Sawbones 265: Rubella

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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]

Sydnee: [quietly] Are you gonna quit burping, or is that gonna be the whole show?

Justin: [holding back laughter] Hello, everybody, and welcome to Sawbones: a Marital Tour of Misguided Medicine. I'm your co-host, Justin McElroy!

Sydnee: And I'm Sydnee McElroy.

Justin: So glad we were runnin' tape on that one, Syd!

Sydnee: Sorry! I just wanted to know if myself and our listeners were going to have to put with that for the entire episode, or was that just special for me, right before?

Justin: The burping you mean.

Sydnee: Yes.

Justin: I am terribly sorry about it. I am getting over a cold, as you know—

Sydnee: That has nothing to do—no, you had—your allergies were bothering you yesterday and they're not today. You're not getting over a cold, and that has nothing to do with burping.

Justin: I had a fever, ma'am.

Sydnee: You didn't.

Justin: I did! It was 100.5!

Sydnee: Okay, well, you did, then.

Justin: What's up? Oh, you didn't know? What makes a fever?

Sydnee: Well, I—honey—

Justin: Dr. McElroy!

Sydnee: No, I didn't know that it got that high. You checked your temperature like, 40 times yesterday. I could not keep track of every—

Justin: Of those 40, if you were chart it on a chart, of those 40, one of them was above 100.4. It was 100.5, so that did get me into febrile territory.

Sydnee: Yeah.

Justin: Uh… [sighs] boy, this energy—

Sydnee: Technically 100.4 is a fever, so that's all—

Justin: That's what I said! I mean—

Sydnee: You don't have to be above it. 100.4 works.

Justin: Now you're getting into semantics.

Sydnee: No, I'm just saying—and also, again, you took your temperature so many times.

Justin, when he's sick, will sit on the couch and just take his temperature every few minutes to just see how things are going. [laughs]

Justin: I was very—I thought I was very brave, yesterday.

Sydnee: [laughs]

Justin: I like, helped with the kids the whole time and I didn't get to—I wasn't a baby about it til they were asleep. That's true, right?

Sydnee: That's true.

Justin: I was try—I was really trying, even though it felt bad.

Sydnee: He was a brave little toaster.

Justin: All right, then. Fine. If you're not gonna give me any, uh, uh… poor Justin.

[sad trombone sound effect]

Sydnee: You're fine today!

Justin: Sad trombone for me. Okay, anyway, uh, what are we—what are we talking about this week, Syd?

Sydnee: Well, as promised, I wanted us to round out the R of the MMR this week.

Justin: So far we have things that make you go "Mm," and now we're gonna have things that make you go "Err…" [laughs]

Sydnee: Or "Mmerr…"

Justin: "Merr." [laughs]

Sydnee: That's nothing.

Justin: [coughs]

Sydnee: That's nothing.

Justin: That's nothing.

Sydnee: Uh, yeah. So we have talked about measles. A long time ago, not recently. And then we stopped there, and then we remembered that we forgot—

Justin: Our series. Our series had a brief, uh, couple year hiatus, yeah.

Sydnee: A two year hiatus or something? And then we talked about mumps, and now it's time to talk about rubella! Which I think is the one, maybe—

Justin: Is the prettiest name, easily. Like, if it weren't a disease, I could see that as a name for a little girl or boy, for sure. Rubella?

Sydnee: Do you know what rubella means?

Justin: [pauses] Pretty—

Sydnee: It's from the Latin.

Justin: —re—r… pretty re—red. Red pretty.

Sydnee: You're close. Little red.

Justin: Little red.

Sydnee: Little red.

Justin: Little red.

Sydnee: Yeah. Uh, but yes. And I would say rubella is probably the heart of the triumvirate that people know the least about, maybe, on average? And I mean, some people certainly do, but on average.

Justin: Probably a good thing, right? I mean, any—

Sydnee: Well, goodness knows I wish—I wish they were all diseases of antiquity at this point.

Justin: Ah, yes.

Sydnee: 'Cause that would be good, but, you know, you gotta get those vaccines. Uh, thank you to everybody who recommended this. Darcy, Kate, Ashley, Christina, Rory, Greg, Marilyn, and Michelle.

Uh, rubella was first described in like, the mid-18th century, and it's one of those… so rubella—I'll get into what it looks like, but it causes a rash, and so when you get into things that cause red spots, the timeline of when exactly we

figured it out is always kind of shaky, because a lot of things caused red spots, so—

Justin: Chicken pops.

Sydnee: Mm.

Justin: Sorry, I said pops. Chicken pox, um…

Sydnee: Measles.

Justin: Kool-Aid accidents.

Sydnee: [pauses] Yeah—s—yeah?

Justin: You blow in too hard with the straw—[wheezes] and it blows back—don't tell me that our daughter has not—like, she had one yesterday from candy necklace! Just like, coating her face with red. I thought she was having an allergic reaction to the candy necklace. It turns out, she was having a chromatic reaction to the candy necklace, and it's just as designed.

Sydnee: Kids get red spots for lots of reasons.

Justin: Yes.

Sydnee: And the thing is, a lot of the time these rashes, like, as physicians we'll look and go, "Hmm, appears to be a viral exanthem," which means "I don't know, they got a rash. It's probably a virus. It'll be fine." And most of the time it is. Most of the time it's not a big deal.

