

Erin Welsh

"With this poison anything is possible. It assumes the most unexpected and disconcerting forms. It almost seems to know the ridiculous shame it inspires, so it kills under a disguise. It makes its victims die of an intestinal obstruction for example or a nice little liver disease. You don't recover but your honor is safe. At least the bereaved don't have to blush at the mention of the deceased. So much for its caprices. But it also has its little habits. It loves to come out into the daylight and then you get the whole garden full of cutaneous manifestations, those burgeonings, those dreadful efflorescences, the lupus. You can find fine examples of them all at St. Louis or in its museum.

And of course it eats away your bones. But above all, you see, the disease attacks the nervous system, that's its treat, its dessert. It chooses its spot. It snaps the network of the nerves at whim, it can cut off communication with the outside world, suppress the five senses and then we've got a pretty bouquet of infirmities. Or it plays with a man as if it were a puppet. By pinching the nerve at the right spot it makes him jump or dance or start. Then, tired of this, it casts him aside, legs broken and then we have ataxia. Such a cruel game. You have heard tell for instance of the acute pain which strikes unendingly in the small of your back or perhaps it lays into the brain, the kingpin of it all. And there's your general paralysis, senility in all its glory, all its regularity."

TPWKY

(This Podcast Will Kill You intro theme)

Erin Allmann Updyke

I loved that description.

Erin Welsh

Yeah. That's from this book called 'History of Syphilis' believe it or not.

Erin Allmann Updyke

Well then, jumping right into it.

Erin Welsh

Jumping right in. Yeah so hi, I'm Erin Welsh.

Erin Allmann Updyke

And I'm Erin Allmann Updyke.

Erin Welsh

And this is This Podcast Will Kill You.

Erin Allmann Updyke

Season 3!

Erin Welsh

Season 3! And we're starting off with a bang by covering a classic.

Erin Allmann Updyke

A very classic.

Erin Welsh

Syphilis.

Erin Allmann Updyke

I'm very excited about today.

Erin Welsh

Yeah we've been wanting to do this one for a while and it's been highly requested.

Erin Allmann Updyke

Yes.

Erin Welsh

And I think we've been saving it because it's such a big one and it feels a bit daunting.

Erin Allmann Updyke

It's such a big one.

Erin Welsh: So hopefully you get your fill.

Erin Allmann Updyke: Yeah. I think this was kind of on our shortlist for the first season wasn't it? Cause it such a big, big one.

Erin Welsh: It was but I'm glad that we saved it.

Erin Allmann Updyke: Me too.

Erin Welsh: So because we're doing syphilis we should maybe preface this with a bit of warning.

Erin Allmann Updyke: Yes. If you are... So syphilis is a sexually transmitted disease which means we will be talking about genitalia and sex. So if you're listening with young ones that you don't want to hear those things, maybe skip this episode. Come back in two weeks.

Erin Welsh: Yeah, up to you.

Erin Allmann Updyke: Yeah. Okay.

Erin Welsh: Okay. So first episode of Season 3.

Erin Allmann Updyke: Yeah.

Erin Welsh: A lot of things have happened.

Erin Allmann Updyke: So many things have happened.

Erin Welsh: And it hasn't even been that long since Season 2 ended.

Erin Allmann Updyke: No, it hasn't. So Erin, tell us about some of the things that happened for you since we ended Season 2.

Erin Welsh: I am back in the United States.

Erin Allmann Updyke: Yes!

Erin Welsh: And so now we get to record in the same time zone at least even if it's not in the same location but there will be upcoming same-room recordings which will be excellent.

Erin Allmann Updyke: That'll be way more fun. But it's really nice to be on the same time zone.

Erin Welsh: It is. And Erin, what's up with you?

Erin Allmann Updyke: Well you might hear throughout this episode tiny little squeals of my baby human who is sitting here near me.

Erin Welsh: Yay! The cutest.

Erin Allmann Updyke He's very cute and hopefully will sleep through this recording but if not, we'll take breaks.

Erin Welsh Yeah. Little baby.

Erin Allmann Updyke No problem.

Erin Welsh Okay, so.

Erin Allmann Updyke All right. That's us all caught up. Do we have anymore business?

Erin Welsh Yeah so we still have merchandise so go take a look at that and we also will have new soap coming out, a new scent which is going to be super delicious smelling.

Erin Allmann Updyke Yeah, a kind of fall scent.

Erin Welsh Yeah.

Erin Allmann Updyke Yeah. I'm excited about it.

Erin Welsh Where can you find all of this?

Erin Allmann Updyke You can get to it all from our website thispodcastwillkillyou.com under MERCH.

Erin Welsh Perfect.

Erin Allmann Updyke It's pretty easy.

Erin Welsh Okay, onto more important things.

Erin Allmann Updyke Yes.

Erin Welsh It's quarantini time.

Erin Allmann Updyke It's been so long since we've gotten to say those words.

Erin Welsh (laughs) And since you've been able to actually participate.

Erin Allmann Updyke I know and I'm not even right now which is really disappointing. But I will be again soon. Quarantini time Erin, what are we drinking today?

Erin Welsh We are drinking The Killer Cure.

Erin Allmann Updyke Ooh!

Erin Welsh It has mulled cider.

Erin Allmann Updyke Of course.

Erin Welsh Rye whiskey, ginger liqueur.

Erin Allmann Updyke Okay.

Erin Welsh And walnut liqueur or walnut bitters if you can find them.

Erin Allmann Updyke Fantastic.

Erin Welsh I will recommend Templeton rye because that was Al Capone's favorite whiskey and he had syphilis. And shout out to our friend Sam for telling me that bit of trivia.

Erin Allmann Updyke That's amazing Sam just in her pocket knew like, 'Oh yeah and Al Capone had syphilis and loved Templeton rye.'

Erin Welsh Yeah! She had to do a report on famous Chicagoans when she was like in grade school and so she chose Al Capone and always remembered that he had syphilis. (laughs)

Erin Allmann Updyke (laughs) Oh that's amazing.

Erin Welsh Yeah. That's perfect. Anyways we will post the recipe to the quarantini and the nonalcoholic placeborita on our website thispodcastwillkillyou.com and we'll also blast it all over social media.

Erin Allmann Updyke Yes. So if you're not following us on social media, you should probably get on that.

Erin Welsh Yeah, probs. Okay.

Erin Allmann Updyke All right. Well then, shall we begin our first episode of Season 3?

Erin Welsh Absolutely.

Erin Allmann Updyke All right, we'll take a quick short break so everyone can go back themselves a quarantini.

TPWKY (transition theme)

Erin Allmann Updyke All right so syphilis.

Erin Welsh Yes, give it to me. Don't give it to me.

Erin Allmann Updyke I will. Well, yeah, I'll give you the biology, not the disease. How about that? (laughs)

Erin Welsh Excellent.

Erin Allmann Updyke So one thing that I think is very fun that we did not do intentionally, at least I don't think we did this intentionally. Syphilis is our second spirochete bacteria.

Erin Welsh That's right.

Erin Allmann Updyke

And we ended Season 2 with a spirochete and now we're starting Season 3 with a spirochete. How fun!

Erin Welsh

I didn't think about that, yeah.

Erin Allmann Updyke

Me neither. Not intentional but kind of adorable. All right so that's the first thing we already know now, we've learned something new about syphilis. It's caused by a spirochete bacterium which means like the bacterium that causes Lyme disease, it is a corkscrew shape and it sort of swims like a little... What am I doing here, Erin? Swimmy spiral.

Erin Welsh

Yeah, it's just corkscrew movement. I don't know.

Erin Allmann Updyke

Corkscrew. There we go. So this bacterium that causes syphilis is called *Treponema pallidum*, however you wanna say it. Now something that's very interesting about syphilis that's different than the last spirochete we did, while Lyme disease is caused by a number of different species of bacteria, syphilis is not only caused just by one species but by one particular subspecies of one bacteria.

Erin Welsh

I was hoping that you were gonna cover this.

Erin Allmann Updyke

Of course!

Erin Welsh

Because I find this super interesting that it's a subspecies.

Erin Allmann Updyke

Me too.

Erin Welsh

And what does that mean for the biology of this disease vs the other subspecies in *Treponema pallidum*?

Erin Allmann Updyke

It's fascinating. So *Treponema pallidum* has a number of different subspecies that cause completely different diseases aside from syphilis. So syphilis is caused by *Treponema pallidum* subspecies *pallidum*, so *Treponema pallidum pallidum*. That causes the disease that we're gonna talk about today, syphilis, also used to be called venereal syphilis. So this is the sexually transmitted form of syphilis. However other subspecies of *Treponema pallidum* cause diseases like yaws and - I'm not sure how you pronounce it - bejel?

Erin Welsh

I was hoping that you were gonna try to pronounce this first cause I have no clue.

Erin Allmann Updyke

Nope. I even looked it up and I couldn't find a consistent pronunciation so it's also called endemic syphilis.

Erin Welsh

It's spelled B-E-J-E-L.

Erin Allmann Updyke

Yeah. I don't know if it's 'bedjel' or 'bay-hel'. Who knows? But anyways that's another form. And then there's another that I actually saw it listed as a subspecies of *Treponema pallidum* and also as another species of *Treponema* that causes a disease called pinta. So I'm actually not clear.

Erin Welsh

I think what I read is that pinta is called by a separate species and that's only because they could not get a bacterial isolate of it to determine whether it was a subspecies.

Erin Allmann Updyke

That seems believable.

Erin Welsh

Yeah.

Erin Allmann Updyke

And what's so interesting about these different subspecies is that based on the tests that we use to diagnose syphilis, you can't distinguish them from each other. So morphologically when you look at them under a microscope, they're identical. The tests that we use to diagnose them, you can't tell them apart. There are tiny, tiny differences in their genomes that result in small differences in proteins that if you do very specific tests that nobody does in real life, you can tell them apart. But the reason that we classified them as different subspecies before we had those tests is because they're clinical manifestations, so the way they present in people, is totally different and the way that they're transmitted is different. So these other diseases caused by *Treponema pallidum* different subspecies are not transmitted sexually, they're transmitted in other ways that we're not gonna talk about today.

Erin Welsh

Right.

Erin Allmann Updyke

So that's our first fun fact. *Treponema pallidum* subspecies *pallidum* causing syphilis.

Erin Welsh

Very fun fact.

