Should we be Holding our Breath?
Updates in Current Management of COPD

Nada Farhat, PharmD, BCPS
PGY2 Ambulatory Care Pharmacy Resident
University of Michigan Health System
Clinical Instructor
University of Michigan College of Pharmacy

Amber Lanae Smith, PharmD, BCPS
Clinical Pharmacy Specialist, Ambulatory Care
Henry Ford Health Systems
Clinical Assistant Professor
Department of Pharmacy Practice
Eugene Applebaum College of Pharmacy and Health Sciences
Wayne State University

Pharmacy Technician Objectives

• Identify different inhaler devices for patients with COPD
• List appropriate counseling points for specific inhalers
• Identify patient factors that may help aid in the selection of specific treatment options

Disclosure

• The presenters have no conflicts of interest regarding the content of this presentation

Pharmacist Objectives

• Discuss new GOLD recommendations for COPD management
• Evaluate new treatment options and inhaler devices for COPD
• Formulate factors that help aid in the selection of specific treatment options for COPD

COPD Definition

Common, preventable, treatable disease

Chartered by persistent respiratory symptoms and airflow limitation

Symptoms due to airway and/or alveolar abnormalities

Epidemiology

• >15 million Americans
• Under-recognized and under-diagnosed
• Major cause of morbidity
• Increases with age
• Significant mortality
• Now the 3rd leading cause of death in the US

Global Strategy for the Diagnosis, Management, and Prevention of COPD: Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2017
COPD Rates in Michigan

COPD Prevalence in Adults by State, 2013


Etiology

Cigarette smoking
• Responsible for 85-90% of cases

Exposures
• Environmental tobacco smoke
• Occupational dusts and chemicals
• Air pollution

Host factors
• Genetic predisposition (alpha-1 antitrypsin deficiency)
• Airway hyperresponsiveness
• Impaired lung growth
• Age

Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2017

Pathophysiology

Exposure to noxious particles

Host factors
• Genetic predisposition
• Airway hyperresponsiveness
• Impaired lung growth
• Age

Pathophysiology
• Impaired lung growth
• Lung and systemic inflammation
• Accelerated decline

Emphysema
Parenchymal tissue destruction

Small airway fibrosis
Disruption of normal repair and defense mechanisms

Diagnosis

Spirometry
FVC: amount of air expired as long as possible
FEV1: amount of air expired during the first second of the FVC maneuver
FEV1/FVC: ratio used to determine if pattern is obstructive, restrictive, or normal

Clinical Presentation

Dyspnea
• Persistent
• Characteristically worse with exercise
• Progressive and worse over time

Chronic cough
• May be intermittent and unproductive

Chronic sputum production
• Any pattern of chronic sputum production

Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2017
2017 Guideline Updates

Changes in 2017 Guidelines
- Staging/classification based on ABCD assessment tool
- Shift toward more individualized treatment with integrated care
- Symptoms and exacerbation risk guide treatment
- Emphasis on inhaler technique

COPD Assessment Test (CAT)
- Comprehensive test
- Score ranges 0-40
- Applicable worldwide
- Available in several validated translations

Modified British Medical Research Council (mMRC) Questionnaire

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

ABCD Assessment Tool
- Confirmed diagnosis by sputumery
- 2. Assess airflow limitation
- 3. Assess symptoms & risk of exacerbations

St. George’s Respiratory Questionnaire (SGRQ)
- 50-item questionnaire
- Three component scores are calculated
  - Symptoms
  - Activity
  - Impacts
- One total score is also calculated
- Minimum change in score of 4 units is established as clinically relevant
Audience Participation

Which of the following factors must be considered when assessing and staging a patient's severity of COPD?

- Spirometry
- Airflow limitation
- Symptoms
- Risk of exacerbations
- All of the above

Changes in 2017 Guidelines

- Staging/classification based on ABCD assessment tool
- Shift toward more individualized treatment with integrated care
- Symptoms and exacerbation risk guide treatment
- Emphasis on inhaler technique

Treatment Goals: Stable COPD

- REDUCE SYMPTOMS
  - Relieve symptoms (SOB, sputum production, etc.)
  - Improve exercise tolerance
  - Improve health status
- REDUCE RISK
  - Prevent disease progression
  - Prevent and treat exacerbations
  - Reduce mortality

