Sawbones 327: COVID-19 and Bad Data

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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: Uh, Sydnee, we've spent the last couple episodes, prompted by the Black Lives Matter protests and a sort of rash of police violence, et cetera, talking about racial injustices within the medical system.

Sydnee: I would—I would argue that it's not a recent rash of police violence, as much as a—

Justin: Recent focus on? Is that—

Sydnee: Yes, recent focus on, after a long history…

Justin: Yeah, fair enough.

Sydnee: … of police brutality, especially against the Black community.

Justin: Um, and we—now you've really made me look like a jerkwad, Sydnee. I'm sorry, I misspoke.

Sydnee: No, I'm—I'm helping—

Justin: But I'm gonna keep on truckin', because—

Sydnee: I'm helping you, 'cause I know what you meant, and—

Justin: Much like the celebrities—

Sydnee: I know you wouldn't want to come off as saying something other than that.

Justin: Much like all the white American celebrities—

Sydnee: [laughs]

Justin: —I take responsibility for saying the wrong thing a second ago. But—

Sydnee: Oof!

Justin: Oofa doofa.

Sydnee: Oof!

Justin: Oof! Uh, but we—and we are not done talking about that. Uh, but we are also in the middle of a global pandemic. Uh, and so we are going—

Sydnee: Which—which is—which, to be fair—

Justin: It's all connected.

Sydnee: —is all conne—well—

Justin: All tied together.

Sydnee: —it's connected in that it has disproportionately affected Black people in this country. So, you know, I think, again, it's another example of how the system was never made—we say the system is broken. The system was never made to function for everyone.

It was made to function for white people, and that includes the healthcare system, as we have discussed at great length, which is reflected in the fact that COVID-19 has disproportionately impacted Black people.

Justin: Um, so we will—we will, uh, return to talking about that. This week, a little bit more of a focus on COVID. We wanted to do kind of a general check-in.

Um, it sort of left—for very understandable reasons, left the sort of mainstream conversation, or at least lost a bit of the limelight that it had pretty much completely absorbed.

Sydnee: And it's—and it's unfortunate, in that, when something is not the headline media focus, I see a lot—I see this reflected on social media, and I think that it's probably true beyond that. There seems to be this kind of belief that perhaps it's not as big a deal, and I think that it's important to remember that there can be multiple things that are all big deals at the same time. And, uh, coronavirus seems to have—because it is not the headline, I think some people believe, like, "Well, it must be, uh, goin' away then, right? Like, we... it's gone?"

Justin: It's gone.

Sydnee: It's gone?

Justin: Fixed it.

Sydnee: We lost interest, so... [laughs quietly]

Justin: So it's over!

Sydnee: So that's it. That's the most—[laughs] That's our American attitude. "We lost interest in it, so it must be gone."

Justin: And that is not the case. But I will say, interestingly—and I don't know if this is, uh… there has been a bit of an uptick talking about—and this kind of broke through, uh, this week. And I asked you about it, 'cause I needed some help sort of decoding it.

That there was a big, uh, Lancet study on hydroxychloroquine, which we discussed in a previous episode. There was a big Lancet study that was retracted, and I saw several, um... I would say, bad... actors, on Twitter, saying that this is proof that the media just glommed on to this, and that the establishment was using this to try to target Trump, um, by—by, you know, with—by fixing the results of things like that. So I wanted to get your... hot take.

Sydnee: No—yeah, I think this—I'm glad you brought this to my attention, because once I started reading into it… one, it became pretty clear to me what really happened and why it is—it is unfortunate, in that if you are trying to expedite the—kind of the... not the scientific method, but the process by which we design a study, do a study, like, publish—put the data together, not publish it yet, get it reviewed and, you know, accepted as something that is a reasonable study, and the outcome looks appropriate based on—and all that, and then get it published.

That process has been short circuited somewhat by necessity.

Justin: Right.

Sydnee: We need data. We need it. Nobody's trying to... for the most part, people aren't trying to mislead anyone. They're just trying to get answers as fast as possible to save lives. There's a need to move fast.

But whenever there is that need, and so some of the safeguards against bad methods and bad science are easier to cross... you—you open the door for perhaps intentional, uh, malfeasance? Or unintentional—I don't know.

It's a strange story, I have to say. Uh, as I dug into it, I found it a little shocking. Uh, the truth behind this article and why it was retracted, and exactly what is going on here. It was a lot more in depth than I thought. Um, so—

Justin: I'm on the edge of my seat! Let's go!

Sydnee: So there were actually two studies that were retracted. The one that got the most press was the Lancet study. And by the way, the Lancet and the New England Journal of Medicine, which are the two journals that had to retract COVID-related studies, uh, are respected medical journals.

Justin: They're among the good ones.

Sydnee: Yes. And so—

Justin: It should be noted though—as long as we're on the topic, though, the Lancet is a much cooler name for a publication than the New England Journal of Medicine.

Sydnee: [laughs quietly] The Lancet is a cool name for a publication, I agree.

