Sawbones 323: COVID-19 Q&A

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[theme music plays]

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

Sydnee: And I'm Sydnee McElroy.

Justin: Ooh, did you like that energy, Syd?

Sydnee: Uh, it was… I mean, it's up there. It's high. I would say it was high energy.

Justin: Uh, sometimes, this is as close as you and I get to talking to other adults! So I like to imagine that energy right now. I'm just talking with some friends of mine!

Sydnee: Right.

Justin: Other adult friends we have, that we're talking to!

Sydnee: This is not sad.

Justin: This is in no way sad!

Sydnee: That's a normal thing. You know, we could just, like, Zoom or Skype somebody, or FaceTime, or whatever. Like, that kind of thing.

Justin: I don't—I guess that's true. But…

Sydnee: You only know how to communicate through podcasting now.

Justin: When I start talking about the mattresses I enjoy—

Sydnee: Ohh.

Justin: —the underwear I like, they're like—they tune out. And I need people who are dialed in and here for it.

Sydnee: So the—[laughs] It's the ads that really…

Justin: It's the ads that bum my friends out.

Sydnee: [laughs]

Justin: Um, the—the unpleasantness continues.

Sydnee: [laughs] That's a way to put it.

Justin: That's—I mean, that's—yeah. That's the—actually, that's the only calendar item that I have. Just a ongoing thing that says, "The unpleasantness continues."

Sydnee: I hope you're hangin' in there, friends. Uh, we're doin' our best here. It's been a rough week, and I—I thought, you know, I should put together a medical question type episode, uh, but we've had so many COVID-related questions, I thought maybe one specific to that.

Justin: Right.

Sydnee: Uh, we didn't really have to put out a call for them, because we've just had so many, that I thought we could address some of—some of the—they're kind of grouped, as opposed to—I know in our usual weird medical

question episodes, we read, like, the whole email from the listener, but we've had… I think the general questions fall into several themes, so I kind of have these general things.

Justin: Uh, well, I'm excited to learn something. I know I've got a lot of questions myself about—about COVID. I'm sure they'll all be answered by the end of this episode and, uh, I'm excited to—to get goin'.

Sydnee: Now, I should caution, Justin. We are not gonna answer all your questions about COVID, because I don't have all the answers.

Justin: I've only got six questions.

Sydnee: Oh. Well, okay. I'm just saying.

Justin: Perfect.

Sydnee: I don't think anyone has *all* the answers right now.

Justin: That's true.

Sydnee: That's just the truth.

Justin: That's true. I would distrust anyone who acts like they have all the answers.

Sydnee: Uh, there was one common question that came up a lot. I read an email from Kat who summed it up nicely. It's about how likely a vaccine is.

Justin: Yes.

Sydnee: Uh, especially, I think that this specific email was in light of, uh, family members who are anti-vaxx, and who feel that, not only would they, I think, not want a vaccine, but there's also not one coming.

Um, specifically for reasons like, we don't have viru—we don't have any vaccines against coronaviruses right now, so why would we be able to make a vaccine against this one?

Justin: Uh, Boris Johnson, you may know him better as the, uh… [holding back laughter] Prime—British Prime Minister.

Sydnee: Yes.

Justin: Uh, and COVID-19 survivor, to be fair.

Sydnee: That is true. That is all accurate.

Justin: Uh, said that a vaccine—he said this week, actually, that a vaccine—or, last week—uh, a vaccine may never be found. So I—I—[holding back laughter] It's not exactly a conspiracy theory, at this point.

Sydnee: No. I didn't know he said that.

Justin: Yeah.

Sydnee: Uh, now, if you—if you listened to the recent, um… the… what was it? It was a Congressional hearing, testifying before Congress, the various scientific experts. Dr. Fauci and Robert Redfield from the CDC. Some other people who were asked to come testify as to, uh, before the Senate, as to where we are in terms of our response and various things.

And I think Dr. Fauci made it very clear then, which was very recent, and he said it multiple times, that a vaccine is not only likely, but it *is* coming. It will be coming. It is not here now. It takes a while. He has to keep saying that, because every time he says it, other people might say—

Justin: They're like, "Can I have some? If you—do you have it on you?"

Sydnee: Other people are like, "Well, we'll try to speed that up." And he's like, "No, that *is* the speeding up."

Justin: [laughs]

Sydnee: "The speeding up is 12 to 18 months." And they're like, "Well, maybe we can speed it up." And he's like, "No, no, really, we can't."

Anyway. Uh, it is *very* likely that a vaccine is coming, and I am not telling you that as, myself, an expert. I am telling you that because the experts say that. That's what they all say. [laughs quietly] They agree. The people who make the vaccines and the people who know how to make vaccines and direct agencies to do so all agree that, yes, a vaccine is quite possible.

Justin: Now, I'm gonna challenge you on that, Sydnee. We've never made a vaccine to a coronavirus.

Sydnee: That's not really true.

Justin: Oh, wow.

Sydnee: Uh, let's ex—let's exclude SARS and MERS for a second.

Justin: Okay.

Sydnee: Why have we not made vaccines for other coronaviruses?

[pauses]

Justin: Uh, my—

Sydnee: You may be able to answer this.

Justin: —my best guess would be that they have not been that serious.

Sydnee: We don't have a vaccine against the common cold.

Justin: The common cold, basically.

Sydnee: Yes. I mean, we don't have a vaccine for rhinovirus, either, which also can cause basically a common cold, for most people. That's not to say that any of those illnesses in someone who is—who has, uh, other chronic diseases or who might be very sick from something else… of course, it *could* be a big deal.

But for most of us, the coronavirus, the everyday coronavirus – not SARS, not MERS, not COVID – has not been a big deal. That's why we don't have a vaccine against it. We can't have a vaccine against every single virus.

Justin: Right.

Sydnee: We just—

Justin: There's not enough hours in the day.

Sydnee: No. We don't. There are those cool ideas that I've mentioned before, where Dr. Fauci has said we could have, like, platform vaccines that we could tailor to different outbreaks as they occur, but that takes time and money and, uh, a federal government that is—

Justin: Focus, from the federal government.

