Know the score.

If your teen is 12 years or older have him take the test now and discuss the results with your doctor.

Step 1: Write the number of each answer in the score box provided.

Step 2: Add up each score box for the total.

Step 3: Take the test to the doctor to talk about your child’s total score.

1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school, or at home?
   - All of the time
   - Most of the time
   - Some of the time
   - A little of the time
   - None of the time

2. During the past 4 weeks, how often have you had shortness of breath?
   - More than once a day
   - Once a day
   - 3 to 6 times a week
   - Once or twice a week
   - None at all

3. During the past 4 weeks, how often did your asthma symptoms (wheeze, cough, shortness of breath, chest tightness, or pain) wake you up at night or earlier than usual in the morning?
   - 4 or more nights a week
   - 2 or 3 nights a week
   - Once a week
   - Once or twice
   - None at all

4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?
   - 3 or more times a day
   - 1 to 2 times a day
   - 2 to 3 times a week
   - Once a week
   - None at all

5. How would you rate your asthma control during the past 4 weeks?
   - Not controlled at all
   - Poorly controlled
   - Somewhat controlled
   - Well controlled
   - Completely controlled

Total
Monitoring Asthma Control

- Assess whether medications are being taken as prescribed
- Assess whether inhalation technique is correct
- Consider performing spirometry or peak flow and compare to previous measurements
- Adjust medications as needed to achieve best control with the lowest dose needed
- Consider environmental mitigation strategy
# Classification of Asthma Control

## Components of Control

<table>
<thead>
<tr>
<th>Impairment</th>
<th>Classification of Asthma Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symptoms</strong></td>
<td><strong>Well Controlled</strong></td>
</tr>
<tr>
<td>Nighttime awakenings</td>
<td>≤ 1/month</td>
</tr>
<tr>
<td>Interference with normal activity</td>
<td>none</td>
</tr>
<tr>
<td>SABA use</td>
<td>≤ 2 days/week</td>
</tr>
<tr>
<td>Exacerbations</td>
<td>0 - 1 per year</td>
</tr>
<tr>
<td>Progressive loss of lung function</td>
<td>Evaluation requires long-term follow up care</td>
</tr>
<tr>
<td>Rx-related adverse effects</td>
<td>Consider in overall assessment of risk</td>
</tr>
</tbody>
</table>

## Recommended Action For Treatment

- **Well Controlled**
  - Maintain current step
  - Regular follow up every 3 - 6 months
  - Consider step down if well controlled at least 3 months

- **Not Well Controlled**
  - Step up 1 step
  - Reevaluate in 2 - 6 weeks
  - If no clear benefit in 4-6 weeks, consider alternative dx or adjust therapy

- **Very Poorly Controlled**
  - Consider oral steroids
  - Step up (1-2 steps) and reevaluate in 2 weeks
  - If no clear benefit in 4-6 weeks, consider alternative dx or adjust therapy

Evaluation requires long-term follow up care.
### Classification of Asthma Control

**Components of Control**

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</tr>
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<td>Nighttime awakenings</td>
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<tr>
<td>Interference with normal activity</td>
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</tr>
<tr>
<td>SABA use</td>
<td>&lt; 2 days/week</td>
</tr>
<tr>
<td>FEV₁ or peak flow</td>
<td>&gt; 80% predicted/personal best</td>
</tr>
<tr>
<td>FEV₁/FVC</td>
<td>&gt; 80% predicted</td>
</tr>
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<td>Exacerbations</td>
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**Recommended Action For Treatment**

- Well Controlled:
  - Maintain current step
  - Consider step down if well controlled at least 3 months

- Not Well Controlled:
  - Step up 1 step
  - Reevaluate in 2 - 6 weeks

- Very Poorly Controlled:
  - Consider oral steroids
  - Step up 1-2 weeks and reevaluate in 2 weeks
# Asessing Asthma Control and Adjusting Therapy in Youths > 12 Years of Age and Adults

## Components of Control

### Impairment

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Well Controlled</th>
<th>Not Well Controlled</th>
<th>Very Poorly Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nighttime awakenings</td>
<td>&lt; 2 days/week</td>
<td>&gt; 2 days/week</td>
<td>Throughout the day</td>
</tr>
<tr>
<td>Interference with normal activity</td>
<td>none</td>
<td>Some limitation</td>
<td>Extremely limited</td>
</tr>
<tr>
<td>SABA use</td>
<td>&lt; 2 days/week</td>
<td>&gt; 2 days/week</td>
<td>Several times/day</td>
</tr>
<tr>
<td>FEV₁ or peak flow</td>
<td>&gt; 80% predicted/personal best</td>
<td>60-80% predicted/personal best</td>
<td>&lt;60% predicted/personal best</td>
</tr>
</tbody>
</table>

