

Sawbones 072: Blood Transfusions

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Intro (Clint McElroy):

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

[theme music plays]

Justin:

Hey everybody, welcome to Sawbones: A Marital Tour of Misguided Medicine. I'm your cohost Justin McElroy.

Sydnee:

And I'm Sydnee McElroy.

Justin:

Uh, welcome to the show, Sydnee.

Sydnee:

Thank you, Justin.

Justin:

Special guest, Sydnee McElroy.

Sydnee:

No, I'm not. I'm here, like, literally every week.

Justin:

But it's so special.

Sydnee:

I'm one half of the marital, misguided marital.

Justin:

But it always feels special for me when you're here.

Sydnee:

Aww.

Justin:

'Cause you're very special to me.

Sydnee:

Well, thank you, honey.

Justin:

No problem.

Sydnee:

That's sweet of you. What are you trying to get something out of me, is that what all this—

Justin:

No. Don't be silly.

Sydnee:

All the sweet talking is about?

Justin:

No.

Sydnee:

That usually means you wanna buy something that I don't—

Justin:

No.

Sydnee:

Okay.

Justin:

Not at all.

Sydnee:

Well, what do you— What do you wanna buy?

Justin:

I don't. I don't wanna buy anything. On an unrelated note—

Sydnee:

Okay.

Justin:

I would very much like to buy a new version of the Oculus Rift Virtual Reality headset, so I—

Sydnee:

The what now?

Justin:

It's the Oculus Rift Virtual Reality headset. It would let me get lost in my favorite games and get swept away by the magic of digital entertainment.

Sydnee:

You have so many video games, though, already.

Justin:

This isn't a video game.

Sydnee:

Like so many different, and like, systems—

Justin:

It's not a system.

Sydnee:

And there's, like, we have, like, a whole...

Justin:

It's a tool. It's a gateway.

Sydnee:

... ottoman full of controllers.

Justin:

It's a gateway to, uh...

Sydnee:

There's a cube thing full of—

Justin:

...digital entertainment.

Sydnee:

Oh, we have— I have a whole extra TV in my house—

Justin:

It's not a TV.

Sydnee:

... just for all your video games.

Justin:

It's two TVs you strap to your head and it sucks you into a world of virtual entertainment, um, that's like magic and it's just a few hundred dollars. And I would like very much to buy it, please.

Sydnee:

I don't approve of that. And a few hundred dollars. I just don't think. I mean, we're a family now. We have a child to raise. I just, I—

Justin:

Fine. Fine. I will raise the money on my own.

Sydnee:

Are you gonna have, like, a lemonade stand or?

Justin:

A lemonade stand, car washes in a sexy get up.

Sydnee:

Oh.

Justin:

Something I could do.

Sydnee:

Okay. All right. Uh, it's a little cold for that. It's January.

Justin:

Yes.

Sydnee:

Do you have any other better ideas?

Justin:

I could sell my blood. Sell my blood. Sell my plasma.

Sydnee:

You're gonna sell plasma?

Justin:

Did it in college? Can't— Don't know why I can't do it as a 34-year-old father of a 5 month old, and homeowner.

Sydnee:

I mean, you can.

Justin:

I don't know why?

Sydnee:

You could, yeah. I mean, um.

Justin:

I could raise a few hundred dollars.

Sydnee:

Whoa.

Justin:

I figure they'll give me 30 bucks per pint. I got 9 pints. Quick math.

Sydnee:

You're just gonna...

Justin:

Yep. Oculus.

Sydnee:

No wait. Well, I mean, like, how quickly are you planning on—

Justin:

Oh, once.

Sydnee:

Oh, no you can't. No, you can't sell all your plasma all at once.

Justin:

Oh, I still, oh, I still—

Sydnee:

Like you can't do it all at once like that.

Justin:

Oh, I'll lie still for a while afterwards.

Sydnee:

No. Well, no.

Justin:

I'll have a fruit roll up and a Little Debbie and an orange juice and I'll be fine.

Sydnee:

Is that what they give you?

Justin:

Uh, I think—

Sydnee:

All those things?

Justin:

I did get a Little Debbie when I gave. Um.

Sydnee:

That's a smorgasbord.

Justin:

Not all those things. I think that would send you into shock. But, you do get a Little Debbie, if memory serves it was a Starcrunch. Not one of the superior Little Debbie's.

Sydnee:

No. No, I agree. I like the oatmeal cream pie things.

Justin:

Oh, that's good stuff.

Sydnee:

Yeah.

Justin:

Uh, but anyway, yeah, I'm gonna sell my blood.

Sydnee:

Okay. Well you can't sell all your blood. You can sell blood, but you can't sell all of it at once 'cause you'd die.

Justin:

Uh, can't I just get more blood from the hospital?

Sydnee:

Well, okay. I don't think you understand blood transfusion very well.

Justin:

That doesn't sound like me, but go on.

