Objectives

• 1. Learn the Asthma Guidelines
• 2. Be able to classify asthma severity
• 3. Be able to determine asthma control
• 4. Be able to successfully treat asthma
• 5. Be able to improve patient outcomes
• 6. Pass your boards
• 19 yo male with asthma since age 5
• Presents with EIA and year round nasal congestion
• Denies daytime symptoms
• Night time symptoms 2 times per month
• Uses SABA pre-exercise
• Never used any other type of inhaler
• He has moderate limitation on ability to exercise
• No ER visits or Hospitalizations
• **What is his asthma severity?**
• **What would you do now?**
What is his asthma severity?

a. Mild intermittent asthma
b. Mild persistent asthma
c. Moderate persistent asthma
d. Severe persistent asthma

Ans:
• **What is his asthma severity?**
  a. Mild intermittent asthma
  b. Mild persistent asthma
  c. Moderate persistent asthma
  d. Severe persistent asthma

  Ans: C
## Classifying Severity in Patients ≥12 Years Not Currently Taking Long-Term Controllers

<table>
<thead>
<tr>
<th>Components of Severity</th>
<th>Classification of Asthma Severity (Youths ≥12 of age and adults)</th>
<th>Intermittent</th>
<th>Persistent</th>
<th>Persistent</th>
<th>Persistent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairment</td>
<td></td>
<td>Intermittent</td>
<td>Persistent</td>
<td>Moderate</td>
<td>Severe</td>
</tr>
<tr>
<td>Normal FEV₁/FVC:</td>
<td></td>
<td></td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
</tr>
<tr>
<td>8-19 yr 85%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-39 yr 80%</td>
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<tr>
<td>60-80 yr 70%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nighttime awakenings</td>
<td></td>
<td>&lt;2x/month</td>
<td>3-4x/month</td>
<td>&gt;1x/week</td>
<td>Often 7x/week</td>
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<tr>
<td>Short-acting beta₂-agonist use for symptom control</td>
<td>&lt;2 days/week</td>
<td>&gt;2 days/week but &gt;1x/day</td>
<td>Daily</td>
<td>Several times per day</td>
<td></td>
</tr>
<tr>
<td>Interference with normal activity</td>
<td>None</td>
<td>Minor limitation</td>
<td>Some limitation</td>
<td>Extremely limited</td>
<td></td>
</tr>
<tr>
<td>Lung function</td>
<td>• Normal FEV₁ between exacerbations</td>
<td>• FEV₁ &gt;80% predicted</td>
<td>• FEV₁ &gt;60% but &lt;80% predicted</td>
<td>• FEV₁ &lt;60% predicted</td>
<td>• FEV₁/FVC reduced &gt;5%</td>
</tr>
<tr>
<td></td>
<td>• FEV₁ &gt;80% predicted</td>
<td>• FEV₁/FVC normal</td>
<td>• FEV₁/FVC reduced 5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exacerbations requiring oral systemic corticosteroids</td>
<td>0-1/year</td>
<td>&gt;2 in 1 year</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Relative annual risk of exacerbations may be related to FEV₁
What would you do now?

a. Start a LABA
b. Start a medium dose ICS
c. Start a high dose of ICS with LABA
d. Start a low dose of ICS with a LABA

Ans:
• What would you do now?
  a. Start a LABA
  b. Start a medium dose ICS
  c. Start a high dose of ICS with LABA
  d. Start a low dose of ICS with a LABA

