Asthma Update 2015: Has Anything Changed?

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Sheri Stensland declares no conflicts of interest, real or apparent, and no financial interests in any company, product, or service mentioned in this program, including grants, employment, gifts, stock holdings, and honoraria.
Pharmacist Objectives

- Discuss the pathophysiology, symptoms and goals of asthma treatment

- Compare the NHLBI and GINA asthma guidelines

- Demonstrate the use of the soft-mist inhaler

- Explain the asthma–COPD overlap syndrome (ACOS)
Pharmacy Technician Objectives

- Discuss the pathophysiology, symptoms and goals of asthma treatment
- Demonstrate the use of a soft-mist inhaler
- Describe the asthma–COPD overlap syndrome (ACOS)
Asthma Definition

- Chronic inflammatory disorder of the lungs that is **reversible**
- Associated with symptoms of
  - Wheezing
  - Coughing
  - Chest tightness
  - Shortness of breath
- Nighttime/early morning awakenings often occur with the above symptoms
One in 12 people (about 26 million, or 8% of the U.S. population) had asthma in 2010, compared with 1 in 14 (about 20 million, or 7%) in 2001.

http://www.cdc.gov/nchs/data/series/sr_03/sr03_035.pdf
Current Asthma Prevalence Percents by Age, Sex, and Race/Ethnicity, United States, 2013

Source: National Health Interview Survey, National Center for Health Statistics, Centers for Disease Control and Prevention

http://www.cdc.gov/asthma/asthmadata.htm
NHLBI Guidelines
Expert Panel Report – 3
Goals of Treatment

- No missed days from school or work
- No sleep disruption
- Maintain normal activities
- No (or minimal) need for ER visits or hospitalizations (decrease healthcare utilization)
- Normal or near-normal lung function
1989
First expert panel convened

1991
Expert Panel Report (EPR): Guidelines for the Diagnosis and Management of Asthma issued

1997
EPR–2 issued

2002
Updates of selected topics (EPR–update)

2006
GINA guidelines published

2007
NAEPP (EPR–3) updated guidelines issued

2014
GINA guidelines major revision

EPR–1
Asthma highlighted as an inflammatory disease

EPR–2
Importance of early recognition/intervention recognized

EPR–3
Recognition that natural course of asthma does not appear to be altered by current antiinflammatory treatments; increased focus on asthma control; emphasis on individualized treatment
Goals of asthma therapy

- **Reduce Impairment**
  - Prevent chronic and troublesome symptoms
  - Maintain “normal” pulmonary function and activity levels
  - Meet patients’ and families’ expectations and satisfaction with asthma care

- **Reduce Risk**
  - Prevent recurrent exacerbations and minimize the need for ER visits or hospitalizations
  - Provide optimal pharmacotherapy with minimal adverse effects
  - Minimize ER visits and hospitalizations
Pharmacotherapy – Step 1

Classifying Asthma Severity and Initiating Treatment in Youths ≥ 12 Years of Age and Adults

- Utilize chart to determine classification
  - If any discrepancy occurs between parameters ALWAYS go to the higher level
- Chart indicates step of therapy to initiate

**Components of Severity**

<table>
<thead>
<tr>
<th>Intermittent</th>
<th>Classification of Asthma Severity (≥ 12 years of age)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>Mild</td>
</tr>
<tr>
<td>&lt;2 days/week</td>
<td>&gt;2 days/week</td>
</tr>
<tr>
<td>Nighttime awakenings</td>
<td>&lt;3x/month</td>
</tr>
</tbody>
</table>

**Impairment**

- Normal FEV/FVC: 8-19 yr 85%, 20-39 yr 80%, 40-59 yr 75%, 60-68 yr 70%
- Short-acting beta2-agonist use for symptom control (not prevention of EIB)
  - <2 days/week
  - >2 days/week but not ≥1x daily

**Interference with normal activity**

- None
  - Minor limitation
  - Some limitation
  - Extremely limited

**Lung Function**

- *Normal FEV₁ between exacerbations
- *FEV₁ >80% predicted
- *FEV₁/FVC normal
- *FEV₁/FVC > 80%
- *FEV₁/FVC <80% predicted
- *FEV₁/FVC reduced 5%

**Exacerbations (consider frequency and severity)**

- 0-2/year
- >2/year

**Risk**

- Frequency and severity may fluctuate over time for patients in any severity category
- Relative annual risk of exacerbations may be related to FEV₁

**Recommended Step for Initiating Therapy**

- Step 1
- Step 2
- Step 3
- Step 4 or 5
  - And consider short course of systemic corticosteroids

In 2-6 weeks, evaluate level of asthma control that is achieved, and adjust therapy accordingly.

