

## Sawbones 263: Mumps

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

[theme music plays]

**Justin:** Hello, everybody, and welcome to Sawbones: a marital tour of misguided medicine. I'm your co-host, Justin McElroy!

**Sydnee:** And I'm Sydnee McElroy.

**Justin:** Eugh. Hated the way I said that!

**Sydnee:** No. Don't—don't do that anymore.

**Justin:** Sounded like I was throwing up my own name.

**Sydnee:** Don't do that. It sounded like you were mumbling.

**Justin:** Or maybe mumpsling?

**Sydnee:** I was—I—you know? I was gonna go there with mumbling, and then you took it a step further.

**Justin:** Mumpsling.

**Sydnee:** No. I was very curious as to where—we're gonna talk about mumps this week. I guess we're just launching right into it. There it is. And I was very curious as to where the name "mumps" came from. And I was trying to find an answer to that, and the best answer I found... this was actually my clever transition, but then you said mumpsling... is mumble lumps.

**Justin:** Mumble lumps.

**Sydnee:** [laughs quietly]

**Justin:** It's fun to say.

**Sydnee:** Mumble lumps. Because it caused big lumps in your cheeks that made you mumble, people called it mumps.

**Justin:** Huh!

**Sydnee:** I don't know that that is true, but that was the best... guess? Hypothesis? Explanation?

**Justin:** It was a portmanteau, or as Charlie says, a pork man toe, of mumbling and lumps. Mumps. Mumble lumps. Mumps.

**Sydnee:** Yeah.

**Justin:** Got it.

**Sydnee:** Uh, but I wanted us to talk about mumps this week, Justin. We've talked about measles before, which is more—I'd say like, the more interesting topical thing in medicine right now. Measles, right?

**Justin:** Yeah, 'cause we've got an outbreak in Washington? Is that right?

**Sydnee:** Mm-hmm. And other places. I believe it was—I actually think there was one in New York before the one in Washington, which has made all the press recently. But many states are seeing a rise in measles, because of lack of vaccination. Largely.

There's also—there's also concern that—and this is fair—there is waning immunity as we get older. So we are seeing measles cases in people who have gotten vaccines. Most of them—in case anybody's interested—most of them are in kids who have only gotten one vaccine, because you're not—that's why we get boosters, right? That's why the vaccine schedule has—there's a logic behind it.

Sometimes you get one, and then you get another dose of it later, and it's because you need to boost the immunity and make sure that you're completely protected, and your numbers of people who are immune go up with each booster.

So, a lot of the patients had only gotten one measles vaccine, and so they just haven't got—they're not old enough to have gotten the second one yet. They're not behind, they're just not old enough.

But we are seeing like, people who were fully vaccinated, much, much later down the road maybe getting measles, and so there's some concern that maybe we need another booster as we get older.

**Justin:** Sign me up. I'll take all the vaccines you can give me.

**Sydnee:** Well, me too. I mean, I would happily do that, but the problem with all this, of course, is like, if we were all vaccinated this really wouldn't be an issue, now would it?

**Justin:** Hmm...

**Sydnee:** Hmm... but we've done a whole episode on measles, if you're interested, that you can check that one out. But if you get vaccinated against measles, you also probably get vaccinated against mumps and rubella at the same time, because of the MMR, the vaccine that most of us, at least in the US get. Nobody's getting like, independent measles, mumps, rubella vaccines, for the most part.

So I thought it would be good to talk about mumps, as a reminder of all the things that this wonderful vaccine can protect you against.

**Justin:** Also, our—it's also, I think, fresh on our mind, 'cause both our kids just got—or, not this one, but Charlie got a booster. Is that right?

**Sydnee:** They both got MMRs yesterday, yes. Charlie needed her booster, because she is four, and Cooper got her first one, because she is one.

**Justin:** Can you talk—before—I wanna get into the topic, but real quick, can you talk about what that nurse told you? 'Cause I thought that might be a good PSA for everybody.

**Sydnee:** Which—which part?

**Justin:** About parents not, um, assisting in that.

**Sydnee:** Yeah. So, both of our kids got their vaccines yesterday. Our oldest, Charlie, is four, and between four and six you get what a lot of people think of as the kindergarten vaccines, the ones you get before you start kindergarten. She's not starting kindergarten, but she was due. So she actually had to get four. And then our youngest, Cooper, is one, so she had to get five, which is no fun.

**Justin:** Woof.

**Sydnee:** I mean, I'm not gonna sit here and say that because I know they're safe and effective and important, it's easy for me to see my kids get shots. It's hard, and they both cried, and they hurt! We know. They don't hurt as much as kids think they do, but they do hurt.

And the nurse asked if I was going to be in the room, and I said, "Well, I—I'll help you. We don't need a—" 'cause she said, "Do I need to get somebody else in to hold her while I give the shots?" And I said, "No, no, no. I'll hold here. I wanna be here."

And she said, "Well, a lot of parents don't." And I said, "Why?" And she said, "Well, they either hide in the corner or they leave the room, because they don't want to be associated with it, or they don't want to see the kids cry, or whatever."

