

Sawbones 290: Vaping

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Intro (Clint McElroy): Sawbones is a show about medical history, and nothing the hosts say should be taken as medical advice or opinion. It's for fun. Can't you just have fun for an hour, and not try to diagnose your mystery boil? We think you've earned it. Just sit back, relax, and enjoy a moment of distraction from that weird growth. You're worth it.

[theme music plays]

Justin: Hello, everybody, and welcome to Sawbones, a marital tour of misguided medicine. I'm your cohost, Justin McElroy.

Sydnee: And I'm Sydnee McElroy.

Justin: And I'm pretty excited about this next episode, Syd.

Sydnee: You are?

Justin: I am. I'm excited-ed—I'm excited about it.

Sydnee: You're—you're kind of a semi-expert on this topic.

Justin: Semi is very kind, but, uh... yeah, I guess so, Syd. I guess we're both the doctors today.

Sydnee: No. No. I'm still the only... doctor.

Justin: [laughing softly] I'm a doctor of vapology.

Sydnee: [laughs] I went to school for a very long time, and I was in enormous debt—

Justin: I went to the school of hard—

Sydnee: —as a result of it, and so that's what it means to be a doctor in America. [laughs]

Justin: I went to the school of hard draws, where you—and I mean, you can talk about vaping all you like.

Sydnee: Mm-hm.

Justin: But you're never going to be able to understand, like, what it feels like to take a huge draw and have your ohms cranked up way too high, and just blow cotton and... hurt yourself. And that's the kind of sacrifices you have to go through to live the vape life.

Sydnee: Right.

Justin: And you'll never understand that.

Sydnee: That's true. That's true. I never quite got on the vaping bandwagon. Not my thing.

Justin: We call it the vapewagon. [laughs]

Sydnee: The vapewagon? [laughs]

Justin: Yeah.

Sydnee: Uh, we're gonna talk about vaping this week. It's very, uh—it's very—

Justin: You're gonna talk about it. I'm gonna live it!

Sydnee: No.

Justin: It's just a thought to you, it's an idea. It's a lifestyle.

Sydnee: I should—we should preface that Justin no longer vapes.

Justin: That's true.

Sydnee: Yes.

Justin: That's true.

Sydnee: That was important to me.

Justin: Yes. It was important to Sydnee that that no longer happened.

Sydnee: Yes. I—I'll be honest, mainly because you liked to vape those things that smelled like they were different—they were flavored things, and I was—I was pregnant, and the smell made me wanna vomit. Because it was very sweet.

Justin: I remember Paul Miller, uh, who quit the internet for a year, once said to me, "Justin, in my day, all we had to vape was electronic NJOYs, tobacco flavor, and you kids today are vaping blueberry pancakes."

Sydnee: [laughs]

Justin: Um, w—I don't think—here's what I will say. No, I don't vape anymore. Yes, I used to vape. This is not gonna—not gonna be a lot of easy answers in this one, would you say, Syd? Not a lot of—grand proclamations are common on Sawbones, and I don't think this is the episode for them.

Sydnee: No, I don't, and that's what—I'm glad you said that, because I wanted to preface with there—there's a lot of nuance to this topic. This isn't —with vaccines, it's easy: just get 'em. They're great. But with—with vaping, there's a lot of nuance, and I think that—I respect our audience enough to know that they're up to it.

This is why I'm a doctor, and not a politician, because I live in a world of the things that are gray and not yet fully understood and nuanced. So, uh, let's —let's talk about the history of vaping, and then I also wanna address what's going on right now, and the reason why vaping is—is in the news.

Uh, thank you to Haley for sending us an email very recently to suggest this. Um, because I think it—I think there's a lot of misunderstanding and fear, and that's always a good place to start addressing something.

So, do you know when the first e-cigarette, the first electronic cigarette, was made?

Justin: Um, I—I kinda remember them catching on, like, late—mid to late 2000s.

Sydnee: That's what most people remember as the beginning of e-cigarettes, and I think that's a fair place to start with modern e-cigs, but the very first one was actually patented in 1963.

And now, to be fair, people had talked about and kind of drawn pictures of what could be e-cigs even before that, like back to the '30s, but the first one that we have a good record of is with a guy named Herbert A. Gilbert.

Justin: Okay.

Sydnee: He lived in Beaver Falls, Pennsylvania. He sold scrap metal, and he was a two-pack-a-day smoker. And this was in that time period—this was '63, so it was a time period where—

Justin: Everybody was smoking.

Sydnee: Exactly.

Justin: Legally.

Sydnee: *Everyone* was smoking.

Justin: Had to smoke.

Sydnee: Like—I think, like, 42 percent of Americans were smoking.

Justin: They were wild for it.

Sydnee: I think the year that we sa—that the most cigarettes were consumed, I believe, by the American public, was this year.

Justin: If you didn't smoke in '63, y—real smokers were legally obligated to take your wallet, and push you down some stairs.

Sydnee: And then go buy cigarettes with the money.

Justin: Buy cigarettes with your money. And teach you how to smoke!

Sydnee: Everybody was smoking, but it was also in that time period where—I think a lot of people who lived through this time period will tell you, people knew at that point, or they had begun to understand, at least on some level, that smoking wasn't good for you.

Justin: Mm-hm.

Sydnee: They—this was the year before the Surgeon General would come out with the—the kind of groundbreaking, like, smoking and cancer report that said, "Hey... this causes lung cancer."

Justin: "They're bad."

Sydnee: But even before that, I always remember my—my grandpa said, "Well, we like to pretend that we figured out that smoking was bad for us in the '60s, but we were calling 'em coffin nails as long as I can remember, so we knew they weren't good for us."

Uh, so Herbert Gilbert is at least somewhat aware that smoking is not the greatest thing. Because he decides to make his own invention, called Smokeless.

Justin: Mm-hm.

Sydnee: Is what he dubbed it. And it was made of aluminum, it was a little black canister with a silver tip, and it was battery powered, and it just heated up a liquid that you inhaled.

Justin: Vaping.

Sydnee: He vaped!

Justin: That's vaping, baby!

Sydnee: Yup!

Justin: That's vape.

Sydnee: And he was vakin'. And, uh, he made 10 different flavors. His favorite was cinnamon.

Justin: Mm!

Sydnee: That was the one he liked the best. Uh, and he—by the way, it didn't have nicotine in it.

