**Medical Insider COPD Podcast, Season 2 Episode 6**

**Early COPD trajectories: Management insights**

Richard ([00:05](https://www.rev.com/transcript-editor/Edit?token=3kO2R3PI1Lzm_SS8VCY0fBx_BCRUxfjAK5TC7IPzyI2Ja3lgyJ5Ybd7IMUCmNsmu85VCOtTQjT7BOifLU5JVyJ5Mxi8&loadFrom=DocumentDeeplink&ts=5.12)):

This podcast is intended for healthcare professionals outside of the United Kingdom and the United States of America only.

Richard ([00:22](https://www.rev.com/transcript-editor/Edit?token=Jz6adWyWxxObnu7duYIuj8Oi7WMsVF4SwJ4r6OrgtDDgmuJ9R77PmH4dHNlFEJ3NnM3saxtg9-0xzn76rbUiE_cSKFs&loadFrom=DocumentDeeplink&ts=22.09)):

Welcome to the Medical Insider COPD by Boehringer Ingelheim, a podcast offering a breath of fresh air to clinicians treating COPD across the globe. My name is Dr. Richard Russell. I'm a Consultant Chest Physician at Lymington New Forest Hospital and a Senior Clinical Researcher at the University of Oxford. I'm also Editor-in-Chief of the International Journal of COPD. I'm delighted to be your moderating host for this season of Medical Insider COPD podcast. I'm here to bring news and insights in COPD right from the source directly to you. So, thank you for joining us today and be sure to follow Medical Insider COPD to ensure you do not miss any of the exciting podcasts in this series.

Richard ([00:59](https://www.rev.com/transcript-editor/Edit?token=2E6qqedegERrIcG-7Nt4Hw9h2oC9iUOMmrUBavOWCWTnQkDFro9u-nvFSeI4Kb09NcH3uRmi59iBP3BsQBndyzROClk&loadFrom=DocumentDeeplink&ts=59.89)):

In a little while, I'm going to be introducing to you an important new paper on COPD, which is looking at predicting mortality using the available risk assessments we have for COPD, a 12-year follow-up. This was published from Sweden in the International Journal of COPD. But before I do that, I want to introduce our guest and the main topic of today. The main subject of today's podcast is early COPD. How we treat it, how we characterise it and what we can do about diagnosing COPD quicker. There is no one better in the world to talk about this than Professor Wisia Wedzicha. Professor Wedzicha is a Professor of Respiratory Medicine at Imperial College London and is one of the most senior respiratory physicians in the world. She is the first female editor of the American Journal of Respiratory Critical Care Medicine and the first non-American. Wisia has been involved in my career throughout the last 25 years and has single-handedly developed a generation of new COPD researchers who are now coming to fruition as independent investigators. Wisia, welcome to the podcast.

Wisia ([02:04](https://www.rev.com/transcript-editor/Edit?token=OIC437mLS-Zf4cbzCLEjdL4sWiEF9vEkuwxWTmfC0qEzm-3nNiK3mNWj6oNtfQFmdtt1wEPoRR5azFhARPYX0cT3N9E&loadFrom=DocumentDeeplink&ts=124.19)):

Richard, thank you very much for asking me to join the podcast today. I'm delighted to be here.

Richard ([02:09](https://www.rev.com/transcript-editor/Edit?token=AZ0viHSfCZa00H4egfFH0groiAl_oxor1H8ef01XWnFczexrPE6M_k1ofKM2eGniQt9d62mwP24aD6vJCpyq8vY1ZX0&loadFrom=DocumentDeeplink&ts=129.29)):

So, Wisia, your career lately has begun investigating the characteristics and definitions of early COPD. Can you tell us what that really means?

Wisia ([02:19](https://www.rev.com/transcript-editor/Edit?token=R2G1ou5diD1UKupW9X54guZmu6SFBxkwn0HthHmHyKcm6D-no-3ZZMH0-pXUdX1fyoDcTP4qBJStXpKngrwL2qG2D9M&loadFrom=DocumentDeeplink&ts=139.52)):

As you know, COPD starts much earlier than we diagnose patients. We usually diagnose patients over 55, over 60, but we now understand that this is a condition that starts in midlife. And I think by early COPD, we are referring to the early trajectory of COPD. It is very important though, to differentiate early from mild COPD. By mild COPD, we mean mild severity of the disease, mild impairment of lung function, which can occur across all age groups. By earlier COPD, we mean COPD in younger people, in midlife, let's say patients in their forties and fifties, the very first manifestation of the disease, mainly in smokers.

