

## Sawbones 467: Leprosy in Florida

Published August 8, 2023

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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'm Sydnee McElroy.

**Justin:** And, uh, we're— this is interesting. This— everything—

**Sydnee:** That's a great way to start our podcast, so people will know. This one's going— this one—

**Justin:** This one's interesting.

**Sydnee:** This one is interesting.

**Justin:** This one's interesting. We've had, uh, some medicine, some health issues in the news that you wanted to touch on. There's a great amount of overlap between this topic and a topic that we have covered before. But when I say "before," I mean before, before, before.

**Sydnee:** 2014.

**Justin:** 2014. We're gonna go back to the halcyon days, the silver age of *Sawbones*. Uh, and we'll hear sort of a condensed, slightly condensed version of our episode on Leprosy.

**Sydnee:** That's right. And then, and then we've gotta talk about Florida.

**Justin:** We've gotta talk about Florida.

**Sydnee:** Gotta talk about Florida, y'all.

**Justin:** Gotta talk about Florida. We'll be right back with you, right after this. Take it away, us! Without kids. God, they're gonna sound so chill.

**Sydnee:** [laughs]

**Justin:** [wheezes loudly]

**Sydnee:** So relaxed.

**Justin:** So relaxed.

**Sydnee:** So, leprosy dates back, if you didn't know this, Justin, to probably 4,000 BC, maybe longer. Um...

**Justin:** That's a long time.

**Sydnee:** Yeah. It's been around a really long time. They took DNA from a corpse from Old Jerusalem, and they figured that it had leprosy from the DNA.

**Justin:** Okay. Uh, what, it was missing some skin? Yeah, ancient scientist. Yeah, I would think—

**Sydnee:** I think it was, just, like a bet. Like, "Hey. I bet they had leprosy."

**Justin:** "I bet they had leprosy. Where's his nose?"

**Sydnee:** "I mean, we've heard a lot about it, somebody had to have it."

**Justin:** "He might have leprosy. I don't know."

**Sydnee:** And—

**Justin:** "He's missing some stuff. He don't look good."

**Sydnee:** Well, yeah. It's...

**Justin:** It's a mummy.

**Sydnee:** Like, thousands of years old. And all throughout history, different, you know... Hippocrates talked about it in 460. I mean, this is... this is probably one of our oldest and most, uh, discussed diseases...

**Justin:** Mm-hmm.

**Sydnee:** ... throughout history.

**Justin:** Yeah. I mean, it's one of those that pops up in, in the Bible a decent amount.

**Sydnee:** Absolutely, yeah.

**Justin:** To, to an extent where I... You kind of start to assume, like, half the people had it. It comes up a lot.

**Sydnee:** Um, do you know where the word leprosy comes from?

**Justin:** Come on, Syd.

**Sydnee:** No.

**Justin:** Obviously not.

**Sydnee:** Okay. So, there are two, two possibilities. There's the Indo-European term *lap*, which means the removal of scales.

**Justin:** Mm-hmm.

**Sydnee:** So they thought because of some of the appearance of some of the skin lesions, that perhaps could be where it's from. Or from *lepra*, which is the Greek word for scales. I mean, I figure that it's probably from the same common root.

**Justin:** Yeah.

**Sydnee:** You know, both things. But anyway, that's where the word leprosy comes from. Um, and again, that's because of the appearance of some of the skin. Now, there are a lot of... Before I kind of tell you the history, uh, let me just say

that, uh, a lot of people don't really understand what leprosy causes, like what the disease leprosy, what... how that manifests in a person.

**Justin:** Shameful. It's like, read a book, you know?

**Sydnee:** Right. They think it's, like, you know, when they nick themselves shaving, or maybe jelly.

**Justin:** Possi— Eh, well, agree to disagree.

**Sydnee:** But there's a lot of misconception about, uh, people having leprosy and, like, losing body parts, and, um... I don't know. I just think people's vision of leprosy is not quite what it... what it was, or is today.

**Justin:** Okay, well clear it up for us Syd. What is it... what does leprosy really look like?

**Sydnee:** Okay, so there are different forms, so it depends on which form of leprosy you have, but it could just present as some, um, like, uh, numb, pale patches on your skin, some areas on your skin where the, the color changes, and they become numb because it, it also damages nerve tissue.

Um, you can have areas which actually, you know, the skin becomes thickened, and scaly, and forms nodules. There is possibility of, like, nasal deformity, and you can lose, you know, parts of your, like, the nasal structure, parts of your nose as a result.

**Justin:** Mm-hmm.

**Sydnee:** Um, and then you can have weakness as well, and, and kind of this, uh, diffuse, like, nervous system involvement, where your hands and feet and legs and arms eventually become numb, or weak, or, you know, the nerves becomes damaged. Uh, but that's, that's very different from, I think, what we picture. And again, it depends on the patient and it depends on which form you have.

**Justin:** Mm-hmm.

**Sydnee:** It's really slow growing, this disease. It has a super long incubation period, so it's really hard to figure out when people got it. Um, it's usually three to five years that you carry it around before you ever have a symptom.

**Justin:** Wow.

**Sydnee:** Uh, but it...

**Justin:** So you're saying I could have it right now and just not know it.

**Sydnee:** Oh, let's not.

**Justin:** Possibly.

**Sydnee:** Probably not.

**Justin:** Okay. Why not?

**Sydnee:** Because, this is interesting, do you know that about 95% of the population is not susceptible to infection?

**Justin:** That does make me feel better, slightly better.

**Sydnee:** I think that's a pretty staggering statistic, 'cause I got the same impression, that, like, biblically, everybody had leprosy.

**Justin:** Basically.

**Sydnee:** Uh, but just, it has to do as much with your immune system's reaction, uh, to the bacterium as it does to the disease itself. Uh, so like I said, 95% of people are not, you know... Even after coming into contact with it, are not going to actually become infected. It's transmitted by nasal droplets. It usually has to be long sustained contact, so you've got to hang around people a long time.