And I said, "I'd rather—" and this is my personal preference. This isn't judgment, but it is something I would say think about, if you have kids or if you're thinking of having kids or whatever, think about. I want our kids to know that I'm part of this decision.

**Justin:** Mm-hmm.

**Sydnee:** That Justin and I decided that they need these vaccines, because we know the evidence says they will be much safer and less likely to get horrible diseases or die if they get them, and it's a hard thing, but it's important for them.

And we do a lot of stuff our kids don't like, because it's the right thing for them. And so, I wanna be there, part of it. I'm holding them, I'm comforting them, I'm telling them it's gonna be okay, I'm hugging them when it's over, I'm drying their tears, but I'm also helping the nurse make this happen, because I know it's the right thing for them. And it's hard, but it's the right—so often, the right thing is a hard thing, so.

**Justin:** So let's talk about mumble lumps.

**Sydnee:** Mumble lumps. I don't know if that's where it comes from, but I hope so.

**Justin:** I'm gonna go with that.

**Sydnee:** I hope so. And thank you Rory and Charlie and Greg and Chloe and Anthony for suggesting this topic.

Mumps is a viral illness. It's a virus that spreads. It's caused by a paramyxovirus, in case you're interested in what kind of virus.

**Justin:** [high pitched] Ooh!

**Sydnee:** I don't know if people wanna know that kind of thing. You—after you get exposed, there's an incubation period from 16 to 18 days, and then—as much as 25 days, so you can be exposed to it and not know you have it yet for quite a while.

Now, people tend to think about—when they think about mumps, I think everybody pictures like, the... the kid with the bandage around their face. Like, the thing—

**Justin:** Yeah, yeah, yeah.

**Sydnee:** —like, the bandage tied around and the big cheeks.

**Justin:** Like, uh, uh, uh—lookin' like Jacob Marley.

**Sydnee:** Yeah. Yeah. Like Jacob Mar—why does he have that?

**Justin:** It—corpses.

**Sydnee:** Oh.

**Justin:** So their mouths didn't hang open.

**Sydnee:** You know, I should've known that. I'm impressed.

**Justin:** Pulled it completely out of my butt, but I bet it's true. It sounds true.

**Sydnee:** It's dark, if that's—

**Justin:** [through laughter] Sounds true! It feels true when I say it, and that's the most important thing. Right, Syd?

**Sydnee:** [laughs quietly] That is the most important thing.

**Justin:** The most important thing is that it feels true to me when I say it.

**Sydnee:** Uh... rarely right, but always certain?

**Justin:** That's me!

**Sydnee:** There you go.

**Justin:** That's my family motto!

**Sydnee:** Mumps is best known for that. So, the parotid glands, which are salivary glands, they're in your—kind of at the angle of your jaw in your cheeks, but like, further back. Not right in the meaty part, but further back closer to your ear. Uh, those get swollen when you have mumps, right?

They get inflamed and swollen. And so you get those big chipmunk cheeks, and that's what, I think, most people think of when they think of mumps. You can get fever and headache and muscle aches, and you feel tired and achy, and lousy. You know.

**Justin:** Yeah.

**Sydnee:** Now, some people who get mumps don't get very sick, right? They get—maybe they get a little bit of swelling, maybe just some of the symptoms, but they don't feel that bad. They get like, a mild case. Uh, most people recover completely in a few weeks with no complications, so for most people it's a pretty benign—annoying, but benign—thing to get.

Now, the problem is, with mumps, that one, it can be spread pretty easily through infected—either like, spit, saliva, or through like, respiratory droplets, so by coughing, sneezing, stuff that sprays out of you. [snorts]

**Justin:** Mm-hmm.

**Sydnee:** Uh, that can spread it. Sharing food or drink—and then if like, you cough or sneeze and it gets all over a table, and then somebody touches the table, you can spread it that way. So these are not hard—it's not a hard thing to spread, and this is important because something that spreads pretty easily, even if the complications are rare, if enough people get it, somebody's gonna get the complications, right? Statistically, you know.

If you give it to enough people, people are gonna get complications. So while these are rare, you can also get inflammation of the testicles... and inflammation of the testicles, in some cases, can lead to fertility problems down the road. Not often, but it is possible.

**Justin:** I—I'm very frustrated with you and our relationship in this program, that you said "Inflammation of the testicles" and then waited and stared at me as though, "Well, let's see. Let's see what he has, for inflammation of the testicles."

**Sydnee:** [laughs quietly]

**Justin:** And then I'm frustrated with myself, if we're passing it around, that I had nothing. I opened my heart and my mouth, and nothing came, from the inflammation of the testicles. And I feel like that kind of low hanging fruit—what I'm gonna go with is it's not that I am tapped—

**Sydnee:** Low—low hanging fruit?

**Justin:** Hey, there you go.

**Sydnee:** [laughs]

**Justin:** It's that it's beneath me now.

**Sydnee:** Ah!

**Justin:** I'm going for more high-minded observations, that—something a little loftier, a little more urbane than inflamed testicles. So, please, my dear. I am so sorry to interrupt. Please proceed.

