COPD: Treatment Updates and Transitions of Care

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Ensuring Safe Transitions of Care in Patients with CHRONIC OBSTRUCTIVE PULMONARY DISEASE

COPD: Treatment Updates and Transitions of Care

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Provided by ASHP and sponsored by Sunovion Pharmaceuticals, Inc.

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- Spouse is an employee and owns stock: GlaxoSmithKline

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Learning Objectives

• Describe the epidemiology and societal impact of COPD
• Discuss the risk factors for COPD and smoking cessation strategies
• Choose appropriate treatment regimens for patients with COPD
• Using a patient case, develop a plan to manage a patient with an acute exacerbation of COPD requiring hospitalization
• Develop a plan to coordinate the transitions of care for a patient with COPD
• Discuss appropriate inhaler selection and assessment and the effect on transitions of care

How many patients with COPD do you provide care to each month?

a. Less than 20
b. 21-50
c. 51-100
d. More than 100
e. None – I am not directly involved in patient care

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Defining COPD

• Global Initiative for Chronic Obstructive Lung Disease
  “Common, preventable and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases.”

• Defined via spirometry
  – Presence of Disease
    • FEV1/FVC< LLN or 0.70
  – Severity of Disease
    • FEV1 impairment

Epidemiology of COPD

• Global Impact
  – ~251 million cases of COPD in 2016
  – 3.0 million COPD deaths in 2016 (~5% of global deaths)
  – 3rd leading cause of death in 2016
    • Projected to be 3rd leading cause of death by 2020

• National Impact
  – ~16-24 million cases of COPD in 2011
  – 160,000 deaths in 2017
  – 4th leading cause of death

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Prevalence of Chronic Obstructive Pulmonary Disease (COPD) for Adults Aged ≥18 Years by State, United States, BRFSS 2014


Age-Standardized Death Rates for Chronic Obstructive Pulmonary Disease (COPD)—United States, 1999-2014


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Impact of COPD on Patients

- Quality of life
- Lung function
- COPD exacerbations
- Hospitalization
- Mortality

Impact of COPD on Society

- COPD-attributable costs
  - $32.1 billion (2010) increased to $49.0 billion (2020)
- ~16 million days of lost work
- 923,000 ED visits (2017)
- Four leading COPD inhalers account for > $8 billion expenditure (2015)


www.cdc.gov/copd
Risk Factors for COPD

- Tobacco Smoke
- Everything else (other occupational and environmental gases)
- Global Contributors:
  - Polluting industries and the use of fossil fuels
  - Unsafe methods for indoor cooking, heating and lighting

Inflammation in COPD

- Burning Hydrocarbons
  - Generate
  - Activates Respiratory Tract Macrophages
  - Release Neutrophils
  - Proteases
  - Release
  - Resulting in Airway and Parenchymal Damage
Treatment Goals: Stable COPD

- **Reduce Symptoms**
  - Relieve symptoms
  - Improve exercise tolerance
  - Improve overall health status

- **Reduce Risks**
  - Prevent disease progression
  - Prevent and treat exacerbations
  - Reduce mortality
  - Prevent and treat complications
  - Minimize side effects

Non-Pharmacologic Treatment

- Education and self-management
- Smoking cessation (including pharmacotherapy)
- Physical activity and exercise
- Vaccination

- Pulmonary rehabilitation
- Nutritional support
- Supplemental oxygen
- End of life and palliative care

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The 5 A’s*

- **ASK** about tobacco use
- **ADVISE** tobacco users to QUIT
- **ASSESS** readiness to make a quit attempt
- **ASSIST** with the QUIT ATTEMPT
- **ARRANGE** follow-up care

* All clinicians should assess tobacco use regularly and offer help with cessation
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What is the most important factor you consider when assessing a COPD patient's disease control?

a. Respiratory symptoms
b. COPD exacerbation history
c. Quality of life
d. Hospitalization frequency
e. A & B

How to choose the appropriate treatment regimen for COPD patients

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>mMRC 0-1</td>
<td>mMRC ≥2</td>
</tr>
<tr>
<td></td>
<td>CAT &lt;10</td>
<td>CAT ≥10</td>
</tr>
</tbody>
</table>