Justin: It's a cool name for a publication.

Sydnee: But they're both—they're both generally accepted to be respectable publications that go through appropriate peer review processes. I mean, 'cause there are a lot of journals.

And know this, if you don't already: if you are somebody who looks to journals for truth, do some digging into—if you find a journal where you're like, "Oh, I've never heard of this one before."

Do some digging into the journal before you just accept… like, what their process is, how they get—how they review things, where their funding comes from. All these things matter. Anyway, these are—

Justin: But these are good ones.

Sydnee: —these are generally accepted to be good ones. So, the first study from the Lancet got the most press because it involved hydroxychloroquine, which... [sighs quietly] Has unfortunately become a political medication, which I didn't know there would be one, but there it—well...

Justin: You should've guessed.

Sydnee: That's not true.

Justin: You should've guessed.

Sydnee: That's not true. Our history of HIV tells us that a lot of medicine is political. Um, but hydroxychloroquine, uh, was looked at in a—in a huge study in the Lancet, uh, to see if, as Trump has suggested, it is going to be this miraculous cure for COVID.

And here's what the—

Justin: I think you meant to say, "Trump and some of our top scientific minds," right, Sydnee?

Sydnee: Well...

Justin: No, just—

Sydnee: No. I think—I think that, among actual scientific minds, the answer—the—the feelings on hydroxychloroquine has always been, "Maybe it works or it doesn't work." I don't think there's been anybody who has been touting it as a miraculous cure that I would call a scientific mind.

Um, anyway—so, here's the study. "Hydroxychloroquine or chloroquine, with or without a macrolide, for treatment of COVID-19: a multinational registry analysis."

That is the name. Scientific studies never have sexy names, I would say. Very rarely. Sometimes they'll come up with, like, an acronym. They'll name it in a way that they have, like... JUPITER as the acronym, or something. [laughs quietly]

Justin: That—now that's—[through laughter] Now *that's* cool! Now *that*, Sydnee, is cool!

Sydnee: They didn't do that with this study.

Justin: Aww, that's less cool. ‘Cause man, like, give me JUPITER. Man, that's cool!

Sydnee: This study—

Justin: You guys know how to party.

Sydnee: [laughs quietly] This study looked at the efficacy of hydroxychloroquine or chloroquine, um, with or without—'cause you may remember, the question was, should you treat somebody with it, and should you pair it with azithromycin? The Z-Pack, the antibiotic. That's a macrolide. That's what they're talking about. So alone or with azithromycin, um, in 96,032 patients in 671 hospitals from six continents.

Justin: That seems good.

Sydnee: That's huge, right? And in order to do that—like, as you may imagine, we're in the midst of a pandemic. It's not like they went from hospital to hospital and set up a study.

Justin: There was a bunch of different people working at different hospitals that were doing, like, smaller… like, right?

Sydnee: Well, sort of. This is really observational. So if you're gonna do a study like this, all you need is a bunch of data. You don't really even need other people involved. You just need to get a bunch of data.

So they took—they looked for—they took a database that compiled diagnosis codes, treatment—you know, treatment histories, outcome measures, um, whether it being death or, you know, ventilator use, whatever. They took all that data from all of these hospitals, put it into a big, giant database that could be searched and analyzed for the use of researchers.

Now, you may imagine this database could have tons of different info, right? And, like, you can see where something like that would be used in medicine. We have this giant database that just has a whole bunch of information about patients, about what diagnoses they have—I mean, there's value in a big database like that.

So what they did is they took a big database like that, and they just looked for certain things and analyzed what they found. So you don't really have to connect to any one of those 671 hospitals to do that. They're feeding the data into their computers, because that's what you do now.

You put all of your records, you know, into the EHR, Electronic Health Record. And all of that goes into the database, and the database is being analyzed by these researchers.

Justin: Mm-hmm.

Sydnee: Does that make sense?

Justin: Yes.

Sydnee: 'Cause that's—that is how this data was collected.

Justin: Got it.

Sydnee: I think it's important to know that it wasn't—it wasn't, like, a—a physician in some hospital, in one of these 671 hospitals saying, like, "Let me collect this data to send to our study." It wasn't like that.

Justin: Okay.

Sydnee: So, they looked for how many patients had COVID in the facility, how many got these meds, how many didn't, and how did they do, how many died, whatever.

After analyzing all this data, they came to the conclusion that patients treated with hydroxychloroquine or hydroxychloroquine plus azithromycin did no better than the patients who weren't treated with it. And in fact, they found a higher rate of life threatening fatal arrhythmias.

Justin: Seems bad.

Sydnee: Like, heart—abnormal heart rhythms.

Justin: Seems bad for hydroxychloroquine.

Sydnee: So they published this study in the Lancet. Uh, and the whole world gasped. And all of the different—there were some big actual trials going on with hydroxychloroquine across the world, where they were actually, instead of just looking at data, they were actually, like—

Justin: Making data.

Sydnee: —giving these patients hydroxychloroquine, not giving these patients hydroxychloroquine, and watching what happened, which is a better—that's a more robust study to do than to just observe data.

