TPWKY - EP 201 - Poop Part 2

EW: [00:00:00] "Sir, I traversed this day by Steamboat. The space between London and Hungerford bridges between half past one and two o'clock. It was low water and I think the tide must have been near the turn. The appearance and the smell of the water forced themselves at once. Upon my attention, the whole of the river was an opaque, pale brown fluid. In order to test the degree of opacity, I tore up some white card into pieces, moistened them so as to make them sink easily below the surface, and then dropped some of these pieces into the water. At every pier the boat came to before they had sunk an inch below the surface, they were indistinguishable, though the sun shone brightly at the time and when the pieces fell edgeways, the lower part was hidden from sight before the upper was underwater.

Near the bridges, the feculence rolled up in clouds, so dense that they were visible at the surface. Even in water of this kind, the smell. Was very bad and common to the whole of the water. It was the same as that, which now comes up from the gully holes in the streets. The whole river was for the time, a real sewer having just returned from out of the country air. I was perhaps more affected by it than others, but I do not think I could have gone on to Lambeth or Chelsea, and I was glad to enter the streets for an atmosphere, which except near the sinkhole, I found much sweeter than that on the river. I have thought of a duty to record these facts that they may be brought to the attention of those who exercise power, or have responsibility in relation to the condition of our river. There is nothing figurative in the words I have employed or any approach to exaggeration. They are the simple truth. If there be sufficient authority to remove a cent pond from the neighborhood of a few simple dwellings, surely the river which flows so many miles through London ought not to be allowed to become a fermenting sewer.

The condition in which I saw the Thames may perhaps be considered as exceptional, but it ought to be an impossible state, instead of which I fear. It is rapidly becoming the general condition. If we neglect this subject, we cannot expect to do so with impunity, nor ought we to be surprised if air many years are over a hot season gives us sad proof of the folly of our carelessness. I am sir, your obedient servant m Faraday Royal Institution, July 7th, 1855."

EAU: There's just so many good parts, Erin,

EW: so many good parts.

EAU: Feculence.

EW: Feculence,

EAU: the word, the smell was very bad.

EW: The smell was very bad. Like I, I have no more synonyms period for succulents. Mm-hmm. And so I'm just gonna have to go with the sheer reaction of Very bad,

EAU: very bad,

EW: very bad.

EAU: I mean, and also, this is not an exaggeration.

EW: Oh.

EAU: I am not being figurative with

EW: this. There is no figurative language in this, sir.

EAU: I love it. I love it so much.

EW: I love it too. I love it. I love it. It's ridiculous. Mm-hmm. And it will, um, I will touch more on the specific situation mm-hmm. That this became the center focus of

EAU: Right.

EW: In this episode.

EAU: Can't wait.

EW: It's gonna be great. Um, and I already said in the firsthand where that came from. And Faraday.

EAU: And Faraday.

EW: There you go.

EAU: Okay.

EW: Hi, I'm Erin Welsh.

EAU: And I'm Erin Allmann Updyke.

EW: And this is, This Podcast Will Kill You.

EAU: Welcome to Poop part.

EW: To Poop two. Poop number two, poop number two. Number two, we're way too pleased with ourselves.

EAU: Ah. We just think we're so clever.

EW: We do. Um, okay. So if you have not tuned into the first episode in this poop series, series, part two, two part series, uh, do it.

EAU: Do it.

EW: You know, whatcha waiting for?

EAU: Just go listen to it.

EW: You don't have to listen to it in order. No. But it will make,

EAU: this will still make

EW: sense. It'll still make sense. Yeah. But you should do it.

EAU: It's a great episode. It

EW: i's really

EAU: proud of it. Episode.

EW: Yeah. Uh, you're gonna learn a lot.

EAU: Yeah.

EW: Just like you will in this episode. Yeah. So last episode, we went [00:05:00] over sort of how we make poop,

EAU: right.

EW: And, um, why poop is actually a gold mine rather than like the waste mm-hmm. That we presently view it as. Right. And today we're gonna go over what happens when our poop doesn't go. To plan,

EAU: right? When

EW: I guess

EAU: Yes. Yep.

EW: And also, um, why poop is actually gross and what we do about it.

EAU: The flip side of the coins,

EW: you know, poop is many things.

EAU: It is so many things.

EW: Poop contains multitudes.

EAU: It does, it really does.

EW: It really, truly, truly does.

EAU: Ed Yong,

EW: thank you.

EAU: Um, yeah, it's gonna be a great episode. I'm really excited about it. It's, but first, but first it's quarantining time.

EW: What are we drinking this week?

EAU: Same thing we drank last week. Drink number two.

EW: The drink Number two,

EAU: we're actually drinking water, which is also important for your poop, but

EW: it is, as we

EAU: learn, if you want to drink a quarantine, it's poop Number two. It's

EW: poop number two. It's a,

EAU: I mean, drinking number two,

EW: we keep saying that.

EAU: Yeah, yeah, yeah.

EW: You know, uh, it's, it's basically a chocolate mint martini. It's great. It's pretty easy to make.

EAU: You can do it at home.

EW: As you can with all of our quarantining, I would assume

EAU: we'll post the full recipe for that quarantine on our social media channels. Are you following us there? 'cause you should definitely check it out and follow us.

EW: You should. You should. Um, uh, our website, which we may be putting quarantining stuff on, maybe we'll try that out. We'll give tonight try. You know, you can find other things though. Yep. You can find so many things. You can find transcripts, you can find, uh, links to our bookshop.org affiliate page. Mm-hmm. Our good reads list, which needs some updating links to Music by Blood mobile, firsthand. Account form, contact us form sources, sources for each and every one of our episodes. Mm-hmm. I was like, I know it starts with an S And um, also YouTube videos. You can find links to that,

EAU: including this one. Yes. Which we are very excited to be bringing you from the Exactly right. Network studios.

EW: Yes. Yes. Yes. Yeah.

EAU: The end

EW: the end. Follow us on YouTube, follow us on social media. Uh. Check out our website. On the reg.

EAU: On the reg.

EW: What are we?

EAU: Let's just do it.

EW: Let's just do it. Yeah. Okay. Fantastic. Let's take a quick break.

EAU: Quick break, and then you'll tell us about

EW: poop. Sewers.

EAU: Sewers. Give it to me. Okay.

EW: Poop is gross.

EAU: I love that. That's a sentence that you wrote down. Love

EW: said. Yeah. Oh yeah. I was like, how do I start this?

EAU: Poop is gross.

EW: Poop is gross.

EAU: It is grody.

EW: It is. It is there, there is no getting around it.

EAU: No.

EW: Like, yeah. Okay. Yeah. We can talk about how important it is. Mm-hmm. As a resource. We can break it down into like, what makes up poop. How do we make poop? Everyone poops. Pooping is not shameful.

EAU: Yeah.

EW: No, I'm behind all that.

EAU: Yeah.

EW: The fact remains poop is gross. It's gross. It's gross. After all, it can contain pathogens or it can signal your presence to a predator, or it can attract flies that lay eggs, that hatch maggots. Mm. Speaking of which, if you are tuning into the YouTube, we have maggot art. We do displayed Yes. Somewhere, multiples. Here. Multiples. Yep. Back anyway. Yeah. You, you can see it. It's incredible. Uh, but maggots are also gross. They're also gross. You know, it's just, it is what it is. Uh, poop. The disgust that poop evokes in us is probably evolutionarily ingrained, because we don't wanna be near it. You know? It's that it's all, again, the pathogens, all that stuff. Yeah. And this aversion that we feel for poop. It's not new. Right. It's not a product of our modern sanitation system, or like a remnant of prudish Victorian sensibilities. That's

EAU: good to know.

EW: It's, yeah. Right. It's not just like it is, it is normal to feel disgusted by poop.

EAU: Okay.

EW: Charles Darwin even called disgust, one of the six universal universal emotions.

EAU: Oh, that's so interesting.

EW: Yeah. And this disgust for poop, it's not specific to humans. Many animals go out of their way to avoid poop, like having designated latrines far away from their burrows or grazing only in areas uncontaminated by poop. This was a real issue in Australia after the poop. Uh, cow poop. Oh, the cow pooped. Yeah. Okay. Because they were like, I'm not, I'm not eating here. 33

EAU: million tons,

EW: I believe. Yeah. Yes. Every year. Yeah.

EAU: Oh yeah.

EW: For much of human history, uh, poop didn't pose too much of a logistical issue

EAU: Okay.

EW: For humans. Right. You, we were living in small groups. We were moving around a bunch. It was a simple matter to just like, oh, the, you know, the call of nature and you just take a little step,

EAU: go away from the

EW: river, you go away,

EAU: you poop.

EW: Oh, actually you didn't go away from the river necessarily.

EAU: Oh, okay.

EW: But it wouldn't have mattered all that much '

EAU: cause you were gonna move on.

EW: You were gonna move on. It was someone

EAU: else's problem.

EW: Yep. And that is how Giardia is everywhere and now it's all of our problem. Mm-hmm. [00:10:00] But yeah, so, and also in addition to like, it not being a huge issue in terms of like having to constantly be around your own poop. You're moving on. And our poop was an essential part of that nutrient cycle and seed dispersal. You know, you eat some berries here, you walk for a while, you poop over there.

EAU: Now

EW: you have, now you got a new berry bush. Yeah. And then it was also not just seeds for, you know, berry plants. It was also we're, we're providing material for decomposers. We're fertilizing the ground. It's the typical circle of poop like we talked about. Right. But then of course, humans begin to live in larger groups and for longer periods. We developed agriculture, we bred livestock, we built permanent settlements. And poop became a problem. A problem, yeah.

EAU: Okay.

EW: We used as much as we could to fertilize crops. AKA night soil. Night soil. We dug poop pits on the fringes of our settlements. We designated communal pooping areas. We pooped on river banks and near streams so that the water would wash the poo away. Oh, okay. And out of sight.

EAU: Okay.

EW: But every fix proved to be a temporary one. As human populations grew and grew.

EAU: Mm-hmm.