Symptoms

Exacerbation History

≥2*

0-1

Exacerbation Risk

• Two domains
  – Symptoms
    • modified Medical Research Council (mMRC) score
    • COPD Assessment Test™ (CAT)
  – Future exacerbation risk
    • Prior exacerbation history

* Or 1 exacerbation resulting in hospitalization

Adapted from www.goldcopd.org

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mMRC Questionnaire

<table>
<thead>
<tr>
<th>mMRC Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 I only get breathless with strenuous exercise</td>
</tr>
<tr>
<td>1 I get short of breath when hurrying on the level or walking up a slight hill</td>
</tr>
<tr>
<td>2 I walk slower than people of same age on the level because of breathlessness,</td>
</tr>
<tr>
<td>or I have to stop for breath when walking at own pace on the level</td>
</tr>
<tr>
<td>3 I stop for breath after walking about 100 meters or after a few minutes on the</td>
</tr>
<tr>
<td>level</td>
</tr>
<tr>
<td>4 I am too breathless to leave the house or I am breathless when dressing or</td>
</tr>
<tr>
<td>undressing</td>
</tr>
</tbody>
</table>

COPD Assessment Test™

- **8 domains**
  - Scores range 0-5
  - Max score: 40
- **Suboptimal symptoms**
  - Total score ≥10

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COPD Therapies:
Both a molecule and a device

- Pressurized metered dose inhaler
- Soft mist inhaler
- Dry powder inhalers
  - Diskus, Handihaler, Ellipta, Neohaler, Pressair
- Nebulizer
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### Maintenance Inhaler Therapies

<table>
<thead>
<tr>
<th>Metered Dose Inhaler</th>
<th>Dry Powder Inhaler</th>
<th>Soft Mist Inhaler</th>
<th>Nebulizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABA</td>
<td>Arcapta® (Indacaterol maleate) Serevent® (Salmeterol xinafoate)</td>
<td>Striverdi® (Olodaterol hydrochloride)</td>
<td>Brovana® (Arformoterol tartrate) Perforomist® (Formoterol fumarate)</td>
</tr>
<tr>
<td>LAMA</td>
<td>Spiriva® HandiHaler® (Tiotropium bromide) Seebri® (Glycopyrrolate) Incruse® (Umeclidinium bromide) Tudorza® (Aclidinium bromide)</td>
<td>Spiriva® Respimat® (Tiotropium bromide)</td>
<td>Yupelri® (Revefenacin) Lonhala® (Glycopyrrolate)</td>
</tr>
<tr>
<td>ICS</td>
<td></td>
<td></td>
<td>Pulmicort® (Budesonide)</td>
</tr>
<tr>
<td>LAMA/LABA</td>
<td>Bevespi® (Formoterol fumarate; glycopyrrolate) Utibron® (Glycopyrrolate; Indacaterol maleate) Anoro® (Umeclidinium bromide; Vilanterol trifenate)</td>
<td>Stiolto® Respimat® (Olodaterol hydrochloride; Tiotropium bromide)</td>
<td></td>
</tr>
<tr>
<td>LABA/ICS</td>
<td>Advair® HFA (Fluticasone propionate; Salmeterol xinafoate) Symbicort® HFA (Budesonide; Formoterol fumarate dihydrate)</td>
<td>Advair® Diskus® (Fluticasone propionate; Salmeterol xinafoate) Symbicort® Turbuhaler® (Budesonide; Formoterol fumarate dihydrate) Dulera® (Formoterol fumarate; Mometasone furoate) Breo® (Fluticasone furoate; Vilanterol trifenate)</td>
<td></td>
</tr>
<tr>
<td>LABA/LAMA/ICS</td>
<td>Trelegy® (Fluticasone furoate; Umeclidinium bromide; Vilanterol trifenate)</td>
<td></td>
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</tr>
</tbody>
</table>

### The Importance of Reassessment

**FOLLOW-UP PHARMACOLOGICAL TREATMENT**

1. **IF RESPONSE TO INITIAL TREATMENT IS APPROPRIATE, MAINTAIN IT.**
   - Consider the prednisolone inhaler dose to target dyspnea or exacerbations
   - Use exacerbation pathway if both exacerbation and dyspnea need to be targeted
   - Place patient in box corresponding to current treatment & follow indications
   - Assess response; adjust and reassess
   - These recommendations do not depend on the AECG assessment at diagnosis