Sydnee: —focused and, yeah, on that. And… we've got space wars right now, so. Other things take precedence.

Justin: Yeah. When the Klingons come, though, you will be grateful.

Sydnee: [laughs] So, when it comes to SARS and MERS, though, because those are—those were big deals, as we've covered on this show before. Those were big deal coronaviruses. Why do we not have a vaccine?

Okay. Well, we were working on it. [pauses] We—

Justin: Really?

Sydnee: Yes! There was no reason we couldn't. We just hadn't yet. But both of them burned out really quickly, if you remember.

Justin: Which, uh—I don't.

Sydnee: Both—both SARS and MERS were not—I mean, I think you do remember that they weren't—they did not cause *this*.

Justin: Right. They were—there was a lot of worry about those, but they didn't exactly… I don't know what a sensitive way of saying "making a splash" is, but they didn't make—make a splash.

Sydnee: Yeah, they were contained a lot more quickly. And so, the idea of continuing the funding and the resources to make a SARS vaccine was not of the utmost importance to any of the players who would be responsible for that. And so it—it kind of stopped.

But the work was being done, and it can be, and could be. And my understanding is that MERS is actually—the vaccine may still be in process. Like, they may have a MERS vaccine. They haven't gone through all the trials of any of these yet. Again, not because they couldn't do it. There were—there were certain, uh, barriers.

You may have heard this idea that if you do the vaccine wrong, it could—it could harm someone, in these specific illnesses. And so, they had to do all the appropriate safety testing and all that, right? 'Cause you don't—we know that before we give you a vaccine. We know it's not gonna harm you. That's why we do them.

But they just hadn't done all that yet with these. But they can, and they will, and they are.

Justin: I—yeah. You know, as for the past few months, let's just go ahead and just keep workin' on those, huh? Let's just go ahead and just go wild and just go ahead and keep workin' on all those vaccines.

Sydnee: They're using that research that they've already done and the progress they'd already made on those vaccines to help expedite the research on the COVID vaccines. In some of them. There are many in process. There are many different, you know, companies working on different types of COVID vaccines.

But one way or another, that research is helping to feed into that. So the idea that, "Well, we've never done it before." I mean—well, I mean, yeah! We—we sort of did. We tried to. We kinda did.

We thought about MERS—uh, specifically I saw a lot of, um… military interest in a MERS vaccine, should we need it. But anyway—so, yes, of course we can do that, and we *will* do that. We just need time to do it.

A lot of people have brought up, "Well, what about mutations in the virus?" So we'll make a vaccine that was based on our sequencing of the viral RNA back in January, right? That was announced. Do you remember when that was—I love when science things like that float to the top of the announcement, although… not so much the reason.

Justin: Yeah.

Sydnee: But we sequenced the viral DNA—or, RNA, and we were able to, at that point, make a vaccine. That's great.

Uh, the—the conspiracy out there has been, "Well, but because the virus will mutate, if we're using that sequence, by the time we have the vaccine, the virus will be so different from that original sequence that it won't work."

That's not true.

Justin: Mm.

Sydnee: Coronavirus is an RNA virus, and RNA viruses do mutate, they do change, and coronavirus has. We know that. That has been charted. You can read papers on it. There have been news articles on it. Uh, but one thing we know about this coronavirus is that it changes very slowly. The genetic code

of it, even the most recent strains, are not that different from the original coronavirus, that strain, as far as we can tell, that we have found. So—

Justin: So it won't be as hard to keep up with.

Sydnee: No. Well, and the idea of keeping up with it would mean we'd have to change the vaccine. We have no reason to think we're gonna have to do that.

Um, we are using a flu vaccine for H1N1 that was developed from the 2009 H1N1 strain, and it still is effective against the H1N1 strains of today, because that's how slowly that virus has mutated, has changed over time. Is that a vaccine that works for the ancestor is still typically very effective for its descendants.

Justin: Okay.

Sydnee: Um, it is very rare that you would need to change that. A better example would be, uh, mumps, for which we have used the same vaccine for 50 years.

Coronavirus could be more—we believe is more similar to that. There is no reason to think that the vaccine we make now will be ineffective by the time, you know, it's out there and produced. There's every reason to think it *will* be effective.

Now… [pauses] Will, uh, it be available for everyone at an affordable price? That, I cannot say.

Justin: Well, I will—I will continue to remain hopeful.

Sydnee: Yes. I think—I am not—I would not say I'm hopeful. I am certain that a vaccine will come.

Justin: Oh, I meant about the cost.

Sydnee: Oh. Yes. I—

Justin: [laughs quietly]

Sydnee: Well, we can remain hopeful about that.

Justin: Yeah.

Sydnee: Uh, we have gotten multiple questions, including one email from Hasini and Ryan, who asked about vitamin D supplementation for COVID. Uh, I think the specific question was, "My mom is making me take vitamin D now. Is that really anything?"

Uh, there's been a lot of work done in this area. I think it's a really interesting question.

Justin: Now, vitamin D—if I remember correctly from our Vitamins episode, I feel like vitamin D was the one supplement where you said, sometimes, it may be good.

Sydnee: Yes. Because there are people who are vitamin D deficient. That is something we are finding, and so, in those patients, they should take vitamin D supplements.

Justin: I have been, I'm sure, but now that May is here and I'm startin' to see those rays peek out from between the clouds, you *know* your boy is gonna get his D. It's not even a concern anymore. Come to my house. I'll give you some spare… D. Just off of my… shoulders or wherever.

Sydnee: Right.

Justin: 'Cause I won't even need all these big, beautiful rays I'm gonna be soakin' up.

Sydnee: Through… a layer of appropriate SPF sunscreen.

Justin: Suncr—sun cream.

Sydnee: Sun cream, yes.

Justin: As our children—

Sydnee: Of course, always.

Justin: —have watched too much Peppa Pig and only call it sun cream, and only call them bathing costumes.

Sydnee: Yes.

Justin: That they wear.

Sydnee: "Mommy, where's my bathing costume?"

So, the idea behind this is that the way the virus gets into your cells is through—like, it has to have, like, a door, okay? To get into your cells. And doorways for viruses are usually receptors. Just little things sticking off the surface of the cell.