EW: Pit toilets filled to the brim poop shoots didn't always extend to the cess pit that collected sewage.

EAU: Sorry, sorry, sorry. A poop shoot's a real thing.

EW: Um, is that a technical though? I don't know. I was just imagining like a tube, you know, like a, like with the

EAU: use for construction.

EW: Exactly.

EAU: I always thought your poop shoot was your butt.

EW: Well, yeah, I think that that's Simon. Like,

EAU: but I love the idea of a

EW: poop, multiple meanings.

EAU: Shoot. Like that was a thing that really had,

EW: I mean, there were, I'll get into it. Okay. Okay. But yes, there were, um, pipes more or less Okay. That, you know, or they would be u uncovered. Essentially gutters,

EAU: gutters, poop.

EW: Poop gutter. But poop shoot just sounds better.

EAU: I love

EW: it. Yeah. Uh, and then there were indoor chamber pots that required frequent emptying mm-hmm. At locations, not within a quiet or a quick walk. You know, this was, there were a lot of different ways that poop. Just, you can't, you turn your back and suddenly there's a massive pile of poop. It's another one that you have to do. Of

EAU: course.

EW: Yeah.

EAU: It's just like laundry.

EW: Okay. So it's, I'm like, how did I, how does it accumulate? It's just like laundry. Okay. So to, to put the poop overload into perspective, let's consider kenso, which is the largest city of the manoan civilization. Okay. Older than ancient grace. Okay. Located on the island of Crete, around its peak, say 1700, BCE. There were 100,000 people living in Osias, each pooping every day. Of course, well, on average for a total of 50 tons of poop per day.

EAU: Wow.

EW: That's a lot of poop. It's quite a lot of poop. Even in 1700 B, c, E. Correct. That's a lot of poop.

EAU: Yeah.

EW: And it of course pales in comparison to what the city of New York makes in a single day today. And I singled out New York because that is where the data are available. Give it to me. Okay. So poop and B, poop and pee combined to about 1200 tons or 2.4 million pounds daily.

EAU: Every day.

EW: Every day.

EAU: 2.4 million pounds of waste from our bodies.

EW: Is it waste though, Erin? I thought we learned that it wasn't.

EAU: It's a synonym for poop and pee. Turds. Turds and pee. We can't forget the pee

EW: and P. We can't forget the P. Yeah, it's a substantial portion. It

EAU: is, yeah.

EW: Okay, so it's, it's not, it's not New York today, but you could, you could see why it would quickly become a pressing matter in need of Absolutely. An effective solution. Right. For the minoans, that solution turned out to be water. Hmm. A handful of engineering minded individuals realized the power of water as transportation, and they devised water supply systems that piped in Rainwater to flush toilets. Toilets.

EAU: They had flushing toilets in 1700. BCE.

EW: Yeah. Wow. I mean, so the toilets were pretty much like localized to the manoan civilization. Okay. And, but they were not just in palaces, like they started out just in palaces. But yeah. I mean, and it wasn't like continuous supply. Okay. You had to, you know, dump it. You've ever been somewhere where you had to dump in water, water, water to the top where you water?

EAU: Yeah.

EW: Yeah. It's like that.

EAU: Wow.

EW: Mm-hmm. Mm-hmm.

EAU: That's so cool. And then they had pipes,

EW: I mean, and also the seats were like really wooded and splintery looking. Oh, for

EAU: sure.

EW: I mean,

EAU: where did the poop go?

EW: Okay, so the water flushed the poop out of the building and down into the sewers that ran into the streams that ran into the sea. So it was all just sort of like connected just down to

EAU: stream.

EW: Yep.

EAU: Part of the water

EW: cycle. And since then the world has never been the same. Ah. Wow. And remarkably 4,000 years later, those drains still function perfectly after a large rain shower.

EAU: Are you serious?

EW: They still wash every, they still wash right down, like to the streams, to the sea. Yeah. For thousands of years now, though, we have used water to do our dirty work separating us from the poo that we produce, so that we don't have to look at it or smell it, or have it contaminate the water that we use. Mm-hmm. The invention of flush toilets and sewers, which we're, [00:15:00] I'll talk about the modern flush toilet. Okay. Because this wasn't one that was like, this didn't, it

EAU: didn't go everywhere.

EW: Spread. Yeah, exactly. Okay. Um, they, it has ca it has saved countless lives and it has made our day-to-day much more pleasant. Right. Uh, but in allowing us to flush and forget. We have become divorced from the reality of poop, not as a waste product, but again, as a resource. Mm-hmm. From those first splintery, wooden Minoan toilets to the seat warming water spraying high tech toilets of today. We've been moving poop from here to way over there. Mm-hmm. Radically upsetting the balance of nutrients like phosphorus and nitrogen across the landscape. And just as the early minoans confronted the mounting poop problem in their city and devised a solution, we finally seem to be coming to terms with the fact that it's time for a new solution or suite of solutions to contend with our growing poop issue. Our cacatastrophe

EAU: cacatastrophe

EW: as we need. I can't let that one go. I'm very proud. No,

EAU: that was really good. It was in the moment too.

EW: It was. It was. We have proof of that. We didn't had Take a mo, take a break and then edit that out. Brainstorm now it sounds like we did, but we really didn't. So what I wanna do now is take us through how we've dealt with our poo and pee and other liquid waste throughout history and how a change in how we think of and deal with poop is really the only path forward.

EAU: Okay.

EW: The Minoans were not the first or the only group in the ancient world to devise ways to manage the sewage that was produced in large cities. Around the same time, the Harapan civilization in what is now India, also had a similar drainage system using deep gutters, which remo with removable covers. Huh. So you could like, you could clean, get rid of any if you need to. Yeah, exactly. Connected from house to house, similar to the way that many of our modern sew drainage systems work today. Wow. Yeah. And so for cities that numbered in the tens of thousands, these Minoan and harapan sewage systems, they did a decent job. No doubt. Things were still stinky, especially if there wasn't a lot of rainfall. And like cesspits probably got clogged, but it it did all right. Considering, yeah. Yeah. Unfortunately, they were no match for the more than 1 million occupants of ancient Rome. I mean, really the history of sewage systems and, and poop comes down to like, oh no, there's too much poop. Oh, we fixed it. Oh no, there's too much poop again. Oh, we fixed it again. Oh no. You know, it just like repeats forever. Just over and over forever. Yeah. Okay. So how did ancient Romans fix it?

EAU: Okay.

EW: With something called the Cloaca Maxima.

EAU: Cloaca. Now that's a great word.

EW: It is a great word. Okay. Cloaca Maxima drag. I know cloaca because like,

EAU: I feel like we should define, 'cause some people might not be

EW: good.

EAU: Yeah,

EW: yeah. No, we, I mean, we can, so my first exposure to the word klaw mm-hmm. Came from the, what? We use it the biological term. Correct. Meaning the single orifice through which, which many animals do all their business poop. Pee reproduce.

EAU: Yeah.

EW: Uh, cloaca.

EAU: cloaca

EW: that. Usage only came into existence in like the 18 hundreds. Okay. So the word cloaca existed before then, and it was, uh, it translate, it was ba it basically translates into the word sewer. So cloaca, maxima, greatest sewer,

EAU: greatest sewer of

EW: all the time i's meaning like biggest. Like largest. I love

EAU: that. I like it. I love imagining ancient Rome being like, this is the

EW: greatest, this is Right. It's like very in line with how I think about ancient Rome. Yes. Which might be totally, I totally much, yeah. Okay. But Cloaca comes from the, the Roman goddess Cloacina based on the word to clean.

EAU: Oh, okay. So

EW: yeah, it has So

EAU: sewers are cleage

EW: clean. Yeah. Yeah. So, yeah, the Ika Maxima, it really did live up to its name though, uh, in terms of its size. Okay. It was so big that entire wagons filled with hay could travel through it. It was massive. So it's like,

EAU: like storm drain?

EW: Yes. Like

EAU: rivers that we have here in southern California today. Yes. Like, like those,

EW: like you could take a boat, like a small boat.

EAU: Okay.

EW: Throughout it.

EAU: Wow.

EW: Isn't that amazing?

EAU: But it was just for sewage.

EW: It was just for, well, no.

EAU: Oh,

EW: actually, so e every day it, it would handle a lot. Millions of gallons of water and a million pounds of poop probably flowed through the cloaca maxima every day day. Mm-hmm. Something. Around there.

EAU: Okay.

EW: But like our sewer systems of today, it was not created necessarily to just handle human waste. Okay. It was mostly to prevent, to remove excess water during a rainstorm. And Rome was built on a swamp, basically.

EAU: Oh,

EW: okay. It's the Houston of the, of ancient world. Okay.

EAU: Oh, of the ancient world, the Houston. Someone's gonna get real mad about that.

EW: Houston is on a swamp.

EAU: Yes, I know that.

EW: Okay. I'm just stating facts here. It's true. Um, and so you, you have to drain, you [00:20:00] have to drain the swamps to prevent flooding. Okay. And so that is what the Cloaca Maxima also did. Okay. Was mostly to just drain, drain the swamps, the swamps. I don't know why this is so funny, but it is. It

EAU: really is.

EW: Uh, but it, the Cloaca Maxima, I'm just gonna say it as many times as possible, was an engineering marvel. Mm. And the Romans poured money into its construction and its upkeep. It was a real, like, uh, it's a real testament to how much they cared about sewage and sewer systems, is that the Cloaca Maxima parts of it are still standing where many, many, many other buildings have fallen. Ah,

EAU: yeah. But they were like, this shall stand.

EW: Yes. Okay. Do you wanna hear more about what the toilet experience might have been like? Yes. For someone in ancient Rome, of course. All right. So if you're wealthy, you would have your own private latrine in your big house, likely situated over a dugout pit, or you'd be like, no, I'm gonna get a chamber pot. And have someone just get that, get that away from you before. I don't want even this in my, I'm

EAU: gonna

EW: pay in my

EAU: house someone to do that. Okay.

EW: Yeah. Pay someone. Nothing. Many wealthy citizens didn't wanna connect to their house, to the Cloaca Maxima. Okay. Because the smell, the smell, it wasn't also like, there wasn't water piping continuously through.

