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## Keys to Managing the Systemic Effects of COPD Exacerbations

### Announcer:

You're listening to *Clinician's Roundtable* on ReachMD, and this episode is sponsored by AstraZeneca. Here's your host, Dr. Charles Turck.

### Dr. Turck:

Welcome to *Clinician's Roundtable* on ReachMD. I'm Dr. Charles Turck, and joining me to discuss how we can manage the systemic effects of disease exacerbations in patients with chronic obstructive pulmonary disease, or COPD for short, is Dr. Allen Blaivas. He's a pulmonary critical care and sleep medicine physician at VA New Jersey Healthcare system in East Orange, New Jersey. Dr. Blaivas, it's great to have you with us today.

### Dr. Blaivas:

Hi, Dr. Turck. Thank you for having me.

### Dr. Turck:

So jumping right in, Dr. Blaivas, how do COPD exacerbations impact the respiratory system?

### Dr. Blaivas:

First, I think it's important to define exactly what a COPD exacerbation is. It's a worsening of dyspnea with or without cough and sputum that can worsen over the course of one or two weeks. COPD can be triggered by a number of different factors, alone or in combination, including bacterial and viral respiratory infections, environmental pollutants, or other unknown factors. So when you get these infections or other environmental factors that could cause an airway inflammation, which leads to increased mucus production and significant air trapping, ultimately, these hyperinflammatory response in the lungs can increase dyspnea, which is really the cardinal symptom of an exacerbation. Other symptoms include increased sputum purulence and volume, increased cough, and wheezes, and these are all the acute changes. Additionally, many studies have shown that there's a detrimental impact of COPD exacerbations on long-term health. They're associated with accelerated lung function loss and ongoing symptoms. Recovery from a COPD exacerbation can be prolonged, with about 20 percent or so not reaching their pre-morbid status even after two or three months. Additionally, exacerbations tend to cluster, so one exacerbation may beget another exacerbation, and that just leads to worsening health status.

### Dr. Turck:

And if we look beyond the lungs, how do COPD exacerbations affect patients' cardiovascular and overall health?

### Dr. Blaivas:

Well, cardiovascular risk factors and COPD definitely coexist in a lot of patients. It's a primary comorbidity in patients with COPD. Not the least because if you think about what causes COPD in most patients, it's long-term smoking, and these are associated with the fact that smoking is associated with a lot of cardiovascular risk factors, particularly in regard to things like MI and other comorbidities that could occur. Heart failure and arrhythmias can be frequent in patients with COPD, both during exacerbations and not during exacerbations. During exacerbations of COPD, as we've already described, there's a hyperinflammatory state in the lung, and that probably represents a very vulnerable, high-risk cardiac state. Exacerbations have been shown to be associated with an increased risk of MI, stroke, and other cardiovascular death. These risks are elevated even during moderate exacerbations; it doesn't only have to be

during severe exacerbations. Even moderate exacerbations have been shown, to a lesser extent than severe exacerbations, but that hyperinflammatory state can definitely cause increased risk. And that risk tends to decline over time post-exacerbation. So there's really a strong emphasis on the hyperinflammatory state that can cause long-term cardiovascular problems. Outside of the cardiovascular implications, there's quality-of-life issues and physical activity issues that are often decreased after exacerbations. This may impact the ability to do routine activities of daily living, even walking, sleeping, or talking. All these things that we do—I don't mean just really strong functional things—I mean even just doing the routine things that we do in our life.

**Dr. Turck:**

And aside from the cardiovascular system, are there any other ways that COPD exacerbations lead to increased mortality?

**Dr. Blaivas:**

So as we've discussed, COPD is a hyperinflammatory state, which can lead to an inflammation which relates to cardiac disease. And the hyperinflammatory state of COPD leads to malnutrition, anorexia, and further reduction of physical functioning. You know, a lot of patients with COPD lose weight. They talk about the obesity paradox in COPD whereas in most cases, obese patients tend to live shorter than those who are thin. In COPD patients, they actually tend to live longer, and that's believed to be due to the chronic inflammation that occurs in COPD that tends to be marked by weight loss and anorexia, and these patients lose weight. And that's really a sign of significant disease. Essentially, a COPD exacerbation could result in what's known as the downward spiral of reduced lung function, less physical activity, declining mental health, and worsening quality of life, which leads to further COPD exacerbations, and that ultimately will result in increased mortality.

**Dr. Turck:**

For those just tuning in, you're listening to *Clinician's Roundtable* on ReachMD. I'm Dr. Charles Turck, and I'm speaking with Dr. Allen Blaivas about the effects of COPD exacerbations on different organ systems.

So, Dr. Blaivas, now that we know more about the systemic effects of COPD exacerbations, let's focus on how we can manage them. Starting with a multidisciplinary team and care, who's part of that team and how do you work with them?