Justin: Aw, man, I just realized something. This episode's *really* gonna make me wanna vape. Oh, no! Cinnamon, delicious.

Sydnee: You're not gonna vape.

Justin: I know I'm—can't. I'm talking into a microphone. And they don't sell them within arm's reach.

Sydnee: No. Especially not right now, but we'll get to that by the end of the episode. You're not gonna vape. I'm telling you; you're not going to vape.

Justin: Okay.

Sydnee: So anyway, so he—he makes this thing, the Smokeless, and he tries to get interest in it. Like, he starts taking it around, and he's like, "Look at this great thing I invented. It comes in all these flavors, and you can do this instead of smoking," but at this time, like I said, everybody in America was smoking, almost...

Justin: They were *wild* about these smoky things.

Sydnee: Nobody cared! And again, it's the year *before* the Surgeon General says that smoking causes cancer, and I mean, how many years before people really—

Justin: Right.

Sydnee: —believed that and took that advice to heart. So basically, his patent expired, and he was kinda unknown, and nobody knew that he made this thing. So, fast forward to 2003.

Justin: [audio fast forwarding noise]

Sydnee: Hon Lik, a Chinese pharmacist and an inventor, he already knew how to make—he was al—he was mainly involved in, like, ginseng-like products at the time, is what he was working on.

But he wanted to make something new to help him quit smoking. The inspiration for this was that his father had been a smoker, and had—had died of lung cancer recently. And he was, you know, afraid that he would suffer the same fate.

Justin: Mm-hm.

Sydnee: He knew he needed to quit, but he had not had any luck so far with other products that were around, or other methods he had tried. So drawing on a lot of past ideas – probably Gilbert's involved, but not just on his, 'cause this was Hon Lik's own invention. It was different. It was definitely different than this—than this Smokeless that Gilbert had made.

Uh, he created his own electronic cigarette. And it was—and now, this one would have nicotine in it, obviously.

Justin: Mm-hm.

Sydnee: And you could—and he just kind of thought it was the obvious next step. It was like anything else, that we were taking from an analog to a digital.

Justin: Right. More variety.

Sydnee: Yes. Less waste.

Justin: Funnier.

Sydnee: Well, I don't—his idea was really that this would be a safer alternative to smoking.

Justin: Okay.

Sydnee: You could get the nicotine, and it would fulfill, like, kind of the behavioral part of it, the habit—

Justin: Right.

Sydnee: —but it wasn't as dangerous.

Justin: Now, there have been attempts to do this with cigarettes way back in the day. I know this isn't where you're sort of going with this, but they have actually done—there was a line for a while called Quest, and Quest was a line of cigarettes that had stepped-down—

Sydnee: Hmm.

Justin: —uh, nicotine content, actually. So they've tried—this is not a—that was not a new idea. Now, Quests were terrible, and the absolute worst, and felt like death, but the idea is—

Sydnee: The idea is the same.

Justin: The idea is the same.

Sydnee: Well, and to be fair—

Justin: And you can control nicotine—in vaping, there are different levels of nicotine content, right?

Sydnee: Right.

Justin: So you do have that advantage, too, of being able to step down the nicotine content in a way that, like, you can't do with cigarettes, unless you're smoking terrible Quest.

Sydnee: Much in the same way that nicotine patches do.

Justin: Mm-hm.

Sydnee: That's why nicotine patches come in different strengths, so that you can step down.

Justin: Right. Exactly.

Sydnee: Uh, so he brought this to market under his employer, who would eventually become Dragonite International Limited in 2006. It's introduced in China first, and then kind of spread all over by 2006.

And as you already alluded to, even though this was the first big e-cigarette to come to market, and for people to, like, start buying and recognizing and to kind of popularize vaping, there were other companies that said, "Hey, hey, hey, hey, we've been working on this for a long time."

Philip Morris is an example, said, "We've been trying to make an electronic cigarette since the '90s. This isn't new. We've been doing this since the '90s."

Um, but they had had a lot of problems in the US, because the FDA had stopped them. 'Cause the question, and we're gonna talk a lot about this, the question is, what is an e-cigarette? What *is* an electronic cigarette, really? Is it a tobacco product, like a cigarette?

Justin: No.

Sydnee: Or like smokeless tobacco? Is it—does it—is it in that, like, genre of products? Or is it a drug delivery device?

Justin: Mm-hm.

Sydnee: And so initially, when Philip Morris had tried to kind of bring these things to market in the '90s, the FDA stepped in, and said, "No—woah, woah, woah, woah. This is a drug delivery device. That is a whole other ball game. You have to have studies and research and sciences regulated by the FDA. This is—this is not something that you can just sell."

Justin: Right.

Sydnee: Uh, and so that had halted any progress in that field until Hon Lik invented his e-cigarette that really broke through the market, and by 2007, the US was seeing these e-cigarettes, largely imported at first.

Justin: Yeah. That's what is—you have to remember, at the time when this sort of all got going, when vaping was first starting to be a thing, like, there wasn't the Juuls and all these other things lining the gas station shelves. They weren't at gas stations.

It was, like, you were buying them from a vape shop, or buying them online, and ordering *all* your stuff online. For a long time, that was the way everybody was doing it. And then moving into the vape shops, as it kind of caught popularity there, but the gas station stuff, the mass-produced stuff wasn't a thing.

Sydnee: Well, and initially it was because they weren't—they weren't *illegal* in the US, but they weren't legal, either.

Justin: Right. Kind of like, um, Salvia fell through the cracks for a while. [laughs]

Sydnee: Yes.

Justin: Where it's like, "This is a drug. We shouldn't have this."

Sydnee: And you could order it online for a while.

Justin: Right. Yeah.

Sydnee: And just buy it.

Justin: Buy it at a head shop, or whatever.

Sydnee: Or yeah. Buy it at the store.

Uh, but—so for a while, the FDA would put out, like, alerts on imports, like, "Stop these imports," you know, "don't let this vape—don't let these materials or this equipment, or the actual, you know, e-cigs themselves, don't let this come into the country, because we—we—we are still taking the position that this is a drug delivery device, and you can't just mail those to people. You know, the US regulates them a certain way, and this is not okay, so, you know, stop."

Justin: Right.

Sydnee: Uh, but it didn't. It didn't stop people. It never works, right?