2. **IF NOT**
   - Consider switching to another inhaler device or molecule
   - Investigate and treat other causes of dyspnea

- **DYSPNEA**
  - LABA or LAMA
  - LABA + LAMA
  - LABA + ICS
  - LABA + LAMA + ICS

- **EXACERBATIONS**
  - LABA or LAMA
  - LABA + LAMA
  - LABA + ICS
  - LABA + LAMA + ICS
  - Inhaled steroids
  - Azithromycin

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Meet SM

- SM is a 63 year old Hispanic male with COPD attributed to a 50 pack-year smoking history.
- He quit smoking 3 years ago and is treated with a tiotropium inhaler (soft mist inhaler), two inhalations daily and an albuterol MDI PRN.
- For the past week, he has experienced increased dyspnea and a cough that is more frequent and productive of a darker, thicker sputum than usual. He reports that his inhaler only provides temporary relief.
- The patient appears uncomfortable and in distress with labored breathing. BP is 134/82, P 92, R 24.
- SM is afebrile and his lung exam reveals more crackles than usual with decreased breath sounds in the bases.
- His oxygen saturation is 90%, down from his usual 93%.

SM

- He is also diagnosed with hypertension which is controlled with amlodipine 10 mg daily.
- Based on his presenting signs and symptoms, and concerns about his support at home, he is admitted for treatment and observation of this COPD exacerbation.
Management Strategies for Treating Exacerbations

- Intensify short-acting (rescue) bronchodilator regimen
- Systemic corticosteroids (e.g., prednisone) for 5 to 10 days
- Antibiotics for 5 to 10 days (usually)
- Supplemental oxygen if warranted
- Non-invasive ventilation (in hospital) if warranted to avoid ventilator
  - CPAP – continuous positive airway pressure ventilation
  - BiPAP – bilevel positive airway pressure ventilation

Antibiotic Recommendations for COPD Exacerbations

- GOLD recommendations largely based on 1987 recommendations (Anthonisen) which considers:
  - Increased dyspnea
  - Increased sputum volume
  - Increased sputum purulence
- Based on criteria, antibiotics warranted if:
  - All 3 are present
  - 2 are present and include sputum purulence

- Up To Date recommends antibiotics if any 2 of the 3 are present
What is the most important time to address transitions of care for a COPD patient?

a. Admission day
b. During inpatient stabilization
c. Day of discharge
d. Chronic care management encounters
e. All the above
Transitions of Care- Admission Day

• Confirm accurate diagnosis
• Review exacerbation history
• Develop daily action plan
• Ancillary assessments
  – Nutrition
  – Occupational and physical therapy

Transitions of Care- Discharge Planning

• Specialist consultation
• Smoking cessation
• Vaccinations
• Address comorbidities
• Mobility assessment
• Pulmonary rehabilitation referral

• Review insurance coverage
• Formulary assessment
• Begin inhaler education
  – Teach and teach-back
• Review COPD action plan

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Transitions of Care- Discharge

- Appropriate level of care
- Durable medical equipment needs
  - Oxygen
  - Nebulizer supplies
- Review COPD action plan
- Ensure appropriate follow-up with PCP and specialists
- Review home inhaler regimen
- Confirm appropriate COPD therapy selection
  - Molecule(s)
  - Device
- Inhaler education

Transitions of Care- Chronic Care Management

Phase 1- Immediate Needs

- Medication reconciliation
- Review GOLD strategies
  - Symptom assessment
- Review COPD action plan
- Inhaler technique assessment and education
- Manage comorbidities
- Assess goals of care
- Smoking cessation
- DME needs
- Home health needs
Transitions of Care- Chronic Care Management
Phase 2- Stable chronic management

- Assess disease control
  - Exacerbation history
  - Symptoms
- Inhaler technique assessment and education
- Review COPD action plan
- Pulmonary rehabilitation candidacy
- Communication between care teams

- Smoking cessation
- Physical activity
- Screen for alpha-1 antitrypsin deficiency
- Lung cancer screening
- Bone density testing
- Sleep apnea/hypercarbia screening
- Advanced care planning