**Justin:** Mm-hmm.

**Sydnee:** So, it's not something that you're just gonna pass somebody in a hallway and get. Um, there's some evidence that maybe broken skin, too, but...

**Justin:** Hm.

**Sydnee:** But it's not easy to get and it's not common.

**Justin:** Got it. Okay. I'm feeling better, I'm feeling comfortable discussing this now.

**Sydnee:** And you can only get it from humans, maybe armadillos. All right. Let's talk about the Bible.

**Justin:** Finally.

**Sydnee:** [laughs] Let's move into something...

**Justin:** It's the only thing I find scarier than raccoons.

**Sydnee:** Let's move into something that's not controversial at all.

**Justin:** Yeah.

**Sydnee:** Let's talk about religion. In the Bible, you know, it divides leprosy into clean leprosy and unclean leprosy.

**Justin:** Mm-hmm.

**Sydnee:** Uh, which are not actual medical categories of any significance. Um, unclean leprosy was probably leprosy. You know, when they... When they talk about a patient who had unclean leprosy, that probably was the real deal. They talked about changes in their skin, um, losing... Again, losing body parts, probably focusing on the nose, 'cause that is something that can happen, um, but, but big skin lesions.

So, when they referred to somebody who had that, that they probably got it right. Then they talked about clean leprosy. Clean leprosy...

**Justin:** It's kind of the decaf of the leprosy world.

**Sydnee:** ... was— and clean— and these people were treated differently. If you had unclean leprosy, um, you would not get around these people, they were completely quarantined off from the rest of society, and if any of their, uh...

If they touched anything that you owned, you would burn it.

**Justin:** Mm-hmm.

**Sydnee:** Um, clean leprosy was not treated the same way. Uh, these were people who just had... Their skin lost its pigment, so maybe this actually included some people who had leprosy, but it also probably included a lot of people who had vitiligo.

**Justin:** What's vitiligo?

**Sydnee:** It's a skin condition where, you know, uh, people with, uh, darker pigmented skin lose the melanin.

**Justin:** Okay.

**Sydnee:** Yeah. And so, people would become paler. And, uh, so there were probably a lot of people who actually just had vitiligo who were thrown into this category.

**Justin:** Doesn't seem fair.

**Sydnee:** Uh, and this was— this is common. There's a lot of stuff that's discussed, uh, in the Bible and then, you know, from the years that follow, and the time periods that follow, that was called leprosy that again, probably wasn't.

Uh, psoriasis was mistaken for leprosy. Uh, tinea capitis, or like, um, a fungal infection of the scalp, 'cause you would lose, like a patch of hair, and it didn't look very pleasant, so they thought was, you know, leprosy. Um, and there were all kinds of fungal infections of the skin, you know, athlete's foot probably would have been mistaken for leprosy back then.

**Justin:** Bad spray tans. Anything.

**Sydnee:** [laughs] Exactly. Snooki has leprosy.

**Justin:** I knew it.

**Sydnee:** Now, eventually, uh, we figured out what is and isn't leprosy in 1873, uh, when a doctor G.H. Armauer Hansen. Armoire?

**Justin:** The least popular Hansen brother.

**Sydnee:** [laughs] In Norway, uh, discovered the causative agent, *Mycobacterium leprae*, so kind of related to tuberculosis, same family there.

**Justin:** Mm-hmm.

**Sydnee:** Um, he identified the agent that caused disease, um, because it was actually, in the 1800s, pretty rampant in Norway, and Iceland, and England, and...

**Justin:** Hm.

**Sydnee:** ... and those regions. Um, that's why leprosy is also known as Hansen's disease. Did you know that?

**Justin:** Mm-hmm. I always thought they're for getting Mm Bop stuck in your head, but that's... It's good to know that I was incorrect.

**Sydnee:** Yes.

**Justin:** How have we tried to treat this over the years, Sydnee?

**Sydnee:** Like a lot of the diseases we talk about on this show. Uh, leprosy was seen as a punishment, or a curse from God, or the Gods. You know, you did something wrong and now this horrible thing has been visited upon you.

**Justin:** Mm-hmm.

**Sydnee:** And so, pray. Get right with God, have holy people pray over you. Um, hopefully, it'll go away. Uh, that's probably the oldest treatment for anything, I think would be fair to say.

**Justin:** Still probably the most widely prescribed, too, for any... for any ailment as a first line.

**Sydnee:** You know, you... That's a good point. That's probably the longest existing treatment for anything.

**Justin:** Mm-hmm.

**Sydnee:** Yeah.



**Justin:** Besides rub some dirt in it.

**Sydnee:** [laughs] One of my dad's favorites.

**Justin:** And Adam.

**Sydnee:** Also run it off.

**Justin:** Run that off, Caleb.

**Sydnee:** Run it off, or...

**Justin:** Caleb?

**Sydnee:** Or—

**Justin:** What was that fool's name? Cain, Abel. Combined them. Caleb. [laughs]

**Sydnee:** Caleb. [laughs] The third son, Caleb.

**Justin:** The third son, Caleb.

**Sydnee:** So, if prayer doesn't work, what else? Let's try blood. That's what everybody likes to try, right?

**Justin:** It's a good first line. It seems very... There's a lot of power we assign to it, I think.

**Sydnee:** Uh, absolutely, and the Greeks tried it, the Egyptians, uh, the Chinese, they all tried blood for leprosy. You could either rub it on, you know, the affected areas or you could drink it.

**Justin:** Okay.

**Sydnee:** Um, originally, the blood you would prefer, virgin blood or perhaps child blood.

**Justin:** Mm. Mm.

**Sydnee:** Yeah.

**Justin:** Yeah, and you know we didn't have like, a great way of getting that blood out.

**Sydnee:** No. I don't want to think about where the virgin and child blood came from. Um, in... I guess in a more humane period, we switched to animal blood. I still don't know that that's humane, so lamb or dog's blood...