Justin: Is it the Golgi bodies?

Sydnee: No.

Justin: I always wondered what those things did.

Sydnee: It's call—it's called an ACE2 receptor, if you're curious. And the idea is that vitamin D can decrease the number of ACE2 receptors you have on your cells, so less—fewer doors through which can coronavirus can enter, right? Makes sense.

Justin: Okay. Easy. Done.

Sydnee: Um, so take more vitamin D, fewer receptors. Either you don't get an infection, or your infection is milder. That's the other idea.

Now, where all this comes from is really based on correlation, which we know is not the same as causation.

Justin: Right.

Sydnee: But there has been a correlation in a number of studies that have simply looked at patients who had COVID, measured their vitamin D levels, and then kind of came up with, like, a rating of disease severity.

So, based on these factors, we would say this person either had mild, moderate, or severe COVID. And then, their vitamin D level was either normal, slightly deficient, or very deficient. Right?

Justin: Okay.

Sydnee: And then they compared them. And they found a correlation between people who had severe disease and vitamin D deficiency.

So, as a result of this, because of these correlations that they have observed, in some hospitals, I know they are adding vitamin D to their protocols for treating COVID. Uh, just—you can also, in addition to everything else we're doing for you, here's a vitamin D supplement.

I know that some people have elected on their own to start taking vitamin D prophylactically. Like, the idea being that, if I keep taking my vitamin D, I'm less likely to get COVID.

Justin: Okay.

Sydnee: Okay. Now, all of that I would say—

Justin: I have—I've got my Amazon cart full, so I'm just waiting—

Sydnee: [through laughter] Full of vitamin D.

Justin: —for you to tell me… if I should pull the trigger.

Sydnee: Vitamin D is one of the vitamins that—it's fat soluble, so you do store it, so it is possible to take too much vitamin D. It is possible.

Now, I would say if we're—if we're being… I'll put that out there. You could take too much. You may already have plenty, in which case, I have no reason to tell you, if your vitamin D level is normal, that taking extra vitamin D is more helpful. I don't—I don't have that evidence. The idea is—

Justin: It's deficiency that seems to be the issue.

Sydnee: —if you're deficient, taking vitamin D would be helpful, because disease would be worse for you. Um, and you don't know if you're deficient if you haven't been checked, right?

Uh, so it's hard for me to just say, "Everybody start taking vitamin D," 'cause there is a small risk to that. It's small, but there is a risk to that.

Justin: Okay.

Sydnee: Um, the other thing, though, is that there are confounders. So—

Justin: What does that mean?

Sydnee: Uh, factors that are not being controlled for in these studies that could also be leading to these differences.

Justin: Okay.

Sydnee: We're assuming the vitamin D is the difference. But there are other things about these patients that might also be playing a role. For instance, vitamin D deficiency is more common in people who are at risk for nutritional deficiencies, especially because of socioeconomic status.

Um, we also see an overlap with obesity and vitamin D deficiency. We also see racial disparities when it comes to vitamin D deficiency. Um, and all the

different, like, social determinants of health that can come with, you know, all of those factors within our American healthcare system.

So, are we really—is it the vitamin D, or is it all the other reasons why somebody might be more likely to be vitamin D deficient?

Justin: Right.

Sydnee: Um, and right now, I don't think we have a clear answer to any of that. So what I would say is, if you're vitamin D deficient… vitamin D is—you should be on it. I mean, that's—yes. I have—[laughs quietly]

Justin: Sure, that's—that one I could've figured out.

Sydnee: I have diagnosed and treated vitamin D deficiency many times, and I absolutely support that. I—I would always support that. But I would certainly not take vitamin D as a supplement and believe I am now safe from COVID. There is no evidence…

Justin: Certainly not that!

Sydnee: It is not going to prevent it, solely. It will not—it will not cure it. Um, it will not treat COVID itself. It will treat vitamin D deficiency.

Uh, I would not… it's kind of like—I have a lot of patients who would have leg cramps, and so they would start taking over-the-counter potassium, which—when I say that, I know there are people listening who are, like, in the medical field, like pharmacists, who are wincing. Like, "[quietly] No, don't do that!"

'Cause you can definitely take too much potassium, and it's very dangerous.

Justin: Uh-huh.

Sydnee: Most of the time, your leg cramps aren't potassium. If you have low potassium, yes, it could be due to that. But if you don't, taking extra potassium won't fix your leg cramps.

Justin: What'll it do?

Sydnee: Well, it could make you have too high potassium, and then you could have a heart arrhythmia.

Justin: Great!

Sydnee: Like, don't do that.

Justin: Yeah, okay! Fi—fine, Syd!

Sydnee: [laughs quietly] You can go get your levels checked.

Justin: Are we buying the vitamin D or not?

Sydnee: Uh, only if we're deficient.

Justin: Okay.

Sydnee: So—

Justin: But I don't know if I'm deficient.

Sydnee: [laughs quietly]

Justin: It's a real… it's a real, uh… Schrodinger's… Cart. That you've set up for me. I don't know if I'm buyin' the D—

Sydnee: You can go get a level check.

Justin: —or not.

Sydnee: If—if you have questions or concerns about your vitamin D level, please talk to your primary care physician, and they can help you with that.

Justin: And get some rays, get some volleyball goin'. Whatever.

Sydnee: Wear your sunscreen. Wear your sun cream. I wanna talk about our immune system, but before we do that…

Justin: Oh?

Sydnee: Can we go to the billing department?

Justin: Let's go!

[theme music plays]

[advertisements play]

Justin: Uh, so Syd, you were gonna talk about the immune system, which I can only assume means you wanna discuss the hit 2001 animated film Osmosis Jones, starring David Hyde Pierce and Chris Rock.

Sydnee: No.

Justin: As a blood cell—white blood cell and a cold pill that team up to bring down a virus.

Sydnee: I don't know any—I've never seen that.

Justin: You haven't—you haven't seen—Bill Murray's in it.

Sydnee: I… don't know—

Justin: They're in Bill Murray's body.