Um, so a lot of these studies got shut down as a result of this, because if you think—I mean, you can't do that, right? Like, that's unethical. If you have evidence that you're studying a drug that's gonna kill people, you can't give people the drug.

Justin: Right.

Sydnee: So—

Justin: So those studies shut down.

Sydnee: So those studies shut down. And a lot of people thought, "Okay, phew. We're past this whole hydroxychloroquine nonsense." Uh, fast forward to... I think it was just, like, a week or so later. It was a pretty short period of time where, as scientists started reading this, immediately people started to notice problems with the study, with the data, with, uh, the whole method of it.

And they started to call out individual problems, and then eventually, 200 scientists would come together to write a letter to the Lancet to say, "This is—there is problem—this is a problem. There is a problem with this study, and you are better than this, and you need to look into this."

So, one of the things they immediately identified is that the numbers for Australia didn't make sense. Like, they knew what the Australian numbers were, and the numbers in this study were way higher.

And so immediately, they were like, "Whoa, whoa, whoa, whoa, whoa. There is no—that's not possible that the data's accurate, because of even just this one piece, we know—we in Australia know this is wrong."

And then they looked into it and went, "Oops, sorry. One of the hospitals was marked as being in Australia but wasn't actually in Australia. It was somewhere else. So, our bad. That's—that's the only problem."

So initially they put out that as, like, "Okay, yes. Found it, problem addressed, got it."

But then they were like, "Well, no, no, no, no, there's more. There's some more things here. Um, how did you get this much data?" 'Cause it does seem remarkable, right?

Justin: Mm-hmm.

Sydnee: Because this data was collected between the period of December and April, as the world was just figuring out, throughout various countries in various places where these hospitals are, when we were just figuring out what was going on… how did we collect so much data? How did we get it so exact? How could we come to these conclusions?

It—the number is mind boggling, really. I mean, it's—it's just—it's so many patients. It's so much information. People really started to question, like, "I don't know. I don't think these methods make sense."

And then some of the hospitals, some of those 671 hospitals who were said to have collaborated with this study, started to say, "Hey, we didn't—uh, we don't know who these people are. [pauses] We don't know anything about this."

Justin: What do you mean?

Sydnee: So, these 671 hospitals should at least know that their data is being fed into this database. They don't know anything about it.

Justin: Hmm!

Sydnee: So all of a sudden, all these places that supposedly had relationships with these authors, with the—with this study, with this database, were going, "We—w—I don' know how they would get our data. Like, we didn't—we didn't agree to sign over your data to anybody."

Uh, specifically the hospital in Glasgow was like, "Nuh-uh-uh-uh. The NHS is not doing this. We're not part of this. I don't know what they're talking about, and we're named as being part of this, and we're not."

Justin: Hm.

Sydnee: So then it started to call into question the whole thing. So the authors of the study issued a statement that said, "Look. We got all this data from this database, and we thought the database was accurate, but now we're seeing that maybe it's not. So we're going to do an independent review. We're gonna hire people to come in and review this database to see if the database is true."

Because what they're saying is, "The stuff we did with the data, we know is solid."

Justin: But the data that we got initially...

Sydnee: Yes. Is the raw data solid? So they—they asked for this review, and then they came out after that and said, "You know what? Actually, they won't let us do it. They're telling us that because of various privacy and access and all this different stuff, they're not letting us put independent reviewers on this database, and so now we can't verify the integrity of the data."

So the authors themselves requested that the Lancet retract the study.

Justin: So, I feel like we're getting closer to the villain of the piece, Sydnee.

Sydnee: And then following this, there was the study in the New England Journal of Medicine, "Cardiovascular disease, drug therapy, and mortality in COVID-19," which was specifically looking at the danger of taking a class of blood pressure medications, ACE inhibitors, while you have COVID, 'cause this has been a question. Is it more dangerous to take this if you have the disease?

And it said that it was okay. This was also based on data using that same database.

Justin: Mm-hmm.

Sydnee: And so it was—it was retracted by NEJM, because they were like, "Okay, well if the database is in question, then the study is in question, so let's retract that too."

Justin: Alright. And then we find the owner of the database, we pull off the mask—

Sydnee: [laughs]

Justin: —it's Mr. Barnes, the owner of the old amusement park! I knew it! Why did you set up this database, Mr. Barnes?! Why are you trying to fool all of us? You—you would've gotten away with it too, if it wasn't for Sydnee McElroy.

Sydnee: Uh, that is not—

Justin: Cracked this thing wide open.

Sydnee: —that is not who owns the database.

Justin: It's not Mr. Barnes. Okay, let me pull the mask off again—you're right! It's Tony Shalhoub. I—I never thought—

Sydnee: [laughs]

Justin: Monk himself?!

Sydnee: Why are you im—why are you implicated poor Tony Shalhoub in this?

