EPISODE 28: DIABETES AND SMOKING

Dr. Rita Kalyani: Welcome to ***Diabetes Deconstructed***, a podcast for people interested in learning more about diabetes. I'm your host, Dr. Rita Kalyani at Johns Hopkins. We developed this podcast as a companion to our Patient Guide to Diabetes website. If you want a trusted and easy-to-understand resource for diabetes or to listen to previous podcasts, please visit **hopkinsdiabetesinfo.org**.

Today we are delighted to welcome Dr. Panagis Galiatsatos. Dr. Galiatsatos is an assistant professor and physician in the Johns Hopkins Division of Pulmonary and Critical Care Medicine. He is co-chair of the Johns Hopkins Health Equity Steering Committee and is a co-director and co-founder of Medicine for the Greater Good. He also serves as the director of the Tobacco Treatment Clinic at Johns Hopkins and has a particular interest and expertise in community engagement and its impact on health and health equity. Welcome, Dr. Galiatsatos

Dr. Panagis Galiatsatos: Thank you so much. It's an honor being here. By all means, you are welcome to just call me Dr. G

RK: Welcome Dr. G.

PG: Thank you, a true honor to be here.

RK: Well, we are so delighted to have you here to share your expertise on smoking. This is something that comes up all the time when we talk with our patients who have diabetes and even those without diabetes about smoking not being good for your health. I wonder; could you tell us why that is? Why is smoking considered not a good thing to do?

PG: This dates back hundreds of years ago, to the Frenchmen who brought nicotine to the world. His last name actually is Nicotine; it's named after him. As early as the 18th century, Dr. Benjamin Rush, who also signed the (US) Declaration of Independence, started realizing that smoking could be bad for health and so forth.
A lot of it has to do with not the nicotine molecule itself; that's what's going to drive the addiction. But it's all the chemicals that are added to exploit the addictive properties of nicotine, those chemicals in combustible cigarettes, and now we're finding more and more in electronic [cigarettes], those are going to cause, massive injuries to the lungs. It has resulted in a genesis of patients with COPD, emphysema and novel lung cancers related to smoking. And then to my colleagues in the rest of the world, outside of the lungs, it may not be causative of your diseases, but it's highly influential to worsening diabetes, and to worsening heart disease. A lot of it has to do with those chemicals that will cause an aberrant immune response, an inflammation where our bodies are trying to combat these chemicals; these chemicals are contributing to toxicities and so forth. I say this because it's an age old problem, hundreds of years old, but I think that also shows the gravity of what this nicotine addiction means for people. I've yet to find a patient who's like, “Oh, it's bad for me?” No, no, they know this. It's just trying to shape that nicotine addiction to tobacco dependence.

RK: Well, that's so interesting that you mentioned that it's the chemicals actually that are used, not necessarily the nicotine itself, although as you mentioned that, that part of it is the addictive part of it. But it almost seems like there's two parts to it; the chemicals that are used and then also the addictive potential of nicotine. Is that right?

PG: Yeah. So, nicotine has the potential to be addictive. But in and of itself, it's not. If, if it was just by itself very addicting, then we'd all be sitting here wanting to eat more tomatoes and eggplants, et cetera. It's found in those fruits and vegetables. You have to exploit nicotine's potential for addiction. So you have to unlock it, and that's what those tarring chemicals and heat are necessary. For, for those science geeks who are listening to this; nicotine has a methyl group, a CH_3, you have to knock that off with heat, fire, or the battery-operated heating coil on electronic cigarettes. But when you do that, it becomes a very unstable molecule. So, you add all the tar; all these carcinogens; the ammonias; the heavy metals; mainly to make sure it stays stable until it gets to our brains resulting in that addictive property.

Yes, nicotine’s addiction gets exploited by all the chemistry that is found in cigarettes, but chemistry that is rather difficult and dire for our health.

RK: That's so interesting, I wonder if you could talk about when we use the word smoking, what do we really mean by that? You used the term cigarettes or e-cigarettes; smoking with a pipe, or are these all the same things? Or what do we really mean when we say smoking?

