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From the Front Lines

AlixaRx Clinical Pharmacists Address Everyday Challenges in Long-Term Care

Treatment of Chronic Obstructive Pulmonary Disease (COPD)
The GOLD Standard

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) is an international organization that develops guidelines for the diagnosis, management and prevention of COPD. The GOLD guidelines were updated in January of 2015 and are summarized below.

COPD is a disease of the lungs characterized by chronic limitation of bronchial airflow that is usually progressive. A diagnosis of COPD should be considered in any patient who has dyspnea, chronic cough or sputum production and a history of exposure to risk factors for the disease (smoking, indoor/outdoor air pollution, occupational exposure to dust/chemicals). Spirometry is used to determine the presence and/or degree of airflow limitation present and is required to make a diagnosis of COPD.

Assessment:
In order to guide the treatment of COPD, an accurate assessment of disease severity is important. Factors to be considered include symptom severity, severity of airflow limitation and frequency of exacerbations. This assessment results in patients being placed in one of 4 categories used to guide the treatment of COPD:

- Category A – Low risk, less symptoms
- Category B – Low risk, more symptoms
- Category C – High risk, less symptoms
- Category D – High risk, more symptoms

Treatment strategies:
Although pharmacotherapy can decrease symptoms, lessen the frequency and severity of exacerbations and improve health status, none of the medications used to treat COPD have been shown to modify the long-term decline in lung function.

The first and one of the most important treatment strategies for COPD is smoking cessation. Patients who smoke should be encouraged to quit. Nicotine replacement therapy and pharmacotherapy for smoking cessation can significantly help increase long-term smoking abstinence.

Regular physical activity should be encouraged. Patients should be directed to remain active as much as possible. Influenza and Pneumococcal vaccines should be offered, as appropriate.

Pharmacotherapy:
Bronchodilators
Bronchodilators are an essential component in the symptomatic treatment of COPD. They include the beta2 agonists, anticholinergics and theophylline. They may be prescribed on a scheduled or as-needed basis to reduce or prevent symptoms.

In this issue:

Long-acting bronchodilators are preferred over short-acting formulations as long-acting formulations are convenient and more effective at producing sustained relief of symptoms.

If symptoms are not adequately managed using one bronchodilator, the use of a combined bronchodilator product (beta agonist/anticholinergic) may be more effective in treating symptoms as compared to increasing the dosage of a single bronchodilator.

The use of oral bronchodilators and theophylline is not recommended due to low efficacy and increased risk of side effects. Low-dose theophylline has been shown to decrease exacerbations, but does not improve lung function.

Corticosteroids
Long term treatment with inhaled corticosteroids is recommended in patients with severe disease and for patients with frequent exacerbations not adequately controlled by long-acting bronchodilators. Corticosteroid/long-acting bronchodilator combinations are recommended for patients that are at high risk for exacerbations.

Extended use of inhaled corticosteroid monotherapy is not recommended. Chronic monotherapy is less effective than using a corticosteroid/long-acting bronchodilator combination. Long term treatment with oral steroids is also not recommended. Adverse effects of long term steroid treatment include an increased risk of pneumonia and a slight increased risk of fracture.

Withdrawal from treatment with inhaled corticosteroids may result in exacerbation of symptoms in some patients.

Phosphodiesterase-4 inhibitors
The phosphodiesterase-4 inhibitor, roflumilast, may be used to reduce exacerbations for patients with chronic bronchitis, severe and very severe airflow limitations and frequent exacerbations not adequately controlled by long-acting bronchodilators.

The treatment guidelines, based on the patient's disease category as discussed above, are summarized in the table below:

Patient Category	Recommended first choice	Alternative choice	Other possible treatments
A	SAMA prn or SABA prn	LAMA or LABA or SABA and SAMA	Theophylline
B	LAMA or LABA	LAMA and LABA	SABA and/or SAMA Theophylline
C	ICS + LABA or LAMA	LAMA and LABA orLAMA and PDE-4 inhibitor or LABA and PDE-4 inhibitor	SABA and/or SAMA Theophylline
D	ICS +LABA and/or LAMA	ICS + LABA and LAMA or ICS + LABA and PDE-4 inhibitor or LAMA and LABA or LAMA and PDE-4 inhibitor	N-acetylcysteine SABA and/or SAMA Theophylline