EAU: Got it. Okay.

EW: And so you kind of, it wasn't, it would've

EAU: stunk,

EW: things just would've hung out there. Yeah. And then vermin. Yeah. You know? Mm-hmm. It's, I, I, I get it. Uh, but so they, but they were really the only people to enjoy privacy while pooping were the wealthy. Everyone else that was a, it was a luxury for them. Public toilets were constructed, used almost exclusively by men. It was not a safe place for women. Mm-hmm. They were found throughout the city, paid for often by the wealthier citizens who wanted to avoid poop in the streets.

EAU: Ah.

EW: And that happened all the time.

EAU: Poop in the streets.

EW: Yeah. There are so many inscriptions, warning people against pooping in this alley, or against this building or whatever. So there's one found in Pompeii that warned, quote, defecate, watch out for what might happen to you. In an alley. In an

EAU: alley.

EW: Yeah.

EAU: Oh, stop pooping here.

EW: Defecator.

EAU: Defecator.

EW: If you, if you poop, you'll be

EAU: cursed. That's a great dis by the way.

EW: Yeah.

EAU: We should call more people

EW: defecate. But everyone is a defecate.

EAU: That's true.

EW: It's what we, you know,

EAU: but to use it as a dis

EW: feels,

EAU: I know. Intentional.

EW: It does. It does. Okay. So these, these public toilets were housed under a low ceiling Okay. With small windows. So like not a very pleasant, pleasant, you know, place to be. And they were essentially marble benches carved with rows of holes, holes. Just was roll hole after hole after hole. No dividers between the holes. Uh, so close that you could hold hands. You could carry on a whispered conversation or make after work plans. Okay. With your pooping partner.

EAU: Okay.

EW: People weren't really wearing pants. It was more like a toga vibe situation. Got as far as I read. Okay. You know, I don't know how widespread togas were, if that's just like my image of ancient Rome uhhuh. But you weren't totally exposed. So like you weren't drop t trout the way that you would be, right. They were

EAU: today.

EW: Yeah.

EAU: Okay.

EW: And so for wiping your heine, there were, which I love wiping heine is another great's a great word for wiping your heine. There were communal, communal sea sponges on a stick. They were called ter or wiping thing.

EAU: Um,

EW: yeah.

EAU: So they just was like a few of them scattered about,

EW: or maybe one per whole, I don't know. The numer, yeah, I don't know how many there were.

EAU: Was there like water?

EW: Yes, there was.

EAU: So the bucket of water that

EW: mixed it, I don't, a gutter of clean water to clean the sponge in between uses.

EAU: Okay.

EW: Mm-hmm.

EAU: A sea sponge. That's actually genius.

EW: Uh, it is.

EAU: Yeah.

EW: I mean,

EAU: I love it.

EW: I don't know if I love it. The

EAU: communal

EW: part. The commune, it's the communal part that really gets to me Yeah. Gets to me too. And whether there was handwashing,

EAU: probably not.

EW: It's, it's doesn't seem to be So who knows?

EAU: You like, let me check,

EW: right? Yeah. Let me, but yeah. Okay. Uh, so the poop and pee would flow from these public toilets away into a sewer system where they eventually emptied into the river tiber, which is also where people got their drinking and bathing water.

EAU: Uhhuh.

EW: Yep. The filth might have been out of sight, out of mind, but it didn't mean it wasn't an issue. There was waterborne illness all over the place. It was, I mean, based on descriptions, like it seemed pretty, pretty overrun with. Poop. Poop. And there was a lot of like issues related to disease because of that. Yes.

Okay. So moving on from ancient Rome though, throughout the medieval period and beyond, sewage construction in most of Europe was guided by the get this poop as far away from me as possible principle.

EAU: Okay.

EW: Livestock manure was spread on fields for fertilization and toilets operated under a similar logic as an ancient Rome, not the Minoan civilization. Okay. Uh, minus the claw maxima that effectively, uh, more or less effectively drained things away.

EAU: Okay.

EW: So there would be like outdoor latrines for the poor, you know, pits or barrels, which could then be like buried or taken away, taken away, uh, while the rich built private toilet rooms in their castles where they like [00:25:00] stuck out over the moat so that the poop and pee would travel down into the moat, a shoot into the water,

EAU: a poop shoot,

EW: poop shoot.

EAU: This, that always makes me think of the Game of Thrones, the guy who died on the toilet. There was a, anyways, it doesn't matter, but there was a guy who died on the toilet. He got shot with like an arrow in the toilet and his toilet room was like way up and off. Away in the castle. Just was like

EW: historically accurate. Yeah. Despite it not being a historical show.

EAU: Yeah.

EW: But no, I mean that, that, I think that is, that's what I'm sort of imagining. These little rooms. Yeah. Like just sort of cut out.

EAU: Yeah.

EW: And then like

EAU: boop.

EW: Yeah.

EAU: Okay. Cool.

EW: Into the, the surrounding moat. So like, it just would just be poop ar in the moat. In the

EAU: moat.

EW: Just horrible feeding the

EAU: crocodiles or whatever,

EW: feeding something the, the carp and catfish. Yeah. I don't know. Uh, and so that's where it would stay until like the rains grew heavy enough and then the currents could carry it away.

EAU: Okay.

EW: Okay. So as European cities exploded in population, the situation grew dire and more dire. Yes,

EAU: it does

EW: poop piled up. Multiple laws were passed. Like this is how bad the poop was. Right. There were many laws in many countries about. Public pooping. They were trying to regulate how much poop there was on the streets. Okay. So for instance, in Berlin, a 1671 law was passed that instructed every peasant visiting St. Peter's church to take a pile of poop away. It was a popular dumping ground.

EAU: It

EW: so

EAU: people would,

EW: so many

EAU: people would poop there. It was like, you need to take poop

EW: with you and you go take, take poop away. Yeah.

EAU: Fascinating.

EW: I know. Uh, in 1531, Allah in Paris required landlords to provide a latrine for every house.

EAU: Wow. Mm-hmm. Not until 1531. Okay.

EW: Were the laws enforced? Ah, many people did their business in chamber pots in their home, which they then emptied out of the window after a yelled warning. Like, look out below. Look out below. Yeah. The descriptions of people pooping everywhere in the streets are alleys and waste piled high. Like there are many of them, but there it's, it's, it's too much. Okay. For example, quote, the Louvre was a mess. People defecated without restraint or attempt at secrecy in the courtyards on the stairs and balconies and behind doors without hindrance. From palace attendance. On August 8th, 1606, an order was given prohibiting any resident of the palace of Saint Germain from committing a nuisance therein. That same day, the king's son urinated against the wall of his room end quote. So like people just seem to be pooping everywhere.

EAU: That is so fascinating to me.

EW: It is to me too. I, I, I don't know how That's it. Yeah.

EAU: That's like, you just, I mean, I guess if you don't really have an alternative,

EW: right.

EAU: If you don't have an alternative, you gotta go. Yeah. Nature calls

EW: and nature calls, and so it's like, and the laws were not a effective, um, and it just kind of, the, of course, the problem keeps growing, but keeping in the theme with one man's trash is another's treasure uhhuh. There was an entire occupation that sprung out from these soiled streets, the so-called night men. Oh, mm-hmm. Okay. And so also known as scavengers. These night men would walk the streets at night, they would empty out chamber pots and public toilets to either sell to farmers or just dump in the country. In the countryside, they would be like, I, I will handle your waste, your poop. People had like signs on like, uh, carriages or like wagons that were like, I am the best at this. Oh. Like, I will make sure to do this. It, yeah. Yeah. And when transport became a

challenge, like there was just too much to carry or whatever, they dug out big pits and they held the waste there. And this is when they began to experiment with different chemicals and other additives to dissipate the smell. Or they would heat the night soil to desiccate it.

EAU: Ah,

EW: uh, but guess what happened, Erin?

EAU: Ah, something bad.

EW: I mean, kind of just populations keep growing. Yeah. There's just poop and too much poop kept growing and the nightmare just couldn't keep up.

EAU: Mm-hmm.

EW: And so the situation was, again, becoming dire. Fortunately, a hero was about to emerge.

EAU: Who is it?

EW: Ajax, the first modern flushing toilet.

EAU: Oh.

EW: It was invented by Sir John Harrington. Ajax was the name he gave it. Okay. Yeah, yeah, yeah. In England, 1584 after being sent away by the queen whom he offended with his poetry. It's a true story.

EAU: Okay.

EW: Um, well, no one knows the exact details, but like I can imagine the gossip was just fierce. What did he say this time?

EAU: Yeah,

EW: but he embarked on some home construction projects, um, and out of this creative retreat sprung the toilet. And it wasn't the first, like I mentioned, the ows and Haans hold that tile, but it did involve a more advanced flushing system with valves in a cistern, kind of like what we think of today, where it has that on top. And then, yeah, he named it Ajax and wrote an ode in its honor.

And then the queen, after getting over her irritation towards him, she visited, she tried it out and she was like, [00:30:00] I need one of these. Oh. So she had one built in her palace, home castle. Oh. Whatever it was, whatever it is. Over the next couple of centuries, the toilet underwent several technological improvements that made it more feasible to, we installed in lots of homes and soon everyone, it was like, I, I need this. Right? I want this. It's like a

EAU: standard part of your home.

EW: Mm-hmm. Uh, its popularity was helped along by British plumber Thomas Crapper, who did not invent the toilet, nor give his name to a slang word for poop. Like poop. Sorry, sorry. But

EAU: his name really

EW: was Crapper Thomas Crapper. Yeah, I know. Uh, and, but he did a great job at marketing it. Of, of course. And he kind of helped to turn the toilet into a status symbol.

EAU: Oh, wow.

EW: Everyone wanted one. Good

EAU: for him.

EW: Mm-hmm. I want a crapper. Mm-hmm. I mean, yeah. And guess what happened? People were so happy to flush and forget, and the problem of excess poop was solved for a very brief period of time. Oh

EAU: dear.