**Justin:** Mm-hmm.

**Sydnee:** ... was used. Do you know that this carried on until 1790?

**Justin:** Sheesh.

**Sydnee:** That's a long time.

**Justin:** Yeah, we kind of took a breather on treating leprosy, huh?

**Sydnee:** Yeah, a lot of... a lot of blood.

**Justin:** Yikes.

**Sydnee:** Now, there were other things thrown in there from time to time. Um, snake venom was a popular suggestion, um, especially cobra. And, uh, you know who was a big fan of that?

**Justin:** Let me guess.

**Sydnee:** Guess.

**Justin:** Pliny the Elder.

**Sydnee:** If you don't have a snake...

**Justin:** I don't.

**Sydnee:** ... you could try some scorpion venom, perhaps a poisonous frog.

**Justin:** Mm-hmm.

**Sydnee:** Or there was some kind of, uh, climbing fish that you could use, it had some kind of venom.

**Justin:** Okay. That's...

**Sydnee:** Um...

**Justin:** That's horrifying, but... "Oh, oh, fish can climb now, and they're poisonous. Fantastic."

**Sydnee:** [laughs]

**Justin:** "Just the thing to take my mind off my leprosy."

**Sydnee:** And you know if there are poisonous climbing fish, they definitely exist in the Ohio River.

**Justin:** Yeah, absolutely.

**Sydnee:** We definitely have them here.

**Justin:** No question. Four eyes. Yeah.

**Sydnee:** Um, you know, eventually this would, uh, morph into increasing doses of bee stings.

**Justin:** What?

**Sydnee:** You don't want to try snake venom, let's just, uh, [laughs] sting you with a bunch of bees and see if it fixed your leprosy.

**Justin:** I mean, it took my mind of my leprosy.

**Sydnee:** If you... Do you remember scarification, we talked about that once before?

**Justin:** Mm, wasn't it like a... something you did with, like, a sharp metal thing?

**Sydnee:** Yeah, a sharp metal thing. You could... you cut people, and scar them, and make...

**Justin:** It's in the—

**Sydnee:** Damage the skin, and...

**Justin:** It's in the family of, um, trepanation, right? Isn't that when we talked about it?

**Sydnee:** Uh, no. Yeah, I think we did talk about it...

**Justin:** Okay.

**Sydnee:** ... in trepanation. Um, you could do it with or without arsenic, however you prefer.

**Justin:** I'll take without thanks you.

**Sydnee:** So cut people off, and... Or cut people up and then pour arsenic in their wounds.

**Justin:** None for me, thanks.

**Sydnee:** Um, in the Middle Ages they tried castration.

**Justin:** Mm.

**Sydnee:** Which probably, to be fair, was as much to prevent them from having children as to actually try to fix it.

**Justin:** It would pass that way?

**Sydnee:** Huh?

**Justin:** You think it would pass that way? Would it pass genetically?

**Sydnee:** No, it doesn't.

**Justin:** Okay.

**Sydnee:** One very popular treatment for decades was chaulmoogra oil... chaulmoogra oil. Uh, a lot of people have probably heard of this. Um, it's from a tree. Uh, there's some confusion over which tree, but the important thing for you to know is it's from a tree. The active ingredient is hydnocarpic acid, and it has a bunch of fatty acids in it too. And that, that acid is antibacterial.

**Justin:** Hm.

**Sydnee:** It really is. So, the thought was that you could, um, either, like, turn it into a mixture, like suspended in gum, or an emulsion, or something. You could put it on topically. Uh, they tried to give it to people orally, um, but it made you really, really nauseous.

**Justin:** Mm-hmm.

**Sydnee:** When that didn't work, they tried to give it to people rectally. Don't know if that would have been my next move.

**Justin:** No, me neither.

**Sydnee:** But that was bad, 'cause then it caused ulcers.

**Justin:** Ugh. I don't know if this is a good solution.

**Sydnee:** So instead, they started injecting it into people, IV or, uh, intravenously, or intramuscularly.

**Justin:** Mm-hmm.

**Sydnee:** They, you know, did it work or not? I don't know. Uh, there's some information that maybe it was successful at times.

**Justin:** Really?

**Sydnee:** Maybe it helped for a little bit. It didn't help in the long run...

**Justin:** Right.

**Sydnee:** Um, probably, uh, but there... was some evidence that maybe... I mean, and this was used for quite a long time, like all the way up until we had actual medications for leprosy.

**Justin:** Yeah.

**Sydnee:** People were using chaulmoogra oil.

**Justin:** It's interesting. It seems like because of the... and this is just, like, a... this is, again, some of my classic speculation, but it seems to me that perhaps the Biblical stigma, because it was so... had such a reputation of being connected to being dirty, or being...

**Sydnee:** Okay.

**Justin:** Unclean, that maybe we weren't as...

**Sydnee:** Uh-huh.

**Justin:** 'Cause we... These are really long for treatments. We don't normally cling to stuff like this that isn't working for, like, centuries.

**Sydnee:** Yeah.

**Justin:** That maybe there wasn't the rush to try to treat it and take care of it.

**Sydnee:** I think you're... I think that's a very good point because as I looked for a lot of different treatments, um, I didn't find the usual just lists and lists of weird stuff that we gave people to eat, or drink, or paste all over the body.

You know, I mean usually, I look up these illnesses and I find just pages and pages of... "And then try this tree, and then try this plant, and then— "

**Justin:** Right.

**Sydnee:** You know. And it's not out there, as far as I can tell, for leprosy. We found this chaulmoogra oil, which seemed to work maybe, and we stuck with it for a long time. There are a handful of other weird treatments in there, but sadly, uh, I think because you're right, uh, for a long time, it was seen as the patient's fault...

**Justin:** Mm-hmm.

**Sydnee:** ... so they did something wrong, that they were dirty in some way.

**Justin:** They were cursed or something.

**Sydnee:** And then, the other thing, the last thing I kind of wanted to talk about, I guess, in terms of treatment, although this isn't really a treatment, it was one of the things that was done for people who had leprosy was quarantine. Um, it was very common, all throughout history, that if you had leprosy, you were kept away from the general population.