And that was kind of the way Rubella was probably regarded, and so it—when you find diseases like that, it takes a while to get them actually named and distinguished, because there were probably cases of measles that were actually rubella, but you're just—if you're spotty, who knows?

Um, and in fact, by—it was 1814 that George de Maton first figured out that, "You know what? There's measles, there's scarlet fever, and then there's this other thing." Which, at the time, was just called German measles.

Justin: Hmm. I'll bet they weren't crazy about that!

Sydnee: Because a lot of the, uh, a lot of the physicians who were figuring this out and distinguishing these from each other were all German, and so they just started calling it German measles.

Justin: What was that disease we talked about a while ago, where every country was naming it after… another country?

Sydnee: Was it syphilis?

Justin: No… uh, I don't remember. Someone'll tweet at me and let us know.

Sydnee: Oh, I forget which one it was.

Justin: You remember what I'm referring to? It was the disease where like—

Sydnee: Yeah, I know. Wherever they was, they just named it after the—yeah.

Justin: After whatever country they didn't like. [wheezes]

Sydnee: So, initially rubella was just called German measles, because it looked sort of like measles. It was seen to be like, a milder form of measles, generally, but it kind of seemed similar. It wasn't until 1866 there was an outbreak in India, and Henry Veal, who was an English Royal Artillery surgeon, starting calling it rubella, and that's where we finally see the word "rubella," which, as I said, meant "little red," comes from.

By the end of the 1800s, people figured out, "Yes, this is its own thing. Rubella. It is not a German form of measles," although you will still hear people refer to it as German measles. I don't know you ever have.

Justin: Really? No, I've never heard that.

Sydnee: Uh, my mom, I remember when we were talking about this once said, "You mean German measles."

Justin: Whoa, no! You don't!

Sydnee: Well, I mean, it's not an offensive thing. It was just—that's what it was called for a while. Uh, and so there were a lot of… by the end of the 1800s,

everybody was like, "Yes, this is rubella. It's its own thing. It's not a form of measles. Yes, it causes red spots, and we know which viru—or, we know that it can be passed along."

Um, by the 1930s, there were 2 scientists, Hiro and Tasaka, who took filtered nasal washings…

Justin: Filtered nasal washings. What could that be?

Sydnee: So, you squirt some water up a nose, and let it come back out and fall into like, a cup or whatever, some sort of collecting device. And then you filter that.

Justin: Okay?

Sydnee: I guess to get like, chunks out or whatever.

Justin: [dry heaves]

Sydnee: And then—no, they were passing it through a filter to see if it was a virus. The filter—the size of the filter can help you determine if something is a virus or bacteria, 'cause viruses are smaller, so—

Justin: [incredulously] Really?

Sydnee: Mm-hmm. So if it pass—I mean, we're talking—we're not—you're not thinking of filter in the way these filters look.

Justin: Okay.

Sydnee: They're incredibly small filters. Incredibly tiny, tiny, like, holes in the filters.

Justin: Okay.

Sydnee: And so then you pass it through a filter with very small holes, and if then the stuff that you get, if you give it to another kid and the kid gets sick, then it's a virus.

Justin: Hmm, okay. I see what you're saying.

Sydnee: Does that make sense?

Justin: Yeah, yeah, yeah.

Sydnee: The only thing I found interesting about this is that they were definitely giving it to other kids.

Justin: Take that, kids.

Sydnee: And then seeing if they got sick. And I kept trying to dig into this research to figure out like, wh—how, wha—where, who?

Justin: It's one of those you can only get once, right?

Sydnee: Well, and… well, yeah, but still. Um… still. [laughs]

Justin: Yeah, it's not very—

Sydnee: This was—this was research!

Justin: [coughs] Listen, no argument from me. It's not—

Sydnee: And they're kids! You don't usually see this.

Justin: I'm not saying that it was nice or pretty, but I'm saying those hero kids deserve to be recognized for willingly signing up for that government program that gave them, I don't know, probably in those days a hoop and a stick? Something like that, to let them get measles!

Sydnee: Not measles.

Justin: German measles, fine!

Sydnee: Yes, German measles, rubella. Yeah, and I mean, it's fair to say that like, yes, for—it is typically a very benign course in terms of diseases, but still.

I kept trying to find this, and I found this exact same reference, like, "And then they passed filtered nasal washings on to other children and they got sick and

they proved it was a virus," and I'm like, "But tell me more!" [laughs] "This is the beginning of a story, not the end!"

I don't know. I'm sure there's a very interesting, maybe upsetting story there. Maybe that's why it's hard to find.

Justin: Yeah, let's look away.

Sydnee: So, as I have alluded to, rubella is a virus. Uh, it is typically mild, and you can get it from people either through direct, like, snot, you know? Or sharing of food and drink, like, saliva. Sharing saliva.

Justin: Trumpet.

Sydnee: Making out, you know, that kind of stuff.

Justin: Sharing your trumpet.

Sydnee: Sure, sharing your trumpet. Also from droplets, so like, if somebody sneezing or coughing or blowing their nose or whatever nearby—

Justin: They cough into their trumpet, and then they let you use it.

Sydnee: [laughs quietly] So it's not—that's not—anything that's spread that way, through droplets, is not terribly difficult to get, you know? It's easy to spread. Um, you get the rash, which is what we call like, a maculopapular rash. I was trying to describe this to Charlie the other day. I taught her the word—

Justin: You were trying to describe it to Charlie?