EW: What the toilet had effectively done was move those individual CS pits from the home to the rivers that supplied the city with water, making one giant cess Pitt out of it. The situation again, grew di dire. How dire you might ask.

EAU: Oh dear.

EW: Let's go to London 1858. Okay. For the full picture. Okay. That's Summer was unusually hot and dry, but any enjoyment of sunny weather was thwarted by the shocking stench that emanated from the tenths I I've mentioned the great stink of 1858 before in our Typhoid fever episode. Okay. And I read a quote in

that episode that I think is worth dredging up for this one. Give it to me. Okay. This is from a newspaper reporting on the Great stink quote. Uh, for the first time in the history of men, the sewage of nearly 3 million people had been brought to seethe and ferment under a burning sun in one vast open ika, lying in their midst.

EAU: I remember this quote now. We made it into a reel. It was like one of our first reels that we ever made.

EW: I don't know why. It just kills me every time because it's the word Chloe ferment and it's like ki It is the word ika.

EAU: Yeah.

EW: But it's also like poetic in a way. It

EAU: is. It's beautiful and disgusting.

EW: Disgusting. It's really effective. It

EAU: is.

EW: That is effective. Great imagery, language. Mm-hmm. Right there. Uh, so, okay. The, the temps had been getting more disgusting for years. Okay. But the great stink really galvanized many Londoners. Okay. Something had to be done about this, not just because of the unpleasantness of having to breathe that vial air, but also because that air was thought to spread disease. My asthma was sort of the leading idea at the time, and it wasn't the air itself, but it certainly was the water as John Snow revealed in his investigations of the London cholera outbreaks from a few years before. Okay. Which was of course caused by the nasty and poorly functioning, uh, drainage systems in the city. Those cholera outbreaks. So it took a few decades. I'm skipping over so much here in terms of like the history of sewage.

EAU: It's okay.

EW: But eventually a massive and intricate sewer system was built to manage London's waste. The project was spearheaded by visionary engineer, Joseph Basil Get, and the completed system, truly a modern marvel, still serves the city today.

EAU: Wow.

EW: Mm-hmm. And there's a whole book about its design and basil get and the Great stink, if you'd like to learn more, it's on one of these shelves here. The London Sewer System, which acted as inspiration for many other cities. It operates with the goal of using water to wash away the city's poop and liquid waste. And in the brainstorming phase of this design, several options were presented and dismissed before landing on this present layout. One of these ideas involved transporting the waste to farms in the surrounding countryside to use as fertilizer. The annual value of 4 million People's Excrement, which is in the city of London, was estimated to be about worth about 1.7 million pounds in the 1880s. Oh wow. Which is 178 million pounds today.

EAU: Oh, wow.

EW: In terms of fertilizer. Yep. But England not seeing the tremendous worth of the substance opted to flush it away. A strategy in keeping with the sentiment of past centuries that poop was waste and nothing more. Mm-hmm. And this sentiment wasn't universally shared even across Europe. Uh, in his book, Les Mis, a Victor Hugo question, questioned to the similar approach that Paris took with its sewers. Quote, "what do we do with all this golden dung? It is swept into an abyss. All the human and animal manure, which the world wastes if returned to the land instead of thrown into the sea, would suffice to nourish the world." End quote.

EAU: I

EW: mean, truth.

EAU: Yeah. He's not wrong

EW: truth. And he wasn't just discussing a hypothetical strategy for millennia. Many [00:35:00] cultures had a much different perspective on how best to deal with the amount of poop and pee that a growing city produced, where the ancient Romans and modern Londoners saw the value of poop in its absence. Other cultures saw its value as a fertilizer. Hmm. Why did some parts of the world adopt the view of human excrement as a valuable thing and others as a thing to get as far away from as possible? One aspect was need, how many livestock you had or how fertile your soil already was, or how much pasture land was even available.

EAU: Okay.

EW: Maybe you were land limited, right? You couldn't just clear more land when all the nutrients were leached out of your soil. Or maybe you didn't have and didn't have the land to have, uh, these ample amounts of livestock that were producing manure that could be used as fertilizer. And so you're just like, I'm gonna use what's right in front of me, right? I'm what? This is fertilizer, right? It's, I'm

EAU: already making it.

EW: Yeah. Yeah. Throughout Japan's history, for instance, both poop and urine was sold to farmers to fertilize their crops called night soil. Japan didn't really have acres and acres of pasture land or many large livestock, and so night soil was highly valued. If you rented an apartment, your landlord technically owned the night soil that you produced, and so the rent was adjusted based on the number of people living in a room.

EAU: How many people are pooping here?

EW: Yeah.

EAU: Oh, that's so interesting.

EW: How much can I get for their poop? So if five people lived in one room, rent was free. For example. Yeah,

EAU: that's hilarious.

EW: Pooping at a friend's house was considered a generous act because you're like, thank you for that.

EAU: Oh my God, I love that.

EW: I know. So you might wonder how this practice, which the use of night soil is still used in many parts around the world today, how it didn't lead to the spread of pathogens transmitted by poop. You know, we just talked about the great stink and cholera outbreaks and all of that, and a big part of it was how you process the poop. Mm-hmm. Composting, right? You have to, um, uh, what is the word? Ferment? Ferment the poop, I guess. Mm-hmm. Mm-hmm. And so this, what would happen is, like in this composting process, it would help to reduce the proliferation of pathogenic bacteria in the poop and break it down into its raw components, which were more readily used by plants.

EAU: Yeah.

EW: It, it's, it's a part of the, it's the decomposition cycle, you know?

EAU: Right, right, right.

EW: And the second was just like standard hygienic practices. Right. Washing hands, boiling water, cooking vegetables. Things like that. Japan wasn't alone in seeing the value of night soil. China was also well ahead of the curve when it came to seeing poop as a resource rather than waste. Uh, one strategy that people used in China was to let all the refuse from humans, animals, um, other parts of agriculture all mix together with water in covered tubs and pits. And then after the fermentation process was complete, they would either pour this liquid manure directly onto the roots or let it dry in the sun forming cakes, which would desiccate and then they could sell.

EAU: Mm-hmm.

EW: Yeah. Mm-hmm. Mixed with water and there's instant fertilizer.

EAU: Yeah.

EW: Poop was so valued that in 1737 in China, there was an imperial treatise that commanded treasure night soil as if it were gold.

EAU: Wow.

EW: Yeah.

EAU: 17 hundreds you said?

EW: 17 hundreds for that. Okay. But it had been going on for much longer. Yeah. And so while most of Europe treated poop as a waste product exclusively, there were a few pockets that saw it differently. Some places that paid for poop rather than paying to have it be taken away. Okay. Uh, in parts of Belgium and in the Netherlands, farmers utilized night soil for crop fertilization. They constructed specialized casks that could hold over 100 gallons. The casks were loaded onto carts where they were dragged around by a horse, the farmer on the horse lifting the rope. That like controlled a lever to be like, now release some more now. Release some more. Mm-hmm. Mm-hmm. It's pretty ingenious. Yeah. And even in the US in the late 18 hundreds, there was a very successful night soil company based in New Jersey, who got paid twice for their

labor, first to remove the poop in the first place. Ah, and then the second to sell fertilizer.

EAU: Love it.

EW: Uh, and so inspired by their success, a few sewage farms sprung up around the us, but eventually they fell out of favor by the end of the 19th century, as did night soil almost across the board. What changed the invention of commercial fertilizer? And the introduction of germ theory whereby poop became the enemy and nothing more. Yeah. And I think it's important to note, and I feel like we didn't cover this in an actual episode, uh, like a regular episode, but in a, there was a, the devil's el, the devil's element mm-hmm. Book club book. They, he talked about, um, fertilizer and like guano, these islands of guano, and then people harvesting like bones from battlefields mm-hmm. Like old battlefields to use as fertilizer. Right. And I just find that so, because a lot of that was happening in like the 18 hundreds or so, and there was this huge rush prior to the introduction of commercial fertilizer and poop was there all along.

EAU: Right.

EW: It's just, yeah. Yeah.

EAU: [00:40:00] It is really, really interesting.

EW: Right.

EAU: Especially to think about that alongside the rise of germ theory, which like we talk about so much on this podcast. Yeah. And it is like, so important and your poop can make you quite sick.

EW: Uhhuh. Yeah.

EAU: And so it's, it, it is just really interesting to think of those things as like side by side and like how Yeah.

EW: Right. To see it in one, like one, one angle, right. One, one perspective, right. Of poop. Yeah. Is just that it is waste and nothing more in the enemy and it's gonna make you

EAU: sick. It makes you sick. The end

EW: and that's it. And that is true.

EAU: It is true.

EW: And

EAU: two things can be true

EW: Uhhuh. But what have, so that when these, when these things change, the introduction of um, commercial fertilizer and then germ theory things, even places that had long used night soil. It just, they, they kind of stopped like many places stopped. Commercial fertilizer took over in the 20th century and that decree of treasure night soil, if it were gold, became a relic of the past. Poop was no longer a commodity. It was a thing to rid yourself of a thing to fear. Okay. And today, most of the world is still stuck in that mentality. The really, we should be following that 18th century decree because it is wild how much waste we let go to waste. Mm-hmm. Functioning sewage systems are foundational to public health, and everyone should have access to clean water because waterborne disease kills so many people every year. Mm-hmm. But it's also clear that our massive sewage plants have solved one big problem, removal of poop from our immediate proximity while simultaneously creating another, too much poop in all the wrong places.

EAU: Yeah.

EW: We raise livestock on large scale farms where their manure leeches into the waterways near the farms meat, and other food gets shipped to our local stores, removing those nutrients from where they were grown. Mm-hmm. Then we eat the food and poop it out, and that gets flushed into waterways again, far from the original source of these nutrients.

EAU: Yeah, and then it goes into the ocean and then

EW: into a blooms, then goes the ocean, AAL blooms, marsh decay, barren farmland, eroding soils, ecosystem collapse like these are the consequences of nutrient redistribution across the landscape.

EAU: Oh man.

