**Medical Insider COPD Season 3
Real-world studies in COPD: What does the evidence say?**

Richard Russell ([00:00](https://www.rev.com/transcript-editor/Edit?token=vK8jjPWTRgDd9sqFUi7pS7Lbl6hfC2aGuhTMKYxSG-YC5nuFEjGL4NUvgt2jqqeQXww4jNAMinQ15t9q_sp1lNkWliE&loadFrom=DocumentDeeplink&ts=0.3)):

This podcast is intended for healthcare professionals outside the United Kingdom and the United States of America only. Welcome to the Medical Insider COPD by Boehringer Ingelheim, a podcast offering a breath of fresh air to clinicians treating COPD across the world. My name is Dr. Richard Russell. I'm a Consultant Chest Physician at the Lymington New Forest Hospital in United Kingdom, a Senior Clinical Researcher at the University of Oxford and also an Editor-in-Chief of the *International Journal of COPD*. I am delighted to be your moderating host for this season of Medical Insider COPD podcast. I am here to bring you news and insights in COPD right from the source directly to you. Thank you for joining us today, be sure to subscribe and follow Medical Insider COPD to make sure that you do not miss any exciting podcasts in this series and the ones we've done before.

Richard Russell ([01:07](https://www.rev.com/transcript-editor/Edit?token=jzZWQ8ynJvKvxnVvx6xvTxZi3cjPFqwBxadElztwtD2cKw3nU7VkYzMoGcpZ8SdTXm3ZA1Ae9Ktz3tCrvca4JU4KxQs&loadFrom=DocumentDeeplink&ts=54.56)):

Today, we are going to delve into a publication, which I believe is well worth reading. This is entitled ‘Blood Eosinophil Counts and the Development of Obstructive Lung Disease, the Kangbuk Samsung Health Study.’ We're also going to look at an emerging and exciting topic from social media. Very relevant at the moment. COPD and the impact of fatigue on patients. But first, I am absolutely delighted to introduce today's guest. And we're going to be discussing real-world research and real-world evidence and how this is impacting our treatment of COPD. With me to discuss this is Professor Antonio Anzueto from the University of Texas in San Antonio. Antonio, welcome to the podcast.

Antonio Anzueto ([01:49](https://www.rev.com/transcript-editor/Edit?token=qCB5q6Uw0Etlg-EccwtbfsVXmpbKk57IkNwaet346GtR-gylBBVuL3Nd0-cgIHqZXVMg-st2c88CIwnzg8wk1jZoQiA&loadFrom=DocumentDeeplink&ts=97.48)):

Richard, thank you for the opportunity to be with you to discuss this important issue in the decision of how should we treat patients with COPD.

Richard Russell ([01:58](https://www.rev.com/transcript-editor/Edit?token=1mlxdfPjm1IejxrPAZf34MsvAibO0zOJylQgFJCUmG5_t7i9VWgKZXpq__1oqD8GwSgxCDAViPZexLVtjVEWxe1Pp8k&loadFrom=DocumentDeeplink&ts=108.42)):

So, you're a researcher. You're also a guideline expert and a topic expert. What special criteria or special skills and experience do you have to talk about real-world studies, Antonio?

Antonio Anzueto ([02:14](https://www.rev.com/transcript-editor/Edit?token=uhFujGQwZG9gHJtUWQTH5qlGsHbrwjXE2EEaSc2QkRcLBX11Xi9R49iHaAMvbETN9-BgZg-N4TTM77uGuJK1cmU4wRc&loadFrom=DocumentDeeplink&ts=125.12)):

So, Richard, I've been involved with real world studies for many years. And this, my interest was created in part because I saw there was a gap. Clinical trials publishing highly rated journals will show us one part of the story. Certain randomised controlled trials have a highly selected patient population, but they do not reflect the real life of the patients that I see in my clinic. It's the need to understand how can we translate these clinical trials into what's going on, on my patients in their clinics?

Richard Russell ([02:50](https://www.rev.com/transcript-editor/Edit?token=Ctmg_Q8caqwTRvbVKDifu-y9RMURo3tmlUP45Ty9d3OyGwFkB-RHZMihIXMtxVgIlotMT1gT7EXc4sfoRVbRRHhwHHk&loadFrom=DocumentDeeplink&ts=164.56)):

So, this is the key point, isn't it? You've nailed it there. What are the key differences between randomised controlled trials and the evidence we get from those, and then cohort studies and maybe real-world evidence later on?

