Sawbones 223: Bee Venom Therapy

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Clint: 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 am Sydnee McElroy.

Justin: Well, she's on her grind again.

Sydnee: Uh, who? Me?

Justin: No. Not Sydnee. I believe you are on your grind again.

Sydnee: Cooper?

Justin: Not Cooper. Cooper's doing her thing sleeping.

Sydnee: She just had a great bath.

Justin: And a great—

Sydnee: Well, a great poop.

Justin: A great poop, and then a great bath.

Sydnee: And now she is passed out in my arms.

Justin: Nah, Gweny P. On her grind again.

Sydnee: Ah, no. GP.

Justin: GP.

Sydnee: That's how she signs her little—

Justin: General Practitioner. Gwyneth Paltrow, GP.

Sydnee: Right. She is—you know, she doesn't mean that to be misleading. I'm not—I'm gonna give her that. Like I don't think she—I doubt she knows.

Justin: Nobody uses that term anyway.

Sydnee: Yeah. Well, outside of the US, it's used a lot more frequently.

Justin: Okay.

Sydnee: But yeah. Um, yes, Gwyneth Paltrow. This is actually… I'm gonna get into how Gwyneth Paltrow is attached to this story by the end. I promise. Um, this is actually an older recommendation of hers, though, that we're gonna cover this week. This is not—

Justin: We're gonna get to go to the boneyard and find some classic deep cuts.

Sydnee: The—but the reason is that there was a—there was a story in the news, um, just this last week or two uh that sparked this episode. A lot of people had already recommended this topic, so this isn't like, out of nowhere. But um, but let's get into it. I wanna talk about apitherapy.

Justin: Okay.

Sydnee: Apitherapy. Apitherapy.

Justin: It's where you—how do you fix your apathy.

Sydnee: No.

Justin: Okay.

Sydnee: I bet you could figure out that root word. A-P-I therapy.

Justin: Uh. Api, api…

Sydnee: Come on.

Justin: Ap-api…

Sydnee: In reference to…

Justin: Ah. Well, like an EpiPen.

Sydnee: No, A-P-I.

Justin: [sighs] Well, Syd-

Sydnee: This is gonna go nowhere.

Justin: Well, no.

Sydnee: You're gonna Google it and pretend like you knew.

Justin: I'm not gonna Google it! I'm just gonna say that… having to do with bugs.

Sydnee: Bees.

Justin: Bees. Having to do with bees. Of or relating to bees.

Sydnee: Yeah. Okay, so it's like bee stuff therapy.

Justin: Okay. Bee junk therapy.

Sydnee: It's—yeah. It's—it broadly refers to the use of any kind of bee product to treat disease.

Justin: Okay.

Sydnee: Um, and like I said, there's a recent story that I wanna start with. But um, Stephanie, Annie, Dana, and Brendon have all suggested this topic in the past. It just took this long to get around to it, so thank you.

Justin: Thanks, y'all.

Sydnee: Uh, so like I said, this—we have talked about honey before. That's not new.

Justin: Mm-hmm.

Sydnee: That would be considered to be product, I think. Probably the primary bee product that…

Justin: Yeah, one that top five bee products.

Sydnee: [laughs] That we use.

Justin: I hate to choose favorites, but it's defo up there.

Sydnee: But um, so I'm not gonna go back into honey, because we have a whole episode on it, and if you haven't listened to it, the long and short of it is, honey actually works for some stuff.

Justin: Yeah. It, it, it is uh, uh demulcent.

Sydnee: It's good for wound healing.

Justin: Mm-hmm.

Sydnee: So, in some cases. So there are some actual medical uses for certain kinds of honey.

Justin: Mm-hmm.

Sydnee: Uh, so, if you want to know more about that, we have a whole episode about it.

Justin: Go, go listen to that one.

Sydnee: Yeah.

Justin: And if you already listened, download it again, sucker.

Sydnee: But we're not gonna—we're not gonna talk about that. I'm gonna talk about the other bee products. So, let me tell you this story. This is why this is sparked my interest at this moment.