Justin: I'm pulling the mask off again. You're right, it wasn't Tony Shalhoub. Simon Cowell?! That's a little treat for everybody that saw the *Scoob!* movie, in which Simon Cowell was inexplicably featured.

Sydnee: It—it was—I do think you'll like the name.

Justin: Okay.

Sydnee: The name of the database is Surgisphere.

Justin: [robotic voice] Activate Surgisphere!

Sydnee: And—

Justin: Sentient data platform!

Sydnee: This seems to be the weak link in this chain. And I'm gonna tell you more—

Justin: Doesn't sound like it!

Sydnee: I'm gonna—[laughs quietly]

Justin: Sounds cool as heck! [laughs quietly]

Sydnee: I'm gonna tell you more about the history of Surgisphere and how we got to this. But before I do that... let's go to the billing department.

Justin: Let's go!

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[advertisements play]

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Justin: Sydnee, I believe you were about to besmirch the good name of my new robot friend, Surgisphere. You can see him hovering behind me, uh, using his antigrav lifters. Uh—and, uh, I just—whatever you have to say to me, you can say to Surgisphere, my new best friend, who is also a robot.

Sydnee: Well, if you want to find out more about Surgisphere, I'll tell you. It's not—

Justin: I'll ask him.

Sydnee: Well—

Justin: If I wanna know—Surgi—listen. If I wanna know more about Surgisphere, I'll ask him.

Sydnee: Hey, Justin?

Justin: Yeah?

Sydnee: Do me a favor.

Justin: Yeah.

Sydnee: While I'm—while I'm starting to talk, pull up a—an open tab there and Google "Surgisphere," and try to go to their website.

Justin: Okay.

Sydnee: Um, the database is called Surgisphere, and I think the first thing you should know about it... yeah, just go to the Surgisphere website right there.

Justin: Oh no!

Sydnee: Uh-oh!

Justin: [holding back laughter] The site is suspended?!

Sydnee: Uh-oh!

Justin: Everybody's comin' for my guy Surgisphere!

Sydnee: I think it's important—

Justin: Hide, Surgisphere! [through laughter] The robot police are after you!

Sydnee: Surgisphere was initially started back in 2008, uh, by a Dr. Sapan Desai, who, by the way, is one of the authors of this study, I think it's worth noting.

Justin: Okay.

Sydnee: One of the authors of the study that was retracted.

Justin: So wait a minute—[wheezes]

Sydnee: In the Lancet.

Justin: [through laughter] Wait a minute!

Sydnee: So he—he—

Justin: No, wait, stop. Hold on. He's the co-author of this study. So this guy—I—I'm—I may look silly after you give me more info, but the situation, as I understand it, was everybody who authored the study was like, "We need to—we need to do an independent review of this!"

And this guy was like, "Yeah, we do! Who made this? Hey—hey, whoever made this data, get outta here! We need to do an independent review of it!"

And then he puts on a mustache and calls 'em back like, "No, you cannot!"

Sydnee: He was actually the only one who did not call for its retraction.

Justin: Weird! [wheeze-laughs]

Sydnee: I should've—I should've noted that.

Justin: [through laughter] Weird!

Sydnee: He was the one who did not—like, he was a part of the original—like, "Hm, is there concern?" And then it sounds like—

Justin: [laughs]

Sydnee: He—I feel bad for the other authors, 'cause they're... so far, I have no reason to believe that they were intentionally misleading anybody. I—I really don't. And I can't—I'm not gonna sit here and, you know, judge jury and—whatever the expression.

I don't know if this guy... I mean, it sounds bad for him. But I don't—I am not, uh, an investigative journalist. I am—I have read the work of journalists who figured all this out.

Um, and I am not—uh, I don't know what he knew and how he got his data, and what his methods were. I don't know. I'm just telling you the facts. This is where we are right now. So I'm not gonna sit here and accuse anybody of anything, 'cause I don't know exactly who knew what when.

Justin: Okay.

Sydnee: Uh, so Dr. Desai is a vascular surgeon. He started the company back in 2008, and initially, he was selling medical textbooks to students, to medical students.

Uh, he started this while he was in residency, by the way. So, like, this guy's—

Justin: Wow, industrious.

Sydnee: —this guy's got tons of energy. He's—he's very busy. He has, uh—he has an MD, he has a PhD in anatomy and cell biology. There's been some questions about other degrees he may or may not hold. Uh, there was some evidence that a Wikipedia page was edited back in the past.

Justin: Okay.

Sydnee: Like, to add things that were not verifiable. I don't know. Uh, he tried—he did have his own medical journal briefly at one point. Not anymore. He got an MBA in 2012, so, uh—

Justin: Oh.

Sydnee: —very—very active, very busy. Um, in 2019, Surgisphere transitioned from textbooks to medical data. To—and—and this—this idea is not... strange, right? Like, this is not the only company that would do this.

Justin: No, it's sexier. I mean, textbooks are boring. You get into medical data, that's the hot spot right there.

Sydnee: Well, it's—no, but I mean, like, from a—okay. You know that marketing companies want your data, right? They want all the stuff about—that's why Facebook keeps surfacing me ads for the same things over and over again, 'cause...