**Notes**

- The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patient needs.
- Level of severity is determined by both impairment and risk. Assess impairment domain by patient’s/caregiver’s recall of previous 2-4 weeks and spirometry. Assign severity to the most severe category in which any feature occurs.
- Exacerbation is defined as an acute episode of signs and symptoms requiring oral systemic corticosteroids. More than two exacerbations/year indicate persistent asthma. There are no data to correspond frequencies of exacerbations with different severity categories within the classification of persistent asthma. In general, more frequent and intense (e.g., requiring urgent, unscheduled care, hospitalization, or intensive care unit admission) exacerbations indicate greater underlying disease severity.
Pharmacotherapy – Step 2

- Create Medication Plan
  - Remember to take any patient specific issues into account (e.g. pregnancy)

### Stepwise Approach for Managing Asthma in Youths ≥ 12 Years of Age and Adults

<table>
<thead>
<tr>
<th>Intermittent Asthma</th>
<th>Persistent Asthma: Daily Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consult with asthma specialist if step 4 care or higher is required. Consider consultation at step 3.</td>
</tr>
<tr>
<td>Step 1 Preferred:</td>
<td>Step 2 Preferred: Medium dose ICS</td>
</tr>
<tr>
<td>SABA PRN</td>
<td>Step 3 Preferred: Medium dose ICS OR Low dose ICS + LABA</td>
</tr>
<tr>
<td>Alternative:</td>
<td>Step 4 Preferred: High dose ICS + LABA, LTRA, Theophylline, or Zileuton</td>
</tr>
<tr>
<td>Cromolyn, Nedocromil, LTRA or Theophylline</td>
<td>Step 5 Preferred: High dose ICS + LABA, Omalizumab may be considered for patients who have allergies</td>
</tr>
</tbody>
</table>

#### 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.
  - Use of beta₂-agonist >2 days a week for symptom control (not prevention of EIB) indicates inadequate control and the need to step up treatment.

#### Key:
- ICS, inhaled corticosteroid; LABA, inhaled long acting beta₂ agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta₂ agonist

#### Note:
- The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patient needs.
- If alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up.
- Zileuton is a less desirable alternative due to limited studies as adjunctive therapy and the need to monitor liver function. Theophylline requires monitoring of serum concentration levels.
- In step 6, before oral corticosteroids are introduced, a trial of high-dose ICS + LABA + either LTRA, theophylline, or zileuton may be considered, although this approach has not been studied in clinical trials.
Pharmacotherapy – Step 3

- Determine current level of control
  - This step is for “returning patients”
  - Utilizes either the ATAQ or ACT
- Place information into chart to help determine level of control and changes in therapy

**ASTHMA THERAPY ASSESSMENT QUESTIONNAIRE (ATAQ)**

1. In the past 4 weeks did you miss any work, school, or normal daily activities because of your asthma? (1 point for Yes)
2. In the past 4 weeks did you wake up at night because of your asthma? (1 point for yes)
3. Do you believe your asthma was well-controlled in the past 4 weeks? (1 point for No)
4. Do you use an inhaler for quick relief from asthma symptoms? If yes, what is the highest number of puffs in one day you took of this inhaler? (1 point for more than 12)

Total points = 0-4, with more points indicating more control problems.
# Assessing Level of Control and Change in Therapy

<table>
<thead>
<tr>
<th>Components of Control</th>
<th>Classification of Asthma Control (&gt;12 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Well Controlled</td>
</tr>
<tr>
<td><strong>Impairment</strong></td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td>&lt;2 days/week</td>
</tr>
<tr>
<td>Nighttime awakenings</td>
<td>1-3x/month</td>
</tr>
<tr>
<td>Interference with normal activity</td>
<td>None</td>
</tr>
<tr>
<td>Short-acting β2-agonist use for symptom control (not prevention of EIB)</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>Validated questionnaires</td>
<td></td>
</tr>
<tr>
<td>ATAQ</td>
<td>0</td>
</tr>
<tr>
<td>ACQ</td>
<td>&lt;0.75</td>
</tr>
<tr>
<td>ACT</td>
<td>&gt;20</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.</td>
</tr>
<tr>
<td>Treatment-related adverse effects</td>
<td>Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.</td>
</tr>
</tbody>
</table>

**Recommended Action For Treatment**

(See figure 4-5 for treatment steps.)