Non-Pharmacologic Treatment

- Smoking Cessation
  - Counseling
  - Nicotine replacement therapy
- Preventive Care
  - Minimize second hand smoke and occupational fumes
  - Monitor pollution index and stay indoors when pollution is high
- Vaccinations
  - Influenza
  - Pneumococcal
- Supportive Care
  - Regular physical activity
  - Oxygen
  - Pulmonary rehabilitation

Pharmacologic Options for Stable COPD

- Bronchodilators
  - Short-acting beta agonists (SABA)
  - Long-acting beta agonists (LABA)
  - Short-acting antimuscarinic (SAMA)
  - Long-acting antimuscarinic (LAMA)
  - Methylxanthines
- Anti-Inflammatory Therapy
  - Inhaled Corticosteroids (ICS)
  - Oral glucocorticoids
  - Phosphodiesterase-4 inhibitors
  - Antibiotics
  - Mucolytics
Timeline of Inhaler Availability

- Serevent (1997)
- Foradil (2001)
- Brovana (2006)
- AstraZeneca Neohaler (2011)
- Spiriva Handihaler (2004)
- Tudorza Pressair (2012)
- Incaze Ellipta (2014)
- Seebri Neohaler (2015)
- Spiriva Respimat (2014)

Pharmacology

- **LABAs**: Target B2 receptors, throughout the lungs and distal airways
- **LAMAs**: Target M3 receptors, more concentrated in proximal airways

Dual Bronchodilation

2017 Treatment Algorithm

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

**Group D**
- LABA + ICS
- Further exacerbation(s)

**Group A**
- LABA + LAMA
- Evaluate effect
- A long-acting bronchodilator (LABA or LAMA)

**Group B**
- LAMA + LABA
- Further exacerbation(s)
- Persistent symptoms

2017 GOLD Guidelines

- Discontinue the LABA and start a LAMA
- Add an ICS
- Add a LAMA
- Add a LAMA and an ICS

Audience Participation

According to the 2017 GOLD Guidelines, which of the following is the appropriate treatment strategy for a patient in Group B who is currently on a LABA inhaler, but now experiencing increased symptoms?

- [ ] a. Discontinue the LABA and start a LAMA
- [ ] b. Add an ICS
- [ ] c. Add a LAMA
- [ ] d. Add a LAMA and an ICS

LABA/LAMA Combination Inhalers
LAMA/LABA Combination Inhalers

General Considerations

- Concomitant anticholinergic use
- MAOIs and TCAs
- Beta-blockers
- Non-potassium sparing diuretics

Interactions

- Worsening of narrow-angle glaucoma and urinary retention
- Hypokalemia and hyperglycemia

Precautions

- Do not initiate in acutely deteriorating patients
- Not for relief of acute symptoms
- LABAs contraindicated in patients with asthma without use of long-term controller

Warnings

Vilanterol/Umeclidinium (Anoro Ellipta)

Dosing

- Administration via inhaler (1 inhalation daily; DPI formulation)

Pharmacokinetics

- Metabolism: CYP3A4 (VI); (CYP2D6 (UMEC)

Adverse Effects

- Pharyngitis, sinusitis, lower respiratory tract infections, constipation/diarrhea, pain in extremity, muscle spasms, rash and chest pain

Contraindications

- Contraindicated if severe hypersensitivity to milk proteins or ingredients/excipients

Drug Interactions

- Strong CYP3A4 inhibitors: use with caution

Vilanterol/Umeclidinium (Anoro Ellipta)

Donohue et al.

Study Design

- 24-week randomized, double-blind, placebo-controlled, parallel group study

Patients

- N = 1532 patients with moderate to very severe COPD

Interventions

- Treatment groups
  - UMEC/VI 62.5 mcg/25 mcg
  - UMEC 62.5 mcg
  - VI 25 mcg
  - Placebo

Outcomes

- Improved FEV1 in all groups compared to placebo
- No safety differences
- HRQoL similar in all active treatment groups
- Decreased exacerbations

Cohen JS et al.


Decramer M et al.


Vilanterol/Umeclidinium (Anoro Ellipta)

Decramer et al.

Study Design

- 24-week replicate study that included an active control

Patients

- Patients with moderate to very severe COPD
  - N = 846 in study 1; N = 872 in study 2

Interventions

- Study 1: UMEC/VI (2 doses), TIO, VI monotherapy
  - Study 2: UMEC/VI (2 doses), TIO, UMEC monotherapy

Outcomes

- Study 1: UMEC/VI (2 doses) had greater improvement in FEV1 compared to TIO and VI (p < 0.005)
  - Study 2: UMEC/VI (2 doses) had greater improvement in FEV1 compared to TIO (p < 0.05), but not UMEC (p = 0.38)
  - No difference between active treatments in dyspnea, HRQoL, or exacerbations

Cohen JS et al.