Richard ([03:15](https://www.rev.com/transcript-editor/Edit?token=TrC5vk-b7oW7sOePZKDoaVmIZnlmwVF46xTg_8jeu4O77wG_piZKsX3Z1UN67d_AYxoXbctq8ktBT0T207pWV6Iwq_Y&loadFrom=DocumentDeeplink&ts=195.25)):

And Wisia, we can measure, as a metric, FEV1 decline and there's been a couple of really important papers, the first by Tantucci and then followed up by the Lange paper in the New England Journal, looking at rates of decline of lung function. What have we learned about that and how that affects these milder and early patients?

Wisia ([03:33](https://www.rev.com/transcript-editor/Edit?token=-bfHzrDDi4n-aRtNn0kXzhCOzr9szm2yGeCcHHqT_wwGjeepu302a85trrdZyBmglnam4EXAIdOaahZWxMYDI6vZ0wc&loadFrom=DocumentDeeplink&ts=213.55)):

Well, I think that we now see that the trajectories that we see of lung function, it's the course of lung function with age is different than Fletcher–Peto told us. Remember, Fletcher–Peto was a cross-sectional study. We're now seeing longitudinal studies and there are a number of different patterns. But what is emerging is that lung function declines more if your lung function is good and that makes sense, percentage wise, it would decline more. So, in order to affect disease progression and have a disease-modifying effect, we need to intervene much earlier in the disease. And this is where the concept of early COPD comes from.

Richard ([04:21](https://www.rev.com/transcript-editor/Edit?token=eS1uVWM8NewNbK5asARtWfWuPNKKc2NsEA4oZtP4684nfJ_5tOkTMdgzLO7OA9BvQf0vgp60o7UJLGM_6fQerp4ZIw4&loadFrom=DocumentDeeplink&ts=261.63)):

This is critical. I completely agree with you, but how do we actually get to those patients? How do we actually diagnose them? Because we know that by the time someone is diagnosed with COPD, there's been several missed opportunities before to diagnose them at an earlier stage.

Wisia ([04:35](https://www.rev.com/transcript-editor/Edit?token=u5RnPDY7ow-I2e8q_o1OsyEd60DuaVdzqOkA9IGZUqUVK4Sl3I2uJlevm6O-_83GAwVvb2tJ0FktEqdBGbB5fY6HWJg&loadFrom=DocumentDeeplink&ts=275.52)):

Yes. And we know from studies that have been done from databases, that patients come to primary care for five years before they have a diagnosis of COPD. I think we need to look out for one very important sign and that is people who present to primary care with bronchitis. It will be smokers, often more than 10 pack years or even more. And they will also have exacerbations of winter bronchitis. So, they will present after a cold with cough and sputum production not resolving, maybe with some wheeze. This is the beginning of COPD and these patients really need attention with stopping smoking, lifestyle changes and if they're breathless, they will need pharmacological intervention.

Richard ([05:21](https://www.rev.com/transcript-editor/Edit?token=RH-35rLRdFV4b28Z15DxQxqGwU3E7FTtLDIuKU1pEucGQp3-wcDE-Fep1Twiayxz2U6HmB2aN-fbk2ElKBrfJn9XR3I&loadFrom=DocumentDeeplink&ts=321.49)):

And another thing which is very close to my heart and I'm really passionate about is about the impact that early disease or even subclinical disease has on people's exercise tolerance. Humans adapt to breathlessness. How can we actually understand and get at the people who may be developing breathlessness, even though they perhaps don't realise it? Do you have any evidence or thoughts on that?

Wisia ([05:41](https://www.rev.com/transcript-editor/Edit?token=LFiUQui99-ZIlJ6t32177y9TPnqJxZ6J7lNeM7z-Xe2EsA0XdzVScrrkKfp_BxSQpTdmvCyn-ywM2-CQVRpfLTT8-LU&loadFrom=DocumentDeeplink&ts=341.37)):

Well we know from work from Denis O'Donnell from Canada, that if you study patients with normal lung function or maybe with grade one COPD, so that's very mild impairment, normal lung volumes, and normal ratios, that these already will have abnormalities of exercise tolerance and dyspnoea. And I think we need to take a very good, accurate history. I think the other issue is to refer these patients for exercise and pulmonary rehabilitation programs earlier, because that is where the assessment will show their limitation.

