Breathe Easy
Asthma and COPD Update

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Clinical Assistant Professor | Department of Pharmacy Practice
The University of Kansas School of Pharmacy | Wichita Campus
KPhA Annual Meeting | September 24th, 2016
I have no conflicts of interest to disclose.
Pharmacist Objectives

1. Apply treatment guidelines when making recommendations to providers about a patient’s asthma or COPD treatment

2. Differentiate between appropriate and inappropriate use of newer medications in the treatment of asthma and COPD

3. Counsel patients on safe and effective use of newer medications in the treatment of asthma and COPD

4. Appreciate the pharmacist’s potentially changing role in asthma and COPD management
Technician Objectives

1. Be familiar with newer medications used for the treatment of asthma and COPD
2. Better understand daily demands that patients with asthma or COPD are experiencing
3. Recognize times when patients could benefit from additional education from a pharmacist about their asthma or COPD medications or disease state management
Learning Assessment Questions
Learning Assessment Question 1

Patient JJ is a 14 year old male who presents to your pharmacy with his mother to refill his albuterol inhaler. He has no other medications on his profile. He states he uses his albuterol “some days” before soccer practice and as he needs it for shortness of breath. You notice that he last filled his inhaler 9 months ago and he states today that his dose counter shows he only has 10 doses left. What do you recommend for this patient?

A. Continue current therapy of SABA PRN, but recommend refilling the inhaler every 6 months
B. Add an Inhaled Corticosteroid (ICS)
C. Add a Long-Acting Beta-2 Agonist (LABA)
D. Add a combination of an ICS and LABA
E. Add montelukast
Learning Assessment Question 2

Which of the following is an appropriate use of tiotropium in a patient with asthma?

A. A 42 year-old patient needing a quick-relief inhaler when experiencing shortness of breath
B. Added onto SABA PRN and ICS in an 11 year old patient
C. Added onto SABA PRN, montelukast, ICS, and LABA in a 17 year old patient
D. None of the above – tiotropium should not be used in patients with asthma
Learning Assessment Question 3

While conducting a CMR with a 44 year old female patient, you note she is taking the following medications for her asthma:

– Fluticasone/salmeterol DPI 250/50mcg 1 puff BID
– Levalbuterol 45mcg 2 puffs q 4-6h PRN

She states she uses her fluticasone/salmeterol twice daily every day and has used her levalbuterol twice in the last 4 months. She has had 2 night time awakenings from her asthma in the last year, and reports a few symptomatic days every 2 weeks.

What is the best treatment recommendation for this patient?

A. Continue current therapy
B. Discontinue levalbuterol
C. Discontinue fluticasone/salmeterol
D. Decrease fluticasone/salmeterol to 100/50mcg 1 puff BID
E. Add tiotropium 1.25 mcg/actuation – 2 puffs daily
Patient MP is a 62 year old male who presents to your pharmacy counter today to pick up his budesonide/formoterol inhaler. He also wants to purchase an OTC product containing dextromethorphan, acetaminophen, and guaifenesin for his “cough and mucus.”

You ask him about his symptoms and he states he has had a cough for 2 days, but today it is “worse than most days” and it woke him up in the middle of the night. He uses his albuterol inhaler a few times a week and it usually relieves his coughing, but not today.

You ask him about his COPD history and he states that in the last year, he has had only 1 COPD exacerbation but it sent him to the Emergency Department.

Before today, which combined assessment patient group would MP have fallen into?

A. A: low risk, fewer symptoms
B. B: low risk, more symptoms
C. C: high risk, fewer symptoms
D. D: high risk, more symptoms
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You ask him about his COPD history and he states that in the last year, he has had only 1 COPD exacerbation but it sent him to the Emergency Department.

Today, which combined assessment patient group would MP fall into?

A. A: low risk, fewer symptoms
B. B: low risk, more symptoms
C. C: high risk, fewer symptoms
D. D: high risk, more symptoms
Learning Assessment Question 6

Patient MP is a 62 year old male who presents to your pharmacy counter today to pick up his budesonide/formoterol inhaler. He also wants to purchase an OTC product containing dextromethorphan, acetaminophen, and guaifenesin for his “cough and mucus.”

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You ask him about his COPD history and he states that in the last year, he has had only 1 COPD exacerbation but it sent him to the Emergency Department.

What do you tell MP today at the pharmacy? Select all that apply.