Sydnee:

Yeah. Maybe, maybe we need to talk a little bit about, like, blood transfusion and blood donation and then, then maybe we can put this to bed.

Justin:

You'll still let me sell all my blood.

Sydnee:

No.

Justin:

If it seems like a good idea at the end of the episode.

Sydnee:

Uh, okay. Sure. If it seems like a good idea at the end of the episode.

Justin:

Agree to disagree.

Sydnee:

So, first of all, I wanna thank, uh, a couple people who have recently suggested this topic, Amy and Jennifer. Um, a lot of other people have tweeted and emailed, I think, periodically to suggest this. Um, so thank you to everyone else who I'm not mentioning. Uh, so, um, so let's talk about it.

Justin:

Hit me.

Sydnee:

The—

Justin:

When did we start doing this? 'Cause it seems like something that seems mechanical enough that we would have started experimenting with it, you know, fairly early.

Sydnee:

You know, what's kind of interesting is that it took us a while to understand the circulatory system. And in order to— So you understand what blood transfusion is.

Justin:

Right. Well, yes.

Sydnee:

You take blood out of one person and put it another.

Justin:

Sure. Yeah.

Sydnee:

Pretty straightforward.

Justin:

Mm-hmm.

Sydnee:

But you don't just, like, pour it into the other person. Like the, you know, you have veins and arteries and capillaries.

Justin:

I can't swallow it.

Sydnee:

Right. You have, like, a whole circulatory system that the blood has to get into.

Justin:

Right.

Sydnee:

Well, the idea of the circulatory system was something that people had to figure out before they could figure out how to put blood into somebody. Does that make sense?

Justin:

I guess you can, um, before you knew that it, like, refilled, you might worry that if you gave away some of it that you wouldn't get it back.

Sydnee:

Yes, absolutely. And you also would have to identify that you need more blood, that that is ever a problem.

Justin:

Right. That it's not just the sort of goopy filler.

Sydnee:

Exactly. Exactly. I mean, you know, we thought that blood was one of the humors. And we actually thought it burned up in the heart over time.

Justin:

Oh, okay. That's wrong.

Sydnee:

Yeah. So [laughs].

Justin:

That's not right.

Sydnee:

So you wouldn't necessarily know to put more blood into people. Um, the first attempts weren't until the 1600s and that was because that was when

British physician, William Harvey, first described the circulatory system, you know, in depth. I mean, we had some inkling of it before then. But really understood this process of circulation and properties of blood.

Justin:

Humankind tends to leave as little time as possible between understanding something and then messing with it.

Sydnee:

Exactly. As soon— I think that's a good point. As soon as we figured out the circulatory system, we were like, what can we do to screw this up?

Justin:

Right.

Sydnee:

Um, most of the attempts early on were pretty much failures, um, resulting in either complete, like, exsanguination, so you just lose all your blood.

Justin:

Mmm, okay.

Sydnee:

Because, I mean, part of it was, where do you put the blood, you know? And how do you get it out of the other person? This usually involved, on one end or the other, attempting to sever an artery.

Justin:

Mm-hmm.

Sydnee:

And that's the bad—

Justin:

Not good. Not a good look.

Sydnee:

No. So a lot of the time, a lot of the early attempts they— People bled to death. Or, if they did manage to get blood from one person and into another, they would have some sort of reaction because their blood types were incompatible because we didn't know about blood types. And then the person would probably die.

Um, it's interesting because even before we figured out how to actually put blood in the proper place, you know, in the circulatory system, we did think that putting blood in another person had some healing powers. And I think we talked about this, actually, briefly in a couple of the other episodes we've done.

Justin:

Mm-hmm.

Sydnee:

The idea of, like, drinking somebody's blood.

Justin:

Um, Marie Laveau, uh, from New Orleans.

Sydnee:

Mm-hmm.

Justin:

In the, uh, third season of American Horror Story did this. She, uh...

Sydnee:

Sure.

Justin:

... took the blood of young people and, I think slaves in her case, and, uh, rubbed them on herself to give herself youthful powers.

Sydnee:

And you see a lot of, I think we mentioned this before, like, vampire myths come from some of these practices.

Justin:

Mm-hmm.

Sydnee:

Uh, people drinking blood. We talked about, like, when someone was executed, when someone had their head chopped off, that people would stand around with ups and their mouths open hoping that blood would fly into their mouths to cure them. Remember when we spoke about this in another episode?

Justin:

Right.

Sydnee:

Um, the Egyptians, the Greeks, the Romans all drank blood for healing. None of this was because somebody needed blood, though.

Justin:

It was thought it was—

Sydnee:

I mean, like, understand, it was just, like, the healing properties of blood. Uh, Pliny advised it. Our favorite.

Justin:

Of course he did.

Sydnee:

Pliny the Elder. Um, he advised both drinking blood and bathing in blood as a great idea.