Sydnee: Yeah, I taught her the word maculopapular.

Justin: 'Kay.

Sydnee: Um, which was—ask her to say it.

Justin: A unique—a unique child.

Sydnee: It's—it's fun. Anyway, so it's like, a red, bumpy, but not all bumpy rash. Some of 'em are red flat spots, and some of 'em are red bumpy spots. That's it.

You get enlarged lymph nodes. You're gonna get a fever. Usually the rash is gonna start on the face. That's always helpful when we're trying to figure out all these various spotty things, to know where the rash starts and what direction it goes. That can kind of help us figure that out.

Um, in about a day the rash is all over you, after its starts on the face, and it lasts around 3 days. It can be a little bit longer, a little bit shorter.

Justin: Is it itchy?

Sydnee: Uh, I don't believe it is particularly itchy.

Justin: You guys have a technical term for itchy?

Sydnee: Pruritis. Pruritic.

Justin: Pruritic?

Sydnee: Pruritic, itchy.

Justin: Itchy's good, though. You all should've stuck with itchy.

Sydnee: It doesn't sound as… you know.

Justin: Insufferable?

Sydnee: [laughs] Thanks. Uh, anyway… so, for most people—actually, this is kind of interesting. So the lymph nodes that get enlarged… I don't know. I think this is interesting.

Justin: [snorts]

Sydnee: Um, can be the ones behind your ears, or the ones at the back of your neck, like at the base of your skull in particular can get enlarged. I just think it's interesting to—those are not lymph nodes you think of very often as like, "I'm sick," and then you feel behind your ear and you got enlarged lymph nodes behind your ear and then on the back of your head. I don't know.

Justin: No, it was good! [clears throat] I just didn't—

Sydnee: [quietly] Sorry.

Justin: —I don't think I have all the context I need to make that interesting to me.

Sydnee: A quarter to a half of infections are asymptomatic, so it's not—so for like, a lot of people, it's not a big deal. You get sick, you get better. Nobody bothered to figure out what you had, 'cause you were better almost before it mattered.

Justin: Okay.

Sydnee: There are serious complications, though. In people who get sick who are not pregnant, they can get things like arthritis. There are very rare complications where like, the numbers of certain parts of your blood, the platelets, which help with clotting, can drop. You can become very—those will get very low as a result.

You can get infection—or inflammation, I should say, inflammation of the brain. These are very rare complications. They do happen, and so it's better not to get it—

Justin: Right. Preferable.

Sydnee: But for most people, this was considered just like, one of those normal diseases of childhood, the same way that like, people of our generation probably think of chicken pox. Everybody just got rubella, and then they got better, and that was it.

Justin: Isn't that wild, to think that the next generation won't—

Sydnee: They don't. Yeah, already they don't think of chicken pox that way.

Justin: Yeah.

Sydnee: Uh—

Justin: Did Rileigh get it? Did Rileigh get chicken pox?

Sydnee: No.

Justin: Was she even old enough for the vaccine?

Sydnee: No, she got the vaccine. So, when… the problem with rubella, the big problem, 'cause all this… a lot of people will argue that if you hear this, and this is what you hear some people who are against vaccines say is like, "But what's the big deal?"

Chicken pox is always the example. They don't use rubella very often, 'cause I don't think most people remember it as well as they do chicken pox, but you might hear that and think, "What's the big deal about rubella? Why do we bother getting a vaccine if it's just a no-big-deal thing?"

Because, when rubella infection happens while a person is pregnant, to the pregnant person, the results for the baby can be very serious. This is why rubella is a big deal, and something to worry about, is that if you become infected with rubella, especially during the first trimester of your pregnancy—anytime can be a problem, but the first trimester is the worst—you can have very serious consequences.

One, you could miscarry, so you could lose the pregnancy. And then two, you can have severe birth defects if you don't miscarry. The most common things you'll see are congenital cataracts, so the baby is born with cataracts. Hearing loss or hearing impairment. If you get rubella in your first trimester, you actually have an 80% chance of miscarriage.

Justin: Oh my gosh. Ugh.

Sydnee: And then almost—or—I'm sorry, miscarriage or congenital rubella syndrome, so one of the two happening. I misspoke. So, 80% chance that either you'll lose the pregnancy, or there can be these severe birth defects that occur. And in addition to hearing issues and visual impairment, you can also have delayed development, and kind of global issues as a result.

So it is a—it's a severe—

Justin: Kind of like Zika, then. It's not a big deal to get it, but it is a big deal if you get it while pregnant.

Sydnee: That's a good corollary. I think everybody—yes, that's a good way to think about it, 'cause Zika everybody is more aware of since it was more recent, and for you, as someone who is not, and I don't think will ever be pregnant… for you, personally, Zika would not be a big deal, but had I gotten it while I was pregnant it could've been a big deal for our child.

So, this is why it matters, is because we want to prevent congenital rubella syndrome, known as CRS. Uh, we figured out… this is kind of interesting. We figured out that CRS was an issue, because before you knew about and made that link with congenital rubella syndrome—

Justin: It wouldn't be—

Sydnee: Why would you even bother doing anything about this, right? Like, we figured out, "There's rubella, we gave it to some kids, yay!" And we move on.