Antonio Anzueto ([03:03](https://www.rev.com/transcript-editor/Edit?token=IxtJkMRhL1Gk10xlfXwLyO6r5reBHjz4thET-p4-Gd0uNYjV4BsYERS79mxwTrF-HO0cSIH0eQqGal3xqQnG9dQPwzU&loadFrom=DocumentDeeplink&ts=177.74)):

So, randomised controlled trials in chronic lung diseases and COPD, asthma, are a highly selected population. The strength is a randomisation avoids imbalances between the groups. So, you need to look at the inclusion criteria, need to understand which are the patients who are involved there. In the other hand, having the real-world evidence that is obtained from analysis or real-world data, what you're going to do is you're going to bridge this gap. You are going to have meaningful endpoints. You are going to have long term effectiveness data. You are going to understand medication use based on adherence. Are the patients able to take their medication? And at the end of the day, what is more important is patient related outcomes. I can tell my patient, "Mr. Williams, your FEV1 is 150% better." He will roll his eyes and says, "I don't care. I'm short of breath going up the stairs. I cannot do anything on my life." This is the translation of this very exciting 150mL into, I can do more. Or how can I do more on my daily life?

Richard Russell ([04:19](https://www.rev.com/transcript-editor/Edit?token=Z6ruTpEWuLej-v3uApAHK7ZlKaoxpIx5NHsP-suqq4p8nziXAezDEpI90KvJ4Svvqb1FSWFoYHrhd_gXj7_5xMquFbk&loadFrom=DocumentDeeplink&ts=256.31)):

So, Antonio, when we read papers and we are looking at say, randomised controlled trials for example, what's the most important thing that we need to do to be able to actually interpret the study, to have them to see where they're applicable to our patients?

Antonio Anzueto ([04:34](https://www.rev.com/transcript-editor/Edit?token=5uccHEAmd3gSB7nEPKI0Wvbeq6VjJZWKEW-adsCqOEu6cSo4BEhmywqN_BQtDwMdPLphMuBsSdutg628m3_OnRfH_HY&loadFrom=DocumentDeeplink&ts=270.38)):

You need to read the methods. You need to read the section say study population. Who were they? What medication worked before they entered the study? Where they had this wash out period that they took them off some medications. Are we having a selected population that had many exacerbations before? And that's why, once you took medications away, some of those patients are going to behave much worse. Also, it's very important how the analysis were done. What were the considerations that we're taking to do the analysis that will lead into the results?

Richard Russell ([05:15](https://www.rev.com/transcript-editor/Edit?token=1OqmurH1W2f-c8iQIUA8bFusONGbSakPFrIhBzkodISrmveC25dWERp47ByGXXc_BZ4s4HAVamfsLIvOjSp94lbYkOg&loadFrom=DocumentDeeplink&ts=312.24)):

And are you aware of data that actually comes out quite differently when you take into account the complexity of real-life patients?

Antonio Anzueto ([05:23](https://www.rev.com/transcript-editor/Edit?token=B2uMI8Vvc3l3fAAy_2Vf54nXz05r1YO48MCdSC8expNKmaUqbfu_mhDKh4HIu7qF4BSY772ZnH021a7GN-uRCA90TC4&loadFrom=DocumentDeeplink&ts=321.49)):

Yeah, for example, we have recently publications of two large, randomised trials that look at triple therapy, ICS/LABA/LAMA, ICS/LABA, and LABA/LAMA. And the results were different. Just looking at the ICS/LABA versus the fixed LABA/LAMA combinations, it shows that the ICS/LABA were actually really good at reducing exacerbations. But when we go into real world data, for example, there is a recent publication by Dr. Quint, that is an administrative healthcare claims from the US. It's a huge population, 61,000 individuals. Then they can identify the group where ICS/LABA versus the group that were a fixed LABA/LAMA combination. And Richard, in this analysis, it clearly shows that the fixed LABA/LAMA combinations had in the long term, less exacerbations, less likely to require going up to triple therapy. And more important, less side effects from the inhaled corticosteroid. They were less likely to have pneumonia. Over there, we can see how it's impacted in real world data what clinical trials weren’t able to demonstrate.