Sydnee: That's—

Justin: Can you imagine?

Sydnee: —wow.

Justin: Yeah! It's wild. It's wild.

Sydnee: Uh, no. I don't wanna talk about that.

Justin: The Farrelly Brothers produced the live action parts of Osmosis Jones. That's wild. I'm shocked that you haven't—are you a fan of Osmosis Jones, or were you out on it?

[pauses]

Sydnee: I don't know anything about it. I mean, like this. This is the first time I've—

Justin: Are you telling me you haven't seen it?

Sydnee: No, I've never seen it! I don't know anything about it!

Justin: You love medi—okay, you say you love medicine and stuff.

Sydnee: Yeah.

Justin: And yet, a movie about medicine, and you're not watching it. That's it. Cancel your plans.

Sydnee: Okay.

Justin: For—for tonight. We're watching.

Sydnee: Right. My big plans for tonight. What were they? Oh, that's right. Stay in.

Justin: "Not watch Osmosis Jones." Scratch that out and write in "*Do* watch Osmosis Jones today—together."

Sydnee: I—Laura asked me about—

Justin: I haven't seen it either, but it looks good. [laughs quietly]

Sydnee: Laura asked me about social distancing, and whether or not it can weaken our immune system, and Laura was not the only one to ask that question.

Many people have asked that, because it was one of the thing in that, uh—the video, the press conference from those two urgent care doctors. Uh, they mention this. And I—I—it was on my list of things to address, but I got lost in statistics and forgot to mention it.

So, um, if you have heard people say that—and I think it's in that—actually, I know, it's in that Plandemic, uh, thing too. That other… completely false, bogus thing.

Um, that the idea that staying inside is making our immune systems weak, and we're more at risk for… [pauses] General disease, COVID specifically, whatever.

Um, this is false. I think—here is what I think they are trying to… I think they're trying to make connections between things that aren't connected, to confuse people.

Justin: Okay.

Sydnee: Okay. I think they're sort of referencing the hygiene hypothesis. Have you heard of that before?

Justin: Hmm… I feel like we've talked about it before.

Sydnee: I think we've mentioned it. It's a way of explaining why there's more, like, incident of allergies and, um, uh, like, contact dermatitis, like atopic disease and asthma and things like that nowadays.

Justin: The theory being that we make ourselves too clean, and so, our body doesn't develop the, uh, immune responses that we need to… pathogens.

Sydnee: Well, we have an exaggerated immune response, really, is what we're, uh, assuming, because we're not exposed to these things early enough.

Justin: Okay.

Sydnee: It's similar to the idea, if you—if you have little kids, or if you have, in the past, you know, if you have bigger kids that used to be little, or you have a lot of contact with little kids, you may have heard the recommendations about food introduction change through the years.

We used to say, wait when it comes to, like, nut butters, things that have a higher likelihood of having allergies to. And now, we say you should introduce them earlier.

Justin: It's even, like, since we've had kids, right?

Sydnee: Yeah. It has changed even since then. Like, give a baby peanut butter, because then they're less likely to be allergic to peanuts later.

Justin: Uh-huh. And 'cause they love it, and their little mouths go… [smacking noises] It's adorable.

Sydnee: [laughs quietly] They—they do love peanut butter. Uh, so I think that's what they're kind of… trying to talk about with this. The idea that, like, when we're younger, if we're not exposed to a lot of stuff, maybe we're more likely to have allergies to stuff later on.

I—but that's a whole—first of all, allergy is a whole other thing… that isn't a virus or a bacteria, obviously. So they're—they're not related, but I think that might be what they're talking to.

It is fair to say that you can't develop antibodies to a specific infection until you're exposed to it, right?

Justin: Right.

Sydnee: Like… you and I, as far as we know, have not been exposed to coronavirus, to this specific—

Justin: Right.

Sydnee: —to, you know, novel coronavirus, so we do not have antibodies to it. Now, in this example, I am a healthcare worker. I have probably been exposed to and developed antibodies against maybe a higher number of pathogens than you. Let's theorize that.

Justin: Okay.

Sydnee: I don't know if that's true, but let's—

Justin: It sounds right.

Sydnee: —let's—let's say it.

Justin: I do some na—I get up to some nasty stuff, so I'm not gonna just 100% grant it to you, but okay. Let's assume it.

Sydnee: My—now, you and I, though, have not been exposed to coronavirus. If we are exposed to coronavirus, neither of us have antibodies to it. We both are at risk for an infection. That's it.

It does not matter how many other things I have antibodies to. My immune system is not stronger than yours. It's a one to one thing. So this is a really weird argument to try to make with people; the idea that you need to be out in the world exposing yourself to other viruses and bacteria so that you'll be ready… for when you get COVID.

Justin: It's like the idea that just because you've seen a lot of movies, you're more likely to have seem Osmosis Jones.

Sydnee: [through laughter] That's true. Or that I would know anything about Osmosis Jones, because I've seen a lot of other mo—

Justin: Because you've seen a lot of movies.

Sydnee: —yes.

Justin: And a lot of other David Hyde Pierce movies.

Sydnee: Exactly. Like, I—it's really a one to one thing, so I am—you are—you can get coronavirus… anybody can, who hasn't been—I mean, who hasn't had it. That's it.

And so, there is no weakening of your immune system that happens because you're staying in your house, or in your yard, or not around other people. Um, I think that's a common myth, really, when it comes to the immune system. The idea that we all have these, like, varying—like, some of us have really weak and some of us have really strong immune systems, and all this.

No. Unless you've been diagnosed with an immunodeficiency, either a genetic issue or from a chronic disease state or from a medication you're taking, something like that. Unless you have been diagnosed with that, there's no reason to think your immune system isn't going to function fine.

Justin: Well, that's interesting. That's a misconception even I had, so that's good to actually—good to know.

Sydnee: Obviously, you need to support it with proper nutrition, with good sleep, with management of chronic diseases. All those things play into a functioning immune system. Um, but the idea that you staying in your house is gonna damage your immune system? That's not—it's not founded on, I mean, anything. They're just pulling that out of nowhere.