- *Maintain current step*
- *Consider step down if well controlled for at least 3 months.*

- *Step up at least 1 step and *Reevaluate in 2-6 weeks.*
- *For side effects, consider alternative treatment options.*

- *Consider short course of systemic oral corticosteroids*
- *Step up (1-2 steps), and *
- *Reevaluate in 2 weeks, *For side effects, consider alternative treatment options.*

**Notes:**

- The level of control is based on the most severe impairment or risk category. Assess impairment domain by caregiver’s recall of previous 2-4 weeks and by spirometry/or peak flow measures. Symptom assessment for longer periods should reflect a global assessment such as inquiring whether the patient’s asthma is better or worse since the last visit.
- Exacerbation is defined as an acute episode of signs and symptoms requiring oral systemic corticosteroids.
- Before step up in therapy:
  - Assess adherence to medications and environmental control.
  - If alternative treatment option was used in a step, discontinue it and use preferred treatment for that step.
GINA Guidelines

Global Initiative for Asthma

- Collaboration with NHLBI, National Institutes of Health and WHO
GINA Global Strategy for Asthma Management and Prevention

- 2014 major revision
- *Not* a guideline – a way to manage asthma
- Moved from practice-focused to patient-centered approach
“New” Asthma Definition

“Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation.”
Global Strategy for Asthma Management and Prevention

CONTROL = Symptom control + risk factors for adverse outcomes
NHLBI vs. GINA

NHLBI

- Reduce Impairment
  - Symptoms
  - Maintain normal activities
  - Meet expectations

- Reduce Risk
  - Prevent exacerbations
  - Optimal pharmacotherapy
  - Reduce hospitalizations

GINA

- Symptom control
  - How often
  - When
  - Effects on activities

- Risk control
  - Potential for flare-ups
  - Airflow limitations
  - Medication side effects
Global Strategy for Asthma Management and Prevention

- Management of asthma
  - Treat asthma to control symptoms and minimize risk
  - Cycle of Care – Assess, adjust, and review
  - Check technique and adherence
  - Review non-pharmacologic, modify risk factors and comorbidities
NHLBI vs. GINA

**NHLBI**
- Assess level of control
  - Impairment
    - Symptom
    - Lung function
  - Risk
    - Side effects
    - Adherence
- What’s missing?

**GINA**
- Assess
  - Diagnosis
  - Symptoms
  - Risk factors (lung function)
  - Inhaler technique
  - Adherence
  - Patient preference
- Adjust
- Review

Inhaler Technique Assessment!
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<thead>
<tr>
<th>Step 1</th>
<th>Preferred: SABA PRN</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Preferred: Low dose ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR Low dose ICS + LABA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Preferred: Medium dose ICS + LABA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alternative: Low-dose ICS + either LTRA, Theophylline, or Zileuton</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 4</th>
<th>Preferred: High dose ICS + LABA AND Omalizumab may be considered for patients who have allergies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alternative: Medium dose ICS + either LTRA, Theophylline, or Zileuton</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 5</th>
<th>Preferred: High dose ICS + LABA AND Omalizumab may be considered for patients who have allergies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[other options]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 6</th>
<th>Preferred: High dose ICS + LABA AND Omalizumab may be considered for patients who have allergies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[other options]</td>
</tr>
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### 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.
- Use of beta_{2}-agonist > 2 days a week for symptom control (not prevention of EIB) indicates inadequate control and the need to step up treatment

### Key:
ICS, inhaled corticosteroid; LABA, inhaled long acting beta_{2} agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta_{2} agonist

### Note:
- The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patient needs.
- If alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up.
- Zileuton is a less desirable alternative due to limited studies as adjunctive therapy and the need to monitor liver function. Theophylline requires monitoring of serum concentration levels.
- In step 6, before oral corticosteroids are introduced, a trial of high-dose ICS + LABA + either LTRA, theophylline, or zileuton may be considered, although this approach has not been studied in clinical trials.
For children 6-11 years, theophylline is not recommended, and preferred Step 3 is medium dose ICS.

For patients prescribed BDP/formoterol or BUD/formoterol maintenance and reliever therapy, tiotropium by soft-mist inhaler is indicated as add-on treatment for adults (≥18 yrs) with a history of exacerbations.
Add-on tiotropium by soft-mist inhaler as an “other controller”
- Steps 4 and 5 (GINA)

Management of asthma in pregnancy

DPI’s can be used to deliver SABA’s in mild–moderate asthma exacerbations

Assessment of risk factors
- Over-use of SABA is a risk factor for exacerbations
- Very high use is a risk factor for asthma–related death
Tiotropium (Spiriva) – Respimat

- Long-acting muscarinic antagonist (LAMA)
- Approved in U.S. in 2004 – first line agent in COPD – Handihaler
- 24 hour antimuscarinic activity
- Muscarinic receptor stimulation = bronchoconstriction and mucous production
Tiotropium – Add–on maintenance treatment for asthma