A. The OTC product he selected will help his cough and mucus
B. Reassess MP’s albuterol inhaler technique
C. He would benefit from adding a new medication to his COPD regimen
D. Use his albuterol inhaler every 2 hours today and reevaluate tomorrow
E. Refer MP to his primary care provider today
ASTHMA
Asthma Statistics

• As of 2014 …
  – 17.7 million adults (7.4%)
  – 6.3 million children (8.6%)
  – 1.8 million ER visits
  – 10.5 million physician office visits

• As of 2010 …
  – 439,000 discharges with asthma as the first-listed diagnosis
    • Average length of stay = 3.6 days

• Mortality: 3,640 (as of 2013)
Asthma Treatment Guidelines

• National Heart, Lung, and Blood Institute (NHLBI)
  – Last updated in 2007
  – Quick Reference Guide updated medications and dosages in 2011

• Goals of Treatment:
  – Reduce Impairment
    • Prevent chronic symptoms
    • Infrequent use of rescue inhaler
    • Maintain near normal lung function and activity
  – Reduce Risk
    • Prevent exacerbations
    • Minimize need for emergency care/hospitalization
    • Prevent loss of lung function
    • Minimize adverse effects of therapy
Asthma Treatment Guidelines

Review of Step Therapy

• ADULTS
  – Step 1: SABA as needed
  – Step 2: low-dose ICS
  – Step 3: low-dose ICS + LABA
    • OR medium-dose ICS
  – Step 4: medium-dose ICS + LABA
  – Step 5: high-dose ICS + LABA
    • AND consider omalizumab for patients who have allergies
  – Step 6: high-dose ICS + LABA + oral corticosteroid
    • AND consider omalizumab for patient who have allergies
<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Step 5</th>
<th>Step 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At each step:</strong> Patient education, environmental control, and management of comorbidities</td>
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<tr>
<td><strong>Intermittent Asthma</strong></td>
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<tr>
<td>Preferred Treatment¹</td>
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<tr>
<td>SABA* as needed</td>
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<td></td>
</tr>
<tr>
<td>low-dose ICS*</td>
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<td>medium-dose ICS*</td>
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<tr>
<td>medium-dose ICS* + either LABA* or montelukast</td>
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<tr>
<td>high-dose ICS* + either LABA* or montelukast + oral corticosteroids</td>
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<tr>
<td>Alternative Treatment¹⁺</td>
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<tr>
<td>cromolyn or montelukast</td>
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</table>

If clear benefit is not observed in 4–6 weeks, and medication technique and adherence are satisfactory, consider adjusting therapy or alternate diagnoses.

<table>
<thead>
<tr>
<th>Quick-Relief Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>• SABA* as needed for symptoms; intensity of treatment depends on severity of symptoms.</td>
</tr>
<tr>
<td>• With viral respiratory symptoms: SABA every 4–6 hours up to 24 hours (longer with physician consult). Consider short course of oral systemic corticosteroids if asthma exacerbation is severe or patient has history of severe exacerbations.</td>
</tr>
<tr>
<td>• Caution: Frequent use of SABA may indicate the need to step up treatment.</td>
</tr>
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<table>
<thead>
<tr>
<th>Step 2-3 Years of Age</th>
<th>Step 4-11 Years of Age</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intermittent Asthma</strong></td>
<td></td>
</tr>
<tr>
<td>Preferred Treatment¹</td>
<td></td>
</tr>
<tr>
<td>SABA* as needed</td>
<td></td>
</tr>
<tr>
<td>low-dose ICS*</td>
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<tr>
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<td>OR</td>
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<td>medium-dose ICS</td>
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</tr>
<tr>
<td>Consider subcutaneous allergen immunotherapy for patients who have persistent, allergic asthma.**</td>
<td></td>
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<tr>
<td>• Caution: Increasing use of SABA or use &gt;2 days/week for symptom relief (not to prevent EIB*) generally indicates inadequate control and the need to step up treatment.</td>
</tr>
<tr>
<td>STEP 1</td>
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</tr>
<tr>
<td>Preferred Treatment†</td>
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<tr>
<td>Alternative Treatment‡</td>
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<table>
<thead>
<tr>
<th>STEP 2</th>
<th>Persistent Asthma: Daily Medication</th>
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</thead>
<tbody>
<tr>
<td>STEP 3</td>
<td>Consult with asthma specialist if step 4 care or higher is required. Consider consultation at step 3.</td>
</tr>
<tr>
<td>STEP 4</td>
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<td>STEP 6</td>
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### ≥12 years of age