Justin: I want everybody to have my data. I'm really loose with it, in the hopes that eventually it will be useless.

Sydnee: That—[laughs quietly]

Justin: So if everybody has my data, no one will want it anymore.

Sydnee: Right.

Justin: That's my theory, at least.

Sydnee: So—so most—a lot of companies want your data so they can sell you stuff. Well, in medicine, your data is useful for us to research, right? Like, you can see where this connects.

If we're all feeding these diagnoses and these treatments and these outcomes in computers, we can start to figure out what's going on with people. So, like, a big database that collects medical information is not strange. That's a good idea, and it could be very profitable, as you may imagine.

Uh, so… he transitioned his company to do this back in 2019. I—I don't know what else it has been involved in specifically, Surgisphere as an entity, but obviously, the database, whatever it is, has been used in these two giant studies, one of which Desai is a coauthor.

So... [sighs] now that nobody could verify any of the data, and we started to wonder what the heck is up with Surgisphere, and it's called this other study into question, people have started digging in to Dr. Desai himself, to try to figure out, like, is this intentional? Is it just made up? Does he have data? What—what is this thing? Like, what are we dealing with, you know?

I mean, you can't—there's no way he just made all these numbers up whole cloth, so, like, where is all this coming from?

Justin: I wouldn't say there's no way. I mean, we've seen a lot worse on this show. [laughs quietly]

Sydnee: That's true. It would be pretty wild, though.

Justin: I don't wanna impugn his character, but I'm just saying, it would not be outside the scope of reality.

Sydnee: I really don't know. I really—I—I will—I am following the lead of a new friend of the show… I love when I find a new friend of the show. Remember when we found Dr. Lasagna?

Justin: Yeah.

Sydnee: And he was a—he became a new friend of the show? Dr. Elisabeth Bik is our new friend of the show. She is a microbiologist who specializes in scientific integrity. She's like… a detective, a science detective, who looks at research—

Justin: Like Bones. [pauses] Basically like Bones.

Sydnee: No, I don't think that's what Bones did.

Justin: A science detective, yeah, sure!

Sydnee: Well—but, no. This is, like, a detective to look for bad science.

Justin: Ohh, not—so you're saying, not a detective with science powers. But a detective who specializes in bad science.

Sydnee: Well, she also has science powers.

Justin: Oh, so she's even better than Bones.

Sydnee: [laughs]

Justin: Okay, great! Sure, Sydnee, whatever!

Sydnee: Sorry. I've never seen Bones, but I'm gonna say she's better than Bones.

Justin: You're not—okay, just talk a bunch of nonsense on our podcast, Sydnee. That's fine. We're supposed to be reason-based and skeptical, but you go ahead and talk about your nonsense about how this—anybody's better than Bones. Okay. That's fine.

Sydnee: So...

Justin: Do you know how many seasons Bones ran?! I'm—I can't start.

Sydnee: Dr. Bik looked into a research paper that was coauthored by Desai back in 2005, which was actually the basis of his PhD. And in the paper,

which was published in the Journal of Neurophysiology, uh, she found some problems.

She found—all the way back in 2005, she looked at this research and went, "Okay."

One of the things she specializes in—you're gonna think this is cool. She can analyze scientific images and look for manipulation.

Justin: Mmm.

Sydnee: To see if this is really an image of, like—'cause we're talking about pictures of cells and things, right? Where, like, the average layperson would look at it and go, "I don't know. Is that... what that's supposed to look like?"

Justin: Like—like people on Reddit try to spot Photoshops, right?

Sydnee: Except—yes. Except she is an expert in this area.

Justin: So are they. They're on Reddit.

Sydnee: [laughs quietly]

Justin: [holding back laughter] Why would they be weighing in if they weren't experts, Sydnee?

Sydnee: So she—she started looking, and she found that there were these tissue sections. They were looking at the inner ear of different rodents, and she could find, like, where he had – well, someone, I don't know who – has duplicated the same part of an image into multiple other places within the image to play with the data. And she called the whole thing into question, because of these images that—that she says are fraudulent. Um, so, like, they were copy and pasted.

Justin: Hmm.

Sydnee: Mmm. Okay. And she's—she is the expert on this. She has done a ton of this. And this has triggered a ton of, uh, examination into basically every paper he's ever been involved with.

So they're—so now there is this big search into all the research that he's done in the past to see, like, "Uhh... is it—is it—other stuff maybe manipulated, or misleading, or wrong?" We don't know.

Um, and it's also found stuff—like, digging into his past, I thought this was interesting for our audience. At one point, there's a video of him where he was starting a crowdfunding campaign for a product that was a wearable neural induction device?

Justin: I'm in. Whatever—sign me up, that sounds awesome.

Sydnee: That could increase brain function and creativity. It's like a limitless pill, except you wear it.

Justin: "Sharks…"

Sydnee: [laughs]

Justin: "I'm here to pitch you on my limitless pill, except you wear it. This is my assistant, Surgisphere."