Justin:

I need a Pliny stinger for our show. I need, like, uh, shock jocks have.

Sydnee:

[laughs]

Justin:

Like, that's so Pliny! [makes sound effects], like that.

Sydnee:

Can it be better than that?

Justin:

Let's open up the Pliny pack. [makes sound effects]

Sydnee:

Eh, I don't like that sound you make at the end.

Justin:

[makes sound effect again]

Sydnee:

No, I don't like that.

Justin:

No?

Sydnee:

We'll have to work on it.

Justin:

Well, that'll be— We'll fix that in post.

Sydnee:

Yeah [laughs]

Justin:

We'll Foley that, we'll Foley that right out.

Sydnee:

Come up with something else. All together. Completely.

Justin:

Well, I'm sure someone else has something.

Sydnee:

Something funny.

Justin:

A fun Pliny stinger we can edit in there.

Sydnee:

Um, but people would use it for everything from just, like, aches and pains to epilepsy. So, it had nothing to do with, like, you're lacking blood, you need more of it. Um, but, I thought this was interesting.

I did find, there was a specific mention in the 13th Century that it was good to drink blood or to bathe in blood, you know, for different illnesses, but you had to be careful where you got the blood because it could really mess you up if you got the wrong blood.

And this is one of the quotes I found. "He who drinks of menstrual blood or that of a leaper, will be seen to be distracted and lunatic, evil minded, and forgetful, and his curse is to drink of daisies powdered and mixed with water of honey and to bathe in tepid water and to copulate with girls according to the law natural. And to play with pretty girls and young boys. And the antidote is to eat serpents whose heads and tails have been cut off with the edge of a palm frond." So— I— some of that doesn't sound like a curse.

Justin:

No. Some of it's okay.

Sydnee:

'Cause part of it was, like, getting down.

Justin:

Mm-hmm.

Sydnee:

That that's your—

Justin:

And young boys. Play with pretty girls and young boys.

Sydnee:

Yeah, but then part of it was, mm.

Justin:

Eh.

Sydnee:

Mm.

Justin:

I don't know.

Sydnee:

And then you have to eat a serpent. And then—

Justin:

Those can be good eating though, from what I've heard.

Sydnee:

But then, like, water and honey.

Justin:

It's City Slickers.

Sydnee:

That's pretty nice.

Justin:

City Slickers they said. They were delicious.

Sydnee:

So, as I mentioned, the 1600s is when we first started figuring out, like, maybe there are other ways go get blood into your body other than trying to drink it or rub yourself in it.

Um, William Harvey, it's interesting, did not attempt transfusion himself, even after figuring out the circulatory system, but he did figure it out by

pumping, like, water through a dead man. So that's kind of... I don't know if you consider that a transfusion [laughs].

Justin:

That's a weird afternoon, though.

Sydnee:

Yeah.

Justin:

"What'd you do today at work?"

Sydnee:

[laughs]

Justin:

"Oh, me? I pumped water through a dead guy."

Sydnee:

Same ole, same ole.

Justin:

I was trying to Weekend at Bernie's him, because I don't know anything and I'm around in 1600s.

Sydnee:

But I know Weekend at Bernie's?

Justin:

But I know Weekend at Bernie's. Uh, Rufus, the time traveler from Bill and Ted, I know about Bill and Ted, too. Uh—

Sydnee:

[laughs]

Justin:

He taught me about Weekend at Bernie's. So I was trying to Bernie's him. And, uh, it didn't work. You'll be surprised to hear, uh, nothing happened.

Sydnee:

The first kind of attempt was in 1652 when there was this crazy vicar who thought he would try to transfuse a chicken from another chicken.

Justin:

Yeah, go for it.

Sydnee:

But, there's not really any, like, it's not recorded very well. He didn't present it exactly as, like, a case study in transfusion. So I don't really know how it turned out. So we'll just chalk that up to, who knows if that's true or not. Maybe. I don't even know if the chicken was sick.

Justin:

Just wanted to do it.

Sydnee:

[laughs]. He was just like, like, I can trade chicken blood. That sounds like something you do when you're really drunk.

Justin:

Same reason people climb Everest, you know. 'Cause it's there.

Sydnee:

[laughs]. Why did he transfuse that chicken?

Justin:

Why would you do this? What have you done with your day? Should have just caught up on Gilmore Girls.

Sydnee:

As long as there are chickens to transfuse, I will be transfusing chickens.

Justin:

For whatever reason.

Sydnee:

Um, in 1655, so soon thereafter, uh, physician Richard Lower, um, decided he was going to try it out with a dog. So he bled a dog almost to death and then he basically tied an artery of another dog to an artery of the first dog. Just kind of tied them together. Like, not knotted them, but you know what I mean? Like, tied the edges together.

Justin:

How'd that go?

Sydnee:

Both dogs lived.

Justin:

Success.

Sydnee:

There you go.