PG: Yeah. So I tend to use just tobacco dependence as you know, and one form of it is smoking a combustible cigarette. There's vaping with electronic cigarettes, and people try to differentiate it too. There's also chewing tobacco and pipes and so forth. All of them are bad in regard to health. Because again, the only chemicals that we've ever found to really try to stabilize a demethylated nicotine at high concentrations are these dangerous chemicals. So, from my standpoint, what I kind of take it back [to] is tobacco dependence- Are you using tobacco products? Alright because in those tobacco products are nicotine or nicotine like chemicals to drive an addiction. That's what I tend to use.

So, when I hear smoking, you're right, it may mean different things to different people. We haven't really standardized that language. What I've standardized or what others [use] is tobacco dependence. Are you using tobacco

products? And regardless of that, how it comes in, and I say this because a lot of my lung colleagues are like, “Well, if they're chewing tobacco, it's not gonna harden the lungs.” I'm like, “I know, not directly.” But remember, tobacco has a lot of indirect consequences, hence why it's massively influential in diabetes management and control. You know, tobacco products will have those chemicals that will cause dire health consequences.

RK: So when we talk about smoking or tobacco dependence clearly it's a large public health problem. But focusing on people with diabetes; why is it especially important to address tobacco dependence in people with diabetes?

PG: To me, I will address it for all patients, where even if they haven't developed those diseases yet, and the one thing I also want to make clear is, The way I even approach patients is I tell them “I'm very pro, smoker, just anti-smoking.” Because, and especially in patients with diabetes, it is going to impair any efficacy for one, the management you're going to put forth, whether it's lifestyle changes, or whether it's medications. Smoking will undo that or greatly attenuate the gravity and strength of those medications and lifestyle changes. If you are like, “I'm eating more fruits and vegetables,” that's great. Smoking's going to undo that. If you're taking certain medications, there's a reason why all those drug trials, a lot of them didn't recruit patients who actively smoked; because they know the smoking's going to weaken the strength of those medications.

In addition to that, it does throw in a wrench a variety of unique biochemical processes that create kind of just poor glucose metabolism overall. So at the basics of this, it can worsen diabetes in addition to offsetting all the good things you might be trying to do for your diabetes management.

And as doctors, we know that — I see that all the time. Lke my patients are like, “Why can't I breathe with my inhaler?” Because you're still smoking. And I imagine you feel the same way when you're working and the patient's like, “Well, I'm eating better and I'm taking the medications” and you're like “But you’re off-setting that with the smoking” And so forth. That’s why we, in my line of work, really try to make patients understand that you can't really do one without the other, or you have got to tackle them at the same time.

RK: That's so true when we talk about, , healthy behaviors or behaviors that promote health, such as lifestyle modifications, exercise, and diet. And then if you're actively smoking, it can negate some of those benefits to your health, particularly for cardiovascular health. I wonder if you could talk a little bit about why smoking has a special detrimental effect on cardiovascular health and, and it's particularly in people with diabetes.

PG: It goes back to that inflammatory response and the toxicities that it's going to result in. These chemicals in and of themselves, you may say, “Well, how dangerous are they?” They're not dangerous with an immediate puff. But they're dangerous over time, and over time, and that nicotine addiction will drive people to do this behavior for decades and decades and decades. And it culminates into plaque in the heart. And especially if you have diabetes or , smoking's amplifying the diabetic consequences, these patients are going to end up resulting in blood vessels in the heart that are going to be narrowing and narrowing and narrowing until blood flows just stop.

So yes, smoking will contribute to that process where the blood vessels are becoming more narrow. Influencing greatly the diabetic effect and other effects from cardiovascular disease such as lipids and so forth, and even blood pressure; smoking worsens these. The smoking public health concerns that I have are, it can either be causative or massively influential to other diseases outside of the lungs. The way they contribute is taking those blood vessels and just obliterating them.

RK: How much does smoking increase the risk of cardiovascular disease?

PG: The numbers from here are anywhere from double to triple it. from my standpoint it's high. Even from a blood pressure standpoint, I remember telling patients coming off of cigarettes, it may lower even your points, from [stopping] smoking, up to 10 points, the top number of the systolic blood pressure. So, there is a massive benefit. And I say this because they understand — patients know this. They get to understand it and the fact they're still unable to stop and become non-smokers, I think we have to realize we're not going to convince them by telling them the health benefits. There have to be more conversations to this. Cardiovascular to diabetes — big risk factor for worsening of disease and ultimately making it more life-threatening.

