

Mayo Clinic Q & A- Dr. John Costello - COPD - YouTube Audio

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SPEAKERS

Dr. Halena Gazelka, Dr. John Costello, Narrator

- N** Narrator 00:00
Coming up on Mayo Clinic Q&A,
- D** Dr. John Costello 00:03
Tobacco damages the airways. It damages the substance of the lungs as well and causes emphysema and is the major cause of COPD.
- N** Narrator 00:12
Chronic obstructive pulmonary disease, or COPD, is a chronic inflammatory lung disease that causes obstructed airflow from the lungs. It's a progressive disease that gets worse over time, but it is treatable.
- D** Dr. John Costello 00:25
If you catch it at an early phase, if you stop the patient smoking, if you take the patient away from the polluted environment that may be contributing to it, if you treat infections quickly and aggressively, and the patients who have the more severe disease are entered into a rehab program, then the outlook is quite good.



Dr. Halena Gazelka 00:41

Welcome, everyone to Mayo Clinic Q&A. I'm Dr. Halena Gazelka. Chronic obstructive pulmonary disease, or COPD, is the third leading cause of death worldwide according to the World Health Organization. COPD is a chronic inflammatory lung disease that causes obstructed airflow from the lungs. The main cause of COPD in developed countries is tobacco smoking. In the developing world, COPD often occurs in people exposed to fumes from burning fuel for cooking or heating in poorly ventilated homes. People with COPD are at increased risk of other diseases too, such as heart disease, lung cancer, and a variety of other conditions. While COPD is a progressive disease, it's also treatable. Joining us to discuss this today is Dr. John Costello. Dr. Costello is a consultant pulmonologist at Mayo Clinic Healthcare in London. Welcome, John.



Dr. John Costello 01:38

Thank you. Glad to be here.



Dr. Halena Gazelka 01:40

Well, I'm so glad to have you here today because you're the first person I've gotten to interview in London. How wonderful. I suspect that it will surprise some of our listeners that there is a Mayo Clinic Healthcare in London. Can you tell us a little about that?



Dr. John Costello 01:56

Indeed, it's a splendid building in the West end of London. It's functioning clinically now as an outpatient facility. We have cardiology, we have gastroenterology, and I'm the first pulmonologist here. It's a very exciting initiative in the London scene and has generated an enormous amount of interest.



Dr. Halena Gazelka 02:21

It is wonderful. I had my first visit to London, just before COVID in 2020. I had to think what year it is. And it's an absolutely beautiful facility on a beautiful street. I really enjoyed it.



Dr. John Costello 02:36

Yeah, it's a wonderful facility.



Dr. Halena Gazelka 02:39

Well, John, let's jump in and talk about COPD. What is it, and who is at risk of developing it?



Dr. John Costello 02:45

Right. Well, the letters COPD, as you say, stand for: Chronic, so it's a chronic condition. Obstructive, implying that there's obstruction to flow of air in and out of the lungs. Pulmonary being the lung's Disease. And it's an inflammatory condition in the airways, the tubes through which air is transmitted in and out of the lungs. And because of the inflammation and because of other factors that subsequently happen, the airways narrow, and therefore make it more difficult for the patient to breathe. The airways, because also the inflammation produces mucus, and therefore you have a chronic cough. If the precipitating factors are not avoided, it does become progressive and ultimately can become very disabling. I think it's a term we have to use very carefully, because if our patients consult the internet, about COPD, you see some very gloomy and very frightening things. And the situation isn't always that bad. And indeed, treatment for many aspects of it are available. So, it's great for people to consult the internet, but people should also be consulting their physician to filter that information to give a realistic appraisal of what their situation is.



Dr. Halena Gazelka 04:09

I touched on this just a bit in the intro, but who would be most at risk of developing COPD?



Dr. John Costello 04:14

Well, it depends. It depends to some extent on where you are in the world. In developed countries, tobacco smoking tobacco is one two and three. Tobacco damages the airways. It damages the substance of the lungs as well and causes emphysema, and is the major cause of COPD and it should be avoided at all costs anyway. But certainly, in anybody who has developed the condition, if you want to stop the progress of the condition, you must stop smoking. And in the developing world we've come to understand now that there are other factors that may be at play because people who do not smoke may be living in very enclosed environments, with indoor fires in areas that are not well ventilated. And the inhalation of that smoke, and the particles and the pollutants will damage their lungs in a very similar way to a smoker. You know that environment, of course, for these people is much more difficult to avoid than the cigarette smoking that we see in other parts of the world. But they're the two major factors. There are some inherited conditions that lead to

a similar syndrome. They are very rare. But people with COPD are more at risk, as you said, from lung cancer, from heart disease, coronary artery disease. And indeed, at the end-stage of the condition from heart failure, right heart failure, because their blood oxygen is so low.