**Dr. Blaivas:**

Yeah, so we've discussed how the COPD really acts systemically, and so absolutely, it's important to involve a multidisciplinary team. We could think of behavioral health counseling for smoking cessation, which is necessary in those who still smoke. You also want to have, obviously, a pulmonologist involved and other environmental or occupational experts to identify potential triggers of COPD. We need to have a fail-safe mechanism to really make sure that all vaccinations are given when indicated. So that's our nursing colleagues who usually are in the front-line in terms of giving vaccinations and knowing when they're due.

A nutritionist can help with nutrition support. Respiratory therapists are essential in patients who need oxygen therapy and are often also well trained on making sure that the patient is using their device for their inhaled medicine correctly, that they have proper technique in terms of using their inhalers. Rehabilitation specialists, including the physiatrist, the physical medicine doctor, as well as physical therapists are necessary for pulmonary rehab and other exercise therapy.

We should be on high alert for signs of cardiac disease, especially in those who have dyspnea disproportionate to their level of lung disease, have an arrhythmia, or sometimes even just tachycardia on exam. If they have peripheral edema or crackles on exam, then these are other signs that they probably need a cardiovascular referral as well.

**Dr. Turck:**

Now about the guidelines from the Global Initiative for Chronic Obstructive Lung Disease, or GOLD, Report, how do you apply them in clinical practice, especially given their recent recommendation to initiate triple therapy early on in appropriate patients?

**Dr. Blaivas:**

The first thing to recognize is that monotherapy is rarely recommended in patients with COPD. Typically, the initial therapy will be a LABA/LAMA combination, a long-acting beta agonist with a long-acting muscarinic antagonist in all, except for those with only occasional dyspnea. Combination treatment with a LABA/LAMA has been shown to increase FEV1, reduce symptoms, and reduce exacerbations in comparison to monotherapy. So it's important to really get these patients on dual therapy to begin with. There are several factors to consider when we want to think about adding an inhaled corticosteroid, which in some patients may appropriately be given even as their initial therapy. If there's a history of hospitalizations, or there's two or more moderate exacerbations of COPD per year, these are patients that inhaled corticosteroids should be considered. If there's a history of asthma or blood eosinophils are greater

than 300, there's definitely strong evidence to use an inhaled corticosteroid even as initial therapy. And those with one moderate exacerbation or if their blood eosinophils are between 100 and 300, it's less clear that it's helpful, but it probably is. It's not quite as strong in terms of the data, but it's probably helpful. And in those with the history of pneumonia, we should probably not consider ICS because as we know, an inhaled corticosteroid can increase the risk of pneumonia, or if the patient has eosinophils less than 100, it's probably not that helpful according to most of the studies. So those patients probably do not warrant ICS usage.

**Dr. Turck:**

And lastly, Dr. Blaivas, would you like to share any other best practices for managing the multi-system effects of COPD?

**Dr. Blaivas:**

First and foremost is to really appreciate how important the self-management interventions are to really motivate, engage, and coach our patients to adapt their behavior and develop skills to better manage their own COPD on a daily basis; it's very empowering for patients. They appreciate it, they know what to do when they're faced with difficulty, and they also are much more in tune with their symptoms. When we see the patients, we really have to ask appropriate questions to fully evaluate their symptoms, if they've had mild exacerbations, and really get a sense of their current functional status as it compares to prior functional status and activity level. I like to teach my residents and fellows that if we don't ask the right questions, we're not going to get the answers. If you ask the patient how he's doing and he says he's doing really well, that's nice, but then you start talking to him a little more and you find out that he used to go bowling three times a week, and now he doesn't bowl because he's too short of breath. So if you just ask him a simple question without probing at all or without really relating to prior activity level, he sounds like he's doing fine, but in fact, he's actually altered his behavior because of his dyspnea and that's not good. So that's something we have to really be on top of.

Obviously, we have to review smoking status. We have to probe and address issues such as comorbidities, as we've discussed, like CHF, ischemic heart disease, and osteoporosis, which could occur with frequent steroid use which can happen in a lot of patients with a lot of COPD exacerbations. Check their nutritional status; ask about weight loss. Think about possible obstructive sleep apnea, particularly in patients who are at least mildly hypoxemic as this can definitely worsen the outcome of COPD. COPD, as we know, is a lung disease, but it really represents a chronic systemic illness, and we should be thinking of it that way.

**Dr. Turck:**

Well, with those best practices in mind, I want to thank my guest, Dr. Allen Blaivas, for joining me to discuss strategies for mitigating the systemic effects of COPD exacerbations. Dr. Blaivas, it was great having you on the program.

**Dr. Blaivas:**

Thank you so much for having me, Dr. Turck.

**Announcer:**

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