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<tr>
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<tbody>
<tr>
<td>STEP 1</td>
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<td>Preferred Treatment†</td>
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<td>high-dose ICS* + LABA* AND consider omalizumab for patients who have allergies‡†</td>
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Consider subcutaneous allergen immunotherapy for patients who have persistent, allergic asthma.**

### Quick-Relief Medication

- SABA* as needed for symptoms. The intensity of treatment depends on severity of symptoms: up to 3 treatments every 20 minutes as needed. Short course of oral systemic corticosteroids may be needed.
- Caution: Use of SABA >2 days/week for symptom relief (not to prevent EIB*) generally indicates inadequate control and the need to step up treatment.
Asthma Treatment Guidelines

Review of Step Therapy

• New indication/treatments for asthma not included in guidelines or step therapy
  – Tiotropium
    • Approved as an additional long-term controller medication for asthma in patients 12 and older
    • Phase III study → add-on treatment to ICS/LABA maintenance therapy
    • Up To Date → best used in combination with an ICS
Tiotropium in Asthma Poorly Controlled with Standard Combination Therapy

Huib A.M. Kerstjens, M.D., Michael Engle, M.D., Ronald Dahl, M.D., Pierluigi Paggiaro, M.D., Ekkehard Beck, M.D., Mark Vandewalker, M.D., Ralf Sigmund, Dipl.Math., Wolfgang Seibold, M.D., Petra Moroni-Zentgraf, M.D., and Eric D. Bateman, M.D.

ABSTRACT

BACKGROUND

Some patients with asthma have frequent exacerbations and persistent airflow obstruction despite treatment with inhaled glucocorticoids and long-acting beta-agonists (LABAs).

METHODS

In two replicate, randomized, controlled trials involving 912 patients with asthma who were receiving inhaled glucocorticoids and LABAs, we compared the effect on lung function and exacerbations of adding tiotropium (a total dose of 5 μg) or placebo, both delivered by a soft-mist inhaler once daily for 48 weeks. All the patients were symptomatic, had a post-bronchodilator forced expiratory volume in 1 second (FEV₁) of 80% or less of the predicted value, and had a history of at least one severe exacerbation in the previous year.

RESULTS

The patients had a mean baseline FEV₁ of 62% of the predicted value; the mean age was 53 years. At 24 weeks, the mean (±SE) change in the peak FEV₁ from baseline was greater with tiotropium than with placebo in the two trials: a difference of 86±34 ml in trial 1 (P=0.01) and 154±32 ml in trial 2 (P<0.001). The predose (trough) FEV₁ also improved in trials 1 and 2 with tiotropium, as compared with placebo: a difference of 88±31 ml (P=0.01) and 111±30 ml (P<0.001), respectively. The addition of tiotropium increased the time to the first severe exacerbation (282 days vs. 226 days), with an overall reduction of 21% in the risk of a severe exacerbation (hazard ratio, 0.79; P=0.05). No deaths occurred; adverse events were similar in the two groups.

CONCLUSIONS

In patients with poorly controlled asthma despite the use of inhaled glucocorticoids and LABAs, the addition of tiotropium significantly increased the time to the first severe exacerbation and provided modest sustained bronchodilation. (Funded by Boehringer Ingelheim and Pfizer; ClinicalTrials.gov numbers, NCT00772538 and NCT0077684.)

Tiotropium Use in Asthma

• “Tiotropium in Asthma Poorly Controlled with Standard Combination Therapy”
  – 2 replicate trials
  – 912 patients (456 in each group) x 48 weeks
    • 5 micrograms of tiotropium vs placebo via soft-mist inhaler
  – Addition of tiotropium to ICS and LABA:
    • Significantly increased time to first exacerbation
      – Overall reduction in severe exacerbation
    • Provided modest sustained bronchodilation
    • No deaths occurred and adverse events were similar vs placebo
Persistent Asthma Step Therapy: Preferred Treatments

