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On-Demand Clinical News

Medication Management of End-Stage COPD

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Treatment of end-stage COPD symptoms can be a challenge. Aside from suffering from a difficult and complex disease process, COPD patients are commonly very anxious and hesitant to change their breathing regimen – especially their costly inhalers. The following sections will describe which cost-effective treatments are recommended, and which treatments potentially lack benefit or are unsafe. A strategy to facilitate the COPD patient's willing adoption of cost-effective breathing treatments is also discussed.

If you remember just one regimen, *regardless of which inhalers the patient is currently using*, most end-stage COPD patients respond well to and tolerate the following 2-Part Basic Regimen:

A) Ipratropium-albuterol nebulizers (DuoNeb®) SCHEDULED+PRN orders;

B) +/- cost-effective oral steroid such as prednisone or dexamethasone

Why does the above regimen work for most end-stage COPD patients? First, simply switching from inhalers to nebulizer ("neb") treatments is likely to deliver a greater amount of medication to the lungs (and hence, oral steroids are optional since many patients receive adequate control with neb treatments alone). Studies have demonstrated that less than half of patients who use inhalers in the general population (e.g. COPD, asthma, not end-of-life) are able to use their inhalers with adequate technique. In our debilitated hospice population, this is likely a much lower number. Secondly, the scheduled neb order acts like a controller, and PRN order acts like a rescuer for increased symptoms. Finally, the above regimen works because it provides the same 3 types of medications that most/all end-stage COPD patients are receiving from their inhalers: an inhaled beta-agonist (such as albuterol), anticholinergic (such as ipratropium), and a steroid.

Certain patients may not be appropriate for the above 2-Part Basic Regimen. Aside from those with a true allergy to any of those components, inappropriate patients might include those who cannot tolerate albuterol (most commonly experiencing tremors, anxiety, and/or rapid heartbeat). **For these patients, ipratropium nebulizer alone is a cost-effective alternative that will not cause those adverse effects.** Levalbuterol is also frequently used in these cases, but it is not preferred due to cost. The 2-Part Basic Regimen may also not be appropriate for some patients who are still ambulating and out of the house often. Additionally, the optional oral steroids have potential consequences: you may want to avoid these in patients whose goals of care include wound healing or strict glucose control. However, please note that **glucose management and diabetes should not be considered a contraindication to oral steroid therapy.** Typically, we are more concerned with preventing dangerous hypoglycemia versus hyperglycemia, as long as patient remains asymptomatic. **Edema control may be a concern for some, but note that in these patients, dexamethasone is preferred due to low/no edema potential.**

The above regimen might be great – if we can just get the patient to try it. How can we convince the patient to try it? Consider the following: alternate inhaler(s) and neb therapies each day by slowly reducing the number of puffs and/or frequency of inhaler doses while slowly increasing frequency of neb treatments over time. Continue to reduce and eventually stop inhalers as the patient begins to notice the benefit of the neb treatments. Add or optimize cost-effective oral steroids if needed. Duplication of therapy from the inhalers and nebs is not a significant concern, since it is likely the patient is getting little medication into the lungs from the inhaler(s). However, continue to monitor the patient closely during the cross-taper.

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Beyond the 2-Part Basic Regimen, there are many other cost-effective medications to help with symptom management of end-stage COPD. Refer to Table A.