Decramer M et al.


Ellipta® Device

- Requires no hand-breath coordination
- Single-step dose activation
- Opening and closing cover will result in lost dose if not inhaled
- Patients report improved ease-of-use compared to diskus

Vilanterol/Umeclidinium (Anoro Ellipta)

Hezamer et al.

Study Design

- 24-week replicate study that included an active control

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Vilanterol/Umeclidinium (Anoro Ellipta)

- Combo vs Monotherapy
- Combo vs Tiotropium

Olodaterol/Tiotropium (Stiolto Respimat)

- Dosing
  - 2 inhalations (each 2.5 mcg/2.5 mcg) once daily (Resimat formulation)

- Pharmacokinetics
  - Metabolism: glucuronidation, O-demethylation (Olo), partly hepatic (25%) but excreted mostly unchanged (Tio)

- Adverse Effects
  - Nasopharyngitis, cough, and back pain

- Contraindications/Precautions
  - Contraindicated if hypersensitivity to any ingredients or excipients; immediate hypersensitivity reactions occurred in clinical trials
  - Patients with renal impairment should be monitored for anticholinergic side effects

Olodaterol/Tiotropium (Stiolto Respimat)

- Proven efficacy with lower doses of medication
- Reduces oropharyngeal medication deposition
- Approximately 75% of particles are absorbed
- May not be easily used by all patients

Olodaterol/Tiotropium (Stiolto Respimat)

- Study Design
  - 52-week replicate, R, DB, active-controlled, PG study

- Patients
  - N = 5162 patients with moderate to very severe COPD

- Interventions
  - Treatment groups
    - Tio/Olo 2.5/5 mcg or 5/5 mcg
    - Tio 2.5 or 5 mcg
    - Olo 5 mcg

- Outcomes
  - Improved FEV1 in all groups with combination
  - No safety differences
  - HRQoL improved vs. mono-components, but only in Tio/Olo 5/5 mcg
  - Exacerbations?

Olodaterol/Tiotropium (Stiolto Respimat)

- Trough FEV1 Response

- P < 0.0001 for all comparisons
Indacaterol/Glycopyrrolate (Utibron Neohaler)

Neohaler Device

- Breath-actuated device
- Requires several steps for dose activation
- Dexterity and strength needed to prepare doses
- Advise patients to now swallow capsules

FLIGHT 1 & 2 Study Design
- Two 12-week replicate R, DB, PG placebo and active-controlled studies
- Patients: N = 2038 patients with moderate to very severe COPD
- Interventions:
  - Treatment groups (all given BID via neohaler):
    - Indacaterol/Glycopyrrolate 27.5/15.6 mcg
    - Indacaterol 27.5 mg
    - Glycopyrrolate 15.6 mcg
    - Placebo
- Outcomes:
  - Improved FEV₁ in all groups with combination
  - No safety differences
  - HRQoL improved vs. mono-components

Indacaterol/Glycopyrrolate (Utibron Neohaler)

Dosing
- Inhale contents of 1 capsule (27.5 mcg/15.6 mcg) twice daily (neohaler formulation)

Pharmacokinetics
- Metabolism: UGT1A1 and CYP3A4 (Indacaterol); minimal (Glyco)

Adverse Effects
- Nasopharyngitis, hypertension

Contraindications/Precautions
- Contraindicated if hypersensitivity to any ingredients or excipients
- Use in patients with severe renal impairment should be considered only if benefit outweighs risk

Formoterol/Glycopyrrolate (Bevespi Aerosphere)
Formoterol/Glycopyrrolate (Bevespi Aerosphere)

- Requires hand-breath coordination
- Device familiarity
- Difficult to master technique
- Co-Suspension™ Delivery Technology may improve drug delivery

Co-Suspension™ Delivery Technology

- Prevent interaction of drug crystals
- Allow for more consistent dosing

Formoterol/Glycopyrrolate (Bevespi Aerosphere)