RK: You talked about the effects of smoking on lung health, which clearly there's a strong connection; worsening diabetes management and blood glucose control, which I thought was really interesting, and also cardiovascular disease. What are the, some of the other effects that smoking has on the body?

PG: One; it's kind of more behavioral, it's an addiction. So it's going to drive people to want to do this behavior over and over again. The best way I can always tell people who have never smoked is to think of eating. Think of yourself if you haven't eaten in a while; you get hungry; you get angry, and you're going to start seeking food to kind of offset that. Smoking does the same thing for patients. Because it's a conditional response, and so you will seek it out, especially if you conditioned yourself to smoking for an environmental reason or an intrinsic reason. If I've learned to cope with anxiety by smoking, when I'm anxious, guess what I'm seeking — right off the bat, the addictive properties of it. Which will force people into certain behavior changes over time. That's actually one of the key things we talk about patients with regards to

quitting and why quitting is really not our focus. Our focus is becoming a non-smoker. They're smokers; that's a noun. And we focus on this verb where adding anyone can quit; you know, many patients quit thousands of times. We focus on the non-smoking, the behavioral change right off the bat.

In addition, some neurological issues. It makes pain much worse. So if you have any chronic pain issues, smoking will make it worse. If you have a neurologic, it can set you up for dementia. So that should frighten everyone, because watching a loved one go through dementia is one of the saddest things. So, dementia is another one. And then finally just overall endurance and I say this because it's not just lungs; it's your whole body; it will really shut it down.
You will age exponentially by smoking.

RK: One of the questions that I often get from my patients is, “What's the difference between cigarettes and e-cigarettes? Aren't e-cigarettes safer?” What would you say to that?

PG: Oh, this question has been the bane of every pulmonary doctor's existence. I understand how e-cigarettes came to be. It was Dr. Hon Lik, over in China, who is a pharmacist. His dad struggled with lung cancer; he couldn't stop smoking. And that's all he asked of him and because smoking really mitigates the strength of a lot of oncological treatments. So he wanted to create a safer alternative.

Right now the medications that we have don't replace cigarettes. Even a nicotine replacement therapy, no one's put on a patch and been like, “Ah, I feel like I'm having a cigarette.” It's not the intention for that.

So with that said; when they created the e-cigarettes, the conversation was the hope and intention that it'll be safer. However, it never, never went down that path in order to prove its safety. And because of that it went more of a commercial pathway, not as a medical pathway. So, it went through that notion, and so there was a lot of conjecture; it's never been proven. So that relative risk conversation is not there to exist; it's a lot of hypotheses. The absolute risks we're seeing. This is the big key that I want everyone listening [to take away]: there are chemicals in there, we know they're dangerous. And right now we have a benefit of what doctors didn't have a hundred years ago with the combustible cigarette surge.

We are seeing the beginning parts of a lot of diseases happening from e-cigarettes - the bronchitis that pops up. Even mouse models now, that showcase you can create some level of cancers. We didn't have that data a hundred years ago. Actually. We had to wait until a doctor led study, an epidemiological one in 1957 that showed, yes, there's a link between smoking and cancer. All these people had to die in order for us to prove it. My hope is for people to hear this, it is not safer. It's a different beast. If you truly want to become a non-smoker, work with your doctor, we can achieve that. It may take time; we can achieve that. Vaping should not be seen as a safe replacement.

And I say this with no bias or stigma, “If you want to vape, by all means, as long as you know the consequences.” My frustration is that word “safe” gets manipulated and people feel, “Ah, I'm doing great. It's not a combustible” it's like you're saying “Oh, I'm not using a nuclear bomb. I'm just using a tank.” - Still dangerous.

RK: Well, thanks for clarifying that. Because I think that's a question and perhaps a misassumption that's out there that there may be difference in safety. But it's great to hear from you that e-cigarettes really should be treated just like cigarettes in terms of their potential risk to health or their danger to health. You mentioned the term vaping. For those who may not be familiar with that term, what does that mean?

PG: Actually before even launching into that, for the purpose of the diabetes conversation, remember the word “safe” got manipulated around lung cancer. It still holds the potential for heart disease and- taking it even a step back to diabetes- because it does the same thing that combustible cigarettes do. It causes that apparent inflammation that's going to drive a lot of processes to be thrown off, such as glucose metabolism. Yes, e-cigarettes, while we can make this conversation around lung cancers and that's what the, that Pro E-Cigarette Group tries to do - don't forget, there's also tons of other diseases that smoking is bad for, and so vaping likely parallel to that.