- Based on two – Phase III clinical trials
- Patients not controlled on ICS or ICS/LABA treatment

Results:
- Improved lung function
- Increased time to first exacerbation

- GINA approved as “other” controller for Step 4 or 5 (severe asthma)
- Not currently FDA approved in U.S. (under review)
Inhalation Delivery Devices

• Metered dose inhaler (MDI)

• Dry powder inhaler (DPI)
Inhalation Delivery Devices

- Breath-activated inhaler
  
- Soft-mist inhaler
Respimat Soft-Mist Inhaler Device
Respimat Device

- Cap (A)
- Mouthpiece (B)
- Air vent (C)
- Dose release button (D)
- Safety catch (E)
- Clear base (G)
- Piercing element (I)
- Cartridge (H)
- Dose indicator (F)
How to Use the Respimat (TOP)

1. TURN
2. OPEN
3. PRESS
Respimat Use

- Must be primed upon first use
- No need to shake with each use (no propellant)
- Turn base to load dose
- Open cap after turning base
- Press the button to release the dose
- Use a slow deep breath
ACOS
Asthma–COPD Overlap Syndrome
Asthma–COPD Overlap Syndrome (ACOS)

Children and young adults = asthma
Adults >40yo = COPD more common

However, many patients may have features of both asthma and COPD

Distinguishing between asthma and COPD may be difficult
ACOS

- Patients with both features may have worse outcomes:
  - Frequent exacerbations
  - Poor quality of life
  - Higher mortality
  - Greater healthcare utilization

- Rates of ACOS – 15–55% of patients with chronic airway disease
Asthma – Defined earlier in this presentation

COPD – persistent airflow limitation that is usually progressive and associated with enhanced chronic inflammatory responses in the airways

ACOS - persistent airflow limitation with several features usually associated with asthma and several features usually associated with COPD.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Asthma</th>
<th>COPD</th>
<th>ACOS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age of onset</strong></td>
<td>Usually childhood onset but can commence at any age.</td>
<td>Usually &gt; 40 years of age</td>
<td>Usually age ≥40 years, but may have had symptoms in childhood or early adulthood</td>
</tr>
<tr>
<td><strong>Pattern of respiratory symptoms</strong></td>
<td>Symptoms may vary over time (day to day, or over longer periods), often limiting activity. Often triggered by exercise, emotions including laughter, dust or exposure to allergens</td>
<td>Chronic usually continuous symptoms, particularly during exercise, with ‘better’ and ‘worse’ days</td>
<td>Respiratory symptoms including exertional dyspnea are persistent but variability may be prominent</td>
</tr>
<tr>
<td><strong>Lung function</strong></td>
<td>Current and/or historical variable airflow limitation, e.g. BD reversibility, AHR</td>
<td>FEV, may be improved by therapy, but post-BD FEV/FVC &lt; 0.7 persists</td>
<td>Airflow limitation not fully reversible, but often with current or historical variability</td>
</tr>
<tr>
<td><strong>Lung function between symptoms</strong></td>
<td>May be normal between symptoms</td>
<td>Persistent airflow limitation</td>
<td>Persistent airflow limitation</td>
</tr>
<tr>
<td><strong>Past history or family history</strong></td>
<td>Many patients have allergies and a personal history of asthma in childhood, and/or family history of asthma</td>
<td>History of exposure to noxious particles and gases (mainly tobacco smoking and biomass fuels)</td>
<td>Frequently a history of doctor-diagnosed asthma (current or previous), allergies and a family history of asthma, and/or a history of noxious exposures</td>
</tr>
<tr>
<td><strong>Time course</strong></td>
<td>Often improves spontaneously or with treatment, but may result in fixed airflow limitation</td>
<td>Generally, slowly progressive over years despite treatment</td>
<td>Symptoms are partly but significantly reduced by treatment. Progression is usual and treatment needs are high</td>
</tr>
<tr>
<td><strong>Chest X-ray</strong></td>
<td>Usually normal</td>
<td>Severe hyperinflation &amp; other changes of COPD</td>
<td>Similar to COPD</td>
</tr>
<tr>
<td><strong>Exacerbations</strong></td>
<td>Exacerbations occur, but the risk of exacerbations can be considerably reduced by treatment</td>
<td>Exacerbations can be reduced by treatment. If present, comorbidities contribute to impairment</td>
<td>Exacerbations may be more common than in COPD but are reduced by treatment. Comorbidities can contribute to impairment</td>
</tr>
<tr>
<td><strong>Typical airway inflammation</strong></td>
<td>Eosinophils and/or neutrophils</td>
<td>Neutrophils in sputum, lymphocytes in airways, may have systemic inflammation</td>
<td>Eosinophils and/or neutrophils in sputum.</td>
</tr>
</tbody>
</table>
Initial Treatment

- **Asthma (single disease)**
  - ICS
  - Add–on LABA and/or LAMA (if needed)

- **COPD (single disease)**
  - LABA and/or LAMA
  - Add–on ICS (not monotherapy)

- **ACOS**
  - ICS + LABA and/or LAMA
Case: Asthma, COPD, or ACOS?