Now, the one thing I will say is, if what they—what they're trying to say with this is that, if there was a way for us to expose people to coronavirus, or maybe, like, part of coronavirus, in such a way that they wouldn't actually get sick from coronavirus, but would develop an immune response to coronavirus… if *that's* what they're trying to say; that, like, that would be better…

Justin: That's science fiction. That doesn't seem possible.

Sydnee: No, that's a vaccine, is what they're saying.

Justin: Right, a vaccine. I should've said vaccine.

Sydnee: So… that, I support.

Justin: [snorts quietly] A vaccine.

Sydnee: A vaccine.

Justin: Uh, let's talk about masks. Uh, I feel like I've seen, uh… here in West Virginia, there's just a real wide array of mask, uh, usage and non-usage, I would say.

Sydnee: More non-usage, uh, than I would like to see.

Justin: Yeah. Uh, yeah. Especially since we've started to slowly reopen—[sarcastically] "Slowly," ugh… reopen things here.

Sydnee: The comeback, we're making the comeback.

Justin: Yeah, the comeback. As a—since the *comeback* has begun, uh, I think I've seen fewer masks, which is, uh… counter… sort of counterproductive, but okay.

Sydnee: There are—there are two big kind of categories of myths that I've seen. Just to address one briefly, it's that they don't work. And I think we've

talked about this on the show before, and I hate things like this where they're, like, couched in truth, but they're promoting, like, a false action.

So, it's not that masks don't work. If you're wearing a cloth mask, which is what we recommend, right? If you are just going out in the world to go to the grocery store or whatever, you should wear a cloth mask. Um, if you're a healthcare worker, obviously, we're hoping you have other masks. But in this situation, if you're going out into the world, wear a cloth mask.

The reason we mainly suggest that is to protect other people from *you*. You are less likely to spread viral particles all over the place if you have covered your face with a cloth mask, your nose and mouth. That is why.

No, they do not completely protect you against getting sick. You, the wearer of the mask, could still, through that fabric, inhale viral particles from other people. That is absolutely possible, and I think we've covered that pretty clearly.

Justin: Yes.

Sydnee: The rate of transmission is even more greatly decreased if both you and I are wearing a mask. And, they are not a replacement for social distancing. So, just 'cause you're wearing a mask doesn't mean you can now, like, go to a keg party.

You shouldn't be having parties. You shouldn't be going to parties. We should still be trying to keep six feet away from people as much as possible, and staying home when we're sick. A mask doesn't replace any of that. It's just another layer of protection.

So, anybody who's saying that they don't work, it's like, well… I mean, yes, they *do* help. But they're just one piece of it.

Justin: Right.

Sydnee: Uh, the other thing I've seen are some really wild ideas about how, like, it will make you re-inhale your viral particles and push them into your brain and make you sicker?

Justin: Now, that does happen, I've found, with burps. For sure.

Sydnee: [laughs quietly] I—I don't—I mean… I don't know why—first of all, if you're wearing some sort of, like, N-95 or something like that, no, it's trapping the viral particles in there.

But, like, the other thing is, if you are wearing a cloth mask, you can still breath through it. Like, there's still stuff making it through, so that's not—I mean, I guess if you're wearing, like, just a face shield? Like, completely—but if it's something you can't breathe through, you shouldn't be wearing it.

It's important that whatever mask you're wearing you can breathe in. [pauses] If you can't breathe in it, please take it off immediately… if you are st—[laughs] If you're still awake.

Justin: Please.

Sydnee: Um, to that—to that, uh, note, there has been some talk of, like, the masks actually make you more at risk for infection. As we've talked about, unless they're, like, wet and dirty and you're not properly handling them, no they don't.

Now, if you—if you're mishandling them, if you're throwing them down on contaminated surfaces and then putting them back on your face, if you're touching them a ton, if you are wearing gloves that you don't know how to wear properly so you're cross-contaminating your mask and your face and your gloves and all the items at Wal-Mart and all that, sure.

But if you're prop—following proper mask hygiene, and washing your hands, and washing the masks, and letting them dry completely like you're supposed to, they're not a risk to you. They're just not 100% protective.

Justin: Also, quick reminder – if it's not over your nose, it's not doing anything. I can't tell you how many people I see working at stores who—and I get it, because it's gotta be uncomfortable.

Sydnee: Yes, they are uncomfortable.

Justin: Like, I 100% get it. But just—especially if you're goin' about your day-to-day whatever, just remember, you gotta cover your nose and your mouth with the mask, or else there's no point.

Sydnee: And there's no worry—I saw somebody out there saying that you're going to re-inhale so much carbon dioxide… 'cause, you know, you breathe in oxygen and you exhale carbon dioxide. But that now because of the mask you're gonna—you're going to breathe in so much carbon dioxide that you're going to, like… pass out or something, get confused.

Um, again, if your mask is functioning properly, no. You won't. If you can't breathe through your mask, you need a new mask. It should not be made of a material that you can't breathe through. That's…

Justin: Yeah.

Sydnee: Yes.

Justin: Yes.

Sydnee: Yes. That is essential for the mask to function. Uh… Justin, I wanna talk about testing.

Justin: Yeah! Yeah, yeah.

Sydnee: We got a ton of questions about testing, and because there's been a lot in the news lately about how the tests maybe don't work very well.

Justin: Good. [laughs quietly] [mumbling] Good, good, good.

Sydnee: There are two—broadly speaking, there are two basic types of tests.

Justin: Okay.

Sydnee: There's the test that tells me if you have coronavirus right now. A PCR test. It looks for RNA, it looks for the virus. We're trying to find the virus itself in your body. So it tells me if you have it right now.

Then there are the antibody tests. The antibody tests either look for IgG antibodies, IgM antibodies, or maybe both. And what that means is, uh, these are—these are things that your body made in response to the virus. It makes IgM antibodies in response… like, those are the first things it makes. So if I find those, it usually means you have an acute infection. You're sick.

It makes IgG later. So if I find those, it meant you *had*…

Justin: Okay.

Sydnee: … coronavirus. And in a perfect world, if you thought you had it right now, I could run the PCR test on you and it would be positive if you have it and negative if you don't. And if I thought you had it last month, I could run the antibody test on you right now, and it would have IgG antibodies if you do, and no IgG antibodies if you don't.