Justin:

Medical miracle.

Sydnee:

These are not recommended experiments to do on animals, I should, I should note.

Justin:

Any of you Dexter types out there were thinking about giving it a whirl.

Sydnee:

Please do not try to bleed a dog to death. Um, and unfortunately, because this was successful, dogs all over [laughs]—

Justin:

What up, dogs?

Sydnee:

Had to...

Justin:

Humans got an idea.

Sydnee:

... run in fear because a lot of people started experimenting on dogs, I guess just because it worked once, so why not try dogs again.

Justin:

And also Sarah McLachlan wouldn't be born for several hundred years afterwards. So there was no one to look out for them.

Sydnee:

[Laughs] Uh, there were a lot of writings from Sir Christopher Wren, who was a scientist and a famous architect at the time and, and generally just a big time genius. And people took a lot of his ideas on, like, uh, the kind of instruments he used.

He, you know, described different methods of doing it and how to do it without, you know, causing the dog to bleed to death and that kind of stuff. And so people took his ideas and started doing all kinds of weird stuff. Like, instead of just transfusing blood to blood, like, they would transfuse opium into dogs or, like wine or beer. I don't know.

Justin:

Beer?

Sydnee:

Ale.

Justin:

This is my dog. His name is Party Boy. He is the sweetest dog, the coolest dog ever and I filled him with beer.

Sydnee:

[laughs]

Justin:

His blood is beer and his name is Party Dog. Party Boy, sorry. Party Boy the dog.

Sydnee:

Sounds like an awful thing that was done in a frat. Nothing against frats, but like...

Justin:

Science frat.

Sydnee:

Like, we got way too drunk and we transfused beer into our dog. I hope the dog was okay.

Justin:

I'm sure the dog, I'm sure Party Boy was fine.

Sydnee:

Uh.

Justin:

He lived a rich, fulfilling, hour to 90 minutes.

Sydnee:

If I ever let you get a dog, we are going to name him Party Boy, right?

Justin:

Yeah, absolutely.

Sydnee:

But we're not gonna fill him with beer.

Justin:

Not gonna fill him with beer.

Sydnee:

So the animal experiments continued. Um, and especially in 1667 with the court physician to King Louis the 14th, who— Jean Baptiste Denise, who was really into sheep blood. That was kind of his thing. So everybody was trying with different animals. And he wanted to try transfusing the blood of a sheep into people.

Justin:

Okay.

Sydnee:

Because we work, so far, animal to animal, so why not try animal to people?

Justin:

Both red.

Sydnee:

[laughs] Both sheep and people are red?

Justin:

Blood.

Sydnee:

Oh, okay.

Justin:

Both their blood is red. Give it a whirl.

Sydnee:

Fair. Have you seen sheep blood, though?

Justin:

I haven't. Have you?

Sydnee:

No. But I assume it's red. I mean, it's red, right? Like it's red.

Justin:

It's red. It's red.

Sydnee:

What other color would it be? Don't go kill a sheep.

Justin:

Don't kill a sheep.

Sydnee:

So anyway.

Justin:

What are you thinking?

Sydnee:

There was a fifteen year old boy who was suffering from fevers. Uh, so the thought was that since sheep are so cool and calm, if you take the blood of a sheep and transfuse it into the boy who's got the fevers, that he'll be fine afterwards.

Justin:

That worked okay?

Sydnee:

He actually lived. Um, and I will say that from the descriptions, it sounds like he was taking relatively small amounts, like, with a syringe, you know. Removing a small amount of blood from the sheep and injecting it into the human.

Justin:

Okay.

Sydnee:

Um, he repeated it later with somebody else, uh, with sheep blood who was also sick, and that worked as well. Um, and both of them not only lived to tell the tale of their sheep blood transfusion, but they also both said they felt a little better.

Um, specifically when the second guy that he did it with kind of talked about how, like, after he had it done, his arm felt warm and he felt like he had energy and he felt invigorated.

Justin:

Oh, God.

Sydnee:

I think he was having a little bit of a transfusion reaction probably.

Justin:

Oh, okay.

Sydnee:

His arm probably did get warm.

Justin:

Well, then we know living with humans now. Now that we think we can get a momentary bit of pleasure from sucking blood out of sheep.

Sydnee:

[laughs] This is the new—

Justin:

This is the new normal.

Sydnee:

This is the new street drug.

Justin:

Yeah.

Sydnee:

This is the next Krokodil.

Justin:

[laughs]

Sydnee:

[laughs] Sheep blood. Um, and you know, what's interesting is that they, it was preferred at the time, like, nobody was thinking of using human blood. They were all using animal blood partly because it was thought that human blood could be made impure by our actions. So your blood could be impure because of your vice or your passion and you wouldn't want to put that into another person.

Justin:

Okay.