Richard ([06:17](https://www.rev.com/transcript-editor/Edit?token=z7wt_Ezdm9TP8rXpBiFU4clEm7bMJKKGsPHo5YivILL6eMczFdbzjfyd3MBfUjODiiu-kUElHYSRpCp_ufykC44fKWk&loadFrom=DocumentDeeplink&ts=377.54)):

And it's perhaps a different way of looking at their lung function. I completely agree. The other part of your career, that’s been extremely well recognized and famous for is actually looking at exacerbations. Do these people with early disease have exacerbations? And are we missing those opportunities?

Wisia ([06:32](https://www.rev.com/transcript-editor/Edit?token=o2Ph-RMRYmp29MqUCvidAmHbNO0Ttg9AJKWT83m6yl5CaGbnhHi2lyl3tlXCbOHRlISWTkNluYSavZtmFsn_K2Exkxc&loadFrom=DocumentDeeplink&ts=392.54)):

Yes, they do have exacerbations. These will be infectious events. They will be colds followed by persistent cough and sputum, so episodes of bronchitis. They will be milder than the average patient with COPD exacerbations because these patients are not so dyspnoeic as our patients we see in secondary care with COPD. They'll have fewer events, but these events are potentially very important because exacerbations may not return back to normal. And if they do not recover back to normal in lung function and symptoms, these patients may have a permanent deterioration in their lung function leading to development of fixed airflow obstruction and COPD.

Richard ([07:23](https://www.rev.com/transcript-editor/Edit?token=60ybmcMA8T1JRT-xU250ZLd2zRIHN7z-cLRLmaJgyqIx3H6NQLHAvPGC38-nrDN2hiLdJuG6i99Bj4Io_u8HCSl0fJ0&loadFrom=DocumentDeeplink&ts=451.03)):

You've already highlighted the importance of smoking cessation at the earliest possible stage and I think that's absolutely critical. Can you unpack a little bit more of the influence that smoking has on both I think, exacerbation risk in these early patients and also decline of lung function?

Wisia ([07:39](https://www.rev.com/transcript-editor/Edit?token=0273IjK8cA6SZ0V3M1Mpg-iACAdFTCuSw9OMzQvRW7u5LAmthZbillDK5imu3UJcJv3OgdJMRpM01tVLIG9Ifwke_Ac&loadFrom=DocumentDeeplink&ts=467.37)):

So, we know that smoking is the most important factor for decline in lung function. We still do not have enough information about e-cigarettes and vaping. What happens to these people? But cigarette smoking at all stages of COPD, patients need to stop, particularly in these early stages. What does it do to exacerbations? There is evidence that cigarette smoking worsens exacerbations and makes them longer and more severe and also, you're more likely to get infections, so that is another important reason to cut down and stop smoking.

Richard ([08:23](https://www.rev.com/transcript-editor/Edit?token=H3hnvcCP3Gzup4kLtTeYrF72VXAMdiIHnlsUPHWzy00tHSB5zEhi1-Qpny0YDBXuLTn8b4QG2pBWNJEvW63Hp3G--CA&loadFrom=DocumentDeeplink&ts=512.56)):

That's very helpful and very clear, thank you. Let's come on now to treatment. We have a disease which we need to detect as soon as possible, stopping people smoking is the number one thing, but also we want to actually maximise lung function with the goal of improving exercise tolerance, certainly in the very beginning and when and what should we treat with?

Wisia ([08:43](https://www.rev.com/transcript-editor/Edit?token=vfsJaak-4cVqaGLbwMiEKZd6hrEeSgPI0BMb-WNJBT736skXNGvos2m8vcAdv-GnanaFUUr71-tId08tk4lTtis6fa4&loadFrom=DocumentDeeplink&ts=534.83)):

So, obviously we've talked about exacerbations and we treat those in a standard way. Usually with antibiotics in these people, not with steroids, because they're usually not disabled enough. If patients with mild or early COPD present, the first question is how breathless are these patients? And if they are breathless on exertion, I would recommend early intervention with bronchodilators. And I would treat with dual bronchodilators to optimise the bronchodilation as much as we possibly can in these patients, and we will reduce hyperinflation and improve exercise tolerance. There's a lot of evidence out there that two bronchodilators are better than one. If you take dual bronchodilators, optimise bronchodilation, you will do so much better in your exercise training programs.