Justin: Okay.

Sydnee: In a perfect world, that's what those two tests would do. Now… I don't know if I'm the first one to tell you that we don't live in a perfect world.

Justin: [laughs] No.

Sydnee: But you probably have surmised that by now. The PCR test, the one that says if you have it, was initially—what the numbers at least I know *we* were working with—were that they had a 20 to 30% rate of false negatives, meaning 20 to 30% of people who do in fact have coronavirus are gonna test negative with this test. Which is, I mean—it's kinda high.

Justin: It is, yeah. It's not great.

Sydnee: Um, especially with something like this where we're trying to contain a public health threat. That's a—that's… that's a scary number.

Justin: That's a lot, yeah.

Sydnee: Um, now, you've probably seen some recent reports that are out that—

Justin: That it's worse.

Sydnee: —that it's actually—it might be even as clo—even closer to 50%.

Justin: [laughs]

Sydnee: Which is like a—a coin flip. Um…

Justin: [coughs] [through laughter] It's almost worse than not getting the test!

Sydnee: Obviously you can rerun tests. There are tests—there are other diseases out there. Like, one that springs to mind is, it can be hard to diagnose tuberculosis. Sometimes we have to do multiple tests on you before we're sure you do or don't have. Before—before we're sure you *don't* have it, I should say. False negatives are not uncommon.

But the nice thing is, if I'm trying to diagnose you with tuberculosis, I can order as many of those as I need. Right now, we're still in a situation in a lot of places where being able to test you repeatedly for coronavirus is not really possible. We don't have enough tests to do that for everybody, which puts us in a bad situation if we really think you have it, but the test came back negative, but we still really think you have it.

Justin: Yeah. What do you do?

Sydnee: It's tough. Like, how do we—how do we ration our testing supplies to cover for that?

Justin: Yeah.

Sydnee: It's a bad—you know. So that's—that's part of the problem right now. Um, the antibody test has some similar issues, in that a positive test could be a false positive. Now, why would that happen? Why would I look for antibodies to coronavirus in your body and think I found them, but they're not really there?

Justin: Maybe you had another coronavirus.

Sydnee: That's exactly it.

Justin: Woo!

Sydnee: Good job Justin.

Justin: Yeah!

Sydnee: The tests are supposed to control for that, but they're not perfect. And so, sometimes, they accidentally pick up an antibody for a different coronavirus, and not to this one, which would lead you to believe that you'd already had it, when maybe you hadn't.

Justin: Ah.

Sydnee: Uh, and the reason that this is really dangerous with the antibody tests comes down to statistics. This is really like—even in my—even as I have learned this stuff in school and studied it, and still—I know it, I find this stuff very dense and not intuitive.

When it comes to these different tests, what you will often hear quoted are their sensitivity and specificity, okay? And these are two statistical measures of, uh, basically how likely this disease is, or how likely this test is test is to rule in or out a disease. Okay?

Justin: Okay.

Sydnee: Um, they will tell you that a lot of these antibody tests either have—you'll see different numbers quoted. 90% sensitivity, specificity; 95%. Some of 'em are out there saying 100% sensitivity and 99% specificity, which sounds awesome, right?

Justin: Yeah.

Sydnee: Like, if you saw those numbers, you'd think…

Justin: Good, yeah. Absolutely.

Sydnee: Great! This is—this is a great test! [laughs]

Justin: Yeah.

Sydnee: I mean, those nu—I mean, they can't get much higher than 100, and almost 100. So, here's the problem – the other end of that is the positive predictive value and the negative predictive value.

Justin: Okay.

Sydnee: Okay? And these are slightly different concepts. The positive predictive value is how many people who test positive… so, of all the people who get a positive test, how many of those people actually do have it?

Justin: Okay.

Sydnee: And then the negative predictive value is, of all the people who test negative, how many people really don't have it? How many times did it get it right?

Justin: Okay.

Sydnee: Those numbers are slightly different, and they're really based on prevalence, is how we figure that out. 'Cause, like, otherwise how do we know what we don't know? How do you know how often it got it right?

Justin: Oh, I guess I see what you're saying.

Sydnee: You need a gold standard, and our gold—and—and that depends on the prevalence of the disease. How—how often is it out there?

Justin: Okay.

Sydnee: Right now, in the US, the prevalence of coronavirus is, like, five percent. And in some areas it's way lower, like here, where we are. And in some areas it's way higher, in New York.

Justin: Okay.

Sydnee: The problem is… [laughs quietly] If you're in an area like here in West Virginia, and you have a prevalence that's even less than five percent… when you do that test, even that test that has, let's say, a, uh… 99% sensitivity and specificity, there is still a 16% chance that the disease is not present when the test is positive. So that the test is a false positive.

If you take that, uh, sensitivity and specificity down to 95%, there's a 50/50 chance that that disease is not present, even when the test is positive, meaning a false positive. And if you take it all the way down to 90%, 67.9% chance of false positive.

Justin: [snorts quietly] Syd, this sounds so bad!

Sydnee: So in an area like this, if you get a positive antibody test, it's more likely to be a false positive than a true positive.

Justin: So you just switch it. You just switch it around. [holding back laughter] Look at it upside-down, and it's better.

Sydnee: Now, these tests will become more effective, more important, when we can target them to, like, areas where there's a lot more of it, right? Like, in New York, those numbers are gonna be different, because there's a higher prevalence, especially depending on what neighborhood you live in.

Justin: Okay.

Sydnee: So I'm not saying these tests are useless. I'm just saying that right now, especially in parts of the country where we've had a pretty low case number, I don't know that these tests have a huge utility for us.

Justin: The antibody tests, or the other test?

Sydnee: The antibody tests.

Justin: Okay.

Sydnee: I just don't know how to—I mean, they're great from a research perspective. But, like, to actually guide your actions, I wouldn't—if you told me you had a positive here in Huntington, West Virginia, I would tell you to continue social distancing and wearing a mask and acting as if you could still be infected or get it.

Justin: Right.