Erin Allmann Updyke

Such fun. That's as fun as it gets, it's downhill from here. Okay so syphilis, as most people are aware and as we've said already, is a sexually transmitted infection. It can be spread through any type of sexual contact. We're talking all the different kinds of sex. So syphilis is a very, very tiny spirochete. So the way it's transmitted is essentially just when you come into contact with the bacteria through direct skin on skin or skin on mucus membrane contact. The bacteria is able to just corkscrew it's little way inbetween the tiny gaps in your skin cells, wither if you have microscopic little tears or just through your mucus membranes like your genitalia where the skin is very thin and very moist. Syphilis can also pass through the placenta and be transmitted congenitally, so from mother to infant. And in some cases it can even be transmitted to a baby during birth, like through the birth canal.

Erin Welsh

Okay.

Erin Allmann Updyke

And once it penetrates the skin the bacterium pretty quickly makes its way into your bloodstream. And from there, as we saw in that firsthand account, it can travel to and invade pretty much any organ. It can even cross the blood-brain barrier and make its way into your nervous system.

Erin Welsh

Yeah.

Erin Allmann Updyke

Yeah. And as it travels through your bloodstream it turns out that it stimulates a lot of inflammation on the part of your immune system and this inflammation is what causes a lot of the symptoms that we see. There are a few specific organs that it tends to infect preferentially for some reason or another and we'll talk about those but it can invade almost any organ just by swimming its way through your bloodstream.

Erin Welsh

Yikes.

Erin Allmann Updyke

Yeah. Let's start talking about the actual symptoms. So now we know this is how it's gonna cause them, right, it's traveling through your bloodstream causing inflammation as it goes. Okay, so what are the actual symptoms? There's three main phases of syphilis: primary, secondary, and tertiary. Very creative names. And then it can also lay latent so between the secondary and tertiary phase you can have years long latency where there are bacteria there but you don't have active disease, so you wouldn't know that you're infected. So the primary stage usually presents within 3 weeks of infection, so the incubation period on average is about 3 weeks, it can be less, it can be more. And usually the primary stage is essentially a chancre, that's what it's called. It's essentially just an ulcer. So an open wound that is most commonly found on the genitalia because again we're talking about a disease that's transmitted sexually. So this chancre, this ulcer is essentially chock full of spirochete bacteria. It's just a bunch of spirochetes swimming around just under the surface of your skin, busting out as they go into this open wound.

Erin Welsh

Where is the wound?

Erin Allmann Updyke

So it's most commonly if you have a penis on the shaft of the penis or the glands of the penis.

Erin Welsh

Okay.

Erin Allmann Updyke

It can be on the labia or inside of the vagina.

Erin Welsh

Okay.

Erin Allmann Updyke

Or in the anal canal or around the anus. It is possible also for it to be in the mouth or there's even been reports of it in physicians before gloves were a thing, they would get it in their nose.

Erin Welsh

Ugh!

Erin Allmann Updyke

I know, yeah. It's horrific. So it can be on basically any mucus membrane.

Erin Welsh

Okay.

Erin Allmann Updyke

Yeah. But most commonly on the penis, anus, or labia or inside the vagina. But one thing that is really important about this ulcer of primary syphilis is that it's completely painless and it doesn't itch. And so that's something that distinguishes it from a lot of other genital ulcers is that you might not ever know that it's there if you're not looking for it because it doesn't hurt at all and even though it might bleed a little, that's in an area where things just kind of bleed sometimes, right?

Erin Welsh

And especially if it's like up the vaginal canal or something, it's much more difficult to spot.

Erin Allmann Updyke

Exactly. Or even in the anus.

Erin Welsh

Yeah.

Erin Allmann Updyke

You're probably never gonna find that. And so yeah, it's very possible to never know that you have this primary form.

Erin Welsh

And the site is usually the site of infection as well?

Erin Allmann Updyke

It is, yeah.

Erin Welsh

Okay.

Erin Allmann Updyke

So this is something where that's the site of infection and it's full of bacteria, extraordinarily infectious.

Erin Welsh

Okay.

Erin Allmann Updyke

So these ulcers are extraordinarily infectious. And usually the ulcer will persist between 3 and 6 weeks, so it's a pretty long-lasting ulcer, it doesn't just pop up overnight and then disappear overnight, it lasts for quite a while. So that's primary syphilis. Secondary syphilis is what happens a bit later, so this usually happens after between 4-10 weeks after infection, so a longer incubation period in general. And I'm unclear on exactly how many, like what percentage of people go on to develop secondary syphilis if primary is untreated. Some numbers I saw said 25% but I saw numbers as high as 60% or 80%. So honestly, who knows? I don't. But a number of people will go on to develop this secondary syphilis. And this is I think one of the main ways that syphilis got one of its nicknames which was The Great Imitator, right.

Erin Welsh

Right.

Erin Allmann Updyke

And it's kind of what you talked about or touched on in the firsthand account. This can present in so many different ways because the bacteria have gone throughout your entire bloodstream and they can essentially invade any organ that they choose. So you can have GI manifestations where you have inflammation and gastrointestinal distress. You can have hepatosplenomegaly where your spleen and your liver get infected and then they get really large because they're full of inflammation. 'Hepato' is liver, 'spleno' is spleen.

Erin Welsh

I like that word a lot.

Erin Allmann Updyke

It's a good word, I like to throw it in whenever I can.

Erin Welsh

Yeah.

Erin Allmann Updyke

You can also get meningitis, so if it crosses that blood-brain barrier, in secondary syphilis you can get meningitis and it's not uncommon to find actual bacteria in the CSF, the spinal fluid. But then there are a few other manifestations that are kind of classic secondary syphilis and most commonly that's a rash. And this rash is on the trunk and the extremities and specifically it goes to the palm and soles of the feet.

Erin Welsh

Okay.

Erin Allmann Updyke

So palms of the hands and soles of the feet. There are not a lot of infectious diseases that cause a rash on your palms and soles. Isn't that bizarre?

Erin Welsh

It's very bizarre.

Erin Allmann Updyke

It's very bizarre. There's only three main disorders that we learn in medical school that give you rashes on the palms and soles. It's secondary syphilis, rickettsial diseases like Rocky Mountain spotted fever, and coxsackie virus, hand, foot, and mouth disease.

Erin Welsh: Oh okay.

Erin Allmann Updyke: Those are the three big ones.

Erin Welsh: How interesting. I wonder why.

Erin Allmann Updyke: Me too! I tried to find out an answer and I don't have a good one. There are other things like obviously contact dermatitis, if you like grab your hand onto something like poison ivy, yeah you'll get a rash there.

Erin Welsh: Right.

Erin Allmann Updyke: But in terms of infections those are the three big ones. I know.

Erin Welsh: So the rash thing. Cause it wouldn't just be on one hand either, it would be on your palms and your feet, the soles.

Erin Allmann Updyke: Yeah and usually it's kind of throughout your body as well so it's not only on your palms and soles, it's like kind of all over.

Erin Welsh: Right. And this is the whole Great Pox vs smallpox thing is the big rash?

Erin Allmann Updyke: Yeah so this rash can actually look a lot of different ways. If you like Google Image search it which I'm sure on our social media we'll post plenty of pictures of this but sometimes it's just flat red spots. Sometimes it can be raised spots. In people who have some kind of immunocompromise, like they don't have a great immune system response, they can actually get necrotizing rashes, so that's where the tissue starts to die and they get these very large kind of purple, very dark rash.

Erin Welsh: Yeah.

Erin Allmann Updyke: So it can look a lot of different ways. Yeah. And then you'll also see other signs of kind of systemic involvement, things like fever, sore throat, weight loss, hair loss. So that's secondary syphilis. Okay and then there's tertiary.

Erin Welsh: Dun-dun-dun.

Erin Allmann Updyke: Yeah. Dun-dun-dun is right. After secondary there's often a long latent period where we're talking years pass between secondary and tertiary. And it's also possible that you can get tertiary syphilis or have signs of tertiary syphilis without knowing that you had syphilis because if you only had a primary ulcer and you never developed those secondary signs, you might never have known that you had that ulcer and then 5, 10, 15, 20 years down the line you can develop signs of tertiary syphilis.

Erin Welsh: So you can jump essentially from primary to tertiary without-

Erin Allmann Updyke: Yeah, you could.

Erin Welsh: Okay.

Erin Allmann Updyke

Yeah. So tertiary syphilis, if primary and secondary syphilis goes untreated it can result years down the line in this much more severe form of syphilis. And this tertiary third form actually has three different forms itself. So there's a cardiovascular form of tertiary syphilis where as you can imagine it affects your heart, there's the gummatous.

Erin Welsh

Oh yeah, the gumma.

Erin Allmann Updyke

The gumma form and we'll talk about what the heck that means in a second. And then there's neurosyphilis which affects your nervous system. Neurosyphilis is the most famous of these I think and that's because it was the most common. Before there was treatment for syphilis, tertiary syphilis, specifically neurosyphilis was the most common form of this late phase of syphilis. And there's a few different ways that this can present and they're all absolutely horrific. But the two more devastating forms of neurosyphilis are called general paresis and tabies dorsalis. So we'll talk about each of those. General paresis, so 'paresis' means paralysis but this is much more than just a paralysis. This is when basically the spirochete invades your brain in such a way that your cerebrum which is the main part of your brain, like the brain-shaped part of your brain starts to atrophy.

Erin Welsh

Oh my god.

Erin Allmann Updyke

Yeah, it's horrific. And so you get a dementia which is basically things like memory loss, personality change. And then you also get these physical symptoms, so things like trouble speaking, tremors, seizures, your muscles will eventually start to deteriorate because the connection between your brain and your muscles is not working correctly so your muscles start to atrophy because of that. And then eventually complete paralysis.

Erin Welsh

Why does this happen?

Erin Allmann Updyke

Great question. I don't know entirely. Especially with general paresis, as far as I understand it's just the invasion of your brain itself, your brain and your spinal cord that causes this atrophy. So as each part of your brain starts to atrophy you'll see these different manifestations. So that's actually not the most common form of neurosyphilis, the most common and kind of I know what we learned in med school is like the most classic neurosyphilis is tabies doralis. Tabies, I looked this up, get my etymology hat on. 'Tabies' means wasting away which is horrific.

Erin Welsh

Interesting.

Erin Allmann Updyke

And 'dorsalis' is like dorsal, like a dorsal fin, so the back part. So tabies dorsalis is literally the wasting away, the degeneration of the posterior part of your spinal cord.