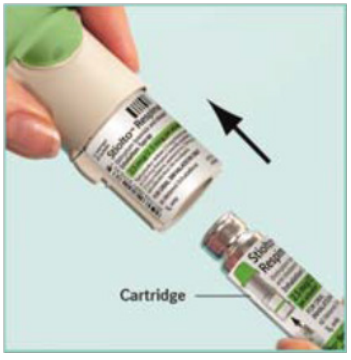
*Abbreviations used *
SAMA – Short acting muscarinc antagonist (anticholinergic) - ie, ipratropium (Atrovent)
SABA – short acting beta agonist – ie, albuterol (Proventil, Ventolin)
LABA – Long acting beta agonist – ie, Salmeterol (Serevent); Formoterol (Foradil)
LAMA – Long acting muscarinic antagonist - ie Tiotropium (Spiriva); aclidinium (Tudorza)
ICS – Inhaled corticosteroid – ie Budesonide (Pulmicort) , fluticasone (Flovent)
PDE-4 inhibitor – ie roflumilast (Daliresp)

Source: Global Strategy for the Diagnosis, Management and Treatment of COPD, Global Initiative for Chronic Pulmonary Lung Disease (GOLD) 2015. Available from http://www.goldcopd.org. Accessed 10/2/2015.

Nursing Update on New COPD Inhaler Devices – Part 1 Respimat Inhalers

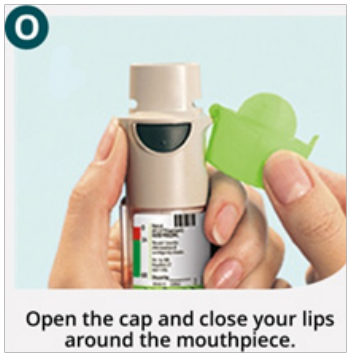
Respimat Inhalers include: Stiolto Respimat®, Spiriva Respimat®, Combivent Respimat®, Striverdi Respimat®.

Getting Started:
Push the safety catch and remove the clear base. Insert cartridge into the inhaler device and write the discard (expiration) date on the label of the Respimat inhaler which is 3 months from the date the Cartridge is inserted into the inhaler.



Priming the Respimat devices:
First use – press the dose-release button (results in an actuation or puff) until an aerosol cloud is visible and then continue to press the dose-release button 3 more times.
Daily use – no priming is required after the initial prime as above.
If not used for more than 3 days – Press the dose-release button once to prime.
If not used for more than 21 days – Prime following the directions for first use.

Administration of the Respimat devices: Remember T.O.P.



NOTE: Pay close attention to the dosing instructions as Stioloto, Striverdi, and Spiriva require 2 inhalations (actuations or puffs) once per day to deliver the usual full prescribed dose.

Cleaning and Storage:
Wipe the mouthpiece inside and out once a week. Store at room temperature and discard inhaler 3 months after the first use or when the locking mechanism is engaged (inhaler is empty).

Sources:1. https://www.respimat.com/functions_and_use/how_to_use.html 2. http://us.boehringer-ingelheim.com/our_products/prescription-medication-products.html

Delivery Devices for COPD | Take a Deep Breath and Avoid Survey Citations

Patients being treated for COPD and their caregivers face a confusing array of drug delivery devices including metered dose inhalers (MDIs) and nebulizers, as well as oral medications. MDIs include inhalers containing liquid and dry powder inhalers (DPIs). This same confusion can lead to survey citations for improper storage and administration.

See below from the State Operations Manual for LTC facility surveyors to assess proper use of metered dose inhalers:

Metered Dose Inhalers (MDI)

Ensuring that a device is administered correctly is vital to optimizing inhalation therapy. The surveyor would observe the administration of MDIs for the following:

- *Shake the container well;*
- *Position in front of or in the resident's mouth. Alternatively a spacer or valved holding chamber may be used;*
- *For cognitively impaired residents, many clinicians believe that the closed mouth technique is easier for the resident and more likely to be successful. However, the open mouth technique often results in better and deeper penetration of the medication into the lungs, when this method can be used.*
- *If more than one puff is required (whether the same medication or a different medication), follow the manufacturer's product information for administration instructions including the acceptable wait time between inhalations.*

Note: If the person administering the medication follows all the procedures outlined above, and there is a failure to administer the medication because the resident can't cooperate (for example, a resident with dementia may not understand the procedure), this should not be counted as a medication error. The surveyor should evaluate the facility's responsibility to assess the resident's circumstance, and possibly attempt other dosage forms such as oral dosage forms or nebulizers.