Justin: That'd be hard to figure out too, right? Because you get sick, and then you're better long after—I mean, like, the baby—you may not even connect it at first.

Sydnee: So—exactly, and it took a while. The link was established by an Australian ophthalmologist named Sir Norman McAlister Gregg. Uh, he was seen… he was actually a pediatric ophthalmologist, and he noticed—he was seeing patients.

It was around the start of World War II. He was seeing a lot of patients with congenital cataracts, babies born with cataracts, which is not—I mean, it can just happen, unrelated to rubella, but it's uncommon, and he was seeing a large number of patients, and that seemed unusual.

That's not usually what he was, you know, experiencing, and so he started trying to think, like, "Why all of a sudden am I seeing so many babies born with cataracts? What could be going on?" And he actually overheard some of the moms in the waiting room talking about the fact that they both had rubella while they were pregnant.

Justin: Hm.

Sydnee: And so he overheard this and he started thinking about like, "Could that mean anything?" He actually—I think he asked some of the other moms, and he started noticing a trend.

So he did a study, and he found that 68 of 78 cases of congenital cataracts, the babies had been exposed to rubella in utero. So that seemed like a pretty, pretty strong link. And this matched with the fact that there had been an outbreak of rubella in some of the Australian army camps in 1941, and then of course when everybody would go home, they would spread that to their families and to the communities.

So, he published a paper, initially—while in Australia this was kind of embraced as, "Oh, this makes sense! We gotta get on top of this, now we figure this out." It took a while for this to like, spread to the rest of the world. Initially, a lot of places outside of Australia, the doctors like, "I don't know about that data. I'm not sure. This doesn't make sense. I've never heard anything about this."

I feel like this is anybody somebody makes a brilliant discovery. A lot of people have to say "No."

Justin: [sighs] Is it the worst thing in the world, though?

Sydnee: I mean, it's good to be skeptical, but he had pretty decent data. And I say that he had decent data because his research was basically gone over by a mathematician, professor Oliver Lancaster, who then published a paper saying like, "Yeah, this looks pretty good!"

Justin: Yeah!

Sydnee: "I think it's pretty good!" And then everybody went, "Okay… well, I guess if Oliver says so…"

Justin: That—at that point it's like, "Well, everybody—let's all agree just to not get rubella anymore, I guess!"

Sydnee: Well, that's the problem, right? So now—and maybe that's—maybe there's more—

Justin: It's super scary. Another thing we have to be super scared of. We just also—[laughing] we're at war with Germany! It's a cool few years."

Sydnee: That's—and you gotta imagine—

Justin: Oh, the A-bomb's almost done! Cool!

Sydnee: [laughs] You gotta imagine this was a very—maybe that would even increase resistance. Humans don't like to hear things that are bad news—

Justin: Right.

Sydnee: And so we tend to not embrace it as quickly if it's bad news, and when they're telling you, "Okay, it turns out rubella, which we thought was this no-big-deal, you get sick for a few days, whatever, miss a day of work, miss a day of school, you get better no-big-deal infection, can have these really severe consequences. Also, we have no idea what to do about it."

Justin: Hm.

Sydnee: "It's hard to distinguish from other viral illnesses. We don't know when you have it. We have no treatment for it. We have no cure for it. We have no way of preventing it. So good luck!"

Justin: [quietly] Yeah.

Sydnee: So, uh, even after they figured this out, nobody knew what to do. There were—this reminded me again of chicken pox. Some parents started having rubella parties, so if a kid in the neighborhood would get rubella, they would invite all the other kids over, especially anybody who could become pregnant. They would invite all of them over to get rubella. I don't know. That usually involved like, sharing lollipops and stuff, I think?

Justin: Gross.

Sydnee: Yeah, gross. But the hope was that you could get everybody to get rubella and get over it while they were young, and so that then when they became older if they became pregnant, they didn't have to worry, 'cause they were already immune.

So they did things like that, but there was no real way to prevent it, other than that. Uh, until—

Justin: So how did we—yeah, tell me! I'm ready.

Sydnee: Until…

Justin: Go ahead! Do it! Drop it on me!

Sydnee: Well, I'm gonna tell you after the billing department.

Justin: Aww, Sydnee! No!

Sydnee: You already know it's gonna be vaccines.

Justin: Sydnee!

Sydnee: You already know I'm gonna talk about vaccines! Let's go.

[theme music plays]

Justin: Folks, our first sponsor this week is Quip! Your teeth are dirty. I don't know how to tell you—

Sydnee: Hey!

Justin: Sorry, Syd.

Sydnee: I brush so much.

Justin: But you don't brush with Quip. Well, you do, but pretend you don't—

Sydnee: I do. [laughs]

Justin: Let's pretend you don't brush with Quip. Well this toothbrush is gonna offer you sensitive sonic vibrations and a built-in two minute timer that lets you know how long that you need to brush.

There's nothing more excruciating than the time you spent waiting for that tooth brushing session to be over, and now you know that you won't have to go a second past two minutes.

But the big problem with tooth brushing, among… you know, there's not doing it, but other than that, the big problem is, you wait too long to replace your head. Sydnee, you are perhaps the biggest offender. You use your toothbrushes until they are but a feather duster.