STEP 1: SABA PRN

STEP 2: Low-dose ICS

STEP 3: Medium-dose ICS

STEP 4: Medium-dose ICS + LABA

STEP 5: High-dose ICS + LABA + Oral Corticosteroids

STEP 6: High-dose ICS + LABA + Oral Corticosteroids
Asthma Treatment Guidelines

Review of Step Therapy

- “Step up if needed”
- “Step down if possible”
  - “Consider step down if well controlled for at least 3 months”
  - Children often have spontaneous remission
    - Important to assess need for long-term controller medication regularly
Asthma Treatment Guidelines

Review of Step Therapy

• Follow Up < 12 years old - Well Controlled:

<table>
<thead>
<tr>
<th>Symptoms</th>
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<tbody>
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<td>Nighttime awakenings</td>
<td>&lt; 2 per month</td>
</tr>
<tr>
<td>Interference with normal activity</td>
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</tr>
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<td>SABA use</td>
<td>2 days per week or less</td>
</tr>
<tr>
<td>Exacerbations</td>
<td>0 or 1 per year</td>
</tr>
</tbody>
</table>

• Continue current therapy OR consider step down if well controlled for at least 3 months
Asthma Treatment Guidelines

Review of Step Therapy

- Follow Up < 12 years old - Not Well Controlled

<table>
<thead>
<tr>
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<th>More than 2 days per week</th>
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<tbody>
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<td>2x per month or more</td>
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<tr>
<td>Interference with normal activity</td>
<td>Some limitation</td>
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<tr>
<td>SABA use</td>
<td>More than 2 days per week</td>
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<td>2 or more per year</td>
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- Step up at least 1 step
  - Reevaluate in 2-6 weeks
Asthma Treatment Guidelines

Review of Step Therapy

• Follow Up >12 years old - Well Controlled:

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Asthma Treatment Guidelines

Review of Step Therapy

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<tbody>
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<td>1 – 3 times per week</td>
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- Step up at least 1 step
  - Reevaluate in 2-6 weeks
Asthma Treatment Guidelines

*Important Notes for Pharmacists*

- “Integrate education into all points of care involving interactions with patients”
  - “Include members of all health care disciplines (e.g., physicians, pharmacists, nurses, respiratory therapists, and asthma educators) in providing and reinforcing education at all points of care”

- Review medications, technique, and adherence at each follow-up visit
  - [Dr. House Episode](#)
Asthma Treatment Guidelines

*Important Notes for Pharmacists*

- Patient Education for Self-Management
  - Self-monitoring
  - Taking medications correctly

- Written Asthma Action Plan

- Select medication and delivery devices that meet patients’ needs and circumstances
  - Consider patients’ willingness and ability to use the medication

- Avoiding environmental factors

- Treat comorbid conditions
  - “consider inactivated flu vaccine for all patients > 6 months of age”
Asthma Action Plan

• I feel good / Doing well
  – No symptoms
  – Can do usual activities
  – Action: take long-term control medicines each day (and list out)

• I do not feel good / Asthma is getting worse
  – Coughing, wheezing, chest tightness, or SOB
  – Can do some, but not all, usual activities
  – Waking at night due to asthma
  – Action: add quick-relief medicine and keep taking “green zone” medicine

• I feel awful / Medical alert!
  – Very short of breath
  – Quick-relief medicines have not helped
  – Cannot do usual activities
  – Symptoms are same or worse after 24 hours in “yellow zone”
  – Action: take quick-relief medicine and oral corticosteroid (if available)
    • AND call doctor NOW
    • Go to hospital if in “red zone” for 15 minutes and unable to reach doctor
Biologics for Asthma Treatment

• Anti-IgE
  – Omalizumab (powder for SubQ injection)
    – FDA approved for ages 12 and up with allergic asthma
    – July 2016: Now approved for ages 6-11
  • Inhibits early and late phase allergen-induced asthmatic reactions – prevents IgE’s binding to mast cells
  • Dosing based on baseline IgE levels and weight
  • Hard to predict response
  • Boxed Warning – anaphylaxis (2 hours – 4 days later)
    – Administered in physician’s office
  • Extremely expensive
  • 26 day half-life
Biologics for Asthma Treatment

• Anti-IgE
  – Omalizumab (powder for SubQ injection)
  – FDA reviewed 5-year safety studies
    • Slightly increased risk of problems involving heart and blood vessels supplying the brain
      – TIAs
      – Heart attacks
      – Sudden, unexpected chest pain
      – Pulmonary Hypertension
      – Blood clots, PE
    • Study design was weak, FDA unable to determine exact level of increased risk
Biologics for Asthma Treatment

