

Vaping and Dabbing

Transcript

[Upbeat theme music plays]

Dr. Clancy

Welcome to Rounding@IOWA, a continuing medical education podcast developed by and for healthcare teams. I'm your host, Dr. Gerry Clancy, Professor of Psychiatry and Emergency Medicine, and the Senior Associate Dean for External Affairs here at the University of Iowa's Carver College of Medicine. Today we will be discussing guidance for clinicians and their patients regarding vaping of nicotine, THC, and CBD-based chemicals. For centuries, the smoking of tobacco has been all around us. In the 1950s, the clear and direct connection of cancer and heart disease from smoking tobacco products began to come to light. Public health campaigns to prevent smoking and lawsuits against tobacco companies had a significant impact on the number of Americans smoking. In 2003, we saw the introduction of vaping nicotine-based products marketed as safe alternatives to smoking of tobacco. But as ESPN's Game Day, Lee Corso, often says, not so fast. We will be talking through how mountains and mounting research now debunks these claims of vaping as a safe alternative to smoking. Alongside vaping of nicotine and THC, we've seen an increase in dabbing. Dabbing is the heating of a resin or oil, often containing much higher concentrations of THC, and then inhaling the vapors to gain a quicker and more intense high. Today, our objectives include: First, we want clinicians and their patients to discover the mechanics of the process of vaping and dabbing and how it compares with the smoking of nicotine, THC, and CBD products. Second, we hope clinicians and their patients can recognize the toxic chemicals that are contained in vaping and dabbed products. And third, we hope our participants can stem the myths of vaping and dabbing as a safer alternative to smoking of nicotine, THC, and CBD-based products. Our expert guests today are threefold. First, we're very pleased to have Dalton Powers here. He is a 2022 lung transplant recipient. He's been back to work now for just a short amount of time, but he's got some really exciting long-term plans. Dr. Jeff Wilson is a Professor of Internal Medicine here at the University of Iowa Carver College of Medicine in the Pulmonary, Critical Care, and Occupational Medicine Division. He graduated from the University of Iowa Medical School. He then went on to the University of Vermont for internal medicine residency training, and then back here to the University of Iowa for his pulmonary and critical care fellowship. He is the director of several clinical programs, including the

Pulmonary Function Laboratory, the Pulmonary Rehabilitation Program, and the Cardiopulmonary Exercise Laboratory. He is the associate director of the Pulmonary Disease and Critical Care Fellowship Program. And finally, like me, he is a proud Little Hawk graduating from Iowa City High. Dr. Alejandro Comellas is a Clinical Professor of Internal Medicine in the Pulmonary Critical Care and Occupational Medicine Division. He earned his MD from Central University of Venezuela. He then completed his internal medicine residency and pulmonary and critical care fellowship at Northwestern University. He staffs our medical intensive care unit, as well as at the VA Medical Center, and was instrumental in starting and helps run our post-COVID clinics. Dalton, Alejandro, and Jeff, welcome to Rounding@IOWA.

Dr. Wilson

Yeah, it's great to be with you, Gerry.

Dr. Comellas

Great to be here.

Mr. Powers

Yeah, I'm glad to be here. Thank you.

Dr. Clancy

Well, thank you all for joining us today, and thank you for the work you do. And Dalton, thanks for coming here to tell your story as well. To the doctors, I just provided our listeners your official title and a summary of your training. Could you give us a better idea of your daily efforts and what a work week might look like for you? And Jeff, let's start with you.

Dr. Wilson

Yeah. So I spend most of my time now on the inpatient consultation service and in the clinic with our fellows. I got interested in the whole problem of nicotine addiction and helping people stop smoking years ago. And so I've spent a fair amount of time trying to understand that better and teach our trainees how to help people with that problem.

Dr. Clancy

Alejandro, how about you?

Dr. Comellas

Yeah, so I spent quite a bit of time in clinical research trying to understand mechanisms of how environmental exposures causes lung injury and chronic lung diseases. And clinically,

I have a clinic that I attend, which is on COPD and asthma. So we get to see patients who actually suffer from the exposure to either smoke or other environmental exposures.

Dr. Clancy

Great, great. And you've both been in critical care and pulmonary medicine for a while. What was the start of your interest in these areas? What got you going?

Dr. Comellas

Sure. So in my case, I think it's, I have a young kid. Now he's 18, he's not that young anymore. But you start hearing in the school, I have issues with vaping. In clinical research, the personnel that I work with, they brought to my attention the problems we're having in the schools with vaping. And that really started to bring to our attention really some of these issues that we thought was really directed towards adults. And some of the aspects that people discussed in the past about smoking cessation or alternatives. But once you start hearing that this was happening in junior high, in high school, that really brought a sense of urgency in trying to understand what was going on in society and also understanding the potential effects of vaping.

Dr. Clancy

Great, great. Jeff, how about you? How did your interest move in this direction?

Dr. Wilson

I think a lot of people start out being interested in critical care because it requires kind of a general knowledge of internal medicine, other problems, including psychiatry. And so I think that is a fun part of what we get to do. And, you know, Gerry, let's face it, the lungs are the most important organ. So, that's what drew a lot of us to it.