  Ans: B
Stepwise Approach for Managing Asthma in Patients ≥ 12 Years of Age

**STEP 1**
**PREFERRED**
Low-dose ICS

**ALTERNATIVE**
Cromolyn, LTRA, Nedocromil, or Theophylline

**STEP 2**
**PREFERRED**
Low-dose ICS + LABA

**ALTERNATIVE**
Medium-dose ICS

**STEP 3**
**PREFERRED**
Medium-dose ICS + LABA

**ALTERNATIVE**
Low-dose ICS + either LTRA, Theophylline or Zileuton

**STEP 4**
**PREFERRED**
High-dose ICS + LABA

**STEP 5**
**PREFERRED**
Consider Omalizumab for patients who have allergies

**STEP 6**
**PREFERRED**
High-dose ICS + LABA + oral corticosteroid

Consider Omalizumab for patients who have allergies

**Patient Education and Environmental Control at Each Step**
- Quick-Relief Medication for All Patients:
  - SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of systemic oral corticosteroids may be needed.
  - Caution: Increasing of β-agonist or use >2x/week for symptoms control indicates inadequate control and the need to step up treatment.

FVC was 90%, FEV-1 was 80% and his ratio was 85%
CXR was normal
Skin tests were positive for house dust mites
Prescribed a medium dose of inhaled steroid
Started on nasal steroid
Albuterol as needed
Prednisone for severe asthma
Educated on technique, adherence, acute asthma action plan and mite avoidance
• Returns in 3 month
• He has been using his ICS regularly
• Denies nighttime, daytime symptoms, or exercise related symptoms
• His QOL is good.
• Albuterol in the last week has been pre-exercise only.
• He used prednisone three times for asthma attacks over the past 12 weeks
• FEV-1 was 80% with a ratio of 83%
• What is his asthma control?
• What would you do?
• What is his asthma control?
  A. Mild persistent asthma
  B. Well controlled asthma
  C. Not well controlled asthma
  D. Very poorly controlled

Ans:
What is his asthma control?
A. Mild persistent asthma
B. Well controlled asthma
C. Not well controlled asthma
D. Very poorly controlled

Ans: D
## Assessing Asthma Control in Patients ≥12 Years of Age

<table>
<thead>
<tr>
<th>Impairment</th>
<th>Classification of Asthma Control (Youths ≥12 years of age &amp; adults)</th>
<th>Well Controlled</th>
<th>Not Well Controlled</th>
<th>Very Poorly Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components of Severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td>&lt;2 days/week</td>
<td>&gt;2 days/week</td>
<td>Throughout the day</td>
<td></td>
</tr>
<tr>
<td>Nighttime awakenings</td>
<td>&lt;2/month</td>
<td>1-3x/week</td>
<td>≥4x/week</td>
<td></td>
</tr>
<tr>
<td>Interference with normal activity</td>
<td>None</td>
<td>Some limitation</td>
<td>Extremely limited</td>
<td></td>
</tr>
<tr>
<td>Short-acting beta&lt;sub&gt;2&lt;/sub&gt;-agonist use for symptom control</td>
<td>&lt;2 days/week</td>
<td>&gt;2 days/week</td>
<td>Several times per day</td>
<td></td>
</tr>
<tr>
<td>FEV&lt;sub&gt;1&lt;/sub&gt; 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>
<td></td>
</tr>
<tr>
<td>Validated questionnaires*</td>
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<tr>
<td>ATAQ</td>
<td>0</td>
<td>1-2</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>ACQ</td>
<td>≤0.75</td>
<td>≥1.5</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td>≥20</td>
<td>N/A</td>
<td>≤15</td>
<td></td>
</tr>
<tr>
<td>Exacerbations</td>
<td>0-1/year</td>
<td>&gt;2/per year</td>
<td>&gt;2/per year</td>
<td></td>
</tr>
<tr>
<td>Progressive loss of lung function</td>
<td>Evaluation requires long-term follow-up care.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment-related adverse effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• **What would you do?**
  
  a. Increase to a high dose ICS  
  b. Increase ICS to a high dose and add a LABA  
  c. Add a short acting anticholingeric  
  d. Add Zileutin (a lipo-oxygenase inhibitor)  

  Ans:
• What would you do?
  a. Increase to a high dose ICS
  b. Increase ICS to a high dose and add a LABA
  c. Add a short acting anticholingeric
  d. Add Zileutin (a lipo-oxygenase inhibitor)