Um, the reasoning for this was twofold. One to protect everybody else from you because, you know, the belief was that leprosy was very contagious. In reality, it wasn't, but the, the fear was that if you touched someone with leprosy, you would get it.

**Justin:** Right, which, which we've already talked about is inaccurate.

**Sydnee:** Right. Uh, but then, it also was because of the stigma against people with leprosy, they were the common... they were a common target of violence.

**Justin:** Oh, wow.

**Sydnee:** And murder, so, uh, keeping, uh, people with leprosy in quarantine was, was also for their own protection. Um, if they weren't in quarantine, they had to, uh, especially throughout the Middle Ages, wear bells or clappers, um, as they were— to ring, or to, you know, clap together as they were moving through crowds so that people would know they were coming and be able to move away from them.

Uh, they even... Depending on which way the wind was blowing, they had to walk on a certain side of the street so that people wouldn't...

**Justin:** Ugh, gosh.

**Sydnee:** ... have to breathe them in, people who passed them.

**Justin:** Cut them a break.

**Sydnee:** I know.

**Justin:** They already have leprosy.

**Sydnee:** So, and... which is why so many people ended up in, um, leper asylums, or leprosariums is what they were called.

**Justin:** Mm-hmm.

**Sydnee:** Um, all... They started in the 13th Century, all the way through to the 20th Century we had these. Um...

**Justin:** Wow.

**Sydnee:** Yeah. Yeah. All across Europe and Asia, and eventually into the US. Uh, at their peak, there were probably 19,000 in existence at one time. There were colonies, uh, like, um... Especially some of the monastic orders, so a monastery would kind of sponsor like, a colony of people who had leprosy, so they didn't actually have to be in a building. 'Cause a lot of these places were similar to, like, psychiatric asylums.

**Justin:** Mm-hmm.

**Sydnee:** Um, they were called leper colonies, and, uh, the idea was that we would just have, like, a little community where you could only live if you had leprosy.

The reason that monks got involved is that they thought that, um, someone who had leprosy was actually in purgatory on earth, that their suffering was holier than the suffering of other sick people because having leprosy was a way that you had already died, but you were stuck on earth so you were in purgatory.

**Justin:** Well, they were certainly holier.

**Sydnee:** Really?

**Justin:** Wakka wakka.

**Sydnee:** Unacceptable.



**Justin:** Fair enough.

**Sydnee:** Unacceptable.

**Justin:** That was my one. That was my only one, I'm sorry.

**Sydnee:** That's the only one you get.

There was actually a group of monks that were, um, specifically founded for the care of people with leprosy, and also made up of people with leprosy called The Order of Saint Lazarus, in which you probably get that reference. You're a good, good little...

**Justin:** Yeah, that's like a...

**Sydnee:** Bible reader.

**Justin:** That's like, a super popular one.

**Sydnee:** Yeah?

**Justin:** That's like, classic. That's one of the classics.

**Sydnee:** So what happened to Lazarus, Justin, for those who don't know?

**Justin:** He died.

**Sydnee:** Uh-huh.

**Justin:** Of leprosy?

**Sydnee:** No.

**Justin:** Uh, just died.

**Sydnee:** Just died.

**Justin:** He just died, [laughs] and he... Jesus brought him back.

**Sydnee:** Right, so it would make sense that they would call it The Order of Saint Lazarus if they thought that people with leprosy were dead on earth.

**Justin:** Yeah.

**Sydnee:** So... um, people who did stay in asylums, who weren't in, in colonies but in asylums, were usually separated by gender, um, in order to prevent children, uh, because the children of lepers, they were seen as a sin against God, unfortunately.

Um, like I said, this eventually happened in the US. The biggest was in Carville, Louisiana, and it was just known as... I forget what it was called, it was just known as Carville eventually. So I guess, "Gone to Carville" was probably a good euphemism for somebody with leprosy.

**Justin:** Mm-hmm.

**Sydnee:** Um, remember we had, "Gone to Dwight" for somebody who was getting clean off alcohol?

**Justin:** Gone to Dwight, yeah. [laughs]

**Sydnee:** You're going to Carville if you've got leprosy. Um, and while in most parts of the world in the mid-1900s, with the invention of the drugs we use today for leprosy, a lot of these things stopped. There weren't leprosariums anymore. Um, and some parts of the world persisted. In Japan, there was one open until 2008.

**Justin:** Wow.

**Sydnee:** Which I think is pretty crazy.

**Justin:** Yikes.

**Sydnee:** And there are still possibly, I don't know. As of the last thing I read, possibly there is still a handful of people left in asylums all over the world with leprosy.

**Justin:** Ugh.

**Sydnee:** Today we have treatments. We have a cure for leprosy.

**Justin:** Oh, great.

**Sydnee:** Um, the first modern treatment that was invented was called promin. Uh, it was quickly, uh, replaced with better drugs, uh, dapsons, clofazimine, rifampicin. Uh, those three are used in triple therapy today, much like tuberculosis. If anybody's familiar with it, we use multiple drugs to treat it, you don't just get one.

**Justin:** Mm-hmm.

**Sydnee:** Leprosy's the same way. Um, so we use these medications today, uh, with great effectiveness. Um, leprosy is still around, which a lot of people don't know. Uh, there are probably... as of 2012, there were 180,000 cases, that was the prevalence. The incidence of leprosy— do you know the difference?

**Justin:** I do not.

**Sydnee:** The incidence is how many cases we have each year.

**Justin:** Oh, okay.

**Sydnee:** The prevalence is how many cases total exist right now.

**Justin:** Oh, right.

**Sydnee:** So, incidence is tough with leprosy because it hangs around...

**Justin:** Right. So it's hard to...

**Sydnee:** ... for so long.

**Justin:** ... tell exactly when it happened.

**Sydnee:** Yeah, when it happened. Um, but it still exists, uh, mostly in India, Brazil, Nepal, Tanzania, Mozambique...

**Justin:** Why can't we just treat everybody?

**Sydnee:** Um, we can. We will.

**Justin:** It seems like we could just wipe this thing out.

**Sydnee:** Uh, you know, there— there are a lot of movements to do that, a lot of, um... A lot of organizations, uh, money and good people putting their time into trying to eradicate leprosy. I don't think it's, uh, an unrealistic goal.