Sydnee:

However, things kind of went off the rails when he tried to kill, or when he tried to cure, I should say, a very ill man, he was also very naked. He had had a—

Justin:

[laughs]

Sydnee:

He had had psychiatric episode of some sort, uh, that we obviously didn't understand back then. And was running through the streets of town naked basically. So he decided he would cure him by giving him blood from a cow because cows are so gentle, I guess.

Justin:

Okay. Yeah.

Sydnee:

And so he gave him a transfusion. It did not work so well and that guy, unfortunately, did die.

Justin:

Awe.

Sydnee:

And the doctor was charged with murder.

Justin:

Whoa. Good job, old timey people.

Sydnee:

This gets weirder. So he was charged with murder. He—

Justin:

I'm— Let's just take a moment. That is surprisingly responsible. I'm super proud of them.

Sydnee:

Yeah. Well, I'm glad that somebody went, "You what? You injected him with cow's blood?"

Justin:

Listen, I know it's 1667, but you know you can't just kill naked people, right?

Sydnee:

Yeah. I don't care that he's running around the street. Like that's not okay.

Justin:

That's not okay.

Sydnee:

So anyway, he, but he was cleared of charges. They didn't, they didn't convict him. But as a response to that, he quit medicine. So he stopped practicing.

Justin:

Yeah.

Sydnee:

Which was probably a good idea.

Justin:

Hard to drum up business at that point.

Sydnee:

The weirdest part is that, if that's not weird enough, in the long run it was revealed that the reason the guy was probably already having problems is that his wife had been slowly poisoning him with arsenic for a while.

Justin:

Okay.

Sydnee:

Just as a weird afterthought.

Justin:

Mm-hmm.

Sydnee:

But as a result of this, in France they banned animal to human transfusion.

Justin:

That's— Okay. I mean, that's an understandable— We, you know, cooked the, uh, killed the golden goose, I guess, with that last one.

Sydnee:

[laughs]

Justin:

Literally, we took it's blood out.

Sydnee:

We were having so much fun.

Justin:

Having a blast.

Sydnee:

Shooting up our sheep's blood.

Justin:

And then, just went one step too far.

Sydnee:

And then old Jean Baptiste had to ruin it with the cow's blood and the naked guy. You know what's interesting is that there were also some beliefs at the time that if you used animal blood in a human that it would change their species. But they were doing it anyway. Um, you would think that would've—

Justin:

But that didn't happen, right?

Sydnee:

No.

Justin:

Okay.

Sydnee:

They did, there were accounts where people would say, like, "And then they gave her some cat blood and she seemed very feline-like afterwards."

Justin:

Mm-hmm.

Sydnee:

Which, you know, whatever. Um, it was— So, at the time it was mainly used very sporadically, anyway. So this wasn't like a big loss to medical practice. It was mainly used for, like, mental illness or maybe marital discord.

Justin:

[laughs]

Sydnee:

It was proposed sometimes that you use— And I mean, it was the same idea. Give them a sheep or a cow's blood, something that's calmer than a human and then it'll calm them down. Although there was a theory that if you trans blood from a husband to a wife or vice versa it would fix their marital problems.

Justin:

Mm-hmm.

Sydnee:

Um, but it was really—

Justin:

Is that real?

Sydnee:

No.

Justin:

No.

Sydnee:

We're not gonna do that. No.

Justin:

I'd give it a whirl.

Sydnee:

No.

Justin:

We have to fix this.

Sydnee:

We're not gonna do that.

Justin:

Please.

Sydnee:

No.

Justin:

This distance between us.

Sydnee:

I don't know what you have.

Justin:

What?

Sydnee:

I'm not taking your blood.

Justin:

Okay.

Sydnee:

What kind of vices and passion are you gonna give me?

Justin:

[laughs]

Sydnee:

[laughs]

Justin:

Passion for virtual reality. A deep burning desire to step inside that digital archway and see what lies beyond.

Sydnee:

I don't want that.

Justin:

Fair enough.

Sydnee:

And that was the main reason that they, like I said, the main reason they weren't using human blood yet, even though it probably would've worked

better, is that there was a thought that you could pollute the person with the personality and the spirit and the...

Justin:

Makes sense. I mean...

Sydnee:

...all this stuff of the other.

Justin:

Like, it doesn't make sense-sense, but it makes a kind of sense. I think.

Sydnee:

I mean, you're still coming off the whole humors theory where like, the, you know, these different...

Justin:

There are—

Sydnee:

elements in your body influence your—

Justin:

To their defense, I mean, in one of those cases were, like, we were kind of right, but for the wrong reasons, you know, we— There were, you know, diseases that could be passed from person to person. So, you know, the... Not doing it willy-nilly was probably smart.

Sydnee:

Right. No, I mean, we didn't understand that.

Justin:

No, but like—

Sydnee:

We just didn't want to give somebody, like, the urge to drink a lot.

Justin:

Like, we had the right idea, you know what I mean?

Sydnee:

Yeah.