### Risk

<table>
<thead>
<tr>
<th>Exacerbations</th>
<th>0 - 1 per year</th>
<th>2 - 3 per year</th>
<th>&gt; 3 per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progressive loss of lung function</td>
<td>Evaluation requires long-term follow up care</td>
<td>Consider in overall assessment of risk</td>
<td></td>
</tr>
</tbody>
</table>

### Rx-related adverse effects

- Consider oral steroids
- Step up 1 - 2 weeks and reevaluate in 2 weeks

## Classification of Asthma Control

### Recommended Action for Treatment

- Maintain current step
- Consider step down if well controlled at least 3 months
- Step up 1 step
- Reevaluate in 2 - 6 weeks
- Consider oral steroids
- Step up 1 - 2 weeks and reevaluate in 2 weeks
# ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN CHILDREN 5 - 11 YEARS OF AGE

## Components of Control

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<th>Classification of Asthma Control</th>
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</tr>
<tr>
<td><strong>FEV₁/FVC</strong></td>
<td>&gt; 80% predicted</td>
</tr>
<tr>
<td><strong>RISK</strong></td>
<td></td>
</tr>
<tr>
<td>Exacerbations</td>
<td>0 - 1 per year</td>
</tr>
<tr>
<td>Progressive loss of lung function</td>
<td>Evaluation requires long-term follow up care</td>
</tr>
<tr>
<td>Rx-related adverse effects</td>
<td>Consider in overall assessment of risk</td>
</tr>
</tbody>
</table>

## Recommended Action For Treatment

- **Well Controlled**: Maintain current step.
- **Not Well Controlled**: Step up 1 step.
- **Very Poorly Controlled**: Consider oral steroids.
- **Step up 1-2 steps and reevaluate in 2 weeks**.
A 7-year old female with asthma reports nighttime awakenings about 2 times per week and requires albuterol about 3 times per week. She is currently taking fluticasone 44 mcg 2 puffs twice daily. The BEST next step in your step-up treatment plan would be to:

A. Increase the dose of the inhaled steroid
B. Add a leukotriene modifier
C. Add a long-acting B-agonist
D. Encourage albuterol more frequently, every 4 hours
# Recommended Action for Treatment Based on Assessment of Control

<table>
<thead>
<tr>
<th>Well Controlled</th>
<th>Not Well Controlled</th>
<th>Very Poorly Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain current step</td>
<td>Step up 1 step and reevaluate in 2-6 weeks</td>
<td>Consider short course of oral corticosteroids</td>
</tr>
<tr>
<td>Consider step down if</td>
<td>For side effects, consider alternative treatment options</td>
<td>Step up 1-2 steps and reevaluate in 2 weeks</td>
</tr>
<tr>
<td>well controlled for at</td>
<td></td>
<td>For side effects, consider alternative treatment options</td>
</tr>
<tr>
<td>least 3 months</td>
<td></td>
<td></td>
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</table>

Before stepping up check adherence and environmental control
STEPWISE APPROACH FOR MANAGING ASTHMA IN CHILDREN 5-11 YEARS OF AGE

- **Intermittent Asthma**
  - Persistent Asthma: Daily Medication
  - Consult with asthma specialist if step 4 or higher care is required
  - Consider consultation at step 3

**Patient Education and Environmental Control at Each Step**

**Step 1**
- **Preferred:** SABA prn

**Step 2**
- **Preferred:** Medium-dose ICS
  - OR
  - Low-dose ICS + LTRA
  - Cromolyn
  - Theophylline

**Step 3**
- **Preferred:** Medium-dose ICS + LABA
  - **Alternative:** Medium-dose ICS + either LTRA or Theophylline

**Step 4**
- **Preferred:** High dose ICS + LABA
  - **Alternative:** High-dose ICS + either LTRA or Theophylline

**Step 5**
- **Preferred:** Medium-dose ICS + either LTRA or Theophylline
  - **Alternative:** Medium-dose ICS + LABA

**Step 6**
- **Preferred:** High-dose ICS + LABA + oral Corticosteroid
  - **Alternative:** High-dose ICS + either LTRA or Theophylline + oral corticosteroid

Assess Control

- Step up if needed (check adherence, environmental control and comorbidities)
- Step down if possible (asthma well controlled for 3 months)
A 7-year old female with asthma reports nighttime awakenings about 2 times per week and requires albuterol about 3 times per week. She is currently taking fluticasone 44 mcg 2 puffs twice daily. The BEST next step in your step-up treatment plan would be to:

A. Increase the dose of the inhaled steroid
B. Add a leukotriene modifier
C. Add a long-acting B-agonist
D. Encourage albuterol more frequently, every 4 hours
Quality Measure #4