I think with it being a primarily human disease, um, that makes it possible. That's why smallpox was easier to eradicate, because it was a human disease. So, I think it's a possibility. We've got good treatments. We've just still got work to do.

**Justin:** If I need to wipe every armadillo off the face of this planet, so help me God, I'll do it.

**Sydnee:** I think the armadillos would be low on my list. I'd start with treating all the people with leprosy, and remembering that, um, leprosy is just another illness that people unfortunately can get.

**Justin:** Yes.

**Sydnee:** And is no... Should be no more stigmatized than the common cold.

[theme music plays]

[ad break]

**Justin:** Okay, Syd. So that's— that's leprosy. Or at least leprosy as it stood in 2014, so very long ago.

**Sydnee:** [laughs] Well, I don't think a lot of our ancient facts about leprosy have changed, right?

**Justin:** Let's hope not, yeah.

**Sydnee:** Like, I mean that's the thing.

**Justin:** New and stunning research.

**Sydnee:** I mean, there is new— I mean, there is new stuff, that is true. But all the old stuff holds. And I will say, one of the first things I want to address as we kind of update, like, where are we now with this disease, and what is happening, and why is Florida... just, what's going on down there, guys? Just, like, what's... you're wildin' out down there, Florida. I don't know what you're doing, but... I mean, I guess we do.

**Justin:** Yeah, we do.

**Sydnee:** We do. Um... the first thing I want to address is that we are trying to move away— and I know this can be difficult when we're trying to communicate that something's happening, right? You're trying to— as a public health notice, like, there is a disease that is emerging in higher numbers in an area, and we want people to know it's happening. And if it's something that you're familiar with, like, I think most people know the word leprosy. They've heard it. You know, it's a very well-known thing. You need to use that word to communicate the disease.

We're trying to move away from that as a term, though. We're trying more and more to call it Hansen's disease, which is not a new name. It's been a name for leprosy for a very long time.

**Justin:** Okay. So, when you first told me about this, I thought that somebody named Hansen had kind of come around recently and been like, "Actually, you know what I'd like? Name it after me. Go for it."

**Sydnee:** No. [laughs] No. This— the name Hansen's disease is a very old disease for leprosy, named for the first person to, like, identify the bacteria as the causative agent, which we have referenced already. Um, but I think because the word "leprosy" is such an ancient— it has such ancient roots...

**Justin:** Like, in the Bible. [wheezes]

**Sydnee:** Right?

**Justin:** Right?

**Sydnee:** Um, it's from the— I mean, we talked about it, from the leper and all that. So that word has so permeated our culture and, like, our human understanding, and we have a lot of connotations with it, most of them pretty negative, right?

**Justin:** Yeah.

**Sydnee:** Um, so it's kind of like a double-edged sword. It's useful for communicating quickly what the disease is, 'cause we all know what it is, which is not always true for disease processes. But on the flip side, it's so stigmatized. So stigmatized that the word... not necessarily leprosy, but the term "leper" has become... has been used as kind of a derogatory term for people, right? Like, not just someone who has contracted this illness that we call leprosy, but it has all these other connotations because it has so thoroughly permeated our understanding. Um, and so we're trying to move away from that word and call it Hansen's disease more, but it's tricky, 'cause you still want people to know what we're talking about.

So I thought it would be useful. We mentioned briefly that that is for Gerhard Henrik Armauer Hansen, Dr. Hansen, we'll call him. And feel free— Justin, do you need to say anything about Hansen right now? Do you need to sing MMMbop?

**Justin:** No. I will restrain myself.

**Sydnee:** Do you need to— okay.

**Justin:** No, when you lay it out like that, you make me feel like a clown. I'm not a clown, Sydnee. Not a clown.

**Sydnee:** I know you're not a clown. I just figured you would need to do that.

**Justin:** No, Sydnee. No.

**Sydnee:** Okay, okay. I know you love Hansen.

**Justin:** I do love Hansen.

**Sydnee:** I know.

**Justin:** They're... I mean, one of the top brother bands, in my opinion, of three brothers, absolutely.

**Sydnee:** Better than the Jonas Brothers, or...

**Justin:** Uh, I don't want to start an absolute war here.

**Sydnee:** We can't do this on this podcast.

**Justin:** Yeah.

**Sydnee:** So we mentioned there was the Norwegian scientist, Dr. Hansen, for whom Hansen's disease is named. I thought talking a little bit about him and then getting into what's going on in Florida might help us sort of cement this name. Try to use it. Although I think for, gosh, I don't know how many decades to come, if you're going to call it Hansen's disease, you probably need to put in parentheses next to it, (the disease formerly known as leprosy), for people to understand, right?

**Justin:** That's the way we change language though, right? You kind of have to talk about both of them in concert for anybody to know what you're talking about. And then hopefully someday we can move away.

**Sydnee:** Um, and still, the bacteria, *Mycobacterium leprae* still sounds, you know...

**Justin:** Yeah.

**Sydnee:** Anyway, so, um, I thought it was interesting 'cause I thought, "Well, I'll read a little bit more about Dr. Hansen. Maybe that'll help cement it in my mind as well." And what I thought was most interesting is that he— there was a lot of controversy around his discovery of this bacteria, because if you think about it, we are talking about a disease that has been around... I mean, all of human history as far as we know it, right? Like, we have so many descriptions of, as we talked about, leprosy, and then what might not have been actual leprosy. But it was so part of culture that to finally be the scientist who said, "And this is what caused it," would be a big deal, would be something that could be controversial. And especially since prior to him actually naming the bacteria, there were a lot of beliefs, one, still, that it was some sort of, as we mentioned, like, curse. Something that you've been stricken with by some sort of omnipotent being perhaps, or by an evil source of something. It was very much tied to something that was, like, spiritual, and not an illness, not a medical condition. So there were still—even when we're talking to, like, the mid to late 1800's, even at this point there were still people who probably kind of believed that, even if they didn't want to say it out loud, who still felt that way. And even beyond that, the

predominant scientific view is that was genetic. There were hereditary factors involved. And so you couldn't get it unless it ran in your family. And that was the— very much, like, a scientific theory at the time. And this makes sense if you think about the fact that, like, 95% of us have a natural immunity to Hansen's disease.