Justin:

But the wrong justification, I guess. I don't know.

Sydnee:

Right. No, you're right, you're right. Uh, but, you know, one thing, and I read this and I thought this was a really good point. All throughout this time period, it was really hard to get anybody on board with the idea of transfusion in general because what was the most popular treatment?

Justin:

Uh, transfusion. Or, no, bloodletting.

Sydnee:

Yes.

Justin:

Yes.

Sydnee:

So why would you wanna put blood in somebody when—

Justin:

You're just trying to get it out.

Sydnee:

Yeah, when most of the time physicians were trying to get the blood out of them.

Justin:

That's your problem, you got too much blood in there.

Sydnee:

If you look at pictures of people being transfused at the time period, you'll often see them being bled from the other arm.

Justin:

Tell me we started getting the hang of this.

Sydnee:

Well, eventually we did. But before I tell you more about that, Justin, I'm gonna need you to come on down to the billing department with me.

Justin:

Let's go.

[theme music plays]

[ad break]

Justin:

Okay, Syd. When did we start getting the hang of this?

Sydnee:

So, in 1818 the first person to person transfusion was successful, and that was done by obstetrician, Dr. James Blundle, who had been kind of—

Justin:

That's an unfortunate name.

Sydnee:

It really is.

Justin:

It's not a very—

Sydnee:

It doesn't sound like he's gonna do this right.

Justin:

"Me, I'm Dr. James Blundle. Can I take your blood out of your body and put it in another body? I'm James Blundle."

Sydnee:

Nah, I'm good. I'm good.

Justin:

"Oh, now, it's okay."

Sydnee:

Dr. Blundle.

Justin:

"I'm a licensed physician. Dr. James Blundle."

Sydnee:

It's 1818. I'm already rolling the dice with doctors as it is anyway. I'm gonna pick one with a cooler name.

Justin:

"Sure. But I've got a name you can trust. Dr. James Blundle."

Sydnee:

So he'd been experimenting with this whole idea for a while. Uh, but it really came to a head when one of his patients, he's an obstetrician, uh, started having a severe postpartum hemorrhage.

So after she gave birth, she started bleeding. They couldn't get her to stop, um, and that, at the time, would've been a death sentence for many a woman. However, he transfused her and she survived.

Justin:

"I'm a hero."

Sydnee:

He—

Justin:

"I'm a hero. Dr. James Blundle, hero."

Sydnee:

[laughs] He wrote out— He wrote up about 10 of these cases. Um, and half of them went well. Five of them, you know, that's pretty good odds at the time, 50%.

Justin:

"I'm 50% hero. I'm a half hero."

Sydnee:

And to be fair to him, two of the people who didn't, uh, survive, were already dead when he started transfusing them. So.

Justin:

"Well, I'm no Dr. Frankenstein."

Sydnee:

[Laughs]

Justin:

"I do my best with what I have, which is blood."

Sydnee:

It should also be noted that while he was transfusing the patients, he did bleed them all.

Justin:

"Well, sure." Wait a minute. What?

Sydnee:

Yes.

Justin:

[laughs]

Sydnee:

I told you that was a common thought. It was—

Justin:

Out with the old, in with the new.

Sydnee:

We didn't know how it worked, but we knew—

Justin:

[laughs]

Sydnee:

Bloodletting was our thing.

Justin:

I'm sorry, old timey people. I try to give you the benefit of the doubt, but you really thought that the thing to do while putting blood in would be to take other blood out?

Sydnee:

I, hey. If you haven't listened to our episode on bloodletting yet, I would recommend you do. It's kind of a good foundation for everything else we ever did in medicine.

Justin:

Yeah. Fair enough.

Sydnee:

So, at this point, he started arguing that transfusion was a thing that would actually help people, you know. Some— Half of his patients had benefited from it. A woman who would have died otherwise, survived. So he started pushing this idea.

But people were pretty resistant to it, you know. Like any new thing in medicine, and especially when we were so used to taking blood out of people instead of putting it in. Um, a study came out at the time, as well as we did studies, that reviewed all the cases of transfusion that had been done and found a survival rate of about 1 in 3.

And they noted that, you know, this isn't quite as good as a hernia operation at the time, but it is about the same as amputation, so maybe you should go for it.

Justin:

Now, would one third about work out to difference in blood typing? Like—

Sydnee:

That's so hard to say because you're talking about, it's not just the percentage of the population who has a single blood type. That math is too advanced for me.

Justin:

Right.

Sydnee:

It'd have to be the chances that they had either your same blood type or another one that was compatible. Which we'll talk about in a minute.

Justin:

Okay.

Sydnee:

You know. 'Cause you don't have to necessarily have blood from the exact same blood type as you. Um, so how to do it was a big problem. You know, even those people who agreed that it was a good idea. You know, we tried tying an artery from one person to the vein of another, which would work, but was very dangerous.

