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# The Role of Physical Therapy In Treating the Patient with COPD in the Home: Medication Management, Smoking Cessation, Pulmonary Rehabilitation

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Presenter: Melissa Bednarek, PT, DPT, PhD, CCS  
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- [Calista] Welcome, Our course title is, The Role of Physical Therapy in Treating the Management With COPD in the Home: Medication Management, Smoking Cessation and Pulmonary Rehabilitation. It is my pleasure to introduce Dr. Melissa Bednarek, to physicaltherapy.com. Melissa is currently an associate professor and the doctor of physical therapy program at Chatham University in Pittsburgh, Pennsylvania. She has her bachelor's of Science Degree, with a major in Biology and Psychology, from Saint Bonaventure University, and a master of Physical Therapy, from MCP Hanaman University, and a PhD in Physiology, from Virginia Commonwealth University. In 2009, she had joined the physical therapy faculty at Chatham, where she currently teaches Exercise Physiology, Cardiovascular, and Pulmonary Physical Therapy and Pharmacology Content. She has since earned her DPT degree from Chatham and achieved her clinical specialist certification in cardiovascular and pulmonary physical therapy as well. over her 20 plus year career in physical therapy, Melissa has practiced in acute care, outpatient pulmonary rehabilitation and home health. So we are so pleased to have you here with us today in part of our home health series. And at this time I'm gonna turn the microphone over to you, Dr. Bednarek.

- [Dr. Melissa] Thank you Calista. So good morning or good afternoon, wherever you may be. As I mentioned, my name is Melissa Bednarek. And I would like to thank you for joining me on this continued webinar. I know it's the Friday before a long holiday weekend, so I really appreciate the time that we will spend together here for the next two hours. So over these next two hours, I hope that you might gain some additional insights and that might be helpful in treating your next patient with COPD. So in particular, some thoughts on recommended medication management, which I know is everyone's favorite topic, medications in general. Some concrete suggestions on how to have the ever difficult conversation, regarding smoking cessation and finally, even some next step recommendations for patients with COPD that you're seeing in the home. So I kind of do have certainly a home health setting in mind, but really any of this information could apply to any post acute setting. So let's get started, as far as some disclosures. So from a financial perspective, I'm certainly receiving an

honorarium for presenting this course, as well as I do have courses on med bridge. On things such as Pharmacology for the Neurologic Physical Therapist, as well as a course on assessment of Cardiopulmonary Conditions and The Geriatric Client. A nonfinancial disclosure, and I really mentioned it as a resource. Once upon a time, I was really interested in certainly working with patients with COPD and I was looking for sort of a home, from a professional organization perspective. So where were other physical therapists interested in treating these patients? Where did they seek out information and camaraderie? And actually I've found many colleagues in the American thoracic society, pulmonary rehabilitation assembly. So similar structure to a PTA and the multiple sections and academies, there's a specific assembly dedicated to pulmonary rehab as part of the American Thoracic Society. This is a great organization, so if like me, you're interested in more information, I definitely recommend checking out their website. Certainly even though it's American Thoracic Society, it is an international organization. So sort of interact with those from across the world, as well as interprofessional. So physicians, nurses, exercise, physiologists, physical therapists, et cetera. So it's a great, great resource. These are the learning outcomes for this course. So by the end of this course, participants will be able to identify classes of pharmacological agents used in the treatment of COPD. So as I mentioned, pharmacology is a topic that physical therapists certainly appreciate the importance of, but it can often seem overwhelming with all of the ever-changing information. So through this course, I hope to offer a way to think about and organize the medications, specifically related to patients with COPD. Based on their symptom presentation, as well as history of exacerbations and hospitalizations, and sort of provide a tool that will offer us a framework to think about this. So I certainly appreciate, that our role as physical therapist does not include prescribing medications, but hopefully, by the end of this webinar, what I'm hoping to offer you is some insight that might assist with patient education, perhaps as a physical therapist or doing medication reconciliation in the home. You're sort of noticing an omission in the potential important medication for a patient with COPD. The second learning outcome will be to list tools available to assist with medication management in the home health setting. So again, related to

COPD, but it's sort of taking a small sidebar to talk about pharmacology in general. Again, trying to provide you some insight with tools that are available that provide recommendations on potentially inappropriate medications for older adults. Those that should be avoided for patients with given conditions, those that should use with caution, et cetera. So again, is a tool that this can provide recommendations for medications that are either prescribed that perhaps shouldn't be, or that may be omitted. So certainly any sort of medication omissions in air. The third learning outcome for this course is to describe clinical practice guidelines, to support a patient in smoking cessation and how to modify if the patient is not ready to quit. So as close to mention, I actually teach cardiovascular and pulmonary physical therapy content in an entry level program. And with certainly conditions that we see smoking as a risk factor.

So for many years, all I could suggest to students was, let's just tell them not to smoke, not very helpful. So then I learned at these clinical practice guidelines that I'm gonna share with you today, that might offer some assistance in helping you structure a conversation. Sort of interwoven with this will be, just a brief discussion of motivational interviewing. So again, topics that you may have heard about, but, maybe don't know enough about to feel comfortable implementing into your practice. And so thinking about motivational interview, again, as a patient education strategy to assist with behavioral change. The fourth learning outcome for this course is to describe the components about patient pulmonary rehabilitation. So, how many times have you as a therapist, hope for a next step in the care for a patient in the home health setting? So if a patient has an orthopedic diagnosis, a total knee replacement, a total hip replacement, the transition to outpatient physical therapy is a pretty easy one, pretty standard one. But what about that patient with a primary cardiac or pulmonary condition? So here, we'll talk more about some outpatient pulmonary rehab strategies and how you might even begin this, to begin outpatient pulmonary rehab strategies, in the home with the patient. And then finally, we'll finish up for the fifth learning outcome here, to describe the role of the home health physical therapist in the management of a

patient with COPD. We'll finish up with a case study that we'll try to bring the different components together in the care of a patient with COPD. So am sure everyone's comfortable with what COPD, Chronic Obstructive Pulmonary Disease is, but just a quick reminder that really when you sort of kind of get boil it down to the bottom level, the disease really involves an airflow limitation, that's not fully reversible. So chronic obstructive pulmonary disease is not a specific disorder per say, but sort of an umbrella term for a couple of disorders. But the commonality is that the airflow limitation is not fully reversible. The two main sort of conditions under COPD are Chronic Bronchitis and Emphysema. So Chronic Bronchitis is a perpetual inflammation with excess mucus production and the lung bronchioles that limits excretory flow. So I underline lung bronchioles on this particular slide, just to highlight the anatomical difference as far as where the issue is with chronic bronchitis. So again, it's a perpetual inflammation of the bronchioles, with a mucus production that limits the patient's ability to breathe out.

So as far as the definition of chronic bronchitis, defined as a chronic productive cough, for three months in each of two successive years. So this sort of, kind of eliminates that sort of chronic cough because of a bad flu season or something like that. So by definition, chronic bronchitis is a chronic productive cough because of that excess mucus production for three months in two successive years. So this is a different than emphysema, also considered under chronic obstructive pulmonary disease, which is an abnormal and permanent enlargement of the alveoli. And the problem here is the fact that with these large alveoli, then when you have abnormal and permanent enlargement, you decrease the surface area and alveoli is critical for the surface area for gas exchange. So you essentially have decreased surface area that's available for gas exchange, that can result in issues with expiratory flow. So again, chronic bronchitis, emphysema, different locations in the lungs, as far as where the pathology occurs, but the bottom line is they both result in an airflow limitation, that's not fully reversible. I've included asthma and parenthesis on this particular slide, is cause actually at one point, asthma was categorized under chronic obstructive pulmonary

disease. But more recently it seems that it's now thought to be a different disorder, even though it certainly shares some common traits and features. So I certainly want to acknowledge that, but the current thinking seems to be that actually asthma is not listed under chronic obstructive pulmonary disease. So as I mentioned in the learning outcomes, I'd like to introduce you to some tools. This is the first tool that I'd like to introduce you to. The first is this Global Initiative for Chronic Obstructive Lung Disease or GOLD Guidelines. So GOLD was launched in 1997. It's in collaboration with the, National Heart Lung and Blood Institute at the NIH, as well as the World Health Organization. So again, an international based initiative. They provide yearly updates on diagnosis, management and prevention specifically related to COPD. So an important update,

So again, this was launched in 1997, but sort of kind of a critical pivotal year was back in 2011 when through these guidelines, they updated them to include this ABCD Assessment Tool. This was first developed in 2011, and this was a way to stratify patients and thus provide some guidance for healthcare providers to appropriate management. This tool has been revised over the years, and today I'm gonna share with you the most recent 2020 version. As far as if you're interested in more on this document, I would absolutely recommend going to the website. You can just sort of Google, GOLD and you're able to actually download a single copy, of the 141 page document from the website for free for personal use only. So as you'll see throughout this presentation, because it's copyrighted and I don't have the permissions, sort of sharing some of the highlights of this document, but you will not see any direct information from there because of the copyright. That being said, though, if you're interested, you can actually, as an individual, download it for your own personal use. So the information I'm gonna share with you now, is really coming from those GOLD guidelines. So thinking the diagnosis, so symptoms typically include dyspnea, especially if persistent and very progressive over time, chronic cough and sputum production. These are sort of like the Cardinal symptoms of COPD. Additional symptoms could include, fatigues easily, wheezing, frequent respiratory infections, the

use of accessory muscles to breathe, cyanosis and clubbing, so clubbing of the nails. So some other common signs and symptoms. As far as thinking about diagnosis, individuals with this symptom presentation in combination with risk factors, the most common of which is certainly smoking. Might suggest the need for spirometry, for definitive diagnosis.

