Learning Objectives for Pharmacists: Upon completion of this CPE activity participants should be able to:
1. Compare and contrast the benefits and challenges of the new inhaler devices with previous devices
2. Describe the place in therapy of the newer medications in asthma and COPD
3. Explain the use of the new inhaler devices to patients

Speaker: Jean Moon, PharmD, BCACP
Dr. Moon is an associate professor for the University of Minnesota College of Pharmacy and adjunct associate professor the University of Minnesota School of Medicine. She is clinical faculty for the University of Minnesota North Memorial Family Medicine Residency Program where she provides comprehensive medication management services for a medically underserved patient population. Dr. Moon is the Program Director for the University of Minnesota College of Pharmacy PGY-1 pharmacy residency program within ambulatory care setting across the state. She received her Doctor of Pharmacy and completed a PGY1 pharmacy residency in 2005 from the University of Minnesota College of Pharmacy. Dr. Moon currently provides pulmonary content for pharmacy and medical students and residents in addition to serving as faculty for the ACCP Ambulatory Care Pharmacy Preparatory Review and Recertification Course.

Speaker Disclosure: Jean Moon reports no actual or potential conflicts of interest in relation to this CPE activity. Off-label use of medications will not be discussed during this presentation.
Clinical Pearls: Pulmonary Medicine

Jean Moon, PharmD, BCACP
Associate Professor
University of Minnesota College of Pharmacy

Disclosure

• Dr. Jean Moon reports no actual or potential conflicts of interest associated with this presentation
Learning Objectives

- Upon successful completion of this activity, participants should be able to:
  
  • Describe the place in therapy of the newer medications in asthma and COPD
  
  • Compare and contrast the benefits of new inhaler devices with previous devices
  
  • Explain the use of the new inhaler devices to patients

Types of Inhaler Devices

- Metered dose inhalers (MDIs)
- Single dose dry powder inhalers (DPIs)*
- Newer multi-dose DPIs*
- Breath actuated DPI*
- Soft mist inhaler (SMI)

*All DPIs contain lactose and should be avoided in patients with severe hypersensitivity to milk or milk products
Newer MDIs

- ICS/LABA
  - Budesonide/formoterol (Symbicort)
  - Mometasone/formoterol (Dulera)

- Short-acting muscarinic antagonist (SAMA)
  - Ipratropium (Atrovent HFA)

- LAMA/LABA combination
  - Glycopyrrolate/formoterol (Bevespi Aerosphere)

Clinical Pearl: Budesonide/formoterol (BF)

- BF combination may be superior to fluticasone/salmeterol for asthma exacerbation\(^1\)

- BF combination may be used as a rescue inhaler\(^2\)

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Newer Single Dose System DPIs

• LABA
  • Indacaterol (Arcepta Neohaler)

• LAMA
  • Glycopyrrolate (Seebri Breezhaler)

• LAMA/LABA
  • Glycopyrrolate/indacaterol (Utibron Breezhaler)

Newer Multi-Dose DPIs

• LAMA
  • Aclidinium (Tudorza Pressair)
Newer Multi-Dose DPIs cont.

- ICS
  - Fluticasone furoate (Arnuity Ellipta)

- ICS/LABA
  - Fluticasone furoate/vilanterol (Breo Ellipta)

- LAMA
  - Umeclidinium (Incruse Ellipta)

- LAMA/LABA
  - Umeclidinium/vilanterol (Anoro Ellipta)

Breath-Actuated DPI

- SABA
  - Albuterol (ProAir RespiClick)
SMI

- LAMA
  - Tiotropium (Spiriva Respimat)

- LABA
  - Olodaterol (Striverdi Respimat)

- LAMA/LABA
  - Tiotropium/olodaterol (Stiolto)

Using the SMI

Turn: the clear base

Open: the green cap and close your lips around the mouthpiece

Press: the dose-release button and inhale the mist

Courtesy of Google Images
Clinical Pearl: Tiotropium

- Respimat® FDA indicated for:
  - Patients > 12 year of age for asthma
  - Patients with COPD, including chronic bronchitis emphysema

- GINA recommends tiotropium as an add-on option in Step 4 management of asthma

Asthma-COPD Overlap Syndrome (ACOS)

- Persistent airflow limitation

Asthma features

Asthma-COPD Overlap Syndrome features

COPD features
Step 1: Does the patient have chronic airway disease?