• IL-5 Receptor Antagonists
  – Eosinophil accumulation is a feature of the inflammatory process in the lungs
    • Not normally in healthy lung tissue
  – IL-5 = major cytokine responsible for growth, differentiation, recruitment, activation, and survival of eosinophils
    • Eosinophils potentiate airway inflammation and contribute to lung tissue remodeling
  – By antagonizing IL-5 receptors, reduce production and survival of eosinophils
Biologics for Asthma Treatment

- IL-5 Receptor Antagonists

- **Mepolizumab:**
  - Approved for 12 years and older as add-on maintenance treatment of severe asthma with eosinophilic phenotype
  - 100mg **subcutaneous injection** every 4 weeks
    - Half-life = 16-22 days

- **Reslizumab:**
  - Approved as add-on maintenance treatment of severe asthma in adults with eosinophilic phenotype
  - 3mg/kg **IV** every 4 weeks
    - Half-life = ~24 days
  - Boxed warning for anaphylaxis (20 minutes up to second dose)
On The Horizon ...

• Benralizumab
  – Phase III studies in severe asthma:
    • Well-tolerated
    • Achieved primary endpoint of reduction in exacerbation rate compared to placebo in 2 phase III trials
    • Regulatory submission anticipated second half of 2016
    • Potential use in COPD as well
      – Phase III studies underway
On The Horizon ...

• IL-4 and IL-13 – dual blockade
  – Important in eosinophil accumulation
  – Key factors in IgE synthesis
  – IL-13 may also have an effect on airway smooth muscle function
    • Potentially effective target for asthma
  – E.g., lebrikizumab, tralokinumab, pitrakinra, dupilumab,

• Many biologics appear promising in animal models of asthma, but inadequate clinically
On The Horizon ... 

• Riociguat and Cinaciguat  
  – Initially designed to treat pulmonary hypertension  
    • May also work as a bronchodilator  
    • Useful in 10-15% of patients with asthma who don’t respond well to ICS  
    • Useful in 10-40% who respond poorly to bronchodilators like albuterol or levalbuterol  
    • Shown to reverse airway hyperresponsiveness
On The Horizon ...

• Sensitive Glucocorticoid Receptor Agonists and Modulators (SEGRAMs)
  – Anti-inflammatory effect of corticosteroids
  – No undesired side effects

• Syndecan-4
  – Protein in cell membranes of antigen presenting cells
  – Key protein in development of allergies
    • Further research needed to determine if possibly block allergic response
On The Horizon ...

• Calcialytics
  – Research showing Calcium Sensing Receptors (CaSR) may be the root cause of asthma
    • Link between asthma triggers and chemicals released by immune system in response
  – Possibly used to prevent attacks – thus preventing need for rescue inhalers
  – Reduced airway hyperresponsiveness and inflammation in mice
  – Some predict possible approval by 2020
CHRONIC OBSTRUCTIVE PULMONARY DISEASE

COPD
# Asthma vs. COPD

<table>
<thead>
<tr>
<th></th>
<th>Asthma</th>
<th>COPD</th>
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<tbody>
<tr>
<td>Reversible?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Onset</td>
<td>Early in life</td>
<td>Mid-life</td>
</tr>
<tr>
<td>Symptoms</td>
<td>Vary day to day</td>
<td>Slowly progressive</td>
</tr>
<tr>
<td></td>
<td>Worse at night/early morning</td>
<td></td>
</tr>
<tr>
<td>Contributory</td>
<td>Family history of asthma</td>
<td>Tobacco smoking</td>
</tr>
<tr>
<td>History</td>
<td>History of eczema</td>
<td>Exposure to smoke</td>
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COPD Statistics

- As of 2014 in the U.S. ...
  - 8.7 million diagnosed with chronic bronchitis
  - 3.4 million diagnosed with emphysema
- As of 2010 ...
  - > 10% of residents in assisted living and other residential care had COPD
  - 614,000 discharges with chronic bronchitis as first-listed diagnosis
    - Average length of stay = 4.5 days
- Mortality:
  - 3rd leading cause of death
  - Chronic lower respiratory disease (not asthma): 136,627
  - Emphysema: 8,284
COPD Treatment Guidelines

• GOLD Guidelines:
  – Global Initiative for Chronic Obstructive Lung Disease

• Treatment goals:
  – Improve symptoms
  – Improve lung function
  – Improve exercise tolerance
  – Decrease exacerbation frequency