<table>
<thead>
<tr>
<th>Study Design</th>
<th>PINNACLE 1 &amp; 2</th>
</tr>
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<tbody>
<tr>
<td>Study</td>
<td>24-week replicate, R, DB, PC, PG study</td>
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<tr>
<td>Patients</td>
<td>N = 3718 patients with moderate to very severe COPD</td>
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<tr>
<td>Interventions</td>
<td>Treatment groups (all twice daily except tiotropium)</td>
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<tr>
<td></td>
<td>• Glyco/formoterol 18 mcg/9.6 mcg</td>
</tr>
<tr>
<td></td>
<td>• Glyco 18 mcg</td>
</tr>
<tr>
<td></td>
<td>• Formoterol 9.6 mcg</td>
</tr>
<tr>
<td></td>
<td>• Tiotropium 18 mcg (handihaler)</td>
</tr>
<tr>
<td></td>
<td>• Placebo</td>
</tr>
</tbody>
</table>

Formoterol (Glyco) Pharmacokinetics

- Metabolism: direct glucuronidation and O-demethylation (Formoterol); minimal (Glyco)

Adverse Effects

- Urinary tract infection, cough, nasopharyngitis, sinusitis

Contraindications/Precautions

- Contraindicated if hypersensitivity to any ingredients or excipients

Dosing

- 2 inhalations (4.8 mcg/9 mcg each) twice daily; pMDI (pressurized MDI)
- Unique Co-Suspension™ Delivery Technology

Formoterol/Glycopyrrolate (Bevespi Aerosphere)

<table>
<thead>
<tr>
<th>PINNACLE 1 &amp; 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in Trough FEV1</td>
</tr>
</tbody>
</table>

- Improved FEV1 vs individual components and placebo
- No safety differences
- HRQoL improved with GFF vs. placebo and GP (PINNACLE-1 only)

Audience Participation

Which of the following factors are unique about Bevespi?

a. Inhaler device
b. Co-suspension technology
c. Dosing
d. Cost
LABA/LAMA Combination Inhalers

<table>
<thead>
<tr>
<th>Device/Delivery</th>
<th>Anoro Ellipta</th>
<th>Stiolto Respimat</th>
<th>Utibron Neohaler</th>
<th>Bevespi Aerosphere</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of use with Ellipta device</td>
<td>Improved drug delivery with Respimat</td>
<td>More complex device use with capsule</td>
<td>Improved drug delivery via new technology</td>
<td></td>
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<tr>
<td>Dosing</td>
<td>1 inhalation once daily</td>
<td>2 inhalations once daily</td>
<td>1 inhalation twice daily</td>
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<tr>
<td>Efficacy</td>
<td>Improved</td>
<td>Improved</td>
<td>Improved</td>
<td>Improved</td>
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<tr>
<td>HRQoL/symptoms</td>
<td>Similar</td>
<td>Improved</td>
<td>Improved</td>
<td>Improved</td>
</tr>
<tr>
<td>Exacerbations</td>
<td>Decreased?</td>
<td>Decreased?</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>

Changes in 2017 Guidelines

- Staging/classification based on ABCD assessment tool
- Shift toward more individualized treatment with integrated care
- Symptoms and exacerbation risk guide treatment
- Emphasis on inhaler technique

Benefits of LABA/LAMA Therapies

- Improved adherence
- Decreased complexity and cost
- Lower risk of adverse effects
- Improvement in symptoms

Pharmacist Learning Objectives

1. Discuss new GOLD recommendations for COPD management
2. Evaluate new treatment options and inhaler devices for COPD
3. Formulate factors that help aid in the selection of specific treatment options for COPD

Pharmacy Technician Learning Objectives

1. Identify different inhaler devices for patients with COPD
2. List appropriate counseling points for specific inhalers
3. Identify patient factors that may help aid in the selection of specific treatment options

Future Directions

- Approval of formoterol/aclidinium
- Further head to head studies
- Post-marketing experience
- Triple therapy inhaler combo

As per the www.jama.com data, these are the latest data.
Therapy Considerations: Putting Guidelines into Practice

Treatment Goals: Stable COPD

Pharmacotherapy Factors to Consider

COPD Assessment Tool

2017 Treatment Algorithm
Meet AB

- AB is a 58 year old female who presents with complaints of increasing shortness of breath. Patient had a 22 year smoking history (1 pack per day). Quit smoking 5 years ago.
- Patient complains of increased shortness of breath; also notes that she has increased sputum production
- Spirometry confirms a diagnosis of COPD
  - FEV1/FVC < 0.7
  - FEV1: 52%
- CAT Score: 14
- Patient has private insurance

How would you assess AB's COPD? (GOLD grade and group)