Erin Welsh

Oh my god. Okay.

Erin Allmann Updyke

So instead of your brain kind of wasting away, it's the back part specifically jus the posterior part of your spinal cord.

Erin Welsh

Wow.

Erin Allmann Updyke

It happens that that section of your spinal cord, the nerves that run through it are mostly responsible for a few specific things: vibration sense and discriminative touch, so being able to know that what you're poking me with is sharp and this is where you're poking me vs this is soft and this is not. So you lose that, you lose any kind of vibration sense.

Erin Welsh

Okay.

Erin Allmann Updyke

And very importantly proprioception. Proprioception is knowing where your body is in relation to your body. So here's where my arm is, it's off to my right hand side and if I need to do something like for example pick up a fork and bring it to my mouth, you need proprioception to be able to do that.

Erin Welsh

Right.

Erin Allmann Updyke

So you lose all of that in tabies dorsalis which means your brain doesn't know where your leg is in relation to your body so you can't walk properly cause you can't coordinate between your two legs, your brain doesn't know where they are in space.

Erin Welsh

Right, right.

Erin Allmann Updyke

Isn't that...?

Erin Welsh

Yeah, that's really rough.

Erin Allmann Updyke

Yeah. So yeah, so that's tabies dorsalis, it's really gnarly. It'll eventually result in complete loss of coordination, loss of reflexes because part of the reflex loop goes through the back part of your spinal cord as well. And then that will also lead to muscle degeneration cause you're not coordinating your muscles correctly. It's really gnarly. Yeah. Luckily those manifestations are not common today because we have treatment but they still can happen.

Erin Welsh

Yeah.

Erin Allmann Updyke

Okay but that's just neurosyphilis, we're not done yet. The cardiovascular form of syphilis is actually the most deadly.

Erin Welsh

Seems reasonable.

Erin Allmann Updyke

Yes. And this is one of the most interesting forms for me when I first learned about it. Cardiovascular syphilis, what happens is your aorta which is the giant, largest artery that leads directly off of your heart, right, that's the artery that feeds every other artery giving blood to your whole body.

Erin Welsh

Right. In a blue whale the aorta, a small human can fit through it.

Erin Allmann Updyke

Yes. (laughs)

Erin Welsh

That's my fun fact for this.

Erin Allmann Updyke

That is a fun fact.

Erin Welsh

Just pepper a fun fact in here.

Erin Allmann Updyke

We need some of those.

Erin Welsh: Yep.

Erin Allmann Updyke: Cause this is depressing. So your aorta is so large and thick and muscular that it actually has its own blood supply. So there are teensy tiny blood vessels that actually feed the muscles surrounding your aorta. What happens in cardiovascular syphilis is the bacteria replicate and invade those tiny blood vessels, they're called the vasa vasorum, that feed your aorta and then the inflammation causes those vessels to obliterate.

Erin Welsh: Whoa.

Erin Allmann Updyke: So that means that your aorta is not getting blood supply to the muscle of your aorta so then the walls of your aorta become weak and then it dilates and it can eventually rupture.

Erin Welsh: Yikes.

Erin Allmann Updyke: Cause it can't contain the pressure from your blood flow from your heart.

Erin Welsh: Do we have any breakdown of the proportion of...?

Erin Allmann Updyke: It's a good question, I don't have exact numbers. I did see that neurosyphilis is the most common form of tertiary but cardiovascular is responsible for what I read is 80% of the deaths associated with syphilis.

Erin Welsh: Okay.

Erin Allmann Updyke: So if that helps at least to get an idea. And then finally there's the gumma form. This is the least common but this is what happens when the spirochetes invade your skin or your bone or other tissue and basically just in small areas destroy all that tissue. So you get these large what are called granulomas which essentially is just a bunch of dead tissue with inflammatory cells and bacteria in these kind of nodules.

Erin Welsh: Is this the one that leaves the most traces? I mean you said it invades the bones but do they... I didn't even think about this, I just kind of assumed that all tertiary syphilis left bone traces but is it just the gumma form or the gummatous?

Erin Allmann Updyke: Well I would guess that you can have gummas even if you never know that you had them.

Erin Welsh: Oh okay, right. It would only be discovered... Like you could have cardiovascular syphilis and gummas.

Erin Allmann Updyke: Absolutely, yeah.

Erin Welsh: Okay.

Erin Allmann Updyke: But one is gonna be the thing that kind of brings it to the attention or something like that. I don't think that, these are not distinct entities necessarily.

Erin Welsh: Right, they're just different shades of...

Erin Allmann Updyke: Right, exactly.

Erin Welsh: Okay.

Erin Allmann Updyke: Different shades of syphilis.

Erin Welsh: Different shades of syphilis.

Erin Allmann Updyke: And then finally there's congenital syphilis which is very depressing, it's when the spirochetes cross the placenta or in some cases through the vaginal canal infect a fetus or a baby. And there's a number of different things that it can cause in infants and even in children, so even after like several years congenital syphilis can cause a lot of different... The way that it can manifest in a lot of different ways in adults, it can cause a lot of different types of disease in children as well. But at least about half the time if a pregnant person gets infected with syphilis what happens is just early fetal loss or stillbirth if the pregnancy is farther along.

Erin Welsh: That's really sad. So it seems like most of the time it's a fatal outcome?

Erin Allmann Updyke: Exactly, yeah.

Erin Welsh: Okay.

Erin Allmann Updyke: So that's pretty much the biology of syphilis. The only good thing that I have to say about it is that it's very treatable still. Syphilis is treated with penicillin, it's one of the few things that we still treat with penicillin and thus far it shows little to no resistance to penicillin which is fascinating to me.

Erin Welsh: How interesting.

Erin Allmann Updyke: It's very, very interesting.

Erin Welsh: And fortunate.

Erin Allmann Updyke: Cause everything else is resistant to penicillin but syphilis.

Erin Welsh: Right, within like a few years or less.

Erin Allmann Updyke: Right, yeah.

Erin Welsh: Yeah.

Erin Allmann Updyke: Yeah. What I think is very cool is that penicillin is so good at treating syphilis that if someone has, especially if they have a late stage of syphilis and they're allergic to penicillin, instead of treating them with a different antibiotic you actually desensitize them to penicillin first and then you treat them with penicillin.

Erin Welsh: How do you desensitize someone to penicillin?

Erin Allmann Updyke: The same way that you would with other allergies, you basically give them a tiny bit at a time and you monitor them and then you slowly increase the dosage.

Erin Welsh: Does that work for everyone?

Erin Allmann Updyke: As far as I can tell it works for most people.

Erin Welsh: That's really interesting.

Erin Allmann Updyke: It's interesting. But it can take a very long time.

Erin Welsh: But it's worth it to be able to use penicillin rather than trying to find an alternative treatment?

Erin Allmann Updyke: Yeah, yeah. There are other antibiotics if somebody has an early form of syphilis and is allergic to penicillin but for late syphilis, it's pretty much penicillin or bust.

Erin Welsh: Gotcha.

Erin Allmann Updyke: Cool. So yeah. That's syphilis. What the heck, Erin? Where did this thing come from and how can it wreak so much havoc on our bodies?

Erin Welsh: Oh man. Okay well here we go. Here we go. But first let's take a little break.

TPWKY: (transition theme)

Erin Welsh: Syphilis. Outbreaks of any kind of disease don't just happen out of thin air even though that may be how it seems when they begin. Usually there's a set of very specific circumstances that perfectly set the stage for the emergence and spread of a particular pathogen. Can you guess what one of the most common stage setters is?

Erin Allmann Updyke: No.

Erin Welsh: Come on, guess anything. What would lead to an outbreak?

Erin Allmann Updyke: I was gonna say orgies.

Erin Welsh: I'm not talking specifically about syphilis.

Erin Allmann Updyke: Oh. (laughs)

Erin Welsh: Or STIs. I'm just talking about disease, infectious.

Erin Allmann Updyke: Oh, a lot of people in a small area.

Erin Welsh: Sure.

Erin Allmann Updyke: That's one.

Erin Welsh: And maybe chaos and maybe people from a lot of different areas getting together.

Erin Allmann Updyke: Absolutely.

Erin Welsh: Could be war.

Erin Allmann Updyke: Absolutely.

Erin Welsh: So war is the answer I was looking for.

Erin Allmann Updyke: (laughs) Not orgies?

Erin Welsh: What is it good for? Spreading disease.

Erin Allmann Updyke: Absolutely.

Erin Welsh: So yeah as you mentioned a bunch of people in close contact, they're traveling in areas that are new to them, infrastructure is sort of falling apart and all of these things promote the exchange of pathogens, new pathogens including syphilis. It turns out that the question of where syphilis came from and when is a bit more complicated than I had expected.

Erin Allmann Updyke: Really?

Erin Welsh: Yeah but don't worry, I'll get into all of it later.

Erin Allmann Updyke: Okay.

Erin Welsh: But for now let's first things first this. So first things first, the first time that we see what is definitely an outbreak of syphilis in Europe conclusively is around 1495 during the first Italian war.

Erin Allmann Updyke: Wow. Okay.

Erin Welsh: You've heard of that, you know this war, right?

Erin Allmann Updyke: Of course.

Erin Welsh: Yeah of course.

Erin Allmann Updyke: I know all about it, it was the first one in Italy.

Erin Welsh: Yeah, totally. No I have no idea so I Wikipedia'd it.

Erin Allmann Updyke: Okay.

Erin Welsh: And here's what I could glean from just a quick skim. So in the 1490s there was apparently - and I like this historical context because I think it's really interesting to talk about how this all happened.

Erin Allmann Updyke: You have your extra joy face on when you're talking about this so I know it's gonna be good.

Erin Welsh: Yeah, it's sort of those Wikipedia rabbit holes. Okay. So in the 1490s there was apparently a bit of a spat between the pope at the time, who was Innocent VIII if you were interested, and King Ferdinand of Naples. This kingdom was basically the southern half of Italy excluding Sicily.

Erin Allmann Updyke: Okay.

Erin Welsh: The kind refused to pay any money to the pope and so the pope was like, 'Alright, fine. I'm just gonna depose you and give your kingdom to King Charles VIII of France.'

Erin Allmann Updyke: Naturally.