There was a recent case report published that tells the story of a 55-year-old woman in Spain who was receiving regular bee acupuncture treatments. Now, what—just tell me what you think that means, and you're probably gonna be right.

Justin: Like acupuncture, except bee… Using bee stingers to sting the place. Now, acu, I think, means in the right place. Right? How are we getting bees to be like, "A little to the left, Jerry." Like how are we acu anything with bees?

Sydnee: I found this term bee acupuncture, or actually, I also found the term apipuncture. Apipuncture.

Justin: Does api—I don't know about the prefix api. I guess I just did, of or related bees.

Sydnee: Yeah.

Justin: But uh, yeah, unless that means completely random as to where you are being stung…

Sydnee: So, this one was receiving, uh, bee stings, bee acupuncture treatments, uh, for muscle pain. She had a lot of muscular pain and that is one that—we'll talk about all the things that it is used for, but this is one of the things that it—I'm not saying treats. One of the things that it is used for. And she had an anaphylactic reaction to the bee stings, and she unfortunately died.

Justin: Mm.

Sydnee: Um, there's some complicating factors. The health center where she was having this done, which was not like a hospital, or necessarily any kind of doctor's office… just a health center, uh, where she was having this performed, they did not have epinephrine.

Justin: Hey, y'all. Hey, y'all. It's Justin. Hi, I'm from America. I do a podcast. Um, that's not to say that we have it figured out in America, just by way of introducing myself.

Sydnee: Yeah, no. Our—

Justin: Are you sure you don't have an EpiPen? Hey, look under the candles. Hey, can we take a second just dig under the candles, and make sure that your bee sting factory does not have an EpiPen in it?

Sydnee: Now—

Justin: I know they're pricey but like…

Sydnee: Right. We're, we're not gonna throw too much shade, because I can see that happening in the US, not because you didn't know or think to have an EpiPen but because, you know, they're prohibitively expensive for so many people. The life-saving drug that's prohibitively expensive.

Justin: Yeah, but you know what, let's go-ahead and—yeah. Yeah, for sure. That's—I've no doubt that's a total crime. Let's go ahead and fold that into the start-up cost of our freaking bee sting resort.

Sydnee: That's true. They made me have EpiPens on hand when you were like, just looking at some tarantulas on your TV show.

Justin: Yes.

Sydnee: And that wasn't—that didn't even really make any sense, but like, I did it.

Justin: Yeah, you had two EpiPens.

Sydnee: Uh-huh.

Justin: Ready off camera.

Sydnee: In my hostlers. Um, so, so, they didn't have any epinephrine and uh, it took the ambulance like a half an hour to get there. I don't know all the reasons, location, I don't know. But the point is there were complicating factors. One where another though, a woman was receiving what was being called a medical treatment, and she had a predictable reaction, anaphylaxis, and she, unfortunately, passed away.

Justin: Now, this is very sad, and I'm sorry for her family. It's always a tragedy. The—is it weird that she had an anaphylactic response? Like, if she'd been having this regularly? Isn't this the kind of thing like, you do or you don't?

Sydnee: This is actually the kind of—no. This is predictable and can happen.

Justin: Cool.

Sydnee: Where you do not have a reaction the first time you're stung by a bee, or even the second time. It can happen if you have, uh, continued, random exposures to a certain trigger. Some people can develop sensitivity over time and have an anaphylactic reaction.

Justin: Mm.

Sydnee: I'm not gonna say that it's common. It certainly isn't, but—

Justin: So even if you don't think you're allergic to bees, eventually, there could be one that gets you. Is that what you're telling me right now, about bees?

Sydnee: The—it is much more likely in a case like this where you're intentionally, repeatedly being exposed to bees at a random schedule with random doses and all that kind of stuff.

Justin: It's not a random schedule, it's every Tuesday at four.

Sydnee: [laughs]

Justin: Or I can't even, I can't even be myself unless I've had my bee stings for that week.

Sydnee: Um, and we'll get more into that, but let me take a step back. Because if you're interested in bee therapy, there are different bee products that people use and have used for a long time. We talked about the long, long history of honey. Well, honey is not the only bee thing that people have used for health reasons. Um, we talked about—bee venom is also called apitoxin.