Table A: Additional Therapies to Basic 2-Part Regimen

Therapy	Use For:	Comments
Guaifenesin	To loosen/wet/thin out thick, tenacious/sticky secretions	Need high doses (1200-2400mg/day) Avoid when patient is too weak to expectorate (could worsen symptoms)
Water	To loosen/wet/thin out thick, tenacious/sticky secretions	As effective or more effective than guaifenesin Limited by what patient can tolerate or fluid restrictions Avoid when patient too weak to expectorate (could worsen symptoms)
Saline nebs	To loosen/wet/thin out thick, tenacious/sticky secretions	Use in addition to or instead of guaifenesin/water Avoid when patient is too weak to expectorate (could worsen symptoms)
Dextromethorphan (OTC), promethazine+codeine, hydrocodone+homatropine, benzonatate, guaifenesin combination products (+codeine, +dextromethorphan)	Cough suppressant	Might prohibit patient from "getting the gunk out" Focus usage at night, when coughing interferes with sleep (but ok during the day) Good for when patient too weak to expectorate (can use with anti-secretory)
Hyoscyamine, atropine	Very end-of-life, to dry up secretions that the patient is too weak to expectorate	Does not 'get rid of' current secretions (common misconception) - can help harden/dry them Only prevents new secretions from forming Use with cough suppressants if needed
Opioids – morphine, oxycodone, hydromorphone, methadone	Cough suppressant, reduce shortness of breath/dyspnea	Any mu receptor agonist (opioid) will work, including methadone No clinically significant negative impact on respiratory function in COPD – patients usually benefit
Lorazepam, clonazepam, trazodone, buspirone, mirtazapine	SOB due to anxiety	These DO NOT directly reduce oxygen demand or respiratory drive via the brain stem like opioids do Benefits/effects come from cutting the anxiety-dyspnea cycle (reduce anxiety → reduce dyspnea→ reduce anxiety) Not likely effective when anxiety is not underlying the dyspnea
Oxygen	Dyspnea	Titrate to oxygen saturation of 88-92% Avoid titrating too high (can be dangerous and causes adverse effects)

Oral drug therapies specifically indicated for COPD treatment are not always safe and effective for end-stage COPD patients on hospice. Roflumilast (Daliresp®) is not likely to add benefit or any direct symptom control during a patient's hospice term, but it adds pill burden, cost, potential side effects and drug interactions. Theophylline can easily reach toxic levels and has many drug interactions; it is recommended not to add it for acute exacerbations and should generally be stopped if serum levels are not monitored on hospice. Antibiotic use remains controversial, especially for exacerbation prevention/chronic use. Generally, use for prevention is not recommended while on hospice due to the higher risk to benefit ratio. See criteria for antibiotic use in Table B for acute and chronic COPD exacerbation management.

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Table B: Criteria for Antibiotic Use for Acute Exacerbation and Chronic Prevention

Acute Exacerbation	Increased purulence REQUIRED, PLUS increased dyspnea OR increased sputum from baseline
Prevention	Generally not recommended/not appropriate for hospice (risk generally outweighs benefit). Azithromycin study: • Only 0.35 fewer exacerbations over 12 months vs placebo (1.48 vs 1.83 exacerbations per person per year) • Dyspnea scores improved by 2 pts vs placebo (4 points considered 'clinically significant') • Risks: antibiotic resistance, hearing loss (sometimes permanent), arrhythmias

Often forgotten but quite effective are non-pharmacologic therapies. Studies have shown that hand-held fans can help reduce feelings of breathlessness in COPD patients—though any constant airflow to the face will work. Splashing cold water to the face can also help. Fans and cold water stimulate body responses that decrease the sensation of breathlessness. Pursed lip breathing is a breathing technique whereby the patient inhales slowly through the nostrils for about 2 seconds (a deeper breath than normal is not necessary), and exhales via pursed lips slowly for 4 seconds keeping a slow, steady breath (avoiding a hard exhalation). Energy conservation and relaxation techniques can also be very effective for alleviating dyspnea or shortness of breath.

If a patient must continue their inhalers, the best management approach then is to regularly assess and ensure the patient has adequate inhaler technique and is storing and cleaning the inhalers properly. There are many resources to educate and demonstrate how to properly use, clean and store the patient's inhalers – including the package insert, manufacture websites, lung and breathing organizations, and your local pharmacist. Please be aware that each inhaler typically comes with its own directions, and generics may not always operate the same way as their brand counterparts. To determine which cost-effective therapies would be recommended for your patient (or which therapies to discontinue), or for education about how to use inhalers, contact a ProCare clinical pharmacist.

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