Justin: It never works.

Sydnee: "Stop!"

Justin: "Please!"

Sydnee: That's never an effective method. So they—so they said, "Stop," nobody was listening, the vapes came in, and then people started making them as well. I mean, it doesn't take long for people who can manufacture these products in the US to start saying, "Woah, hey. Vaping, huh?"

Justin: Huh.

Sydnee: "Everybody wants to vape." So despite the fact that the FDA was trying to stop them, and despite the fact that in this time period, all over the

world, as e-cigarettes are becoming more popular, different countries are reacting in different ways. There were a lot of places where, almost immediately, they were banned.

Justin: Mm-hm.

Sydnee: Just, like, from the jump. "No. We don't want these. Just forget 'em."

Justin: "Not here."

Sydnee: Um, now, some of those have been overturned since, some of those have been changed somewhat. There are still some places in the world where you just can't, but I think there are some places in the world where you can't smoke either, so... But there was all this kind of, like, time period where there were no clear rules, and so they flourished.

Justin: Sure, right.

Sydnee: Uh, so the FDA in the meantime is trying to figure out what these things are, so that they can figure out how to regulate them. If it—initially, if it was a tobacco product, then the FDA wouldn't have had jurisdiction. Because at this point in time, when they first—

Justin: It'd be ATF, right?

Sydnee: Yeah, at the time. When they first—I assume. At the—'cause when they first came into the US, the FDA didn't have any jurisdiction over tobacco products.

Justin: Mm-hm.

Sydnee: So if it was, then they were kind of cut out of the loop, and they—they had no power there. Um, and then it would be reg—like you said, ATF is a good example, 'cause then it would be regulated that same way. Like, maybe it's dangerous, maybe it's not; it doesn't really matter to the FDA because it's not a medical device. Uh...

Justin: It's a—it's a party device. Right?

Sydnee: Right. It's like—

Justin: It's—it's—

Sydnee: A cigarette—like a combustible cigarette, or alcohol, or a gun.

Justin: Right.

Sydnee: Yes, they're dangerous, but we still sell them.

Justin: Right.

Sydnee: In stores.

But they were pretty convinced that it was a drug delivery device, and so they were still—and even though at this point, you're starting to see research come out, like what could this do for smoking cessation? 'Cause this was the idea, right? From the jump. The idea is that this was supposed to be a tool for smokers to quit smoking.

Justin: Right.

Sydnee: And so you're seeing some early evidence, um, but it's not really enough to con—and they're not huge studies. Nobody's doing these big, giant trials to see, like, "What's better, this or a nicotine patch? This or behavioral therapy?" You know, nobody's doing these trials, so, like, it's not enough evidence for the FDA to say yes or no, these could help. People are making medical claims for them... somewhat.

Justin: Yeah.

Sydnee: But all of this is kind of unofficial, and so of course, what happens? A lawsuit ensues.

Justin: Right.

Sydnee: So the FDA is trying to clamp down on these. Several brands of e-cigarettes, as well as what began to form were consumer organizations backing e-cigarettes. Um, the Electronic Cigarette Association was formed, which was a bunch of, like, vape distributors, and people who sold the accessories and stuff, to, like, come together and fight the FDA, to say, "These are tobacco products. You have no jurisdiction here. Let us sell our vapes." [laughs] "Let us vape."

Justin: Let us vape. Just let us vape!

Sydnee: And it's funny, because in the midst of all this fight, 'cause this lawsuit would stretch out over a couple years, right? It was a huge lawsuit. Uh, and in that time period, the Obama Administration actually gave the FDA regulatory power over tobacco products anyway.

Justin: Hm.

Sydnee: So the whole thing would still fall to the FDA. But it's still different, right? I mean, at the end of the day, a cigarette is still regulated differently than a prescription medication.

Justin: Right. Yeah. Obviously.

Sydnee: So this definition still matters. What—the outcome of this lawsuit is still important to the fate of vaping. 'Cause imagine if they said it was a drug delivery device.

Justin: Then...

Sydnee: Then it's like a prescription drug, it's regulated.

Justin: Right. That's how—yeah.

Sydnee: Then no Juul.

Justin: Oh. Yeah.

Sydnee: I think you have a hard time arguing that you need flavors for the drug delivery device.

Justin: That's fair, yes.

Sydnee: Yeah. [laughs]

Justin: Although, although, Advil's candy-coated.

Sydnee: [pause] ...Yeah. I mean—

Justin: Oh, that was such a good point, you don't even know what to say back to it, it was so smart and insight—insightful.

Sydnee: To be fair, we do add flavorings to a lot of children's medications to help them tolerate them, but I still think you—

Justin: I know.

Sydnee: I think we're—again, I guess this is nuanced.

Justin: I know. Trust me, I know. I have to drink tons of the stuff to have an effect on me.

Sydnee: [laughs]

Justin: Why don't they make it for adults? That's my question.

Sydnee: Eventually, by the end of 2010, by December of 2010, a ruling—the ruling was that electronic cigarettes, vaping products, would be regulated like tobacco products. So they *are* under the FDA, but they're not drug delivery devices unless they make medical claims.

As long as they're not making medical claims—which is true of a lot of stuff at the drug store, right? You see a lot of supplements and things, a lot of vitamins.

Justin: Mm-hm.

Sydnee: They always say, "This is not used to diagnose or treat anything."

Justin: Yeah.

Sydnee: That's how they're skirting the FDA. So as long as it wasn't making a medical claim. Anecdotally, testimonials, whatever you wanna say. But you can't say, "Our vape will help you quit smoking."

Justin: Right.

Sydnee: 'Cause that would be a medical claim.

Justin: That makes sense.

Sydnee: So as long as they didn't say that, they were fine. Now, since then, things are still in flux. From a legal perspective, when it comes to vaping, I—it's not that cut and dried, right?

Justin: Right.

Sydnee: Because on more local levels, not just—not on a federal level, but on more local levels, there've been a lot of restrictions. Um, in different states, in different, uh, muni—municipalities. There are different rules about where you can vape, um, what kind of vapes can be sold. There are places where flavored vapes are not sold. State regulations. Um...

Justin: It's just so hard—it seems like in the internet age, it's just like trying to put the genie back in the bottle, right? Like... [stuttering] anybody can buy anything online, and it's just—like, they—it's kind of ran roughshod for so long that that culture is, like, so established. Of like, hundreds or thousands of different rigs or mods that people are selling, in, like, tens of thousands of different flavors of juices.