Richard Russell ([06:49](https://www.rev.com/transcript-editor/Edit?token=Jpbmx3KkpSYBqHoX_xU4vFg7mIRfxfFHzf1Eh2IMJj02OMk-dmbauGAdUMA4kPf5gUFWfOGxWLAJfnrU0K0Tf5o6uqM&loadFrom=DocumentDeeplink&ts=413.9)):

Let's talk a little bit further about actual real-world studies that are using dual bronchodilators, particularly as examples of how to treat COPD. Because long term, you've got to the studies like Jenny Quint there, which was, as you said, a big database study based upon insurance claims. But also, there are long term cohort studies, which also look at people, as you've mentioned, longitudinally. So, we can see the impact of changes to their treatment. And there's the DACCORD study in Germany by Roland Buhl is particularly one of those that's done that, which shows that patients treated with dual bronchodilators early, seem to not need extra therapy and stay stable without exacerbations. And I think there are others too, aren't there?

Antonio Anzueto ([07:28](https://www.rev.com/transcript-editor/Edit?token=RHFOiTnfEdHcfdVqSCfz6ngIhgSNAijpnbuemthH78AWtuDUnJocoATa1UDrlkjsji5bU7z_k6maTBo4vT88upOW718&loadFrom=DocumentDeeplink&ts=455.44)):

Yes. And I’m glad you mentioned the DACCORD study because this is a very well-characterized cohort that have been followed. And I think having cohorts, and now we have these German cohorts, we have the COPD gene cohorts in the US. We have a the SPIROMICS cohorts. We have been able to put cohorts and follow them over time. And clearly in those groups, we can see the differences. In the study from the Roland Buhl study. We can demonstrate that triple therapy was not better than fixed LABA/LAMA combinations. Patients of fixed LABA/LAMA combinations had this same number of exacerbations. It was not better to increase into a triple therapy in a group of patients who had not had exacerbations before. And I think that is my very important point. Most of the individuals that we see they haven’t had, or they have an exacerbation that was mild or moderate; in those individuals, they don't need to use ICS. Those patients fixed LABA/LAMA are going to be appropriate.

Richard Russell ([08:35](https://www.rev.com/transcript-editor/Edit?token=ys0y_Sw3Qv3R0IwCSxp2z4Cy57nftv5OahiCHD01v_c6SYizxs_LskINBiyhiFprswhgun5fKFfzxMAhoFEwLqxHjD0&loadFrom=DocumentDeeplink&ts=530.38)):

We've got the evidence, we've got randomised controlled trials. We've got cohort studies and real-life, long-term studies, but we need to talk about guidelines because it's through guidelines that we make recommendations that then implement findings from the studies. And you've been involved in several guidelines over your career. Are guidelines now beginning to consider real-world evidence?

Antonio Anzueto ([08:57](https://www.rev.com/transcript-editor/Edit?token=Ulrtl_pv7mWpheAHrDZyqpQD2Hr0KsPP5MunYwQ5kHi5ZviXKWZyU2y4-K7FuJv4dQFEoo5V2dyjGsJR76oAh5KWcZo&loadFrom=DocumentDeeplink&ts=554.24)):

I think it's fascinating to see how has evolved the guidelines. When we have to, we can start with grade and everything has to be on the grade, it will take 10 years to do the guidelines; it will cost thousands of dollars. And then by the time we are able to publish them they say, "Oh my God. Why we do it? We spend all this time and waste all this money and we couldn't come up with any meaningful conclusion." In GOLD, it's one of the areas this has evolved is the, we keep up going into real word evidence, clinical studies, while going into systematic reviews, meta-analysis, into taking into consideration that it has to be looking at the data from all the different aspects in order to provide meaningful recommendations.

Richard Russell ([09:42](https://www.rev.com/transcript-editor/Edit?token=ejZcO4OzQ43ovUOEgXs-4hsDJ9WtIulX5zRvN_xgt9B0JAS_iCphE1v38n2MIxul3mWfgmTmN4F0nvUQHjClCDdNaso&loadFrom=DocumentDeeplink&ts=603.12)):

And it's true that now the GOLD strategy and the European Research Society, and also the British National Guidelines from NICE, National Institute of Clinical Excellence, certainly recommend as a baseline treatment, optimal bronchodilatation now. We need to do more with this maybe.