Sydnee: I don't—[laughs quietly]

Justin: "The hovering antigrav bot."

Sydnee: I don't think it ever happened. But anyway—so—

Justin: Yeah. You know it didn't happen, 'cause you can look at me and not see one on me, so you know it didn't happen.

Sydnee: I—I will tell you that typically—I mean, you don't see retractions of giant landmark studies in well-respected medical journals often, but when you do see retractions, it's not usually this dramatic.

Justin: [laughs]

Sydnee: It's usually just like, "Oh, we found a conflict of interest." Or "Ooh, you know what? Your methodology turned out to be flawed in this very specific way that wouldn't be obvious to everyone."

And it is not usually... this. [laughs] Um, on the bright side, I think that learning about Dr. Bik has been great, because I—again, I think our listeners would enjoy knowing, uh, what she does.

Not only, again, a microbiologist, works on the human microbiome. She was involved in, like, cholera vaccine research for a while. Um, before she kind of devoted herself to scientific integrity, preserving it, and fighting, like… manipulation of scientific research for other ends. She actually took 2019 off of paid work to just pursue this.

Justin: Wow.

Sydnee: Why does this happen? Where does this happen? What are the causes of this kind of fake stuff? She found, like… apparently specifically in China, medical students are—they have to publish research before they can become doctors. That's incredibly demanding.

I will say that, as a medical student here, if I had had to publish before I could become an MD, that would've been... very, very difficult. Uh, and so, as a result, there is, like—there was—she found this paper mill where people were just churning out these studies – true, untrue, duplicated, whatever – just so people could publish something and move on with their lives.

Justin: Ooh.

Sydnee: Um, and anyway, she's awesome and you should—

Justin: Kind of like get—kind of like gettin' the nerd to do your homework, huh?

Sydnee: [laughs quietly] Yes, except this is scientific data that adds to our body of knowledge, and if it's fake, then it's bad, and it takes us in the wrong direction!

Justin: So you're saying they—you're saying that they were all nerds. Everybody involved was a nerd. Got it. Okay, I understand the distinction.

Sydnee: So—so where does this leave us with—by the way, you should follow her on Twitter.

Justin: Uh, @MicrobiomDigest.

Sydnee: I know.

Justin: It's a perfect handle for that.

Sydnee: I love her now. She's the coolest detective.

Justin: Thank her for her radical work.

Sydnee: You are my Sherlock. Uh, anyway—so, where are we with hydroxychloroquine?

Justin: Also, ask her to be Sydnee's friend. If you would—if you wouldn't mind, and then we'll get—we'll make them be friends.

Sydnee: Please. Please be my friend. I'm—I'm fan—I'm a fan. Uh, so anyway, there was another study, which was not as fraught as this one. Did have some flaws, but it looked at using hydroxychloroquine for what we would call post-exposure prophylaxis, meaning, uh, I have been hanging out with you and I found out that you were just diagnosed with COVID. I could take this right away to try to prevent me from getting COVID.

Justin: Okay.

Sydnee: That's post-exposure. As opposed to pre-exposure, which would be like, "I take it every day before I go to work, because I know I'm gonna be exposed to it." That's pre-exposure.

Justin: Kind of like the morning after pill.

Sydnee: That's a—that's a way to look at it, yeah.

Justin: Okay. I know that that's not a virus.

Sydnee: No.

Justin: But—it's—it's a spermies. But you get the idea. It's a good metaphor. You're—you're nodding emphatically.

Sydnee: There are better—no. There are better metaphors, but we'll just—[laughs quietly]

Justin: You're giving me two thumbs up and nodding emphatically, so I'm assuming—

Sydnee: Anyway—

Justin: —it was a great metaphor.

Sydnee: —post-exposure prophylaxis. Uh, and it did not see any effect. Um, but it was, again, not a perfect study. Obviously bigger trials still need to be done, and we still need to look at—a lot of people are still trying to claim that it's great for pre-exposure prophylaxis, meaning that, as a physician, when I start working in the hospital again next week, if I take it every day before I go to work, I will prevent, you know, getting COVID that way.

And I have... currently, we have no evidence to say this is true. We have no evidence to say that it works as a cure, as a treatment, as post-exposure prophylaxis, as pre-exposure prophylaxis… we don't have any evidence to say any of that. Um... we don't have definitive proof that it *doesn't* work, I would say. But—

Justin: But you can't—it's—it's much harder to prove a negative.

Sydnee: Yes, and we—and I would say that the body of small studies, the body of research that says it doesn't is growing bigger and bigger every day. Um, but I don't know. These big trials that had to be stopped have been restarted, so we'll see. A proper—proper research takes time, and, I mean, we'll see.

But, um, I would say that one of the loudest voices yelling about the Surgisphere stuff was a Dr. Raoul Dejay—Raoul? Who did a study on hydroxychloroquine early on with, like, 24 people in it, that showed amazing results supposedly, and has been highly criticized. His methodology has been all called into question, also by Dr. Bik.