Erin Welsh: Yeah. And so the King of Naples and the pope eventually made up but the King of France, King Charles was like, 'Um excuse me, you offered this to me and then you drew it back right away.' And he never really got over it so he was super annoyed. And so a few years later when the proper heir to the kingdom of Naples of called into question because the previous king died, whatever whatever, Charles gathered some troops and it ended up being this ragtag bunch of mercenaries from all over. Some were Flemish, some were Swiss, some were Spanish, some were Italian. I mean you get the idea.

Erin Allmann Updyke: Yeah.

Erin Welsh: And then he invaded and met almost little to no resistance initially so they kind of hung out in Naples and around Italy just partying and pillaging and having a good time. And then the people had had enough so they chased them out and then they met on this huge battlefield in July, 1495 with actually Italian troops. And so from this battle is when we get the first known descriptions of syphilis. Quote:

"Through sexual contact an ailment which is new or at least unknown to previous doctors, the French sickness has worked its way in from the west to the spot as I write. The entire body is so repulsive to look at and the suffering is so great, especially at night, that this sickness is even more horrifying than incurable leprosy or elephantiasis and it can be fatal."

Erin Allmann Updyke: Whoa!

Erin Welsh: Yeah.

Erin Allmann Updyke: Even worse than leprosy and elephantiasis. That is heavy words.

Erin Welsh: Yeah. Right?

Erin Allmann Updyke: Yeah.

Erin Welsh: Remember that because it's a really interesting facet of the emergence of syphilis in Europe. Okay so that was from this Venetian doctor named Benedetto by the way.

Erin Allmann Updyke: Oh I know someone named Benedetto.

Erin Welsh: Really? I love that name.

Erin Allmann Updyke: Yeah, one of Brett's best friends from Hawaii.

Erin Welsh: Oh cool. Okay after this battle the retreating French troops returned to their respective countries and along the way made some stops and may have deposited the syphilis bacterium in various cities and towns.

Erin Allmann Updyke: Of course.

Erin Welsh: And from there it exploded. And I mean like within a few years it was already in medical treatises, it was already all over Europe. I mean everywhere.

Erin Allmann Updyke: Can I just say that 'deposited' is a really funny way to say that.

Erin Welsh: I didn't know how else to say it. I guess there were probably many ways.

Erin Allmann Updyke: (laughs) I like 'deposited'.

Erin Welsh: Yeah. Okay, good. (laughs) Just a little deposit.

Erin Allmann Updyke: Yeah.

Erin Welsh: And this syphilis as you could probably tell from the description during the battle, this was not the syphilis of the 21st century or even that of the 19th or 18th centuries. And those syphilis' are horrifying enough but this one, if you can believe it, was worse.

Erin Allmann Updyke: Whoa.

Erin Welsh: This was a terrible scourge that killed quickly, hugely disfiguring people, and eyewitness accounts at the time read like a horror movie script. It definitely was much more virulent in its first emergence.

Erin Allmann Updyke: That is so interesting and it's fascinating to me that it was so recent.

Erin Welsh: Oh okay, we're gonna get into that.

Erin Allmann Updyke: Okay cause wow. Keep going.

Erin Welsh: Okay. No it is and I think it also makes sense considering if that was a first exposure, that's how we often see epidemics happening is that the first wave is so deadly.

Erin Allmann Updyke: Right. Someday we'll do myxomatosis.

Erin Welsh: Oh of course we will.

Erin Allmann Updyke: Can't wait.

Erin Welsh: People quickly realized that the disease was A) contagious, B) spread through sexual contact, and C) often appeared for the first time after people had traveled through the town, particularly people from out of town. It was viewed as a matter of such huge public health importance that some towns or cities had laws forbidding people with syphilis from entering.

Erin Allmann Updyke: Whoa.

Erin Welsh

And this part in particular, this whole 'it came from somewhere else' is what gave syphilis its various nicknames, all of which have that general theme 'it came from over there' with 'over there' being whatever country or region was your political enemy or one that you didn't like or thought was unclean.

Erin Allmann Updyke

Yeah.

Erin Welsh

For instance in Russia it was called The Polish Sickness. In Poland it was called The German Sickness. In Germany it was called The French Sickness. In England it was called The French or The Spanish Sickness. In the Netherlands it was called The Spanish Sickness. In Turkey it was called The Christian Sickness. In Japan it was called The Chinese Sickness. And in Spain it was called Las Bubas. It's a bit of an outlier, that one.

Erin Allmann Updyke

Yeah.

Erin Welsh

But I swear if you just learn the country-specific nicknames for syphilis during the 15th and 16th centuries, you could tell a lot about the political atmosphere during that time and also the attitudes that one country holds for another.

Erin Allmann Updyke

Yeah.

Erin Welsh

Syphilis, like many sexually transmitted infections, was and still is in many places viewed as a dirty disease with moral implications.

Erin Allmann Updyke

Yeah.

Erin Welsh

The disease was seen as punishment for living an unclean or immoral life. But in terms of origins, which of these accusatory nicknames was right?

Erin Allmann Updyke

Yeah.

Erin Welsh

Was it really the French disease brought over from France or the German Sickness? Was it even of European origin? The answer is that we don't know for sure.

Erin Allmann Updyke

Ugh, you're killing me!

Erin Welsh

But yeah, the great debate about syphilis and one that still seems to attract fairly high levels of interest is its origins. And not the evolutionary origins of the spirochete necessarily but the origins of the epidemic. There are two basic thoughts. One is that it was brought from the New World to Europe when Columbus returned from his voyage in April of 1493 bringing with him a few hundred people from Hispaniola and then some of Columbus' crew then joined King Charles VIII's army, bringing with them syphilis and starting the whole pandemic. This one is referred to as the Columbian theory. The second, called the pre-Columbian theory, it's sort of in the name, is that syphilis had been present in Europe since antiquity but increased in incidence and virulence due to an evolutionary leap. Let's go through each of these.

Erin Allmann Updyke

Okay.

Erin Welsh

Okay. The Columbian theory. This is the one that seems to be the best supported by archeological evidence and also writings from the time. It's also been the more prominent theory of the two for the longest period of time. There are even some historical writings dating back from this first unambiguous appearance of syphilis in 1495 and in the early 1500s that state that the disease was brought back by Columbus and his crew after his travels to the New World. Because syphilis infections and congenital syphilis can leave traces on skeletons you can basically just look at the archeological record to see both the timing and origin of syphilis' emergence.

Erin Allmann Updyke

Yeah.

Erin Welsh

And while there are more than several pre-Columbian New World skeletons in both the northern and southern hemispheres that showed signs of syphilis, clear evidence of syphilis infections in Old World skeletons isn't I guess as clear. There are definitely some cases that appear to be syphilis but for many of these the dating or diagnosis is called into question.

Erin Allmann Updyke

Interesting.

Erin Welsh

A review from 2011 looked at all 54 published cases of supposed pre-Columbian syphilis in skeletons in the Old World and did not find a single one whose diagnosis or dating was clearly pre-Columbian syphilis.

Erin Allmann Updyke

Interesting.

Erin Welsh

Yeah. And so the timing and severity of that first clear syphilis epidemic in Europe is also a point in favor of the Columbian theory, so that it was brought over. Descriptions of syphilis from this time tell of these erupting pustules and horrific lesions with death being a primary outcome. And before the 1495 outbreak that I talked about there aren't unequivocal descriptions of syphilis and definitely nothing as telling or extreme as that one. Many proponents of the pre-Columbian theory which is the one that syphilis was present in Europe have suggested that many writings about leprosy are actually about syphilis. And there are some instances of something called venereal leprosy but it's not clear that that's definitely syphilis. And early writings about syphilis distinguished it from leprosy and smallpox, so they were like this is worse than leprosy, as you heard in that description.

Erin Allmann Updyke

Right.

Erin Welsh

So the debate still kind of rages on and it's helped along by sensationalist quote "documentaries", like I watched this one by Timeline which was like 'Rewriting History of Syphilis' and it had some of the worst sound effects I have ever heard on a documentary. It had these weird wolf howls and creepy slamming doors, it was weird. Anyway.

Erin Allmann Updyke

Cause you know slamming doors, that's a sign of syphilis for sure.

Erin Welsh

Exactly. But these documentaries or these shows they often heavily rely on unpublished and not peer-reviewed data or findings.

Erin Allmann Updyke

Right.

Erin Welsh

And they also catch a lot of flack for that and rightfully so. But what is the evolutionary history of the syphilis pathogen?

Erin Allmann Updyke

Yeah.

Erin Welsh

Syphilis as you mentioned is caused by the subspecies and so one of the ideas, although this isn't certain, one of the ideas is that syphilis actually evolved from yaws most likely into being a sexually transmissible and more virulent form.

Erin Allmann Updyke

Okay.

Erin Welsh

And that could have happened in the New World and then been brought over or it could've, a lot of people of the pre-Columbian hypothesis say well it could've happened in both places. Because it is pretty clear that syphilis, from skeletons in the New World, it's pretty clear that syphilis was there and infecting people before Columbus.

Erin Allmann Updyke

Okay.

Erin Welsh

And so they say well maybe yaws made the leap to syphilis in the New World and it also made the leap to syphilis in the Old World. And it's kind of an interesting, like that seems highly unlikely but yeah, anyway.

Erin Allmann Updyke

I feel like then you'd be more likely to see two distinct forms of syphilis which I don't think we really see.

Erin Welsh

Exactly, exactly.

Erin Allmann Updyke

That's an interesting idea.

Erin Welsh

I mean it's interesting and also as you mentioned this is called The Great Imitator and so writings are can be interpreted a lot of different ways.

Erin Allmann Updyke

Yeah.

Erin Welsh

There's a lot of retrospective diagnosing famous people that is interesting, it's like if you were famous, if you were an artist or a composer or a dictator, you had syphilis.

Erin Allmann Updyke

For sure, yeah.

Erin Welsh

Yeah. Which it could be possible entirely but it's just sort of like...

Erin Allmann Updyke

Right, after the fact.

Erin Welsh

Way after the fact.

Erin Allmann Updyke

Are there, and I'm sorry if this is jumping your gun, are there any descriptions of it in other parts of the world like in Asia or in Africa or in anything like that?

Erin Welsh

Not that I could find, I didn't see anything that was super distinctive or super related or indicative of syphilis or suggestive of syphilis, I should say. Yeah.

Erin Allmann Updyke

Okay, yeah. Cool, interesting.