So spirometry, I'm not sure if anyone's familiar with the process for spirometry, but it's certainly a noninvasive test, but it is often challenging. So individuals have to take sort of a deep breath in and exhale into a device and different metrics are obtained. So these metrics include FEV<sub>1</sub> and FVC. So just taking a moment to kind of define those as well. So I'm gonna start actually with FVC. So FVC stands for, Forced Vital Capacity, and this is the amount of air that can be forcibly exhaled after a maximum inspiration. So eventually essentially the individual has this device, takes a maximal inspiration and then forcibly exhales as much air as possible. What's important to know about this, is that there's no timeframe. So essentially they could take all the time in the world to be able to exhale that amount of air. So again, this is forced vital capacity. The other term here is FEV<sub>1</sub>, so this is the forced excretory volume in one second. So this is really measuring again of that air that I just described that was forcibly exhaled. How much of it is exhaled in the first second? So there's sort of norms related to this, again, tying this back to how COPD presents, it's an airflow limitation. So one would expect that decrease in airflow, certainly in that first second. So these are the two values that are commonly used within spirometry for diagnosis. So really what it is, is it's taking the ratio. So after, a given a Bronco dilator, right? So trying to maximize the diameter of the airways and sort of be allowed to be able to compare among individuals. So again, all individuals are given a Bronco dilator, then they go through this spirometry process and they're measuring the FEV<sub>1</sub>. So the amount in one second over that given all the time in the world, how much air they'd be able to exhale, and that ratio is determined. So if that ratio is less than 0.7, this is diagnostic for an airflow limitation. So again, having to find those two and then looking at how much they're doing in one second, versus given all the time in the world. Just to give you an idea, so a normal

ratio is not one, right? So the normal ratio is 0.8. so a normal FEV 1/FVC ratio would be 0.8. So essentially, in that first second, they're able to exhale about 80% of what they could exhale given all the time in the world. So if it's less than 0.7, that is diagnostic for an obstructive disease. So thinking about sort of going back to high school math and that if typically the FEV 1 is significantly reduced, as well as FVC. So therefore kind of with a smaller numerator over a small denominator, you get that reduced ratio. So certainly not the goal of this particular presentation today, but just kind of as a note, comparing this to somebody with restrictive disease. So we know about obstructive diseases and restrictive diseases. Here, somebody such as restrictive lung disease, for example, they would actually have a decrease in forced vital capacity as well. They can't get the air in, so therefore they're not able to get it out, but it's not really an expiratory air flow issues. So basically the numerator and the denominator with both reduced, would both be reduced probably in similar amounts.

So therefore the ratio would more approach normal or even exceed normal. So again, just sort of as a sidebar, if you're sort of interested in the diagnostic aspect of this, but again for COPD, it's a post-bronchodilator, FEV 1 over FVC, less than 70.7 or 70%. So what do we do with this information? So that is diagnostic. And then we can sort of classify impairment beyond that. So once we've determined or once the medical team has determined through spirometry of a diagnosis of COPD, then they are able to look at that FEV 1 value and classify it into GOLD 1, 2, 3, and 4 categories. So for example, GOLD 1 is mild. So this is where the FEV 1 is greater than or equal to 80% of predicted. So again, they've already met the requirement of that reduced ratio, but the FEV 1 is actually maybe greater than, or equal to 80% of predicted. So predicted, predicted based on what? So the values are all dependent on demographic information, such as age of the individual, gender height, weight, smoking status, et cetera. So this is all information that is put into the system prior and therefore able to predict what it should be. And then a GOLD 1 is mild to a PD, with an FEV 1 greater than 80%. Gold 2 as you can see is moderate, within an FEV 1 50% or greater, but up to 79. So essentially 50% to 79% of predicted. GOLD 3, is severe between 30% and

49 of predicted and GOLD 4 would be very severe. So this is an individual that is able to expire less than 30% of what should be predicted based on demographic information in that first second through spirometry. All of this to say sounds very, what she'll sort of notice as far as my appreciation of literature. And that is, I love things that are really organized. And this sounds very organized to me, which is one of the reasons that I'm hoping to share it with you today. But also what we're gonna now learn, is that FEV 1 alone has not been a good predictor of exacerbation risk or mortality risk in patients with COPD. So therefore they've over the years, through these GOLD guidelines, compared it with symptom measures, The two symptom measures have actually, that are used most commonly and sort of described in the GOLD guidelines , are the Modified British Medical Research Council or MMRC questionnaire and the COPD Assessment Test or the CAT.

So the MRC is a measure of breathlessness. So it's a grade of zero to four and with higher grade meaning more impairment. So this is, thinking as a physical therapist, right? These are very function-based, this is a very function based measure of breathlessness. So for example, and there's very specific wording. So a grade of zero indicates that the patient is not troubled with breathlessness, except with strenuous exercise. An MMRC grade one, would be troubled with shortness of breath when hurrying or walking up a slight hill. Grade two, is that the individual walks slower than people of the same age due to the breathlessness, or they have to stop for breath when walking at their own pace on the level. Three is that they have to stop for breath after walking approximately a hundred meters, or after a few minutes on the level. And four is that they're too breathless to leave the house or breathless when dressing or undressing. So again from zero to four, I mean, I sort of think of myself as a grade zero, and not really troubled with breathlessness, except with strenuous exercise. Versus the grade four to breathless to leave the house or breathless when dressing or undressing. So when I think about the scale, I tend to always think about one patient, I had a number of years ago that I was treating in the home setting, very delightful, older female, sort of living in law quarters with family. I specifically, she was very strict as far

as she would not let me come and see her for visits until the afternoon. And why was that? Because she really wanted to go through her morning routine as far as getting dressed and bathed and things like that. And because she got so breathless with dressing and she needed such frequent breaks, it took her two or three hours in the morning to be able to sort of go through her morning bathing routine. So again, this patient always comes to mind, so to breathless to leave the house or breathless when dressing her undressing. So just kinda give it another application there. The COPD Assessment Test, so this is unlike the MMRC, which is really more focused on breathlessness, this is more comprehensive. So this has a series of eight items, and it says Likert scale from zero to five. So zero is being, known impairment on that particular item and five is being high impairment. So again, the higher, the closer to score to 40, the more impairment.

So what are these items that, these more comprehensive items, they're items related to cough. So essentially on a zero to five scale, you don't cough at all, you cough a lot for example. Presence of phlegm in the chest, chest tightness, breathlessness with activity, activity limitations, does the individual feel confident in leaving the home due to their lung condition? What is their quality of sleep and energy level? So certainly breathlessness is captured within the CAT, but it's certainly more comprehensive asking about sleep and energy and more symptoms related to cough and such. So taken together, right? The spirometry results, taken together with these symptom measures and exacerbate an exacerbation risk, can lead us to that ABCD Assessment Tool that I've alluded to. So I sort of think about this as sort of a couple, a step wise process. So first the diagnosis of COPD is confirmed a spirometry as I mentioned. Second, the airflow limitation is determined. So that GOLD 1 through 4, those are sort of two separate steps. And then there's the assessing the symptoms and risk of exacerbations. Essentially what they have done, is they've almost built like a two by two table. So with symptom assessment. So again, whether the MMRC or CAT were used for symptom scores on the X axis, and then the number of exacerbations, and whether they resulted in a hospital admission on the Y axis. And with this two by two

table, we ended up with a series of essentially all the different combinations to result in this ABCD Assessment Tool. So for example, if the MMRC and the CAT scores are lower, so again, indicating less impairment and the individual has either zero or one exacerbations, without leading to a hospital admission, they're a category eight. If they have higher symptom measures but yet it's still either zero or one COPD exacerbations, again, that did not lead to hospital admission they are B Again, lower scores on the symptom measures, but two or more exacerbations, and at least one that has led to a hospital admission, that's a C. And again, higher symptom measures, two or more exacerbations, or at least one hospitalization is a D. So why i really appreciate this, is the fact that it's gonna kind of guide treatment. You can certainly anticipate that somebody in a GOLD class A, with lower symptom measures, maybe had an exacerbation, but not hospitalization might require different types of pharmacological recommendations, different types of behavioral recommendations and followup than somebody with higher symptoms that has had more exacerbations and potentially hospitalizations.

So again, kind of taken together. So just to sort of an example here, so somebody could be GOLD Grade 4, Group A, so the grade 4 would have indicated back on the previous slide, the FEV 1 less than 30% of predicted, so pretty significant airflow limitation. And then group A would say that they had decreased symptoms scores, with a low risk of exacerbation. Versus that same individual could also, that has that airflow limitation in group D, might have increased symptoms scores with an increased risk of exacerbation or hospitalization. So, and again, as you would imagine, treatment is likely to be different between these two categories. By the way I will just mention, certainly as I'm going along here, if a question kind of pops in your head, feel free to, as Colista mentioned and indicate it in the chat box. And I will try to answer as many questions as we go along. Okay, so now that we've gone through this process and stratified patients through these GOLD guidelines, into A, B, C and D, how does this help as far as management? So from a pharmacological perspective, there's some recommendations for initial pharmacological management with a patient. First thing is

sort of just putting it out there that they recommend through these GOLD guidelines, that all individuals are prescribed a short acting bronchodilator for symptom relief. This is essentially like an albuterol inhaler, for example. So regardless of which classification, individuals should be prescribed a short acting bronchodilator for symptom relief. As far as further pharmacological management, depends on that group. So if their group A, they recommend either a short or long acting bronchodilator. Group B, and this is where this is where the acronyms start. And I'm going to define all of these, as well as give examples of each of these. Group B, they recommend a LABA or a LAMA. So hopefully you're able to hear through the audio, the difference here.

So what that stands for is a, long acting beta 2-agonist for LABA, or a long acting muscarinic antagonist for a Lama. And again, I'll define and give examples of all of these. For group C, They actually recommend a LAMA. So again, that long acting muscarinic antagonist. And group D, so again, that was more symptoms, more at risk for exacerbation or hospitalization, certainly would not be surprising that the pharmacological management recommendations are more complex as well. They recommend for those patients, either a long acting muscarinic antagonist, or a combination of a long acting beta 2-agonist, as well as a muscarinic antagonist, or a beta 2-agonist, as well as inhaled corticosteroids. So I see us as inhaled corticosteroid. So it really sort of just focusing here on the initial pharmacological management. So this is sort of like earlier in diagnosis, certainly followup is going to be a little bit beyond what we're gonna talk about today, but the pharmacological management, really depends on sort of how the patient presents. Are this sort of symptoms that are becoming problematic? Are they more disciplinary related or are they more exacerbation related? So again, these guidelines go into even more recommendations. So is iT dyspnea related, that was causing a problem or being able to control exacerbations, those are sort of the characteristics that they use for the followup pharmacological recommendations. Just yet another reason why I think these guidelines are helpful, is they not only provide recommendations for pharmacological

management, but also non-pharmacological management. So group A, so again, lower symptoms, less risk of exacerbations and hospitalizations. The nonpharmacologic non-pharmacological management that they talk about is smoking cessation being essential. So again, another reason why we're gonna give that a little bit of time today, as well as physical activity being recommended. Those with higher symptoms, higher risks, certainly recommending smoking cessation, physical activity, but you'll also see the addition of pulmonary rehab. So again, taken together the three topics for today's session. All right, so as promised, we'll sort of start with the medications, we'll hopefully everybody's still fresh before we maybe take a stretch break here after a little bit. So those broncodilators that I mentioned, so there's really two classes, the beta 2-agonists, as well as the muscarinic antagonists.