Justin: Mm-hmm.

Sydnee: Apitoxin. Um, and it contains some proteins that can trigger an inflammatory response, especially if you're allergic. Obviously, even if you're not allergic to bee stings, you'd get an inflammatory response. You get like, a little red bump and it hurts, and it gets swollen and…

Justin: It's unpleasant.

Sydnee: Yeah, it's unpleasant, but obviously it's much worse for some people. There's also uh, propolis, which is a mixture of uh, bee spit and bee wax.

Justin: Mm.

Sydnee: And it's used as like, a sealant on the hive. Like it's all—it seals up all the little holes.

Justin: Kind of like if bees dipped.

Sydnee: It's like a resin.

Justin: Okay.

Sydnee: Yeah. And then it—they like, put it all over the hive to like, hold it all together.

Justin: Okay.

Sydnee: Um, and then there's also royal jelly. You've probably heard of royal jelly.

Justin: Yes, I have heard—we got some… we got some for Christmas before.

Sydnee: Yes, and my dad takes it all from us. He hoards all of our royal jelly.

Justin: Yeah, he's wild about the stuff.

Sydnee: He is, to use on his face. I think that… I'm just gonna say face.

Justin: Probably his face.

Sydnee: I don't wanna know where else my dad uses royal jelly.

Justin: If he's putting it in other places, I would rather not know.

Sydnee: Let's not talk about that.

Justin: Check, please.

Sydnee: Let's forget we ever had that part of the conversation.

Justin: New episode st—hi everybody. Welcome to Sawbones.

Sydnee: [laughs] So, royal jelly is a secretion from certain glands in the bee that is fed—it's actually fed, I always thought it was just fed to the queen.

Justin: Is that not it?

Sydnee: It's actually fed to all the bees, but the queens like… they develop in it. Like I saw, you can see pictures of this, like little pools of royal jelly with queen bee larva in it.

Justin: Wild.

Sydnee: Like, developing.

Justin: That's wild.

Sydnee: So, you get like a lot. Because I think any bee can become a queen bee… if she believes in herself. No, if—

Justin: [laughs]

Sydnee: If she—

Justin: According to Tyra Banks.

Sydnee: If she is, if she can smize, if she models H-2-T, and if she is submerged in royal jelly when she's a larva.

Justin: [laughs]

Sydnee: Is that—

Justin: That's the sequel to—that is the plot of ModelLand 2.

Sydnee: God, I can't wait for that book to come out.

Justin: [coughs]

Sydnee: So, uh… so these are all—all these things have supposedly have had medical applications for a really long time. Royal jelly, as I've already kind of mentioned, is very popular in skincare. A lot of people say it makes you look younger, and your skin firmer, and has more elasticity, and that kind of thing.

There are a lot of alternative medicine sites, for instance, on the internet, that will advertise it for everything from allergies to Alzheimer's to menopause to diabetes. Uh, sperm production. It's commonly recommended if you are worried about fertility or virility, or you just want more sperm because you like 'em. Um, royal jelly is recommended for that.

There's no clear mechanism of action for this. Like, why would this substance do these things? Eh, we don't know. And there's no real strong evidence that any of that works.

Propolis is supposedly effective for a couple different things. Oral health, like getting kind of dental disorders. Um, stomach health, any disorder of the stomach. And you know something is sketchy when they just start saying, "It's good for stomach stuff. It's good for like gynecological *stuff*."

Justin: Stuff. Yeah.

Sydnee: And then, it's also recommended for some cancers.

Justin: Is it though? By whom, Sydster?

Sydnee: By people who don't have degrees related to medicine.

Justin: Ah, so is that so? You're telling me that uh, degrees or knowledge about medicine is what qualifies someone to advise which medicines that you should take?

Sydnee: Yeah.

Justin: Okay.

Sydnee: [laughs] Is there more to that question?

Justin: Fair enough. No, that's fair.

Sydnee: Um, I wanna focus mainly on BVT, bee venom therapy, because this was the one that I found the most intriguing. Because it seems so counter-intuitive. I don't like to get stung by bees.