COPD Assessment Tool

1. Confirm diagnosis by spirometry
2. Assess airflow limitation
3. Assess symptoms and risk of exacerbations

- GOLD grade
  - GOLD 1 2-80
  - GOLD 2 50-79
  - GOLD 3 20-49
  - GOLD 4 < 20

- FEV1 (% predicted)
- FEV1/FVC: < 0.7

- History of exacerbations
- History of hospitalization

Disease State-Control (symptoms/exacerbations)

Cost

Device (ability and preference)

Pharmacotherapy Factors to Consider

- Disease state and control
- Symptomatology
- Cost
- Device preference

Treatment for AB

- Gold grade 2, group B
- Which of the following medication classes are appropriate for AB?
  - LABA
  - LAMA
  - ICS
  - SABA

Treatment Algorithm

Group A

- Confirm severity of airflow limitation
- Evaluate effect
- A bronchodilator

Group B

- LABA
- LAMA

Group C

- LABA + LAMA
- Consider ICS

Group D

- LABA + LAMA + ICS
- Consider roflumilast

Inhalers: Patient Preference

- No need for external power
- Convenient and unobtrusive to carry and use in public
- Robust enough to survive routine transport, use, and cleaning
- No extraordinary respiratory maneuvers required for correct use
- Dose counter
- Efficacy
- Cost
40 Years of Inhaler Technique

- Meta-analysis conducted from 1975-2014
- Articles reporting direct observation of inhaler technique by trained personnel
- 144 articles; 54,354 subjects
- Overall prevalence of correct technique: 31%
- No significant difference between first and second 20 year periods

Sanchis J, et al. CHEST 2016; 150:394‐406

Inhaler Competence: Common Errors

- Device: demands a certain level of physical skill, manipulation, dexterity, hand strength, lung capacity, and/or hand-lung coordination to ensure optimal/correct use
- Considerations:
  - Check natural technique
  - Consistent devices
  - Check for errors
  - Use training aids
  - Patient
  - Healthcare professional

Types of Devices:

- Metered-dose Inhaler (MDI)
- Dry-powder Inhaler (DPI)
- Soft Mist Inhaler (SMI)
- Nebulized Solutions

Technique: the Basics

MDI
- Remove Cap
- Hold upright and shake well
- Breathe out gently
- Seal lips around mouth piece
- Start to slowly inhale and then press firmly down on canister
- Continue to breathe in slowly and steadily
- Hold breath for 10 seconds
- Wait 3 min between doses

DPI
- Load dose (differs for each device)
- Breath out gently, away from device
- Seal lips around mouth piece
- Breathe in steadily and deeply (more forcefully than the MDI)
- Hold breath for 10 seconds
- Breath out away from device

SMI
- Twist bottom of inhaler to prepare dose
- Open cap
- Breath out gently
- Seal lips around mouth piece
- Start to slowly inhale and press firmly down on the button
- Continue to breath in slowly and steadily
- Hold breath for 10 seconds
- Wait 3 min between doses

Technique: Points to Consider

MDI
- Breath/Actuation coordination
- Force of breath and inhalation time
- Small dose counter

DPI
- Breath force to aerosolize powder
- Inhalation time important
- Some devices require opening a blister pack to prepare dose

SMI
- Multiple pieces that must be put together
- Requires some force to twist

Anoro Ellipta: DPI

The "Discard" date is 6 weeks from the date you open the tray.
The counter counts down by 1 each time you open the cover.

Stiolto Respimat: SMI

Bevespi Aerosphere: MDI

Utibron Neohaler: DPI

Utibron Neohaler: DPI

Back to AB

- The provider asks you to recommend a device type for Ms. AB
- You determine that Ms. AB has mild arthritis in her hands that is worse in the winter months
- You also observe her inhalation forces and determine that she has appropriate inhalation force for all devices

Which inhaler device would you recommend for AB?

Inhalers: Factors to Consider

- Disease State Control (symptoms/exacerbations)
- Device (ability and preference)
- Cost

Inhaler Cost Considerations

- Pulmonary patients pay ~$6000 more in medical costs annually
- Majority of inhalers are not generically available
- Cash Price: $200-$400 per inhaler
- Insurance often put inhalers on Tier 3-4 (Tier 2 for 2017?)
- Average out-of-pocket cost: $30-60 per inhaler ($15)
- Medicare patients typically pay higher copays and pay 45% of cash price once in the ‘coverage gap’
- Studies demonstrate that when costs are controlled, COPD patients do better