So just a little bit about physiology, because really my approach to pharmacology is understanding the physiology. So for example, remembering what we're gonna talk about that right now, understand what the beta 2 receptors are and where they are in the body and what they do. It's a little less sort of difficult to kind of imagine what these medications are doing. So the beta two receptors, so there's beta two receptors located throughout the body, typically the heart and lungs, but they tend to be more concentrated in the lungs. When stimulated, so again, this is, thinking autonomic nervous system. When these beta two receptors are stimulated in the body and the lungs, they actually result in bronchodilator. So there's also beta one receptors, and these are ones that I'm sure we're more familiar with. So again, beta one and beta two receptors located throughout the body, including heart and lungs, beta one receptors are more concentrated in the heart. Beta two receptors are more concentrated in the lungs, if you ever need to remember that for any reason, the way I recommend is we have one heart, which is where the beta one receptors are located predominantly. And we have two lungs, which is where the beta two receptors are. So again, thinking, autonomic nervous system, running from a bear. If we're running from a bear, thinking that fight or flight response, what are we looking for? Stimulation of the beta one receptors, is gonna result in increased heart rate and contractility. Stimulation of the

beta two receptors, is gonna result in bronchodilation. So certainly if we're running from a bear, we want our heart to be working, heart rate contracting strongly. And we want our lungs wide open, for gas exchange for breathing. That being said, I will share with you just on the side. So I've been using that example about running from a bear for quite a while, kind of the typical right fight or flight response. Not too long ago, within the last couple of years, I was in class and I had a student raise their hand and they said actually, just to kind of clarify, the recommendation is not to run from a bear. Like that's actually the worst thing you should do. So anyway, just to kind of a little aside that I thought was funny.

So I clearly haven't changed my example yet. So I bring this up because we'll certainly what we're definitely familiar with our beta blockers. So beta blockers are blocking these receptors. So they're blocking the beta ones in the heart and therefore decreasing heart rate, decreasing contractility, perhaps used in the treatment of hypertension. And they could also block nonselective if they're a non-selective beta blocker, they're blocking beta two receptors in the lungs. For an individual without long pathology, probably not a problem. However, what about the patient with asthma or with COPT, that are blocking the beta two receptors in the lungs and thus the bronchodilation resulting in bronchoconstriction, can be certainly a problem with a patient with expiratory flow, limitations. So then they actually have, which you might see as well, what they call selective beta blockers. And those are typically just selected for the beta 1's and kind of leave the beta 2's out of the picture. So just kind of bringing that up as I mentioned, that basically not all beta blockers are created equal. So with all of that background on beta 2-agonists. So again, these medications are trying to stimulate those receptors above and beyond what the body might do. So again, to try to get that bronchodilation, to sort of decrease that expiratory flow limitation. So then the other sort of category here, is whether it's short acting or long acting. And again, exactly what it sounds like, how long are the effects lasting? So we have short acting beta 2-agonists. So I call them SABA's, examples here are probably ones we're certainly familiar with. So ProAir HFA, being a brand name for a generic

albuterol, but the effects here lasting four to six hours. Another common one I've seen, 'cause I actually remember one patient that was specifically had a reaction to albuterol. So it was recommended that he tries Xopenex or levalbuterol. So again, another form with a here, a timeframe of six to eight hours. So again, this is that rescue inhaler that we hear about, the short acting beta 2-agonist. Then we had to also acting beta2-agonists. So I call these LABA's.

So examples here are, Serevent, it's a brand name for Salmeterol, and the effects can last 12 hours. So again, certainly not an exhaustive list, but I've tried to actually pick examples of all the different medications that I know I've seen in clinical practice. So hopefully you have as well, but not meant to be, there's certainly other long-acting beta 2-agonists available out there. So again, so the short acting and the long acting beta 2-agonists. For each of the classes, just again as a very general statement, some side effects are tachycardia, which really should not be surprising, right? So beta 2-agonist, we did mention that there were some beta 2-receptors in the heart, if they're stimulated we're gonna get that increase in heart rate and blood and contractility that I mentioned earlier. So that's a very common side effect. We'll talk about pulmonary rehab coming up, but it was not unusual when I've worked in pulmonary rehab. Patient comes in, in and outpatient setting, they sit down, we take some resting vitals before they start their exercise. And if I look in their heart rate is 110, as they're sitting there. My next question is always, did you just take your inhaler before starting your session today and 99.9% of the time, the answer is yes. So again, just sort of connecting that with vital sign monitoring as well. Some other side effects, tremor, hypokalemia, as well as hyperglycemia. So again, these are some side effects in very general terms. The most common of which I believe is the tachycardia for beta 2-agonists. Moving on to bronchodilators, so the anticholinergics, So again, we have the same time sort of delineation with short acting and long acting. So we have muscarinic antagonists. So really what we're doing here is we're, the effects of acetylcholine in the lungs is to block bronchoconstriction. So here we're going to antagonize that. So it's a muscarinic antagonist. So it's a beta 2-agonist trying to support that bronchodilation. And here it's

a muscarinic antagonist, 'cause we're trying to block that bronchoconstriction effect of acetylcholine in the lungs. So some examples here are the SAMA's and the LAMA's. The short acting muscarinic antagonist, such as atrovent or ipatropium bromide. So here we have six to eight hour effects, similar to short-acting beta 2-antagonist's timeframes. Long-acting muscarinic antagonist is a LAMA. So here very common example is spiriva or tiotropium. So again, typically, once daily dosing, because the effects last 24 hours. So we'll talk about it a little bit more, but I do wanna mention the greater effect on reducing exacerbations. It has been shown with the LAMA's versus the LABA's. So again, just sort of taken as a category, if one comparing a long-acting muscarinic antagonist versus a long-acting beta 2-agonist, they've shown that there's a greater effect on reducing exacerbations, and you're gonna review those ABCD categories, but we'll see that there. And then side effects here, again, very general terms, again we're blocking the effects of acetylcholine.

So we might see some of those effects throughout the body, which a very common side effect here is dry mouth. That's especially challenging for pulmonary patients, thinking about different breathing strategies, diaphragmatic breathing, pursed lip breathing, which may be challenging for a patient that is subject to dry mouth side effects from their medications. So just another kind of connection to make, as well as potentially urinary symptoms. Again for the effects of blocking the acetylcholine within the urinary system. All right, so with sort of the recommendations previously for the ABCD and now sort of having to find those there's definitely combination drugs. So some of the advantages, and this is sort of a pharmacological concept in general. So for example, I used to always wonder, why a patient was on three different medications for hypertension. Like, why don't we just stick with one and go with it? And the answer is by using different medications, they can keep the dose lower and still try to target, for example, high blood pressure, but yet minimize side effects. So it's the same concept here. So the idea of combination drugs, whether they're on three different medications or these ones actually come packaged together. So for example, the short-acting beta 2-agonist, and the short-acting muscarinic antagonist together, if any

of your patients are combivent, so salbutamol and ipratropium. So again, six to eight hour timeframe, but this is coming together. Another kind of a combination drug here is LABA/Lama. So if you're in the, of your patients are on Brevespi. indacaterol and glycopyrronium, again, 12 to 24 hour effects that the patient might be on. Another combination, we haven't talked a whole lot about it, but as far as a long-acting beta 2-agonist and an inhaled corticosteroid. So Advair, common medication used Advair HFA, which is a combination of salmeterol, which has that long-acting beta 2-agonist, in combination with caseone, the fluticasone, which is a steroid. So again 12 hour, 12 hour effects. So as far as the role of steroids, there is concern as far as regular treatment with steroids that can increase the risk of pneumonia. So that is certainly a concern. However, many of the ill effects that we think about with the longterm use of steroids in many conditions with patients with COPD, they're now inhaled. And so some of those effects are not as prominent because it's more directed.

So there can certainly be, sort of like oral symptoms, things like that because of the inhaled nature. But the sort of systemic effects are often minimized because of sort of the more direct route of administration. Then you might hear about triple therapy. So triple therapy is basically a combination of everything. So the LABA, the LAMA and the steroid. So an example here would be Trelegy Ellipta. So you have the steroid and the umeclidinium and vilanterol. So again, one of each of the categories and the long-acting aspect being once daily dosing, so there's combination drugs as well. So I just wanna take a moment, so this is beyond the scope of what we're talking about today, but just thinking about inhalers. So just how important education and training is on techniques to use inhalers. I mean, there's many different ones out there. So a meter dose inhalers with or without spacers, there's discuss, there's handiHaler. And really, it's not surprising, especially when we're looking at all these different combinations, perhaps, one medication uses one type of inhaler and another one uses another that patients often get confused, have difficulties with medication compliance. Perhaps it's just understanding the dose or understanding the device and how to administer it. Perhaps it's actually technique, perhaps it's actually, a lot of this is fine motor. So

some of our older adult patients with, perhaps arthritis in their hands, things like that, some of the, sort of putting a Kaplan crushing in, things like that can often provide a challenge. Again, just awareness, perhaps connecting with the nurse or respiratory therapist that might be on your home health team. If you're identify that there's an issue as far as medication administration, due to the ability to use the inhaler properly. So again, having gone through all the different medications, I actually have it listed again, but going back, you can sort of go back and look at the different ABCD classifications and thinking about that. So like we said, the group A was a shorter long-acting bronchodialator, Group B was a long acting, so LABA or LAMA, group C again, was that one that I mentioned that long-acting muscarinic antagonist, has been really been shown to be beneficial for the patient that has lower symptoms, but higher risk for exacerbations or hospitalizations. So again, that's kind of putting together some of the information and then group D could be either the LAMA or a combination LABA LAMA or with the steroid.

So again, we're not pharmacologists, but just sort of thinking about like, if a patient seems to be having issues with symptoms and that like do you see these medications in, or similar ones in the category within their medication lists? So kind of Related topic, talking a little bit more about medication management. I wanted to introduce you to a couple of additional tools. So one is called the Beers Criteria. So this is from the American Geriatric Society. They updated in 2019, and this is for potentially inappropriate medication use in adults. And then I also wanna sort of talk briefly about the stop start criteria for potentially inappropriate medication prescribing in older adults as well. And there's, we're up to the second version. So at the Beers Criteria, so developed by Consensus Panel of Experts, under the lead of geriatrician, Mark H. Beers in 1991. So there's been multiple updates since 1991, when these criteria were first developed and with the most recent in January of 2019. So really this is a pretty extensive document, I think a bit more, it was like a reference document, but it's really for certainly for clinicians treating patients, prescribing medications, specifically related to those 65 and older. So in all settings, so certainly including home health, except for

hospice and palliative care, certainly needs are different there. But really what they have is they have medications and they're divided into five different categories, so potentially inappropriate medication. So PIMM's is another sort of acronym you might see in most older adults. And they actually are very specific about drugs that should be avoided in the older adult with certain conditions. So for example, certain medications are not recommended for those with kidney issues, because the ability to be able to break down the medication would be impaired, so for example. Drugs that should be used with caution in those 65 and older, common sort of drug drug interactions. As well as again, some of those drug doses that are based on kidney function, drug dose adjustment. So if it's not something to be completely avoided, maybe it is necessary, but adjusting the drug dose appropriately. So again, this is something that I have the reference on that previous slide, that you should be able to just sort of download if you're interested in sort of more of another reference, as far as medication management. Another tool is the STOPP.