Sydnee: I just like to really get my money's worth out of a toothbrush.

Justin: Rather than brush the tartar away, they become so sensitive that they offer tenderly worded eviction notices, asking the tartar to vacate her teeth at their earliest convenience. But not with Quip!

Quip is one of the first electric toothbrushes accepted by the American Dental Association, but more importantly they're gonna automatically deliver the brush heads on a dentist-recommended schedule, every three months, for just 5 bucks!

So those same dentists that approved it are also approving this time of 3 months. That's all you need to spend with a Quip head, and then they are going to send you a new one for 5 bucks.

Sydnee: Not the dentists themselves. I don't think they're—

Justin: The dentists don't make the toothbrushes.

Sydnee: They don't make it or send it to you, they just approved all of that.

Justin: Approved, I should say—so, Quip is backed by over 20,000 dental professionals. It starts at just $25, and if you go to getquip.com/sawbones right now, you'll get your first refill pack for free. The Quip electric toothbrush. That's your first refill pack for free, at getquip.com/sawbones.

Sydnee, can I ask you a personal question?

Sydnee: Sure, Justin.

Justin: What do you love about Stitch Fix?

Sydnee: Well, the main thing I love about Stitch Fix is, I'm not a big shopper. I don't like to go to the mall and go through stores and look through racks and try things on, and I'm not very good at picking out clothes for myself. But I know what I like when I see it, and Stitch Fix saves me all that trouble by picking out—

a professional stylist picks out clothing tailored to my likes and dislikes, and also shoes and accessories, if I want those, and sends them to me, to try on at home when I'm feeling good. When my hair is done the way I like it—

Justin: And we didn't just eat pizza.

Sydnee: We didn't—yeah, exactly! Exactly. And I really love that. And I, right now, am wearing a sweater from Stitch Fix that is my favorite sweater now, and my jeans are from Stitch Fix, and they are also now my favorite jeans, so I can vouch for the fact that, um, once your stylist gets to know you, they can really find clothes, shoes, and accessories that will fit your body, budget, and your lifestyle!

Justin: So folks, get started right now at stitchfix.com/sawbones, and you'll get an extra 25% off when you keep all the items in your box. That's stitchfix.com/sawbones to get started today. Stitchfix.com/sawbones!

Sydnee: So you wanna hear about vaccines?

Justin: Always, Syd.

Sydnee: Always. So that's what we're really—that's the hero in this story, is the rubella vaccine. So, we didn't know how to treat it. We didn't know—it was hard to diagnose. The best way to take care of something like this, a viral illness that spreads rapidly and there is no treatment for, is to prevent it on the front end. Um, and this became especially important during what we now know was the last major rubella epidemic, although you have to assume nobody knew that at the time.

Justin: Nobody called it that!

Sydnee: Nobody called it that, but it turned out—

Justin: "There it is, folks! We're in the middle of the last major…" kind of like people calling it World War I. Like, "Oh no, what happens after this?"

Sydnee: "Oh, no!" [laughs] So from 1964 to 1965 in the US, it is estimated that about 12 and a half million people got rubella. Um, and again, the consequences of that are that 11,000 pregnant people lost their pregnancies as a result of rubella. 2100 newborns passed away from rubella, and there were 20,000 babies

born with congenital rubella syndrome, from that last major epidemic, 1964 to 1965.

In fact, I thought this was an incredible statistic. 1% of all babies born in New York were affecting by rubella. Uh, so scientists were already working on a way to prevent it, but I think this epidemic probably really accelerated the speed at which people started to figure things out.

Now, you may remember Dr. Maurice Hilleman, from our…

Justin: Yes.

Sydnee: Mumps episode?

Justin: Last episode, yeah.

Sydnee: Yes.

Justin: I guess it's two episodes ago, now.

Sydnee: Two episodes ago. I mentioned that he developed a lot of different vaccines, and among the vaccines that he developed was…

Justin: Rubella.

Sydnee: Rubella. That's right. He worked on measles, he worked on mumps. You gotta get the—gotta get all three. Gotta go for the trio.

Justin: The hat trick.

Sydnee: Yep. Gotta get the rubella. He was already actually testing his own vaccines. Because of the epidemic in 1964 and 5, he was working on stuff from that epidemic to make his own vaccine, but federal regulators got involved and said "Hey, we're working on this vaccine. Will you work on it? We think we're close," and he said the first one that they brought him was very toxic. It had a lot of side effects. He wasn't thrilled about it, but he worked on it and he worked on it and he worked on it, and by 1969—

Justin: Nice.

Sydnee: —it was a safe enough—[snorts] no. No. I'm not gonna give you that one. By 1969, it was safe enough to get FDA approval—

[rimshot sound effect]

Sydnee: —um, and prevent another rubella epidemic, thank goodness. And then by '71, he'd already added it to the vaccine for measles and mumps. At first in '69 it was just it's own rubella vaccine, and then it got put into the MMR in '71.

But, this is the really cool corollary to this. So, as I mentioned, he was not… and we've talked about Dr. Hilleman before. He was not a, uh… not a guy who liked to do things, um… I can't say a bad word… half… butt.

Justin: Half-butted.

Sydnee: Half-butted. [laughs] He liked to do things right. He wanted things done well. He was a perfectionist. He had extremely high standards. He was not in it for the glory. He was in it to make sure that the job got done well.