[laughter]

Dr. Clancy

Yeah, it's important, but psychiatry is the most cerebral of all the fields. I just want you to remember that. I tell the orthopedic surgeons that one a lot. Well, let's start into our main topic today of vaping and dabbing by first looking at smoking and tobacco and nicotine and THC products and ask a question that really probably doesn't get asked and answered enough, but what's in cigarette and marijuana smoke? What are the things that you're breathing into those very important lungs?

Dr. Wilson

Yeah, well, it was interesting to prepare for this. I kind of looked up the answer to that, and it's reported that there's like several thousand different chemicals in cigarette smoke. And so I looked up some of the more notable ones. which include acetone, which is a paint stripper, hydrogen cyanide, which people used in gas chambers, toluene, which is an industrial solvent, cadmium, which is a component of car batteries, carbon monoxide, butane, vinyl chloride, benzene, methane, nitric acid, just to point a few out. It kind of reminded me when I was looking at this of like being in organic chemistry lab back in college.

Dr. Clancy

Things you frankly don't want to have on your hands and we're actually breathing them in. So yeah. Anything you want to add to that, Alejandro?

Dr. Comellas

Yeah, I think that the other thing that we think about is that there is this thing called tar. Tar that really is the byproduct of this, you know, combustion of these products. And tar has been shown to be causes inflammation, causes also carcinogenesis, some mutations in your DNA. So you're having all these issues that are really, you can see detrimental on the health on anybody. And the younger you are, you can see these effects over time that can be actually adding up.

Dr. Clancy

So just to be clear, what are some of the risks from inhaling these things? What's on our list of chronic disease inspired from inhalation of smoke?

Dr. Wilson

Yeah, the list is pretty long, Gerry. The most recent Surgeon General's report reported that approximately 480,000 Americans die prematurely from smoking. And I always wondered what prematurely meant. And what it means is that the average smoker lives about 11 or 12 years less than the average non-smoker. There's about 12 different cancers now that have been associated with smoking, including colon cancer, which is a newer one, which I think a lot of people don't realize. And of the non-cancerous things, interesting conditions like diabetes are actually, smoking is a risk factor for developing adult onset diabetes. So there's a whole long list of things. Yeah.

Dr. Comellas

And I think that the other thing also is besides quantity of life, there is people also, been talking more and more about quality of life. So we know that quality adjusted life years are really affected by smoking because you did end up developing chronic diseases that actually impair your quality of life. So you could have interventions that actually can keep you alive, but it doesn't mean that you're having, you know, good years of life. So that's another aspect of the impact of smoking in the development of chronic diseases.

Dr. Clancy

Great, great. So those risks from smoking created an open door for an alternative. So looking back a few years, how did vaping come about and gain so much popularity so quickly? And I'd love to hear from the docs, but also Dalton, I'd love to hear about you as far as what kind of piqued your interest as well.

Dr. Comellas

So like they say, the road to hell is full of good intentions. I think that was a good intention at one point, thinking that when you hear the history, there's 1960s, 70s, people were looking even at some of these alternatives for people to try to quit smoking, because there was the epidemic, of course, of combustible smoke. In 2003, there was a pharmacist that actually developed this technology. And he was inspired by his dad, who actually, when you see the story, who was a heavy smoker and developed chronic lung disease. And the argument was, okay, can we find an alternative that would not be as injurious as tobacco, combustible tobacco? And that's how it came about. And then what happened after that is, of course, he has nicotine, creates addiction, And then people start realizing that this was a new product, not an alternative product. And that's how I think it took off. And I know we're going to discuss more about how marketing and targeting was happening, but there was a very intentional way of trying to push some of these products into even populations who had not smoked at all and were starting to get into the LGBTQ communities, starting to also target young people. And that's how we end up in the situation we're in today.

Dr. Wilson

Yeah, I think there's, you know, most smokers, cigarette smokers will express that they would like to quit. And so when you market something to them that, you know, suggests that maybe this will help them, they're a really good target audience. And I think that's where it all started.

Dr. Clancy

Sure. So Dalton, if you could jump in here. How did your story start? Were you smoking beforehand and switched over to vaping or did you start out vaping or?

Mr. Powers

No, I never liked smoking at all. It was, I thought it was dirty. My parents did it. It just smells my, just the older, I just thought it was like an older generation type of thing, you know, and so I started vaping probably when I was a sophomore in high school. I bought my first vape. And it was more or less that everybody was doing it, so that you just wanted to do it. And then after a while, then you got the urges, so you had to do it, or you feel the withdrawals kind of it.

Dr. Clancy

Great. So there was a social connection, but then you definitely felt kind of a physical need as well. So it got very tangled and messy though.

Mr. Powers

Yeah. And also like you have different types of different percentages of nicotine in the juices and you'd start off really low and then you'd end up almost doubling or tripling your number, which three to a six or to a nine, and it gets stronger and stronger. You can even feel it, when it's inside of you, like when you're inhaling it.

Dr. Clancy

Wow, great. For Jeff and Alejandro, are you seeing individuals that vape more than just nicotine? Are you seeing vaping of nicotine and THC together? Or is that something that comes up clinically for you guys?