**Justin:** Hm. Really?

**Sydnee:** Yeah.

**Justin:** Huh.

**Sydnee:** Most of us aren't going to get it.

**Justin:** If that was in the episode, by the way, it was nine years ago. I'm sorry. I might've forgotten.

**Sydnee:** Yeah, you may have forgotten that.

**Justin:** [laughs]

**Sydnee:** Um, and so you could see where, like, our— why do some people get it and others don't? And even to this day, the question, how is it transmitted? We cannot fully answer.

**Justin:** Really?

**Sydnee:** Yes. Which is scary, right?

**Justin:** That's wild, yeah.

**Sydnee:** We believe strongly that it takes prolonged person-to-person contact, and we think respiratory droplets are the most likely mode of transmission. Could physical contact also, like if you actually have lesions, could physical contact, prolonged physical contact, skin to skin, could that? Yeah, possibly. We like the respiratory droplets better, but maybe this too.

And then also armadillos are part of it, are? Nine-banded armadillos are a known reservoir. So somehow contact with an armadillo... maybe could be part of it?



So you could see, like, with a mode of transmission that isn't clear, with a kind of spread that isn't going to be as direct as, like, you're in a room with somebody with leprosy and you're gonna catch it, because more than likely you're not, you're immune.

Um, and in a family it's going to hit different people. It all would make it very difficult to elucidate.

**Justin:** Yeah.

**Sydnee:** So, Dr. Hansen specifically because he studied under Dr. Danielson, who was kind of his mentor, and he would actually go on to marry his daughter—this is like a theme, by the way, right? How often do we find this in these stories?

**Justin:** Yeah, that pops up.

**Sydnee:** Right? Um—

**Justin:** And also in Dr. Who, I mean, that has happened. So you tell me.

**Sydnee:** This is true, this is true. Um, so he studied under Dr. Danielson who was, like, the leader of scientific research on leprosy at the time. Um, and like I said, at this point there wasn't an infectious etiology. We didn't know yet. But Dr. Hansen devoted his life to kind of finding this, to taking pathological samples from patients with Hansen's disease and studying them, and studying them, and studying them, and looking for what is the agent that causes it?

Now, at this point, as we're getting into where he's doing his work, we understood Koch's Postulates. So, like, how do you prove that this bacteria or this thing we're looking at under a microscope, whatever it is, bacteria, virus, whatever. How do you prove that it causes this disease?

I mean, you have to find it in someone who's sick, and then you have to put it in someone who isn't sick, and then they have to get sick with the same clinical syndrome, and then you have to get a sample from them and look under a microscope and find the same thing.

**Justin:** And in all likelihood they probably won't get it. Right?

**Sydnee:** Yes.

**Justin:** 'Cause they're probably immune.

**Sydnee:** And this is also a very slow growing, slow multiplying bacteria, so it's really hard to culture. That's another big hurdle when you're trying to prove, like, what causes it is, like, you isolate it from tissue and you put it in a petri dish and you grow more of it. You've probably seen petri dishes with little colorful dots all over them.

**Justin:** Yeah.

**Sydnee:** Those are bacterial colonies, typically, or fungal or whatever. And in order to do that they have to multiply and grow. Well, if it's super slow you might assume it didn't grow at all.

**Justin:** Oh yeah.

**Sydnee:** You know? And so it was really hard. And plus you have to have the right medium, the right food, so to speak, for whatever you're trying to grow.

So all of this had not been done, and he was trying to do this. Now, he didn't have great skills at first in staining. Like, I mean, it's a very specific set of lab skills. To know, like, what kind of stains to use to make different things show up on a slide. Um, what will they— how will they react to that? Like, you don't want to destroy whatever you're trying to do. How will the tissues react? Like, it's a very specific set of skills, and at that point we were still developing them.

So actually, he tried for a while, it wasn't working. He actually went and, like, did a whole extra course in pathologic anatomy and all this to try to figure out, how can I improve my histopathology skills? And to go back and then again try to stain all these slides of tissue and figure out what... what is it?

He finally found a rod-shaped organism... in the tissues. He still wasn't able to really stain it well. Um, but he did find an organism, and he said "This is— I'm finding this little rod in every single sample. This has gotta be it."

**Justin:** I love the idea of him showing that around to people like, "I know, I know, I know. The staining's bad. I get it, I get it. Please don't say anything. I get it. I know. I know. But... look at this."

[pause]

**Sydnee:** "I found it. It's a rod."

**Justin:** "I found it. I found it. I'm sorry it doesn't look great."

**Sydnee:** [simultaneously] "It's a little rod. It's a little rod."

**Justin:** "I tried my best."

**Sydnee:** "I'm gonna name it after me." He didn't actually name it after him. Um, but anyway, so he found this, and he published, and he talked about it. But it didn't— like I said, he didn't satisfy all of Koch's Postulates. He didn't grow it. He didn't stain it. He didn't grow it. He didn't give it to anybody and then reproduce it, you know? So, like, all of that other stuff to say definitively, "This is it," he wasn't able to do.

Now, there was another young scientist, a German bacteriologist named Albert Neisser, who if you are in the scientific community, Neisser, Neisseria, he would later go on to find Neisseria gonorrhoeae, the causative agent of gonorrhea. So, I mean, pretty famous, right?