**Sydnee:** You know, it was interesting. I asked both my parents if they had mumps, because this—this is not something—

**Justin:** Tell what you did to your mom.

**Sydnee:** Oh, I texted mom and said, "Did you ever have mumps?" And my mom called and said, "[frantically] Why?! What's wrong?! Do you think I do?!" [laughs quietly] And I said, [snorts] "No, no! I don't—"

**Justin:** [laughs]

**Sydnee:** "—I'm texting you! Why would I think you had mumps? No, I was just curious, 'cause my dad had told me he had mumps, and so I was curious if you ever had mumps!"

Uh, and she said no, she didn't—at least, she didn't remember. She said, "If I did, it wasn't bad enough that I remember it." But she remembered that her brother did. My mom is one of many children, and she remembered one of her brothers had it, and that the doctor told him to make sure and stay laying down... so that it didn't drop.

**Justin:** What?!

**Sydnee:** So that it didn't drop to his testicles. That's what they—that was the reference, was that if you—the thought was, if you lay down, [through laughter] it'll stay up in her cheeks, and if you stand up—and she said and like, jump up and down or something, it would drop, which of course is not how... viruses work, but I think that's a really interesting... interesting thought. Uh, I like—I like—this is our show. That's an interesting thought.

**Justin:** How else would it get—how else would get there?

**Sydnee:** How else would it get down there? Uh, but this can, in rare cases, lead to fertility problems. It can also cause inflammation of the ovaries. Again, these are very rare complications, but it's kind of like I always would tell patients.

Like, here is a side effect of a med you need to know about. It's incredibly rare, but if you're the one who gets it, you don't care how rare it is. It's important to you, and that's why you need to be informed and know about it. It doesn't mean don't do it, it just means you need to know about it.



Well, you can get inflammation of the ovaries, of the breasts, even. You can get mastitis, inflammation of the breasts. You can get severe complications like inflammation of the brain, which is called encephalitis, or of the spinal cord, meningitis. Again, rare, but they can happen. And then it can also actually result in loss of hearing, in rare cases.

**Justin:** Wow.

**Sydnee:** So, there were cases of mumps where afterwards the children had completely lost their hearing, and it doesn't come back. That's not something that resolves over time.

So again, most people with mumps... 'cause that's what I think—I hear this argument against vaccines, specific vaccines a lot is like, "Well, what's the big deal?" I always heard this with chicken pox. "[mocking tone] What's the big deal? You get chicken pox. What's the big deal?"

And people might have said that about mumps. What's the big deal? Well, for a lot of kids, probably not a big deal, but if your kid is the one who gets meningitis, or loses their hearing, or becomes infertile afterwards—

**Justin:** It's a pretty big deal!

**Sydnee:** —it's a pretty big deal for you! And if we have a vaccine that can prevent it, isn't that worth it?

**Justin:** Wouldn't—let's go for it.

**Sydnee:** Uh, so when we look at the history of mumps, we have known about mumps since the time of Hippocrates, and we know that because Hippocrates wrote this description of mumps that—it seems like—sometimes I'll stumble on something when I'm doing research that like, a lot of doctors like. A lot of doctors really like to talk about this great description of mumps.

**Justin:** [snorts]

**Sydnee:** That Hippocrates wrote.

**Justin:** Yeah.

**Sydnee:** It's not—It's really interesting, 'cause I heard all these people kind of like, waxing poetic about like, "This is just a beautiful description, like, the perfect format like we should all follow, you know, so that people know how to document things appropriately in the medical record—like, show to all your medical students."

Um, but in 410 B.C.E, he wrote about, "Swellings appeared about the ears in many on either side, and in the greatest number on both sides. They were of a lax, large, diffused character, without inflammation or pain, and they went away without any critical sign." So.

**Justin:** That's... good.

**Sydnee:** There you go. So that's mumps.

**Justin:** That's very good.

**Sydnee:** Apparent—that's—yes. I mean, I—yes, I would be impressed. I will say that if a medical student handed this in to me I would say, "Whoa! Nice!"

**Justin:** You would think they were a weirdo.

**Sydnee:** No I wouldn't!

**Justin:** Yes you would.

**Sydnee:** Uh—

**Justin:** That's how weirdos talk.

**Sydnee:** I wouldn't. I wouldn't think that.

**Justin:** You would.

**Sydnee:** I would be delighted and impressed.

**Justin:** Okay. What—but you would ask them to stop—

**Sydnee:** I don't think—how well do you know me?

**Justin:** —you would ask them to stop wearing a toga to work, though.

**Sydnee:** [through laughter] Well, I would say that is not appropriate dress for.. that's also like, the toga, there's so much fabric. Like, same problem as a white coat, right? It's just a fomite. Just something else you can get germs on. Let's just—let's ditch the white coats and togas, please.

**Justin:** Yeah.

**Sydnee:** Anyway. So, we've known about this for a long time, but we didn't—like I said, we didn't really know what to do about it. That's true for a lot of viruses. We tried a lot of stuff. Nothing really worked. People got better. Or, everything worked.