Dr. Comellas

I think that, you know, I see a lot of older adults, but I hear a lot of what's going on through my son and friends and people. And you hear that a lot, actually, people who vape also, they do THC, some marijuana. And even if they haven't done it before, there's even data that demonstrates that within 30 days, like 1/4 of people who start vaping, they try some marijuana. So it seemed like in the younger population, this is happening more commonly. I think as you get older, it changes the type of habit.

Dr. Wilson

Yeah, I am surprised sometimes that many of my older patients come and I ask them about smoking marijuana and a lot of them smoke marijuana. And I guess they're children of the 60s and 70s. So I'm always amazed by that.

Dr. Comellas

But you know what I think is different, Jeff? is that they use the organic one, which is really used in the joint, and not really the synthetic ones, which I think is what you see in this difference. So there is, of course, the use of marijuana through society, but I think the type of marijuana, the type of product they use is what you can find that is different. And it has to do a lot with, if they're younger, they don't want to smell, they don't want to have the parents to find out. There are other issues probably related to it, but I think that's really kind of the, so if you ask an older person, I bet you they say, yes, I use marijuana, but do you use marijuana in your vape? And they probably say, no. Yeah, I think that's true.

Dr. Wilson

Yeah.

Dr. Clancy

So I am in the emergency room. I definitely see higher and higher concentrations of THC impacting their presentation in the emergency room for psychiatric reasons. And I'm certainly seeing an increase in dabbing. where someone wants to get a much higher amount of THC into their system. Are you crossing paths with dabbing very much yet? Again, you guys in general, an older population, but.

Dr. Wilson

Yeah, I am not. Of course, sometimes I think that may be because I'm not asking, but no, I haven't seen that, Gerry.

Dr. Comellas

Yeah, me neither. I hear more stories, but not crossing clinically.

Dr. Clancy

Dalton, how about you? Any stories or things that you hear as far as vaping marijuana or dabbing.

Mr. Powers

Yeah, no, it's been a big thing nowadays. I mean, I'm not gonna lie, I did it when I was in high school too, and it seemed like that was the way to go because it was almost a little bit more expensive, but it would seem like, you said, it gets you higher. So that was the way you wanted to go. So yeah, no, it's a problem now because it seems like now that's the main alternative to smoking marijuana is dabbing.

Dr. Clancy

Yeah. Let's talk about the mechanics of vaping and the electronic delivery system. How do these electronic cigarettes work?

Dr. Wilson

So traditional cigarettes are, you know, combustible. They heat at a temperature that's reported up to 900 degrees centigrade. And so they're burning tobacco. Electronic nicotine delivery systems have a battery as a power source. And that battery energy from that goes to some type of a heating element, a coil oftentimes, that then heats up a liquid and that liquid contains nicotine and some other substances that we'll talk about. The temperature is generally less, but I was reading that it actually depends on kind of how the battery is set and how high of the temperature you get. And so, one of the presumed, I think probably inaccurate assumptions is because the temperature is less that you get less harmful substances, produced from that.

Dr. Comellas

And like everything in technology, there are like generations. The first generation, second, third, and they keep trying to make this fancier, but also more customizable and then actually you can vary the heat. So you can actually have, you can think that it's going to be low, but you can actually go up on the amount of heat and can generate even more of these vapors and it can change the chemistry. because of the amount of heat that you put in there. So the issue is that it's only about vaping or electronic cigarettes. Really, you want to know more about what type of generation are they using. And by the time you learn that one, there's another one coming. So it's always, you're trying to, you know, catch up.

Dr. Clancy

So Dalton, you've been vaping for a while. Have you noticed that the change in the e-cigarette itself?

Mr. Powers

Yeah, no, I haven't vaped since transplant, so . . .

[laughter]

Dr. Clancy

I know that.

Mr. Powers

But no, like you said, there's a new one every month or so and you got to get the best one and you want to be the best one because like you said, it's just the more heat you feel like you do generate more smoke, but you know, you don't think about the things that you were saying about it releasing, changing the chemistry and can release more potent or toxic stuff into your lungs.

Dr. Wilson

Yeah, it's interesting. I read a study where the more heat you apply, the more formaldehyde is produced.

Dr. Clancy

You gave us a great answer on what was in tobacco smoke. So what's in the vapor of vaping?

Dr. Wilson

Well, that's a long list also. It's probably not quite as long as for combustible cigarettes because they're still finding new things all the time. But some of the things that that you can find is acrolein, formaldehyde, acetaldehyde, benzene, metals, free metals actually, from some of the metals that are in the coils and things get into the, and also from, interestingly, from the soil that the tobacco is grown in has some influence on the metals that end up in the product. Ethylene glycol, which is antifreeze, diacetyl, which is known to cause what we call popcorn lungs. So people that worked in microwave popcorn industry that got exposed to diacetyl developed really severe narrowing of their small airways in their lung. And so, you know, there's a long list, Gerry, and I think the list is, you know, getting larger every day.

Dr. Clancy

Yeah. It's not just nicotine and water vapor. It's a lot more than that. There's a lot more than that.