Ans: B
Stepwise Approach for Managing Asthma in Patients ≥ 12 Years of Age

STEP 1
PREFERRED
Low-dose ICS

SABA PRN

STEP 2
PREFERRED
Low-dose ICS + LABA

ALTERNATIVE
Cromolyn, LTRA, Nedocromil, or Theophylline

STEP 3
PREFERRED
Medium-dose ICS + LABA

ALTERNATIVE
Medium-dose ICS + either LTRA, Theophylline or Zileuton

STEP 4
PREFERRED
High-dose ICS + LABA

AND

Consider Omalizumab for patients who have allergies

STEP 5
PREFERRED
High-dose ICS + LABA + oral corticosteroid

AND

Consider Omalizumab for patients who have allergies

STEP 6
PREFERRED
High-dose ICS + LABA + oral corticosteroid

AND

Consider Omalizumab for patients who have allergies

Patient Education and Environmental Control at Each Step
- Quick-Relief Medication for All Patients:
  - SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of systemic oral corticosteroids may be needed.
  - Caution: Increasing of β-agonist or use >2x/week for symptoms control indicates inadequate control and the need to step up treatment.

Intermittent Asthma

Consult with asthma specialist if step 4 care or higher is required. Consider consultation at step 3.

Persistent Asthma: Daily Medication

• Prescribe a peak flow meter
• High dose inhaled corticosteroid plus LABA
• Consider omalizumab
• SABA PRN and pre-exercise
• Increase albuterol for yellow zone
• Prednisone for red zone
• F/U in 1 month
Review the Guidelines
Classifying Severity in Patients ≥12 Years Not Currently Taking Long-Term Controllers

<table>
<thead>
<tr>
<th>Components of Severity</th>
<th>Classification of Asthma Severity (Youths ≥12 of age and adults)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intermittent</td>
</tr>
<tr>
<td></td>
<td>Mild</td>
</tr>
<tr>
<td>Impairment</td>
<td></td>
</tr>
<tr>
<td>Normal FEV₁/FVC:</td>
<td></td>
</tr>
<tr>
<td>8-19 yr 85%</td>
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<td>Short-acting beta₂-agonist use for symptom control</td>
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</tr>
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<td>Interference with normal activity</td>
<td>None</td>
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<tr>
<td>Lung function</td>
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</tr>
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<td>• Normal FEV₁ between exacerbations</td>
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</tr>
<tr>
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<td>0-1/year</td>
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Relative annual risk of exacerbations may be related to FEV₁
Stepwise Approach for Managing Asthma in Patients ≥ 12 Years of Age

### Intermittent Asthma
- **STEP 1**
  - **PREFERRED** Low-dose ICS
  - **ALTERNATIVE** SABA PRN

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

#### STEP 2
- **PREFERRED** Low-dose ICS + LABA
  - **ALTERNATIVE** Medium-dose ICS
    - **ALTERNATIVE** Low-dose ICS + either LTRA, Theophylline or Zileuton

#### STEP 3
- **PREFERRED** Medium-dose ICS + LABA
  - **ALTERNATIVE** Medium-dose ICS + either LTRA, Theophylline or Zileuton

#### STEP 4
- **PREFERRED** High-dose ICS + LABA
  - **AND** Consider Omalizumab for patients who have allergies

#### STEP 5
- **PREFERRED** High-dose ICS + LABA + oral corticosteroid
  - **AND** Consider Omalizumab for patients who have allergies

#### STEP 6
- **PREFERRED** High-dose ICS + LABA + oral corticosteroid
  - **AND** Consider Omalizumab for patients who have allergies

### Patient Education and Environmental Control at Each Step
- **Quick-Relief Medication for All Patients:**
  - SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of systemic oral corticosteroids may be needed.
  - Caution: Increasing of β-agonist or use >2x/week for symptoms control indicates inadequate control and the need to step up treatment.

