Breathe It In: Inhaled Medication Formulations in Palliative Care

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Objectives

- Discuss commonly prescribed inhaled medications (including drug delivery devices)
- Identify opportunities for deprescribing, based on patient prognosis and medication appropriateness
- Review patient cases
# Respiratory Illness: Common Medications

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>Beta\textsubscript{2}- Agonists</td>
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<tr>
<td>Anticholinergics</td>
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<td>Methylxanthines</td>
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<td>Corticosteroids</td>
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<tr>
<td>Phosphodiesterase-4 Inhibitors</td>
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<td>Mucolytics</td>
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Inhalers: Preparation

- **Prime inhaler**
  - Necessary if inhaler not used in a specified number of days
  - Package instructions
- **Remove cap**
- **Visual inspection**
  - Look inside mouthpiece for obstructions
- **Shake inhaler vigorously prior to use**
- **Breathe out completely**
  - Expel as much air as possible
**Metered Dose Inhaler (MDI)**

- Pressurized canister of medication
- Plastic holder with mouthpiece
- Reliable, consistent dose of medication with activation
- Common
  - Asthma, chronic obstructive pulmonary disease (COPD), other respiratory illnesses
- Portable, convenient
- Cost-effective
- Little to no preparation required
- Patient difficulties
  - Breath coordination
  - Dose counting
MDI: Inhalation

- Hold inhaler with mouthpiece down
- Place lips around mouthpiece, forming a tight seal
- At initiation of slow, deep inhalation, breathe in through mouth and press down/activate inhaler once
- Continue breathing in slowly and deeply
MDI: Hold Breath

- Remove inhaler from mouth
- Hold breath and slowly count to ten
- Pucker lips and breathe out slowly through mouth
- For inhaled, rescue medications (example: beta$_2$-agonists), wait about one minute before the next activation
- Put cap back on mouthpiece
- After using inhaler, rinse mouth with water, gargle, and spit
  - Do not swallow the water
Dry Powder Inhaler (DPI)

- Many shapes and sizes
- Commonly used to deliver corticosteroids into the lungs
- Breath-activated (fast, deep breath required)
- Multiple and single dose devices
- Poor inhalation techniques common
  - Continued use
  - Inspiratory flow requirement
- Cannot be used with spacers
- Costly
Dry Powder Inhaler (DPI)

- Remove inhaler cap
- Add or load a dose of medicine, if applicable
- Tilt head back slightly and breathe out slowly and completely
  - Do not breathe out into inhaler
- Place inhaler's mouthpiece in mouth
- Close lips tightly around mouthpiece
- Inhale quickly and deeply through mouth for two to three seconds
- Remove inhaler from mouth
- Hold breath for ten seconds
- Slowly breathe out through pursed lips
  - Do not breathe out into inhaler
- Repeat these steps for necessary second doses
Soft Mist Inhaler

- Device releases slow-moving mist when inhaled
- Contains liquid formulations
  - Like those in nebulizers
- Works well for reaching small airways in the lungs
- Indicator on side of device tracks remaining doses
- No spacer needed
- More medication reaches lungs than with an MDI or DPI
  - Lower dose required
- Difficulty with dose loading
Soft Mist Inhaler

▪ Open cap after following device-specific preparation instructions
▪ Breathe out slowly and completely
▪ Close mouth around mouthpiece
  • Don’t close air vents on the side of inhaler
▪ Breathe in slowly and deeply through mouth while pressing the dose release button
▪ Inhale mist
▪ Hold breath for 10 seconds and slowly breathe out
Nebulizer

- Small machine
- Turns liquid medicine into a mist
- Medicine moves into lungs as patient breaths
- Ten-to-15-minute treatments
- Less effort than an inhaler
- Most nebulizers work by using air compressors
- Must be cleaned properly
- Used according to the manufacturer's instructions
Nebulizer

- Wash hands well
- Connect hose to compressor
- Fill the medicine cup with prescription
  - Close the medicine cup tightly and hold the mouthpiece straight up and down
- Attach the hose and mouthpiece to the medicine cup
- Place the mouthpiece in mouth; Keep lips firm around the mouthpiece
- Breathe through mouth until all the medicine is used
  - If needed, use a nose clip to breathe only through mouth
- Small children usually do better wearing a mask
- Turn off machine when done
- Wash cup and mouthpiece with water and air dry
Medication Appropriateness

- Few guidelines exist for determining how and when to discontinue medications
- What is Medication Appropriateness?
  - Medication appropriateness provides a means to evaluate medication need
  - Medication appropriateness refers to whether a medication is useful in an individual clinical situation based on both the attributes of the medication and those of its recipient.

Arch Intern Med 2006
Medication Appropriateness

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<tr>
<th>Question</th>
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<tr>
<td>Is there an indication for the drug?</td>
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<td>Is the medication effective for the condition?</td>
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<td>Is the dosage correct?</td>
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<tr>
<td>Are the directions correct?</td>
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<tr>
<td>Are the directions practical?</td>
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<tr>
<td>Are there clinically significant drug-drug interactions?</td>
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<tr>
<td>Are there clinically significant drug-disease interactions?</td>
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<tr>
<td>Is there unnecessary duplication with other drugs?</td>
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<tr>
<td>Is the duration of therapy acceptable?</td>
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<td>Is the drug the least expensive alternative compared with others of equal usefulness?</td>
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Medication Appropriateness: GOLD Guidelines

KEY POINTS FOR INHALATION OF DRUGS

- The choice of inhaler device has to be individually tailored and will depend on access, cost, prescriber, and most importantly, patient’s ability and preference.

- It is essential to provide instructions and to demonstrate the proper inhalation technique when prescribing a device, to ensure that inhaler technique is adequate and re-check at each visit that patients continue to use their inhaler correctly.

- Inhaler technique (and adherence to therapy) should be assessed before concluding that the current therapy requires modification.

Global Initiative for Chronic Obstructive Lung Disease: Teaching Slide Set 2022.
Medication Appropriateness: GOLD Guidelines

**Management Cycle**

**Review**
- Symptoms:
  - Dyspnea
  - Exacerbations

**Assess**
- Inhaler technique and adherence
- Non-pharmacological approaches (including pulmonary rehabilitation and self-management education)

**Adjust**
- Escalate
- Switch inhaler device or molecules
- De-escalate

**Figure 4.3**

Global Initiative for Chronic Obstructive Lung Disease: Teaching Slide Set 2022.
Patient Cases

Patient 1: Recent Hospitalization

Patient 2: Palliative Care Services

Patient 3: Hospice Admission
Communication: Words Matter

- Individualized
- Max benefit
- Patient goals
- Decrease burden

- Stop
- Quit
- Cheap
- Non-covered
Thank you
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