**Justin:** I mean, that's—

**Sydnee:** Like, don't you get excited when you hear these names?

**Justin:** I get excited. I do think it would be great if we stopped calling it leprosy and started called it Neisser disease. [wheeze-laughs] You know, the Neisser name for leprosy.

**Sydnee:** Well, we already have Neisseria.

**Justin:** You know, the ni— but listen to what I'm saying. It's very good. The nicer name for leprosy...

**Sydnee:** Is Neisser. I gotcha. I gotcha. Uh, well, but this would be hugely controversial. Because basically, Dr. Neisser studied under Dr. Hansen and said, like, "Hey. I'm a bacteriologist. I've done a lot more staining. Do you want me to try to stain it?" Basically. "Can I have these tissues and go stain it?"

**Justin:** Okay. We all know that guy.

**Sydnee:** So he took the tissues back to his lab—

**Justin:** And it is always a guy. [wheezes]

**Sydnee:** He was successful in like staining, and then that was a way to learn more about the bacterium and eventually allow it to be grown and cultured, and all this other stuff was done. And so he published all this later, and got the credit for it. And eventually it was— I mean, originally it was called Nizer's— Neisser, Nizer— N-E-I-S-S-E-R, in case you're— N-E-I-S-S-E-R. So Neisseria is the—

**Justin:** In case you're transcribing this.

**Sydnee:** Well, I'm— [laughs]

**Justin:** Somebody is!

**Sydnee:** Neisser, Nizer, Neisser? Anyway. Uh, it was originally called Neisser's bacterium... first.

**Justin:** Hmm.

**Sydnee:** Because he's the one who published about and was like, "I stained it!"

**Justin:** Yeah. "Stained it!"

**Sydnee:** "It's mine. I did it. I did it."

**Justin:** "Stained it badly. I get it."

**Sydnee:** And Hansen got really mad, and then there were a bunch of people in Norway who were defending Hansen and were like, "No! Hansen did it first!"

**Justin:** "Just badly! [laughs] He's just bad at staining, it's not his fault!"

**Sydnee:** "And you just stole his work, basically."

**Justin:** Doesn't sound nicer.

**Sydnee:** But the whole thing was complicated because at that time— and this is always— man. We tell these stories about these medical people from history, and then you hit this kind of roadblock. The reason that Hansen—

**Justin:** [simultaneously] One of 'em was a Nazi.

**Sydnee:** Huh?

**Justin:** One of 'em was a Nazi. No?

**Sydnee:** I— I don't know about that, but— no, I don't— I'm not saying they're Nazis. Um... but what I will say is that when Hansen was desperate to try to prove, because he realized that until he proved all this extra stuff, the Koch's Postulates, until he did that he wasn't really gonna get full credit for it. In desperation, he tried to inoculate a woman's eye.

**Justin:** What?!

**Sydnee:** With some of the material that he got from a leprosy lesion.

**Justin:** Eugh!

**Sydnee:** Yeah. So he tried to, unknowingly— I mean, obviously this person did not give permission. He tried to give a woman leprosy.

**Justin:** Hansen?

**Sydnee:** Yes.

**Justin:** But we're gonna call the disease after him?

**Sydnee:** We still call the disease after him.

**Justin:** I'm gonna— hey, everybody! I'm sick of leprosy. Sorry!

**Sydnee:** He faced legal action for it. It was, um... his medical career was obviously sidelined for a while. I mean, he bounced back! He was able to continue practicing after that.

So, anyway— and, I mean, I will say, like, I don't know that Neisser is the better option, because as I was reading a little bit about him, he did some studies on syphilis later with people who were sex workers that were also without permission and unethical, so. Anyway.

**Justin:** [sighs] All my heroes let me down. [laughs quietly]

**Sydnee:** I know. Well, I mean, the— the history of medicine, and anyone who is marginalized, depending on the time and place we're living in, is terrible, and we know this repeatedly. I think it's important when we talk about these sort of scientific heroes that we name things after that heroes be in, um... quotes?

**Justin:** Scare quotes? [laughs quietly]

**Sydnee:** Yes. Uh, so anyway, he went on to get the credit eventually for Hansen's disease, and that is where we get the name Hansen's disease. And, I mean, Neisser got gonorrhea, so I don't know what he's complaining about— I mean, he didn't get gonorrhea.

**Justin:** Maybe. You don't know.

**Sydnee:** Well, I don't know if he got— actually I don't— oh. I don't know. When you read about what happened to them, um, it just says Neisser died of sepsis, so I don't know what—

**Justin:** Hey, you got 'em, Syd. You brought 'em down.

**Sydnee:** And Hansen died of, uh— he had a stroke, and then I think he had a heart attack. Both of those were probably related to the fact that he had syphilis, so.

**Justin:** Syd just can't be happy until she gets to people's deaths. She has to follow 'em all the way down to the grave.

**Sydnee:** There's where Hansen's disease comes from. What's the story in Florida? Okay, so.

**Justin:** For a panic inducing second you were looking at me, and I thought you were expecting me to tell you.

**Sydnee:** No.

**Justin:** I was— I had a real palpitation there.

**Sydnee:** I know the story in Florida.

**Justin:** Okay, good. [laughs quietly]

**Sydnee:** This just came out. I was reading the CDCs emerging infectious disease case report of leprosy in Central Florida, USA, 2022, and this just came out literally this month. So, cases of leprosy have been increasing in Florida.

Now, what we have seen overall worldwide is a downtrend in the numbers of cases of leprosy, 'cause it still exists in different parts of the world. We don't see a ton of it in the US. We did see some number, around 200-ish cases a year, most of the time from people who immigrated to the US from somewhere else where it's endemic, right?

What is concerning, and I don't want to use the word "interesting" 'cause that always sounds bad in medicine, to say something's interesting when it's an illness. What's concerning is that these cases in Florida, and specifically the case report that they detail in this that was just issued by the CDC, do not—they are not in people who have emigrated to Florida.