### Assessing Asthma Control in Patients ≥12 Years of Age

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<tr>
<td></td>
<td>Well Controlled</td>
</tr>
<tr>
<td><strong>Impairment</strong></td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td>≤2 days/week</td>
</tr>
<tr>
<td>Nighttime awakenings</td>
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<tr>
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<tr>
<td></td>
<td>ACQ ≤0.75</td>
</tr>
<tr>
<td></td>
<td>ACT ≥20</td>
</tr>
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<td><strong>Risk</strong></td>
<td></td>
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<tr>
<td>Treatment-related adverse effects</td>
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## Stepwise Approach for Managing Asthma in Patients ≥ 12 Years of Age

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

### STEP 1
**PREFERRED**
Low-dose ICS

**ALTERNATIVE**
SABA PRN

### STEP 2
**PREFERRED**
Low-dose ICS + LABA

**ALTERNATIVE**
Cromolyn, LTRA, Nedocromil, or Theophylline

### STEP 3
**PREFERRED**
Medium-dose ICS + LABA

**ALTERNATIVE**
Low-dose ICS + either LTRA, Theophylline or Zileuton

### STEP 4
**PREFERRED**
High-dose ICS + LABA

### STEP 5
**PREFERRED**
High-dose ICS + LABA + oral corticosteroid

**AND**
Consider Omalizumab for patients who have allergies

### STEP 6
**PREFERRED**
High-dose ICS + LABA + oral corticosteroid

**AND**
Consider Omalizumab for patients who have allergies

### Intermittent Asthma
Consult with asthma specialist if step 4 care or higher is required. Consider consultation at step 3.

### Patient Education and Environmental Control at Each Step
- **Quick-Relief Medication for All Patients:**
  - SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of systemic oral corticosteroids may be needed.
  - Caution: Increasing of β-agonist or use >2x/week for symptoms control indicates inadequate control and the need to step up treatment.

New develops that have been published since the guidelines have been published:

1. You should not add a LABA until a patient fails moderate to high dose ICS
2. LABA may increase risk of death (????)
3. Tiotropium Bromide can be added in place of a LABA to a moderate to high dose of ICS if the patient is not controlled or to a ICS/LABA combination is poor control
4. Omalizumab adverse effects include anaphylaxis, possibly cancer (doubtful) and possibly CAD (doubtful)
5. Ipratropium bromide can be used in the ED when albuterol use in maximized and patient still has symptoms. This may decrease risk for hospitalization
What is important about the guidelines

• Severity classification followed by control.
• Assess impairment and risk
• Ages 0 to 4, 5 to 12 and greater than 12.
• Addition of functional ability and exacerbations to both severity and control.
• Stresses that ICS are the drug of first choice.
• Addition of omalizumab and zileutin.
Assessing Asthma Control: “Rules of Two”

- If the answer to following questions is yes, a long term controller may be needed or you need to increase care
  - Do you take your quick relief inhaler more than TWO TIMES A WEEK?
  - Do you awaken at night with asthma more than TWO TIMES A MONTH?
  - Do you have daytime symptoms more than twice a week?
  - Do you have attacks more than twice a year
  - OR is there any limitation on exercise or QOL
• 35 year old banker
• Frustrated with his care- “they do not listen to me”
• “I have had asthma since age 3 and always stable, but now I am miserable”
• I no longer can run. I have had 3 attacks this year alone requiring prednisone”
What are some possibilities that may result in his asthma attacks?

• A. Staph lung infections
• B. Warm humid air
• C. Reflux
• D. Pneumococcal infections
• E. Rhinovirus
• Ans:
What are some possibilities that may result in his asthma attacks?