And you risked the person whose artery you were severing bleeding a great deal. Uh, we tried bleeding people into, like, basins and then sucking it up into syringes. Um, we even just tried to kind of like, uh, take a bunch of sharp points and, like, macerate the skin on the person's back and then collect what we thought was capillary blood.

Justin:

This was surface blood.

Sydnee:

Yes.

Justin:

Not a cool, like, not a lot of people lining up at the Red Cross back then. I would imagine.

Sydnee:

No. No. And I don't think they gave you cookies or juice or anything when they did this stuff. Um—

Justin:

They gave you a very soft cushion to lie back on.

Sydnee:

And as you can imagine, getting the blood out was a problem. And then also, uh, if you did put it into, like, a bucket or something, it would probably start to clot, and that was a big problem too.

'Cause then what do you do? Uh, in the late 1870s, it was a trend for a while to try to transfuse milk. So like, somebody really sick, you'd just start, you hook them up to an IV of milk and start running that in.

Justin:

Excellent.

Sydnee:

Uh, there were lots of reactions to that. So by 1884 they replaced it with saline, which is actually something we still use today, not so much to replace blood, but as a volume replacement. Yeah. You know. That's, that's standard IV fluids now.

Justin:

Awesome. Good work, guys.

Sydnee:

The real breakthrough was in 1901 when Karl Landsteiner discovered blood groups. And I should note, there were a ton of physicians involved in this process.

Figuring out, not just what the blood groups were, but how to find them and how to figure out who is what and, you know, what, what that means and how to test blood for that. Um, he was not— He was by far not the only physician involved. There were many, many.

Justin:

Can you give me, like, a bird's eye view of, like, blood types? Like, what, what that actually means?

Sydnee:

So, what it has to do with is what kind of antigens you've got on your red blood cells?

Justin:

And what are antigens?

Sydnee:

Uh, little, like, surface proteins that can cause a reaction.

Justin:

Okay.

Sydnee:

So, the idea is that if I have antigens, um, A antigens on my red blood cells, which I do, because I am blood type A.

Justin:

Okay.

Sydnee:

And you give me blood type B blood, you have formed, that person with type B blood, let's say that's you. I don't know what type your blood is.

Justin:

I don't either.

Sydnee:

We need to figure that out.

Justin:

It wouldn't hurt.

Sydnee:

You have antibodies against my antigens.

Justin:

Mmm.

Sydnee:

So you're gonna try to destroy my blood cells.

Justin:

I'm gonna see your blood as a hostile invader.

Sydnee:

Exactly. And vice versa. I have antibodies against your blood cells. So you can imagine, when you put those blood cells in my body, we're both gonna have problems.

Justin:

Is that gonna be fatal? Or is it—

Sydnee:

Yes. It can be fatal.

Justin:

It can be.

Sydnee:

I mean, it depends on how much blood you get, how severe the reaction is. And nowadays it would depend on what kind of support you could give the

person. You know, this stuff does accidentally still happen. Um, and it depends on how quickly basically you can get this person to an intensive care unit.

Justin:

Okay.

Sydnee:

So, that's generally the idea. There's A, B, AB, meaning you have both, and then O, meaning you don't have any of these antigens on your blood cells. And the great thing about type O blood is that for that reason, you're not forming, you can give this blood to anybody because they don't have antibodies against anything on those blood cells, so they're not gonna attack it as an invader and you're gonna get that blood.

Justin:

Can they take any blood too?

Sydnee:

No.

Justin:

Oh.

Sydnee:

No. They can only take O blood.

Justin:

Oh, interesting. Okay.

Sydnee:

Yeah. So, O is the universal donor and AB is the universal receiver.

Justin:

Okay.

Sydnee:

If you have type AB blood, you can get blood from A, from B, or from O. The other thing to consider of course, which wasn't figured out for about another 40-50 years, was the Rh typing, which is if you're positive or negative. So you know, like, I'm A positive. That means that I have the Rh factor, which is just another, again antigen on the blood cell kind of thing.

Justin:

Okay.

Sydnee:

Don't worry so much about what it means. The important thing is that it has to match if you're positive.

Justin:

Okay.

Sydnee:

No, if you're negative. Strike that. Reverse it.

Justin:

Strike it and reverse.

Sydnee:

It has to match if you're negative. If you're positive, you can get negative or positive blood. If you're negative, you can only get negative. You got it? Make sense?

Justin:

Yep. Got it. Sorry. Sorry.

Sydnee:

So, it took a while for everybody to catch on. Um, there were still a lot of people who were using outdated matching and grouping systems that people had theorized, but were wrong about all the way up until the 30s. Um, it was interesting, in World War I, we also figured out, because as you can imagine all the sudden it became necessary to transfuse blood.

Justin:

Right.

Sydnee:

We figured out how to preserve blood. We figured out how to keep it from clotting, because some of our early methods were killing people. And that's when we figured out the Rh typing. Um, and as a result, after that, as we move into the 30s, we see the rise of the first blood banks.