Erin Welsh: Yeah. Before I move completely away from this origins part of the story I wanna talk of course about the etymology of syphilis.

Erin Allmann Updyke: Yes!

Erin Welsh: And not really its scientific name because I think that's less exciting, 'Treponema' meaning a turning thread in Greek and 'pallidum' meaning pale. But the word syphilis. Where does it come from? The name wasn't actually in heavy use for most of the history of the disease and most people opted to call it The Blank Disease or pox, you know 'The Blank Disease' meaning The French Disease, the Spanish Disease.

Erin Allmann Updyke: Right.

Erin Welsh: Or Great Pox or pox or wild warts.

Erin Allmann Updyke: Okay that's my favorite.

Erin Welsh: Yeah.

Erin Allmann Updyke: Wild warts?

Erin Welsh: I was like why isn't that what we call it now? Wild warts!

Erin Allmann Updyke: That's gotta be the Condyloma lata cause they are pretty wild looking. (laughs)

Erin Welsh: It wasn't until the end of the 18th century really that people started to use 'syphilis' again. 'Syphilis' is the main character of an epic poem and in this poem Syphilis, who is a shepard, gets upset when there is a bad drought that is killing the land and his sheep. I think it's like an old Roman poem. He blames the drought on the sun god, likely Apollo or the Roman equivalent if there is one, whatever, and instead says he's gonna worship the king whose sheep he herds. The king is like heck yeah but the sun god is really annoyed.

Erin Allmann Updyke: Of course.

Erin Welsh: And so he sends a venereal plague upon the countryside where Syphilis lives. Syphilis was the first victim. So yeah.

Erin Allmann Updyke: Interesting.

Erin Welsh: Interesting. Syphilis the shepard. Also I don't remember if we talked about this in the gonorrhea episode so I'm just gonna repeat it anyway but the origin of the term venereal disease, did we talk about that?

Erin Allmann Updyke: I don't remember, tell me again.

Erin Welsh

Okay. Well it tells you a lot about the historical attitudes and even present day possibly attitudes of venereal disease which is no longer a term that we use because 'venereal' comes from Venus, the goddess of love. There was an old saying that a night with Venus leads to a lifetime on Mercury which brings me to my next couple of points. So A) it reveals a lot about the blame and who was often perceived to be the person responsible for transmitting syphilis or being the harbinger of syphilis which was often a woman, a temptress or that sort of thing. And then also Mercury. And let's just get into the treatment real quick of syphilis, some of these wild treatments. So for a long time mercury was the chosen treatment for syphilis. Like even just a few years after the 1495 outbreak it started to be used. And it was I guess maybe effective, somewhat effective.

Erin Allmann Updyke

Cause it just like poisoned you til...?

Erin Welsh

I think so. I don't know exactly how it worked or if it truly was effective but people did use it up until the early 20th century and even a little bit beyond that. And so basically they would rub it on themselves. And this is what inspired the name of our quarantine by the way, The Killer Cure because a lot of the cures that people took for syphilis would kill them. So it was either syphilis would kill you or the cure would kill you essentially.

Erin Allmann Updyke

Right, yeah. Either way you're dead.

Erin Welsh

Mercury poisoning is no small thing. So other things like induced sweating and salivation were also treatments. And you know I can't go-

Erin Allmann Updyke

Wait.

Erin Welsh

Yeah.

Erin Allmann Updyke

You said they would rub mercury on themselves?

Erin Welsh

Mm-hmm.

Erin Allmann Updyke

That's awful.

Erin Welsh

I'm sure they would take it in other forms also.

Erin Allmann Updyke

Right, not that that's better if you ingest it but I can't... Ugh, it just sounds terrible.

Erin Welsh

Yeah it's really bad.

Erin Allmann Updyke

Cool. So then they also...

Erin Welsh

Don't touch mercury.

Erin Allmann Updyke

Don't do it.

Erin Welsh

Yeah.

Erin Allmann Updyke

No.

Erin Welsh: You also know I can't go this entire episode without describing at least one bizarre or horrifying cure.

Erin Allmann Updyke: Our favorite.

Erin Welsh: This is already a long episode so I'm not gonna list too many but here's a great one. And this is directly from this book that I read by the way called 'The History of Syphilis'. Quote:

"If the penis is ulcerated and infected", and the author writes, "it is always the male sex for which the doctor feels pity, the woman being strictly confined to the role of contaminator whose chancre moreover is more difficult to discover." And then continuing with the cure, "If the penis is ulcerated and infected you must immediately wash it thoroughly with soft soap or apply it to a cock" meaning rooster, "or a pigeon plucked an flayed alive or else a live frog cut in two."

Erin Allmann Updyke: What?

Erin Welsh: Uh huh.

Erin Allmann Updyke: You put your ulcerated penis-

Erin Welsh: Your ulcerated penis on a flayed bird or a frog that you've sliced in half.

Erin Allmann Updyke: That's just asking for a salmonella superinfection on top of your syphilis is what you're asking for there.

Erin Welsh: The Killer Cure, this is what I'm saying!

Erin Allmann Updyke: Oh my god.

Erin Welsh: Yeah.

Erin Allmann Updyke: Also what is up with people and plucking cocks and using them as cures? Didn't they do that for rabies too? There was something.

Erin Welsh: Uh huh, there was something along those lines that was like you have to remove... I mean I feel terrible for these.

Erin Allmann Updyke: Oh my gracious.

Erin Welsh: Yeah. Here's another one, I'll just throw one more in there just for fun.

Erin Allmann Updyke: Please do.

Erin Welsh: Yeah. "To gain protection one must wash oneself after the act, then cover the glands with a piece of cloth which has macerated in a preparation of wine, shavings of guaiac" I don't know what that is, "flakes of cover, precipitated mercury, gentian root, red coral, ash of ivory, burnt horn of deer. The protective must stay in place for 4 or 5 hours."

Erin Allmann Updyke: So this is how to prevent syphilis?

Erin Welsh

This is how to... So a lot of the treatments actually were after the fact, it was not really about prevention it was about... It wasn't about prevention before sex it was about making sure that you didn't get infected after. Mostly it was like well you better wash yourself quickly and then maybe soak your penis in a cloth of some sort of weird, grody, disgusting thing.

Erin Allmann Updyke

Grody, grody stuff. Don't soak your penis in that.

Erin Welsh

Don't do it. Don't follow these. These are not instructions to follow.

Erin Allmann Updyke

No they are anti-structions.

Erin Welsh

Yes, this is a roadmap that you should not go on.

Erin Allmann Updyke

(laughs) Oh my goodness gracious.

Erin Welsh

Because the signs of syphilis are often less obvious in women, they were often blamed for spreading the disease.

Erin Allmann Updyke

As per usual.

Erin Welsh

As per usual with the whole harlot and evil temptress concept, those sorts of things.

Erin Allmann Updyke

Like through the 1950s and 60s and 70s.

Erin Welsh

Oh yeah, we're gonna post some posters that are pretty...yeah. And because in most places sex outside of marriage for men and basically any sex at all for women was seen as immoral, diseases such as syphilis and gonorrhea were viewed as divine punishment. And the word venereal as I mentioned inherently has blame tied to it. In many places to try to stop the spread of syphilis, brothels were shut down or made illegal, not that that necessarily decreased the prevalence of infection. Separate hospitals were constructed for people with syphilis and they were often turned away at normal hospitals. And it's not like these hospitals were nice care facilities, they were just a place to isolate the people deemed unclean or immoral. And also a lot of diagnosing especially for women happened just through word of mouth. So if a man said, 'I have syphilis, I had sex with this woman, so she gave it to me.' Then the doctor would say, 'She has syphilis, she has to go to this hospital.'

Erin Allmann Updyke

I feel like I remember you saying the same thing would happen for gonorrhea as well.

Erin Welsh

Yeah, exactly. Yep. Over time though attitudes around syphilis changed a little bit. The disease itself had been so widespread for such a long period of time and during that time it had become much less virulent. And so by the time the 1800s came around it was almost in some ways viewed as a rite of passage, just something that happened to you. The discussion of morality and syphilis shifted again in the late 1800s, early 1900s and it had always been sort of focused on the unclean or immoral aspect of it but around this time it was more about the preservation of marriage as an institution, that's what took the spotlight.

Erin Allmann Updyke

Oh god.

Erin Welsh: And a lot of focus was paid to the innocent wife made to be condemned to a life of disease due to her unfaithful husband. And then congenital syphilis at this time because it wasn't known to be a pathogen, it was more viewed as original sin or a punishment because you were born bad.

Erin Allmann Updyke: Ugh.

Erin Welsh: Yeah. So this brings me to this point of contagion being a different thing than germ theory.

Erin Allmann Updyke: Yeah.

Erin Welsh: So you can think of a disease as being contagious and even though now we know that that is inherently tied to a specific pathogen whether it's virus or bacteria or worm or something, it wasn't necessarily the same thing back then.

Erin Allmann Updyke: Yeah.

Erin Welsh: It was sort of your unclean aspect, your unclean character could be passed from person to person.

Erin Allmann Updyke: That is so, so interesting to imagine. Like not knowing that a bacteria is what's causing it but knowing or believing at least I got this from this person. That is such an interesting separation.

Erin Welsh: Right, yeah.

Erin Allmann Updyke: Oh wow.

Erin Welsh: It's something I hadn't really thought of before this episode. And a lot of the times the episodes that we've covered we've traced the concept of disease and infectious disease and it's mostly been to do with miasma.

Erin Allmann Updyke: Right.

Erin Welsh: And sort of bad areas, swampy areas, lowland areas, whatever else just bad air. But this was like oh no, this is obviously a contagious thing.

Erin Allmann Updyke: Right. And specifically from sexual intercourse.

Erin Welsh: Right, right.

Erin Allmann Updyke: That is how you get it.

Erin Welsh: Yeah.

Erin Allmann Updyke: Yeah.

Erin Welsh: And so the sexual aspect of course had been known for a long, long time but then alternate routes also began to come to light, so kissing, wet nurse to infant or vice versa and this was sort of a question mark, I don't know. And then later on the big thing was sitting on a toilet seat. So some of these ways are actually ways that you can get syphilis, kissing for instance.

Erin Allmann Updyke

Yes.

Erin Welsh

But other ones like sitting on a toilet seat or contaminated holy water which was my favorite one, like excuse me? What?