Richard ([09:41](https://www.rev.com/transcript-editor/Edit?token=6YPgBuz9hFvVXYorejR9aXMUFzGcdvsbvayh-ZT4OoVyvdr3TcFn4sUzSI5r86e3UYMj50YxL8vm3TaOzSYsPCRM0sM&loadFrom=DocumentDeeplink&ts=592.21)):

You're a member of the GOLD scientific committee and have been involved in national and international guidelines throughout your career. I think our audience will know what the guidelines are saying, but where do you think they are? And where do you think they may be going?

Wisia ([09:54](https://www.rev.com/transcript-editor/Edit?token=nAzQU-ztr7TD0FQIXnhLNVl2lCUKLw6WlHlN3MvzK3SqN45AFov2ssNTgaoRtVS4mugi4-3DO_lBZl5v3JQVs2u8gKQ&loadFrom=DocumentDeeplink&ts=556.19)):

I believe very strongly that we have to give optimal bronchodilation to patients. So, the ATS has suggested that we start treatment with a dual bronchodilator: a LABA and a LAMA are more effective than a LABA or LAMA separately. GOLD has been much more conservative and has suggested starting treatment with a single bronchodilator and then increasing to dual bronchodilators if patients have significant breathlessness despite one bronchodilator, and that is because GOLD has a global reach, not only USA and Europe and Australia, but it has to cover the lower and middle income countries. So, I think GOLD in future will modify their guidance as the rollout of dual bronchodilators becomes even greater.

Richard ([10:44](https://www.rev.com/transcript-editor/Edit?token=YjwbtkVo6Jps6sdhJ_Aq9Um96d8xKc_9SBS_xJfxbgoiB6AcfFCjtySsy7sFwD44_ERSv_6-8cUbBLtl3iID5FyviIM&loadFrom=DocumentDeeplink&ts=655.31)):

I'm sure that's right. And I'm sure as the drugs become more available and also cost implications are the same for single or versus dual bronchodilators, I'm sure that'll be picked up as well. Let's think about other treatments now. You may remember a very good session on early COPD at the American Thoracic Society meeting a few years ago where actually Gary Ferguson from Australia gave a very nice description of the science of early COPD. Pretty much saying, actually, that what we're seeing is effectively from an inflammation point of view, a burnt-out disease. Do we need earlier treatments maybe with anti-inflammatories or what other things can we use? And what stages might we be able to use them, do you think?

Wisia ([10:47](https://www.rev.com/transcript-editor/Edit?token=SPffVyPUn8uiqVNIQak6xjpraLweMpYGfK5YWErP46zYxvNEaQ4grOC8LqvKxfvvUmpnz9T5mufFm5mjnRPo8WtXkT0&loadFrom=DocumentDeeplink&ts=647.82)):

So, the reason we're all interested in COPD as soon as it starts is that we feel that is when we can probably intervene with various therapies. I think obvious anti-inflammatory treatments are important and particularly non-steroidal anti-inflammatory treatments. We always felt roflumilast was a possibility. This is, as you know, a phosphodiesterase E4 inhibitor, but it has side effects and not suitable to be used in the early stages of the disease, but it's a pretty good anti-inflammatory agent. But there will be others in the future that will be developed once we understand what the inflammatory profiles are in early COPD. But one target we can do now is of course bronchitis sputum production. And there are already studies going on targeting mucins, targeting CFTR. It is an obvious target in patients with chronic bronchitis because they are the ones at greatest risk of lung function decline in the future.

Richard ([12:37](https://www.rev.com/transcript-editor/Edit?token=B6-wNKaPRJxeNQbrTbUJMvTXqmJrVYvvm_hONodw0u4Ik2v7JwCz-utmaMK3oEmvaNuZZ27CdJ-uJtL1DPgQnkFCm4E&loadFrom=DocumentDeeplink&ts=782.86)):

And I want to highlight clearly the need to stop people smoking. And I'm just absolutely desperate for maybe new ways of getting at these patients so we can actually identify them and then treat them early in that maybe more inflammatory stage. That will be absolutely wonderful.