So vaping is essentially smoking and people that are pro electronic cigarettes try to make this distinguishment. Smoking should be reserved for combustible cigarettes, right? We have to light it with a match or a lighter. Vaping implies that the chemicals I'm going to put into my body will come out as vape, as mist, kind of like the mist that comes off of a hot tub.
So if you try to make that distinguishment between the aerosols and the particulate matter from combustible cigarettes, I don't distinguish, but if people want to be that specific, fine.

RK: Well, it's so interesting what you said about the link between smoking and the development of diabetes. For people with diabetes, we often talk about the importance of tobacco cessation to improve their overall health, to reduce the risk of cardiovascular disease and these other diseases that you talked about. But I think that link between smoking and the development of diabetes perhaps hasn't been as recognized as it should be. Could you talk a little bit more about that?

PG: I love this point, because smoking impacts so much [of the] disease processes that really are born out of these kind of insidious processes over time. Because even diabetes is -when you rewind the patient's lifestyle - from certain levels of

exercise opportunities that were missed to diet and so forth, you realize there's a chronicity of that exposure, ultimately leading down to that diabetic state. For the majority, I recognize there's different types of diabetes. But it's the same thing with smoking. It kind of unlocks this apparent and rather dangerous subclinical inflammation, and those Venn diagrams are going to overlap rather significantly. I've seen countless patients when I'm helping them come off their cigarettes. I'll get the, the endocrinologist (the diabetes doctor) being like, “Oh, hey, thanks. Like, their, their insulin's working better, et cetera.” From my standpoint, that overlap, again, it's not potentially causative, but it's massively influential. A lot of it has to do with, to some extent, the toxins that make their way into this blood vessels and the aberrant (bad) immune response and subclinical inflammation. And even if it's transient, people who smoke will do like a pack a day, it keeps rising and spiking over and over and over again, then for decades of that exposure. Both of those are really going to impair how the body handles energy molecules such as glucose and results in the influence of that kind of diabetic process. From my standpoint, that Venn diagram, I hope more people recognize. Because, as you discussed, with them, those lifestyle changes, stop smoking, becoming a nonsmokers, it has to be one of them.

RK: I agree. It's really that triad, isn't it, of smoking and insulin resistance or diabetes and cardiovascular disease. We really want to address all three and they're all so interlinked. So, moving now to a person who's at the stage where they're ready to start thinking about stopping smoking or cutting down on their smoking. How do you approach that in your clinic and what are the kinds of things that could be helpful to patients when they're trying to make that decision?

PG: I'll be very biased and I'll be the first one to say, I love when the patients are ready, but it's not an expectation.

Why do I say that? So, many patients will come to me and discuss that they're ready, and they're usually doing it and saying that, the majority of the times because everything's aligning for them in life right now. They're like, “all right, I'm in a good place.” All right. Remember, you're a smoker when you're in a good place and in a bad place. I can't wait for you to only be in a good place because my concern is when you go back and, and if you happen to be in a bad place, if we haven't designed ways to help you, when you're going through bad times, if you're going to relapse.

And sure enough, so many of my patients will come to me and discuss- oh, they quit. And stopped for years until a death in their family or until they had some bad news. Patience in quitting - that's an emphasis. But truly becoming a non-smoker means you have to do it in good times and bad times. You can't just put all your chips in the back for one moment of your life because you've allowed smoking to be in all moments of your life. I see this when patients come to me, even if they're 1% ready, good enough for me. I just ask them, [to] start this. Because what we do is counseling; mindfulness and we'll introduce pharmacotherapy in order to make this a little bit easier as they go through the process. There's plenty of data that showcases, even if they're not ready and you start these treatments whenever quote unquote, “they will be ready,” they start firing up.

You start cutting back more and more and more. So the first things I always do when patients come, I'll gauge why; what benefit they'll have becoming non-smokers. I'll get some sense of where they're at from a motivation standpoint, but I make it very clear to them - Being a non-smoker is not just at good times, it's in good times and bad times.If you truly want to put cigarettes behind you, we have to start now.