• Management:
  – Reduce Symptoms
  – Reduce Risk
GOLD – COPD Treatment Guidelines

Combined Assessment of COPD

Risk and Symptoms

High Risk

C

D

Low Risk

A

B

Fewer Symptoms

More Symptoms
GOLD – COPD Treatment Guidelines

A
Short-acting anticholinergic PRN
or
SABA PRN

B
Long-acting anticholinergic
or
LABA

C
ICS + LABA
or
Long-acting anticholinergic

D
ICS + LABA
and/or
Long-acting anticholinergic
Pharmacists' Role in COPD Management

• Helping select appropriate/optimal therapy regimens
  – Provide appropriate counseling
    • Reviewing inhaler / nebulizer technique at every encounter
• Patient education
• Assess need for change in medication, non-adherence, treatment failures, appropriate OTC product use
  – Refill history, patient interview
• Encourage smoking cessation
  – Counseling
  – Nicotine Replacement Therapy
• Recommend and administer appropriate vaccinations
Immunizations

• Influenza
  – Receive annually

• Penumococcal Vaccine for patients with COPD
  – PPSV23 – Once with booster if necessary
    • If 65 or older, should receive BOTH PPSV23 and PCV13
      – PCV13 should be administered first
    • CDC guidelines recommend 1 year between these vaccines
Treating COPD Exacerbations

- Exacerbation definition:
  - Worsening symptoms beyond normal day-to-day variation and leads to a change in medication
  - Causes:
    - Infections, air pollution, etc.
  - Symptoms:
    - Increased dyspnea, increased cough, changes in sputum
  - Treatment with antibiotics if 2 of the following:
    - Increased sputum volume
    - Increased sputum purulence (must be present)
    - Increased shortness of breath
Newer Treatments and Inhaler Types
Newer COPD Treatments

• Aclidinium
  – Long-acting anticholinergic approved for maintenance treatment of COPD
  – BID inhalation

• Instructions for use of inhaler:
  – Remove cap, hold horizontally
  – Press and release green button to “load” the dose
  – Check if ready to use
    • (green above mouthpiece)
  – Inhale quickly and deeply through mouthpiece
    • Hear a click
    • Keep breathing in to get entire dose
  – Replace cap

Newer COPD Treatments

• Indacaterol
  – LABA approved for maintenance of COPD
  – Once daily inhalation (75 mcg)

• Instructions for inhaler use:
  – Remove cap, tilt mouthpiece to open inhaler
  – Insert capsule, close inhaler
  – Hold upright and puncture capsule by pushing both side buttons fully one time
  – Hold with buttons on left and right – quick deep breath
    • Hear whirring of capsule in chamber
  – May repeat breath if powder still left in capsule

Newer Asthma/COPD Treatments

• Fluticasone and Vilanterol
  – Corticosteroid and LABA
  – Approved for COPD and asthma
  – 18 y/o and older
  – One inhalation once daily

• Umeclidinium
  – Long-acting anticholinergic
  – Approved for COPD
  – One inhalation once daily

• Umeclidinium and Vilanterol
  – Long-acting anticholinergic and LABA
  – Approved for COPD
  – One inhalation once daily

https://www.drugs.com/pro/breo-ellipta.html
Newer Inhaler Types

• Respiclick
  – “Inhalation Powder inhaler”
  – Make sure cap closed before each dose
    • Check dose counter on back of inhaler
  – Open cap, and a “click” prepares the dose
    • Hold upright
  – Breath-actuated inhaler
• Close cap after each use

http://proair.com/respiclick/asthma-resources/respiclick-usage.aspx
Newer Inhaler Types

Soft-mist inhaler

• To get ready:
  – Remove clear base
  – Insert narrow end of cartridge into inhaler
  – Push down on inhaler until “click” into place
    • Do not remove once inserted
  – Put clear base back into place

• To use:
  – Turn clear base (180 degrees) in direction of arrows
  – Open cap until snaps fully open
    • Place lips around mouthpiece
  – Press button and inhale
  – Dose indicator on the side slides up as nearing empty

https://www.respimat.com/functions_and_use/howitworks.html
https://sk.lung.ca/lung-diseases/inhalers
Revisit Learning Assessment Questions
Patient JJ is a 14 year old male who presents to your pharmacy with his mother to refill his albuterol inhaler. He has no other medications on his profile. He states he uses his albuterol “some days” before soccer practice and as he needs it for shortness of breath. You notice that he last filled his inhaler 9 months ago and he states today that his dose counter shows he only has 10 doses left. What do you recommend for this patient?