Justin: Okay.

Sydnee: Do you?

Justin: My lifestyle is such that—

Sydnee: Have you never been stung by a bee?

Justin: No, I have in my younger… in my younger days. I definitely was stung by bees. My lifestyle is such that it would need to be like… a bee would need to come to our home and have interest in like, leasing half of my office for like, a coworking situation, and then eventually, I would just accidentally sit on him or something. Like, I don't know the situation that would lead to me being stung by a bee at this point in my life.

Sydnee: Did you ever get yelled at for running around outside without shoes on because you might get—you might step on a bee?

Justin: In—absolutely, and then did.

Sydnee: You stepped on a bee?

Justin: Had, did happen. Yeah.

Sydnee: I nev—see, I was yelled at frequently. Not yelled at. I was instructed firmly to put on shoes, so I didn't step on a bee. Never stepped on a bee. Ran around barefoot a lot.

Justin: Yeah, I'm—my parents were mainly just jazzed that I was outside.

Sydnee: [laughs] So, bee venom therapy, you can either administer it from the bees directly, or you can get injections of like, collected bee venom. And it used, even to this day. You'll see people claim that it's good for arthritis, um, specifically multiple sclerosis, MS.

Justin: Guys!

Sydnee: And then again, you see some people recommending it for cancer. Now, the use of this dates back to ancient times. The ancient Egyptians, the Greeks, um, it was used in ancient Chinese medicine. It was advised by all of the, all the big hitters. Hippocrates, Pliny, Galen, Celsus. Of course, they all agreed on only one use, and that was gout.

Justin: Okay.

Sydnee: They all said it was good for gout. Pliny threw in there that he also thought it was probably good for baldness.

Justin: Probably, if a bee gets up there.

Sydnee: Probably, if you get stung on the head by a bee.

Justin: It's hard to say. Oh, I see you got stung bee. You got a little patch growing in there. Looks nice.

Sydnee: He also said honey was good for that, which… I mean, if you're giving me the option.

Justin: Uh, between the two…

Sydnee: Honey. Um, and you see like, throughout all these different recommendations throughout history, mainly for like, rheumatism, arthritis, basically aches and pain and that kind of stuff, um… you see it uses either like, live bee stings. They take like dead bee carcasses and powder them and put them on people.

Justin: That's nice.

Sydnee: Um, take extracts of the venom to inject, and then, just even eat like, bee bodies.

Justin: Bee bodies.

Sydnee: Yeah.

Justin: Sure is.

Sydnee: Or rub them on your joints. I mean, all kinds of variations in this. It was used for acne for a while.

Justin: Just have a bee sting your face, which leaves a red welt. Right?

Sydnee: And then you can say, "Oh, it's not acne. It's just bee stings."

Justin: This? Oh, I cured my acne. This is just a lot of bee stings.

Sydnee: This is just bee stings. My face is just covered in bee stings.

Justin: No acne. What? No. What, are you wild? No. There's no acne here. What about my face? It's all bees.

Sydnee: They're just highly attractive bee stings.

Justin: They're just cool bee stings. Do you see how they form in a pattern of a unicorn?

Sydnee: And a skull.

Justin: It’s a skull. It’s a very particular…

Sydnee: It's documented that Charlemagne would receive bee sting therapy for gout. There is also some evidence in the 1500s that bee stings

were advised for things like kidney stones and like, issues urinating. Just get some bee stings.

Justin: Just get some bees—get a bee in there to give you a sting.

Sydnee: And you see as late as like, the 1700s, it popped back up as a recommended cure baldness again.

Justin: Okay. Sure.

Sydnee: I really feel like somebody must have gotten stung by a bee and grew some hair later and just threw off medical science for a long time.

Justin: Yeah, like, there had to be people for whom this like… did pan out in some way, for the legend to be perpetuated for that long.

Sydnee: It really started to pick up steam in the 1800s, and that's kind of what I want to focus on next.

Justin: Okay, tell, tell me.

Sydnee: But before I do that…

Justin: Ah man.

Sydnee: Let's head to the billing department.