D Dr. Halena Gazelka 05:59

It seems that everyone that I interview for this show tells us that smoking is bad. So, I guess we can start with that right?

D Dr. John Costello 06:05

I think we have to start with that. If we finished with that as well, that would be all right with me. Smoking is poisonous. It's an unnatural thing to do to voluntarily inhale smoke into our lungs. It is hugely addictive because of the nicotine content. So, you know, I try never to lecture patients who smoke because it is tough. It is really tough to give up smoking, the addiction to the nicotine and the nicotine receptors that are open in the brain, crying out for more nicotine creates the need. Curiously enough, it's not the nicotine that does the damage, it's the other stuff, the other constituents of cigarette smoke. But the nicotine is what addicts you, and that is so difficult to stop. And there's an old and very bad joke that says, oh, it's easy to give up smoking, I've done it many times. And that's a factor that the people give up and then they relax a little bit. And they start again, and they do the same time and time again. And of course, every cigarette you smoke does some damage. So, the strongest possible advice here is to quit smoking, to avoid smoke in your environment. If you can.

D Dr. Halena Gazelka 07:27

From speaking to my patients in the pain clinic who have had to reverse bad habits, smoking certainly seems to be one of the things that's most difficult to give up.

D Dr. John Costello 07:38

There is quite good evidence that it's as difficult as stopping narcotics. Nicotine is hugely addictive, despite claims to the contrary in the past. Nicotine is hugely addictive. So, we've got to be very sensitive and careful how we handle our patients and that we don't do finger wagging or lecture. It's a very tough thing to do. But it's our job and our responsibility to give them the best advice to tell them what the consequences might be if they don't stop.

D Dr. Halena Gazelka 08:11
John, do you see much COPD in individuals who've never smoked themselves but been exposed chronically to secondhand smoke?

D Dr. John Costello 08:19
Yes, you do see that. It's clearly not as severe or as common as those who take in the smoke directly themselves. But yes, environmental smoke can also damage the lungs. Particularly if you have a background of other lung disease. If you're an asthmatic, and you live with a smoker, then your airways will become irritated and inflamed by their smoke, and more so than a non-asthmatic living with a smoker. So, if you already have lung disease, and you've got a member of your household who smokes, they should be asked to step outside to distribute the smoke in the outside air rather than in their home.

D Dr. Halena Gazelka 09:01
John, in medicine we talk a lot about signs and symptoms, signs being things that you and I could observe when we see a patient, and symptoms being what the patient describes to us or experiences. What might an individual who is suffering from COPD experience?

D Dr. John Costello 09:18
Well, one of the definitions of chronic bronchitis is that you have a cough and sputum for more than three consecutive months in two consecutive years, usually the winter months. So, recurrent episodes of cough and phlegm is a cardinal feature. Over time, then you develop more breathlessness, and you will notice that climbing stairs or walking and talking with your partner, and that you find that more difficult and that that progresses over time until such time as it's seriously interfering with your ability to carry out your normal daily activities. So, cough and breathlessness are the major features. As the condition progresses and gets very severe, you may get some ankle swelling, as some cardiac involvement manifests itself.

D Dr. Halena Gazelka 10:09
It strikes me that those are some of the signs and symptoms of other disorders as well. So, important to ask your physician.

D Dr. John Costello 10:17

It's very important to ask your physician and indeed, yes, ankle swelling is a good example, which can be caused by many things, such as deep venous thrombosis and so on. But in end-stage COPD, ankle swelling is a fairly frequent manifestation of right heart failure.

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Dr. Halena Gazelka 10:38

John, if an individual comes to see you and they're concerned or you're concerned they might have COPD, how is it diagnosed, and why is it sometimes misdiagnosed?

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Dr. John Costello 10:47

Well, the history is critical. And in developed countries, clearly the smoking history is a central part of our attitude to the diagnosis, the history of breathlessness, and cough, will give most of it away. Indeed, in the first few minutes with the patient, the patient is a smoker, the patient comes and says, look, doctor, I've been becoming more and more breathless, and I'm getting these frequent chest infections. And they'll often say if I get a cold, it tends to go down an upper respiratory infection, it tends to go down in my chest. That's the phrase that's frequently used. And so, recurrent cough and sputum and progressive breathlessness are the other symptomatic features.

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Dr. Halena Gazelka 11:41

Okay, and how are emphysema and chronic bronchitis? I've heard those terms used for COPD and our listeners might have, are they the same thing?

