Deprescribing Guide: Respiratory Medications

INTRODUCTION TO RESPIRATORY MEDICATION DEPRESCRIBING

A systematic review and meta-analysis published in 2019 found that 8 out of 10 patients with obstructive lung disease experience inhaler device use-related errors.[1] Use error is anticipated to be even higher in patients with end-stage pulmonary disease and/or advanced age. Proper inhaler technique is critical to achieve optimal treatment benefit, but this can be challenging due to the multiple steps necessary to prepare the inhaler for use, lack of familiarity with proper technique, difficulty coordinating inhalation with actuation of inhaler, or decreased inspiratory force or volume. Regardless of the reason, lack of appropriate use can result in suboptimal medication delivery and worsening respiratory symptoms. Fortunately, a therapeutic interchange to a nebulized solution regimen +/- an oral corticosteroid can significantly improve the likelihood of adequate medication reaching the intended site of action, optimizing patient comfort while often reducing therapy costs.

RATIONALE FOR TRANSITIONING FROM INHALER(S) TO NEBULIZED THERAPY

Improper Administration	• Improper inhaler technique can result in inadequate medication delivery, negatively impacting patient comfort • Inability to actuate inhaler due to lack of dexterity increases with symptom progression, age • Increased risk of utilizing emergent medical care
Duplication of Therapy	• Lack of symptom management can result in increased dose/frequency or prescribing of additional agents • Increased usage burden place on patient • Increased therapy cost
Lack of Inspiratory Capacity	• Inability to deeply and forcibly inhale the medication necessary to deliver the medication to the site of action can result in increased symptom burden
Lack of Cognitive Aptitude	• Patients with cognitive impairment with challenges recalling proper inhalation technique • Nebulizer can be more easily prepared by a caregiver for a patient and administered passively compared to attempting to effectively administering a inhaler to a patient

PATIENT & CAREGIVER DISCUSSION POINTS:

- Ask the patient to demonstrate how they are using their inhaler. This will provide an opportunity to directly address the importance of medication being delivered to the lungs in order to be effective for symptoms, and that nebulized solution administered via a nebulizer mask or mouthpiece will help ensure proper drug delivery.

- Provide reassurance that all medication changes are made in consultation with the patient's doctors. The decision to stop or modify a respiratory medication regimen is always an individualized approach with intent to optimize symptom management

- Ask the patient and family questions to bring them into the shared decision-making process. Use open ended questions that lead into conversations about stopping medications, such as the following from the National Hospice and Palliative Care Organization deprescribing guidelines:

    - "It seems you are having some difficulty using your inhalers. As your disease progresses it may be useful to make some adjustments to your medications. What worked before may not work as well for you now. Would you like to talk about making your medication routine a little less complicated?"
    - "There are other medications for shortness of breath/anxiety that may be more effective than your current inhalers."
    - "It sounds like it's hard for you to make a decision about stopping your inhaler. Can I share what my experiences and observations have been?"
    - "We really just want your breathing to be more comfortable. I want you to know this is a team effort and you're in charge of the team. I appreciate you allowing me to talk with you today."
    - "Before I visit next week, I'll give your doctor an update and get her input. She might suggest stopping the inhalers and using a nebulizer. Are you willing to give it a try?"
    - To the prescriber: "I have observed the patient who is unable to properly use the inhalers her anymore. I believe switching to a less complicated delivery system may greatly improve her outcomes. Are you okay with me making this change?"

PHARMACIST CORNER

better RX

HOW TO DEPRESCRIBE/TRANSITION TO APPROPRIATE NEB SOLUTION REGIMEN

1 Review medication regimen and identify respiratory medications patient current prescribed and actively using.

2 Use the Common Inhaled Respiratory Medication Table (below) and the patient's medication list to complete the following steps:

STEP 1: Identify inhaled beta-agonists

Transition to **albuterol nebulized solution**, dosed every 4-6 hours.

STEP 2: Identify inlaheled anticholinergics

Transition to **ipratropium nebulized solution** every 4-6 hours; if patient also had beta-agonist inhaled agent, transition to albuterol/ipratropium nebulized solution, dosed every 6 hours

STEP 3: Identify inhaled steroid

if ordered, recommend transition from inhaled steroid to oral formulation to reduce risk of thrush and respiratory infections

3 If family or patient is hesitant to discontinue, consider a trial discontinuation for a limited period (e.g., 2 weeks or 1 month) and offer to re-evaluate once that trial is completed. Often, the family or patient needs this time as an "adjustment period" to accept the possibility of discontinuation, understand the medication is not helping, and realize that continuation is not necessary.