**Justin:** We congratulated ourselves.

**Sydnee:** We congratulated ourselves.

**Justin:** [laughs]

**Sydnee:** We bled people. They got better. We thought it was because of the fact that we bled them. Um, but in most cases, since it was benign for many, many patients, it wasn't considered a big deal, other than the few that would get these other complications. Uh, but, like a lot of viruses, we eventually figured out that the best plan is not to try to treat it after it happened, but to prevent it before it could.

**Justin:** Oh, that's a great idea.

**Sydnee:** Yeah. So I wanna talk about the development of the vaccine.

**Justin:** Oh, okay.

**Sydnee:** But before we do that...

**Justin:** Oh, Sydnee!

**Sydnee:** Let's go to the billing department.

**Justin:** You would deny me this. Let's go.

[theme music plays]

**Justin:** Friends, our first sponsor this week is Casper, a friendly ghost that wants the most, for you, to have a good rest.

**Sydnee:** No, it's—Ca—not the ghost. The mattress.

**Justin:** The mattress is made of ghosts?

**Sydnee:** [laughs] N—it's so soft, you'd think it was made of ghosts. [laughs]

**Justin:** Sawbones is supported in part by Casper, a sleep brand that's so soft you'd think it was made of ghosts, says physician Dr. Sydnee McElroy.

**Sydnee:** [laughs]

**Justin:** [through laughter] Casper continues to revolutionize it's line of products to create an exceptionally comfortable sleep experience, one night at a time. They offer affordable prices that won't spook you out, because Casper cuts out the middle man, and all the ghosts, and sells directly to the consumer.

**Sydnee:** [laughs]

**Justin:** Uh, we love our Casper mattress, here. We've talked about it at length. It's a fantastic buy, and I—for my money, so much better than trying to buy a mattress at one of the big box stores, or one of the small box stores. No matter what the size of the box, if the store is a store, you should get your mattress online.

**Sydnee:** This one arrives directly to your door.

**Justin:** Right to your door. Uh, pre-haunted. Get \$50 towards select mattresses by visiting [Casper.com/sawbones](https://Casper.com/sawbones), and using promo code "sawbones" at checkout. Act fast to take advantage of Casper's Presidents' Day offer. [through laughter] Get this: not a lot of people doin' Presidents' Day sales. Good for Casper.

Between February 9<sup>th</sup> to the 19<sup>th</sup>, save 10% off any mattress purchase if you visit Casper.com. Additional fees may apply for Hawaii and Alaska. Terms and conditions apply.

**Sydnee:** And you can be sure of your purchase with Casper's 100 night, risk free, sleep on it trial!

**Justin:** Check it totally out. [Casper.com/sowbones](https://www.casper.com/sowbones)—sawbones, sorry, and use promo code "sawbones" at checkout.

You know, folks, nobody likes to think about insurance. Maybe people who sell insurance professionally like to think about it, but other than that, no one does, because you're paying money hoping that something bad won't happen, but trying to feel a bit more secure that it will.

Worse than thinking about insurance is shopping for it. Ugh! There's so much to learn and so much jargon! Syd, it's so boring and I don't wanna do it..."

**Sydnee:** Well, that's okay, Justin.

**Justin:** Why?

**Sydnee:** You don't have to figure it all out, 'cause Policygenius has you covered.

**Justin:** Policygenius is the easy way to get life insurance in minutes. You can compare quotes from top insurers to find the coverage you need at a price you can afford. Whether you're shopping for disability insurance to protect your income, homeowners' insurance or auto insurance, they can help you get covered fast.

No matter how much or how little you know about life insurance, you can find the right policy in minutes! At [Policygenius.com](https://www.policygenius.com). Policygenius: the easy way to compare and buy life insurance.

**Pleck:** Greetings! I am Pleck Decksetter, contacting you from the Zyxx squadron, which is frankly sorta crappy, but I'm here on a heroic mission with my trusty crew: C-53—

**C-53:** [robotic voice] Heroic feels like an exaggeration on our part.

**Pleck:** Okay, sure. And Security Officer Dar—

**Dar:** Pleck, don't put me in your stupid recording.

**Pleck:** Well—and we're all travelling aboard our trusty starship, the Bargarean Jade!

[pauses]

**Pleck:** Bargie?

**Bargie:** [robotic voice] What? Sorry. I'm awake, I'm awake, I was—

**Pleck:** It's fine.

**Bargie:** I was just flying... while asleep.

[triumphant music plays]

**Alden Ford:** Hey there! This is Alden Ford. I play Pleck, and we are so excited to announce that our podcast, *Mission to Zyxx*, is now part of the Maximum Fun Network. Our third season launches on Max Fun on March 20<sup>th</sup>. Binge seasons one and two right now. That's *Mission to Zyxx*: Z-Y-X-X.

**Justin:** Uh, Syd, you were gonna tell me about vaccines.

**Sydnee:** Okay, so, the mumps vaccine that we use today, now, it's—and usually, like I said, the vast majority of people are gonna get it combined with measles and rubella. I'm sure there are some—there's mumps vaccines out there independently, probably, but nobody's getting them.