So stands for Screening Tool of Older Persons. Again, potentially inappropriate prescriptions. So that's where the stop and again sort of things that are non appropriate or potentially inappropriate for patients. Initially developed in 2008, through an evidence based European study, again, age specific. 'Cause oftentimes when it comes to studies, bringing a randomized control studies for medications, they're not often age specific, but these potential, these criteria were developed through age specific considerations. So here they have 65 clinically significant criteria, organized by system. So, the most recent update is now in 2015 to 80 criteria, but similar to the Beers. So, I mean, you know, sorta mentioned there's Beers and STOPP are kind of doing the same thing. 'Cause they're sort of alluding to drug interactions, drug disease interactions, and I'll give some examples of these in a minute and medications that increase the risk of falls as well as duplicate drug classes. Kind of going to a little bit more detail with STOPP. So what's an example of a drug-drug interaction. So a patient is on a beta blocker and perhaps something like verapamil, which is actually a calcium channel blocker. The combination of these two drugs kind of adds together and can

result in sort of slowing heart rate as well as contractility of the heart. So therefore the individual can end up with symptomatic heart block, for example. We could have a whole nother discussion about polypharmacy and how some of these things happen with individuals being prescribed medications from different healthcare providers, obtaining their medications from different pharmacies or through different, maybe mail and things like that. So how an individual could end up on a beta blocker and a calcium channel blocker seems, they're very high potential. But again, the combination, especially in those 65 and older is a risk for symptomatic heart block. Drug disease interaction, so this is a nonsteroidal antiinflammatory in somebody with moderate to severe hypertension. The risk of an exacerbation of the hypertension. So how the end set is working within the system has the potential to sort of make the hypertension worse. And certainly they could be on an NSAID for any sort of musculoskeletal condition.

So again, this is like sort of a great opportunity. Maybe if there's lower extremity, arthritis for example, like can we offer them a cane or a Walker to sort of minimize their need to take the INSEAD and therefore have a Hill effect on their management of hypertension, for example. Medications that increase the risk of falls, right? Certainly a lot of discussion and a lot of concern over our patients and fall risk. One example here is benzodiazepines. So this is a sedative. It can reduce their sort of sensorium and impaired balance. Frequently prescribed for anxiety. But in then the 60, in the older adults, 65 and older, certainly been shown to increase the risk of falls. As well as, STOPP also addresses duplicate drug classes. So any duplicate drug class, for example, to opiates, to INSEAD's, to SSRI diuretics ACE inhibitors. So again, they talk about sort of using one therapy, a monotherapy within a single drug class before adding a new class. So again, oftentimes more than one class is used to sort of keep doses lower and also decrease the risk of side effects. So that being said, I've kind of presented the Beers Criteria and STOPP, which have kind of alluded to, are basically doing the same thing. So there was a study back in 2011 and a prospective study where Hamilton and colleagues actually showed that the STOPP criteria seemed to be

more sensitive, to potentially inappropriate medications that can result in adverse drug events as compared to the Beers Criteria. So again, I was able to locate one study that sort of lean towards STOPP, as far as being more sensitive to inappropriate medication prescription. So if you have to STOPP, you probably have to START. So this is a screening tool to alert doctors to the right treatment. So just as concerning are medications the patients are prescribed, that for one reason or another are not a good idea. Sometimes there's actually medication omissions. So a patient is not on a medication that potentially they should be. So this list was initially developed in 2007, to identify potentially beneficial medication omissions. I think of this, going back to what we talked about with the GOLD guidelines and the ABCD, is the patient not on a LAMA or is it not on a LABA? So again, I kind of that's how I connect these two. So like looking at your patient, looking at their medication list. And again, certainly, not within our role for prescribing, but sort of maybe providing some education or talking with your team to see if this was a medication omission and error, or perhaps there is a reason why they're not. Here though, this is the START criteria, are 22 evidence-based indicators that are organized by physiological system. Updated in 2015 to include 34.

So for example, recommended prescriptions include an ACE inhibitor with chronic heart failure. So that's sort of like an example that, is your patient with chronic heart failure? Have they been prescribed an ACE inhibitor, per the recommendations? Bisphosphonates in patients taking maintenance corticosteroid therapy. So we certainly know the longterm effects of steroids on bone health. So have they been prescribed a bisphosphonate to address that issue? So again, this is really getting at the fact that conditions and older adults have the potential to not only be over-treated, hence the Beers and STOPP criteria but also undertreated. And just another study showed that Beer and all in 2007 showed that using the START list about 58%, a little over half of hospitalized adults had at least one or more prescribing omissions. So again, it happens more than half the time. Just if you're curious, the top two most common omissions, were that patients weren't prescribed a statin in the presence of atherosclerotic disease, as well as they were not prescribed a blood thinners, such as

warfarin, in the presence of chronic A-fib. So those are two sort of other examples, sort of common omissions. So we're gonna kind of switch gears again. The commonality here is our patient with COPD, thinking about in the home, just a little bit about medication reconciliation and sort of the recommendation management, the recommendations for pharmacological management of patients with COPD. Sort of switching gears here a little bit to thinking about smoking cessation. So again, as I mentioned, for so long, I would suggest to students, tell your patients don't smoke. As practicing clinicians, we know that doesn't really work well. So I was really, really pretty excited to find some clinical practice guidelines. And I've sort of the references are here.

So one name that you'll see sort of a commonality here is Rose Pignataro. But the role of PTs in smoking cessation, opportunities for improving treatment outcomes, which is published in PTJ back in 2012, as well as using motivational interviewing and then physical therapy, education and practice. So empowering patients through effective self management. And this was through the, "Journal of PT Education." So the importance, so is practicing clinicians. I don't need to convince you about the importance of smoking cessation, but just to kind of give you some additional details with this. It's been shown that when two or more healthcare providers give advice on smoking cessation it more than doubles the success rate. So again, I just sort of think about this as persistence. So when two or more health care providers, it does not specify physician, nurse, physical therapist, two or more healthcare providers give advice on smoking cessation, it more than doubles the success rate. So perhaps when they see their PCP, if that's part of their questions, and they sort of give advice, the PCP does, then they see you in the home, we've already doubled, the success rate. Certainly, why should it be important for us, is just the contact time we have with patients per episode of care. So as we know, certainly when they do outpatient visits with any healthcare provider, the contact time is limited. Obviously we're seeing our patients two, maybe three times a week for 45 minutes to an hour. So we have a lot of contact time, to be able to engage in this conversation. Here's another statistic that I

remember being surprised at. So sometimes I think we think that patients, if they smoke, they don't really want to, they're they're not interested, they're not motivated and perhaps some are. But 60% of smokers would like to quit, but it takes numerous attempts. So over half again would like to quit, but it takes numerous attempts. And how I envisioned that is going back to that first point where two or more healthcare providers can really even increase the success rate more. Certainly smoking is the greatest preventable 'cause of illness. So if we as physical therapists, thinking sort of on the prevention and wellness end of things, that we could work towards. Certainly talking about smoking cessation is certainly consistent with our role as advocates, for wellness and prevention. This is not dimension, right? The multiple, physiologic reasons, and we could go through multiple systems, all the systems that we treat, neuromuscular, cardiopulmonary, integumentary, et cetera. And all the different effects of nicotine and smoking on the different systems as far as healing and healthy physiology.

So I don't think anybody would really sort of argue the point that it's important, but what are the barriers? So why do we maybe not as physical therapists do this more often? Maybe it's lack of knowledge or awareness of resources. And that's really the main barrier, then I'm actually hoping to address today. So sort of share with you some, these clinical practice guidelines to sort of increase your knowledge and awareness of resources and strategies that you could use with your next patient. Lack of confidence to apply skills in clinical practice. So based on the format of this webinar today, we don't really have the ability to sort of engage in role playing. But that's another thing, because what I found is actually, I'll kind of go over some things and it'll sound like make sense. But when you go to do it for that first time, you might sort of encounter more challenges than you might think. Maybe not, hopefully not, but perhaps. time constraints is another barrier. So again, our thoughts that we need to address, whatever they're being referred to us for, we don't have time to address smoking cessation. But what I'm gonna sort of show is that it can actually take very little time. Perhaps a physical therapist we don't address smoking cessation because

we anticipate, the patient will be resistant. They smoke, they probably don't want to but again, referring back to some of those earlier statistics, so sort of not assuming patient resistance. And then lack of reimbursement for tobacco cessation counseling. So certainly thinking about reimbursement for what we do, but thinking about this, we can certainly incorporate it into patient education. certainly as the patient is participating in therapy X or on a rest break, things like that. So thinking about this as patient education. All right, oh and then actually my last, that was on my next page, another reason another barrier might be frustration, on the part of the physical therapist. Well they don't comply with their exercises and they're not doing follow through, so why would I spend my time trying to work on smoking cessation because they won't do it. Obviously not an uncommon thought, but probably not a fair thought. So, trying to work with the patient through this. All right, so what are these clinical practice guidelines?

So if you've heard of the five A's and the five RS you're ahead of me. So I'm the five A's and the five RS were developed through the Agency for Healthcare Research and Quality and the U.S. Public Health Service. So again, it's sort of available out there as a resource, but I will sort of give you the five A's and five R's, how to implement them now. So the five A's, so the five A's in particular are, ask, advise, assess, assist in a range. So, what is this all referring to? Ask is as simple as what it says? Do you smoke, how often? Maybe this is a verbal question you're asking, or perhaps you're in an outpatient setting or through paperwork, it's a written question. So verbal or written, just again, asking, do you smoke and how often? Advising, so this is strongly urging a smoker to quit. So connecting, with the current health or illness to smoking. So, for example statement, people who stop smoking tend to get better results in reducing their pain, if pain is a primary impairment. So again, you've determined that they smoke and just advising them and stating that, individuals who don't smoke tend to get better results. So again thinking, this is our role in being one of those two or more healthcare providers to give advice. Assess is the third A, and this is determining their willingness to quit. So the way they define assess is a very specific question. Would you be willing

to quit in the next 30 days? There's a timeframe attached. It's not today, tomorrow, next week, by the next visit, sometime in 2020 within the next 30 days. So again can they envision that they could be willing to quit in the next 30 days? I kind of think of this as kind of a pivot point, depending on their answer. If their answer is yes, then you would move on to the fourth A of assist. If they say no, like for whatever reason, then you move onto the five R's. So I kind of again think about this as a pivot point. So again, would you be willing to quit in the next 30 days? So maybe they say yes. So then you move on to the fourth A, which is assist. So this helping the patient to set a quit date, helping enlist support from family, from friends, from coworkers. And again, just assisting. So certainly, working in home health, we're used to this, but in working with students, I think they often forget, or sort of don't realize sort of how intimate we become with a patient's schedule. So certainly not trying to be too nosy, but really sort of getting into the details of their day.