RK: So if someone is ready even 1% to consider smoking, should they just quit “cold turkey” or should they gradually cut down, or what do you recommend?

PG: I want to set people up for success. That to me is the most important thing. No one became a smoker overnight by smoking a pack a day, and I really don't expect patients to cut and move on with their life. Some patients can, some patients can't. Regardless of that, what I really strive for with them- I take more of the approach for many of my patients-more of a weaning opportunity, depending where they're coming from. If they show up to my clinic- “I'm only smoking two a day.” Alright, yes, maybe we can go to zero pretty quickly.

If they come smoking two packs a day, I don't expect them to cut out “cold turkey”, I have no medications or nothing really to kind of offset even that level of nicotine withdrawal [that] they'll have. And that's not fair to them because the key here- implementing our strategies- is mindfulness. When patients come to my clinic, I spend 40 minutes with them when they're at first visit, that 40 minutes is really spent for them to discuss why they smoke. - Is there a room? Is there with coffee? Is it with certain behaviors? Is it when I'm happy? When I'm sad? - I need them to identify these because smoking is a pattern. Even these [patients will say], “I'll just do it throughout the day.” No, it's not true. It's like saying, “I eat throughout the day.” No, you eat in a pattern, right? You know the room where you're going to eat; you know the timing [when] you're going to eat. It's the same thing with smoking. The reason why I have that and make that conversation with them is so they can always prepare themselves to know how to say no to the cigarette when that moment comes on. That's key here. The medications we have aren't permanent and they can kind of mitigate the craving signals or make cigarettes not taste well. But at some point I'm going to take that off. That rewiring that patients have from smoking, it's permanent. So those cravings will come back the second, they pick up their coffee, their brain will be like, “Hey, shouldn't you be smoking now?” So, I need them to understand and learn how to say no. And if we rush it, they're going to fail. If we take it at their pace, they will succeed. I've converted many patients into non-smokers. Some of them, some of them within six months, some of them within two years. We work at their pace because I want them to succeed. My goal isn't quitting, many patients can quit. My goal is to prevent relapsing and truly take on this new identity where they've overcome cigarettes and that takes time to achieve.

RK: It sounds like it's not just a one-time discussion, that it's really a process over time. And do patients come and, and see you often, or do you recommend that patients check in with their providers often during the process? Or is this really something that occurs mostly at home? They do it on their own?

PG: So, I try to model this after my colleagues who manage diabetes. We try to model this like any other chronic disease, so they'll come into my clinic. In the first three months, we have touchpoints every six weeks with clinical visits, either in person or through tele-visits and so forth.

In between those clinic visits, my nurses will reach out to them, checking in on them. Weekly, we will send text messages, checking on patients. What I mean is think of your diabetes management. What makes you guys so successful is your touch points. At home you have a finger stick. Or for my cardiology friends, you have the blood pressure cuff. You know how they're doing.

We give them journals if that, some patients love it actually. A lot of patients like it because we want them to track when they're smoking. So they can see it with their own eyes and be like, "Yeah, I'm rather consistent when I smoke." So they can start devising plans of how to say no to that cigarette. Then that's key here. Because patients, I don't have a single medicine that's going to slap a cigarette out of their hand. They have to be the ones who make that conscious decision, say no, we make it easy for them and they can better game plan if they can see that.

So the first three months, it's a lot of introductions of touch points and some level behavior changes. After those three months, we start letting go a little bit. We'll bring him back every two months, every three months, we gradually let go. We'll bring them back depending on the patient and the severity. And sometimes patients do have a timeline like I need to get an organ transplant, or I need a surgery, so I'm trying to expedite this as much as I can. But every patient, it is clinical visits. It is touchpoints. We do have some level of support groups, but we really implement a chronic disease model for these patients. Because we treat tobacco dependence like a chronic disease. And for my patients who have stopped smoking and now we're converting into non-smokers, we still bring them in. Because you know what we do? We monitor relapse. We see how they're doing. We put out everything in place to make sure that doesn't happen. They call us if they're anxious, they call us if they're having a bad time. That's when they usually call us when they are in bad moments. And if we haven't taught them how to handle those moments without a cigarette, then yeah, that craving's going to be very powerful. So, we teach them to work with us at that moment as well.