**Justin:** Hmm.

These are in people who live in Central Florida. Brevard County is where most of them are taking place. There are other counties, but that is where most cases have been. Um, there have been 15 so far this year, and it looks like they're catching leprosy, Hansen's disease— I'm gonna try to use Hansen's disease. Let's try to just use that. They're catching Hansen's disease in Florida. They're getting it in Florida.

We have wondered if Hansen's disease could be endemic, meaning you can catch it natural— like, it occurs naturally there, in the Southeast United States for a long time. This has been questioned, because as we're seeing this downtrend worldwide, and this downtrend in people who immigrate to the US, we're seeing a slight uptick in cases that seem to be endemic, so this has been questioned.

Also, the nine-banded armadillo, anywhere where it is, it can carry the bacteria, so perhaps.

**Justin:** [whispering] Just get rid of those things.

**Sydnee:** We've also—

**Justin:** Just get rid of those.

**Sydnee:** Well, I mean, honey, I don't have a vendetta against armadillos. Just mosquitoes.

**Justin:** Well, so you think it's very—

**Sydnee:** Maybe ticks.

**Justin:** [whispering] You think it's very cool and chill that they give people Hansen's disease?

**Sydnee:** No, I don't think it's very cool and chill. But I don't think we— well, we don't know, because in this case specifically they asked this guy, "Did you have a lot of contact with an armadillo?" And he said no.

**Justin:** And he said "I don't remember."

And they're like, "How could you not remember that? I would definitely, definitely remember if I'd had extensive connections with an armadillo."

**Sydnee:** They could not find any risk factors that we kind of think of as the risk factors for Hansen's disease. And they found it recently, too, in the UK in a certain kind of squirrel, a certain kind of red squirrel or something. And it's been eliminated from the UK for a long time, so then it just—we didn't think there was a reservoir outside of humans until we found the armadillos. Now maybe it's in squirrels. And so now that opens the question, has it always been in other animals that we just didn't identify? Or a similar zoonotic infection, a similar infection that occurs in animals that can be transmitted to humans? Is there something like that that we've been missing?

**Justin:** If I was looking for a sneaky animal that is sneakily hiding diseases, I don't think, to be fair, that the armadillo, the humble armadillo would be high on



my list of suspects. He seems very unassuming. And I'm sorry I talked about eradicating him.

**Sydnee:** Please don't talk about that. But this is— I mean, it's concerning, because if it is endemic and people are just going to get it, and we don't really understand completely how it's spread, um, we need to figure out how and where is it coming from.

I will say, please don't be alarmed at this, because like I already mentioned, most people are never gonna catch Hansen's disease, and it does seem to take prolonged contact of some sort with whatever the source of it is. It's not something that you get from— it's not like COVID. You don't get it from being in the same room with somebody for a few minutes, right? You don't get it from casual contact, from shaking hands or hugging or sharing, you know, toilet seats or whatever. You know what I'm saying?

**Justin:** I'm with you. Mm-hmm.

**Sydnee:** So I don't want this to be something that people freak out about. Um, but it definitely is new. It's definitely different. And my bigger concern is just what is this telling us? What is this symptomatic of?

And it's a couple of things, right? One, we knew that these sort of neglected tropical diseases, which this is considered, Hansen's disease is one of the neglected tropical diseases, um, we knew that there was a possibility that they would spread more with climate change. We've known this for a long time. This is in the list of diseases that is likely to be impacted by climate change, and now we're seeing more cases in the Southeast US, possibly indicating that it is endemic there. So that— I mean, it's just— it's playing out what scientists have been warning us for a long time is gonna happen if we don't do something. Um, if we don't make bigger strides, not necessarily as individuals, but as a society, as a government, as corporate entities, towards addressing climate change.

And then there are other things like I think that Florida specifically has been called out recently for their sort of— like, their public health infrastructure is not as robust, perhaps, as it could be. Is that a diplomatic way of saying it?

**Justin:** It's very diplomatic.

**Sydnee:** Um, and that perhaps they are taking some unscientific views of how to address things. And we know that historically rises in cases of Hansen's disease have been associated not just with, like, socioeconomic situations, which they definitely have, but also they have found it with areas with lower education levels. So basically, like, if we're not educating the public about this, if we're not— if we don't have a robust public health system that can contact trace, figure out where things are coming from, help people understand the risk, help people know what to look for so they can come in— 'cause this is curable. It takes a long time. You have to take three medicines and it can take a year or two, but it is curable. So you can get treatment, if you know that's what it is.

**Justin:** Right.

**Sydnee:** Um, I think these are the concerns around it. Not so much, like, if you go to Disney you're going to get Hansen's disease. I'm not saying that at all. But what I'm saying is, we need—

**Justin:** But you're not not saying that.

**Sydnee:** No, I'm saying we need to have a robust public health infrastructure in every state and every place on Earth. We need to—

**Justin:** Even the happiest place on the Earth. [laughs quietly]

**Sydnee:** — address climate change more vigorously, if we actually care about these things. And I do think it's important, the CDC has said travel to Florida is now something to consider, if someone presents to you— if you're a healthcare professional and someone comes in and you're looking at them and thinking, "Could this be Hansen's disease?" A question you should ask is "Have you traveled to Florida?" Especially Central Florida. So that's my takeaway. I— again, I don't think this should alarm everyone, except that there are things we could be doing as a society [laughs quietly] that our government could be doing, that Floridians' government could be doing to address these things and possibly prevent it. 'Cause these are just— I mean, like, all of these cases, malaria and Hansen's disease— and, I mean, there will be more. There will be more. It's not just about the weather. It's not just about natural disasters. It is about infectious diseases and the spread of illnesses. Um, and we need to do more.

**Justin:** We need to do more.

**Sydnee:** Or pressure government officials to do more.

**Justin:** That's gonna do it for us this week on Sawbones. Thanks to The Taxpayers for the use of their song, Medicines, as the intro and outro of our program, and thanks to you for listening. We won't be here with you next week. We're going to be on vacation. But we'll be back with you right after that, so stay tuned, I guess. That's gonna do it for us for this week. 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]

[chord]

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