So, when do you tend to smoke, sort of talking through strategies to address that, maybe it's sort of habit after breakfast or something like that. Can you actually help them come up with another plan? Same thing that we do with home exercise programs. When do you think you might have an opportunity to complete these exercises? So we're trying to anticipate challenges, remove temptation here. Maybe we're actually referring back to the PCP for smoking cessation medications, different patches, things like that, or encouraging them to talk to their pharmacist about over the counter medications for smoking cessation. So again they've committed sort of indicated their willingness to try to quit. So we're just assisting in that process. And then the fifth eight is A is a range. So this is arranging followup. Kind of just not indicating that this is a once and done conversation and that you're gonna actually be revisiting them. So maybe this isn't a future visit, maybe it's in a followup phone call, whatever the case may be. Certainly thinking about, at that point, congratulating them on any successes and then reviewing reasons for relapses because they're gonna happen. So they will happen, but sort of helping them analyze what went wrong, how could they end up with a different result next time? So again, those are the five A's. All

right, so what about the five R's? So this is, again, kind of that pivot point when the patient's not ready to quit in the next 30 days, then they recommend moving onto the five R's. I love, organization ABCD tools, I remember five A's and five R's, et cetera. So hopefully you enjoy the organized manner of these tools out there. The first one is relevance. Why smoking cessation is relevant to that particular individual. So the particular body system affected. So certainly kind of similar to the advise, just getting a little more in depth. 'Cause again, the patient has been advised and they said they don't wanna quit. So you're kind of going in a little bit deeper, like how that smoking cessation would help that individual. Perhaps they have a chronic wound and we certainly know the effects of smoking on wound healing, for example. So sort of making it more relevant to them. The next R, is risks. So this is where it kind of pivots a little bit more into motivational interviewing strategies. So sort of what the risks and the rewards and how is that because you know, here rather than providing information, you're more facilitating their responses.

So under risks, you're asking what the patient perceives as a risk of smoking. So if you were to continue smoking, what do you see is sort of the possible downsides or the possible risks? Perhaps they might mention, the second hand smoke. So they know that what they're smoking and it creates secondhand smoke and it increases risks of others in their household. Perhaps they talk about the smell or the lack of taste or things like that. So like that they currently experience that they will continue to experience as long as they're smoking. You may be able to incorporate some additional education, depending on how the patient responds here. Rewards, so again, also using this motivational interviewing strategies, so asking the patient what they might gain through smoking cessation. So if you were to quit, So this is, again, kind of that pivot point when the patient's not ready to quit in the next 30 days, better recovery from whatever, perhaps the neuromusculoskeletal injury that you're seeing them for is, saving money. So there's certainly, tobacco costs money. So thinking about the money saved and how they might use that in a different way. Improve sense of taste and smell, individual. So the particular body system affected. So certainly kind of, you

know, similar to the, the advise, why you're seeing them and how that might be benefit as well. So again, the rewards, but we're not providing that information, we're asking them so we can kind of capitalize on their responses. Roadblocks, so roadblocks here are barriers. So sort of, you know, making it more relevant to them, identify barriers to quitting and helping to develop solutions. So again, it's similar to kind of like the assist that we did before, but we've kind of pivoted. We've kind of pivoted off of the A's. So now we're trying to help identify some roadblocks, identify barriers. Maybe they're gonna talk about withdrawal symptoms, that they're concerned about that or a possible weight gain. So again, using some of the motivational interviewing techniques that I'll mention in a minute. And then finally repetition, so reinforce commitment and interest that you have in the patient success in this, through followup visits, through followup phone calls. It's why don't you kind of pivot over to the five R's, you kind of lose the last two A's if you will, of the assistant near arrange. So we kind of, hit those with the roadblocks and the repetition. they're smoking.

So I've mentioned motivational interviewing and just to kind of give a little bit of a primer. So certainly this can all be incorporated into education with smoking cessation or many other things. also using this motivational interviewing strategies, so this is an evidence based collaborative approach and really collaborative between you and the patient. So this is not really you as sort of the teacher, you're sort of collaborating with the patient, they're playing a very active role in patient education. So this is a technique that can allow us as physical therapists to assess readiness for change, provide individualized patient education and help the individual plan active role in their self management. So again, because of the way our episodes of care occur and the amount of time we have with patients, we have many teachable moments during this time. Really motivation interviewing, actually came out of the field of psychology and specifically related to addictions. So sort of the father of motivational interviewing was a psychologist and working with patients with addictions, responses, roadblocks. There's some assumptions that motivational interviewing takes into account. identify barriers to quitting and helping to develop So no matter how much you sort of taking a

paternal type, our parental type approach, that we as healthcare providers know what's best for the patient is not gonna be helpful. Maybe they're going to talk about withdrawal symptoms that So really it's, the other thing is really the talk about ambivalence. using some of the motivational interviewing techniques that people really are motivated to change when they're not happy. Thinking about just life in general. have in the patient success in this through followup visits, you're probably more motivated it's why don't you kind of pivot over to the five R's you So sort of, kind of with motivational interviewing, of the assistant, the arrange. we're not happy with our current state and trying to facilitate change, So again, the five A's and the five R's. So again, that parental negative message confrontation is not likely to be effective. Knowledge, encouragement to change is often not enough. So we started need to facilitate more.

So again, not sort of giving that directive or just sort of bombarding them with, well, here's the 10 different things that stopping smoking would help with, the PA collaborating with the patient, they're playing a very active role and patient education. this is kind of like one of those catch phrases related to motivational interviewing. So they're not happy, they don't know what to do. They're kind of in the key spot. So trying to reduce that and certainly moving it towards behavior change. So some principles of motivational interviewing is thinking about empathy versus sympathy. So again, appreciating right, that you can appreciate where they are, although not a hundred percent walk in their shoes. Develop discrepancy. So again this is sort of another buzz word related to motivational interviewing, which has changed talk. Facilitating them saying, well, I'm not happy with smoking, but I don't know what else to do. Kind of taking that and facilitating that thought process. So getting them just think more about the change talk. Roll with resistance, to avoid being confrontational. So if they kind of throw up some roadblocks to whatever you're saying, you just kind of roll with it, you kind of roll to a new topic. Just try to keep it more, from a facilitation perspective and not a confrontation perspective. And support self-efficacy, so support that their confidence in their ability for behavior change. I'm really talking about this in

the context of smoking cessation, but this could be with weight management, we're sort of kind of taking capitalizing on sort of this, I mean, this could be anything, so these are sort of bigger principles. Sounds great, but how do you do it? So how do you actually, how do you start this conversation? So ask open ended questions. So again, you as a healthcare provider, certainly have all this, healthcare and medical knowledge and how it relates to the patient, but really we're not trying to just, it's not a one way flow of information, we're asking open ended questions. Going back to the five A's and the five R's, asking about risks, right? So ask what the patient perceives is smoking. I mean, you already know what the risks are, motivational interviewing. So they're not happy. They don't know what to do. They're kind of in a, in a, in the key spot. So asking these open ended questions, the pros and the cons. Demonstrate reflective listening.

So this is something, I've certainly recently come to appreciate that we as physical therapists seem to have a lot of experience in and use quite frequently. That is not true of all others in healthcare, but again, just sort of that patient listening and then sort of repeating back and sort of summarizing what you hear as far as the reflecting, listening. Looking forward. So instead of like, kind of I smoked for 20 years and that I there's nothing I can do now, keep more of a forward looking approach. So getting them just think more about the change, talk, I think is really interesting and really neat is this next point. Which is assess importance and confidence using a zero to 10 scale. So, certainly right, we're very familiar with zero to 10 scales for a number of things, pain, RPE, all sorts of things. just try to keep it more, you know, from a facilitation perspective and not a confrontation So the question is, on a scale from zero to 10, so how likely, or how confident do you feel in your ability to stop smoking? The patient says six. So you basically say instead of saying, okay, why are you a six and why aren't you a 10, you inquire why they're not have, a three or a four. So if they say a six, well, why aren't you a three or four. Again, that's gonna facilitate that change talk in a positive direction. So essentially by going in that direction and sort of asking why they weren't lower, then they're gonna sort of bring out the positives. Well, I have support

and I can't smoke at work or whatever the case may be. But again, you're sort of keeping that sort of positive sort of looking forward, change talk. So I think that's a really, really cool aspect of motivational interviewing. but what do they perceive as the risks or the rewards? you really just facilitating their thought process. But I mean, they're doing, So asking these open ended questions, you know, the patient should be doing most of the talking, unlike oftentimes when we're doing, what we think of traditionally as patient education. Where we're doing most of the talking, patients should be doing most of the talking here. Thinking about this, kind of putting it together just in a graphic. Ask if they smoke, advise why it's probably recommended not to do so and assess if they're willing to quit in the next 30 days. And if they are, you talk about details, specifics, help facilitate their plan to do so. now keep more of a forward looking approach.

And this really goes to it, I think is really interesting and really neat is this next if the under the assess stage, if they're not comfortable or they don't sort of indicate a willingness to quit in the next 30 days, We're very familiar with zero to 10 scales for a number of So the relevance, sort of making it more specific, more tailored to their particular condition and then the risks and rewards. that motivational interviewing, I really see sort of kicking in around that risk and reward conversation that the patient perceives. Roadblocks, so assuming that they're kind of moving more towards willingness to quit after this conversation, sort of getting into the specifics and helping them work through that, as well as repetition or sort of follow up. Sometimes in my mind, they have the arrange, that's going to facilitate that change, but I mean, I really appreciate that it follows the five A's and the five R's. I do do appreciate that piece. All right, so we're definitely over halfway done. you know, I have support and, you know, whatever, you know, but what I might just encourage you to do, is sort of stand up and stretch, right? You're on the move all day long and not even sitting here for over an hour, I'm gonna kinda kind of do the same here. really cool aspect of motivational interviewing. I'm just gonna take a quick drink here. Okay, so again sort of pulling this all together for the patient, with COPD. Again in the home, but really any post acute

setting. Thinking about medication management, because certainly, there's such a risk of hospital readmission, where we're doing most of the topic talking patients should So can we help, the healthcare team, get the patient on the appropriate medications, as well as decreased the risk factors for smoking, or decrease a risk factor for COPD of smoking? Certainly we can't change the years that they have smoked, but we can certainly decrease them going forward. So, as I mentioned, like when I worked in home health, the particular agency that I worked for, really sort of develop their home health model, willingness to quit in the next 30 days, So they were actually an oxygen, they provided oxygen to patients and they were seeing patients in the home and they actually developed their home health model afterward. 'Cause they basically said like, Oh, they're like, if we're seeing patients in the home and delivering oxygen to them, assuming that they're kind of moving more towards willingness to quit after this conversation, you know, They were very, I mean this was 10 plus years ago. through that, as well as repetition or, you know, sort of follow up sometimes in my mind, they have the arrange, One of the things that they really advocated for, was the goal of patients with COPD that you might be seeing for home health, was discharged to a pulmonary rehab.