EW: The situation is again, becoming dire. What do we do about it this time? Do you

EAU: have an answer?

EW: I don't. I mean, I don't have an answer personally, but there are so many people, so many people who are working on this problem from many, many different angles. They're designing more efficient toilets, revisiting the idea of sewage farms, transforming human waste into fuel or fertilizer. Even just rebranding poop into something that's like not shameful. Props to the poop emoji for that one. It doesn't mean it was like, it was really funny. It was like a very popular emoji. Oh,

EAU: I love the poop

EW: emoji. It's a great emoji. Yeah, and it doesn't mean like there are many people working on this, and it doesn't mean that we have everything under control right now, but we do have possible paths forward and a ton of amazing innovators that are dedicated to this work and really passionate about it. Poop is a valuable resource as a fertilizer, as a source of public health. Data like wastewater can tell us what pathogens are currently circulating. Yes, huge, huge. And it's also a valuable resource on an individual level. Like what does your POH say about you?

EAU: Such a good question.

EW: Well, Erin, this is where I pose that question to you. Okay. So you can tell me all about what we can learn from our poop.

EAU: I cannot wait to do that. So I ended last week's episode mostly just talking about what is typical when it comes to our poops. Right. Yeah. Yeah. And you talked us through in last week's episode, if anyone missed it, all of the different ways that animals use our poop. Poop as a resource.

EW: Mm-hmm.

EAU: And poop on a landscape level scale tells us so much about how how we're dealing with our poop can tell us a lot.

EW: Yeah.

EAU: But you're right. On an individual level, our poop can also tell us quite a lot. And I think there's an interesting balance, I guess, where a lot of us don't think about our poop at all. Like we poop. Yeah. And it's done. It is out of our

mind. We're not worried about it. We're not looking at it. We're not thinking about it. We're just maybe trying to think about it as little as possible.

EW: Right, right, right.

EAU: And there are also many people who maybe spend a little too much time thinking about their poops or worrying about their poops or what is this one poop? Did I eat beets or is this colon cancer?

EW: I mean, that's a reasonable question to ask after a beat.

EAU: After a beet poop.

EW: After a beet poop. Yeah.

EAU: Unless it's beets. Um, but it is true that our poops can tell us so much about our health and a lot of times changes in our bowel movements might actually be [00:45:00] an indicator of an underlying disease. Yes. Though my point with today is not necessarily to make everyone worried about their poops, it's more just to kind of understand the spectrum. Okay.

EW: Yes.

EAU: And since we already covered the range of typical, uh, we can look back at our. Bristol stool scale, Uhhuh

EW: Uhhuh

EAU: to understand the ways in which our poop can become atypical, if that makes sense.

EW: Love this.

EAU: So if a perfect poop on that Bristol scale, which again goes from one to seven, where one are these hard, separate lumps, kind of like a nut of poop.

EW: Yep.

EAU: Chunk. Chunk, plop, plop, um, and types. Sorry. I

EW: appreciate that. Extra little,

EAU: a little too much. Um, and a type seven is entirely liquid. Those are our two extremes. Constipation and diarrhea.

EW: Yes.

EAU: And so that's what I'm gonna kind of focus on.

EW: Constipation and diarrhea.

EAU: Constipation and diarrhea. Cool. So, um, and there's a lot of different ways to classify, those are not the only poop problems that you can have, but constipation and diarrhea I think give us a lot of insight because that does kind of cover that whole spectrum, right? So there's a lot of different ways to classify or define both of these things. And I'll start with constipation 'cause I love talking about constipation. So

EW: has that word been uttered? In the history

EAU: of anything. I say it in the office all the time, so. Okay,

EW: great.

EAU: I love talking about constipation. Um, how we actually define it. It's either with this Bristol stool scale, but it's never just exclusively with the Bristol stool, so it's usually hard or lumpy stools or needing to strain Okay. During the bowel movement. Okay. Um, or sometimes feeling like I just can't completely evacuate, like you poop and you just feel like there's something still there that needs to come out, but it cannot come out.

EW: Okay.

EAU: That feeling

EW: uhhuh,

EAU: um, if those things are happening, usually more than 25% of your poops, that's what's considered constipated,

EW: huh? Okay.

EAU: Um, or sometimes it can be if you're having fewer than three bowel movements per week, that might also be considered constipated.

EW: Okay. How often, like, okay. Um.

EAU: I love that you're asking questions already.

EW: I know, I know. Well, you said fewer, you said more than, or 25%.

EAU: 25% of your poops.

EW: Yeah. So who's watching that?

EAU: That's such a great question. Who, like, how many of us are paying that much attention to our poop?

EW: Right.

EAU: I dunno. Unless maybe you're dealing with constipation and then you probably are because Right. A lot of times it's maybe more than 25%. Right? Sure. It has to be at least that for us to call it constipation according to the, like Rome criteria. Okay. Which is the criteria that we use. Um, but a lot of people who deal with constipation have been dealing with it for a really long time.

EW: Mm-hmm.

EAU: Um, it's estimated, most of the studies cite that in the US something like 12 to 15% are dealing with constipation, and a lot of times, unless we can identify the cause of constipation, it gets lumped under what's called like functional constipation, which really just means that we don't necessarily have an idea of what the mechanisms are. But it's estimated that up to 30% of people deal with constipation, at least on an occasional basis, Uhhuh. So they like sometimes have issues pooping. And that is thought to be an underestimate because these are data that are based on people who seek care.

EW: Right, of course.

EAU: Right.

EW: Um, are, are you gonna talk about the causes of constipation? 'Cause I wanna talk about fun, functional constipation. Yeah. Give

EAU: it to me. What's your question?

EW: What are the causes of constipation?

EAU: Great question.

EW: And at what point do you go? We don't know, but you're clearly constipated.

EAU: Yeah, I mean it totally depends on the scenario and also depends on how well it responds to the various treatment options. Right?

EW: Okay. Yeah.

EAU: Um, but there's a lot of things that could cause it, it could be that the, you have slow gut transit, right? Which we know from last episode can be caused by a number of different things. Some of it might be genetics, some of it might be medications that you're on. Some of it might be the diet that you are. Eating, is that right? The diet that you're eating,

EW: the diet,

EAU: the food,

EW: the,

EAU: your diet, your diet. Some of it might be diet because fiber as we know, can increase uh, your stool transit time. And so if your diet is very low in fiber, then you might have prolonged transit time. So you might be more prone to constipation. Yes. Um, also dehydration can put you at risk of harder stools. Um, physical activity increases your motility of your guts. And so we all live much more sedentary lifestyles. Uh, especially like in the us we're quite sedentary. Mm-hmm. And so that is actually con probably contributing to constipation.

EW: I see.

EAU: But then there's other things too. There's like just actual dysmotility. There's something called Hirsch sprungs, which is like, where it's a genetic disorder, where some of your nerve endings of your colon have not developed all of the way, and so you cannot get contraction the way that you should. So

that can make it very hard to poop. Wow. And you can get huge amount of stool buildup and things.

EW: Yeah.

EAU: Um, there's pelvic floor dysfunction. Anal sphincter issues like. There's a lot of possibilities.

EW: A lot of possibilities. Are there a lot of solutions? Is that good?

EAU: That's a great question. I mean, yes and [00:50:00] no. Right.

EW: Okay.

EAU: The main like ways that we go and deal with constipation for like a general rule, um, are going to be using things like laxatives, which are going to hold onto water in your stool. Yep. So that is going to make your stool softer. Is

EW: that how they work?

EAU: That's how they work.

EW: Tell me, tell me everything.

EAU: They just so like, okay. MiraLax, which is polyethylene glycol, there's lots of different brand names of it. It's just a very large molecule.

EW: Okay.

EAU: And so it just attracts water uhhuh. And so you have this molecule, it doesn't get broken down in your digestive tract, so it's sitting in your colon, a holding onto water and therefore you have more water in your poop. Therefore, it is softer and easier to pass. And other, other osmotic laxatives work the same way. Lactulose, magnesium citrate, all these things. There's also some other ones that you can use, like stimulant, laxatives. Those are things like. Bisacodyl is one, or Sena is another. And these are helping to stimulate peristalsis. They're helping to stimulate muscular contractions.

EW: Fascinating. So it's not like a laxative in the water aspect, but in the movement

EAU: it's moving. Yeah, it's helping with movement. And so what you might use might depend on what you think the underlying issue is. Okay. So it's going to be kind of person dependent. There's also stool softeners, but my favorite thing about stool softeners in medicine is that we use them all the time and there's like no data that they work.

EW: Wait, what?

EAU: Docusate is like one of the most commonly used things in hospitals. And like people like tell people to use it all the time. And there's like very little, if any evidence that it, it's supposed to just like help make your stool more slippery. Is the idea

EW: like mucusy

EAU: mu? I don't know, but it doesn't like it doesn't work.

EW: Okay. So, so when you say it doesn't work, do you mean that there have been studies that have found no effect or there have been no studies? There

EAU: have been studies that have had no effect.

EW: Yeah.

EAU: Unlike osmotic laxatives and things which

EW: do work. So why, why would you use a stool softener over a laxative?

EAU: I don't know. I don't,

EW: okay. Okay.

EAU: But lots of people do. I don't know. It's thought to be less harsh.

EW: Okay.

EAU: Right, because it's not gonna like grab onto a bunch of water. Right. Uh, and then like have you at risk of diarrhea or something quite as much, right? Yeah. Yeah. Where you can easily overdo it with some laxatives. So you could end up with electrolyte imbalances if you overdo it on laxatives, things like that. But realistically, I don't know. 'cause I don't, but

EW: what about the, um, like prep for a colonoscopy?

EAU: It's basically a huge jug of polyethylene glycol or sometimes we use sodium based ones too. Okay. So like other electrolyte

EW: ones So you don't electro. Yeah.

EAU: Yeah, yeah.

EW: Okay.

EAU: But yeah, that's basically what it is, just like a huge jug of it.

EW: Wow.

EAU: Jug chug. Chug with a lot of water. 'cause you're gonna be pooping out a lot of water. I know. Isn't that fun?