Wisia ([12:53](https://www.rev.com/transcript-editor/Edit?token=9qcq7afw1rExDkhgMxDFS3RrSwWQkicEsL_fhEAiT8bnhc8rYOF0QOzrQe4NCfADUNVYxK6zOWIYUbr7F6kn1eFiFnY&loadFrom=DocumentDeeplink&ts=797.57)):

This then comes down to education. And I would say that not enough education has been done on people related to smoking and lung disease. I would say that people need to be aware that in the winter, if you are a smoker, if you have winter bronchitis, you must present to primary care for treatment because that is the best way to prevent longer term damage. And at the moment we’ve got bronchodilators, they have an acceptable safety profile. And there is evidence that from a study from China that was published in the New England Journal of Medicine, that if you treat milder patients with bronchodilators for two years, you can arrest some of the lung function decline. There is evidence that bronchodilators are effective in earlier and milder disease.

Richard ([13:50](https://www.rev.com/transcript-editor/Edit?token=H-edA-Qj_AavomQ1-72SoofJjijLzDpMLdaOL2ZdLIZ-4c2IyQ_3ZPVt2jgrb-orX1wbTt6DOo9BZXIUFYmFwUFFiB4&loadFrom=DocumentDeeplink&ts=859.97)):

I completely agree. And I think there is absolutely evidence, clear evidence that people with even what we would call milder disease still get the same benefit and even more with these therapies as the severe ones. Again, perhaps because there's more that we can do. As we come to the end, it's been a fascinating discussion. Professor, could you just summarise what your key takeaways would be about early COPD, detecting it, treating it and also maybe the future?

Wisia ([14:16](https://www.rev.com/transcript-editor/Edit?token=dWR8q4N1wZOvOQOpivULGFVSsRcPMmf3higk3BvL12mUU5wy_g7NDasN4mmajW1ScqE9eJyKWVXPNjfILirxVTp_vCY&loadFrom=DocumentDeeplink&ts=886.3)):

Well, first of all, I think we need to increase awareness that COPD does not present age 55 or 65. It presents in earlier life. And I think it is extremely important to assess these people as early as possible, assess them for the presence of symptoms, particularly of dyspnoea, which we can help with the effect of very effective dual bronchodilators we have at the moment. I think intervening early gives us the best chance at disease modification in COPD.

Richard ([14:58](https://www.rev.com/transcript-editor/Edit?token=V9rx8f5DC3b7c0XS1OWMadI4jhAlvRLRgJUxHtjpxscR4hTmdpL0MQW32FDMyKQL2Y84WvcBtFwTuprbzsnLfwSKREE&loadFrom=DocumentDeeplink&ts=928.47)):

Professor Wedzicha, thank you very much for joining me today on the Medical Insider COPD podcast. I've enjoyed this discussion enormously, as I'm sure our listeners will have done. Thank you for joining me today.

Wisia ([15:09](https://www.rev.com/transcript-editor/Edit?token=EhRC9SNHSbJiMT8InRddHl29xuuC_Rkw_5pJwGisu7E1lvICI9_uRkv60Tn1F8sKjNHa-GzbGMe-ykaYWMLrd2EQSok&loadFrom=DocumentDeeplink&ts=939.24)):

Thank you very much, Richard.

Richard ([15:14](https://www.rev.com/transcript-editor/Edit?token=Q43dX7v26xtFZPmLUS73lyHsVGpsNI2fyyiw52nht-YUQwDzQquPfY4Q9C5xKX6C4iclaY6jG3eiklj41_jSZzTK7bw&loadFrom=DocumentDeeplink&ts=944.29)):

In a moment, I'm going to talk about what's hot in social media in COPD, looking at the impacts of COVID on our patients.

Richard ([15:20](https://www.rev.com/transcript-editor/Edit?token=KnLMjJxYhixO2UatdZn3WHFAqcITtzvzDE8tMqSRmRduXZIvEnUdyQzIb-aUKZ5CqQtNowH9IX2j8xKaszlDbKs82BY&loadFrom=DocumentDeeplink&ts=950.29)):

But before that, I'm going to unpack for you a new and important paper. This is entitled, ‘The Prediction of Mortality Using Different COPD Risk Assessments: A 12-Year Follow-Up’. This is from Sweden by a group led by Åsa Athlin et al. It's published in the International Journal of COPD, this year, 2021, volume 16, page 665 to 675. COPD is common in Sweden. Between 6 and 10% is thought to be the underlying prevalence and, of course, it is a global mortality emergency. So, actually being able to predict mortality is potentially very important. We use GOLD we use GOLD stages, we use GOLD criteria, but we also can use other scores such as the DOSE score, the dyspnoea obstruction smoking exacerbation score and the ADO score, the age dyspnea obstruction score. This group took those assessments and actually followed up for 12 years – between 2005 and 17 – 1,548 patients. 58% were female, the median age at the beginning was 64 and they were characterised both at the start of the study and at the end.