AP is a 78yo female who presents to the pharmacy today (it is early Spring) with a prescription for an Advair Diskus 500/50 inhaler. She is complaining of increased SOB that wakes her up at night at least 2 nights a week, and wheezing. She complains of productive cough that can lead to SOB. Over the years she has had increased symptoms during the Spring due to allergies, but states lately she has had daily symptoms especially after her daily walk and has needed her short-acting inhaler. After using her inhaler she gets relief but only for short periods of time.

PMH: asthma (since she was a child)

Hyperlipidemia (2002)

SH: denies alcohol/elicit drug use

Smoker ½ ppd x 5 years (stopped around 1980), her husband smokes 1 ppd

FEV₁: 70%
Case (Cont’d)

- **Meds:**
  - Advair 250/50 Diskus 1 puff bid
  - Albuterol MDI 2 puffs prn
  - Albuterol 0.083% neb bid prn
  - Amox–Clav 875mg 1 bid (has had 5 courses of abx over past 9 months)
  - Atorvastatin 10mg 1 hs
  - Budesonide 0.5mg/2ml neb bid
  - Prednisone 10mg burst therapy (has had 7 courses over past 9 months)

- **OTC’s:**
  - Zyrtec 10mg 1 qd
  - Sudafed 30mg 1 prn
  - Allbee w/C 1 qd
Table 2b. Features that favor asthma or COPD

<table>
<thead>
<tr>
<th>Favors Asthma</th>
<th>Favors COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset before age 20 years</td>
<td>Onset after age 40 years</td>
</tr>
<tr>
<td>Variation in symptoms over minutes, hours or days</td>
<td>Persistence of symptoms despite treatment</td>
</tr>
<tr>
<td>Symptoms worse during the night or early morning</td>
<td>Good and bad days but always daily symptoms and exertional dyspnea</td>
</tr>
<tr>
<td>Symptoms triggered by exercise, emotions including laughter, dust or exposure to allergens</td>
<td>Chronic cough and sputum preceded onset of dyspnea, unrelated to triggers</td>
</tr>
<tr>
<td>Record of variable airflow limitation (spirometry, peak flow)</td>
<td>Record of persistent airflow limitation (post-bronchodilator FEV1/FVC &lt; 0.7)</td>
</tr>
<tr>
<td>Lung function normal between symptoms</td>
<td>Lung function abnormal between symptoms</td>
</tr>
<tr>
<td>Previous doctor diagnosis of asthma</td>
<td>Previous doctor diagnosis of COPD, chronic bronchitis or emphysema</td>
</tr>
<tr>
<td>Family history of asthma, and other allergic condition</td>
<td>Heavy exposure to a risk factor: tobacco smoke, biomass fuels</td>
</tr>
<tr>
<td>No worsening of symptoms over time. Symptoms vary either seasonally, or from year to year</td>
<td>Symptoms slowly worsening over time (progressive course over years)</td>
</tr>
<tr>
<td>May improve spontaneously or have an immediate response to BD or to ICS over weeks</td>
<td>Rapid-acting bronchodilator treatment provides only limited relief.</td>
</tr>
<tr>
<td>Normal</td>
<td>Severe hyperinflation</td>
</tr>
</tbody>
</table>

For a patient, count the number of checked boxes in each column. If 3 or more are checked for either asthma or COPD, that diagnosis is suggested. But if there are similar numbers of checked boxes in each column, ACOS should be considered.
Does our patient have asthma, COPD, or ACOS?

ACOS

What should we start our patient on for initial treatment?

ICS + LABA and/or LAMA
Future

- ACOS is very new
- Additional studies need to be done in order to better assess diagnosis, classification, treatment
In Summary

- Review of NHLBI Guidelines
  - Assessment of risk and impairment to guide treatment
- GINA Global Strategy for Asthma Management and Prevention
  - Cycle of care – assess, adjust and review
- Tiotropium – Add-on treatment in severe asthma
- ACOS – New way to assess chronic airway disease
Questions?