Sydnee: It is—and it is—it's interesting, 'cause—and a lot of the scientific papers that I've read to research this episode, even, like, the doctors and scientists will note that uh, patients seem to be—we always call them "patients," but in this case, I think we're also talking about just people who

like to vape—um, seem to be more passionately devoted to this form of nicotine replacement therapy than others. [laughs]

Justin: [laughs] Isn't that interesting?

Sydnee: I read that in one of the studies, and I thought, "Oh, well, I don't think you're getting the whole picture there." It's not like people are passionately devoted to their nicotine patches, I get that, but...

Justin: Right. I don't think that's exactly what's happening here.

Sydnee: Uh, so again, they've been banned on places like planes—

Justin: Sure.

Sydnee: —since then. Right.

Justin: Makes sense. Also because they're—they're—they can be a hazard, especially the ones that are uh—they—you don't see this as much anymore, but for a long time, the danger of vaping was exploding mods and rigs.

Sydnee: Mm-hm. They have exploded.

Justin: They had been gotten from shifty, online retailers. So it makes sense, on a plane, you don't wanna—you know.

Sydnee: Now, the big concern, as time has gone on, is—well, twofold. Uh, one, are there long-term health effects, right?

Justin: Right.

Sydnee: And—and I wanna get into that, but before I get into that, two, the other big concern has been, as these have become more popular, and the kinds and flavors and all that stuff has, I mean, just multiplied, there's so many different things, they also look a lot cooler.

Justin: Yes.

Sydnee: Right?

Justin: Yeah.

Sydnee: Like, I've seen the ones that look like... cigarettes.

Justin: Yes.

Sydnee: It just looks like a cigarette, but it's made of plastic, or whatever.

Justin: There are some that look like that. There are some that look like um—like, sometimes the—the Juuls and, like, some of the other brands that are kinda like the mass-produced brands, are kind of like, slightly bigger, chunkier, kind of like—I mean, they're going for futuristic, right? They're not—they don't want it to look like a cigarette.

And I think that that's, like... you saw a push towards that at the beginning of the mass-produced vape stuff that, like, RJ Reynolds and stuff like that were doing, was like, it was trying to replicate that experience of—

Sydnee: With, like, the pretend cigarette that you use in a play.

Justin: Exactly. Right.

Sydnee: Yes.

Justin: Right. Exactly. But the stuff that is popular these days is much more like—it looks futuristic, right? It looks like you're a—a—a—

Sydnee: The caterpillar in Alice in Wonderland.

Justin: Yeah.

Sydnee: [laughs]

Justin: Well, yeah, or more accurately like uh, a character in a William Gibson novel. Like, you know, a neuromancer or something, like inject—ingesting your cyber—cybersmoke.

Sydnee: And with all these changes, another big concern has been, will younger people start using them?

Justin: Mm-hm.

Sydnee: Specifically—

Justin: Yes.

Sydnee: —people who have—yes.

Justin: [laughs softly]

Sydnee: Specifically people who have never smoked—

Justin: Yes.

Sydnee: —will instead start vaping.

Justin: No need to—no need to frame this as a question. Yes!

Sydnee: Uh, by 2017, we—we were supposed to—the FDA was supposed to come out with, like, new guidelines, basically, for e-cigs, because of all these concerns. We need better rules in place.

We still don't—I mean, they're regulated like cigarettes, sort of, but we still don't have any idea of all the specific rules. Um, but the Trump Administration had those changes delayed until 2022. So we still don't have that set of rules from the FDA.

Justin: Mm-hm.

Sydnee: And the numbers of users of vapes have risen dramatically. There are about 35 million in recent counts, as opposed to 7 million in the beginning in 2007.

And when it comes to young people specifically, just from 2017 to 2018, the prevalence of e-cig users increased from 11.7% to 20.8% among US high school students.

Justin: Dang.

Sydnee: That's a big jump. And we're probably missing people, because—I found it interesting, I was reading a lot of articles about the recent vape-related illnesses, and they were saying that doctors aren't very good at screening for vaping, because what they'll say is, "Do you smoke?"

"No."

"Do you use an electronic cigarette?"

And people will say, "No."

Now, if you say, "Do you vape?" a certain percentage of people who said no to the e-cig will say "Yes" when you say vape, and if you say specifically—if they say no to vaping, if you specifically say, "Do you use a Juul?" another percentage will say yes to that question, because they do not see Juuling as vaping.

Justin: [scoffs] That's *wild*, because it definitely is. But also—

Sydnee: Yes.

Justin: —I don't think it's smart to try to bill—I don't think you want a Xerox situation with this stuff, right? Like, I think it makes it harder to talk about.

Sydnee: Well, but the point is, we're not—we're missing kids who are vaping, because we're not asking the questions the right way.

Justin: Yeah, I guess.

Sydnee: And kids aren't necessarily knowing what they're doing.

Justin: Yeah, I guess that's true. Where—

Sydnee: There's an education gap here on both ends.

Justin: Yeah, yeah, yeah.

Sydnee: It's as much on our end as the educators, as it is on the young people who are doing this without really knowing what they're doing, need to be educated. Um, and there's also, obviously now, we've expanded beyond nicotine. So there are—you can vape nicotine, that was the original purpose, right? And then you could vape just flavored liquids.

Justin: Weird, but yes.

Sydnee: And then you could maybe start vaping other substances. So now, of course, we've seen THC as something that you can vape, CBD can be vaped. There's something—butane hash oils can be vaped. These are called dabs.

Justin: [snorts]

Sydnee: And if you do this, it's called "dabbing," and if somebody said they were dabbing, I, as an old person, would have assumed that they were doing that thing with their arms that kids do.

Justin: Right.

Sydnee: And I would have no idea.

Justin: You wouldn't have a—even know.

Sydnee: So as a physician who should be screening for this, or as a parent, would you think to say, "Now, honey, be honest with me. Are you dabbing?"
[snorts]

Justin: I feel like kids aren't stupid, and if you said to them, "Are you vaping?" and they were like, "No," but they're using a Juul, they know what you were asking. Like, they're not id—this is like, so specious, to be like,

"Kids don't even know that you mean vaping when you say—" of course they do, Sydnee! Kids are liars, and they don't wanna tell the doctor [through laughter] that they're using a Juul, 'cause they think that the doctor will tell their mom and dad!