And as I mentioned, he was not initially thrilled with the vaccine that he had been given to develop for rubella. He felt like he could do better. Like, there could be one that would provide a little more immunoge—immunonish—immunogenicity. Immunogenicity.

Justin: I don't know why you couldn't easily pronounce that word on your first try!

Sydnee: Something that would—

Justin: Just slips off the tongue.

Sydnee: Something that would, uh, be better at making people immune.

Justin: Okay.

Sydnee: Ensure that you would become immune. So he wanted that. He also wanted one that had less side effects. Well, in 1978, he discovered that another physician, Dr. Stanley Plotkin in Philadelphia, had made his own rubella vaccine, and he compared the two and went, "This is better than mine." And in the

scientific world, like… you tend to think of all us scientists—maybe. Maybe you don't.

But I think that there is a perception that we might be nerdy, and like, timid, and probably nice. But if you've made a groundbreaking vaccine that can prevent this congenital rubella syndrome, this terrible outcome, and then all of a sudden you find out that this other guy has made a better one, that's a hard pill to swallow, and there are not a lot of scientists who would be eager to let the world know that there's a better vaccine.

Uh, but Dr. Maurice Hilleman was not like that. He went to Stanley Plotkin and said, "Your vaccine's better than mine, and I wanna put it in the MMR. Is that cool?"

Justin: Wha—and he said, "Fine?"

Sydnee: Yeah, of course. He said he was stunned, because it was such a humble thing to do.

Justin: But then Maurice—

Sydnee: But of course he said yes.

Justin: But then Maurice gets back to the lab and he's like, "Oh my God. I have 100,000 gallons of this junk. What am I gonna do! I gotta sell this at discount prices."

And that's why, folks, if you call right now you're gonna get a gallon of this stuff. We can't give it away! [laughing] It's highly toxic and ineffective!

Sydnee: It was not highly toxic, no.

Justin: [coughs]

Sydnee: No. Do not perpetuate those myths. It wasn't highly toxic and it wasn't ineffective. This other vaccine was just better.

Justin: But it's a cut rate thing, if you maybe are trying to save a few bucks, get my stuff! I made a lot of it and I gotta sell it.

Sydnee: So he, uh—

Justin: I've been storing it—

Sydnee: You—

Justin: —in my wife's pottery room, where she's supposed to be able to do her pottery.

Sydnee: [laughs]

Justin: And she's mad, so please buy my bad vaccine!

Sydnee: You gotta understand, too, he was working for Merck at this point, and Merck was making the vaccine. So this is like, a really expensive thing for them to have to do to go in and replace this component of the vaccine. But he did it, because it was the right thing to do. And that was his big concern, was he wanted the MMR to be as effective and as safe as it possibly could be, and so in 1979 the final version of the MMR was released, with this new strain.

Justin: Just in time for upcoming superstar Justin McElroy to be born, in 1980. Wanted to make sure he had a smooth ride.

Sydnee: Now, you know, you were born too late for the rubella fighter membership cards, though. In the late 60s and early 70s, if you were vaccinated against rubella, you got this membership card. It's a really cool looking little card that says you're a rubella fighter.

Justin: Oh, that's very cool.

Sydnee: And it's a little kid holding an umbrella, and it says that they're under the rubella umbrella now.

Justin: It's very good.

Sydnee: So join the rubella umbrella campaign and become a rubella fighter. That was a good idea.

Justin: That's awesome.

Sydnee: Um, in Australia the initial… I thought this was an interesting point, since it was initially an Australian physician who figured out the connection with congenital rubella syndrome.

In Australia, the initial vaccine effort was actually targeted—for rubella, was targeted only at school age girls, with the idea that they will get pregnant, maybe, if they want to, and so they're the ones who need this. But this was obviously not the most effective method of protecting everybody, um, which they figured out over time, and so in 1989 they switched to the MMR for everybody.

You get a dose when you're like, 12 to 15 months, then you get a booster dose around 4 to 6. So they switched to that later, which is the same vaccine schedule we have here in the US, because vaccinating both people who can become pregnant and people who can be part of the…

Justin: Team?

Sydnee: … pregnancy occurring? [laughs]

Justin: Part of the pregnancy occurring? Oh, stop with this, the romantic talk, Barry White!

Sydnee: What I'm saying is—

Justin: Hey!

Sydnee: —whether you—[laughs]

Justin: Tonight, I'd like to be… part of a pregnancy occurring.

Sydnee: [laughing] Whether you've got sperm or—

Justin: Let me play my role.

Sydnee: —or ovum.

Justin: In this… this pregnancy, coming to pass.

Sydnee: And I mention this, because again I think it's another good corollary to the HPV vaccine, Gardasil. Initially we only targeted girls and women, it was

initially young people, girls, but then—and women, with the thought that anyone with a cervix is who needs this.

Basically, if you have a cervix you need this so you don't get cervical cancer, and then people finally started thinking, "You know, it would probably be better, since people without cervixes can also get the virus and spread it to everybody else through sexual contact, why don't we vaccinate everybody? Doesn't that seem like a better idea?"

Justin: "Hey, doesn't that seem better?"

Sydnee: Yeah! And so now we vaccinate everybody, and not just people who have cervixes.

Justin: What about me?

Sydnee: You and I didn't get 'em 'cause we were too old.