Dr. Comellas

And I think that, while you were mentioning that, and I wanted to give context for the general population too about this, that, so I was looking at acrolein, which we are familiar with because of tobacco smoke, but acrolein actually is a herbicide, and it was used during World War I, actually, as a chemical weapon. So you're talking about really poisonous chemicals that actually you're inhaling and going into your lungs. So just to give a little bit of that context.

Dr. Clancy

Yeah. So Dalton, when you were, when you were vaping, did that ever cross your mind of what's in this?

Mr. Powers

A little bit, but that's because I was a welder since I was probably 16 years old. So I mean, I know about the dangerous chemicals that come off of the welding smoke and different things like that. So yeah, the coils would always question me, but you don't think too far into the future when you're that young.

Dr. Clancy

Yeah, pretty natural to do that. You bet. So to Jeff and Alejandro, what type of cell lung injury have you noted from the use of the e-cigarette? So what happens at that cellular level?

Dr. Comellas

So, you know, anytime you smoke, you inhale something that has been actually either aerosolized or is smoke or we know that it can be injurious to the lung. In the case of vaping, what we're talking about, these chemicals actually can affect your DNA. We talked about that. It can actually disrupt the barrier. So the lungs have these cells, which are called epithelial cells that actually cover all the inside of the lung. And they get disrupted, meaning that they start falling apart, they get leaky, they die. Therefore, you can either develop chronic inflammation from that injury, or you can get fibrosis, scar tissue, that makes, for example, the airways remodel, so they are not any more flexible, and you start looking more like potentially somebody with COPD. All this data, we have some of it actually from, well, we know it happens to humans. Some of it is also coming from animal models. And what is happening is that vaping as an epidemic has started probably in the mid-2000s, 10 or so. It's like tobacco. What happened is that it took decades to start seeing the effects. And therefore, we're still trying to understand really what are going to be the chronic effects. But one thing we know for sure, and this is something we are learning the last probably 10 years, even more, that when you expose children to particles, to smoke,

the ability of their lungs to fully develop is impaired. So even if the effect, let's say, will be transient, but you would be impairing the ability to get those lungs to full potential, you could still end up with people having lower lung function, for example. And therefore, they're going to be more susceptible to develop chronic lung disease. So these are some of the things we're learning in regards to the effect. In the lungs, there are other effects happening. Cardiovascular, we know high blood pressure. We know it can have effects on the brain. So there are other aspects beyond the lung that people have been investigating. So that's a little bit of the data out there.

Dr. Clancy

Yeah, certainly more to come though.

Dr. Comellas

Yeah.

Dr. Wilson

I think we have to realize that people had smoked for hundreds of years, and it wasn't until the 1960s when there was a link made with smoking with cancer. And so I think the idea that vaping is safe is completely premature.

Dr. Comellas

And I want to add something which is important about the issue of tobacco and vaping. The level of addiction is also related to the type of nicotine they use. So they have figured out the chemistry to make it protonated. So the protonated form of nicotine reaches your brain within 10 seconds. And you're able to tolerate more nicotine. So the level of addiction is even higher compared to, for example, tobacco, regular combustible tobacco. And that's why you see a lot of people having this difficulty. So the levels of nicotine in the bloodstreams it's much higher than what you see from tobacco. So that part, even we do not understand what are the effects of these very high levels of nicotine in the health of individuals?

Dr. Clancy

So Dalton, you kind of touched on that. You said that when you started vaping, you went to higher and higher doses and you could feel it. You feel like they were, in a way, intentionally getting you hooked.

Mr. Powers

Yeah, no, well, maybe not intentionally, but you just felt like you needed more and more until, you know what I mean? You did. But no, that was definitely a plan that they had, I feel like.

Dr. Clancy

And you were getting higher dose cartridges and then were you also vaping more frequently as well?

Mr. Powers

Yes. For sure.

Dr. Clancy

Yep. So if something gets an acronym, it usually means it's pretty serious. And so there is an acronym in the medical literature that's been used to characterize the injury from vaping and the use of e-cigarettes. What's the term that we use here, Jeff?

Dr. Wilson

So it's been called EVALI, which is e-cigarette or vaping associated lung injury.

Dr. Clancy

Yeah.

Dr. Wilson

We've seen quite a number of cases of it in our intensive care unit and even on the less severe cases on the general medicine wards. Alejandro, you've taken care of some patients, I think, that have had this. You know, it looks every bit like, you know, what we call acute respiratory distress syndrome, where there's just a diffuse lung injury many times the patients end up with a tube in their throat on a ventilator. And, it can be a really serious problem.

Dr. Clancy

Yeah. So, Alejandro, what does the clinical presentation look like? And you said, oh, we've got EVALI here.

Dr. Comellas

Yeah. So as Jeff was mentioning, this is what we call acute lung injury. So it's something that happens pretty fast. The lungs, where I talked about this barrier that gets disrupted, the

lungs, they flawed, actually. So now you see on an X-ray, these lungs, instead of looking dark, because it's air, it's just full of fluid, so they look kind of whitish. The person presents with extreme difficulty breathing, very low oxygen levels in their blood, and most of the time, patients, they require to be intubated and put on a ventilator, because if not, they would die due to the fact that they're not able to really exchange oxygen.