EW: Yeah,

EAU: it's great

EW: fun. Yeah.

EAU: Fun.

EW: That's exactly the word that I would use.

EAU: Yeah. But so that's like, I mean that's how, that's most of the ways that we tr and obvi. There's other newer medicines too. Like there's a lot of, there's a lot of newer medicines that have mechanisms that I'm not going to get into 'cause I'm not as familiar with it. But there's a lot of, because constipation is such an issue.

EW: Yeah.

EAU: Um, there are a lot of interest in new ways to help deal with constipation when these are not effective. This is like, go to first line, try it out. If it's not working, you need to see a specialist kind of a thing.

EW: Okay. Question about constipation. Yeah. And treatments. The like, uh, polyethylene glycol. Mm-hmm. Et cetera. Yeah. Of the world. Yes. Are those for acute relief or in is the more like chronic relief? Yeah. Fiber,

EAU: yes. It's, yes. And

EW: okay.

EAU: Um, do you wanna talk about fiber? I can skip,

EW: we can, no, we, we keep your notes the way you want 'em to keep.

EAU: Let's talk about fiber.

EW: Great.

EAU: Me

EW: just, I'm always, I'm always down to talk about fiber.

EAU: I know. Me too. Okay. So yes, laxatives, stool softeners, um, motility agents. These are things that are going to help treat constipation.

EW: Yes.

EAU: What if you are constipated? Fiber does not necessarily treat constipation, but it can help prevent constipation.

EW: Right. Okay.

EAU: Because like we talked about last episode, it's holding onto water in your stool. Mm-hmm. And so it is hugely beneficial in increasing transit time and in making your stool softer and in providing that bulking agent. And there's two major divisions of fiber. There's soluble fibers, which is like cilium husk, oats, pectins, and then there's insoluble fibers, which is like wheat brands cellulose. Lots of the things that are in our fruits and veggies and things.

EW: Oh, I can't believe we're getting to talk about insoluble and soluble fiber. Is it fun? I'm so excited. Yeah, it's

EAU: thrilled. And most of the, if you're getting your fiber from food sources and not from like a fiber drink that you're mixing. Yeah, yeah, yeah. Then you're getting a combination of soluble and insoluble fibers. Okay. In most of the foods that you're eating. And then there's also, some of the fibers are like fermentable, and I talked a little bit about this last episode, like the bacteria in our guts can break them down and ferment them, uh, specifically to produce these like short chain fatty acids that they can then use to eat, like the [00:55:00] bacteria eat, break down this fermentable fiber, uhhuh,

EW: eat it,

EAU: Uhhuh, uhhuh. Um, and then some of the cells in our colon can also use what they break down as an energy source. These short chain fatty acids.

EW: Okay. Uh, why choose one fiber over the other and why are they all important and why

EAU: they're all important? Yeah. The answer is that they're all important. Some of them are increasing bulk in our stool and some of them are helping to feed the gut microbiome. Okay. And all of them are kind of doing both. Like really, if we get into it, um. And so that, like, that is why fiber, that's why people get so like, stoked about fiber. Yeah. And why fiber is such an important part. There's also so much interesting data on like fiber because of its effects on our gut microbiome in helping to treat or at least prevent the worsening of a lot of like inflammatory diseases. Colon cancer we think is involved, like our low fiber diets we think are maybe involved in the increasing incidents of colon cancer that we see. Yeah. Especially in early onset colon cancer. It's not one thing, it's many things, but fibers a part of that story. It's part of it. Um, so it's, it's huge. And part of the reason that this is important too, is because constipation, while it's an issue in and of itself, it can be very painful. Um, it can, it like constipation can cause its own set of problems. Constipation can also cause other problems. Constipation can put you at risk of things like diverticulosis, which are these little outpouching of your gut wall, especially in the sigmoid colon, the part that sneaks around back before the rectum. Yep. Um, and those little outpouching can trap poop and then oh, can get infected uhhuh or can burst uhhuh or can burst into a blood vessel and cause a lot of bleeding. So diverticulosis can be a problem and constipation is a big contributor to, diverticulosis is not the only thing, but it's one also. Hemorrhoids.

EW: Mm-hmm.

EAU: Okay. Uh, hemorrhoids are basically, everyone actually has hemorrhoids.

EW: Can I, before you go onto hemorrhoids, give it to me because I, I do wanna talk about hemorrhoids. Okay. But I wanna, I wanna ta go back to fiber. Yeah. Unless we're done. Are you are more No, that was end of fiber.

EAU: Yeah. Tell me a question.

EW: Um, the relationship between fiber, I'm just stuck on these different, insoluble soluble. It's fermentable. Oh gosh.

EAU: Don't ask me more

EW: details. I know, but like when we, when we talk about a low fiber diet, it is of course, across the board. Mm-hmm. But are we getting like. Is the low fiber diet more low in soluble insoluble? Mm-hmm.

EAU: That's a

EW: good question. And are there relationships between these different fiber types and colon cancer, for instance, or um, like other outcomes?

EAU: That's a good question. It's beyond. I don't know.

EW: Okay. And then, um, how much, so no one's getting enough fiber. How much is enough fiber? What does that look like? Are fiber, uh, do, do, are fiber, what do you call them? Fiber.

EAU: Fiber cereals. Fiber bars. Fiber supplements.

EW: Fiber powders. Yeah.

EAU: Yeah, yeah. I'll love these questions. Okay. Um, the recommended amount in the US is like 28 to 35 grams of fiber a day. Okay. Okay. A cup of raspberries. As an example, I can't believe I know this in my head 'cause I didn't write any of the down. We, we've

EW: talked about this because raspberries, especially

EAU: rasp, very high in fiber. High

EW: fibrous.

EAU: Yeah. For of all the fruits, they're one of the best. 'cause a cup of raspberries is like eight grams or so of fiber.

EW: A cup of, okay.

EAU: So it's like pretty deese. Um, Kiwis also have a lot of fiber. Broccoli has a ton of fiber. Um, beans. Especially white beans. So much fiber. White beans. White beans, interesting. Navy beans. Have more fiber than most other beans. Don't ask me why. No clue.

EW: Ooh. Lentils.

EAU: Lentils. Lots of fiber. Dunno how much I don't have the rest of them memorized. 'cause I usually just give people a chart. Ooh. When I'm, I It's one of my, that's my standard handout. If you come see me for a physical, that's literally part of my handout.

EW: Like that. Bring one, bring one. Next

EAU: time,

EW: next time we're together.

EAU: Okay. I just got it from the like NIH website or whatever.

EW: Okay.

EAU: Yeah.

EW: Still

EAU: I didn't make it. Um, but no, so that, that's the recommended amount. And most of us are probably getting much less than that. Like if you, but your question about like fiber supplements and things like that can be really helpful. Um, especially some of those soluble fibers like cilium husk and things like that. Um, you tend to tolerate really well because they're not gonna be as fermentable. You're gonna get a little bit less bloating potentially with those. Um, but you could tend, you could get bloating with anything, especially if you're going from like no fiber, right. To some fiber.

EW: Start small baby steps.

EAU: Baby steps. Always.

EW: Yeah. Yeah.

EAU: Um, this is not a medical advice podcast.

EW: Yeah.

EAU: Let me remind you all, we're just talking generalities. Um, but yeah, so that's, did I answer all those questions? Yeah, those count. But of course it is better if you're getting your fiber from Whole Foods because then you are getting a mix. Ah, and I don't know the answer as to like what percentage should be this or that. And like there's probably people who are doing those studies to kind of really look, look into it.

EW: Yeah.

EAU: Um, but I, I don't know the answer to that.

EW: I know. And this like, uh, we haven't said this yet, which I'm shocked that we haven't said this, but there are so many other topics that are related. I know. To poop.

EAU: Yes.

EW: That we will cover.

EAU: There's so many that I'm like, I will say this word and then we need to do a whole episode on it.

EW: Colon cancer,

EAU: colon cancer,

EW: early onset colon cancer,

EAU: so many [01:00:00] things. Huge. Yeah.

EW: Diverticulosis,

EAU: speaking of. Hemorrhoids,

EW: hemorrhoids.

EAU: So

EW: this could be a whole episode.

EAU: Oh my God, it actually would be a really

EW: fun episode. I wanna know about the, because I was thinking about the, the development of laxatives.

EAU: Oh, interesting.

EW: Right.

EAU: Okay. So we should do a whole

EW: episode on, and then also the development of

EAU: something.

EW: Hemorrhoid cream. Hemorrhoid cream. And whether it is true that you should put them under, put it under your eye for puffiness.

EAU: I,

EW: I'm not gonna, I feel like, I feel like that was something in mis congeniality

EAU: really

EW: is where I learned that.

EAU: I mean, it's just like a low potency steroid usually. Anyways, we're getting off the point. Listen,

EW: hemorrhoids,

EAU: hemorrhoids, everyone has hemorrhoids,

EW: uhhuh,

EAU: they're just collections of blood vessels that are in your rectum and your anus. So the function like cushions? Yeah. Basically, um, that help keep your anal canal closed because we want it closed most of the time they help soften the transit of poop. So your poop has like, do, do think of it as like boiling off

EW: the little, little pin, like a little pinball machine? Yeah. Like a pinball poop

EAU: gently off. Okay. Um, but they also, they, they're basically collections of blood vessels and because they are venous vessels, like they're veins, not arteries. Mm-hmm. Um, our veins can get swollen. And as they get swollen, they can sometimes burst open and bleed either in small amounts or sometimes in larger amounts. And depending on where they form in the anal canal, your anal canal is so interesting, um, because some of it has sensory sensation. The external part, you can feel it has a lot of nerve endings. Yeah. And the inner part does not. So if you have internal hemorrhoids, they generally don't have any like pain or discomfort or itching. But external hemorrhoids can cause quite a lot of itching and pain. Okay. 'cause especially they don't tend to burst open though. They, they can, um, but they can get very large and very, very painful because they're like external, so you're basically like sitting on them. So those can be quite painful. Like little water balloons filled with blood basically. Yeah. Right around your anal opening. Um, and so those are, you are at higher risk for those with constipation like big, big, big time. Because it is all of that increased pressure and the straining. Yeah, straining to poop really puts a lot of pressure on that anal canal, and so it really increases the pressure in those veins. So then blood pools up in there.