Justin: Let's go.

[Maximum Fun advertisement plays]

Justin: Now you were about to tell me about some 19th century commotion, re: bee venom.

Sydnee: [laughs] So, um in the 19th century, we see the use of bee venom kind of spreading, like, west. Westward ho. Here comes bee venom.

Justin: [in a gravelly voice] What's that in the wind?

Sydnee: By then, it was actually interesting. There was folk wisdom that beekeepers never got arthritis. This was like just one of those common like, little tidbits like, "Ah, well, you must be a beekeeper, because you don't get arthritis." You know, like people say?

Justin: Mm-hmm.

Sydnee: When people say that?

Justin: Yeah.

Sydnee: About beekeepers.

Justin: For sure.

Sydnee: Um, and that was because of this association with getting stung by bees and it being helpful for arthritis. You also started seeing, um, people who were bringing acupuncture to the west. Doing it with bee therapy. Doing it with bees, which at the time, I don't know… so I guess this is a good time to kind of describe the way that it developed.

Justin: Sure.

Sydnee: Because you said that about like, would just randomly get stung by bees, and that's what I envisioned at first is, you just put somebody in a room with a bunch of bees and like, hope they get stung?

Justin: Mm-hmm.

Sydnee: Like, tell them to like insult the bees maybe. Throw things. Something to make the bees mad.

Justin: Call them names.

Sydnee: Call them names.

Justin: Show them the news for more than five minutes.

Sydnee: [laughs] No, but the way that it works is, you actually have to hold the bee and lower it down and like, place it on the person's skin. And what I read is that, as soon as you let go the bee while have been frightened from, I guess, being held by a very large mammal, and will instantly sting the surface it's landed on.

Justin: And then later, and then later die.

Sydnee: Yeah. The stingers stay in. They're removed twenty-four hours later.

Justin: Mm.

Sydnee: So, you just leave them there for twenty-four hours.

Justin: Pleasant, but also the bee dies.

Sydnee: Yeah.

Justin: Because if it stings one time, it beefs it.

Sydnee: That's a really terrible—I didn't think about all of the bee fatalities.

Justin: Yeah, how about all of the bee fatalities?

Sydnee: Yeah.

Justin: Also, the next time you want to do it again, you gotta go out and catch a bunch more. It's not very fun. Unless you got a lot of clover fields near your house.

Sydnee: Considering how we're trying to like, preserve bees.

Justin: Yeah. Could we not maybe send them on kamikaze missions into your butt?

Sydnee: This did not occur to me until now. So anyway, um… so you can go to an apipuncturist, and they would—and that's how it'd work. They would hold a bee, and then put it on your skin in the place that they wanted to apply. So that's—that's where the accuracy comes in. They could put it in the same places that they would place acupuncture needles.

Justin: Okay.

Sydnee: Um, and they would sting you, and then that was it. Certainly, you could be more accurate if you were extracting venom from bees, and then using needles to inject it.

Justin: Okay.

Sydnee: But that wasn't traditionally how it was being done. In 1888, a book was published, a report about a peculiar connection between the bee stings and rheumatism by Philip Turk who was an Austrian physician, and this really kind of codified this um, like, folk medicine tradition. It was being passed down and a lot of people kind of did it, but this was the first time

like, it was put in print widely enough that everybody read it and said like, "Ah. Well."

Justin: Bad. Whoo. Hmm. Dumb.

Sydnee: I'm excited by this peculiar connection.

Justin: This peculiar connection.

Sydnee: Um, in 1935, Dr. Bodog F. Beck published—

Justin: Oh, don't rush on pass that that little gem, Sydster. Why don't you give it one more pass and give it the relish and the oomph it deserves?

Sydnee: Uh, Bodog…

Justin: Doctor Bodog! [weird voice]

Sydnee: [laughing]

Justin: F. Beck.

Sydnee: [laughs]

Justin: Guess what the F stands for. Did you guess?

Sydnee: I—I don't think that's what it stands for.

Justin: Francis!

Sydnee: [laughs] So he brought—

Justin: Bodog!