Sydnee: I would not tell you to behave any differently.

Justin: Fair enough.

Sydnee: And so—I mean, I think that's the problem with them right now. So I would not, uh—I would not encourage everybody to go running out and get these antibody tests right now. A lot of insurances aren't covering them. People are paying out of pocket for 'em.

Um, there's a ton out there, and their sensitivity and specificity are all over the place, and as I've said, that doesn't always even matter, depending on

where you live. So I would not encourage people to run out and get these tests right now.

And even if you do get a positive antibody test, I would still continue to do all the things they're recommending. Wear your masks and social distance, because we also don't know for sure… that you can't get it again.

Justin: Cheerful. Um, do you have any other, uh, big things that you want to address?

Sydnee: Yes.

Justin: [through laughter] Okay, good. [laughs]

Sydnee: I have two. I'll be quick.

Justin: Okay.

Sydnee: I know that's your way of saying I'm going on too long.

Justin: No! No, no, no, no. I think—I think people are starting to get that they should continue to social distance and wear a mask when in public.

Sydnee: Uh, well then I will answer Ed's question pretty quickly. He asked me about visiting friends and family. A lot of places, like here, are starting to quote, unquote "open up."

Justin: [hisses]

Sydnee: And the question starts to be, like… we don't know how long this is gonna go on. Is it okay for me to start expanding my pod, or seeing my relatives? Or…

Justin: That's what—that's such a nice way of putting it. "This Christmas, let's expand our pod."

Sydnee: [laughs quietly] Uh, I think—I think that it's hard, and you—I—I'm—you're not gonna like my answer, which is, I don't know. I don't know if it's safe.

Justin: [simultaneously] But Syd, I love my dad!

Sydnee: I know!

Justin: And I wanna see my dad!

Sydnee: And I would say that, uh, you could—if you have family members who have all been social distancing, who have been even in isolation, you know, to some extent… I mean, we haven't gone anywhere but the grocery store.

Justin: Yeah.

Sydnee: Um… you could, perhaps, especially in a low prevalence area, arrange for some sort of, um, low risk… it's not no risk. If you're gonna see other people, there's gonna be risk. But I'm envisioning, like, people in—outside. Outside is definitely safer than inside. Uh, still wearing masks, still maintaining six feet apart.

But, like, you can't do things like share bathrooms. So, like, if somebody's gonna come over to your house… it would have to be for a short enough visit and a short enough distance that they're not gonna need to use your restroom. Do you know what I mean?

Justin: They gotta have, like, a stadium pal, kind of a catheter… deal.

Sydnee: [laughs] I'm just saying, like, those kinds of things would be risks, again. And, I mean, maybe those are risks you're willing to take with your family member. If they're medically at risk in some way, a high risk population, you may be less likely to take it.

Um, but I think… There's a great article that I would reference by Professor Erin Bromage. Who's a comparative immunologist and professor of biology at the University of Massachusetts, Dartmouth.

And, uh, there's a great article called "The Risks – Know Them – Avoid Them" that kind of talks about whether or not we should be opening up, and seeing people, and doing these things. Let's put that aside, 'cause I think that's highly debatable.

But if you're going to do these things, what are higher risk and what are lower risk, and how can you do the best to make it as low risk as possible?

I think that, um, that's a great article to reference. And a lot of it focuses on, uh, outside… you could get it. Like, it can be transmitted outside, but it's much less likely outside than inside. So there are a variety of outside options. If you're going to enter the world to some extent, there are outside options that are safer.

Justin: Okay.

Sydnee: So I—I would… I would say that that—that would be a great reference if you've decided, "I am going to go back into the world and I wanna know how to do it in a safer, even if it's a not completely safe way."

Justin: Mm-hmm. So my dad… I'll just text him, and tell him—

Sydnee: Maybe we could have, like, a… a driveway… meeting?

Justin: Just stand in the driveway?

Sydnee: We'll sit on our porch, they can stand in the driveway.

Justin: Sydnee, I didn't drive to Ironton to see Dad when things were good. I'm certainly not gonna drive to Ironton to see Dad now. I have a perfect excuse.

Sydnee: The important thing to remember is that the effects of your state changing the regulations and opening up won't be seen for a couple weeks. So don't assume that if things are okay, they're gonna stay okay. I would—I would use some caution and wait and watch before you make big decisions.

Uh, and I wanna talk about one more thing that Emily asked about.

Justin: Yeah, please.

Sydnee: Uh, Emily wrote an email asking several questions, among them, "Right now, a lot of friends are talking about feeling kind of forgetful and spacey right now. What is this? Is there a name for this that's happening? 'Cause a lot of people seem to be feeling this way."

I would include myself. And what I would say—what—not just me, [laughs] but what a psychologist would probably tell you you're experiencing right now is related to trauma. This is an intensely traumatic experience, uh, for all of us, to some extent. For some of us, to a huge extent.

Uh, we are—most of us spend most of our time at the top of Mazlow's hierarchy of needs.

Justin: Mm-hmm.

Sydnee: Up there, trying to, like, self-actualize—

Justin: [simultaneously] Self-actualize, and…

Sydnee: —and those kinds of things.

Justin: … obtain the respect of others.

Sydnee: Exactly. This—a pandemic, an—uh, an immediate threat to your health and safety, and the health and safety of the people you love, forces your brain, or at least a big chunk of it, back down to the bottom of the pyramid.

And for a good bit of us, we have been lucky enough in life to not spend a lot of time at the bottom of the pyramid. Um, not everybody, but I think—I would say *I* don't spend a lot of time worrying about direct threats to my life on a regular basis, and the lives of the people I love.

But right now, your brain is thinking about that. Even in the background, if you're not aware of it, your brain's doing that, and that's very stressful. And one of the symptoms of that is that inability to concentrate or focus, feeling like you're just kind of in a fog and spaced out.

Um, I know for me, that's manifested in a… in a really, uh, great amount of difficulty being creative and innovative, problem-solving… [laughs quietly] Um, doing podcasts.

Justin: Yeah.

Sydnee: Forming coherent sentences, even. Uh, and—and you're gonna experience in different ways on different days, and everybody's different, too, so maybe it's not affecting you that much.