Justin: Can I get it now?

Sydnee: I mean, you could.

Justin: You never know.

Sydnee: I—thanks.

Justin: [snorts]

Sydnee: [laughs] I mean, yes, we could. We'd have to pay for them, though, 'cause they're not approved for us oldies.

Justin: I don't know.

Sydnee: Actually, that may have just changed, but we'd still probably have to pay for 'em with our insurance. Anyway, so everybody got the MMR—

Justin: I'd like to have as many vaccines as possible.

Sydnee: Here's the happy end. Uh, once the vaccine became available and everybody started using it, you saw the rates of rubella in the United States

drop… I mean, just dramatically. And less than 10 people in the US are reported as having rubella each year, and that's all cases where people have come to the US and brought rubella strains from out the US, but not like, naturally occurring within the United States.

Justin: Does that seem like we could eradicate it? Like—

Sydnee: That's a great question. I was gonna mention that. Yes! Rubella only occurs in humans.

Justin: Yes.

Sydnee: So it could—

Justin: So wipe the humans out, and—

Sydnee: No.

Justin: Oh.

Sydnee: It could be eradicated. Stuff that occurs in animals and can be passed back and forth from animals to humans, that's a lot more complicated, 'cause then you gotta vaccinate all the animals, too, and it's a lot harder to do.

Stuff that only occurs in humans, like smallpox, which has been eradicated, could theoretically be eradicated! And that is exactly what there is a global effort to work towards. The western hemisphere is currently rubella free. [quietly] Yay! [normally] Australia eliminated rubella last year.

Justin: Great.

Sydnee: It was eliminated from Australia last year, but there's still a lot of places where rubella occurs, and so there's still a lot of work to be done, and the way that we're going to do this is by vaccinating everybody. That's really the big… the big push. Rubella's the third disease to be eliminated from the western hemisphere, after smallpox and polio.

Justin: Wow.

Sydnee: Um, two interesting points that I thought I would bring up. One: one of the people who suggested this topic, Kate, also wanted us to know… do you read a lot of Agatha Christie?

Justin: Uh, you know me.

Sydnee: Did you read The Mirror Cracked From Side to Side?

Justin: I have not read that one.

Sydnee: Aw, okay. There's a vic—well, do you want me—aw, well this'll ruin it. This'll spoil it.

Justin: Don't ruin it! Don't ruin it! Here, I'll—

Sydnee: Rubella's a plot point. There.

Justin: Okay, there.

Sydnee: There.

Justin: There it is.

Sydnee: Read that book if you want to find out more. Sorry, Kate. I was gonna share your interesting fact, but I don't wanna ruin that book for Justin. Um, one other interesting point… we've talked a lot about vaccines and some of the anti-vaccination movement, some of the things that they will, um, the half-truths and untruths that are perpetuated in order to try to prevent people from getting vaccines.

Justin: I wanna call them something different, by the way. I'm not calling them the anti-vaccine movement. I'm calling them pro-preventable diseases.

Sydnee: Sure. I'm fine with that.

Justin: Okay. PPD.

Sydnee: [laughs quietly] Uh, so one thing to know is—the MMR vaccine, since we've covered all parts of it, the measles, mumps, rubella vaccine was really the one that Andrew Wakefield took aim at with his whole "Vaccines cause autism"

myth, which is, as we have talked about over and over again, is not true, has been disproven, was completely a lie, but there you go.

The MMR was one of the big vaccines named in this. It's weird because these same people will tell you that it's because of thimerosol and mercury. Thimerosol is a preservative in vaccines that helps to prevent like, bacteria and fungus from growing in vials of vaccines that have multiple doses. So like, a vial that you would draw a dose out and give it to somebody and then draw another dose out and then give it to somebody, as opposed to the single shot vaccines.

Um, thimerosol used to be used in vaccines. It hasn't—uh, it is not in any childhood vaccines, period, now. It's not there. Your kids aren't getting thimerosol. It's not in there. Even when it was, it was still safe. It was still fine. It was mercury-containing, but it's actually a safer form of mercury than the mercury in the fish you eat. So if you eat fish, that is higher risk mercury to you than the thimerosol that used to be in vaccines and isn't anymore for your kids, in childhood vaccines.

But, all that being said, thimerosol was never used in the MMR, ever! Not at any point, ever in history. I don't know where this stuff comes from! Mercury was not in it! It wasn't in it! Thimerosol was not used in the MMR.

Justin: All right.

Sydnee: It was used in multi-vial flu vaccines, and it's not used in any vaccines we give children now. And it still wouldn't matter if it was, 'cause it wasn't dangerous.

Justin: There you go.

Sydnee: There you go. I wanted to unwind that, because I hear that a lot and it's very frustrating. It's nothing to be afraid of. If you eat fish, you're—that's scarier mercury.

Justin: Got it.

Sydnee: Um, and the only other point that I think is worth mentioning… a lot of people will ask about the use of human cell lines in vaccines, in like, the development of vaccines. They're not in vaccines, but they were used to help develop some vaccines. And this is true. Particularly when it comes to rubella,

since that's what we're talking about today, there were cells from aborted fetuses used in the initial discovery and creation of the rubella vaccine. That is a true story.