Antonio Anzueto ([10:00](https://www.rev.com/transcript-editor/Edit?token=ZeNazkX7VHKhqPJN3OKctaRLy6Cn91H7w38lRDRxHIVx56m33n4lS5f64eCAgmArCX30Wu9ezLadUQx7BtsK_fCtNO8&loadFrom=DocumentDeeplink&ts=621.83)):

Yeah. I think we need to emphasise that we have a very unique opportunity. We see the individual for the first time, came to see us. He or she is symptomatic. We need to maximise the treatment because we need adherence. And in order for them to take their medications, they have to see the efficacy, that the medications are doing something for them. It's a challenge as a clinician, it's not only to prescribe the medication, is to ensure that the patient adheres to that medication and if the patient feels the effect, he's going to stay on it.

Richard Russell ([10:33](https://www.rev.com/transcript-editor/Edit?token=JU42mzQE5ZdnYLPddZLTZDOPE8w0wNt99TqJA1f0whzP8VDSFWEBORbmF_nABgfYyqPr_NmiVueOKxL8x8wpyTH2xXY&loadFrom=DocumentDeeplink&ts=656.55)):

You beautifully helped me move on to the next little bit of that discussion. You've got guidance and we've got patients that we need to influence. But we also, as healthcare practitioners, need to know the guidelines, know our patients and know how to implement those changes. And there's been some great work published in European Respiratory Society Conference, also the American Thoracic Society Conference, showing for example, that even within the United States between states, there's enormous variation of prescription in COPD for the same kind of patients. Particularly with an overuse of inhaled corticosteroids. Antonio, how do we deal with this?

Antonio Anzueto ([11:13](https://www.rev.com/transcript-editor/Edit?token=4cuHCRzFwOg_-RCGxGUsXDDNLNPr5aV9o5afDMyMw7GF9wfXcCvmzHA34ga-Pr1mq2kb7-uqZIKxyzwwZ-7cHHCHWAg&loadFrom=DocumentDeeplink&ts=699.42)):

The message is lost in translation. I think that's the problem. The message is lost because clinicians today, they are overwhelmed in their practices, especially primary care. They have to deal with many other conditions. The education and the challenge that we have today is we need to make respiratory conditions the front line, to be important for them and emphasise that these are treatable diseases. That yes, you can make a huge difference on Mr. Williams or Mrs. Johnson if you give them the appropriate treatment. You will improve their quality of life. I think it's education. I think it's important to emphasise that we do have treatments that are effective and appropriate for our patients.

Richard Russell ([12:01](https://www.rev.com/transcript-editor/Edit?token=K7nyZSm7-9LBFAnCcG0y4_F0s94OfL8961p4A3dh1por20WceTeY00CcaqvFKv6NcOjN03hR3jUHrDO79wqqOmiHHbs&loadFrom=DocumentDeeplink&ts=748.54)):

So, it's really important for us as respiratory professionals, those listening to this podcast, that we actually get out there. Particularly talk to our primary care colleagues and particularly spread the simple words about how to actually fairly straightforwardly, and I think GOLD is very straightforward, in how we should manage COPD to prevent deterioration and protect our patients. Yes?

Antonio Anzueto ([12:21](https://www.rev.com/transcript-editor/Edit?token=7VmAfq1VBbaNHhijxmjPrCKI6BGtqdD4s_Yo-d4zQVeysN0jPC1VqsSFAxCnDlDMQQM0tYIXI5PDRMcMt5z5KDFGf4Y&loadFrom=DocumentDeeplink&ts=769.86)):

As respiratory practitioners, we should lead by example. Our interventions, our therapies should be what is recommended by the different guidelines. We should lead by example, treat our patients with appropriate therapies.

Richard Russell ([12:40](https://www.rev.com/transcript-editor/Edit?token=HXHXuDpUCzx0kCXqM99kkIodKn0ZpYedC7agCPH8rjvxhRR9VgC2c2neRzpWhFqG3OZDUPDqtqkUQY1bFaQ6TWAOaZA&loadFrom=DocumentDeeplink&ts=793.32)):

Okay. Let's summarise then. What would you say, Antonio, are the key takeaways from this discussion?