Control Environmental Exposures

Patients who have asthma at any level of severity should be queried about allergen and irritant exposure and counseled appropriately.
“Emily, you can eat organic broccoli. I know for a fact that it is not an asthma trigger.”
Quality Measure #5
Use Asthma Action Plans

All patients should be provided a written asthma action plan with:

1. Daily treatment plan
2. Info on how to recognize and manage symptoms
3. Triggers identified
4. Copies for all caregivers
## Asthma Action Plan

### Green Zone: Go! Take these CONTROL (PREVENTION) Medicines EVERY Day

- **Asthma Severity** (see reverse side)
- **Asthma Triggers Identified** (Things that make your asthma worse):
  - Cold, smoke, tobacco, incense, pollen, dust, animals, strong odors, mold/moisture, pests (roaches, cockroaches), stress, environmental allergies, exercise, seasonal, Fall, Winter, Spring, Summer, Other:
- **Date of Last Flu Shot:**

### Yellow Zone: Caution! Continue CONTROL Medicines and ADD QUICK-RELIEF Medicines

- **You have ALL of these:**
  - Breathing is easy
  - No cough or wheeze
  - Can work and play
  - Can sleep all night
- **Peak flow in this area:**
  - (More than 80% of Best) Personal best peak flow:
- **No control medicines required.** Always rinse mouth after using your daily inhaled medicine.
  - **Inhaled corticosteroid or inhaled corticosteroid plus **_**controller medication_**
  - Nebulizer treatment(s) every **times a day**
  - **Asthma controller medication**
  - Nebulizer treatment(s) every **times a day**
  - Nebulizer treatments by mouth once daily or bedtime
- **For asthma with exercise, ADD:**
  - Inhale puffs inhaler with spacer 15 minutes before exercise
- **For nasal/environmental allergy:**
  - **Asthma controller medication**

### Red Zone: EMERGENCY! Continue CONTROL & QUICK-RELIEF Medicines and GET HELP!

- **You have ANY of these:**
  - Cough or wheeze
  - Shortness of breath
  - Chest tightness
  - Frequent or noisy breathing
  - Nausea or vomiting
  - Severe chest pain
  - Severe headache
  - Dizziness
  - **Call your DOCTOR if you have these symptoms more than two times a week, or if your quick-relief medicine doesn’t work!**

### Maryland State School Asthma Medication Administration Authorization Form

**Asthma Action Plan**

**Asthma Sev:**

**Controller Medication:**

**Quick-Relief Medications:** To be added to Green Zone Medications for Symptoms

**EMERGENCY Medications:** To be added to Green Zone Medications for Symptoms

**Health Care Provider Authorization**

**Parent/Guardian Authorization**

**Reviewed by School Nurse**

**SCHOOL MEDICATION CONSENT AND PROVIDER ORDER FOR CHILDREN/YOUTH**

**Voluntary care of non-controlled medications (e.g., antibiotics) include antihistamines, vitamins, and nonprescription medications.**

**This student is fully capable and approved to self-administer the medication(s) named above.**

**This authorization is valid for one calendar year.**

**As the RESPONSIBLE PERSON:**

- I hereby authorize a trained school employee, if available, to administer medication to this student.
- I hereby authorize the student to possess and self-administer medication.
- I hereby authorize the student to make an emergency self-administration to prevent an allergic reaction.

**This document must be signed by the student and the parent/guardian.**

**Health Care Provider Signature:**

**Parent/Guardian Signature:**

**Student Signature:**

**Date:**

**Government of the District of Columbia**

**Vincent C. Gray, Mayor**

[Website Address: www.dcpspartnership.org]
Quality Measure #6
Schedule Follow-up Visits

Monitoring and follow up is essential. EPR-3 recommends a stepwise approach to management – best accomplished at \textit{planned visits}.
Follow-up visits

Our recommendation:

• Schedule 2-6 weeks after initiating or changing daily treatment plan
• Every 3 months once control is established
• Allows for control assessment, refills, education review, anticipatory guidance
Supplemental Measure #1
Influenza Vaccine 2012-13

CDC recommends:

• Flu vaccine for all persons ≥6 months

• Encourage for people with asthma due to higher risk of flu complications, and chance of flu virus-induced asthma exacerbations

• People with asthma should receive the inactivated vaccine by injection
Supplemental Measure #2
Device Technique

An opportunity for improvement…

Observational study of 296 children ages 8-16y from five primary care practices (41 providers) in non-urban areas of NC

- Only 8% of children performed all of the correct steps for use of MDI/spacer
- 95% of providers did not assess technique
- 96% of providers did not demonstrate technique

Questions & Discussion