A. Continue current therapy of SABA PRN, but recommend refilling the inhaler every 6 months
B. Add an Inhaled Corticosteroid (ICS)
C. Add a Long-Acting Beta-2 Agonist (LABA)
D. Add a combination of an ICS and LABA
E. Add montelukast
Learning Assessment Question 2

Which of the following is an appropriate use of tiotropium in a patient with asthma?

A. A 42 year-old patient needing a quick-relief inhaler when experiencing shortness of breath
B. Added onto SABA PRN and ICS in an 11 year old patient
C. Added onto SABA PRN, montelukast, ICS, and LABA in a 17 year old patient
D. None of the above – tiotropium should not be used in patients with asthma
Learning Assessment Question 3

While conducting a CMR with a 44 year old female patient, you note she is taking the following medications for her asthma:

- Fluticasone/salmeterol DPI 250/50mcg 1 puff BID
- Levalbuterol 45mcg 2 puffs q 4-6h PRN

She states she uses her fluticasone/salmeterol twice daily every day and has used her levalbuterol twice in the last 4 months. She has had 2 night time awakenings from her asthma in the last year, and reports a few symptomatic days every 2 weeks.

What is the best treatment recommendation for this patient?

A. Continue current therapy
B. Discontinue levalbuterol
C. Discontinue fluticasone/salmeterol
D. Decrease fluticasone/salmeterol to 100/50mcg 1 puff BID
E. Add tiotropium 1.25 mcg/actuation – 2 puffs daily
Patient MP is a 62 year old male who presents to your pharmacy counter today to pick up his budesonide/formoterol inhaler. He also wants to purchase an OTC product containing dextromethorphan, acetaminophen, and guaifenesin for his “cough and mucus.”

You ask him about his symptoms and he states he has had a cough for 2 days, but today it is “worse than most days” and it woke him up in the middle of the night. He uses his albuterol inhaler a few times a week and it usually relieves his coughing, but not today.

You ask him about his COPD history and he states that in the last year, he has had only 1 COPD exacerbation but it sent him to the Emergency Department.

Before today, which combined assessment patient group would MP have fallen into?

A. A: low risk, fewer symptoms
B. B: low risk, more symptoms
C. C: high risk, fewer symptoms
D. D: high risk, more symptoms
Learning Assessment Question 5

Patient MP is a 62 year old male who presents to your pharmacy counter today to pick up his budesonide/Formoterol inhaler. He also wants to purchase an OTC product containing dextromethorphan, acetaminophen, and guaifenesin for his “cough and mucus.”

You ask him about his symptoms and he states he has had a cough for 2 days, but today it is “worse than most days” and it woke him up in the middle of the night. He uses his albuterol inhaler a few times a week and it usually relieves his coughing, but not today.

You ask him about his COPD history and he states that in the last year, he has had only 1 COPD exacerbation but it sent him to the Emergency Department.

Today, which combined assessment patient group would MP fall into?

A. A: low risk, fewer symptoms
B. B: low risk, more symptoms
C. C: high risk, fewer symptoms
D. D: high risk, more symptoms
Learning Assessment Question 6

Patient MP is a 62 year old male who presents to your pharmacy counter today to pick up his budesonide/formoterol inhaler. He also wants to purchase an OTC product containing dextromethorphan, acetaminophen, and guaifenesin for his “cough and mucus.”

You ask him about his symptoms and he states he has had a cough for 2 days, but today it is “worse than most days” and it woke him up in the middle of the night. He uses his albuterol inhaler a few times a week and it usually relieves his coughing, but not today.

You ask him about his COPD history and he states that in the last year, he has had only 1 COPD exacerbation but it sent him to the Emergency Department.

What do you tell MP today at the pharmacy? Select all that apply.

A. The OTC product he selected will help his cough and mucus
B. Reassess MP’s albuterol inhaler technique
C. He would benefit from adding a new medication to his COPD regimen
D. Use his albuterol inhaler every 2 hours today and reevaluate tomorrow
E. Refer MP to his primary care provider today
References

References

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Breathe Easy
Asthma and COPD Update

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