Sydnee: Of course, he did. Of course, Bodog brought it to the US.

Justin: It's me, Bodog Beck on the sevens and nines, got traffic!

Sydnee: [laughs]

Justin: Bodog Beck.

Sydnee: Uh, so he, he brought it to the US um for the treatment of rheumatoid arthritis. And uh, then, from there, we started seeing another

physician, Charles Mraz, start recommending it for the use of autoimmune diseases. And then that's kind of where you saw it spread from like, arthritis to specifically like, rheumatoid arthritis, and then for MS, and all kinds of diseases of like, the joints and connective tissues and that kind of thing. Um, now here's kind of the theoretical and the real science behind this.

Justin: Okay.

Sydnee: Because I think what's unfortunate as—the more I read about it, the more I found that there's some really intriguing things about bee venom. It's just that, it's not like… what we think, what we think is true isn't.

Justin: It's not a panacea.

Sydnee: Right. Nothing ever is.

Justin: Nothing ever is.

Sydnee: So, the idea is that bee venom has anti-inflammatory properties, which is weird, considering that it has specifically inflammatory properties. Like, it is specifically… it induces inflammation.

Justin: Right.

Sydnee: And that it can block pain receptors as well.

Justin: Okay.

Sydnee: And they have seen some of these effects both in in-vitro and in small animal models. They've seen some ways that it like, activates and blocks pain receptors briefly in intriguing patterns, and they're not entirely sure why. And so then, that could theoretically, you know, if you just saw that, you might think, "Oh well, maybe it will block pain in a human."

Justin: Mm-hm.

Sydnee: So, there are some intriguing things about bee venom for sure, but when they've tried to replicate these studies in humans, one, you're not gonna find any large-scale studies. Like, nobody's doing this head to head with like, ibuprofen and seeing what works better or something.

Justin: Well, nobody wants to waste all the bees.

Sydnee: And a lot of people don't wanna get stung by bees.

Justin: Oh, weird. Oh.

Sydnee: Um, and the results typically have not been statistically significant, so you gotta be careful. I notice this in a lot of the studies, that at the end, they'll conclude that there is something to it. And if you read the numbers, what they saw was a correlation, but the number actually… So, what you have to calculate in a study is, how likely is this to have happened by chance?

Justin: Okay.

Sydnee: If there is a difference between the two groups, between the group of patients who have bee venom and the group of patients who didn't…

Justin: Which are almost certainly will be of some amount.

Sydnee: How likely is it that this would just have occurred by chance, versus actually indicating, you know, some therapeutic benefit? And the majority of the studies didn't show any… any like—it was not statistically significant, so it could have just been by chance.

Justin: Mm.

Sydnee: Um, and that's also another hard thing to sham treat. Like, if you think about the group of patients who are getting a pill or nothing, versus the group of patients who are getting—

Justin: The ones who were getting pinched?

Sydnee: Well that's the thing. Like, you would have to like apply stings in the wrong place, or apply something that you think is a bee sting but isn't.

Justin: Mm-hmm.

Sydnee: It'd be very hard. And which, acupuncture is hard to do that in general, we've talked about that before. It's hard to do sham acupuncture. You just basically just putting needles in the wrong place.

Justin: Right.

Sydnee: But I mean either way, you're gonna end up getting stuck with needles or stuck with something.

Justin: Right.

Sydnee: So, it'd be a hard—it would be a hard study to blind. And when you start to look at objective results, then you start really seeing a lack of evidence. Anytime they have said there was a difference, it was subjective. So, it was asking people afterwards, "Do you think you hurt less?" and them going, "Yeah, I think I do." And I'm not saying that people lie. I would never suggest that.

Justin: Ah, when you guys really gave me a shot in my elbow, right? The bee really stung me in my elbow, right? Because it definitely did feel like my knee. But if you guys say it's the elbow, I believe you.

Sydnee: But we know how—

Justin: Feels good either way.

Sydnee: We know how powerful a placebo can be, and um, if the patients who agreed to this study already believed in bee venom therapy, how likely they may be to experience results one way or the other. Which is great, but doesn't mean you should get stung by bees.