Sydnee: Well—

Justin: How far removed are you from being a teenager that you think kids don't know [laughing] that you mean vaping when you say Juul?

Sydnee: This is why I do a whole other show were I learn about being a teenager again.

Justin: [laughing] Right. Teenagers are lying, just like we lied, all the time.

Sydnee: So what's the problem with all this? I mean, I think we've hit on one of them, which is—if you are a smoker, if you use combustible cigarettes, and you decide cigarettes are dangerous, that's—I mean, you don't need to decide that. I'm gonna tell you right now.

Justin: [laughs] That's settled law.

Sydnee: Cigarettes are dangerous. Cigarettes are bad for you, and they're bad for the people around you, and smoking is something that, you know, preferably no one would do, for their health. So, "I want to quit smoking, should I use an e-cig?"

The question for a long time—the answer for—to that question for a long time has been, "[hesitantly] Maybe?"

But the question, "I am a teenager and I don't smoke anything, but my friends Juul and I'd like to try it; should I?"

Justin: Yeah.

Sydnee: The answer's definitively "No, no, no, no, no," because kids who use electronic cigarettes are more likely to also try combustible cigarettes. We do have some studies that indicate that.

Justin: It's a gateway.

Sydnee: It's a—I hate gateway, 'cause I feel like once you use "gateway drug," you're just talking about—I don't know. I feel like that's a very loaded—but yes, I mean, that is the concept. That is the concept, and there is some accuracy to that.

Justin: I mean, I—[sighs] I understand your hesitance. I think that a lot of that stuff is kind of silly, because I think that "gateway" is often misused to describe a socioeconomic status, like, more than it is, like—

Sydnee: Yes.

Justin: There's a causation/correlation issue with a lot of the gateway stuff where, like, "Kids who try this are more likely to try this." And it's like, well, that's probably because of their living situation and a lot of other factors, other than they just happened to have also smoked marijuana—anyway.

I mean, it's an addiction. Like, if you—

Sydnee: And if you—

Justin: If you vape, you will develop a nicotine addiction.

Sydnee: Yes. Yes.

Justin: It's not, like, a wild stretch to think, like, "You know what, you might try—be more likely to—" 'Cause you already have the addiction. I mean, the addiction's there, and that's a key component.

Sydnee: Well, and I think that's where we need to start looking at the evidence. So like, if—if we're going to, as a society, decide, like, vaping is a good thing, we need some evidence that it, uh, one, helps people quit smoking, and two, is less harmful than smoking, and three, doesn't have its

own set of other harms that we don't know about that are way worse, I guess.

So what do we know so far about vaping? Well, there is conclusive evidence that, uh, an e-cigarette device has less other toxic substances in it than a combustible cigarette. So we have good—good, strong evidence that—actually, I should say it's *substantial* evidence. These words mean things.

It's not conclusive. There's substantial evidence that, except for nicotine, under typical conditions, exposure to potentially toxic substances from e-cigarettes is significantly lower compared with combustible tobacco cigarettes.

So when people start saying vaping is better for you than smoking, that's what they're talking about. And then we have substantial evidence for that, right?

Justin: Right.

Sydnee: Um, we have—the problem with the nicotine piece of it is that it really depends on how you use it. You can get just as much nicotine from a vape in a day as you do from combustible cigarettes in a day, if you use it that way. So it's hard for me to say you're gonna get less nicotine from a vape. You can, but you could also get the same amount.

Justin: Right.

Sydnee: So that's a little harder. Um, but there are fewer of the other toxic substances. Now, in terms of its ability to help you quit smoking... [sighs] the evidence looks like it's headed in that direction. There have been some studies that have shown, when you compare the use of a nicotine—other nicotine replacement therapies to e-cigarettes for smoking cessation, the e-cigarettes are a little better.

But the *quality* of this evidence so far is low. It would be graded pretty low. There's low evidence that vaping is a useful and perhaps better way to quit smoking than other nicotine replacement therapies. Right now, because the grade of evidence is so low, we don't recommend it over nicotine

replacement therapy or other, um, medications that we can use, or behavioral therapy. Other methods, right? Right now, it's like an alternative, but it is not one of the things we recommend strongly.

Now, there are tons of studies ongoing, and that might change. We might find that it is just as good, or even better than these other ways of quitting smoking, but I don't have enough evidence to tell you conclusively—

Justin: Mm-hm.

Sydnee: —that it does that just yet.

Justin: Um, [sighs] I mean, it makes sense. It's logical, but, like, I—I'm suspicious of all NRTs. Like, I don't—I think that we over-rely on them as, like, a necessary, um—a necessary part of smoking cessation, but that's just my own personal, uh, beliefs that I'm bringing to the table there.

Sydnee: Well, and I mean, evidence has backed up that NRTs can be effective—Nicotine Replacement Therapies can be effective for some people in smoking cessation, so I'm not gonna say that nobody should use them, because I got evidence that says some people will benefit from them.

I think, ideally, if people were using e-cigarettes to quit nicotine completely, and then stop e-cigarettes, there probably wouldn't be such a debate. But that's not necessarily what's happening, right? One, we see people who use them both; instead of replacing combustible cigarettes with vapes, we see people who just kind of go back and forth between the two, which, is that better? [hesitantly] Probably?

Justin: Maybe?

Sydnee: But it's not like, uh, lung cancer from cigarettes is directly correlated with how many cigarettes you smoked.

Justin: Right.

Sydnee: We don't see that. And so that—it's not necessarily better. And if you just replace it with vaping forever, but you're still using nicotine forever, is that better? Probably?

Justin: I mean, there's still—there's also the issue of, like, lifestyle. I—when I was a smoker, I smoked outdoors, because I worked and lived in places where smoking was not permitted. But if you're vaping, you can do that pretty much constantly, and, like, doesn't that... you know, are you gonna become *more* dependent on nicotine in that case?

Sydnee: That's one fear. And the other fear that goes along with that, which we don't have evidence of at this point, but has been hypothesized as a possible consequence, is the renormalization of smoking.

If you can vape places that you can't smoke, and you see smoking more often, and this gets back to young people again, are we renormalizing smoking when what we've seen so far is that, uh, the more laws we've passed about tobacco in this country, the less we've—like, the less normalized smoking behavior is in this country.