Step 2: Syndromic diagnosis of asthma, COPD and ACOS in an adult patient

Step 3: Spirometry

Step 4: Commence initial therapy

Step 5: Referral for specialized investigators (if necessary)

Clinical Pearl: Use a Stepwise Approach

Patient Case: Jason

- 43 year old male
- 20 ppd cigarette history
- Childhood diagnosis of asthma
- BMI = 32 kg/m²

- Having increasing symptoms (past 2-3 years) of coughing, shortness of breath, worse at night
ACOS Step 1: Chronic Airway Disease?

- Clinical history
- Physical examination
- Radiology
- Screening questionnaires

Patient Case: Jason

- On physical exam, normal lung sounds
- Works at a manufacturing factory with harsh chemicals
- Normal chest x-ray
### ACOS Step 2: Syndromic Diagnosis

<table>
<thead>
<tr>
<th>Feature</th>
<th>Asthma</th>
<th>COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of onset</td>
<td>&lt; 20 y</td>
<td>&gt; 40 y</td>
</tr>
<tr>
<td>Pattern of symptoms</td>
<td>Variable; worse at night or early morning; triggers</td>
<td>Persistent; daily (+/-); unrelated to triggers</td>
</tr>
<tr>
<td>Lung function</td>
<td>Variable</td>
<td>Persistent airflow limitation</td>
</tr>
<tr>
<td>Lung function between symptoms</td>
<td>Normal</td>
<td>Abnormal</td>
</tr>
<tr>
<td>Past or family history</td>
<td>Asthma DX; FHX and allergic history</td>
<td>COPD, chronic bronchitis or emphysema DX; environmental exposure</td>
</tr>
<tr>
<td>Time course</td>
<td>No worsening over time</td>
<td>Symptoms slowly worse</td>
</tr>
<tr>
<td>Chest X-ray</td>
<td>Normal</td>
<td>Severe hyperinflation</td>
</tr>
</tbody>
</table>

### ACOS Step 3: Spirometry

**Spirometry interpretation**

- **Normal Spirometry**
- **Mild Obstruction**
- **Severe Obstruction**
- **Possible Restriction**

Courtesy of Google Images
Patient Case: Jason

- On spirometry:
  - Moderate airway obstruction
  - >12% FEV1 reversibility post-bronchodilator

ACOS Step 4: Initial Therapy

- Treatment
- Self-management
- Regular follow-up
- Co-morbidity

Courtesy of Google Images
Patient Case: Jason

- Recommendations:
  - Quit smoking
  - Regular physical activity
  - Vaccinations

ACOS Treatment

- Initiate inhaled corticosteroid (ICS) or
- Add bronchodilator
- No long-acting bronchodilator (LABA) monotherapy
- Prefer no ICS monotherapy
Patient Case: Jason

- 2 week follow-up, patient reports no change in symptoms
- Taking new medications, but was not able to quit smoking or increase physical activity

ACOS Step 5: Referral

- Persistent symptoms or exacerbations with treatment
- Diagnostic uncertainty
- Atypical symptoms
- Few syndromic features of both
- Co-morbidities
GOLD 2017 Updates

- COPD definition
- ABCD assessment tool
- Inhaler technique
- Escalation and de-escalation of treatment
- Hospital discharge and follow up criteria including integrated team care
- Co-morbidities and polypharmacy


ABCD Assessment Tool Simplified

- Spirometrically confirmed diagnosis (FEV1/FVC < 0.7)
- Assessment of airflow limitation (grade)
- Exacerbation history
- ABCD (group)
- Assessment of symptoms/risk of exacerbation
Clinical Pearl: Use the New ABCD Assessment Tool

Exacerbation history

- 2 or > 1 leading to hospitalization: C
- 0 or 1 (not leading to hospitalization): A

mMRC 0-1, CAT < 10: A
mMRC > 2, CAT > 10: B

Symptoms

Stable Treatment Recommendations

Group C
- LAMA
- Further exacerbation(s)
- LAMA+LABA
- LABA+ICS

Group D (abbreviated)
- LAMA+LABA+ICS
- LABA+ICS
- LAMA
- LABA+LABA
- LABA

Group A
- A bronchodilator
- Continue, stop or try alternative class of bronchodilator

Group B
- LABA or LAMA
- LAMA+LABA
Clinical Pearls Summary

• Budesonide/formoterol combination
  • May be superior to fluticasone/salmeterol for asthma exacerbation
  • May be used as a rescue inhaler

• Tiotropium
  • Respimat® FDA indicated for patients > 12 year of age for asthma
  • Consider as add-on therapy

• ACOS
  • Use a stepwise approach

• COPD
  • Use the new ABCD assessment tool

QUESTIONS