D

Dr. John Costello 11:51

No, they're not. Chronic bronchitis and emphysema are not the same thing, but they are intimately interlinked. Chronic bronchitis, bronchitis in the bronchi, which are the tubes, is inflammation of the airways. Emphysema is destruction of the architecture of the lung farther down where the oxygen gets out of the air into the blood and carbon dioxide comes out. You have the most beautiful structures called alveoli, of which you have 300 million, and they would cover a tennis court if you laid them out. It's the most wonderful piece of physiology in gas exchange. But that's the part that gets damaged with emphysema, these little alveoli get destroyed and they get irreversibly destroyed. That's the problem with this. It's destruction of the architecture, and the lungs become very floppy. And the patient finds it very difficult, in particular, to exhale. And emphysema is in the Western world once again, and in the developed world is far and away commonest in cigarette smokers. But my advice to patients pre that stage would always be to stop

smoking earlier, and if you have some emphysema it won't progress. And if you don't already have emphysema, then it won't happen.

D Dr. Halena Gazelka 13:19

John, can you see those changes in the lung that you described on imaging studies like chest x-ray or CT scan?

D Dr. John Costello 13:26

Yes, the chest x-ray is helpful. It's a time-honored tool of my specialty and in the profession. The lungs tend to become a bit overinflated. The patient can become barrel chested, because it's easier to get air in than it is to get it out, so you trap air within the lungs. And the patients tend to lift the shoulders up and down. So, the chest x-ray can show over inflated lungs. It's quite difficult to make a definitive diagnosis of emphysema on a chest x-ray unless there are very large holes called bullae. And these do happen in the lung. But far and away, the better way to make the diagnosis structurally, is with a CT scan. And the CT scan is a wonderful instrument for showing us, it's not wonderful for the patient, but it's wonderful, it's very helpful for the doctor for showing us this architectural destruction within the lung. And it's quite definitive. We can also do breathing tests, lung function tests, that show that the airflow is obstructed, and that the gas transfer in the lung is also reduced. And these are the hallmarks of emphysema. And a final point on the lung function, if we give an inhaler, a puffer, to see if it helps, very often with COPD as opposed to asthma, very often with COPD, an acute use of an inhaler doesn't help very much. That does not mean to say that you don't prescribe inhalers because it is an important part of our treatment. But in the lung function lab, it may be what looks like irreversible airflow obstruction. But we can talk a little bit about treatment later on if you wish.

D Dr. Halena Gazelka 15:13

That would be great. Can you tell us what does it mean when someone has a flare of COPD? I hear that term. And then how do you treat them?

D Dr. John Costello 15:20

Well, a COPD isn't really a flare up of COPD. It is usually an infection in a patient with COPD lungs. An infection is far and away the commonest precipitating factor. So, the patient will comment to the physician. And they will say, well, I've now got increased cough and phlegm. They may have a fever, and they may have crackles in their lungs

where there weren't any crackles before. But the cardinal symptom will be increased cough and sputum. If it's severe, the breathlessness may also be acutely worsened. One of the very important things to stress with this, if the condition is in any way advanced, the COPD, the patient has very little reserve. So, if you have severe emphysema throughout the lungs, and there are various types of emphysema, when we look at it on a microscope, but if you have emphysema throughout the lungs, and therefore your lung function is severely impaired, if you get an infection on top of that you're reserve in the lungs to cope with that can be quite severely inhibited. And so, patients get into trouble quite quickly. So, it's important for these patients to consult their physician quickly and for the physician to fit them into their clinic, because they can get quite unwell quite quickly. And this is even more important. And this has been amplified by the COVID epidemic.

D

Dr. Halena Gazelka 16:58

So, John does that mean that an individual who gets, you know, we all get upper respiratory infections I feel like all winter long sometimes. And does that mean that it's worse for someone who has COPD than it would be for you or for me, perhaps?

D

Dr. John Costello 17:11

Because the baseline is different, the patient is starting with damaged lungs and therefore will not be able to cope with an infection of any severity. So, it's important they get seen more quickly and treated more aggressively.

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Dr. Halena Gazelka 17:24

Tell me about treatment.