Justin: Mm-hm.

Sydnee: If we reintroduce vaping all these places, do we renormalize it? I don't have evidence to support that, but that is at least a concern, you know, that merits further exploration.

Um, the other piece of it is, is it—is vaping safe, period? Well, like I said, so up until the last couple months, the evidence has been overwhelmingly that we don't know, long-term, what the effects of vaping are. We just don't know. But so far, it seems to be at least a safer alternative to smoking cigarettes.

Now, of course, we are concerned about people who never smoked starting vaping. We don't want that to happen. But if you are someone who was using combustible cigarettes, and you've switch to vaping, up until the last couple months, we've had—we've all felt pretty confident that that was a safer choice you were making.

Justin: I want to address one thing, actually, before we move on. I hate to break your flow like this, but, um, nicotine is still a bad chemical for you, right? It is still a harmful chemical for your body, correct?

Sydnee: Exactly. Exactly. Nicotine is not good for you, but we have accepted in smoking cessation for a long time, whether it be via a gum or a lozenge or a patch or a vape, that perhaps exposing someone to nicotine longer to get them to stop using cigarettes was a, like, risk-benefit-reward—we were rewarded by that ratio.

Justin: I—I wanted to touch on it, because, like, I think that a lot of people assume that, like, if you're just getting the—like, the—all the other stuff is the dangerous stuff, and it's not the nicotine.

Sydnee: No, nicotine is dangerous in and of itself.

Justin: Right.

Sydnee: And it's addictive.

Justin: Well, obviously it's addictive.

Sydnee: Yes.

Justin: But like, it is bad for you.

Sydnee: Yes.

Justin: It is a harmful substance to your body.

Sydnee: Yes. Yes. Yes. Nicotine is bad just all on its own. There are other things that are bad, too, of course, and vaping reduces those. But if you vape a lot with nicotine in your vape, you might be getting the same amount of nicotine that you were when you smoked.

Justin: Mm-hm.

Sydnee: Depending on how much you smoked, and how much you're vaping, and all those things.

So what is going on right now? Because obviously, things have changed in the last couple months. So over the last two months, we were noticing a pattern of unexplained respiratory diseases. About 36 states so far in the US have reported these cases in one territory. Since—one case, I think, dates back to April, but most of them have been in July and August.

Justin: Okay.

Sydnee: Since July, essentially. Um, there are around 400, 450, depending on how exactly you're defining them, probable versus confirmed cases, as of two days ago, when the press release from the CDC came out.

And the way that most of these patients are presenting – not all, but typically, we're talking about young, otherwise healthy people who are presenting to emergency rooms with severe respiratory disease, and they are becoming very ill very quickly.

Now, some of these have been slower onset – like I said, one case dated back to April – but most of these have been pretty acute onset. People start getting a cough, some shortness of breath, some chest pain, a lot of them are getting some GI symptoms like nausea, vomiting, abdominal pain, diarrhea, those kinds of things as well. Uh, as well, they might have a fever.

They come in, a lot of them were seen once and treated for, like, an outpatient community-acquired pneumonia-type picture. They just thought, "Oh, well, you got—you got a pneumonia." Or an upper respiratory infection. A lot of them were given some antibiotics, maybe some steroids sometimes, and then sent out and then come back 'cause they're getting worse.

They get worse very quickly. All of their infection markers, all the bloodwork, all the blood tests we do to look for infection seem to point to infection, initially.

Justin: Mm-hm.

Sydnee: Your white blood cell count, those are your fighter cells, are up, which they would be with an infection. The types of white blood cells that are up look like a bacterial infection. Inflammatory markers like CRP and ESR and procal—the important thing to note is that for all intents and purposes, it looks like you got an infection. Your chest x-ray will usually show what we call infiltrates in both lungs.

Justin: Okay.

Sydnee: Which is consistent, most of the time, with a pneumonia. So it looks like you got a bad pneumonia. Except we treat you with antibiotics, and you don't get better. And we test you for all kinds of infections, and all of them come back negative. And a lot of these patients get worse. Over half have ended up in the intensive care unit.

Justin: Mm.

Sydnee: And about a third have spent some time on mechanical ventilation, intubated on a vent. And so far, six people have died.

Justin: Wow.

Sydnee: We've seen some patients respond really well to steroids, uh, and then others have just slowly improved with a variety of treatments over time.

Um, the question is, why is this happening? Because we are not finding a common infectious etiology cause. We're not finding a common infectious cause. Uh, the one thing that we have found in common is that they all used a vape within the last 90 days; most within the last week, and many of them use it regularly.

Justin: But, I mean, again—and not to jump ahead, you said 36 million people, right?

Sydnee: Uh, yes.

Justin: Using a vape? Like, that's one out of 10, almost, like...

Sydnee: It's a very small—what—yeah.

Justin: It's a very com—it's not a small—I mean, it's like, that's a sizable—I mean, run the numbers, right?

Sydnee: Mm-hm.

Justin: If, like, weird stuff happens to people one out of 10 times, like, it could be somebody who's vaping, right? Like...

Sydnee: [hesitantly] Yeah.

Justin: You said they—they were recently using a vape.

Sydnee: There's, like, 35 million vapers, but there's only been 300 or 450 or so cases of this.

Justin: Okay. It's—it's different ways of looking at it. What I'm saying is, it's—there is a small number of people affected by it. That's weird, to start out with.

Sydnee: Yes.

Justin: But also, it could just be weird—there's a lot more, percentage-wise, of the population vaping.

Sydnee: Ah, I see what you're saying.

Justin: So it's like—

Sydnee: I see what you're saying.

Justin: —if some—if weird things are just randomly happening, you know, there's a higher chance that they'll happen to someone who has also vaped. It's a correlation-causation thing I'm trying to lay out.

Sydnee: I see what you're saying. And that is—

Justin: Which is not to defend, obviously. It's just like, you know, we want to be, you know, as—as—

Sydnee: Rigorous.

Justin: —complete a picture and rigorous, right, as possible.

Sydnee: Yeah, no, I agree, and that's why nobody is conclusively saying their vape caused this. We are seeing "vape-associated," "vape-related." You'll see these words used very—

Justin: Vape-adjacent.