COPD Action Plan

- Shown to improve outcomes
- Is similar to an asthma action plan
- Describes chronic therapy
- Includes instructions about how to assess current symptoms and take action
- Also describes other resources available to patient and how to access them
What is the most important factor you consider when selecting a device for respiratory medication delivery?

a. Patient preference
b. Patient capabilities
c. Delivery system
d. Inspiratory force

Collaborating with Patient for Medication and Inhalation Device Selection

**Inhalational Therapies**

- **Use of devices is a skill**
  - Requires education, practice and coaching
- **Patient should be counseled about the purpose/role of specific medication and expected effects/possible side effects**
- **Education about proper use and care of inhalational device should be provided**
- **Periodic assessment of device use with reinforcement is required**
  - Technique can deteriorate without reinforcement
General Inhalation Device Selection Considerations

- Hand-lung coordination
- Manual dexterity considerations
  - Assembly of device
  - Loading doses
  - Actuating device
- Inspiratory force required
- Poor vision
- Ability to clean device

Common Mistakes with Inhalation Devices

- Not shaking
- Not priming
- Not correctly loading dose
- Not exhaling prior to dose
- Not holding breath
- Multiple actuations with single inhalation

- Holding incorrectly
- Poor coordination of spray and inhalation
- Wrong inhalation rate
- Using empty inhaler
- Inadequate cleaning
The perfect inhalation device does not exist

The optimal inhalation device is the one that is best for an individual patient in a specific situation and setting

Issues We Have Encountered....

**Metered Dose Inhalers (MDI)**
- Problems with inhalation
  - rate
  - depth
  - duration
- “hand-lung” coordination
- Multiple sprays with single inhalation
- Clogged inhalation port

**Dry Power Inhalers (DPI)**
- Problems with inhalation
  - rate
  - depth
  - duration
- Failure to load dose
- Dumping dose
- Improper cleaning
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**Issues We Have Encountered....**

**Holding Chambers**
- Problems with inhalation
  - rate
  - depth
  - duration
- Loading multiple doses
- Static electricity
- Inadequate cleaning

**Nebulizers**
- Incorrect preparation of dose
- Long administration times
- Failure to adequately clean equipment
- Intolerance to mask (e.g., infants and children)

**Aerosol Product Recipe**

- **Drug Molecular Characteristics and Properties**
- **Delivery Device Characteristics and Properties**

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Considerations When Counseling Patients Regarding Inhalation Devices

- Inhalation technique vary
  - pMDI-slow, deep inhalation
  - DPI – rapid, forceful inhalation
- MDI is often 2 puffs, DPI is usually 1 puff
- Mouth-rinsing recommended for ICS
- Periodic cleaning of devices is required, but differs according to product
- For patients using multiple inhalers, consider using the same device technology if possible

Factors influencing initial choice for bronchodilators in COPD

- Safety and effectiveness
  - Effect on disease course
- Patient preference and response
- Clinician experience
- Convenience
- Access (insurance coverage) and costs
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COPD Transitions of Care Resource

- www.copdcare.org
- Device selection
- Symptom assessment
- Resource library
- Toolkits
- Key resources

Management of COPD requires standardized assessment of symptom burden and future exacerbation risk. This assessment should occur across the phases of COPD care.

Inhaler selection involves consideration of the appropriate molecule and the appropriate device, tailored to the individual patient.

Improving COPD care starts with admission and continues as they transition from the hospital to the rehabilitation/long term care setting or to home.
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Selected Resources

- Global strategy for the diagnosis, management, and prevention of COPD (GOLD 2019 Report). Available at [www.goldcopd.org](http://www.goldcopd.org)
- COPD Foundation: [www.copdfoundation.org](http://www.copdfoundation.org)

After participating in today's activity, which of the following practice changes will you consider making (Select all that apply)?

a. Incorporate standardized assessment of COPD symptoms and exacerbation history into patient visits
b. Incorporate most current evidence-based guidelines into practice when treating patients for nicotine addiction and smoking cessation
c. Educate team members on the unique attributes of the different inhaler delivery devices
d. Collaborate with healthcare professionals across the COPD care spectrum to formulate transitions plans for COPD patients
e. Utilize online resources to improve the delivery of care to COPD patients
Thank you for joining us

This activity is not eligible for CE Credit

To review the Resource Center and Toolkit visit copdcare.org