D

Dr. John Costello 17:26

Yeah. Treatment, much of what I've described actually sounds quite gloomy because I'm talking about irreversible airflow obstruction and advanced disease. But the fact that when you use an inhaler in the laboratory, it doesn't show much change in lung function doesn't mean that the patient who has COPD long-term will not benefit from inhaled treatment. So, inhaled, these agonists inhaled bronchodilators that open up the airways, can help in more subtle ways within the lung by improving vital capacity and therefore should be prescribed, and there are many patients who find them helpful. If the condition is severe, nebulized bronchodilators, the machine you plug in the wall and put it in a rather larger dose, and other than Ventolin like drugs, the so-called anti-cholinergic drugs can also be very helpful in patients with COPD. So, inhaled treatment is very important. Now,

there has been a long debate in my specialty about whether or not to use inhaled corticosteroids in COPD. There's now good evidence that in fact the inflammation in the lungs is helped, even though there's a small extra risk of other infections such as pneumonia, but there's good evidence that using a regular inhaled corticosteroid will quieten the airway, reduce the cough, and may help the patient's breathlessness.

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Dr. Halena Gazelka 18:56

And then what about the use of oxygen, John? When we see people wearing oxygen or individuals who use it at night is that for COPD?

D

Dr. John Costello 19:05

It's for COPD amongst other conditions, and unless the disease is advanced, oxygen is rarely necessary. And the patient who gets intermittently a little breathless and takes a couple of puffs of oxygen, that's not the right way to use it. When COPD becomes quite advanced, and the patient has a chronically low oxygen in the blood when you look at it on the finger pulse oximeter. And if the option is persistently low, and therefore will be very low at night, giving long term oxygen treatment is helpful. And that means that the patient uses oxygen overnight and indeed perhaps for many of their waking hours during the day. And that will reduce the incidence of right heart failure because chronic low blood oxygen affects the right side of the heart. And raising the oxygen for as much as we can over a prolonged period of time will help to prevent the onset of that. But using oxygen on a sort of as required basis may have a placebo effect. And I would never criticize the placebo effect, because anything that helps our patients helps our patients. But physiologically is probably not of much value. And indeed, some time ago, there was a fashion for marketing oxygen in department stores as a fashionable pick me up. And that's completely hopeless because your blood, I can tell from here and I hope you from me, I can tell that your blood is fully oxygenated. And using extra oxygen doesn't get in at all because your blood is 100% saturated. But using long-term oxygen in severe COPD can be helpful, but we must be quite careful how we use it. Using oxygen also can have deleterious effects in patients who have what we call co2 retention, patients whose lungs are so severely damaged, that they retain carbon dioxide in the blood. And using excessive oxygen with those people can in fact be dangerous. So, you must take your physician's advice and your specialist physician's advice in how to apply oxygen appropriately.

D

Dr. Halena Gazelka 21:26

When you said that, it reminded me of those oxygen bars that I used to see sometimes in

like you said, department stores, airports, things like that. And I haven't seen those lately, but then I thought I haven't really been in many department stores.

D

Dr. John Costello 21:40

A few of us did interviews with the press that unfortunately I think killed off the business. It's of no value. But you know, the old placebo effect may be kicking in, but whatever they charge.

D

Dr. Halena Gazelka 21:52

Right. So, what is the life expectancy like for someone who has COPD?

D

Dr. John Costello 21:58

If you catch it at an early phase, if you stop the patient smoking, if you take the patient away from the polluted environment that may be contributing to it, and you treat it actively, another form of treatment that I haven't mentioned, but in terms of prognosis becomes important is rehabilitation. And long-term rehab programs have been very successful in centers that specialize in pulmonary disease. So, if you use the bronchodilators and the anti-inflammatories, if you treat infections quickly and aggressively, and the patients who have the more severe disease are entered into a rehab program, then the outlook is quite good. It's impossible to predict in any one individual what the outlook is going to be because it depends on what stage of the condition it's diagnosed and treatment is introduced.

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Dr. Halena Gazelka 22:51

This must be an area that is fraught with health disparities I was thinking, John, because I was thinking about prevention, and I'm sure you're going to say not smoking is probably the best thing that people can do. But there are some people that don't have opportunity to protect themselves.

D

Dr. John Costello 23:07

Indeed, and in the developing world, keeping yourself warm in winter is essential. That may involve having an indoor fire without ventilation. It's quite difficult to advise those people, but avoiding people with infections coming into your home, in as far as possible, avoiding pollutants, and if you can ventilate if you have a fire burning within the dwelling, and having as much ventilation as possible for the smoke to get out of the house will be

helpful.

D Dr. Halena Gazelka 23:45
Well, this has been an absolutely fascinating conversation. Thank you, John, for being here today.

D Dr. John Costello 23:51
It's been very good to talk to you. Thank you for having me.

D Dr. Halena Gazelka 23:53
Yes, our pleasure. Our thanks to Dr. John Costello, pulmonologist and consultant at Mayo Clinic healthcare in London for being with us today. I hope that you learned something. I know that I did. And we wish each of you a very wonderful day.

N Narrator 24:09
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