Dr. Clancy

And then there is sometimes some healing and some at least slowing down of the inflammation that comes with it.

Dr. Comellas

Yeah, so as everything, you know, there's a mechanism in our bodies to try to repair. And some of these mechanisms of repair end up having a scar. So we know that people that when they have lung injury, if they survive, sometimes they can have impairment of their lung. Their lungs are not going back again to what they were before the injury. Some of these could be loss of blood vessels in the area. This could be also fibrosis, so fibrotic tissue. So those lungs are not anymore as compliant. They're more stiff. And they end up sometimes with some level of impairment that, especially if you're young, down the road, we know that they're going to put them in a disadvantage in regards to the process of aging. So as you're losing lung, you already started from a lower level. So you're going to potentially end up having some disability, you know, later on in life that you would not have had if that didn't happen.

Dr. Clancy

You can't come back fully.

Dr. Comellas

Yeah.

Dr. Clancy

So Dalton, before we started recording, you said, your life really changed in December of 2021. What was happening? What was kind of your acute episode that landed you in the hospital and then a lot more?

Mr. Powers

I actually got sick with pneumonia and that kind of kickstarted everything. I was sick for probably maybe about 5 days, five to six days before I went into the hospital. But it seemed like I just, it was a good sickness where I probably should have went in a little bit sooner,

but I was stubborn. It's just, you think it's just another cold or something like that and you can push through it. But when I got that Friday, which is the 17th, I woke up and I was having trouble breathing. So I went into the emergency room at Genesis and they got me right in the back and they were checking my vitals. And I want to say I was, 70% oxygen. And they had to take me in the back. And I was in the emergency room for a couple of days because they couldn't get a bed. But when I got into a bed, I was there for about a week until my oxygen level wasn't getting any better. They kept trying to put more and more oxygen into me until they got to like the max level that they could. And I was still not breathing well. And they said I was going to get out the 25th. And on the morning of the 25th, they found me unconscious in the bathroom. I must have got up to go to the restroom and I got up too fast or whatever and I fell and hit my head. And when they found me, they had to airlift me to Iowa City that morning. And then I was in Iowa City for probably I was in, I was, my transplant was the February 1st, but I was on ECMO since like the 25th until I got my transplant. And that was rough. It was, it wasn't mainly like you remember everything of it because you're so heavily sedated, but you remember bits and pieces and you see people's faces and just people that shouldn't be crying or crying, you know, and just weird stuff that probably shouldn't be happening. Your dreams play into it too, because you start dreaming about the nurses and these different people that you're seeing, but you don't know where they're coming from. Sure. But yeah, no, that was the time. And then I got my transplant and it was like I woke up instantly. I remember everything from it. I remember everything from that day on in the hospital. I was in the recovery unit for the for 14 days. I was released December 4th or February 14th, 2022. And they said that was pretty great for the time I spent on ECMO that I walked out of, got to kind of walk out of the hospital, but I got out.

Dr. Clancy

Well, you look great.

Mr. Powers

Thank you.

Dr. Clancy

So Alejandro, just for our general audience, just explain a little bit what ECMO is.

Dr. Comellas

Sure. ECMO, it's kind of the ultimate step once you are not able to have somebody get enough oxygen on the ventilator. It's called, it stands for extracorporeal membrane oxygenation. It's an artificial way that basically takes your blood from your body, takes it

through the machine, makes sure it gets oxygen and puts it back again into the person. So it's like almost kind of a bypass, but it's constantly there. And it's a way that you're able to have this artificial lung working for you until either you heal or you get, for example, a lung transplant.

Dr. Clancy

Got it, got it. And Dalton, what was the conversation eventually around vaping? When did that come back to your conversation of this may be, vaping may have been a contributor?

Mr. Powers

That was their main, that was like their main reasoning, they thought because I did dab a lot too. So my brother tried to tell them that I dabbled and they weren't really listening to that. It was more or less how long has he been vaping, how often has he been vaping and different things like that was the main focus.

Dr. Clancy

Yeah, okay. And so you'd been dabbing and that was, again, a lot of exposure.

Mr. Powers

Exactly.

Dr. Clancy

Pretty intently to your.

Mr. Powers

Yeah, because I was, I probably vaped for about 7 years. And then that's about when it got me was when I was 23 and I started vaping when I was like 20. I was like 15, 16. So.

Dr. Clancy

So do you have a message to anybody out there that is vaping right now or dabbing right now?

Mr. Powers

It's not really worth it. I mean, it's one of those things that people call a myth and like it'll never happen to me, but it could happen to you. And just the possibility of it happening to you, it should be enough because if you've seen my story, you would really think twice about doing anything like that, any vaping, dabbing, or just even smoking in general.

Dr. Clancy

Yeah, good, I'm going to ask both of our experts here, any questions for Dalton here?

Dr. Wilson

No, I just, Dalton, I want to tell you how appreciative we are for you to come today and tell your story. I think that's really, that's really powerful. Yeah, I think, you know, one of the things that you mentioned was that initially you were kind of diagnosed as having a pneumonia and EVALI could oftentimes be diagnosed as pneumonia to begin with, I think. And so until you take a good history and then look for evidence of infection, sometimes you, I think Dr. Klesney-Tait and her team came to the conclusion that this was probably associated with inhalation of those substances.

