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Focus on COPD – Part 1: Risk Factors, Classification, and Nonpharmacological Treatments

- by Ellie Kang and Allen Lefkovitz

Chronic obstructive pulmonary disease (COPD) is the 3rd leading cause of death in the world, affecting more than 11 million adults in the United States, in addition to millions who remain undiagnosed. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) have released their 2018 updates to their "Global Strategy for the Diagnosis, Management and Prevention of COPD" (hereafter referred to as GOLD 2018). This focus article will list known risk factors, outline the different patient groups used to classify individuals with COPD, and provide an overview of the nonpharmacological treatment options that should be considered. Next month's article will focus on the most recent recommendations for the pharmacological treatment of COPD.

Risk Factors for COPD

Known risk factors for COPD include:

Particulate exposure (85-90% of COPD deaths are associated with cigarette smoking)	**Increasing age**	**Recurrent or chronic respiratory infections**	**Genetic factors** (e.g., alpha-1 antitrypsin deficiency)

Of these risk factors, exposure to tobacco smoke and recurrent or chronic respiratory infections may be the most preventable. In the 2017 GOLD guidelines, the definition of COPD was revised slightly to incorporate the influence of smoking. Since 2017, COPD has been defined as "a common, preventable and treatable disease, characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities, usually caused by significant exposure to noxious particles or gases." Both smoking cessation and promoting vaccinations are essential to help reduce exposure to COPD risk factors.

Classifying COPD

Incorporating COPD symptoms, spirometric testing, and/or risk of exacerbation, GOLD 2018 continues to classify those with COPD according to the "ABCD" groups (see Table on page 2). Being aware of how to classify an individual's COPD is essential to determining the appropriate treatment strategies.

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	Patient Group	Description	Features
Less Severe	A	Lower risk of exacerbations, less (dyspnea) symptoms	Mild or moderate airflow limitation and/or 0-1 exacerbations per year
	B	Lower risk of exacerbations, more symptoms	Mild or moderate airflow limitation and/or 0-1 exacerbations per year; significantly impaired health status due to COPD
	C	Higher risk of exacerbations, less symptoms	Severe or very severe airflow limitation and/or ≥ 2 exacerbations per year or at least 1 hospital admission for COPD exacerbation
More Severe	D	Higher risk of exacerbations, more symptoms	Severe or very severe airflow limitation and/or ≥ 2 exacerbations per year or at least 1 hospital admission for COPD exacerbation; significantly impaired health status

Nonpharmacological Considerations for COPD

According to GOLD 2018, pharmacologic treatment "should be complemented by appropriate nonpharmacologic interventions."

Smoking cessation, according to the GOLD guidelines is "key" in helping to:

- reduce COPD symptoms;
- reduce the frequency and severity of exacerbations; and
- improve overall health status and exercise tolerance.

Smoking cessation also "has the greatest capacity to influence the natural history of COPD." Whenever possible, facilities should support policies that promote a smoke-free environment. Additionally, behavioral modification or "counseling" may be a consideration in encouraging individuals to quit smoking. GOLD 2018 states "The effectiveness and safety of e-cigarettes as a smoking cessation aid is uncertain at present."

Physical activity/exercise training, including endurance training, may help combat the great impact COPD can have on an individual's ability to perform basic activities of daily living. This benefit can be seen if individualized training is provided where the amount and intensity of the exercises can be gradually increased. Gradually increasing their physical activity may help provide both physical and psychological benefits.

Education can be as simple as explaining what their disease state means and the impact it has on their lives, to educating about self-management, to giving directions on scenarios when they should be more vigilant. For example, a patient with COPD may benefit from education on the symptoms that indicate they must seek more help so that treatment of an exacerbation can begin as soon as possible.

Nutritional counseling is an important consideration for patients with severe COPD. While a healthy body weight and good nutrition are of great benefit for everyone, they aid individuals with COPD in having the necessary energy to exercise or even just perform daily tasks. For those with more severe disease, specific nutritional strategies that may be an option include:

- consuming more frequent, small meals, as tolerated
- avoiding foods that are extremely hot or cold
- avoiding foods that may cause bloating or gas.

The 2018 GOLD Guidelines are avaiable for free at: https://goldcopd.org/gold-reports/

A Primer on Biosimilars

- by Richard Kilmartin

Biosimilars: As defined by the FDA, "A biosimilar is a biological product that is highly similar to and has no clinically meaningful differences from an existing FDA-approved reference product." This sets biosimilars apart from generic medications which are essentially chemical copies of the original product. Biologic medications are generally very large, complex molecules manufactured through processes such as monoclonal antibody or recombinant DNA technologies. The manufacturing process is complex and each lot of product may have slight differences in composition. The goal of both generics and biosimilars, however, is to provide the same clinical outcome as the originally approved product at a lower cost.