As I mentioned earlier, it's pretty pretty straight forward, total hip replacement, total knee replacement, diagnoses that the patient's sort of the next step, after a few visits with you for an uncomplicated course in home health is gonna move to outpatient. But again, the patients, post MI, post CABG, COPT exacerbation, if you've ever sort of wondered, is there anything more, I try to do as much education and encourage as much activity as possible, and is there anything more I can do? with COPD, again, in the home, but really any, you know, any post acute setting thinking about medication management, because certainly, you know, So again, as I mentioned, where I found a lot of colleagues interested in pulmonary rehab, was through the American Thoracic society. One of the specialty assemblies is pulmonary rehab that again international based as well as interprofessional. But back in 2013, this was an updated statement because the previous one was 2006, from the American Thoracic Society and the

European Respiratory Society, joint statement as far as key concepts So, as I mentioned, right, This is a statement, not a clinical practice guideline per say. But this is representing consensus of 46 diff international experts, focusing on patients with COPD. they actually were initially a DME company. is a comprehensive intervention based on a thorough patient assessment, followed by patient tailored therapies that include, but are not limited to exercise training, education and behavior change that are designed to improve the physical and psychological condition of people with chronic respiratory disease and to promote longterm adherence to health enhancing behaviors. So the underlined words are from me, those are mine thinking about things. And again, this is interprofessional.

So certainly we always think about all of our patient assessments are thorough and individualized. But really the key components being exercise training, One of the things that they really advocated for was, We're gonna talk a little bit more about that, but all of the that I just mentioned as far as smoking cessation and motivational interviewing all plays into that behavior change. Trying to improve physical and psychological condition, again chronic respiratory disease, there is no cure, the only goal is management and promoting longterm adherence to that. So before I even go further, is there anything more, you know, pulmonary rehab is so under utilized. Cardiac rehab is certainly under utilized as well, And the answer is a resounding yes. So the answer here that I've really come to enjoy, is it because of lack of referral? From healthcare, from physicians, where I found a lot of colleagues interested in pulmonary rehab was through the American thoracic society. And again, perhaps the physician is not sort of kind of promoting it to patients, there's research that says that, as well as the patient perception as well. But again, I'd like I'm like to take this opportunity to get the word out to as many of us as I can and thinking about how we might help with pulmonary rehab, even in the home. So there's phases, so some of the phases of pulmonary rehab, generally considered to be the same as cardiac rehab, maybe a little less well-defined. Usually you think about phase one, as far as cardiac rehab being inpatient. So patient post CABG for example. is a comprehensive intervention based on a thorough

patient and home health setting are often considered phase one. Phase two is probably, what we think about as far as cardiac rehab, as far as outpatient. So when they're going to a center, chronic respiratory disease and to promote longterm oftentimes staffed by, nurses, exercise physiologists, perhaps physical therapists, those are mine thinking about, you know, things. And again, this is, you know, interprofessional. but actually phase three is often maintenance. So certainly, an individualized maintenance program following the monitor phase two in the outpatient setting. pulmonary rehab is pretty much the same, again, little less well-defined.

So there are a couple of little differences that you might see though, is whereas a patient, like I mentioned, maybe patient has MI, they're actually admitted they have a CABG. Perhaps, from an inpatient maybe they're seen in home health and then they're referred to phase two. That really started with an acute event. Oftentimes actually referrals to pulmonary rehab, tend to be more when the patient is stable. They might see their PCP or their pulmonologist for a routine visit and they're noticing increased breathlessness. That's oftentimes, for certainly like a pulmonologist, likely to be a referral to pulmonary rehab, is it because of lack of referral, you know, And that absolutely, but just sort of the way things currently are, it's more likely to be referred when the patient's stable versus an acute event. But, and then the next question is, well is it safe? If they've had a hospital exacerbation? Is it, I'm seeing them at home health, is it safe to send them or recommend them for pulmonary rehab and the answer's, yes. So more recent literature has shown, early initiation of pulmonary rehab within three weeks of an admission for an acute exacerbation is feasible, safe, and effective. Thinking about that hospital admission, maybe you're seeing them for two, three weeks, maybe a month that, literature has shown that then referral for pulmonary rehab is feasible, safe, and effective. Sort of another difference between sort of the phases is oftentimes there might be a graded exercise test that occurs certainly with cardiac rehab and pulmonary rehab, oftentimes that might actually occur in the inpatient setting for cardiac rehab, but that might not actually happen in pulmonary rehab until that supervised program. So the first graded exercise tests may be in a

supervised outpatient pulmonary rehab program versus prior to hospital discharge. Just kind of putting it out there that actually sort of the GOLD standard for an exercise test for a patient with COPD, is a six minute walk test. Certainly something we could absolutely administer in home health setting. So certainly there's challenges based on the tests as far as kind of following the protocol of the test, but it does not require a treadmill or bike or any sort of equipment. Who qualifies for pulmonary rehab? from an inpatient maybe they're seen in home health and then COPD, persistent asthma, bronchiectasis, cystic fibrosis, those are restrictive disease. And there's interstitial lung disease, more when the patient is stable. So again, they might see their PCP or their pulmonologist for a So I've definitely seen patients pre and post lung transplant. So certainly, just trying to increase their exercise capacity prior to the lung transplant. And then again following the transplant and once stabilized. as I kind of mentioned the referral here is often based on patient complaints of dyspnea, fatigue and functional limitations rather than sort of an acute event, and then the next question is, well, But again, increasing fatigue, dyspnea that they can't seem to manage, can often lead to a referral to pulmonary rehab.

So what are the benefits? so benefits include reducing dyspnea, so reducing shortness of breath, exercise, acute exacerbation is fit, is feasible, safe, and effective. So again, thinking about that hospital admission, maybe you're seeing them for, you know, two, three weeks, maybe a month that, you know, So again, did I just mention that oftentimes we're results and referral is complaints of dyspnea of which pulmonary rehab, likely to reduce dyspnea, certainly with cardiac rehab and pulmonary rehab, therefore addressing fatigue and the functional limitations as well. This time number two is it's under utilized, there is science behind pulmonary rehab. So it does exist, it is supported by science. It is supported by medicine, it's just under utilized.

Recommending as much as you can. So as far as takeaways from today, what would I think about maybe, over the weekend, do a quick Google search. what are the pulmonary rehabs in your area? Oftentimes they're hospital-based, but they don't have to be. I'm familiar and have work experience in one that was a certified certified

outpatient rehab facility. So a CORF, so a different type of model that actually one of the requirements for CORF, is the fact that it's in their professional. So actually this particular facility employed physical therapist and respiratory therapist, as well as social workers and nutritionists. Sort of getting that interprofessional look to it, but the model that I'm familiar with, is the respiratory therapist, following following the transplant and once stabilized. So when I mentioned the different types of inhalers, for example. So knowing that that's potentially a little bit outside our scope or certainly comfort level for practice. Having the benefit of working closely with a respiratory therapist to provide education on the different medications that they're on, how to use the different type of inhalers correctly,

- So what are the benefits? They also helped with exercise prescription, in aerobic exercise. And actually the physical therapist was responsible for a very individualized exercise prescription. Kind of having already addressed the aerobic piece. Maybe it was strength training, maybe it was balanced training. There's a lot of literature that talks about now the balance deficits in patients with COPD, therefore increasing fall risks. Thinking just as far as things that we routinely see with patients. All these benefits is backed by science, it's reimbursed, it's actually reimbursed in that, but still very underutilized. there is science behind pulmonary rehab. So, you know, So just kind of expand a little bit on the components that I mentioned. And exercise training, really and what the statement talks about, is actually exercise training is the best available means of improving muscle function in COPD. So I mean, and there's different sort of sub components of exercise training, which I'm gonna talk about. But exercise training is the best available means of improving muscle function in COPD. So one is just the aerobic training that we think about. So one thing that I've sort of learned over the years is with patients with a number of diagnoses, COPD being one, frequently say I'm so short of breath, I'm short of breath, I'm short of breath sitting here. How could you possibly expect me to get up and walk on a treadmill or ride a recumbent bike or use an upper body or garment, I'm short of breath sitting here. So my response has, over the years has been, basically like I, likely if the risk factor, So I

mentioned the different types of inhalers, for example. So having, you know, like I can't change the fact that you smoked for 20 years or 30 years or whatever the case may be. There is damage to your lungs that no work participating in pulmonary rehab, is not going to reverse the damage to your lungs. Well, pulmonary rehab and exercise training will do, is there's no reason that your arm muscles and your leg muscles are not functioning as they should. And actually the physical therapist was responsible for a we can make those arm and leg and skeletal muscles more efficient at taking up the oxygen that your lungs are able to provide. So again, like obviously they're focused on the shortness of breath. deficits in patients with COPT therefore increasing fall essentially we can increase the oxygen uptake by the muscles to support activity. Then this translates into less shortness of breath with functional activities in everyday activities.

So what's really nice about pulmonary rehab, is it sort of depends on the model of your particular particular location. But sometimes it's more unlike outpatient, talks about is actually exercise training is the best It could be either class-based, perhaps there's a pulmonary rehab class at nine and another group that comes in at 10, or even if it's more just kind of a traditional schedule, but exercise training is the best available means of As far as often times the scheduling, patients might come in two to three times a week and as their exercise prescriptions get longer and their tolerance improves, I mean, you know, with patients with a number of diagnoses, CIPD being one, you know, frequently say I'm so short of breath, I'm short of breath, But during that time they develop rapport, with not only the clinicians, but also other patients. write a recumbent bike or use an upper body or commoner I'm oftentimes as far as what Medicare covers, Medicare often covers 36 visits. So, three times a week for 12 weeks, it's certainly a lot longer than sort of many traditional outpatient orthopedic plans of care. During that time, three times a week for an hour and a half for 12 weeks, you're definitely going to sort of see a different aspect and the patients that are sort of closer to finishing, we're very supportive of incoming patients and kind of provide that, that support. Also, as long as I'm sort of talking about it, reason that your arm muscles

and your leg muscles are not cardiac and pulmonary rehab, have unlike a traditional outpatient orthopedic, sort of like a graduation. So literally the clinic where I used to work, like I think they kept it like a black, mortar board graduation cap like in the drawer, for somebody that finishes the program and they would literally stop everybody in the clinic and say, "Hey, it's Friday, and you know, Mrs. So and so has graduated and like literally, Then this translates into less shortness of breath with So it's really nice sort of another peer support opportunity as well. As they're making gains with exercise training and sort of seeing the benefits. Exercise training is really the best available means and who else are experts in exercise prescription and monitoring in that then physical therapist, so it's a perfect fit for us. So interval training can be an option. So interval training may be an alternative to endurance training for those unable to achieve parameters because of dyspnea fatigue. they could be at the clinic for an hour and a half or more, At least maybe initially, interval training might be an option. This is certainly somewhere an area of interest that actually have currently from a research perspective.