Sydnee: [laughs] —very particularly, because we're not saying "vape-caused illness," 'cause we don't know exactly what is going on in all of these patients' lungs.

Justin: Have you ever said "vape" so many times in a half hour?

Sydnee: No.

Justin: I have.

Sydnee: Never. [laughs]

Uh, most of the patients had vaped THC. So there was some thought that this was connected with something to do with THC. But some had just used a nicotine vape.

Justin: Hm.

Sydnee: So it wasn't 100 percent. Uh, all their rigs were different, all the liquids were different. Some were buying things from stores, some were mods, some were like homemade kind of things. I mean, it was all over the place.

And more and more, by the way, if you buy something from the store, because of how many different vape shops there are, the idea that this is—they keep saying, don't buy vapes "off the street." I'm using air quotes for "off the street." Buying one in a store, you might be buying the same thing that you would be buying "off the street."

Justin: I don't even know what "off the street" means. That doesn't—it's nothing.

Sydnee: I don't think that means anything anymore.

Justin: "Off the street" is nothing. I mean, it's like...

Sydnee: Right. I mean, it—there's so many products being made in so many different ways by so many people that that's really hard to—

Justin: "Off the street" pretty much means "vape shop," right? I mean, like...

Sydnee: [laughing softly]

Justin: There's no—nobody's opening up a briefcase of vapes.

Sydnee: Well, they're talking about people who are buying uh, marijuana products in places where it's illegal.

Justin: Ohh, ikay. Got it.

Sydnee: Uh, but, what—the point is, what is happening? Like, why are people all of a sudden? People have been vaping for a long time. Why is this happening in July and August of 2019?

Justin: I don't know.

Sydnee: Well, I mean, it's 2019, so that's—that might be reason enough.

Justin: Right. That's part of it.

Sydnee: But are we just now noticing, is one question. Have vapes been killing people, and we didn't notice? Did we just, all of a sudden, like, put it together? That's one theory.

Justin: Wild and possible.

Sydnee: It seems a little wild, because if you see a rash of young, healthy people coming into ERs and then ending up on ventilators, and nobody can explain why, that usually makes news.

Justin: Right.

Sydnee: So it seems weird, right, that we wouldn't have noticed. But I mean, perhaps. That is, like, something that happens. It's a bias. You notice one. It happens with shark attacks all the time.

Justin: Right, right, right.

Sydnee: You notice one, and all of a sudden, everyone makes news, and—

Justin: Yeah.

Sydnee: —so is it that? Is it a particular product? We can't find anything in common, but is there something we're missing? Is it something being added? There's been a lot of talk about Vitamin E oil. You'll see a lot about that in the news.

Vitamin E acetate. It's added as a thickener, and I guess it's also, like, flavor-wise, it's similar to THC, so that's why you see it a lot in marijuana—THC, I should say, not just marijuana, THC, uh, vape products. And it thickens it as well, and it's just the oil, and we have seen in the lungs, when they've done—for some of these patients, they've actually done biopsies of their lungs.

Justin: Mm-hm.

Sydnee: And they've seen, like, cells—what they call lipid-laden cells. Lipid-laden macrophages, which is a certain kind of cell that has eaten a bunch of, like, a fatty substance.

Justin: Mm-hm.

Sydnee: And so the question is, like, are these cells clogged with Vitamin E oil? Uh, which we don't really have definitive evidence for, 'cause it's not in every patient. Not every patient used Vitamin E. It's not 100 percent.

And then also, when cells are damaged, they release lipids. So are we just seeing lipids there because cells were damaged by something else? Chicken or the egg. So none of that is conclusive right now, but you'll see that in the news a lot. Is it Vitamin E? I don't know, maybe?

Justin: Yeah.

Sydnee: Theoretically it could be, but, like, we don't have definitive evidence of that for sure. Um, is it because people are making more stuff at home? There've been some theories, like, is there a YouTuber out there who just put out a bad vape recipe?

Justin: Possible.

Sydnee: Maybe. Because it's been so scattered.

Justin: Mm-hm.

Sydnee: Is it something that would be—you would need something like the internet to get it to that many disparate people that quickly?

Justin: It could just—I mean, it's so—

Sydnee: 'Cause it doesn't seem like it's coming from a common single supplier.

Justin: There's also so many moving pieces. Like, you could combine things in a really dangerous way easily, right? Like, you get weird chemicals—

Sydnee: Yes!

Justin: —and you're heating them up very hot, and then you're inhaling them. Like, who knows?

Sydnee: And the way—and that's been noted a lot. Like, the way things break down, we can't always predict, and there's a lot of stuff in there, and if you're buying it, you don't know exactly what's in there anymore. Um, because we don't have great rules on how they're regulated yet.

Uh, there's also been—I saw one suggestion that it was even the recent tariffs on China, because, uh, more traditional vaping equipment might have become more expensive. Are people making stuff, and so now we're seeing like the result of kind of a DIY approach to vaping that maybe isn't 100 percent—well, it was never 100 percent safe to begin with, but even less safe than originally?

Justin: If that was gonna be it, though—

Sydnee: I don't know.

Justin: —it would've happened—if that was it, it would've happened five years ago. It would've happened five or ten years ago.

Sydnee: That's true.

Justin: Like, it was the *Wild, Wild West* five to ten years ago. Like, I feel like if that was a thing, that would've been happening back then. Then again, that could be the media bias, right? Maybe it *was* happening, but we just didn't clock it.

Sydnee: It's hard to say. Right now, there are more questions than answers. We know that these patients all vaped, but that's...

Justin: [quietly] But everybody vapes.

Sydnee: And I mean, the presentations have all been pretty similar. There's a case definition for it. So we can, like, lump them into a category based on certain features, but then there are also lots of things that don't line up. For instance, the lung biopsies don't all look the same. The, um—the kinds of stuff they vaped aren't all the same. The substances in their vapes, whether they used THC or nicotine, all that stuff is different.

Most of them are young and healthy. Some of them weren't. In—in one case, one of the patients who unfortunately passed away was older, and did have some other chronic illnesses as well, so it's not all just, you know, young, healthy, like, athletic college student who all of a sudden is on a ventilator. I mean, it's varied.

Justin: Right.

Sydnee: So what are we missing? What's the common thread? It's a really—it's—right now, we're in the midst of, if you remember our episode on cholera, how they had to figure out that it was the hand pump that caused—that was the source of the cholera, we're in one of those moments in medical history. This is the investigation that's ongoing, and we don't know the answer.