Justin:

Oh.

Sydnee:

Which was really important by World War II when we were collecting mass amounts of blood to have on hand for the soldiers. There's actually a program in the US first called Plasma for Britain where we were collecting, uh, plasma to, uh, you know, ship overseas and give to the British who were in need.

Justin:

Does plasma have the same typing restrictions?

Sydnee:

Yes.

Justin:

Okay.

Sydnee:

But, then after that, we created our own, you know, blood banking kind of systems for use in the US as well. And civilian use. Um, a big thing was in the 50s when we replace glass bottles with plastic bags to hold blood. That was a big deal, if you can imagine.

Justin:

Why?

Sydnee:

Uh, because it's a lot easier to store and transport plastic bags.

Justin:

Oh, yeah. I can see that.

Sydnee:

So it was a lot, it was a lot harder to have mass quantities of glass bottles that you shipped, you know, to places.

Justin:

Right.

Sydnee:

And we refined the testing. We first started testing for syphilis and then soon after that we started testing for hepatitis B. In '86 we started testing for HIV. And in '91 we finally started testing for Hep-C.

And now we can test for a lot of different illnesses, you know, in your blood before we would give it to somebody. So it is very unlikely that you would get any of these illnesses from a blood transfusion. Um, nowadays we also, of course, crossmatch blood.

So not only, for instance, in the hospital are we gonna pick a blood type that matches your, but we're probably gonna mix it together as well and make sure that we don't see any reaction to unknown antibodies. Because there are things in your blood that we don't necessarily know about ahead of time or test for because they're uncommon, that can cause transfusion reaction.

As you mentioned, we can give plasma, we can give platelets, we can give red blood cells. Some good facts for you to know, every blood donation can save up to three lives.

Justin:

Wow.

Sydnee:

Because we can divide it into the different parts. Um, about 38% of the US population is eligible to donate blood based on their health status and age and everything. But less than 10% does.

Justin:

Huh.

Sydnee:

And why that's important is because every two seconds someone in this country needs blood. So, I don't know, we've been doing this show for, like, 35 minutes. You do the math. That's a lot of people.

So, if you are interested in donating blood, just so you kind of know, they— 'Cause some people have asked about different things that they check for. You go in, you'll have a brief health history taken. They'll check your vital signs. Um, they will check your hemoglobin. If you're anemic, they don't want you to give blood, 'cause, you know, you're already anemic.

Um, and then they actually take your blood and they'll test it for infectious diseases afterwards. And if it is positive, they won't use it and of course then they'll call you and let you know. The whole process takes about an hour for you and, like Justin mentioned, you get juice or cookies or snack cakes or something as a result.

Justin:

Not that you couldn't obtain those on your own, should you so desire. But it's a nice perk.

Sydnee:

But it's a really good idea to do. It's, you know, it's very rewarding. Have you ever given blood, Justin?

Justin:

I have. Yes. I did to impress a girl in high school. I need to go back. I know.

Sydnee:

Did it work?

Justin:

Uh, not super well, 'cause I didn't get married to her. But I, uh, I did—

Sydnee:

I think that worked out well, in my opinion. In my humble opinion.

Justin:

It didn't work that per— I mean that specific effort didn't work. But in the grand scheme of things, it absolutely did.

Folks, thank you so much for listening to our podcast. Uh, we are here every Tuesday. Thanks to Maximum Fun Network for having us on their, uh, their family of programs. A lot of great stuff to listen to.

A new show called Pop Rocket, which is a bunch of really smart people talking about the events of pop culture of the week. A lot of fun to listen to, uh, so check that, uh, totally out. We also have other great shows like, uh, Stop Podcasting Yourself and, uh, The Goose Down, Judge John Hodgman, Memory Palace, uh, Risk, um—

Sydnee:

My Brother, My Brother and Me.

Justin:

Oh, thank you so much, dear. And, uh, also The Adventure Zone is a new, uh, D&D podcast that myself and my brothers do. It's a lot of fun. People seem to like it. So check that out.

Uh, thank you to the Taxpayers for letting us use their song, Medicines. Thank you to all of you, uh, for, for tweeting about our show. Uh, we're @Sawbones on Twitter.

So, thanks to Dr. Adam Avatar, uh, Lindsey Marie Esel, uh, Shout Out Podcast, Rob Weeks, Madeline Cordova, uh, Rob Kelise, Brian K. Eason, Samantha Kerrick, Mark Davis, Jeremy Baker, Rick Bros, Joel Mathis, Matthew Domville, uh, so many others. Thank you so much. Uh, we super appreciate it. And, uh, that's gonna do it for us. Uh, until next week. I'm Justin McElroy.

Sydnee:

I'm Sydnee McElroy.

Justin:

As always, don't drill a hole in your head.

[theme music plays]

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