This was from the 60s, so these were abortions that occurred in the 60s. I don't know the circumstances or any of that. You can discover all that. You can look that up if you want to, if you feel so inclined. Um, and these cells were then used to help develop these vaccines, and so the argument is made by some that you can't get any vaccines because that research was done in a way that is not compatible with their own…

Justin: Beliefs, yeah.

Sydnee: Beliefs. Uh, and this is what I would say. First of all, this isn't an ongoing thing. I think that sometimes if they say, like, "Well, these vaccines are made from aborted fetuses," that gives you the impression that this is like, an ongoing thing that scientists are doing in order to make the vaccines, and that's not true. This happened during the development in the 60s.

Justin: Yeah.

Sydnee: It's not still being done.

Justin: If you are gonna start avoiding medical treatments that at some point during their development had some wack crap involved with it, um, [laughing] there's a lot of medicine you're gonna miss out on.

Sydnee: As we've talked about on the show—

Justin: There've been some bumps in the road! [laughs]

Sydnee: There's a lot of stuff we've done that I think we could all agree was unethical or inconsistent with our morality.

Justin: Regardless of how you feel about abortion, pro or con, like, I'm saying that there's like—even if you're—yeah.

Sydnee: If this personally conflicts with your beliefs. Um, there are many things—we would all find something in medicine that conflicted with our own personal beliefs, I think, that has been done at some point in time.

The second thing that I thought was interesting is as I was researching this particular aspect, I found a letter from the Vatican. And now, I know all of the religious opposition to vaccines isn't Catholic. It's not born of Catholicism, but I thought this was an interesting point from one religious perspective. It was kind of a meditation on this problem.

What is the final word, as per—if you're interested, here's what the Vatican thinks of it. And basically, what they came down to was that while yes, we would prefer the vaccines not have been made this way, clearly, and we would encourage scientists to continue to work on vaccines that aren't made this way, an alternative, a vaccine that is not made with the, you know… like, make a vaccine a different way. Make a new vaccine, and we'll use that one.

Justin: A different way.

Sydnee: Yeah.

Justin: They're not made with abor—

Sydnee: No.

Justin: —like, again—

Sydnee: No, but make a new vaccine that doesn't have that history.

Justin: That was never—yeah, right.

Sydnee: If you can do that, we would prefer that, but all that being said, we also realize that the alternative would be to expose and possibly allow your children to die from preventable diseases, and that that is a morally unacceptable alternative that we do not believe anyone should choose.

So, the word from the Vatican is that even though these… and let me be clear: they do use these same cell lines. There are lots of cell lines that we use that are derived from cells that we got decades ago, as we've alluded to on the show before. Like, the Henrietta Lacks cell line, the HeLa cells. Those are cells we obtained a long time ago, but we are—but not new. New abortions are not providing these cells. Does that make sense?

Justin: Yes.

Sydnee: I just want to—I know this is a sticky subject, so I want to be very clear about what I'm saying. So, even the Vatican is saying like, "All this aside, while yeah, we wish there were different vaccines and we'd prefer this wasn't the case, until there are, you should get the vaccines." Because it is, from their standpoint at least, morally wrong to allow your kid to die from a disease that you could prevent for this cause.

Justin: There you have it, folks.

Sydnee: So, I don't know. That's way outside my realm. I'm not gonna speak for any religious professionals.

Justin: [laughs]

Sydnee: [laughs] I don't know! I don't know any experts in that area, but if that's your concern, there it is. Get your vaccines. Get your MMR. We've eliminated rubella from the western hemisphere. Let's not bring it back.

Justin: Yeah, let's keep it off the charts.

Sydnee: Yeah. And the best way to do that is by getting an MMR when you're 12 to 15 months, get a second MMR between ages 4 and 6, and if you're concerned at all you can always get titers drawn. You can go and they can check your antibody levels to see if you're immune. Specifically if you do become pregnant, they'll actually check you for this. You can't get an MMR while you're pregnant, but after the pregnancy they'll give you another booster, just to make sure, because you wanna keep those antibodies against rubella high.

Justin: Yep.

Sydnee: But you can be checked for this if you're curious, if you're concerned you might not be immune.

Justin: Folks, that's gonna do it for us. Thank you so much for listening. Thank you to The Taxpayers for the use of our song Medicines. Their song, not our song, [laughs] as the intro and outro of our program. Uh, thank you to the Maximum Fun Network for having us as a part of their extended podcasting family. Um, and thank you to you, for listening!

Oh! There's a new couple pins, Sawbones pins, at mcelroymerch.com. If you head over there, that's our merchandise store. You can find these cool little… they're like, ether and snake oil pins that you can get. I think they're really cool.

Sydnee: They're very cool looking.

Justin: Very cool.

Sydnee: Somebody mentioned they would make great earrings.

Justin: Ooh, yeah! I don't know if that's… can you do that with pins? I don't know.

Sydnee: I mean…

Justin: I think these are glittery, for whatever it's worth. I think these are glittery. I don't know if that changes anything, if at all.

Sydnee: If they're glittery?

Justin: Yeah.

Sydnee: Why would that change their desirability as earrings?

Justin: It's not really the earrings, I was just mentioning their glittery interlay. [laughing] Thank you so much—

Sydnee: [laughs]

Justin: —for listening to our show. Uh, you've been a great audience, is something I almost said, but rethought it, because this is a podcast. But, until next week, 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]

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