Richard ([16:25](https://www.rev.com/transcript-editor/Edit?token=2brbs6UKgeJUI5vWEdGLXwe3JZJKDxGqGd1ZYKnyGq_Wcg7le8TQxjs_G1De0GJ0-IfmQ-0sh2W04FFdXQIcwDNz9QU&loadFrom=DocumentDeeplink&ts=1015.1)):

Well, you won't be surprised to hear the outcomes were that if you had more severe disease, you're more likely to die. For example, if you had stage one COPD as defined by GOLD, you had a 21% mortality rate over the 12 years, but if you had stage four disease, you had an 82%. But when we compare the assessments, it was very clear that looking at all-cause mortality that actually the ADO score was significantly better than any of the others. Using a ROC curve approach, the area under the curve for predicting mortality was 0.79 for ADO; for GOLD stage it was 0.73; for DOSE it was 0.69 and for the GOLD criteria, 0.66 and 0.63. Lung function was useful, but actually the ADO composite was actually much better, with a high ADO score having a hazard ratio of 14.1 for mortality versus a low score. What can we take away from this? Use of scores is certainly useful to actually prognosticate in COPD, which may help us in real life predict who is going to die, but also make us focus on their risks and actually try and reduce their risk factors.

Richard ([17:37](https://www.rev.com/transcript-editor/Edit?token=YDDCS3FiZB_epaPcbWu_h7DBdrkoqlboPsH9OWIv_XlNqbhZZLefvxNOBw5i1sijaZz1XKHpYiQ9bS7dswj_J_g7u18&loadFrom=DocumentDeeplink&ts=1087.81)):

So, what's been important and current in social media for our COPD patients? There's been lots of talk now on social media by our patients on the impact of COVID. Vaccinations, should we have a vaccine? Shouldn't we have a vaccine? Which one should we have? There's been political concerns about the misinformation and the lack of information coming from our governments and the fact that decisions are being changed. They've also been concerned about, actually, difference in treatment and globally different countries having to pursue COPD therapies requiring medical inspection visas – for example, in Spain – which has been a real challenge. Also, the loss of rehabilitation due to the COVID pressure in countries such as Holland, the United Kingdom and Germany has also been noticed on social media as being a problem for our patients. And they are desperate to get back out there. And other concerns have been about the increase in cost of drugs. India, Brazil and America, particularly where this has been an issue for our patients.

Richard ([18:33](https://www.rev.com/transcript-editor/Edit?token=D1noEM1zhsJwEr9ORXODnJk8xs4zI4KjlnrPCiAhqVqI8EVKA0Qo_HliczQbkzYaIkXihijyH4e_3gpysO-IDyPfEto&loadFrom=DocumentDeeplink&ts=1145.27)):

But overall, they've been really concerned and anxious. They feel that the public is not taking the pandemic as seriously as the patients are. They want and are engaged with self help and support, diet, exercise and the choirs for example. But, actually, in France, for example, they feel that actually COPD patients are the only ones that particularly understand their problems. What must we do as a healthcare community to respond to this? We need to listen to our patients. We need to engage with them on social media to actually help direct them into positive and useful resources and, wherever possible, try and get rehab going in because this is absolutely critical to the wellbeing of our patients.

Richard ([19:13](https://www.rev.com/transcript-editor/Edit?token=jrBnGiCPjAzuWKOXy2DAE908w7Dd1nKqNCSuRblhEK7MAsX9TmEW0BADbTxbgXLFx01J1dvoPJk1quMcrhCf-LNzhcc&loadFrom=DocumentDeeplink&ts=1188.47)):

Thank you for joining me today on the Medical Insider COPD podcast. I hope you've enjoyed listening to the content today and listening to our global expert Professor Wisia Wedzicha talking about early COPD, unpacking an important paper and then looking at what's important in COPD social media. Please join us again on the next edition of Medical Insider COPD and let's keep working for our patients.