EW: I'm just, I'm thinking of, um, as someone who listens to a lot of like, books on tape uhhuh and in my car, and when I'm running and walking the dog and when someone gets in the car with me and I have like, you know, like a, a colorful scene in one of my books, Uhhuh that I'm imagining. Of all of our episodes,

EAU: someone is

EW: playing this and they this and they're, they're like, I don't know, brother-in-law wa gets in the car and it's like, I'm, you know

EAU: what exactly,

EW: they, they have it on Bluetooth speaker. Yeah,

EAU: yeah, yeah. This is one to share with your family.

EW: Please do.

EAU: Because I'll keep going to tell you about anal fissures, which are another con consequence of constipation.

EW: Consequence of constipation, not related to hemorrhoids.

EAU: Uh, not, not directly related. Okay. Except that they're both like an anal disease basically. Yeah. But anal fissures are also this increased pressure sitting constipation issue. Uh, they're just teeny tiny little like paper cuts almost in the skin of the anus, and so they're super, super painful. Yeah. So treatment for that is really to like avoid constipation. And sometimes, sometimes you need surgeries and things like that to kind of help treat those. Okay.

EW: Okay.

EAU: So yeah, so Constipation's a big deal, right? Yeah, because it can be a problem in and of itself and it can cause all of these other problems. There's something called stir curl colitis. We won't even get there 'cause it's quite extreme. But on the other end,

EW: now I'm now I'm like, what? Don't Google it

EAU: it after.

EW: Okay. Okay. Okay.

EAU: On the other end of the spectrum is diarrhea.

EW: Yes.

EAU: And we've talked a lot about diarrhea. I spent more time on constipation 'cause we don't ever really cover it on the podcast. Yeah. We've talked quite a lot about diarrhea. You define acute diarrhea as like three loose or watery stools in 24 hours. In 24 hours. As my kid will tell you, I only had two. So it's not diarrhea. They're well-trained. Um, but chronic diarrhea we define as loose or watery stools just similar to constipation in at least 25% of your stools lasting for at least three weeks. That would call chronic diarrhea.

EW: Yeah.

EAU: And one of the biggest issues with diarrhea is that you are getting a lot of water loss with it.

EW: Right? Right.

EAU: And diarrhea poops tend to be not only higher in water content, they also tend to be higher in protein content. Um, and as you're losing all this water, you're also losing all those electrolytes that are with that water. So with diarrhea, you're at really high risk of dehydration and electrolyte imbalance.

EW: Uh, protein,

EAU: yeah, because things are just not getting digested and broken down all the way. So

EW: fats too.

EAU: So fats too, depending on the type of diarrhea.

EW: Hmm.

EAU: It could be, it just depends on, it depends on what your GI tract is able to absorb versus not.

EW: What do you mean by [01:05:00] types of diarrhea?

EAU: I mean, what the, what is causing your diarrhea can affect the type of diarrhea that you are having. So for example. If you have an infection that's just tearing through your GI tract so that your sacho just isn't really absorbing any water, then you're just gonna have really watery stools, but you're still gonna probably be absorbing all those nutrients. 'Cause that happens in your small intestine.

EW: Yes.

EAU: Okay. On the other hand, if you have no more gallbladder

EW: mm-hmm.

EAU: Then you are leaking out bile all the time.

EW: Yeah.

EAU: So you might have less ability to digest fats so you have more fat that just made it all the way through to your colon and that is providing a slippery slide. Then you might have diarrhea that is more fatty and is. Floaty fatty, but there's just, I mean, there's lots of ranges of diarrhea.

EW: Okay.

EAU: And like you were talking about, there's lots of ranges of smells of diarrhea. There's some people who are like, I can smell a c diff diarrhea versus not. Yeah. Um, so is it infectious? Is it not? Is it chronic diarrhea? Is it more of an acute diarrhea? All of them though, can put you at risk of things like electrolyte imbalance and dehydration and, and all of that

EW: chronic diarrhea. Okay. Yeah. Yeah. Yeah.

EAU: And prevalence rates. When it comes to diarrhea, I don't have like a, a one statistic like we do for constipation because they range hugely.

EW: Right.

EAU: And we've talked so much on this podcast about acute infectious diarrhea, especially in low and middle income countries. How many kids die from diarrhea every year is in the millions. Yeah. It's very depressing. Yeah. Um, but even in high income countries, it's estimated that chronic diarrhea, the prevalence can range from like three to 8%, which is not a small amount of people.

EW: No.

EAU: So there's a lot of different things that can cause both constipation and diarrhea. But one that I want to kind of talk about because it can actually cause both.

EW: Okay.

EAU: Is IBS

EW: Yeah. Okay. Okay.

EAU: Okay.

EW: Yeah.

EAU: And again, this probably deserves its whole own episode.

EW: Always. Does we We need to do one.

EAU: Yeah, we do.

EW: Please don't take this as a, we're just gonna throw this in.

EAU: No, no, but it, but I can't do a whole two episodes about poop and not talk about IBS Of course.

EW: Not

EAU: especially about problematic poops because Talk about the poster child of problematic pooping. Yeah. It's IBS, so IBS or irritable bowel syndrome. Not the same thing, by the way, as IBD or inflammatory bowel disease.

EW: Right.

EAU: Which very commonly causes diarrhea. Especially bloody diarrhea and is an autoimmune disease and inflammatory and a huge problem.

EW: Yeah.

EAU: IBS. Is not that. It used to be like a diagnosis of exclusion, but it's not anymore.

EW: Oh, interesting. Okay.

EAU: Now it's very much like you should positively diagnose this as IBS.

EW: What are the criteria?

EAU: Well, they can, they can range a little bit, but the core, core criteria are. Recurrent cramping, abdominal pain.

EW: Okay.

EAU: So you get cramping, pain, and then changes in stool frequency or consistency. And this is where it can range. Some people have what's called IBSC, which is IBS with constipation,

EW: uhhuh.

EAU: Some people have IBSD, which is IBS with diarrhea. And some people have mixed cd, CCDM we call it though. Oh, mixed. Because you have both, either constipation or diarrhea, but you're having these changes in your stool frequency. Like I'm having a poop all the time, all of a sudden.

EW: Okay.

EAU: Um, or consistency where like I was having like a Bristol three or four and now I'm a seven.

EW: Okay. I'm just so confused about changes in

EAU: Yeah,

EW: because that implies a time period. Yes. Yeah,

EAU: this has to be for at least three months and it has to be happening at least three, I think three times a week. Is the

EW: three times a week

EAU: is the, this is the criteria.

EW: Is the D or C

EAU: is the or? M is the changes changes in your stool? Yeah. So like what is your, and it's associated with this cramping. So you're having this pain,

EW: you're having the cramping,

EAU: and then you have either a constipated poop or a diarrheal poop or one or the other.

EW: And it's happening for three months.

EAU: Months.

EW: You said? Three

EAU: months. Yeah. Yeah.

EW: Okay.

EAU: And we still do not understand IBS it's deserving of its whole own episode. Yeah. But we are pretty sure that it is, at least in part, a disorder of the gut brain axis, which is just so interesting and fascinating to me.

EW: I know. I mean, the phrase itself is, is really compelling. It's, and what's underneath the surface? What's underneath?

EAU: We dunno. Great question. Great question. Um, but yeah, so it's basically like your guts and your brain are not talking to each other the way that they should. Yeah. Uh, your neurotransmitters are probably involved serotonin, you have more of it in your gut than you do in your brain, et cetera.

EW: Yep, yep, yep.

EAU: Um, but then you also see with this intestinal dysmotility, so whether that is your guts are going too fast and so you're just pooping your brains out because you're not absorbing things 'cause they're moving too quickly or you're going really slow and they're, that's why you're constipated. [01:10:00] And this is really interesting, visceral hypersensitivity, and that's where you get this pain. So viscera is like your, your guts. Yeah. And hypersensitive meaning that your nerve endings are feeling more pain than they should.

EW: Interesting. So, because we've, we've talked about hypersensitivity before when

EAU: I don't remember.

EW: End endometriosis maybe. Maybe.

EAU: Yeah. Yeah.

EW: And so it's the same sort of thing. It's like those pathways have been carved out. Exactly. And so like, it's like a superhighway Yes. To pain.

EAU: Yeah, exactly.

EW: Okay.

EAU: Exactly. Um, but so yeah, so there's a lot, there's a lot of research being done in IBS. There are a lot of new medications, especially to treat like IBS with constipation. Okay. There's medicines that are specific for that. Same thing with IBS with diarrhea. So like, there's a lot of research, but there's also a lot of people who just like suffer with either constipation or diarrhea and they're looking for ways to manage it. And so they turn to things like fiber.

EW: Mm-hmm.

EAU: Or prebiotics, which are all the rage right now. Which is usually just fiber.

EW: Really?

EAU: Yeah. They just market it in a weird and different way. Pre

EW: prebiotics,

EAU: prebiotics, that's what they're,

EW: okay.

EAU: And then probiotics is the other one.

EW: Ah.

EAU: So let's talk a little bit more about probiotics Love. 'cause again, we can't talk about poop and not talk about probiotics. Can't not. I think the last time we talked about probiotics was in our c diff episode. Yeah,

EW: sure.

EAU: I don't remember it. I

EW: believe you

EAU: Honestly, though. That was a long time ago, that episode. And I'm not sure that we have that much more data than we did way back then. Um, people use probiotics and they will recommend that you take probiotics for anything from diarrhea to constipation to bloating, whether that's acute infectious diarrhea or chronic diarrhea.

EW: Yeah.

EAU: Right. There's very little data that show that there is a benefit to probiotics depending on the certain circumstance that you're using them for.

EW: Tell me about those circumstances.