**Justin:** Independent of the other ones. Indie mumps vaccines.

**Sydnee:** Yeah. Nobody's getting those. Uh, if they exist, nobody's getting them. It was licensed in 1967, and I wanna tell you about the researcher who developed it, because I don't think we've ever talked about this scientist on our show, and I—I felt very silly when I started reading about him that we hadn't.

**Justin:** Okay.

**Sydnee:** Have you ever heard the name Maurice Hilleman?

**Justin:** I have not.

**Sydnee:** So, his interest, when it comes to like, science, probably came from the fact that he used to work on a farm and take care of animals a lot, and that was where his like, interest in biology and all that kind of stuff came from.

Uh, he grew up during the Great Depression on a farm in Montana, and after that he went to Montana State. He eventually ended up getting his PhD in Microbiology and Chemistry, and this was a big—when he was growing up, his big goal was just to get a job, like, at the local JC Penney.

He was hoping to like, get off the farm and go work in a store and like, be around people more, and then he ended up getting a PhD and working in a lab, which was not exactly where he thought he would end up, but he was very excited to do so, because of his early interest in biology.

In 1944, he joined the virus laboratories of E.R. Squib and Sons—

**Justin:** [snorts quietly]

**Sydnee:** —in New Brunswick, New Jersey. And they were working on a vaccine at the time to help fight a certain kind of encephalitis. It was called Japanese B Encephalitis. And they needed it for the troops in the Pacific. This would've been during World War II.

**Justin:** Okay, that makes sense.

**Sydnee:** So, they needed this vaccine. So he—

**Justin:** I was gonna say, that seems like an extremely—[wheezes] pretty extremely specific disease to be treating, but then when you said where we needed it, that makes perfect sense.

**Sydnee:** Yes. It was a high yield for that moment in history. So, he started off working on that vaccine, and his interest in vaccines grew from there. So he started to kind of work on like, characterizing different viruses and figuring out about like, viruses changing and mutating, 'cause that's all part of vaccines, right?

If a virus mutates a whole bunch, that's makes it harder to make a vaccine against it, because it could change.

**Justin:** Right.

**Sydnee:** Right? So you worked against one strain, but then it mutated. The best example of this problem is the influenza virus.

**Justin:** Which mutates so frequently we have to remix it every year.

**Sydnee:** Exactly. So, he kind of get into the idea of what these shifts and drifts and—I won't get into all that means, but—can mean for a virus, and can mean for making a vaccine against a virus. This was really helpful when there was a new strain of flu in 1957 in Hong Kong, and there was concern because of this new strain of flu, and nobody had been... this was—nobody had been like, immune to it before, it was brand new—that this could be a worldwide pandemic, and many, many people could die as a result of this flu.

And so, him and the researchers that he was working with worked like, around the clock, like 14 hour days, to jump on top of this and make a vaccine as quickly as they could. Like, this mass production of a flu vaccine that probably saved hundreds of thousands of lives. I mean, it was still a huge epidemic. 69,000 people died in the US of this flu, but it would've been much worse had him and the other researchers not jumped on top of it and made this vaccine to protect people.

So, he was already doing a lot of great work on vaccines before he started working for Merck. Merck is where he did the work that probably impacts most of us today, when we think about like, the vaccines that he created and which ones we get now.

So, he started working at Merck. And I know a lot of people are gonna go, "Merck? They're big pharma!"

**Justin:** They're big pharma, yeah.

**Sydnee:** Yes. I am talking about Maurice Hilleman, a brilliant vaccinologist who happened to work for Merck, and that is where the vaccines were made. Yes, I understand the problems with big pharma. I am not...



**Justin:** Don't try to tell Sydnee about the problems with big pharma.

**Sydnee:** No. Trust me, trust me. I have—I have—

**Justin:** Sydnee has passed up so many free sandwiches and slices of pizza. You have no idea.

**Sydnee:** That's right. I've never taken a pen, or a cup, or a piece of pizza from a pharmaceutical representative in my career. I do not—that is not the direction I go. I am just saying that he worked for Merck, and he made a lot of vaccines while he was working for Merck.

He developed more than 40 vaccines while he was working there. He worked on the measles vaccine. This was really interesting, because much of the work that had already been done on the measles vaccine previously was done by John Enders, and we talked about that during our episode on measles.

But the vaccine that they were using, the Enders vaccine, actually still had some side effects, and that was one of the—you know, a lot of people talk about vaccines and side effects. One of Hilleman's biggest things was trying to make vaccines that were better. Like, a more elegant solution. Fewer side effects while still providing the protection that you need from the vaccine, while still working.

So, Dr. Hilleman and another doctor, Dr. Stokes, started working in a way to minimize the side effects of the measles vaccine. Initially, they came out with—you would get a dose of this gamma globulin shot at the same time you got the measles vaccine, and that greatly reduced the side effects.

But ultimately, that was not gonna... now you get two shots instead of one. How much is the public is gonna accept that? Even though the side effects were lower, people were willing to do it, but that wasn't—they were trying to get more people to embrace the measles vaccine.