Antonio Anzueto ([12:45](https://www.rev.com/transcript-editor/Edit?token=4MMDPH2Q8BKOELkVzk3rVx1p7flqfawf3pTL1H1BZUDe7azaoDSJCrdl-J8VqhS0oLNPZh152LBhRvWALWjXKTuNtH4&loadFrom=DocumentDeeplink&ts=838.3)):

I think the key takeaway is that we have to focus on how we're going to treat our patients. And in order to understand Mr. Williams, we need to look at the combination of randomised trials, who give us information about safety, but fill this gap with real-world evidence that will show us long-term effectiveness, it's going to show us adherence, it's going to show us medication use, patient reported outcomes. All these factors that are very relevant for our patients.

Richard Russel ([13:15](https://www.rev.com/transcript-editor/Edit?token=Rbaw5A6hwnpk1Cgk5ZHy-chf562w0VD9XNuCRMW7Krc5Z2OhoMO3WAgRGQ-MYbDHp2_tOMP3ddVkecPntnfGeEgRU2k&loadFrom=DocumentDeeplink&ts=877.2)):

And we, as a respiratory community, need to keep on with effective education of all of our colleagues in primary care, particularly to get these clear messages across, right?

Antonio Anzueto ([13:33](https://www.rev.com/transcript-editor/Edit?token=sktBqsYADhCCCYGgPr4QV6aSOhaov-UP6017iU7hZCKZ_6ZWN68jvyJvZcPAeXkW1p8txEffdedA6lxWPI5_pAYTQ_Q&loadFrom=DocumentDeeplink&ts=887.28)):

Yeah. We need to educate, educate at every level. And more important, the message for education is, this is a treatable disease. If we give the right medication, we can treat the disease. It's not that it is not treatable. You can change the life. You can change these patients forever if you give the proper treatment.

Richard Russell ([13:53](https://www.rev.com/transcript-editor/Edit?token=IShei0_HMeiDTm3vQ_ez0WHOkFfi8tnPuK2zrWCZ1s36-p3fe4xC90mHJzCrO19VCBdwyU_atOMXSD9u2mh1kp3vFZQ&loadFrom=DocumentDeeplink&ts=842.13)):

Thank you for that. In a moment, I am going to unpack this new paper for you by Hye Yun Park et al., published in the European Respiratory Journal. But before I do that, let me thank my guest today, Professor Antonio Anzueto from San Antonio in Texas. Antonio, it's been lovely spending some time with you. And I look forward to seeing you very soon.

Antonio Anzueto ([14:13](https://www.rev.com/transcript-editor/Edit?token=xFUrJWLbRq6VR0Jf9w-i6lmTXrh7QaefeJ4HOHpxD_ph2HMhS3sbMRmUCCttq3yL2rlYwkSvJdRoGqDXIhb4YmhTSiU&loadFrom=DocumentDeeplink&ts=936.03)):

Thank you, Richard. It was a pleasure.

Richard Russell ([14:20](https://www.rev.com/transcript-editor/Edit?token=HCF84d9HjCONy43SJenbxYi2v0RXrtAI-SCRceDuZWEcP923LpBaKJxljpFnnI2nSZ4Pgd8qwOgCgH-UISRJdys5nXA&loadFrom=DocumentDeeplink&ts=0.32)):

In a moment, I'm going to talk about an important and very hot topic in social media for COPD, the role of COPD and fatigue. But before I do that, let me unpack for you this paper. It's published hot off the press in the European Respiratory Journal 2021, volume 58, pages 2003 following, by Hye Yun Park et al. It's entitled the ‘Blood Eosinophil Count and the Development of Obstructive Lung Disease, the Kangbuk Samsung Health Study.’

Richard Russell ([14:47](https://www.rev.com/transcript-editor/Edit?token=R0i0rHaUX2jOMeh1ME4rbvGdQ8oBgyVZquOrrVdniYeCU6nBVyrHUazR-gFlnpLAmB1rsB-bnAcQFGveIoPmsI4phoQ&loadFrom=DocumentDeeplink&ts=23.25)):

This is a real-life study. It looks a large cohort and has a long term follow up. And the question they asked was, is a high blood eosinophil count associated with risk of developing obstructive lung disease? They defined obstructive lung disease simply based upon spirometry: FEV1 less than 80% predicted with FEV1/FVC ratio of 0.7 or less. They looked at people through their lives from around the age of 37 on average, these people had no previous history of any lung disease and they followed 360,000 adults. They followed them up for about five to six years.