RK: It's so interesting to hear it described as a chronic disease. And you're right, I mean that benefit of the comprehensive care, the touch points talked about, it's really changing behaviors in addition to changing kind of how you respond to life situations that may occur in the good times and bad.

So I really appreciate you emphasizing that becoming a non-smoker is really the goal. Not just quitting a million times, but really not smoking at all. You mentioned briefly the nicotine patch and the nicotine gum. When might you use some of those replacement strategies for, for patients who are trying to stop smoking?

PG: I always tell patients the purpose of the pharmacotherapy is not to do the job a hundred percent. None of these are going to slap the cigarette out of your hand. You still have to be the one who says no. The purpose of these medications is really to make it easier to say no. And right now there's three FDA approved products, so let's go over them a little bit. Break them down into two categories, long acting and short acting. And you're like " I know you're a pulmonologist. So long acting inhalers and short acting inhalers, I get it." Same concept here.

So your, your first product that was approved were nicotine replacement therapies. Now I say this because a lot of patients will hear it and they're like "Oh, it's nicotine. I don't want to keep introducing that into my body." It's like, no. No, this is different. First of all, if you want to diet, you don't just stop eating, right. You eat enough to maintain and move on. Same thing with this. These are low, like nicotine replacement therapies are very low dose. They're about 10% of the nicotine you even get from an actual traditional cigarette. The purpose of that is not to replace a cigarette, not even to give you that euphoric feeling you get from a cigarette. The purpose of NRTs (nicotine replacement therapy), the patch, is to mitigate the craving. Take it from a 10/10 to a 2/10, so it's easier for you to say no to it.

Then you have Bupropion, also known as Wellbutrin. It actually keeps some dopamine alive and well into the brain. The analogy here, I give patients- it's like walking around being full all the time, you're not going to eat. So if your brain is already convinced that, "Hey, you've already smoked," and then you have varenicline, which does a little bit of, well, bupropion does, but varenicline actually goes to the nicotine receptors and blocks them. So, you may smoke, and then you started getting headaches and nauseous because nicotine can't get to the brain where it can stimulate the reward center. So it just goes to other places and causes all these other side effects that you just never feel because they're blunted by your brain's euphoric feeling.

Chantix (commercial name of varenicline) actually is very successful because patients will become turned off to smoking. The short acting products, the gum and lozenges and nasal spray even, and inhaler. I really try to train patients to use them at moments that are just tough. Like say you're about to go sit down at a poker game and everyone's smoking. You're like, "I'm really tempted." That gum lozenge may just mitigate the craving enough for you to say no. They make it easier, because these are short acting, so I tend to double up. I'll use long-acting agents and I'll use the short-acting ones, and I try to train patients that use those short-acting ones really at moments that are just going to be much harder to say no to a cigarette. I'm having my coffee, I can say no to it; the patch is working, but I'm having my coffee, my boss is yelling at me. You better believe I need that gum so I don't reach out for that cigarette to calm me down.

RK: And it sounds like there's so many long and short acting options available, which is really great. You could really individualize it. What works for the patient. One of the things that we see when people stop smoking is some of the

metabolic effects, they can gain weight. How do you address that in your clinic? There are some unwanted effects if we will, that can occur from smoking cessation. What do you say to your patients who might be concerned about those?

PG: I try to tackle it depending on what I think the patient will most respond to. Because I tell them — the way the weight stays off, it's not in a healthy way. Sometimes I'll give the examples of like, "You know how patients with advanced H I V aids lose weight, right? That's not a healthy loss of weight." The smoking does kind of a very similar mechanisms to them, where they feel like that weight loss is nice and attractive, but it's actually unhealthy. Yeah, it may rebound back and so we try to prepare them to make lifestyle changes even directed towards that. Or sometimes we actually use Bupropion, which is known to cause some weight loss, and if it's solving, it begins to combat that. So, I work with the patients to prepare them and then try to meet them in the middle of what that means to them. I'll say this, I've had plenty of patients be upset with the weight gain, but never use it to relapse back to cigarettes. Which is again, and I say that culmination because it's taking time to understand that aesthetic change and work with them. Because you need to hear their concerns. You don't throw them off, don't dismiss them. Hear their concerns. So you can work with them, prepare them, and then combat that. Because what they will say to me is like, "Well, if I could stop smoking, I can lose this weight too." I was like, that's right. That's the way to think of it.