So looking, there's even some research out there in different cardiopulmonary, chronic conditions, oftentimes as far as what Medicare covers, So that high intensity interval training, is that possible, is that safe, is that feasible with patients with things such as heart failure and COPD? So monitoring, typical routine vital sign monitoring, heart rate, blood pressure, pulse oximetry, but also sort of also looking at their breathing pattern and dyspnea rating. We would routinely use the RPE scale, looking for dyspnea ratings. provide that, you know, that support also, as long as I'm sort of talking about it, can often sustain the necessary training intensity and duration for the skeletal muscle adaptation to occur. For that patient that is saying, like I think they kept it like a black, you know, You'd be surprised if sort of the prescription is started out appropriately and progressed appropriately, how they will continue to make gains. And once they sort of, start to feel just the benefit of it a little bit, then there'll be your biggest proponent. Just sort of emphasizing, I'm not changing your lungs. The research really shows pulmonary rehab does not affect measures such as FEV 1, such

as FEC that I talked about in the beginning that were important in the diagnosis, but it's the functional inactivity limitation that are most affected and they benefit. as they're making gains with exercise training and sort of seeing the benefits. As far as other research that's out there, there's many randomized control trials and systematic reviews that actually show no difference between continuous exercise training that I talked about, that we sort of think about with aerobic training and interval training. Especially, there's no difference when looking at exercise capacity, health related quality of life again, or those skeletal muscle adaptations. So either, whatever works for the patient. Some other options that this again, this is contained in that statement that I mentioned. If they talk about NMES, neuromuscular electrical stimulation. If we're going for the skeletal muscle adaptations to be able to improve activities of daily living, can we achieve that through another way through other than exercise training? So through NMEs.

So what they've shown is that muscle contraction via NMES does not lead to dyspnea and it does create a minimal cardiovascular demand. So maybe beneficial in those with significant cardiac or pulmonary impairment. So like, what am I really talking about? So this is literally using NMES for example on the quads, for a patient that might be so acute at the moment, that actually maybe exercise is not appropriate at that moment. So they actually have shown that muscle contraction through this means, which is obviously not the physiological means, does not lead to shortness of breath. So it should be well tolerated and can get some cardiovascular demand. Trying to sort of start at that point. Can be used in patients with stable COPD, as well as after an acute exacerbation. But again, the goal obviously would be for active exercise. Another thing that the statement talks about and that you often hear about with extra or with pulmonary rehab is inspiratory muscle training. When you think about it, the diaphragm is a muscle as well. So can we use that, strengthen that as far as training in that to improve symptoms and what they've really sort of settled on, is that it's not helpful in isolation. So somebody with COPD that just solely does IMT or inspiratory muscle training, is probably not going to really see a benefit, but it can be helpful if use as an

adjunct. Sort of an in addition to exercise training. So with some, background and sort of my experience with pulmonary rehab and just sort of it's a different setup. Then when you think about with outpatient orthopedic clinics. So I've tried to share some of that and certainly with any part of our practice is patient education. So sort of the term here, we've kind of moved from patient education to collaborative self-management. Thinking chronic disease and the only goal is management. What can we do to help with that? So trying to promote self efficacy, through an increase in patient knowledge and skills. So all sorts of different topics here that could be relevant as far as medication adherence. Already spent quite a bit of time talking today about medications, regular exercise and physical activity. Thinking about even after the clinic phase might be done, so thinking about, a maintenance program and how they might be able to maintain that level of exercise and physical activity within the constraints of their home.

So nutritional habits. So oftentimes some patients with COPD, it literally becomes like a war for energy within the body. So it takes so much energy to breathe that they often choose that over eating, taking in calories for nutrition. So therefore patients often end up very thin, very kickxia and things like that. Trying to think about increasing their patient knowledge, their skills, thinking about nutrition, as far as the most effective means for them. Breathing strategies and energy conservation strategies. There's no short term answer, it's just a matter of incorporating these breathing strategies. And in the pulmonary rehab, I'm familiar with, we would actually take dedicated time, which was billable to teach patients and allow focused practice on diaphragmatic breathing and pursed lip breathing. So it might be something oftentimes we teach, but we don't allow focus practice. Oftentimes patients maybe you start in the supine position and they are able to do it, and then they do sitting and they lose it. But if we don't continue practice that, then there's really no benefit. Because obviously the goal is to use these strategies in sitting, in standing, and walking, and stairs. That they actually have, it becomes second nature. So having time for that, as well as energy conservation strategies. Kind of thinking about their everyday activities, how can they minimize

some of the energy expended? This is a big topic, and as far as research, there's a lot of work trying to be done, but this is a very challenging topic to define as far as self management and therefore, there's sort of different definitions or different aspects or it. So research is coming, but it's been a challenge. Barriers, so this sounds great, right? It sounds great for the patient. We've talked about how you might sort of educate the patient on how it's gonna be beneficial to them and the sort of the need for longterm maintenance exercise with anything that we talk about. I've indicated that it's backed by science, that the evidence is there for all the benefits and that whole host of list. And again, most of those are the things that resulted in the patient being referred to pulmonary rehab to begin with it. It's reimbursed, it's supported. So why aren't people going?

So a lot of the literature, and there's been a lot of literature that has focused on this. Really separates some of the barriers to pulmonary rehab and kind of to two categories. One is attendance, basically getting them into the clinic to show up for that first visit. As well as there's actually sort of another list of challenges as far as barriers, as far as completion. So as you can imagine, I kind of outline three times a week for 12 weeks is an extended period of time and likely more lengthy than traditional outpatient orthopedics. Getting the patient to the point of completing the program. Some of the barriers that the literature frequently talks about as far as attendance, is that as soon as the patient hears about the plan, that they're not going to go because it's a disruption to the routine. So when they hear the time commitment and that, they don't, they it's a disruption. One of the challenges too, and this is another area of interest in my research of mine, is individuals that are younger. That might be still working, working full time. Like how do they find an hour and a half, three times a week to be able to attend, even if they sort of see the benefit and they wanna participate, their work schedule might not allow. To be honest in my experience, and this is something, I think in some clinics, but I haven't seen a whole lot of clinics, for example, with evening hours or weekend hours, to sort of address that working individual that would benefit from pulmonary rehab. Travel transportation location. So depending on where the clinic

is and how to get there. 'Cause again, it's a pretty big lengthy time commitment. Like the evidence is there about benefit but yet you can't deny the amount of travel and transportation. Actually, I'll be honest, like one of the clinic that I used to I'm sort of associated with, they actually provide free transportation. So considering that this is one of the major barriers, they actually have found a way to be able to kind of take that out of the equation and provide free transportation to and from their clinics. Influence a patient's doctor, has been shown to be a barrier to attendance of pulmonary rehab. So I kind of alluded to this earlier, as far as when I mentioned that it was under utilized and maybe the physician, knows about pulmonary rehab, but isn't a believer in it. And there's a lot of research that says that obviously patients sort of patient actions or what patients do is highly influenced on what the patient's physician things.

So if they're kind of only half heartedly, like, nah, you could go to pulmonary rehab, but I don't know if it's really gonna help you, obviously the patient's not likely to go. So that's actually been documented in the literature that the influence of the patient's doctor, can be a barrier for patients attending pulmonary rehab. So that might be an opportunity for education for us as physical therapists, to some of our referral sources. Lack of perceived benefit, right? And the patient's like, is the benefit worth the risk? So the amount of time, the travel, all of that is that really gonna benefit them. But again, if a patient can get in the door and sort of get through a few sessions, they're gonna see others. And that peer contact that you might not see in a traditional patient orthopedic clinic, I think is very, very beneficial. Inconvenient timing, so it depends on the particular setup. So like I mentioned, some clinics might have like a nine o'clock group and a 10 o'clock group and 11 o'clock group. Some the clinic I'm familiar with, is kind of just traditional individual appointments scheduling, but depending on the timing. And again, also going back to the individual who might be still working, full time or part time and just not having the appropriate clinic hours, as well as completion. So as far as just being able to finish out the program because of the length of program. So once they kind of here 12 weeks they just don't even wanna start. So that's sometimes a concern as well for as far as barrier. So that's again, just getting somebody in the door.

So getting somebody in the door to kind of see what it's all about, there's been a lot of things that I've heard of that clinics have tried as far as just phone calls, as far as kind of the first time, maybe they don't do a full eval, but it's most a like an orientation. I mean, there's different models out there to kind of address these well-documented barriers to attendance of pulmonary rehab. Completion, so some of the barriers of completion. So again, this is once they've begun the program, do they actually finish the prescribed plan. Some barriers here are illness and comorbidities, so there's certainly research or there's certainly the possibility that a patient could just experience an exacerbation during that time. Hospitalization certainly is going to disrupt their ability to participate or just, a lot of times I've seen other patients with other comorbidities, so they're there for pulmonary rehab, but they have GI symptoms that act up and sort of need to kind of go down through testing or potentially more that, for example. Travel and transportation. Thinking about the fact of the continuous need for travel and transportation.

Smoking, so if the individual is still smoking, that has been shown to be a barrier to completion of a pulmonary rehab program. So hopefully after today's session, you have sort of an idea whether you're in the home or in a post acute setting, how you might address that, but that's a documented barrier to completion of programs. Are those individuals that are still smoking during participation in the program. Depression, so a lot of times pulmonary rehabs now with a lot of other clinics have an anxiety and depression screening scale, oftentimes that they do on intake and at different points throughout the program. Because of the presence of depression. Without appropriate referral to other healthcare providers has been shown to be a barrier to completion. Lack of support, so again, lack of support at home typically like, 'cause I mean the clinic from the healthcare providers, the other patients is often a very, certainly supportive environment, but maybe they don't have the support to stop smoking or for the travel transportation, et cetera. And as well as again, maybe they don't see the perceived benefit. So the lack of perceived benefit on the part of the patient, like they come for a couple sessions, they don't feel better, so they don't think they should

finish. So if you notice I actually have an asterick, after travel transportation and lack of perceived benefit because they actually, those two particular barriers crossover. They can be a barrier to getting in the door as well as completing the program. So, I think that's interesting for potentially new or existing programs to think about. Actually, again, this is an area of interest in research of mine and I've actually worked with an area clinic and sort of these are documented in the literature, but really sort of looking into what is the, is this match with the patient or with the clinic's experience was. Are they seeing this as reasons that patients aren't attending or completing. And there was some overlap, but then certainly just clinic specific characteristics that we're trying to look at and kind of address going forward. A couple of other things to think about. So certainly most of what I've talked about here is outpatient pulmonary rehab, but then there's been a lot of discussion about home-based pulmonary rehab as well. So I mean, many of the ideas of exercise training in that we could actually implement in the home. So six minute walk tests they said is the GOLD standard for exercise assessment and prescription.