MS studies have not shown results that are—that it is helpful, and that's really important, because you'll see a lot of claims to the contrary, that this is used as a treatment for MS. No, uh, yes, people will tell you that, and people are falling victim to that, but they have never shown a reduction in the plaques that form in the brain and spinal cord. They've never been able to show any improvement in that in patients who've received bee venom therapy.

So even though you will—you will see that lie again and again and again, it's not. There have been patients who subjectively say they think they feel better afterwards.

Justin: Mm-hmm.

Sydnee: But… it's not actually halting the disease process. There have been some shingles patients, patients who got zoster shingles, um, and fibromyalgia patients, and rheumatoid arthritis patients, again, who reported subjective improvement, but nothing that we could test or objectively clock or anything like that.

And this is used way more extensively outside the US, so you'll see a lot of these studies have been published outside the US and are not being done here. There just aren't as many cases of it here. There aren't as many patients who have bought into it at this point.

Justin: Okay.

Sydnee: Um, now, before you start bee therapy, bee venom therapy, you're supposed to challenge the patient to see if they are allergic.

Justin: Yes, that's seems like a good step.

Sydnee: Not just take their word for it. You're supposed to actually test them for bee allergy, and bee allergies are pretty rare, so if you're testing, and asking, and statistically, they're rare, most people are probably gonna be okay.

But sometimes, as I've already mentioned, sensitization can occur, and that can be very unpredictable. So, you can have patients who have received weekly treatments for years, and then all of a sudden, have an anaphylactic reaction. And I think that's where you have to really come down on, if there is this possible risk, even if it's small, then you better have some really compelling benefit if you're gonna try a treatment.

Justin: Right.

Sydnee: Because all treatments have risk, I mean that's the—usually what, at this point, somebody who practices alternative medicine will look at me and say, "Well, all treatments have risk." Absolutely they do, but we don't recommend them unless the benefits outweigh the risks, and so far for bee venom therapy, we're not seeing that to be the case.

There was a case in 2003 of a 34-year-old man who received bee acupuncture for pain in his back because he had a bulging disk. He had planned four sessions. The first time, he had got 50 stings to his upper back. They were left in for 24 hours and removed. The next week it was the same treatment. The third week he got 60 stings to his back and butt, and then on the fourth week, he got 70 stings all up and down his spine.

Some number of hours later, he began to experience vomiting and difficulty breathing, and he became severely ill. He had uh—he became hemodynamically unstable, meaning his blood pressure dropped very low. He became unresponsive. He was transferred to the hospital. He was put on a ventilator. Um eventually, they were able to get him off, but he was found

to have had a hemorrhage in his brain as a result of what was probably like, an anaphylactic reaction that was triggered…

Justin: Yeah, from all the bee stings.

Sydnee: Mm-hmm. Exactly. In 2011, a 35-year-old woman receiving bee venom therapy for multiple sclerosis developed liver injury. She came in severely jaundiced and was in, um, possible liver failure. She was treated and recovered, but I think when you see these cases, and I'm, you know, so far, I have not seen any compelling evidence that it works…

Justin: Right.

Sydnee: Why would you do that? And again, this was endorsed a few years ago on Goop by Gwyneth Paltrow herself. She puts these little notes on some of the articles, like, if she actually tried the therapy in this like, "Hey there kiddos. I used bee venom therapy for some pain…"

Justin: Take it from me, GP.

Sydnee: Yeah, well she signs them GP, "For some pain I was having, and it just worked great, and so now I'm gonna tell you all about bee stuff." Um, so, she has endorsed it saying she used it herself and that it was helpful. What I kind of alluded to…

Justin: I wanna—I wanna invent a new thing and I think this is gonna really catch on. It's called Gwenecdotal Evidence, and—

Sydnee: [laughs] I like that.

Justin: Thank you. And, and basically what it means is, Gwyneth Paltrow says something worked, and there's no other evidence, then you have Gwenecdotal Evidence.