Mr. Powers

Yeah, they called it a vape-induced pneumonia.

Dr. Wilson

Yeah. And the other thing, you know, this probably that there's, we actually have two patients that have been transplanted. for this problem here at the university successfully. So kudos to our transplant team.

Dr. Comellas

Kudos. I agree 100%. One thing I think is also, we didn't mention, but people also are looking into whether vaping or dabbing, for example, could increase your risk of infections. which is the other thing. So it could be a direct injury, but also they could be indirect effects because we know they can reduce your ability to fight infections or even to handle the typical bacteria that you have. So that's all the things that we know that could be actually related.

Dr. Wilson

Yeah, just like cigarette smoking does. Same thing.

Dr. Clancy

And then we certainly saw that with COVID, that COVID sets you up to get a lot of other stuff as well.

Dr. Wilson

Yes, and smokers were sicker when they got COVID.

Dr. Clancy

Yeah. Well, Dalton, that was great. Yeah, that was really important. I'm glad you were strong and able to be firm as far as what your recommendations are for people. That's really good.

Mr. Powers

Yeah, it is a lot. But I had a great support team. And shout out to the doctors and nurses of Iowa City. There's nothing like them. And that's why I would like to become a nurse or respiratory therapist here in the future because if I could feel just a percentage of what they meant to me, it's, it'd be, my day would be completed every day.

Dr. Clancy

Yeah. Good to remind us of that too, by the way. Yeah. So Alejandro, you mentioned a little bit about the acute impact and at least alluded to some of the chronic stuff. What are you both seeing as far as some of the chronic longer term impact of vaping.

Dr. Comellas

I think that the development of chronic lung disease is a real possibility. There is, first of all, animal data demonstrating that when you do models with vaping, they end up developing emphysema in the lungs. So that tells that actually that mechanism could actually happen also in humans. And therefore, we wouldn't be surprised to start finding people. And we need to start asking that question as we're seeing patients. Did you vape when you were young? We need to start asking these questions. The second thing also, I think it's development of, for example, asthma or airway diseases. Even airway diseases that sometimes we thought were autoimmune that actually could develop some kind of fibrosis in these areas. I think that history is going to be extremely important for us to understand. And the other thing, as I said before, I think that one of the concerns that it's very clear is if you're having people in junior high and also in high school vaping, those lungs are not getting to full development. The development of a lung gets until they are 25 years old. So if you have that type of exposures, you can see lung health in general being affected in the population that actually has vaped. So that's kind of the perception from the lung perspective. There are other areas that I would not probably claim to have expertise, but I think that also you could imagine high blood pressure, cardiovascular issues, hormonal disruptions, et cetera.

Dr. Clancy

Anything you want to add?

Dr. Wilson

I think it's an evolving story. And we're going to continue to learn more about it. And it's not going to be good, I think, is what I'm worried about.

Dr. Clancy

Well, after Dalton's powerful words, we all know the dangers and damage of these products and their delivery systems. Let's move over to the marketing of these products.

Dr. Wilson

Gerry, can I just make one other point before we do that? So one of the things that people don't realize is that is that e-cigarettes can explode. So the lithium batteries, just like any lithium battery, can explode. And there's literally hundreds of reports. There's a national kind of fire association, you know, repository of that. And if you Google e-cigarette explosions, you'll see people that had e-cigarettes explode in their mouth and fractured their mandible and knocked their teeth out. And there's actually been some deaths from that. And I think that's something that people don't sometimes realize is because these things come from all, you know, over and there's, you know, the FDA has struggled to keep track of them all. They're actually physically dangerous just on an immediate basis.

Dr. Comellas

And I think the other thing to add to that, it remind me, ingestion of the liquid. So we know that this is happening, especially if you have younger brothers, sisters, or you have kids, little ones, they can actually end up in the emergency rooms because they have flavors. So that bubble gum flavor, they drink it and they end up having actually side effects from all the nicotine in that circumstance. So that's another one. It just reminded me when you mentioned too.

Dr. Clancy

So, Dalton, you want to add anything to some of the hidden dangers of these?

Mr. Powers

Yeah, no, the batteries are very dangerous. They're 18650s. They're about two inches long, you know, and they're very big. So once they short out or whatever happens to them, they can explode really fast.

Dr. Clancy

Got it. Got it. So let's move over to the marketing of these. What's the mismatch we're seeing regarding what our patients believe from marketing versus what we know, the

literature and your clinical experiences. And actually, Dalton, I want to start with you. So how did you get exposed? You know, I know you saw peers using, but did you feel like the companies also were marketing to you?

Mr. Powers

Back then, I didn't really see too many commercials or anything like that, but it was just more word of mouth. And also, there were so many shops opening up that you've seen them at every corner. It's just like a liquor store now. And it's everywhere.

Dr. Clancy

Yeah. How about our clinicians? What are you seeing as far as marketing?