Substitution: In contrast to most generic medications, biosimilars will often require a new prescription before any substitution takes place. The manufacturer of a biosimilar may apply to the FDA to obtain approval as an interchangeable product. This requires additional proof of safety and effectiveness, when compared to the reference product. Interchangeable biosimilar products may be substituted for the reference product without prescriber approval or intervention. Laws governing biosimilars are evolving and substitution laws often vary from state to state. The FDA publishes a document referred to as the "Purple Book" listing approved biosimilars and interchangeable biologicals.

What's in a Name: Biosimilars are named in a format set forth by the FDA. The name of a biosimilar consists of a "core name" (e.g., adalimumab) derived from the nonproprietary name of the innovator product [e.g., Humira (adalimumab)] and a four letter suffix (e.g., -atto) that is, "meaningless but distinguishable". Examples of available biosimilars are in the table below.

Reference Product	Biosimilar Product
Humira (adalimumab)	Amjevita (adalimumab-atto)
Procrit (epoetin alpha)	Retacrit (epoetin alpha-epbx)
Neulasta (pegfilgrastim)	Fulphila (pegfilgrastim-jmdb)
Remicade (infliximab)	Inflectra (infliximab-dybb)
	Renflexis (infliximab-abda)
	Ixifi (infliximab-qbtx)

Looking Ahead: The US market for biosimilars is expected to grow and will likely be shaped by the actions of payers and policymakers. As with any therapy, selection of the most appropriate therapy, monitoring for effectiveness and safety, and the prompt reporting of suspected complications will be paramount to the safe use of these products.

Additional information on biosimilars is available at: https://www.fda.gov/Drugs/DevelopmentApprovalProcess/HowDrugsareDevelopedandApproved/ApprovalApplications/TherapeuticBiologicApplications/Biosimilars/default.htm

NEW Generic Medications

- by Allen Lefkovitz

Generic Name	Brand Name	Date Generic Available
Phytonadione 5 mg Tablet	Mephyton® Tablet	5/25/18
Colesevelam HCl 625 mg Tablet	Welchol™ Tablet	5/18/18

Lokelma™ for oral suspension

- by Dave Pregizer

Brand Name (Generic Name)	**Lokelma [lo-KEL-ma] (sodium zirconium cyclosilicate) [zir KOE nee um SYE kloe SIL i kate]**
How Supplied	5 g and 10 g packets: Single or box of 30 packets
Therapeutic Class	Potassium binder
Approved Indication	Treatment of hyperkalemia in adults
Usual Dosing	Starting dose: 10 g three times a day for up to 2 days. Maintenance: 10 g once daily. Adjust dose by 5 g daily, at one-week intervals as needed to obtain serum potassium target range. Mix in approximately 3 tablespoons of water or more if desired. Stir well and drink immediately. If powder remains, add water, stir and drink immediately. Repeat until no powder remains to ensure the entire dose is taken.
Select Drug Interactions	Other oral medications should be administered at least 2 hours before or 2 hours after Lokelma
Most Common Side Effects	Mild to moderate edema
Miscellaneous	Not be used as an emergency treatment for life-threatening hyperkalemia due to delayed onset of action
Website	https://www.lokelma-hcp.com/

Consensi® Tablets

Brand Name (Generic Name)	**Consensi [con SEN si] (amlodipine & celecoxib) [am LOE di peen & se le KOKS ib]**
How Supplied	Amlodipine/celecoxib tablets: 2.5 mg/200 mg, 5 mg/200 mg, and 10 mg/200 mg
Therapeutic Class	Combination calcium channel blocker and a nonsteroidal anti-inflammatory drug (NSAID)
Approved Indication	For patients for whom treatment with amlodipine for hypertension and celecoxib for osteoarthritis are appropriate.
Usual Dosing	Start at 5 mg/200 mg (2.5 mg/200 mg for small, elderly, or frail patients or hepatic impairment) once daily. Titrate as needed to 5 mg/200 mg or 10 mg/200 mg once daily for blood pressure control. Discontinue if analgesic therapy is no longer indicated and initiate alternative antihypertensive therapy. Not to be taken more than once daily.
Select Drug Interactions	Drugs interfering with hemostasis (e.g., warfarin, aspirin, SSRIs/SNRIs), ACE inhibitors, angiotensin receptor blockers, or beta-blockers, diuretics, digoxin, and simvastatin.
Most Common Side Effects	Celecoxib: abdominal pain, diarrhea, dyspepsia, flatulence, peripheral edema, dizziness, upper respiratory tract infection, and rash. Amlodipine: edema, fatigue, nausea, abdominal pain, and somnolence.
Miscellaneous	Boxed warning for risk of serious cardiovascular and gastrointestinal events. Not recommended with moderate or severe hepatic impairment or severe renal insufficiency and poor metabolizers of CYP2C9 substrates.
Website	www.kitovpharma.com

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