**Justin:** Couldn't they just put both of 'em in a bigger syringe?

**Sydnee:** Well... no.

**Justin:** Okay!

**Sydnee:** It's not that—it's not simple. [laughs]

**Justin:** You're the bo—you're the bo—you're the doctor, I'm just a dum-dum with a great idea, I guess!

**Sydnee:** But he did—he continued to work with the measles vaccine—

**Justin:** Why not? Why not?

**Sydnee:** Well, we're also talking about—so you're talking about like, antibodies that you're putting in with live, attenuated... so, live virus that has been like, damaged in such a way that it can't make you sick, and you're just gonna put the antibodies in with it—

**Justin:** It's the old "Humidifier and dehumidifier next to each other, what happens?"

**Sydnee:** It's not that simple. But Dr. Hilleman kept working with the vaccine—this was like a stop gap. They introduced this measure to get more people to get the vaccine, because at the time there were still like, 500 people in America dying from measles every year. So... And mostly children, so this was urgent.

So they started with this. Over the next four years, he kept refining the vaccine and eventually he found a safer strain of the virus that you could use to make the vaccine that would produce way less side effects and be much safer, but still give you the protection against measles. And that is the one we actually still use today.

Now, that strain that he used... it could've been named for him, and you may have heard of Hilleman. It could be called the Hilleman strain, but it's not. It's called the Moraten strain. And you know what that stands for?

**Justin:** What?

**Sydnee:** He named it that for More Attenuated Enders, because Enders was the guy who made the original vaccine, and so he felt like he deserved the credit.

**Justin:** Wow.

**Sydnee:** I just think that was a very lovely story. He could've taken the credit. He didn't. His concern was getting the job done, and that was kind of like, the mark of his... when a lot of people talked about him, when he passed away in

2005, a lot of researchers and scientists came out to speak, because you probably haven't heard his name, even though he is responsible for like, eight of the vaccines—eight of the fourteen routine childhood vaccines came from Hilleman.

**Justin:** Wow.

**Sydnee:** You probably haven't heard his name, 'cause it just wasn't—it wasn't his MO. His interest was not in being famous or having a great deal of renown. His interest was in getting the job done and getting it done right, and they said that he could be a hard person to work with sometimes. He was demanding. He was incredibly smart and efficient, and he expected that of all of his employees. He actually kept a row of shrunken heads—that one of his kids made for him for fun—but he kept a row of shrunken heads over his desk, and he said those were all the employees he's fired.

**Justin:** [snorts] And then murdered?

**Sydnee:** Well, I mean, I think it was a—I think it was just a joke.

**Justin:** No, I get it! [wheezes]

**Sydnee:** It was a joke!

**Justin:** Good stuff! [laughs]

**Sydnee:** It was just a joke! But he—and he apparently used a lot of profanity, so he was kind of like, a rough guy to work with, but it was because he was very exacting and demanding, and really good at what he did.

So in his career, he also was responsible for the mumps vaccine, and the way he made it... one night, his five year old daughter, Jeryl Lynn, was feeling sick. Woke him up in the middle of the night and said, "Dad, I feel sick. I have a sore throat, and I'm feeling headachy, and I think I have a fever."

And he looked at her and said, "You look like you're getting the mumps." She had the swellings on the sides of her face and her parotid glands, so she looked like—"You look like you're getting the mumps."

So he was worried about her, but at the same time he thought, "Hey. This is a great time—"

**Justin:** "I'm gonna capitalize on this."

**Sydnee:** "—for me to get a sample of mumps."

So he swabbed her throat, put the swab—he actually drove to the lab first to get like, the collection tube and everything—came back, swabbed her throat, stuck it in the culture broth, in the medium, drove back to work to freeze it, and then came back to take care of his kid. And that—

**Justin:** I like to imagine her just sitting there in silence through all of this.

**Sydnee:** [laughs] That is the strain that he started working on attenuating, or weakening. That's what attenuating means, kind of weakening the virus so that it can't make you sick, but it will produce the immune response we need. It will make your body make antibodies to it.

So he used that strain to then develop the mumps vaccine. That Jeryl Lynn strain is still what is used. It's named for his daughter. He didn't name it for himself. He named it for his daughter. And that was used to go into what would become the measles, mumps, rubella vaccine, which was licensed in '71. The rubella component was changed again in '79, but that's pretty much been the same since then.

And it's funny, because you can find a great—there's a great picture associated with all this, of Jeryl Lynn's little sister getting her mumps vaccine, and she's kind of like, squirming away from it, like a kid would do getting a shot, and Jeryl Lynn is standing there with her.

And it just—it reminded me so much of Charlie and Cooper, 'cause it's just—it's the older sister standing there and it's like, "Yeah. That my vaccine. Ha!"

**Justin:** [laughs]

**Sydnee:** "Go ahead, give my lil sister a shot." [laughs]

**Justin:** [laughs]

**Sydnee:** But it's great, 'cause there's the little sister getting the vaccine that was made from her older sister's case of mumps.