Richard Russell ([15:22](https://www.rev.com/transcript-editor/Edit?token=a2YFYQqoMmjPtg1OJVa2ZBcHGNV0xM_B4-fRDdv6ukPLFNWSoIG_N5kTG8Aqm_UYYNZhg8nnjdVFkPedCL5yxsKcvDc&loadFrom=DocumentDeeplink&ts=62.93)):

This is over 2.3 million person-years considered. 5800 of them developed this definition of obstructive lung disease. And when you looked at all factors particularly the eosinophil, there was a hazard ratio for increasing levels of obstructive lung disease with a higher eosinophil count. Smoking was controlled for and certainly did predict in some ways but if you took out smoking as a co-factor, if your eosinophil count was greater than 100, between 100 and 200, your risk compared with those of less than 100 was 1.07.

Richard Russell ([16:03](https://www.rev.com/transcript-editor/Edit?token=TaIP7fLJALkaVnX7yakBlxunt41JD3486gv6QrPZxrcB6Meli4XYgwMNXudpzwNFPksEve3tiCKEr-zhqsUnt-qLa5I&loadFrom=DocumentDeeplink&ts=98.12)):

If your level of eosinophils was 200 to 300 cells per microliter, your risk was 1.3. And if your eosinophil count was between three and 500, your risk was 1.46. And over 500 cells by microlitre, your risk of developing obstructive lung disease was 1.72. So, what's going on here? Well, eosinophils are clearly important. We know they're important in COPD as a risk factor, but they're also important in non-smokers as well. When you take the eosinophil count, it seems not to matter. And it's unclear now whether these patients are developing COPD or asthma and it's likely many of them are actually developing early COPD. So, we can demonstrate changes over time and the blood eosinophil may well be a thing you need to consider in taking together the risk of development of obstructive lung disease in the population. So, we need to look out for it.

Richard Russell ([17:01](https://www.rev.com/transcript-editor/Edit?token=c1v8nuW4qT3ieg_W6bdWNRKWbtWTLRBJ27Dh948lbjhE_gnBrVcn5MuItBugsJEUgq80o80iu7f4p230u9CkMy68xII&loadFrom=DocumentDeeplink&ts=0.32)):

Now for the delve into social media. What have COPD patients been talking about in the last few weeks? Well, they're talking about COPD fatigue. There's a wonderful social media site run by patients, for patients, called MyCOPDTeam, which describes COPD fatigue as a major problem. Patients describing that ‘this is my main problem’ and sleep is not the answer. They say that exercise makes us feel better, but really can add to the fatigue. So, what's going on? Well, COPD fatigue seems to be the phenomenon that patients have where they describe the tiredness, the lethargy, the real inability to have energy to do things in the day.

Richard Russell ([17:44](https://www.rev.com/transcript-editor/Edit?token=wABNEK0qRA-E1PiK9XGjboSMMrHwWUH8aXUK2hV8MhdHCx21I1TsQwxGOvf6CBh0ZvHb4M78-hMSz2kdxeHOaW1My34&loadFrom=DocumentDeeplink&ts=44.63)):

So, what tips are available on these websites to actually help people? Well, there's some sharing hacks and things to help them deal with this fatigue in the real life. They felt that slow, incremental exercise was a really good thing to do, regular light workouts. They also felt, and I think this is absolutely right, that there's a need for significant medical review, because of the other causes of fatigue, anemia, heart failure, and other things that may be happening. They're also aware that temperature fluctuations can really affect their feelings. I think that's important too. And also, advice about diets; light, energetic diets with slow-release carbohydrates, rather than sugar-rich, carb-heavy diets. And then finally, they talk about the role of light, and actually the way that maybe vitamin D may affect how they feel in the fatigue, and light, and the fact that some of this may be hidden in Seasonal Affective Disorder as well.

Richard Russell ([18:40](https://www.rev.com/transcript-editor/Edit?token=kKfIQeo6wybRhVic0axduQcHYpigRb1R_D3Ml0anSXyGnxwnPdhr-BQgc6-4iVcwa75cOlVoRIAokEYusx4rgaYcGS8&loadFrom=DocumentDeeplink&ts=99.63)):

So maybe you should look at your patients and consider, have they got COPD fatigue? Is this important to them and what can you do to help about it? So, thank you for joining us today on the Medical Insider COPD podcast. Look out for the next exciting edition, and I look forward to helping you further treat our patients with COPD better. Thank you.