So we can certainly do that in the home, but just again, just thinking about aerobic exercise and the different components, as far as kind of building up towards an outpatient program in home health. So for example, a few years ago, I actually had a patient who actually was a smoker, but actually went into the hospital for an NMI and had a complicated course afterward with A-fib. She actually was a retired physical therapist. So it was absolutely which made my job easy as far as a hundred percent, was planning to go to cardiac rehab afterward. So during that time though, I actually used the time I was seeing her in home health to kind of start to prepare her through education, through increasing exercise tolerance. Like we would just sort of do endurance activities, just kind of increasing her tolerance to activity to kind of prepare her for the more sort of rigorous exercise to come in the cardiac rehab. I think of that the same way for pulmonary rehab. So it's sort of talking about the strategies, spending some time, kind of reinforcing that. I mean, all of these things we can start in the home setting. Additionally, there has been also because the travel transportation

location, is home-based pulmonary rehab feasible? Like can a patient do an entire program? There was a qualitative study in 2018 that actually did show patients valued the convenience. They experienced a positive impact on physical fitness and symptoms they felt supported. And it really seemed like an acceptable alternative and that can overcome some of the barriers. And then, also too thinking about the recent, with a pandemic, with a COVID-19 pandemic, some of the pulmonary rehabs sort of like thinking about what I've heard across the country, across the world have used, certainly bringing these individuals to a clinic, certainly back early in March and April. And that was not sort of recommended. So I know some clinics that actually would do home visits during that time. Even though they were being seen typically for outpatient pulmonary rehab. This is kind of a big sort of question right now that many are looking at is sort of, how do you develop and administer a home-based pulmonary rehab program to sort of address this travel transportation barrier? The other question that's probably gonna come up or may have popped in your mind is about telehealth.

So telehealth and COPD. And there is a systematic review that I was able to look at the impact of telehealth, but really the only outcome that they looked at was quality of life. So again, they looked at a series of studies that were looking at quality of life and COPD, and what effect, if any, telehealth had on that. And really what they found is by itself, it's not a strong approach. But the outcome was really looking at quality of life. But there's so much variability in how telehealth is done. And certainly, we're learning more in the last six months with everything, but there's not sort of one sort of recommended way. So how it's done, how it's monitored followup, all of that varies so widely that it's difficult to sort of put those studies together in a systematic review. But the one that I did locate recently talked about, as far as a primary outcome measure of quality of life, that there was not, they didn't find it by itself. That the telehealth was not a strong impact on quality of life in COPD. all right, so as we kind of think about sort of pulling some of this together, the medication piece, the smoking cessation piece and pulmonary rehab, sort of thought, I'd introduce you to Mrs. C. So Mrs. C is a 76 year old female. She was referred to the emergency room from her PCP office, with four

days of increased shortness of breath. I'm sure just reading that statement, many of you can identify with Mrs. C, right? So she goes to her PCP 'cause she can't catch her breath. And he sends her directly to the ER. She does have a history of smoking for 50 years, but she quit 26 years ago, so she quit. Oh, so like just doing the math really quick in my head, I was like, I'm 76 minus 26 is 50, and she smoked for 50 years. I probably left an error out here that it should have been pack years. So 50 pack years could have been, two packs a day for 25 years, so we'll go with that. So maybe she started smoking when she was 25, smoked two packs a day for 25 years, which would give her a 50 pack year history. And maybe she did quit when she was 50 and now she is 76. So she has since developed a diagnosis of COPD, hypertension, she's diabetic and also coronary artery disease. I'm sure many, if not, all of you can identify and sort of picture Mrs. C in your head.

So meds and I realized later, I actually kind of gave you the shortcut version because we really should have listed here for the medications or things, just like random names. And oftentimes one of the challenges with the medications is sometimes the generic of the medication is listed and sometimes it's the trade name and which just sort of adds to the confusion. So maybe what I should have really said is that, she's on albuterol or ProAir HFA, for example, which we identified earlier as a short-acting beta 2-agonist. She's on Spiriva or tiotropium, which is a long-acting muscarinic antagonist, or an anticholinergic, maybe she's on furosemide or Lasix. So again any of these words, right? It could be a possibility and a medication list, maybe she's on prinivil or lisinopril. Which is an ACE inhibitor and Metformin for diabetes. Like any of those names I just listed or any combination it's really how we know that we actually receive medication lists. So I'm thinking about that. So she was hospitalized for three days. They included the, some nebulizer treatments in her care, as well as an antibiotic. Through a diagnostic spirometry, they determined that she had the diagnosis of COPD, but her FEV 1 is 28% of predicted. So that's obviously pretty severe. So I'm thinking back that would actually be the GOLD grade 4 of less than 30% predicted. And they administered her MMRC. She said she gets short of breath when hurrying on the level

or walking up a slight hill. So again, that's sort of the terminology for a MMRC of a grade 1. So on a zero to four scale, she's a one. Kind of a little bit low on the lower on the symptom end. CAT scores of eight out of 40. So again, that range from zero to 40, higher number of more impairment. Symptoms are sort of on the lower end. And this is just her first admission, sorry her second admission. So she had one exacerbation in the past and she did require hospital admission to manage. So she has a history of exacerbations with one admission. So in her goal is to return to golf and watching her grandchildren two days a week. Sort of thinking about some of the content that we talked about today. So she would be a GOLD grade 4, based on that AFV 1 of 28% predicted and she'd be a group C. Group C was sort of lower on the symptom category, but then she's actually higher on the exacerbation or hospitalization risk. 'Cause again, she's had one exacerbation in one hospitalization, which is gonna increase her her risk. So that would be a group C. Kind of going back and pulling back some of the other information, she should be on a short acting bronchodilator.

So all patients should be on that rescue inhaler, which she does have, as well as a LAMA. The long-acting muscarinic antagonist, which she is also on. In that respect sort of kind of applying that information and thinking about whether she is on what is recommended, that she would be on those recommended medications. So then also thinking about smoking cessation, which in this particular patient, I mean, we would certainly wanna ask and sort of confirm. But she does seem that she has been successful in smoking cessation. Then also thinking about the additional recommendations, the non-pharmacologic, the non-pharmacological recommendations. So going back to that group C category that pulmonary rehab is essential and physical activity is recommended. So Mrs. C would absolutely, if you're seeing her in home health, may absolutely be a candidate for referral or recommendation for pulmonary rehab, for all of the things that we just talked about. So again, just sort of thinking about, pulling everything together. I'm kind of just sort of thinking about, the kind of bringing everything together and pulling it together is some final parting thoughts before we take any questions as resources. So there's a lot of

resources available to assist in treatment with the patient with COPD. Just kind of listing them the GOLD guidelines that I mentioned in as far as medication management, there's the Beers Criteria, there's STOPP and START. So those are some of the main resources as well as the smoking cessation clinical practice guidelines. Really what over the last 10 years, what has really changed a lot in those GOLD guidelines has been accurate, sort of the emphasis on accurate symptom, assessment and exacerbation history and hospital admission history. Those have really kind of become, taken more of a prominent role because they've essentially found that there's not a correlation with mortality, just looking at the FEV 1, just looking at the diagnostic spirometry.

So sort of really taking that into account, things such as the MMRC and the CAT to assess that. Smoking cessation, the five A's, so that we've gone through, then also thinking about the five R's. So then when the individual's not willing to quit in the next 30 days. So that sort of thirty days, that pivotal A. Are you willing to consider quitting smoking in the next 30 days? And if the answer is no, you kind of move over to the five R's and really able to sort of incorporate, more of those motivational interviewing techniques that we talked about as well. And then finally, I mean, really, I feel like if there's one sort of takeaway that I would love everybody who's joined us today to really take away is thinking about outpatient pulmonary rehab for your patient, for your pulmonary patient, you're seeing in home health. I really focused on COPD today, but I mean, I've listed a number of the diagnoses that are covered for outpatient pulmonary rehab and just the benefits. It is very under utilized, so if we, as physical therapists and part of the healthcare team, I would just recommend maybe doing a quick Google search in your area to have some information and maybe giving them a call and kind of finding out about their program. As far as the patients moving along the care continuum, so transitions of care with, for the patient with a pulmonary diagnosis. So it was kind of just to finish up, I have some references. Those references that I mentioned I do have listed as well. So hopefully that was helpful. So I'm sure from the title, might've seemed a little bit like an eclectic kind of group of topics, but hopefully I was

able to kind of connect them for you and provide some resources and some thoughts for your next patient you see with a pulmonary diagnosis. not specifically COPD. Thanks so much for joining me today and I would happy to answer questions. It looks like I see one here. The question is, what is my opinion on wearing a mask during this COVID crisis, in respect to its effect of increasing CO2 for people with or without COPD? So that's a great question. And be honest, I guess I don't know yet, like I'm starting to see that, but I haven't actually looked into that. I think there is sort of some exceptions sometimes for patients with pulmonary issues. Whether as far as use of a mask, but to be honest, I guess I don't have an opinion on that. I know that's a question, but I don't know, I think the thought is that they're breathing into a mask and inhaling the CO2 again, which is obviously the concern with COPD, but I don't have a strong opinion. So I apologize for that. Another question, and also another very good question.

So the question is, are those standards free to use in document with like the CAT? That's a great question. So I mentioned as far as the guidelines, so the GOLD guidelines, as I mentioned, if you go to the website, you can download a personal report, personal copy of the 141 page document. And honestly, what I provided is actually in there. So as far as it's not, you wouldn't have to pay to actually find out what the MMRC is, and the CAT is. That's actually a great question though. 'Cause I know some certainly outcome measures are like copyright protected and you have to pay for a license, things like that. And I certainly have read the document pretty extensively and it's not mention that. So that's actually a good, good question. I'm guessing you're specifically asking about the MMRC and the CAT. Also a good question that I should look that up. So you're asking about those in particular. It just seems like in clinical practice I've seen them used like as they are. So that makes me want to say no, but I can't verify that. So, any other questions?

- [Calista] All right, I don't see any other questions either in the Q and A pod. Thank you so much for sharing your expertise with us today, Dr. Bednarek., it was a wonderful

course. And we're gonna go ahead and wrap it up for today. Before I go ahead and officially close out. Is there anything else you wanna leave us with?

- [Dr. Melissa] No, thank you for, thank you for joining me. Hopefully it was helpful. Have a great holiday weekend and stay safe and yes. I mean COVID rate is a very, those are really real questions, but as we all know, the research is just coming out. So I don't have anything definitive on that, but it's on my radar So great questions, thank you.

- [Calista] Have a great day, everyone.