**Justin:** That's crazy.

**Sydnee:** So anyway, Hilleman really should be remembered as this hero of vaccines. He made so many different vaccines, beyond the ones we were just talking about on this episode.

Part of what really, I think, hurt him personally, and may be why—I saw one person assert, "Maybe this is why he didn't get a Nobel prize." I don't really—I don't know that. I don't know the politics of that or the timing or anything.

But in 1998, as you've probably heard, Andrew Wakefield, who was a British medical researcher, published a paper in the Lancet that claimed that there is a link between the MMR vaccine—measles, mumps, rubella, MMR—specifically, and autism.

Now, we know now that this study was completely bunk. It was wrong. He mishandled the data. He... lied. I mean, let's not use scientific terms. Let's say what it is: he lied. There is no link between the MMR vaccine and autism. There is no link between any vaccine and autism.

He told a lie, and it has been one of the most damaging lies in medical history. And as a result of that, towards the end of his career and his life, Dr. Hilleman received death threats instead of thank yous from many parents, because they had been lied to and misled and misinformed by Wakefield's completely, completely false data. And of course, Wakefield was later stripped of his license, and the study was retracted, but that's the problem, is that the lie has been so powerful that even though—

**Justin:** Can we not tar and feather people anymore? Can we tar and feather him?

**Sydnee:** We—we can't tar and feather him. I don't know what else you can do, but what's hard is I don't know what else we can do but say, "His study was false. It was a lie. It was—it was a lie, and we've retracted—" like, the Lancet retracted it and said "We shouldn't have published it. We're sorry. It was a lie. It was wrong."

And his license is gone, so he has been reprimanded as formally as you can be reprimanded for telling lies, and yet still, people will say this as if it's a fact! As if

there is any—there's no truth to it! There's no link there. It's all lies. Lies based on lies based on lies.

So, that's the—that's unfortunately the... the bump in the road when you get to the history of specifically mumps and the MMR vaccine, is instead of seeing this continued increased rate of vaccination, with lower and lower cases and fewer and fewer people dying of measles and getting, you know, complications from mumps, what you see is that everything improves for a while, and then you see vaccine rates start dropping, and with it, cases of these should-be-gone, should-be-ancient-history diseases start recurring.

And we have seen mumps outbreaks various places in the country. They're not often as highly publicized as the measles cases, because measles can be fatal. It will be fatal to some percentage of the population. I mean, I think—that's the thing we need to say. With a disease like measles, someone will die of it if they get it. No, most people won't, but someone will, and that someone matters just as much as all the people who didn't.

And with mumps, while most people won't get these horrific complications, someone will! That's the way statistics work. Someone will, if enough people get this.

So instead, what I would recommend, what the CDC, the Centers for Disease Control recommend: get two doses of the MMR, measles, mumps, rubella vaccine. The first dose is somewhere between 12 and 15 months, so that's the one that our daughter Cooper just got, and the second dose is somewhere between 4 and 6 years of age. You have to get it before you enter school, and that's the one that our daughter Charlie just got.

There's some thought that maybe immunity does wane with age, and so in certain—like, I, for instance, before I started medical school, I had to have titers drawn. They actually checked my blood to see if I had enough antibodies in my body to protect me against measles, mumps, and rubella, and I did, so that was good.

**Justin:** Congratulations. No need to brag.

**Sydnee:** I was good. But that's been a while. That's been a while ago. It's not something—unfortunately, that's not something you can do routinely, just 'cause

of expense. I mean, it's just a blood draw, it's not like a risky test to do, but that's kind of expensive to go do just to see if you need another MMR vaccine.

If it is clear that it's gonna become necessary, you'll see recommendations come out for a booster. That's what happened with the whooping cough booster, right? We used to just get tetanus boosters as adults, and now we recommend that you get a tetanus and a pertussis booster as an adult, and that's because we realized that immunity waned as we got older.

And so, if that becomes necessary, you'll get that recommendation, and the important thing for you as the patient is that then your insurance'll cover it, right? Unfortunately, that's the thing we have to think about.

**Justin:** Yeah.

**Sydnee:** Uh, the MMR vaccine is incredibly safe. It's incredibly effective. The mumps component is about 88% effective when you get both doses. The first does is 78%, but that's why we get the booster, to bump you up to 88% by the second dose.

And I know that's not 100, but—

**Justin:** But what is?

**Sydnee:** But what—nothing is. Better than getting' the mumps. Mumps used to be—like I said, my parents both—my dad definitely got it, my mom may've gotten it. Mumps used to be something that everybody gets! But there has been a 99% decrease in mumps cases in the United States since the vaccine was introduced. This is how effective—because even if you're part of that percent that the mumps vaccine doesn't—you don't get complete coverage, you're not completely immune; if everyone around you is immune, that's herd immunity. You won't get mumps.

**Justin:** Folks, if you hear people continuing to propagate this nonsense that vaccines are not safe and effective, I think we have to call it out. Like, I don't think that you can let that roll off our backs anymore. 2019, folks. Sawbones: no quarter. We're not—we're not leaving room for any wiggle room, where there's no room to respect people's differing beliefs. There's no room for it. Can't do it. Not for this! Like, I'm sorry, I think that we—if you are somebody that is right-minded and believes in science—and you don't need to believe in science, because it's just science.