Justin: Yeah.

Sydnee: In the meantime, the recommendations from the CDC are, if you can stop vaping, you should.

Justin: Yeah.

Sydnee: That is what all medical organizations are coming out and saying. That's what, pretty much, the official position is: if you can stop vaping, you should stop vaping. If you aren't vaping right now, don't start vaping.

So if you are a young person whose friends are using a Juul, I wouldn't—I mean, don't do that. I would've said don't do that anyway, but really don't do that. Um, not that Juul is the culprit. I don't mean to implicate Juul.

Justin: No.

Sydnee: We don't know. We have no idea where this is coming from.

If you are smoking, you should still quit, but I would, as a physician, recommend using another method to quit right now, aside from an electronic cigarette.

Justin: Mm-hm.

Sydnee: I mean, that has to be the official position until we figure out what the heck is going on. Um, and it may be that your specific vape is not a risk to you, but I—I don't know.

Justin: No idea.

Sydnee: We have no idea. So the safest—I mean, I don't like to take hard lines like that a lot, but my advice would be, like, if you can stop vaping, you should, right now.

Justin: Speaking as a common person—

Sydnee: I wouldn't say start smoking, though. I wouldn't say, like, "Please quit vaping and go back to combustible cigarettes."

Justin: Yeah. Don't do that.

Sydnee: 'Cause we *know* that combustible cigarettes cause chronic lung disease and cancer, so...

Justin: It's—you know what, Syd, something you said right at the beginning of the episode, that your grandfather said that everybody knew they were dangerous, I—I wouldn't speak for everybody else who has done vaping, but, like, there's definitely a little bit of head in the sand, uh, going on with people who vape.

Like, you know it is not *good* for you. There's no—I mean, like, you know it's not *good*, so the odds of it being zero—like, non-applicable are *very* slim, that seems unlikely, so the only thing left is bad, right? Like, you—it doesn't

—I don't think it's a hu—you can wait for the government and science to tell you why it's not good, and the extent to which it is not good, but you kinda know that it's not good right now, I think.

Sydnee: I mean, I think that's the—I think that's the truth. It's hard, because we've—I've dealt with this on a personal level for a long time as a physician. How do you advise people when it comes to vaping if they're quitting smoking using a vape? That's a really hard position to be in.

Because for a long time, the answer has been, I don't know—I don't know what the long-term—I don't know what it's gonna do to your lungs in 30 years. I have no idea. I think they're—right now, we have a lot of good evidence that says they're safer than cigarettes.

Justin: Mm-hm.

Sydnee: So that's great that you quit using combustible cigarettes, 'cause those are very bad for you. But I don't—I don't really know—I mean, there's just not enough research to say much more.

And, I mean, that's a hard place. People push for answers, and they don't get 'em, and right now, I don't—I don't think there's a medical organization that can give you a definitive answer on what's going on right now, and what the long-term consequences will be, so the best thing is, if you can, don't vape.

Justin: And I mean, there's other—if you're gonna do nicotine replacement, like, I feel like, personally, as somebody who has both smoked and vaped, and quit both many, many times, uh, I think that the—the problem with vaping as a method to quit smoking is, you are continuing the behavioral aspect of it and the nicotine aspect of it.

I don't feel like you are getting yourself any closer to... changing the behavior of the addiction. I feel like you're just replicating it. Like, you're not making the behavioral changes that would be a lasting way to stop smoking, would be my argument.

Sydnee: Um, I—I agree.

Justin: But—

Sydnee: But—

Justin: —all the flavors, though. I mean, you can't discount that.

Sydnee: [laughs softly]

Justin: So I guess it's—

Sydnee: No, the—

Justin: Anybody can sa—nobody can say.

Sydnee: No, but the—and I also, I would say, just as a kind of a—because we don't know what's going on right now, one, if you do have a sudden onset of respiratory symptoms and you're concerned—well, you should always go to a doctor.

Justin: [laughs] That's not vaping specific.

Sydnee: But you should tell your doctor if you vape.

Justin: Or Juul, kids.

Sydnee: If they don't ask you, tell them. They should—probably, they should ask, but we're not always 100 percent at this either, so tell them, because right now, we're—that's something that's being looked for, and we're trying to put all the pieces together. So I would definitely go see your doctor, and tell them that you do vape. It may have nothing to do with anything, but it's good to tell them.

Um, and if you do vape, and you have those little bottles of liquid in your house, please put them somewhere secure, where, uh, young people or animals can't get to them. Just as a—'cause that is another—in addition to that some of them can explode, [laughs softly] some vapes do, have been known to have explode—the ingestion of those little bottles of vape liquid,

the ones that contain nicotine, can be fatal. So that is a danger in your house.

Justin: Um, folks, thank you so much for listening to this episode. We really appreciate you tuning in.

Hey, I have a podcast plug. If you, uh, like Sawbones, but wish instead of medicine it was about alcohol, uh, I have—you should check out Neat!, a boozecast by, uh, Liz June, Sydnee's sister and my sister in law, Teylor Smirl. It's called Neat!, it's on iTunes just now. It's just hot off the presses, so uh, I—

Sydnee: Go check it out. It's wonderful.

Justin: It's well worth checking out. There's a video component, too, if that's more your thing. But, uh, it is on iTunes, so go subscribe and check that out.

Uh, we have a book Sydnee and I wrote. It's called *Sawbones: The Book. The Sawbones Book?*

Sydnee: Yeah.

Justin: Just search for Sawbones on Amazon; you'll find it. Uh, it is an—you know, there's an audiobook version, if you wanna get a little silly and listen to an audiobook version of a book of a podcast. You are more than welcome to do that.

Sydnee: We do it!

Justin: We do it! We recorded it. Uh, it was very surreal to do.

Sydnee: Mm-hm.

Justin: Um, you—I wanna say thank you to the Maximum Fun Network for having us as part of their podcasting family. Thank you to The Taxpayers for the use of their song "Medicines" as the intro and outro of our program,

and thank you to you for listening! We really appreciate it, as always. So, uh, until next time, my name is Justin McElroy.

Sydnee: I'm Sydnee McElroy.

Justin: And as always, don't drill a hole in your head!

[theme music plays]

[Maximum Fun sting]

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