Justin: There's also the time dilation aspect, which I think is tied to – my best guess, at least, would be that – I know that your brain—it's like the—the—people talk about time going faster as they get older, and it doesn't, actually. That won't surprise you.

But there's a—an effect where your brain, when it's getting novel information, is recording it more diligently. And so as—when you're young, you're getting a lot of novel information, so it's writing everything down like, "Oh, this is all good stuff."

As you get older it's like, "Oh yeah, I've absolutely seen this. I'm not gonna actually remember this. This isn't as important." And right now, we're all putting our brains in this state where it's, like, the same thing over and over and over again.

Sydnee: Mm-hmm.

Justin: Uhh… so… [laughs]

Sydnee: And if you—if you layer on top of that, that kind of lack of new stimulus and input, if you lay—again, behind it is this constant fear and worry about yourself and the people around you.

Then also about, like… you're—the economy in terms of you. Like, your family, your job, you know? How—how are you gonna—how are you gonna continue to keep your home, pay your rent, buy food?

Justin: Do your podcast tours?

Sydnee: [laughs quietly] All those things. Plus, like, the more, um… figurative losses. Just experiences and time and—and connections with people and opportunities that you may feel like you're losing. That's a lot.

Um, I know a lot of people initially said this would be a great time to do some sort of creative project, like write a book or something. Uh, and if you can do that, that's awesome. You're a superhero, and I idolize you. [laughs quietly]

If you can't, that's okay too. You can join me. Um, I will not be writing the next great American novel during this pandemic, because my brain could not support that. And—and I think a lot of people are in that boat, and that's—that's fine.

Which takes us to the last thing. And I thought, Justin, you could address this better than me. Last time, I mentioned being comfortable with discomfort, and a lot of people responded positively to that idea as being a helpful idea. I think the other thing that comes with that is the concept of self-care.

Justin: Yep.

Sydnee: I—uh, Justin would probably call me out on, um, lying, if I told you that I was great at *practicing* self-care. I think I'm better at preaching it. [laughs quietly] And, uh—so I would, Justin, defer to you to talk about that.

Justin: I mean, I… guess that, you know, trying to… meditate when you can, is good? It takes ten minutes. Just don't think of anything for ten minutes. It's pretty ea—not—not particularly easy right now, but, you know, give it a shot.

Uh… yeah. You know, uh, what I have been doing is trying to address, like, appearance stuff that doesn't really matter that much. [amused] Like, I obtained, like, dandruff shampoo. You know what I mean? Which I wouldn't have done before.

But I'm like, "Let's get this look right. Let's—" not 'cause I care about dandruff, and I shouldn't—it seems counterintuitive to, like, be more focused on appearance-type stuff right now. But I think doing it reinforces a sense of, like, worth to me. To, like—to—to use the dandruff shampoo. And let's try that charcoal toothpaste that everybody's on about. That kind of junk.

Sydnee: That's, uh, I belief Olaf called it controlling the things we can control. [laughs quietly]

Justin: Yeah. Um… so yeah. That stuff. There's—you know, there's lots of other great ways to take care of yourself.

Sydnee: Well, I mean, make sure that you're sleeping and drinking plenty of water, and—

Justin: Oh, I drink wild amounts of water. It's unfathomable.

Sydnee: —eat—eat food that makes you feel good and nourished.

Justin: Mmm.

Sydnee: And well. Uh, get some sort of physical activity and some sort of mental activity as much as you can.

Justin: Yeah.

Sydnee: Both of those things are good. Um, and connect with people.

Justin: Try to learn stuff, too. I know, like, the—I think creation is—is really difficult right now. But I feel like, for some people, probably, like, being able to, like—like, education is maybe more—a little bit more attainable? It's a little bit more passive. [laughs] Um, we, like, did the—like, we signed up for a master class. We're doing one on gardening, you know? Just, like, that kind of stuff.

I've been usin', uh—uh, Babbel to work on, like, Spanish and stuff like that. Like, just trying to keep my mind active.

Sydnee: Mm-hmm. And—and I'm trying to—if you're somebody who is, um—who has children, and so you're doing the home school thing, um… it's so hard and frustrating, and you're not alone. Uh, I—I only have to do Pre-K. I can't imagine how hard it would be if I had to do anything more than that. Um, but I think, like, cutting us all some slack is the number one thing. Cut your kids some slack. Cut yourself some slack.

Um, try to make, like… try to do things that interest you and your children, to make it more of like a collaborative… I try to learn things with Charlie. We—I find things she's interested, and we read about 'em together. And then I'm learning, she's learning. [holding back laughter] I can pat myself on the back for educating.

Justin: Sydnee just learned, uh, the names of the planets, actually. Which she was really excited about.

Sydnee: Eh, well…

Justin: She'd always been curious, and she finally nailed I'd.

Sydnee: Eh, uh… I already knew that. We learned a ton about turtles! I don't know a lot—I've said this on the show many times. I don't know a lot about animals, so we decided one day we were gonna learn everything we could about turtles.

Justin: Um, Charlie als—

Sydnee: There you go. [laughs quietly]

Justin: Charlie and I learned some mime, uh, techniques today, 'cause she decided that's her true calling, is the—the art of mime.

Sydnee: She did. We—we watched a Marcel Marceau video. Did you?

Justin: Yeah.

Sydnee: Did you do mime work? [laughs quietly]

Justin: We did some mime work. [laughs quietly] [inhales] Oh, god. Alright, listen. That's enough podcast. We've enjoyed talking to other adults like ourselves. And the—the children that listen. We appreciate you as well. Um, I hope your parents are grateful for us occupying you for… 52 minutes or so.

Um, so thank you so much for listening. Uh, thanks to The Taxpayers for the use of their song "Medicines" as the intro *and* outro… of our program. Thanks to the Max Fun Network for having us as part of their extended podcasting family, and thanks to you for listening! We sure appreciate it.

Sydnee: Yeah. Thank you so much. Take care of yourselves. Take care of each other. Hang in there.

Justin: Uh, but that is gonna do it for us, so 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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