Also, it is important to administer inhaled medications to patients in the proper sequence.

1. Bronchodilators are given first (i.e. albuterol) – this opens airways and improves absorption of subsequent medications.
2. Anticholinergics are given second (i.e. ipratropium) – also opens airways.
3. Steroid inhaler is always given last and never on a PRN basis (i.e. Advair), Flovent).
4. Rescue inhalers (bronchodilators) given on a PRN basis should be coordinated with any routine dose given to avoid excessive dosing of these medications.

Other standards of practice for Oral Inhalation Administration include:

1. Dry Powder Inhalers are usually held in horizontal position and are not shaken.
2. MDIs containing liquid should be primed before the first use, if not used for several days, and if inhaler is dropped. The MDI can be primed by depressing the inhaler until a full dose is emitted. Do not spray toward resident while priming. Inhalers containing an anticholinergic medication (see above) can cause significant side effects if sprayed in the eyes.
3. If another puff of the same or different medication is required, wait at least 1-2 minutes between administrations.
4. For steroid inhalers (see above), provide resident with a cup of water and instruct them to rinse mouth and spit water back into cup. This is to prevent the development of a thrush infection due to topical absorption in the mouth.

Sources: 1. CMS publication 100-07 State Operations Provider Certification Transmittal 127 11/20/14. 2. AlixaRx Policy and Procedure Manual Section 8.8: Oral Inhalation Administration Updated June 2015

New Vaccine Guidelines Recommend Use of 13-valent Pneumococcal Vaccine in Elderly

The Advisory Committee on Immunization Practices (ACIP) has recently updated the vaccination guidelines with a recommendation to provide the 13-valent pneumococcal vaccine (PCV-13, Prevnar13) in series with the 23-valent pneumococcal polysaccharide vaccine (PPSV-23, Pneumovax) to all adults aged 65 and over. These recommendations are

based on the results of the CAPiTA clinical trial which evaluated the effectiveness of the PCV13 vaccine to prevent community-acquired pneumonia among approximately 85,000 adults aged 65 or greater whom had not been previously vaccinated for pneumococcal disease. These guidelines were updated in June of 2015.

A summary of the new guidelines is presented below:

1. No previous pneumococcal vaccine

Adults aged 65 and over who have not previously received a pneumococcal vaccine should receive a dose of PCV-13 (Prevnar-13) first. A dose of PPSV-23 (Pneumovax) should be given at least 1 year after the dose of PCV-13. PCV-13 and PPSV-23 should never be administered at the same time. If a dose of the PPSV-23 is inadvertently given earlier than the recommended interval, the dose does not need to be repeated.

2. Previous vaccination with Pneumovax

Adults aged 65 and over who have previously received a dose of PPSV-23 should also receive a dose of PCV-13 if they have not previously received it. PCV-13 should be given at least 1 year after the receipt of the most recent dose of PPSV-23. If an additional dose of PPSV-23 is indicated (patient received 1st dose of PPSV-23 before age 65), the dose should be given at least 1 year after the PCV-13 dose and at least 5 years after the most recent PPSV-23 dose.

Vaccination with PCV-13 is contraindicated in anyone who may have had a severe allergic reaction to any component of PCV-13 or PCV-7 or to any diphtheria toxoid containing vaccine.

Common adverse reactions reported with PCV-13 are similar to PPSV-23 and may include: pain, redness or swelling at injection site, limitations of movement in the arm in which the vaccine was given, fatigue, headache, chills, decreased appetite, generalized muscle pain and joint pain. Adverse events occurring after the administration of any vaccine should be reported to the Vaccine Adverse Event Reporting System (VAERS). For more information about VAERS, refer to http://vaers.hhs.gov.

The recommendation for the use of PCV-13 in adults aged 65 or older will be reevaluated in 2018 and revised as needed.

Sources: 1. Tomczyk, S, Bennett, N, Stoecker, C, et al. Use of 13-valent Pneumococcal Conjugate Vaccine and 23-Valent Pneumococcal Polysaccharide Vaccine Among Adults Aged ≥65 years: Recommendations of the Advisory Committee on Immunization Practices. MMWR 2014; 63: 822-825. 2. Kobayashi, M, Bennett, N, Gierke, R, et al. Intervals between PCV 13 and PPSV23 Vaccines: Recommendations of the Advisory Committee on Immunization Practices. MMWR 2015: 64: 944-947.

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