Erin Allmann Updyke

(laughs) Oh my god, contaminated... That is such a try hard, wow.

Erin Welsh

Right? And so these were probably ways to preserve, invented to preserve the virtue of certain people who had gotten syphilis.

Erin Allmann Updyke

Yes. We should probably clarify that you cannot get syphilis from a toilet seat.

Erin Welsh

You cannot, no. You cannot. Or contaminated holy water, in case you were worried about that too.

Erin Allmann Updyke

Definitely not. It's also a human-specific disease so that's I think worth mentioning.

Erin Welsh

Yes.

Erin Allmann Updyke

This is not found in other animals, it's not present in the environment, this is human to human exclusive.

Erin Welsh

Yeah. And so around the late 1800s and early 1900s morality plays were written and performed, poems about the dangers of syphilis and evil temptresses and all that and how they're going to poison your household, etc.

Erin Allmann Updyke

Yeah.

Erin Welsh

And in all of these of course it was the husband that got the disease from a woman of ill repute and he was often portrayed as a victim himself. It was one of the three, like it was genuinely called a social disease, one of the three, the other two being tuberculosis and alcoholism. They were all viewed as sort of the unclean holy trinity or something. Unholy trinity.

Erin Allmann Updyke

Fascinating. That is so interesting to me that it was alcoholism and tuberculosis. Wow, yeah.

Erin Welsh

And it was thought that if we have enough social reform and morality campaigns to preserve marriage or to clean up this and that then we could wipe these things out.

Erin Allmann Updyke

Wow.

Erin Welsh

So yeah. And other people believed it to be hereditary as I mentioned and often the cause of genius or creativity, something that has in common with tuberculosis. So syphilis as I mentioned is one of those diseases that people like to retrospectively diagnose so we've got some, these are both confirmed and suspected cases, I'll just list some famous peeps.

Erin Allmann Updyke

Okay.

Erin Welsh

Franz Schubert and other composers like Smetana and Delius, I don't know if I'm saying that right. Al Capone again.

Erin Allmann Updyke

Ding ding.

Erin Welsh

Nietzsche, Tolstoy, Karen Blixen who wrote 'Out of Africa', Lenin, Hitler, and then like many, many other people. There's even a book called 'Pox' something about, I can't remember who wrote it. I didn't read it because from my understanding it's a lot of this hand-wavey retrospective diagnosis. So anyway. It seems like it would be a fun book to read I would imagine but...

Erin Allmann Updyke

Is it all about syphilis, specifically?

Erin Welsh

Yes, all about syphilis.

Erin Allmann Updyke

Okay, interesting.

Erin Welsh

Throughout much of the history of syphilis, people debated whether gonorrhea and syphilis were the same disease, just different forms or stages and there was some horrific self-experimentations to try to clear this issue up. And I think I mentioned one of these self-experiments during the gonorrhea episode and he died of syphilis but he thought he was infecting himself with gonorrhea.

Erin Allmann Updyke

Yeah.

Erin Welsh

Anyway. The syphilis bacterium was finally seen under the scope and identified almost 30 years after gonorrhea which finally was like oh, this is a different one.

Erin Allmann Updyke

So what year was that, remind me?

Erin Welsh

Well syphilis was discovered or seen in February 1905.

Erin Allmann Updyke

Okay, wow. That's actually earlier than I expected considering how tiny it is.

Erin Welsh

Tiny? Yeah. And then the Bordet-Wassermann diagnostic test was developed a year later in 1906. And then Paul Ehrlich along with another microbiologist named Hata came across an effective treatment for syphilis and it was called Salvarsan and that was a substitute for mercury which people started using it and then there was an even better version called Neosalvarsan.

Erin Allmann Updyke

Okay.

Erin Welsh

So prior to 1945 about 5-10% of all psychiatric admissions were neurosyphilis.

Erin Allmann Updyke

Whoa.

Erin Welsh

Yeah! It was a huge problem. And although mercury and arsenic-based compounds were available from the early 1900s on, they weren't really much help for most people but also people with neurosyphilis.

Erin Allmann Updyke

Okay.

Erin Welsh

But an alternative was discovered. Pyrotherapy, so 'pyro' meaning fire.

Erin Allmann Updyke

Whoa.

Erin Welsh

So essentially using induced fevers to treat another disease.

Erin Allmann Updyke

Oh.

Erin Welsh

Yeah. This had been observed for a really long time, like the fact that fevers could cure whatever pre existing disease that you had.

Erin Allmann Updyke

Right.

Erin Welsh

I'm talking a really long time, like Ancient Greeks, Hippocrates and Galen.

Erin Allmann Updyke

Oh okay.

Erin Welsh

Yeah. But it wasn't really until the late 1800s that this observation was made into application. This Austrian psychiatrist Julius Wagner-Jauregg, I don't know how you say his name which is going to be a problem cause I have to say it a couple times. He had become convinced that a fever from an infectious disease could cure mentally ill patients and that's something that he had observed during his time in psychiatric hospitals. And so naturally because this was the early 1900s, he experimented on humans without consent.

Erin Allmann Updyke

Like you do.

Erin Welsh

Like you do with different fever inducing compounds or pathogens. But eventually he made his way to malaria. During WWI he drew blood from malaria infected soldiers and then injected that blood into his patients.

Erin Allmann Updyke

Stop it.

Erin Welsh

Some of whom died of course.

Erin Allmann Updyke

Of course.

Erin Welsh

Some of whom did not show any improvement and some who did even if it was just for a short while.

Erin Allmann Updyke

Oh my goodness.

Erin Welsh

Yeah. So this was far from a fail-safe cure but he was encouraged by the results so he kept doing it and it was basically the same sort of thing, like people died, people got better, people got worse, whatever. And so this practice wasn't widely accepted really.

Erin Allmann Updyke

Okay.

Erin Welsh

But regardless of that in 1927 he became the first psychiatrist and only one of three I think ever to be awarded a Nobel Prize for using malaria to treat neurosyphilis.

Erin Allmann Updyke

He got a Nobel Prize for that?

Erin Welsh: Yeah.

Erin Allmann Updyke: Whoa.

Erin Welsh: Yeah. Oh also I wanna mention that one of the other three psychiatrists or one of the other two psychiatrists who was rewarded a Nobel Prize was the guy who developed the lobotomy.

Erin Allmann Updyke: Okay.

Erin Welsh: Yeah.

Erin Allmann Updyke: Cool.

Erin Welsh: Yeah. The last one was about the physiological basis of memory. That's cool.

Erin Allmann Updyke: That's cool. Actually cool.

Erin Welsh: Yeah. But this basically using malaria to treat neurosyphilis didn't stick around for obvious reasons, like it was super unethical and could kill you.

Erin Allmann Updyke: Right.

Erin Welsh: This therapy will kill you, I don't know. Hence The Killer Cure again. And Wagner-Jauregg, he fell from grace and basically slipped from public consciousness after WWII because he had really close ties with the Nazi Party and this was around the time when bioethics and human experimentation started to really take focus. But yeah, there you have it. So interesting little chapter in the history of syphilis.

Erin Allmann Updyke: Malaria, man.

Erin Welsh: Isn't that cool?

Erin Allmann Updyke: Yeah.

Erin Welsh: So at the turn of the 20th century a lot of developments for syphilis were taking place, both in terms of microbiology, in terms of treatment and so on. And because syphilis was still a very huge problem and a big focus of both social reform and microbiology and public health. And then WWI breaks out and as we know war is a great place for syphilis to spread. Syphilis caused almost as many service days to be lost from troops, I think U.S. troops specifically in WWI, almost as much, just a little bit less than the 1918 flu.

Erin Allmann Updyke: Wow!

Erin Welsh: So between April 1917 and December 1919 there were 383,000 cases of syphilis and gonorrhea in the American army.

Erin Allmann Updyke: Just in the American army?

Erin Welsh: Just in the American army.

Erin Allmann Updyke

Whoa, bro.

Erin Welsh

Yeah. So lots and lots and lots of syphilis. And a lot of the public health campaigns during this time really focused on avoiding brothels, avoiding loose women, etc. That sort of thing.

Erin Allmann Updyke

Yes, those unclean...

Erin Welsh

And after WWI the public fear of syphilis was at an all-time high, like people were terrified of it and this is when this toilet seat rumor got started. There was required, mandatory pre-marital screening for syphilis and tuberculosis, so both partners had to be screened.

Erin Allmann Updyke

Wow.

Erin Welsh

And then if you did get diagnosed you had to list all of the partners and then they would all be identified. But it wasn't like in a way that was respectful.

Erin Allmann Updyke

Right, of course not.

Erin Welsh

Of course not, it was much more sort of condemning it.

Erin Allmann Updyke

Accusatory?

Erin Welsh

Accusatory, exactly. Yeah okay. And so all of this, the fear of syphilis and gonorrhea remained heightened throughout the time between when WWI ended and between when WWII began. So between 1918 and 1939 was just like just 20 years of fear.

Erin Allmann Updyke

Syphilis terror?

Erin Welsh

Syphilis terror, yeah. It held the world in its grip. And then WWII broke out and it was during WWII that we see the release and widespread distribution of one of the best inventions of all time, penicillin.

Erin Allmann Updyke

Penicillin!

Erin Welsh

And that really knocked it out. And so then you see these posters that are much more focused on like hey, go down to the clinic and get a shot, go down to the whatever and get a shot.

Erin Allmann Updyke

A little bit more positive.

Erin Welsh

A little bit more positive. And with the deployment of penicillin and the widespread use, I mean syphilis cases dropped to almost nothing, it was like magic. And it kind of became a disease that was forgotten. People kind of stopped considering it. Even now you say 'syphilis' and you think of the 1800s, I thought of like different composers and stuff that had syphilis. But then in 1972 is when syphilis took the headlines again.

Erin Allmann Updyke

Yeah this is when it gets to be the most depressing I think.

Erin Welsh

Mm-hmm. I think this is one of the most important, probably the most important lesson of syphilis.

Erin Allmann Updyke

Yes. Yep.

Erin Welsh

At the end of July in 1972 the announcement was made that the U.S. Public Health Service had been conducting a study on the effects of untreated syphilis on the human body. The exact title of this study is the "Tuskegee Study of Untreated Syphilis in the Negro Male". There's a lot in that title that can tell you about this experiment.

Erin Allmann Updyke

Yeah. Ugh. Okay. This story needs to be told.

Erin Welsh

Yep. It's a hugely important story.