So, I—there were problems on both sides of this. The Surgisphere data, right now, we cannot verify its integrity whatsoever, but his study was also flawed. So, I mean... [sighs] This is why—this is why it shouldn't be political! This is why a medicine should either work or not work, and we can find it out through objective data. Not because somebody stands at a podium and says it does or not.

Justin: Fair enough.

Sydnee: Uh, one other thing I wanted to remark on, other than all this confusion about hydroxychloroquine, uh, is the World Health Organization released a statement that was widely covered by the media. Um, that asymptomatic spread of COVID was not happening.

Justin: Yes. Or was very—was extremely rare.

Sydnee: Extremely rare. So, our initial big worry was that it seemed to be that you could get this, not have any symptoms, but go out in the world and spread it to people.

Justin: Silent spreaders.

Sydnee: Yes. And that made it very dangerous, because then you're not gonna stay at home, you're not gonna—you know. Right. Uh, the—and now they're saying "Oh, nope. Not a problem."

Okay. I—I don't think that they were—'cause there were a lot of people saying, "Look, the World Health Organization is trying to mislead everybody, or they don't know what they're doing!"

I don't think that's true. I just think maybe they're not great science communicators all the time. I think that's what we're dealing with. A lot of our—

Justin: You know, they should get the best science communicator on the planet, who I happen to be married to: uh, Dr. Sydnee McElroy. Just hire the—just hire the—the—the number one gun, as I call her.

Sydnee: Well, thank you.

Justin: Syd—the Sydster.

Sydnee: Mm-hmm. Well, if—if the World Health—[holding back laughter] Health Organization is looking for communication help, I'm... well, I don't have a lot of free time. But I have some hours here and there.

Justin: If you don't do it, I'm gonna get Surgisphere to do it.

Sydnee: [laughs]

Justin: And he communicates with two things: binary code, and tasers. Okay? You don't want Surgisphere on this.

Sydnee: And—and questionable data. [laughs quietly]

Justin: And questionable data.

Sydnee: Uh—

Justin: And unquestioning judgment. He's just pure judgment, and has bad data.

Sydnee: [laughs quietly]

Justin: He sucks. I'm—I'm—actually, Sydnee—

Sydnee: [simultaneously] It's all a wild story.

Justin: I'm getting pretty scared of Surgisphere. I know that we've become close in the past 25 minutes. I'm getting a little freaked out about our burgeoning friendship.

Sydnee: So anyway, um… [laughs] The—here's the truth. Justin, if you had—if you have contracted coronavirus, okay?

Justin: You can't just throw that out there!

Sydnee: No, I know you haven't.

Justin: Okay.

Sydnee: But this is the best way to explain this. There is a chance that you will be asymptomatic, right? Like, right now, you would be positive if I tested you. But if I said, "Do you have symptoms?" You'd say...

Justin: No.

Sydnee: Now, there's also a time period where I would test you, and you would be positive, but if I asked you if you had symptoms, you would say "No." And then a day later you would get symptoms. That's presymptomatic.

Justin: That data point has already been established.

Sydnee: Exactly. And that's—right now, we're not following enough people longitudinally and saying, like, "Hey, do you have symptoms? No? Okay, we'll I'm gonna ask you again tomorrow." [laughs] "Hey, do you have symptoms?" To know who's asymptomatic, meaning they'll never have symptoms, and who's presymptomatic, meaning they just don't have 'em yet.

And the other people that haven't been, uh, sussed out in all this data are people who have very mild symptoms, or kind of atypical symptoms, who

might not think to mention it. Like, you know, we've heard a lot of people have some GI problems with this, as opposed to the traditional, like, cough, shortness of breath.

Justin: Right.

Sydnee: So we say, "Do you have any symptoms?" And you say "No," 'cause you don't think to mention that you had diarrhea.

So the—they're not dividing out asymptomatic, presymptomatic, and mildly symptomatic with that statement. Um, because presymptomatic people, we have no reason to think they're not contagious. They almost certainly are.

I would say that the very small percentage of people who actually have no single, like—well, I don't want to say very small percentage. However many people have absolutely no symptoms whatsoever the entire time that they have coronavirus, what they're trying to say is, *those* people do not seem to be particularly big threats, in terms of transmitting the virus.

But we don't know how many of those people are actually presymptomatic and are gonna get symptoms at some point.

Justin: Right.

Sydnee: That is what the World Health Organization was trying to say. So it doesn't change any of the recommendations. You still need to wear a mask if you're going out in public. You still need to avoid large groups. You still need to, if you're sick, stay home, of course. But if you are at risk, you need to stay out of public as much as you can.

Um, all of those things remain true. That statement doesn't change anything, and I think that it was just... it was factually correct, but it was contextually misleading.

And again, I'm not saying intentionally. I just think that—you have to really think through these things, especially when there's so much misinformation. There's so many people with agendas, and there's so many people who are

so quick to look for conspiracy. You really have to be careful, um, how you word these things. So that—that is the truth underneath all that.