Sydnee: There have been—this is what I was saying. There have been some studies in recent years – these were published, I think, in 2014 – where researchers actually isolated the components of bee venom that seem to have some positive effects. They synthesized them, and so, in doing this, by taking out the things that you think are helpful and then creating them synthetically, you're removing all that bad crap that keeps hurting people. Which is like, I mean, key if you're developing a…

Justin: Yeah.

Sydnee: Do the least harm, therapeutic, you know, treatment. So, they synthesized these compounds and they started using them against cancer cells actually delivered by nanoparticles.

Justin: Okay.

Sydnee: Yeah. They've actually found some ways to create like, nano-bees.

Justin: Yes!

Sydnee: To deliver these compounds.

Justin: Oh my God. I was feeling so disheartened and then this episode really turned it around the end with the presence of nano-bees.

Sydnee: Yes. And they found some evidence that they were effective in targeting…

Justin: Obviously! They're nano-bees! Are you kidding me?

Sydnee: … cancer cells. Now of course these compounds could do-

Justin: No, stop right there.

Sydnee: Wait, no, no. Let me—

Justin: No, you're fine.

Sydnee: This is—this is also good. This is all good science. These compounds could do damage to healthy cells—

Justin: No!

Sydnee: —just like any chemotherapy could.

Justin: I didn't want to hear that about nano-bees!

Sydnee: Well, that's where the nanoparticles come in. The nano-bees are, they—they're like smart bees. They deliver it directly to the cancer cells, which is— I mean that's where we're trying to get with cancer therapy, right? Better at targeting the bad cells, and less destruction of the good cells, which means less side effect and less damage to the body.

Justin: Mm-hmm.

Sydnee: And they have found some, some intriguing in vitro studies. So the next steps are human—or animal studies, and then human studies. So, this is a long way off, but I think this is an example where—

Justin: I volunteer as tribute. To get the nano-bees.

Sydnee: I think this a really great example of where, there is a truth in all of this. There is a real scientific truth that we can all be really fascinated and excited by, but when it's covered up with all this junk, with all this pseudoscientific junk, and people who are exploiting that for financial gain, because if you think all of these people who are administrating bee venom therapy are doing it for free out of the kindness of their hearts…

Justin: They ain't.

Sydnee: No. And, and I think that's unfortunately… it hides what might be a really fascinating scientific discovery underneath. And it—and it can be really hard, even as a physician, somebody with like a medical background, to wade throw all that, to try to figure out what the truth is.

Justin: Yeah.

Sydnee: And so, if you don't have any, you know, medical background or scientific training, it's almost impossible to figure out what is true and what is not. It's very frustrating.

Justin: I guess what we come back to is, the nano-bees will fix everything. So, thanks everybody for listening to this episode of Nano-Bees, a new podcast that's just about nano-bees now. Uh we hope that you enjoyed it. Um, sorry. Did you have something else you wanted to say?

Sydnee: I was gonna say that I think that the bottom line is, please don't get stung by bees intentionally. I mean, I'd rather you not even get stung by bees accidentally, 'cause that hurts. But if you are considering being intentionally stung by bees, my advice would be don't.

Justin: Uh, so back to nano-bees, thank you to all the nano-bees that listen to this show. That's so cool. It makes me feel really cool that I made something y'all would like.

Um, uh, next week, the MaxFunDrive is gonna kick-off. It's gonna be fun. We got some cool episodes lined up. We're gonna have gifts. We're gonna have, uh, great gags. We're gonna have just a joyous time as a family, and

if you like Sawbones and you wanna support us… this is it folks. This is the moment. This is the time, so get pumped. Get psyched. We got great stuff for you for the whole two weeks, and we hope you enjoy it.

Sydnee: You know you're gonna get a lot of mileage the next time you're out with your buddies and you start telling them about nano-bees, so…

Justin: Thank you. Yes. Thanks to The Taxpayers for letting us use the song Medicine as the introduction for our program, and thanks to you. You're the best. Thank you.

Sydnee: Thank you.

[theme music plays]

Justin: Thank you. Um that is gonna do it for us this week, so 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 ends]

Justin: Unless it's with nano-bees. If you get a bunch of nano-bees to do it—

Sydnee: No. No. No.

[theme music plays]