Erin Allmann Updyke

Yes.

Erin Welsh

This experiment had gone on for 40 years. It involved 600 black men, 399 of which had syphilis at the start of the experiment. It came out during this news release that the men had not been informed that they had syphilis at the beginning, had not been informed that there was a treatment available either at the very beginning of the study when mercury or arsenic-based medicines were used to varying degrees of efficacy and they were not told about a decade after the study began when penicillin was introduced. This wasn't a study to find out the best way to treat syphilis. It's in the title. The effects of untreated syphilis. This wasn't a treatment-based study, this wasn't an intervention study, this wasn't a diagnostic study.

Erin Allmann Updyke

Yeah.

Erin Welsh

It was just-

Erin Allmann Updyke

Let's see what happens when we withhold treatment from human beings.

Erin Welsh

Yes.

Erin Allmann Updyke

How far can this disease go? How much havoc can it wreak on the human body?

Erin Welsh

So you might ask why would anyone agree to participate in this study? Well the men of course were not told what the study was, most of them were poor and could not read, and the Public Health Service offered a few perks such as free physical examinations, free rides to and from the clinics, hot meals on examination days, free treatment for some minor things, and a guarantee that their family would get a burial stipend if they agreed to an autopsy of the body. These men were not viewed as men, they were not viewed even as patients or subjects, they were viewed as cadavers, they were just cadavers in waiting. And if you think about these quote "benefits" they're meager at best. A hot meal? Free physical examinations? \$50 for a burial?

Erin Allmann Updyke

Yeah. I mean that tells you that these are not volunteers, right.

Erin Welsh

No. I'll get into a bit of this but this really had a huge importance in later ethical guidelines for what can be considered volunteering, what can be considered informed consent.

Erin Allmann Updyke

Yeah.

Erin Welsh

These benefits alone, just that little bit shows that in the words of one editor, quote: "The basic rights of Americans, particularly the poor, the illiterate, and the friendless are still subject to violation in the name of scientific research." And people of color were particularly preyed upon.

Erin Allmann Updyke

Of course. Like entirely.

Erin Welsh

Oh entirely. I mean they were sought out. Yeah, yeah. Some of these circumstances surrounding the experiment have been disputed, like whether the participants were told they had syphilis. They were not, they were told they had bad blood. Bad blood was a colloquial term that sometimes referred to syphilis, could be indigestion, could be just not feeling great that day, it wasn't specific to syphilis. And many doctors in this study confirmed that these men were told that they were being treated for rheumatism or bad stomachs and they were given either just straight up placebo or an aspirin.

Erin Allmann Updyke

Wow.

Erin Welsh

When any of the men were brought to a clinic and seen by a doctor that wasn't involved in this study, these doctors would try to treat them but then they would be forbidden to do so, someone would intervene and pull the person away from that doctor. One of these doctors said that the men were told if they received treatment they would be dropped from the study and lose all of their benefits. At least 28 and possibly over 100 men in the study died as a direct result of untreated syphilis, many other people were infected as a result of these men not receiving treatment and many children were born with congenital syphilis.

Erin Allmann Updyke

This is...ugh.

Erin Welsh

Yeah. When news of this horrifically unethical experiment broke, a lot of the discussion about the ethics centered around the withholding of penicillin when it became recognized as a suitable cure which was about 10 years after it began.

Erin Allmann Updyke

Like that's the only thing that they did wrong.

Erin Welsh

Right, that barely scratches the surface of the problems with this study. And to be clear, withholding treatment was hugely unethical but that happened a decade after the study began. That the study could be dreamt up and executed at all and receive funding for 40 years by the United States Public Health Service reveals a great deal about how your right to be treated as a human being is inextricably tied to race and class.

Erin Allmann Updyke

Yep.

Erin Welsh

The premise of the experiment is the moral issue. It's not surprising that the creators of this experiment would choose to withhold penicillin after designing the experiment in the first place. And this is probably depressing but unsurprising, there were many defenders and apologists of the Tuskegee Syphilis Experiment. When it first came out, the Public Health Service barely apologized for it, saying it had never been kept a secret, results from the experiment had been published in many journals and there had never been outcry in the 40 years it was going on. And other people defended the withholding of treatment, especially the arsenic and mercury compounds used prior to penicillin saying that those drugs were more likely to harm than cure. These people had a bit more difficulty explaining why penicillin was withheld, so reporters turned to the man who was the Director of Venereal Disease during the time penicillin use was widespread. He, he being Dr. John Heller, denied any responsibility for the study and declare, quote: "There was nothing in the experiment that was unethical or unscientific."

Erin Allmann Updyke: I'm sorry, can you say that again?

Erin Welsh: Right? Okay. There's so much here I'm like bursting with information with this.

Erin Allmann Updyke: And rage.

Erin Welsh: And rage. Yeah so well first of all of course it was unethical, we can list 100 million different ways it was unethical. And then in terms of it being unscientific? The whole thing was unscientific. Many of these men had received treatment at the very beginning of the study but not all of them, it was inconsistent.

Erin Allmann Updyke: Right.

Erin Welsh: Some of the men started out being negative for syphilis and then later tested positive for syphilis but they weren't shifted into groups. This study contributed nothing to the body of knowledge on syphilis and many people who were on the outside of this study who were horrified when they learned of this said the same things. Even the people who were involved in the study would say, not directly, 'But what are you hoping to learn from this?' It was the curiosity of these men, particularly one, he was entranced by autopsies and by seeing all the different ways that the body could... Yeah, it's really, really horrible.

Erin Allmann Updyke: Ugh god, that's just...

Erin Welsh: Other people at the CDC said that they doubted that penicillin would've done any good at that point and that in fact it probably could've caused more harm than good due to allergic reactions.

Erin Allmann Updyke: Absolutely false.

Erin Welsh: Right. Other people went the route of, 'It was a different era, we can't apply our 1972 morality to 1932.'

Erin Allmann Updyke: Gross.

Erin Welsh: Then you have a few physicians defending the study saying that it was their own fault they got syphilis in the first place.

Erin Allmann Updyke: The amount of rage.

Erin Welsh: Right. These are physicians, nevermind the Hippocratic Oath or just basic human decency.

Erin Allmann Updyke: They could still be physicians quite honestly, 1972 wasn't that long ago.

Erin Welsh: Yeah, that's true. The Tuskegee Experiment wasn't even the first of its kind. About 30 years before this experiment began a similar study in Norway was underway. So why did it need to be repeated? One of the reasons that they gave was because the doctors wanted to see whether syphilis manifested differently in black people compared to white people. And there's a whole lot of historical context to this because at this time there was still this belief that races were biologically-based which is not true.

Erin Allmann Updyke

Right. Not true at all.

Erin Welsh

Right. And that the higher rates of syphilis in certain groups were somehow biologically-based rather than socioeconomic. Overwhelmingly the response to the news of the Tuskegee Experiment was horror and a feeling of betrayal. The United States, rather than protecting its citizens from being taken advantage of was actively preying upon them. For many that may not have come as a big surprise and all it did was to increase the distrust of the government including the branch that was supposed to help and heal people, the Public Health Service. The Tuskegee Syphilis Experiment started a discussion of medical ethics, raising questions about the difference between volunteering and being coerced and about how medical researchers in their quest for objectivity start to see people as subject, or in this case cadavers, and left people wondering how many unethical experiments will come to light in the future.

Erin Allmann Updyke

Answer: a lot.

Erin Welsh

A lot. And if any of you have, so this Tuskegee study is not news to you, Erin.

Erin Allmann Updyke

No.

Erin Welsh

It wasn't news to me although a lot of the details were because it is mentioned in every single ethical, biomedical ethics course or training program that you do about any public health.

Erin Allmann Updyke

You know what's interesting though? In reading about the biology of syphilis this comes up often because you can't talk about syphilis without talking about the Tuskegee Experiments but in some of the papers and books that I've read they mention it in such passing as though it was oh, regrettable. Like that's it.

Erin Welsh

Right. It's more like oh, it's from another era, that sort of like...

Erin Allmann Updyke

Rather than like gut-wrenching horror that it should provoke. Ugh.

Erin Welsh

Well I think both gut-wrenching horror and also the realization that a lot of the circumstances that led to people doing this study and thinking this was okay are still in existence today.

Erin Allmann Updyke

Yeah, totally.

Erin Welsh

To me there's a lot more in this study than just oh well this is a course in medical ethics.

Erin Allmann Updyke

Right.

Erin Welsh

This is all about how much your rights are tied to your circumstances.

Erin Allmann Updyke

Right. You can't look at a study like this, that a study like this took place and was funded for so long and not realize how deeply systemic racism and classism is in our society. It just boggles my mind that people can try and pretend like that doesn't exist when this was in our lifetime.

Erin Welsh

Yes, yeah. I encourage everyone who listens to this to go seek out more information. There's a fantastic book which is a classic that I got all this information from, it's called 'Bad Blood' by James Jones, it's incredible, it is so well researched. And for someone who doesn't have the time or the desire to read a book, I also watched this Yale lecture on YouTube about it and it was amazing.

Erin Allmann Updyke

Oh, okay. Cool.

Erin Welsh

I mean it was so perfectly done, much better than I could ever do. But a lot of good information there. So after the study came out there were lawsuits, there were investigations into the ethics of this study and it did really change the way that biomedical studies are done. It changed the whole process of how to ensure that you are finding volunteers and not coercing people what informed consent really is. But it did instill a lot of distrust into the U.S. government, rightfully so.

Erin Allmann Updyke

Yeah.

Erin Welsh

And it should still be such a huge part of the conversation about STIs in general and sort of this shame, blame, and being taken advantage of and withholding treatment. All of these things sort of go together and yeah. So my part of this really kind of ends with the breaking of the news of the Tuskegee Experiment.

Erin Allmann Updyke

Yeah.

Erin Welsh

And I don't really know much about what's going in terms of syphilis today, I've definitely seen some news articles flash across my screen that are I would say somewhat alarming. But Erin, tell me what's going on in syphilis today?

Erin Allmann Updyke

I'd love to. We'll take another short break before we get into it.

TPWKY

(transition theme)

Erin Allmann Updyke

Syphilis today. I think you're not alone Erin, you said that when you think of syphilis you think of the past, old-timey but it is certainly still a disease that's prevalent today. So looking worldwide, the World Health Organization estimates - in 2016 was the most recent numbers that I found - that 19.9 million people around the globe were living with syphilis, mostly between the ages of 15-49.