EAU: Well, most of the data, most of the data is. On antibiotic associated diarrhea, or like after you use antibiotics or you're using antibiotics for something like c diff.

EW: Mm-hmm. Mm-hmm.

EAU: Um, and even then, the data is really, really mixed. The biggest issue is that there's huge heterogeneity in how each of these studies are conducted

EW: and who's conducting them.

EAU: Who's conducting them. Mostly it's like people who are making supplements or yogurt or something. So there's that issue, right? But there's also just huge heterogeneity in like, which bacterial strains are they actually using in this study? How many bacteria are you actually getting in that capsule?

EW: Well, because it's gotta go through your stomach.

EAU: Exactly. It has to survive the acidic environment of your stomach. It has to make it through your small intestine to try and colonize your colon. We know now that that's like a 20 plus foot journey.

EW: Yep.

EAU: Um, so that's not necessarily easy. There's also, uh, a huge issue with the fact that in the US there's absolutely no regulation on these things because

probiotics are regulated as supplements. Uh, see our supplement episode for so much more.

EW: Yeah.

EAU: Um, we, or there's sometimes classified as a food product, right? If it's like a yogurt or yogurt drink or something like that. So we don't have really any data on how much live bacteria are even in your gummy or your capsule or your juice drink. How much of those will survive? Or if that particular strain is necessarily beneficial for you in your specific clinical scenario.

EW: I know, I honestly, it is really, it's really frustrating. Like the, I think in particular, one of my, uh, one of my irritants is the probiotic soda.

EAU: Yes.

EW: And I'm just like, it's soda.

EAU: It's,

EW: it's sugar.

EAU: Yeah.

EW: What?

EAU: It's just listen.

EW: I mean, I'm sure there's more stuff in there, but like

EAU: Right. Some of them are, have prebiotics, so again, they've got like fiber. Fiber or like non-digestible sugar.

EW: Okay.

EAU: Great. Um, the other issue too is that we have some data on a few species. We've got some decent data on bifidobacterium that at least it's probably not harmful on a few species of lactobacillus. Mm-hmm. That again, they are good colonizers and they're not harmful. Um, and scro mys, which is actually a yeast.

EW: Right, right, right.

EAU: But. That's just like three and like a couple species of lactobacillus, right? Yeah. So we we're talking a handful of species out of the thousands that colon colonize our guts. Like we don't know what we're doing when it comes to probiotics.

EW: We don't,

EAU: uh, so there are people who say, well, taking one or two species is never going to be enough. It's never going to do the thing that you needed to do. What we need is a fecal transplant. Erin.

EW: Okay. Before we talk about fecal transplants Yeah, I do. I feel like every time we end up talking about the microbiome, we did it more recently, Erin and I don't remember what it was. It we're always like the hype is overrated and it's, it, the hype is not overrated for the microbiome itself,

EAU: right?

No,

EW: it is for our understanding of it. Correct. And how we are able to manage and optimize it. Yes. 'cause we just aren't there yet.

EAU: Right.

EW: Maybe we will be. But we're not there.

EAU: No, not even [01:15:00] close.

EW: I agree. But we're there with fecal transplants,

EAU: are we there with fecal transplants? Are we question

EW: mark?

EAU: We're not. But fecal transplants are essentially like that. That is one of the answers, right? Yeah. It's like, well, okay, giving someone just some lactobacillus or lactobacillus and bifidobacteria, like two little bacteria, is that

going to change the entire architecture of their gut microbiome? Probably not, right? Yeah.

EW: Yeah.

EAU: But hitting them with someone else's entire gut microbiome might. And that's the idea behind fecal microbiota transplant or FMT. This is a huge field of research. I will not do its justice. However, the idea is basically that you take a microbial community from a healthy person's guts. Someone with Bristol three or fours all the time.

EW: Beautiful poops,

EAU: no bloating,

EW: just exceptional.

EAU: Yeah. Love it all the time.

EW: Yeah.

EAU: And you give it to a person with some kind of gut disease, you give them some of their poop. Because in that poop, again, 50% of the biomass of their poop is bacteria.

EW: Mm-hmm.

EAU: Um, you can do this a few different ways. You can instill the poop into somebody via colonoscopy from the bottom or an NG tube from the top.

EW: Mm-hmm.

EAU: Because you wouldn't wanna just eat it 'cause that's gross. But you could make it into pellets.

EW: Yeah.

EAU: And then you could take it as a capsule. You can freeze dry them or you can freeze them either way. Um, and there is so much research being done on this. It is used clinically already, but only in one scenario so far outside of the research sphere as of recording. So there is a FDA approved treatment here in

the US for recurrent c diff infection. That is an FMT. Um, there's two approved products. One of them is given via an enema suspension.

EW: Right.

EAU: And the other one is oral capsules, which is just really exciting because that's so much more palatable to people.

EW: Yeah.

EAU: Then, and also like lower barrier to entry. 'cause you don't have barrier to go into the office. You don't have to do it in clinic, et cetera.

EW: You could just

EAU: boop. Exactly. You just pop it in your mouth.

EW: Yeah. Pop it down,

EAU: swallow it down.

EW: Mm-hmm.

EAU: So it's a very exciting area of research. Uh. But that's all that I really have about it. 'Cause there's a lot of people who are wanting to use it for treatment of IBD. There's some really promising research in that area. There's some promising research on it for IBS even.

EW: Yeah.

EAU: Um, which I think is very exciting. Um, but that's all that I really have about that.

EW: I mean, we could do a whole, another whole, I know that in our c diff episode we did like a big segment on,

EAU: we did,

EW: uh, FMTs

EAU: shout out to Dr. Majdi Osman, who we had on the pod.

EW: Great. Um, I, but I think that we could do a whole, a whole like, update episode on it. Yeah. 'cause I also wanna know like, okay, people who got a fecal transplant five years ago,

EAU: how are they doing now?

EW: What did their poop like today? Yeah. Do they have the same microbes that they were, you know, uh, laced with Right. In that first FMT?

EAU: Certainly not. I would think that there's some turnover.

EW: Oh, I'm sure there's turnover, right. But I mean, like how much does

EAU: the community, the like core community?

EW: Yeah.

EAU: Oh, it's so interesting, Erin.

EW: I know.

EAU: There's just so much I think about our guts and our poop. That is exciting.

EW: I know. And, but it's, it's very true. And I feel like it has been a field of like taboo to talk about or Yes. To be excited about or be like it's really interesting or anything like that. Yeah. And so it's discouraged interest in this really promising

EAU: field. Becausecause poop is gross.

EW: Right.

EAU: But it's also awesome.

EW: Yeah.

EAU: I love it. That's pretty much the end of what I got. Erin.

EW: Poop is gross. It is awesome. We love it.

EAU: We love it.

EW: There's more to it.

EAU: And we'll wash our hands after we poop.

EW: And we, we will certainly do that. Oh, should we tell the people where they can read more? We should. About fun poop stuff.

EAU: Fun poop stuff.

EW: There is so much more when it comes to a, uh, the history of sewers. Oh, yeah. And b, what people are doing about solving the poop problem. I'm

EAU: excited about that.

EW: So there's a book by Lena Zel Dovi who if I, I interviewed for a book club episode earlier this year, um, for about phage therapy. Yeah. Uh, but her earlier book is called The Other Dark Matter, the Science and Business of Turning Waste Into Wealth and Health. I love that. Really fascinating. Then by Steven Halladay, the Great Stink of London, sir Joseph Basil Get and the cleansing of a, the Victorian Metropolis, and then another book by him as well, but it's like an illustrated coffee table book for sewers, and it's called An Underground Guide to Sewers or Down Through and Out in Paris, London. New York. I love that. And it's, it's here. It's, it is honestly beautiful. Yeah. And really fun. Yeah. It's gorgeous and I loved it. Yeah, it was great.

EAU: Uh, I also actually had a book for this one. I never have books. I

EW: love that.

EAU: Um, but I did enjoy by Dr. Fong, it's called Constipation Nation. I love

EW: that. Which

EAU: is such a good title.

Great

EW: title.

EAU: Um, I really did enjoy that book. Um, I, I rarely read entire books and I actually read that whole entire thing, so that's how, you know, it was good. Um, and that there's like a lot more detail on constipation. Um, I think there's even like treat your constipation smoothies at the end, which is hilarious to me. Oh my God. Um, but then I also love, oh, this is [01:20:00] where I have the citation for the paper. We actually mentioned last episode. Oh yeah. About how it takes only 12 seconds to poop. Yeah. Because I didn't get into like, we spend so much time on the toilet.

EW: I mean, and that's related to hemorrhoids and

EAU: that's

EW: related

EAU: to, yeah. Yeah. There was a 2025 paper that was like, if you spend time on the phone, you're at higher risk of hemorrhoids. And I was like, there's so much to this. Let's keep going.

EW: You

EAU: gotta do a hemorrhoid

EW: episode.

EAU: Yeah. But anyways, that paper was from 2017. It was called The Hydrodynamics of Defecation, published in Soft matter.

EW: Soft matter.

EAU: Uh, and then I've got several papers on like the global prevalence of constipation on FMT. I also have some more data on, um, 'cause we didn't get deep into this, but on colon cancer rates. And we're gonna talk more about colon cancer later this season. Um, so you can find all of it on our website, this podcast achille.com, under the episodes tab.

EW: You can, uh, thank you to Blood Mobile for providing the music for this episode and all of our episodes.

EAU: Thank you to everyone here at the exactly right studios.

EW: Yes. Thank you. Thank you.

EAU: And Tom, and Leanna, and Brent, and Pete and everyone who is involved in making this podcast possible.

EW: Heck yeah. Uh, a big thank you to our listeners who listen or watch or read the transcripts, even anyone you know Yeah. Who somehow enjoys or, you know, just partakes in this podcast. You don't even have to enjoy it. Thank you.

EAU: Thank you.

EW: You've, you've helped us out.

EAU: As always. Thank you also to our patrons. Your support really, really does mean the world to us, so we, we really appreciate it.

EW: Yes. Thank you. Thank you. Well, until next time, wash your hands.

EAU: You filthy animals.