A. Staph lung infections
B. Warm humid air
C. Reflux
D. Pneumococcal infections
E. Rhinovirus

Ans: E
• What is the most common cause for poor asthma control?
• A. Poor technique
• B. Poor compliance
• C. Under treatment
• D. Failure to appropriate recognize asthma severity
• Ans:
• What is the most common cause for poor asthma control?
• A. Poor technique
• B. Poor compliance
• C. Under treatment
• D. Failure to appropriate recognize asthma severity
• Ans: B
What are some possibilities that may result in uncontrolled asthma?

- Poor adherence
- Poor technique
- Under treatment
- Tobacco
- Allergen exposure
- Occupational exposure
- Medications (non-selective beta-blockers, ACE-I, ASA)
- Infections (atypical bacteria and viruses)
- Upper airway inflammation
- Depression and poor social system
• NKDA, denies bee-sting or food allergies
• Family history is positive for asthma and eczema
• Non-smoker, banker
• Home is allegen proofed and he traded his cat for a goldfish last year
• He to/erates ASA and NSAID
• ROS is positive for anxiety and depression, severe nasal congestion
General appearance: well developed, well nourished young man in no acute distress.

Vital signs: HR 78    RR 14    T98 °F    BP: 115/76
Ht. 5’ 11”    Wt. 155 lb.

EYES: bilateral allergic shiners

ENT: pale and edematous mucosa; cobblestoned pharynx without erythema or post nasal drainage.

CHEST: scattered wheezes noted, good air entry bilaterally

HEART: RRR without murmurs

EXTREMITIES: no clubbing, cyanosis or edema
What Tests Would You Order at this time?

- A. Sinus CT
- B. PH probe
- C. DLCO
- D. Spirometry
- E. Skin testing

• Ans:
What Tests Would You Order at this time?

- A. Sinus CT
- B. PH probe
- C. DLCO
- D. Spirometry
- E. Skin testing

• Ans: D
Procedures

• Spirometry was done
  FVC was 92% predicted
  FEV-1 was 68% predicted
  FEV1/FVC ratio was 70%
  He reversed 16% with 4 puffs albuterol
CXR- hyperinflation other wise normal
Treatment was initiated and return visit, spirometry and skin testing were arranged in 2 weeks
What is his asthma severity?

a. Mild intermittent asthma
b. Mild persistent
c. Moderate persistent
d. Severe persistent asthma

Ans:
What is his asthma severity?

a. Mild intermittent asthma
b. Mild persistent
c. Moderate persistent
d. Severe persistent asthma

Ans: D
### Classifying Severity in Patients ≥12 Years Not Currently Taking Long-Term Controllers

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<th>Components of Severity</th>
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<th>Persistent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Impaired</td>
<td>Intermittent</td>
<td>Persistent</td>
</tr>
<tr>
<td>Normal</td>
<td>FEV₁/FVC:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-19 yr 85%</td>
<td>&lt;2 days/week</td>
<td>&gt;2 days/week but not daily</td>
</tr>
<tr>
<td></td>
<td>20-39 yr 80%</td>
<td>&lt;2 days/week</td>
<td>&gt;2 days/week but &gt;1x/day</td>
</tr>
<tr>
<td></td>
<td>40-59 yr 75%</td>
<td>&lt;2 days/week</td>
<td>&gt;2 days/week but &gt;1x/day</td>
</tr>
<tr>
<td></td>
<td>60-80 yr 70%</td>
<td>&lt;2 days/week</td>
<td>&gt;2 days/week but &gt;1x/day</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Risk</td>
<td>Exacerbations requiring oral systemic corticosteroids</td>
<td>0-1/year</td>
<td>&gt;2 in 1 year</td>
</tr>
</tbody>
</table>

Relative annual risk of exacerbations may be related to FEV₁
RECOMMENDATIONS

1.

2.

3.

4.