Um, in terms of current numbers, I think the latest data is that 21 states actually have increasing numbers of COVID right now. Um, there was some thought—there were some reports that it was related to the protests.

Uh, that timeline does not work out right now. These probably are related to a couple things. One, the reopenings in many of these states. Two, Memorial Day related celebrations. There were a lot of Memorial Day type gatherings that these are probably related to.

Um, in addition, there's been increased testing in some of these states, and so that's added to it, too. They're just finding more of these patients. Uh, there have also been several, like, isolated large outbreaks in some of these states.

Like in our own state, there was an isolated outbreak within one of our, uh, jails. And so, it made the numbers spike, but it was isolated to that population. And, you know, we can trace that in a way that you couldn't trace a widespread outbreak, necessarily—well, I know we don't have the ability to—

Justin: Would you think it's fair to say, though, that—and this is—this may be asking you to do too much speculation, but would you fair to—think it's fair to say, though, that we have not seen the explosive growth that I think a lot of people expected when some of these states started opening back up?

Sydnee: I think that's true. I think what we kind of thought would happen is that a predictable two weeks after things opened up, we would see our hospitals overwhelmed again.

Justin: Yeah.

Sydnee: Um, and it wasn't—it wasn't quite like that. One, I would say it's taken a little longer, and two, it hasn't been that dramatic.

But I would caution that that doesn't mean it's not going to get worse. Um, in all these states where the numbers are going up... the numbers are going *up*. You know, I mean, something needs to be done to address that.

Um, and I know Arizona has been—had concerns that their hospital system could get overwhelmed with this. There have been concerns within their hospital systems.

So, I—you know, we're not—we're not out of the woods, by any stretch. And the more I think people aren't thinking about it, and they're getting lax and complacent, and because it's not top of the fold anymore, I think that that puts us even more at risk.

Uh, I don't—you know, I'm not gonna sit here and say that there is no risk to protesting. If you are out in the streets protesting, um, of course there is risk there. And as I've said before, I'm not saying that we shouldn't be doing it, but there is a risk to it. Wear a mask as much as possible. Wash your hands as much as possible. If you are sick, I would encourage you to stay home.

Um, for the safety of others, you know. If you're—if you are ill, you don't want to go out and spread that to other people. Um, and take care of yourself. You want to get better.

Uh, but there may be more cases as a result of protests. I don't—I mean, people are out in gatherings, and so I would be lying if I said, "Well, I don't think that…" I think just because a cause is just doesn't mean that people and groups can't accidentally spread a virus.

So, I would continue to be cautious. I would please, please wear a mask. Um, there's a lot of good data. The more we get into this, the more we find that, if you wear a mask and I wear a mask, we're protecting each other.

Um, you wearing a mask protects me from you. Me wearing a mask protects you from me. And so, if we're all wearing masks, we can greatly reduce how we spread this virus when we do go out in public.

And I would continue to encourage you to think—you know, do things thoughtfully. There are great lists out there from epidemiologists and virologists talking about how to safely engage in different activities this summer.

NPR put out a report, "From camping to dining out, here's how experts rate the risks of 14 summer activities." And I thought that was a really interesting way to look at what could you do if—if you need to do some stuff this summer. What could you do that's lower risk?

Um, and then, take your own health into account, you know? It's gonna—there is no safe activity other than staying home right now.

Justin: Mm-hmm.

Sydnee: But everybody's not gonna stay home, so do things thoughtfully, purposefully, and wear—wear a mask.

Justin: Well, I mean, that's disappointing for me. I make—I try to make it a point every July of, uh, going to King's Island and licking every surface in the park.

Sydnee: [laughs quietly]

Justin: So that is off the table for me this year.

Sydnee: Yeah. I—I would not—please—

Justin: Good for my tongue, I guess. It's always a lot of abrasion.

Sydnee: I mean, they have—the World Health Organization has said that the, um... [laughs] The risk of surface spreading is lower than originally thought.

Justin: Okay. So you're thinking I could, like, lick The Beast, but...

Sydnee: [laughs]

Justin: I'm just glad I got to lick The Vortex one more time before they took it down.

Sydnee: No. I—[laughs] Please don't lick any surfaces.

Justin: Hm!

Sydnee: That's a new one I've never said on this show before.

Justin: Not on this show, but to our children, yyyesterday.

Sydnee: Constantly, actually. Constantly.

Justin: Constantly! Every moment of every day.

Sydnee: We talk about not licking things. But please be safe. Please be thoughtful. Please—not just for yourselves, but for others.

Justin: For me. Thank you so much for listening to the podcast. We hope you have enjoyed yourself.

Um, thank you to The Taxpayers for the use of their song "Medicines" as the intro and outro of our program. And thank you so much to you, for listening. We really, uh—we really appreciate it. That is gonna do it for this week, so until next time, my name is Justin McElroy.

Sydnee: I'm Sydnee McElroy.

Justin: And, as always, don't drill a hole in your head!

[theme music plays]