Dr. Wilson

Well, I think for one thing, the tobacco companies are starting to take over the e-cigarette industry and have the same playbook, right? It's less dangerous than smoking, marketing to youth, the flavors. There's literally hundreds of flavors now. Pretty direct advertising to young people. And so we've gone way past the idea of using e-cigarettes to help people quit smoking. It's now become a, you know, a recreational use of e-cigarettes.

Dr. Comellas

Yeah. and I think that they're not, you know, reinventing the wheel. They already know this from the history in the past. They know exactly how they do it, how to market, and now you have social media, which amplifies this incredibly. So I think that the marketing is something that as a society, we had to get together when we realized that tobacco was actually causing a lot of health issues. And we have the same situation again now, I think, with vaping. As a society, we need to all come together and realize that this cannot stand. And before the epidemic of lung injuries that end up with a lot of teenagers in the ICUs, it was very difficult for people to really realize that this was dangerous and they could be a problem with health. I think that event was a sentinel event in society that made people realize, well, these things they don't seem to be safe anymore. And I think that's something we need to all get together as a society and address.

Dr. Clancy

So any magic words in educating our patients, any advice to other clinicians on what's the right thing to say, what can be the most powerful thing? And I'm asking our clinicians, and I'm asking you, Dalton, when you're a nurse, what are you going to tell people as far as vaping?

Mr. Powers

That's a hard question. You know, when I was that young, you couldn't tell me nothing, really. You know, I just think you're pushing, you know, but

Dr. Wilson

Don't remember those days.

[laughter]

Mr. Powers

But I mean, you can just give them the facts. That's just what I tell people. I just give them the facts of what happened to me and my story. And hopefully that'll work. But I can't tell nobody no. And you can't tell most people no or not to do it. So it's kind of hard.

Dr. Clancy

It can be hard. Yeah. But we got to try.

Dr. Wilson

Yeah, I would get back to what Alejandro said. I think this is something that society has to take on. Electronic cigarettes are not legal in many countries. And we've chosen to regulate these products as tobacco products, meaning that they're in stores everywhere, right? Like Dalton was saying. Other countries have chosen a different path. For instance, in Australia, these are marketed as medicines and you need to have a prescription to get one of these. I think that is something that our country should think about.

Dr. Comellas

Yeah, I think that the, I agree 100% what has been said. We have a, it's a big problem because also, as I said in the, like 10 minutes ago or something, the type of nicotine, the way that has been manipulated to make it extremely addictive and getting this rush. And for example, Dalton was talking about needing more and more and more because actually you are really getting that hit and then you're needing now to have that hit again, but you need now a higher concentration. So when you talk about products that give you addiction, the first, as a society, want to make sure nobody starts. because the moment you start, that's when you have the risk of getting addicted. And now it's even a more difficult situation. We're hearing stories of people that actually want to quit vaping and they go into combustible cigarettes. They end up doing the dual use, but actually they're trying to use cigarette smoke, I mean cigarettes, just to try to stop vaping. So that tells you the level of addiction. And we do not have right now also good evidence of what is the best strategy for

people to try to quit vaping. As opposed to with cigarette smoke, we have some alternatives out there. With vaping, we do not know. And part of the reason is also these concentrations of nicotine and what it's doing to these brains. And Gerry, you would know better also regarding the brain. The brain is developing. and what is happening to those brains when you're just getting hit with nicotine all the time before you're 25. And I think that's really the kind of the area that really is very concerning. So the message is do not start. If you start, ask for help. And then as a society, I think we need all of us to get together to try to regulate this and understand this is not something that you can actually think it's just a tobacco product that you can take and buy it from any store.

Dr. Wilson

I think the idea that e-cigarettes represent harm reduction compared to combustible cigarettes is just not true. And it's not proven. And some countries have bought into that. England, for example, has bought into that. I don't think the data supports that at this point.

Dr. Comellas

Yeah. And one thing is important is that, we do not know what are the chemicals inside in all these products. So, if you have a medicine, at least there is, you could argue that, somebody who is a smoker and wants to quit and they want to, they want to see whether this could be an alternative and there's a trial and they do it, but at least there is regulation in the type of chemicals that are inside, what is a product. You understand really what the person is getting exposed to. What is happening right now is the Wild West. I mean, there's not absolutely any idea what are the things that people are getting, are inhaling?

Dr. Clancy

Yeah. Well, you were talking about the effects of nicotine on the brain. I mean, nicotine is very, very tricky to work with, in part because you do feel better when you use it. It is quick, it's fast, as you say, and it is energizing and calming at the same time. And so I, when I'm working with anybody, I say, I know you feel better immediately when you use this, but you've got to be able to look at the long term. Dalton, did you have any trouble with withdrawal when you were you were suddenly away from vaping and dabbing? Was it tough?

Mr. Powers

It was more or less the mind thing because I didn't vape. My transplant was, it was a surreal moment. Once you go through something like that, you're just high on life completely. You know what I mean?

Dr. Clancy

I like that.

Mr. Powers

So it's, I had the thing where I would look for my vape after, you know, I got to eat or something and I'd end up like reaching, like patting my pockets or like feeling around me looking for something. And I would think, what am I looking for? Like, oh, my vape. Like, definitely not. Definitely don't want that.