5.
Recommendations

• Treat his asthma aggressively with high dose ICS and LABA
• Nasal steroid
• Reassurance
• Review medication use
• Educate on technique
• Acute action plan
• Stabilize asthma before skin testing
Stepwise Approach for Managing Asthma in Patients ≥ 12 Years of Age

**STEP 1**
PREFERRED
Low-dose ICS

**STEP 2**
PREFERRED
Low-dose ICS + LABA

**STEP 3**
PREFERRED
Low-dose ICS + LABA

**STEP 4**
PREFERRED
Medium-dose ICS + LABA

**STEP 5**
PREFERRED
High-dose ICS + LABA

**STEP 6**
PREFERRED
High-dose ICS + LABA + oral corticosteroid

Patient Education and Environmental Control at Each Step

- SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of systemic oral corticosteroids may be needed.
- Caution: Increasing of β-agonist or use >2x/week for symptoms control indicates inadequate control and the need to step up treatment.

2 Week Follow-up

- He was on a high dose ICS and a LABA.
- Exercise has improved
- He is sleeping nights, free of day symptoms, and not using albuterol
- QOL is improved.
- Not needed urgent care
- Spirometry was normal
- Skin tests were positive to cats and dust mites
What is his asthma control?

- A. Well controlled
- B. Not well controlled
- C. Very poorly controlled
- D. Very, very, very poorly controlled

• Ans:
What is his asthma control?

- A. Well controlled
- B. Not well controlled
- C. Very poorly controlled
- D. Very, very, very poorly controlled

Ans: A
## Assessing Asthma Control in Patients ≥12 Years of Age

<table>
<thead>
<tr>
<th>Components of Severity</th>
<th>Classification of Asthma Control (Youths ≥12 years of age &amp; adults)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Well Controlled</td>
</tr>
<tr>
<td>Impairment</td>
<td></td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td>≤2 days/week</td>
</tr>
<tr>
<td><strong>Nighttime awakenings</strong></td>
<td>≤2/month</td>
</tr>
<tr>
<td><strong>Interference with normal activity</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Short-acting beta₂-agonist use for symptom control</strong></td>
<td>≤2 days/week</td>
</tr>
<tr>
<td><strong>FEV₁ or peak flow</strong></td>
<td>&gt;80% predicted/personal best</td>
</tr>
<tr>
<td><strong>Validated questionnaires</strong>*</td>
<td>0</td>
</tr>
<tr>
<td><strong>ATAQ</strong></td>
<td>≤0.75</td>
</tr>
<tr>
<td><strong>ACQ</strong></td>
<td>≥20</td>
</tr>
<tr>
<td><strong>ACT</strong></td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td></td>
</tr>
<tr>
<td><strong>Exacerbations</strong></td>
<td>0-1/year</td>
</tr>
<tr>
<td><strong>Progressive loss of lung function</strong></td>
<td>Evaluation requires long-term follow-up care.</td>
</tr>
<tr>
<td><strong>Treatment-related adverse effects</strong></td>
<td></td>
</tr>
</tbody>
</table>
What would you do now?

• A. Drop off the LABA
• B. Start omalizumab
• C. Review his acute asthma plan
• D. Decrease him to a low dose ICS

• Ans:
What would you do now?

• A. Drop off the LABA
• B. Start omalizumab
• C. Review his acute asthma plan
• D. Decrease him to a low dose ICS

• Ans: C
• Your patient has severe persistent asthma that is well controlled
• Follow-up in 3 months
• Consider dropping of the LABA on the next visit (until a year ago we would have decreased the dose of ICS)
• If needs an increase in care consider omalizumab.
Summary: what is stressed in the guidelines

- Severity classification on first visit.
- Asthma control on subsequent visits.
- Different guidelines for ages 0 to 4, 5 to 12 and greater than 12.
- Addition of functional ability and exacerbations to both severity and control.
- Stresses that ICS are the drug of first choice.
- Addition of omalizumab for severe asthma.
- Addition of zileutin for moderate asthma.
- Increase importance of Prednisone for severe asthma and very poorly controlled asthma.
Thank you and enjoy your day.
Tim
tcraig@psu.edu