**Sydnee:** No, you don't have—this is not a belief.

**Justin:** If you understand—and it's not pro-vax and anti-vax, even. I don't think—it's like, real and fake. Like—

**Sydnee:** And I think—I think if you see, um... I know I was—my sister was telling me about a YouTube series that was giving the—like, it's a pro/con kind of thing, and they were giving you like, both sides of the vaccine thing, was a recent episode they did. They're—in my mind, they're damaging, too. There is no other side. Vaccines are safe and effective. That's science, that's fact, that's the truth. That's it. There are people who will lie and say other things—

**Justin:** Right. There's flat earthers.

**Sydnee:** Right, and that's where I would put—people who are anti-vax are in the same category as flat earthers: they're lying. They're telling lies. I don't know if they all know they're telling lies. Some of them may be—may not have malicious intent, may just be misinformed, but that doesn't change the fact that those are lies, and they are lies that will kill people. People will die because of these lies. End of story! And they need to be called out. There isn't another side to this issue.

**Justin:** Right.

**Sydnee:** There's the truth, and there are people who are lying. And if anybody tells you that there is a link between vaccines and autism, don't say, "Well, I believe—" No! You know. Tell them they're wrong. Tell them they're lying, and tell them that also, even if that were the truth—which it's not—but even if it were the truth, what are—why—again, I would still give my kids vaccines! Because that's fine if they have autism. It's not okay if they die of measles! What are you saying to autistic people? That's a horrible, horrible thing, a horrible lie—

**Justin:** And again, it still doesn't—I don't even like indulging that line of reason. Like, it's true, but it's like—it doesn't ma—it's not—it doesn't matter! Like, it's not—it's irrelevant.

**Sydnee:** I know, but it still—it still nor—like, as if being neurotypical is the most important thing on earth. As if that's the end all, be all.

**Justin:** Being good at sports is the most important thing on earth.



**Sydnee:** [laughs]

**Justin:** And, second to being physically extremely, extremely attractive. And then the third thing... no.

**Sydnee:** No. But again, there is no link between vaccines and autism, the MMR or otherwise. There is no link, is no link. It was a lie, it was a lie.

**Justin:** Any—any goofball biohackers that try to say otherwise on Twitter: please let them know that they are incorrect.

**Sydnee:** They are lying, and those lies will harm people.

**Justin:** It's just—can I just complain about that cat for a second? That Ben whatever? I don't even remember the cat's full name. Ben something. He was talking about how... "I would—I would encourage yourself to educate yourself about vaccines the same way I did: by watching these two anti-vax documentaries and reading these two anti-vax books."

Okay. What are you d—like—[stammering] that's not education! That's like—you're not getting both si—there's not both sides, and even if there were, [through laughter] you're only getting the one dumb side, that doesn't make any sense and is wrong and a lie!

**Sydnee:** I really think that's an important thing to remember. Not everything has two sides!

**Justin:** There's Hugh Jackman, and that's it.

**Sydnee:** [laughs] No, there are lots of things that do—

**Justin:** The truth doesn't have two sides.

**Sydnee:** No, there's the truth. And that's, especially now, especially now in the United States of America, it's important to remember that there is the truth, and it is knowable, and we can defend it, and we don't have to give equal time to lies. There are opinions, and there are beliefs. This is not one of them.

**Justin:** Now, the Chuck E. Cheese things, putting the pizza slices back together, I don't know about that. Jury's still out on that.

**Sydnee:** [laughs quietly]

**Justin:** Uh, folks, thank you so much for listening to our program. We hope you've enjoyed yourself. We're sorry we got a little bit preachy at the end, there. That's how we do it here on Sawbones! But we're gonna try to talk about vaccines at least once a year, just bump it back up. This is your booster shot for vaccine awareness.

**Sydnee:** No, we still haven't done an episode on rubella, so...

**Justin:** [movie trailer voiceover voice] Coming in 2020...

**Sydnee:** No, I wasn't gonna wait that long.

**Justin:** Well—okay. You're gonna run out of vaccine related topics to talk about.

**Sydnee:** Oh, I'll never run out of vaccine related topics. [through laughter] You don't know me.

**Justin:** We're part of the Maximum Fun network. You can find them at [Maximumfun.org](http://Maximumfun.org). Thanks to The Taxpayers for the use of their song Medicines as the intro and outro of our program, and thank you to you for listening. We sure appreciate you, and we hope you have enjoyed yourself.

If you get a chance, please share this episode around. Say it's extremely important, because people are dying of measles and mumps and—well, they're not dying of mumps, but it's not great, to get mumps. I will say that.

**Sydnee:** No.

**Justin:** And, uh, please share this episode or any of our episodes. Review it on iTunes if you can. That's actually a really big help. And subscribe, and ask others to subscribe, and all that good stuff.

But until next week when we join you again, 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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