Dr. Clancy

Yeah, good for you. Good for you. So all three of you kind of looking into the future, what trends do you see? Do you see this getting worse? Do you see it getting better? Is this a battle? What's the crystal ball say?

Dr. Wilson

It's a battle. I think it's a battle. And our country doesn't like to regulate the free market. And I think that's a problem with this particular product. I recently, there's a lot of surveys going out about surveying young people on the use of e-cigarettes. And I saw one recently, and there's a lot of data about this, but that 25% of high school seniors had reported, you know, using e-cigarettes in the last month. And so I think we're, you know, we had denormalized smoking and the incidence of smoking combustible cigarettes had gone down and down and down to like, I think it was 12 or 13% of the adult population. And I'm worried now that that's going to reverse. And, you know, e-cigarettes and this form of nicotine addiction is basically a gateway to going back to cigarette smoking. And some people think, and you know more about this than I do, Gerry, some people think that nicotine is a gateway drug to the use of other drugs like cocaine, for example. So I think it's not a good path that we're on right now.

Dr. Clancy

THC for sure affects the part of the brain where you are less inhibited regarding risk-taking behaviors. And so it makes you more willing to take risks. And so there's your gateway toward more dangerous things, unfortunately. Yeah. Dalton, where do you see things five years from now as far as vaping products? You see that's a runaway train or.

Mr. Powers

I see it not slowing down in the next five years at least. I feel like it's going to be a longer process for society to come in and say, this is not okay. You know, it's got to be like drunk

driving or something like that where it's going to kill a lot until people realize that it's, you got to do something about it.

Dr. Clancy

Yeah. So I'm going to wave the magic wand and say all three of you now are US senators. Just for 10 minutes. Any public policy, any legislation you'd like to put forward?

Dr. Comellas

Yeah, I think one of the things that occurs to me is, first of all, this conversation is not happening. So I think in politics, if you would think about a society, what you want to really is have society engage in the conversation about, what this is, why this is a problem, why, that's the first step. I think that we were gearing towards that when the epidemic happened with EVALI, and then COVID hit, and then that momentum went away. And it's very difficult to think about that coming back unless something tragic again will start occurring. But I think as a, in the, I would just start, be honest with you, with a strong education in the schools. That would be the place I would target. I think that's a place that we're seeing vaping starting. I think that needs to be happening actually in elementary school before they get into junior high. We need to have, for example, through TikTok and social media, some of these influencers really influencing good behaviors to the young. So that's a place that I would just probably start a, any type of a legislation initiative, because that's where we're seeing the epidemic occurring.

Dr. Clancy

Great answer. Senator Dalton, any laws you'd like to pass?

Mr. Powers

Yeah, I just get rid of it. As simple as that, just cut it out.

Dr. Clancy

Yeah, good. Senator Wilson?

Dr. Wilson

Yeah, I'd go back to the model in Australia. You know, vaping is actually very uncommon in Australia, in part because they've done a lot of the things that I think Alejandro mentioned about denormalizing it. And so I think, and if we regulated vaping as a drug, it wouldn't pass FDA muster, right? Because to pass FDA muster, it has to be safe and effective. And we know that this is not safe. And so I know that that's not realistic in our country. So I think we'll go back to what Alejandro said, which is probably a good start.

Dr. Clancy

Yeah, good, So I'm going to give each one of you a little bit of an open mic. What's some of the take-home points you'd like to leave with other clinicians and some of our patients?

Dr. Wilson

Yeah. I think lung doctors are pretty united in saying this, is that the only thing that a person should breathe in is clean air.

Dr. Clancy

Okay. Alejandro.

Dr. Comellas

Yeah, I agree with 100% what Jeff said. I think that the take-home message is that this is a problem that's affecting youth, the generations to come. And we need to really, like we thought about secondhand smoking that would be affecting the person beside you and how a lot of initiatives were put in place to reduce smoking by thinking about society, how it was being affected by secondhand smoking. We're having really kind of a secondhand vaping from all these generations are being affected. So that's a way I would look at this.

Dr. Clancy

Great. Okay. Dalton, some take home points?

Mr. Powers

Yeah, I just, I hope that people take home that it, this is serious. It's not, it's not unproven anymore. There's facts out there that you can find, so it's not a myth. You have to take this seriously, or you could be one of the ones injured by it.

Dr. Clancy

Great, great.

Dr. Wilson

Yeah, and Gerry, credit to you for having this podcast, because talking about education and everything, this is what you're doing today. So thank you for that.

Dr. Clancy

Yep, we try to do these emerging areas that people need to know about, because sometimes the what we know on the streets is ahead of what's in the literature. And I think we're seeing that today. And Dalton, a special thank you for joining us today on short notice

and coming down here and being able to tell your story has really been quite helpful, quite helpful. Thank you. So to our expert guests, thank you for joining us on Rounding@IOWA and for the work you've done helping us understand this complicated and ever-changing landscape of smoking, vaping, and dabbing.

[Upbeat theme music plays]

For our listeners, you can access instructions for continuing education within our show notes. And as always, we hope you can join us again for another session of Rounding@IOWA.