Erin Welsh

Okay.

Erin Allmann Updyke

And that there were 6.3 million new cases in 2016, that's the estimate.

Erin Welsh

So the prevalence was 19.9 but the incidence was 6.3 million?

Erin Allmann Updyke

Exactly.

Erin Welsh

Okay.

Erin Allmann Updyke

Yep. And that's worldwide.

Erin Welsh

Okay. Those are lowish numbers, I mean.

Erin Allmann Updyke

Yeah it's not nearly as prevalent as other STIs or a lot of other diseases but here's where it gets to be a bummer.

Erin Welsh

Oh great.

Erin Allmann Updyke

Syphilis is on the rise.

Erin Welsh

Yeah.

Erin Allmann Updyke

And it has been for kind of a very long time. So in the 80s and early 90s was actually the low of syphilis, especially in the United States. So syphilis after the 70s started to decline but since the year 2000 it has been on the rise again. So the peak was in the 90s, I think 1990, in the U.S. the cases per 100,000 were 20. That was the peak since the introduction of penicillin. Then they started to fall. But since 2000 they've been increasing every year since then. So in 2017 there were 30,000 cases of syphilis reported in the U.S., that's 10% more than the year before and the highest rate that we've seen since 1993.

Erin Welsh

Wow.

Erin Allmann Updyke

Yeah.

Erin Welsh

Okay.

Erin Allmann Updyke

So it's like every year it's been increasing and increasing.

Erin Welsh

Is this a reportable illness?

Erin Allmann Updyke

It is. What's very interesting, and I got a real kick out of this, it's been nationally notifiable, so reportable, since 1944 which is like the year after they started treating it. And so if you read UpToDate which is like doctor Wikipedia it says that because it's been notifiable and it's got unique diagnostic features, most cases are reported. Like, 'We've got a great handle on syphilis,' and I'm like...

Erin Welsh

How would you know?

Erin Allmann Updyke

Yeah, great question, I entirely disagree with that sentiment. Because the problem is we only know about cases that are diagnosed obviously. We don't know about cases that people never come to treatment for, people who don't have access to healthcare are not going to be diagnosed and when we have free clinics and Planned Parenthoods being shut down across the country, you can't assume that people have access and are getting treatment especially considering that primary syphilis, often you would never know that you have this ulcer. And those numbers that I said, so like 30,000 cases in 2017, that's of primary and secondary syphilis. So that's not including late or tertiary syphilis.

We definitely don't have a good handle on how many people get late syphilis or what proportion of people that get infected end up getting late syphilis. There has also been an upward trend in late syphilis, like there's been more cases reported in recent years compared to the early 2000s but we're still unclear on exactly what the proportion of people are that present with late syphilis vs early if that makes sense because most people are gonna probably present early but the ones who don't, it's years and years down the line that they're gonna end up with tertiary, so there's such a long latent period.

Erin Welsh

Right.

Erin Allmann Updyke

There's a lot of numbers out there, you can look on the CDC, even on Wikipedia that'll tell you "who" quote unquote gets syphilis, what "groups of people", I put that in air quotes, are at the highest risk. And I am not going to get into the details of that on this podcast and here's why. Syphilis is an extremely infectious disease. As few as 10 organisms, usually it's around 50 but as few as 10 microscopic bacteria in an extremely teeming sore can cause infection. And what that means is that anyone having sex of any kind can get syphilis and that's the reality of it.

Erin Welsh

Right.

Erin Allmann Updyke

So there are recommendations on 'these groups of people should be screened and these groups of people should be screened' but realistically in my opinion, this is where we veer into Erin's opinion territory, if you're a person having sex of any kind with anyone, you should probably get screened at least once. Right?

Erin Welsh

Right. It doesn't hurt.

Erin Allmann Updyke

Yeah. And the more people that get screened, the more cases we identify, the greater our chances of reducing the burden of this disease among the entire population, not just in certain groups.

Erin Welsh

Well and also STIs have a huge stigma, there's a lot of shame and blame and all of these things associated with them and there doesn't need to be cause these things happen to people, they don't happen just to certain groups of people, they happen to everyone.

Erin Allmann Updyke

Yep, exactly.

Erin Welsh

And so the only way that you can help yourself and help everyone else around you is just get screened. It's not a big deal.

Erin Allmann Updyke

Just get screened! Yeah, yeah. In my opinion I'd you're having sex then you should be talking about sex and you should be talking with your partners about sex. And if you're doing that then you should both be talking about getting screened. I even see campaigns that are like, 'Make it sexy, go get screened together.' Whatever, who cares, whatever it takes, just go get screened for syphilis, for HIV, for chlamydia, gonorrhea, for all the things. You know what I mean?

Erin Welsh

Sure, yeah.

Erin Allmann Updyke

Cause again this is such a treatable disease.

Erin Welsh

Right.

Erin Allmann Updyke

Syphilis is one shot and it's treated unless it's late and latent and then it's harder to treat, right.

Erin Welsh

Okay.

Erin Allmann Updyke

And also deadly. So that's horrific. I will say, so in terms of congenital syphilis the numbers also aren't that reassuring cause the rates of congenital syphilis mirror the rates of adult syphilis in the population.

Erin Welsh

Yeah.

Erin Allmann Updyke So again there were downward trends through the 90s but it's been on the rise since. In 2017 in the U.S. there were 918 reported cases of congenital syphilis.

Erin Welsh Wow.

Erin Allmann Updyke This includes 64 stillbirths and 13 infant deaths, so after birth. And that a 44% increase between 2016 and 2017.

Erin Welsh Oh my goodness.

Erin Allmann Updyke Yep. And worldwide it's estimated that 1 million pregnancies per year are complicated by congenital syphilis.

Erin Welsh Wow.

Erin Allmann Updyke And again 40% of these will result in loss of...yeah.

Erin Welsh Yeah.

Erin Allmann Updyke So that's very depressing. Go get screened for syphilis! Every pregnant person that gets prenatal care in the U.S. is screened for syphilis.

Erin Welsh Right but that's only if you can afford prenatal care.

Erin Allmann Updyke Exactly. And not everyone can. Thank you U.S. There's also really high rates of coinfections with syphilis and HIV.

Erin Welsh Yes.

Erin Allmann Updyke And that's really important because there's actually evidence that syphilis, having and in with syphilis can increase the risk of HIV transmission cause it's basically, especially primary syphilis is an open wound and HIV is not very infectious but if you have open sores then it's a lot easier for HIV to infect or be transmitted.

Erin Welsh Right.

Erin Allmann Updyke And then I saw actually some possible evidence that infection with HIV can also facilitate the transmission of syphilis as well. So it might work both ways kind of, they cofacilitate each other in terms of infection.

Erin Welsh Yeah. Mutualistic.

Erin Allmann Updyke Yeah.

Erin Welsh Yikes.

Erin Allmann Updyke

Yeah so that's a big time bummer. I wanted to say 'let's talk about the positives and the current research' but there's not really much positive in terms of the current status of syphilis research. So there are a few groups and there have been a few recent studies that are trying to come up with a vaccine and it seems like it's at least theoretically possible to develop a vaccine for syphilis but so far these studies are still in animals models as far as I can tell so they're very early studies. Every paper that I've read, like in terms of the papers, which I will post these on our website of course, that's like 'what's the status of vaccine research' essentially is like, 'Hey, we really need to work on this, we need for funding to do so.' But yeah so that's pretty much the current status of syphilis. It still exists, it's not as prevalent as other diseases but it's on the rise.

Erin Welsh

I think I mean isn't that the general trend for STIs, that they're on the rise?

Erin Allmann Updyke

It is. Yeah they are, yeah. I learned a lot today.

Erin Welsh

I did too, I did too. This was a very interesting episode.

Erin Allmann Updyke

Yeah.

Erin Welsh

And one of our big ones.

Erin Allmann Updyke

Yes, yeah.

Erin Welsh

Well before we do sources I want to give an amazing shout out to Lagusta's Luscious, so this person owns a vegan chocolate shop in Brooklyn and they reached out to us to send us chocolates for Halloween time and they are incredible.

Erin Allmann Updyke

So, so cool.

Erin Welsh

There's like a bleeding heart that actually bleeds. Oh my god, they're so good, we cannot thank you enough.

Erin Allmann Updyke

Yes. Thank you so much, it means a lot and is really thrilling. We also never said a public thank you to another listener who sent us these beautiful watercolor drawings of cholera and plague, *Yersinia pestis*.

Erin Welsh

Oh my gosh they're so cool!

Erin Allmann Updyke

They're gorgeous. Erin Welsh took the plague cause that's her favorite in the entire world and I got cholera which is so gorgeous. So thank you to Jen for that, we love them.

Erin Welsh

Yes, thank you Jen.

Erin Allmann Updyke

And sorry that it took us so long to say thank you.

Erin Welsh

Okay, sources.

Erin Allmann Updyke

Sources now.

Erin Welsh

So I read a few books for these. I got a lot of the history part from this book called, as you might guess, as I've mentioned, 'History of Syphilis' by Claude Quételet, I don't know how you say his name, and there's a lot of good information there. And then I also read 'Bad Blood: The Tuskegee Syphilis Experiment' by James Jones, incredible book, I highly recommend you check it out. I'll also post a link to that Yale lecture. And then I read a bit of a book called, I love this title, 'That Jealous Demon: My Wretched Health' which is by Jonathan Noble and that's about composers and disease. So like each chapter is a different disease and then it talks about composers who had them.

Erin Allmann Updyke

Oh, how fun!

Erin Welsh

And it's really great because he's like, 'Well you know this book says that this person had...' I'm not gonna go into it. And then there are a couple papers that I'll post also.

Erin Allmann Updyke

As always we post all of our sources, I had a number of different papers and actually a textbook chapter this time too. We'll post all of our sources and links when possible on our website thispodcastwillkillyou.com under the EPISODES tab, you can find the sources from this and every single episode we've ever done.

Erin Welsh

Thank you to Bloodmobile for providing the music for this episode and all of our episodes.

Erin Allmann Updyke

We love it. And thank you all for listening.

Erin Welsh

Yes.

Erin Allmann Updyke

This is so fun for us, Season 3 off with bang. And with that-

Erin Welsh

Wash your hands.

Erin Allmann Updyke

You filthy animals!