RK: Yeah, I, you, you're so right. Lifestyle modifications in general are just so emphasized for people with diabetes. This just further emphasizes the importance of continuing an active lifestyle, particularly when you have behavioral change or are trying to stop smoking altogether. What about the risks that we talked about from smoking? Do some of those go away after you stop smoking? Or do the risks to the heart and to the diabetes, remain?

PG: To some extent, possibly yes and no. There might be some irreversible damage, but one of the things I would tell patients is that where you're at now and you've stopped, it won't get worse, especially with a lot of lung disease where it won't worsen. So, where you're at now, this is what we'll hold on to. Other parts, like blood pressure, does become a little bit better when they've stopped. And as I've said, I'm not a diabetes expert, but I see that in my patients with diabetes, their diabetes gets easier to manage when their smoking has stopped. There is some level of reversibility with diseases it tends to influence. Not so much potential disease that it tends to cause. But I'm telling you, even if it's causing your lung cancer, the best shot at beating it is to stop watering it with the cigarettes. Like you water a plant—stop watering, it'll go away. So yes, I mean, stopping smoking and becoming a non-smoker is going to have so many health advantages throughout. I will say this: health advantages for the body. The mental health purposes patients smoke also take that into account so we can get them to appropriate counseling. Because there are a lot of patients that just use smoking to help them with their anxiety, their depression, and their melancholy. So I am very cognizant of that. We team them up with our therapist and so forth so they can find alternative ways to deal with it. And I say this because they hear all the physical benefits; they love that, but at the end of the day, they're like, "But no one's addressing the fact that I smoke because of my anxiety." And so we got to prepare them for that as well.

RK: And that's a really good point. We see depression and anxiety so much more often in our patients with diabetes and if it's a coping strategy in some way, it underscores the importance of addressing that mental health issue as well. I wonder just for some parting words for the person who's listening who is contemplating cutting down on their smoking or becoming a non-smoker, what would you say to them in terms of the next steps?

PG: Becoming a non-smoker is going to be the hardest thing you ever do in your life. This is the hardest addiction, and I mean that. One to me, it's kind of like gravity, for those science nerds out there. Gravity, and if itself isn't that bad, look - I knocked my mug off the table. Life is good, but I can't jump off this planet. What I'm alluding to is nicotine. Decades of doing it rewires (the brain) and makes it really hard to become a non-smoker. Those cravings are permanent. You will feel them. You'll even dream about smoking a decade after you stop. That's what makes nicotine addiction so difficult, in addition to it wove itself into your everyday life. For patients who drink 80% of the alcohol is consumed at bars, you just tell them to stop going to the bar. Yeah, there you go. Smoking's the only addiction that I know that you had a smoke break for at work. You go and smoke because it doesn't impair you; it doesn't stop you. Sometimes it makes you even feel like you could do more. So what I'm alluding to is recognize it. Don't be dismissive. Don't undermine this enemy. The first thing I say is come up with a strategy, not a goal one. Not, "I want to stop smoking." Great — How? Lemme talk to my doctor about that. To introduce this conversation. Let me get the good support group. People who understand this is going to be hard for me. That's key. Surround yourself with good, encouraging people, and then realize this is not a linear pathway. You're going to have ups and downs, ups and downs. The goal is, can you minimize the downs? I love that you're ready —1% I'll take it and we're going to work with you and make sure you realize this is like any other chronic disease.

Quitting is chapter one. Staying quit is chapter two; staying quit is chapter three. You keep moving forward with that. So to everyone, to all your listeners, first thing I would say is come up with a strategy and implementation strategy. Step one; step two; step three is talk to your doctor and surround yourself with a support cast. You're going to need that.

RK: Well, thanks so much Dr. G for being here with us and sharing all your vast expertise and strategies for effectively quitting smoking and becoming a non-smoker. I've learned a lot and I'm sure our listeners have too. So, thank you so much for being here.

PG: A true honor. Thank you so much. Always happy to come back.

RK: I am Dr. Rita Kalyani, and you've been listening to ***Diabetes Deconstructed***, a companion podcast to the Johns Hopkins Patient Guide to Diabetes website. For more information, visit hopkinsdiabetesinfo.org.

We love to hear from our listeners. The email address is hopkinsdiabetesinfo@jhmi.edu.

Thanks for listening. Be well and see you next time.