Identifying Cost Issues

- Delays or gaps in refill history
- Patient doesn’t fill entire order
- 1 box vs. 2 boxes
- Only gets albuterol and prednisone, but not control inhalers
- Transfers prescriptions
- Requests generics or prescriptions

Factors Affecting Non-Adherence

- Cost-Avoidance Behaviors
  - Delays or gaps in refill history
  - Patient doesn’t fill entire order
  - 1 box vs. 2 boxes
  - Only gets albuterol and prednisone, but not control inhalers
  - Transfers prescriptions
  - Requests generics or prescriptions

Helping Patients Obtain their Medications

Cost-Avoidance Behaviors

- Cost-related Nonadherence
  - Cost barriers
  - Cost savings
  - Strategies to Manage Costs
  - Reasons for Nonadherence

Private Insurance
- Medicaid
- Medicare
- No Insurance

Governmental

Medicaid
- Most formularies are restrictive, require prior authorization, may switch to preferred agent

Medicare
- Part A/B
- Part D
- Medicaid solutions will be covered 20/80 or 30/70

No Insurance

Patient may be eligible for assistance through drug companies

Patient may need to apply for coverage

Assistive Patient’s Insurance
- Patient eligible for drug coupons through manufacturer

No Insurance
- Patient may be eligible for assistance through drug companies

Patient may need to apply for coverage

No Insurance
- Patient may be eligible for assistance through drug companies

Patient may need to apply for coverage

No Insurance
### Uninsured Patients
- Difficult patient population
- May be eligible for assistance through drug companies
- Some companies will have coupons for one time fill for free
- Discount drug programs
- Insurance through pharmacies
- Need to be encouraged to apply for coverage

### Private Insurance
- Drug Manufacturer Coupons
- Manufacture websites have co-pay discount coupons
- Patient or Provider can request
- Coupon will reduce the out-of-pocket co-pay
- Some provide 1-month free

### Discount Drug Programs
- Other Programs
  - NeedyRx
  - 4Rx Card
  - America’s Drug Card
  - Easy Drug Card
  - Free RX Plus
  - True RX Savings
  - Many others...

### Discount Drug Programs

#### Advantages
- Free
- Personal information not required for enrollment
- Some programs allow for "comparison shopping"
- Coupons or discount cards are available for many drugs

#### Disadvantages
- Not all websites allow for true comparison shopping
- Determining an exact price will not happen until the prescription is actually processed
- Discounts likely will be minimal for brand name medications

### Pharmaceutical Assistance Programs for Newer Inhalers for COPD

<table>
<thead>
<tr>
<th>Inhaler Device</th>
<th>Company</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbicort™ Respimat® (tiotropium 2.5 mcg/olodaterol 100 mcg)</td>
<td>GSK First Pharmaceuticals</td>
<td></td>
</tr>
<tr>
<td>Breo® Ellipta® (fluticasone 25 mcg/vilanterol 25 mcg)</td>
<td>AstraZeneca Discount</td>
<td></td>
</tr>
<tr>
<td>Striverdi® Respimat® (umeclidium 62.5 mcg/vilanterol 62.5 mcg)</td>
<td>Boehringer Ingelheim</td>
<td></td>
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### Governmental: Medicaid or Medicare
- Medicaid: often requires a formulary switch or prior authorization
- Medicare:
  - Medicare A/B: Only covers nebulized solutions/medications at 20/20 or 30/30 split
  - Medicare Part D:
    - Patient cannot afford copays
    - Social security office to apply for low-income subsidies (dual enrollment)
    - Patient Access Network
    - Patient in GAP
    - Assess patient’s financial status; if below 150% of federal poverty line patient may qualify for Patient Assistance programs through drug companies
Experience with Resolving Costs

• Cross-sectional retrospective study of patients seen in the outpatient pulmonary clinic at Henry Ford Hospital from January 2015 to December 2015

• Primary endpoint: patient’s out-of-pocket cost savings following pharmacist intervention

• Included all patients seen in clinic by the pharmacist

Results: Pharmacist Intervention

Results: Out-of-Pocket Savings

Results: Collaboration

• Educated inpatient pharmacists and providers about the role of the hospital-based ambulatory care pharmacist

• Developed a referral process to ensure access to medications following discharge

Conclusions

• Pharmacists are a potential resource for reducing patient out-of-pocket costs and improving medication adherence

Key Takeaways

Pharmacists can help patients reduce costs.

Collaborate with other team members who can help make medications as affordable as possible.

Remind patients they may have to “shop around” for the best deals.

Stay current with assistance programs.