4 If patient continues to experience respiratory symptoms following the transition to a nebulized solution regimen, consider the following dyspnea management techniques, as appropriate:

Non-Pharmacologic Interventions	• Elevate head of the bed • Keep room cool with low humidity • Position fan to blow across front of face
Pharmacologic Interventions	• Low dose opioid: morphine 5mg po/SL q2h prn (1st) • Low dose benzo: lorazepam 0.5mg po q4h prn

COMMON INHALED RESPIRATORY MEDICATIONS

Generic Name	Brand Name	Dosage Form	Strength	Therapeutic Interchange
Short-Acting Beta-2 Agonists				
Albuterol	Ventolin, ProAir, Proventil	MDI	90mcg/actuation	Albuterol nebs
Levalbuterol	Xopenex	MDI	45mcg/actuation	Albuterol or levalbuterol nebs

Generic Name	Brand Name	Dosage Form	Strength	Therapeutic Interchange
Long-Acting Beta-2 Agonists				
Indicacterol	Arcapta Neohaler	DPI	75mcg/ capsule	Albuterol nebs
Salmeterol	Serevent Diskus	DPI	50mcg/blister	Albuterol nebs
Olodaterol	Striverdi Respimat	MDI	2.5mcg/actuation	Albuterol nebs
Arfomoterol	Brovana	Neb	15mcg/2ml	Albuterol nebs
Formoterol	Perforomist	Neb	20mcg/2ml	Albuterol nebs
Short-Acting Muscarinic Antagonists				
Ipratropium	Atrovent	MDI	17mcg/dose	Ipratropium nebs
Long-Acting Muscarinic Antagonists				
Aclidinium	Turdoza Pressair	DPI	400mcg/actuation	Ipratropium nebs
Tiotropium	Spiriva Handihaler	DPI	18mcg/dose	Ipratropium nebs
Tiotropium	Spiriva Respimat	MDI	1.25, 2.5mcg/dose	Ipratropium nebs
Umeclidinium	Incruse Ellipta	DPI	62.5mcg/actuation	Ipratropium nebs
Glycopyrrolate	Seebri Neohaler Lonhala Magnair	DPI	15.6mcg/actuation	Ipratropium nebs
Revefenacin	Yupleri	Neb	175mcg per 3ml	Ipratropium nebs
Inhaled Corticosteroids				
Beclomethasone	Qvar	MDI	40,80mcg/spray	Oral steroid
Budesonide	Pulmicort	DPI	90, 180mcg/spray	Oral steroid
Ciclesonide	Alvesco	MDI	80, 160mcg/spray	Oral steroid
Fluticasone	Flovent HFA, Flovent Diskus	MDI DPI	44,110,220 mcg/ 50,100,250mcg	Oral steroid Oral steroid
Short-Acting Muscarinic Agonist/Short-Acting Beta-2 Agonist				
Ipratropium/ Albuterol	Combivent inhaler	MDI	12/120mcg/spray	Albuterol + ipratropium nebs
Inhaled Corticosteroid/Long-Acting Beta Agonist Combinations				
Budesonide/ Formoterol	Symbicort	DPI	80/4.5; 160/4.5	Albuterol + oral steroid
Fluticasone/ Salmeterol	Advair HFA Advair Diskus	MDI DPI	45/21, 115/21/230/21 100/50, 250/50, 500/50	Albuterol + oral steroid Albuterol + oral steroid
Fluticasone/ Salmeterol	Wixela	DPI	100/50, 250/50, 500/50	Albuterol + oral steroid
Fluticasone/ Vilanterol	Breo Ellipta	DPI	100/25mcg	Albuterol + oral steroid
Mometasone/ Formoterol	Dulera	MDI	100/5mcg 200/5mcg	Albuterol + oral steroid

Generic Name	Brand Name	Dosage Form	Strength	Therapeutic Interchange
Long-Acting Muscarinic Antagonists/Long-Acting Beta Agonist				
Umeclidinium/ Vilanterol	Anoro Ellipta	DPI	62.5/25mcg/dose	Albuterol + ipratropium nebs
Tiotropium/ Olodaterol	Stiolto	MDI	2.5/2.5mcg/dose	Albuterol + ipratropium nebs
Glycopyrrolate/ Formoterol	Bevespi	MDI	9/4.8mcg/dose	Albuterol + ipratropium nebs
Glycopyrrolate/ Indacaterol	Utibron Neohaler	DPI	15.6/27.5mcg/cap	Albuterol + ipratropium nebs
Inhaled Corticosteroid/Long-Acting Muscarinic Antagonist/Long-Acting Beta Agonist Combination				
Fluticasone/ Umeclidinium/ Vilanterol	Trelegy	DPI	100/62.5/25mcg	Albuterol + ipratropium nebs + oral steroid
Budesonide/ Glycopyrrolate/ Formoterol	Breztri	DPI	160/9/4.8mcg	Albuterol + ipratropium nebs + oral steroid

SUMMARY

Transitioning patients from an inhaler or a long-acting nebulized solution to the recommended therapeutic interchange listed in the table above consisting of albuterol nebs ± ipratropium nebs ± an oral steroid will not only result in improved respiratory symptom management, but also improve cost effectiveness of pharmacologic management. Please refer to the patient refer to the BetterRX Respiratory Medications Patient Resource Guide for additional resources on the topic created for patients and families.

References

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