Health Myths

EW: Hi, I'm Erin Welsh,

EAU: And I'm Erin Allmann Updyke.

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

EAU: Welcome.

EW: Welcome. It feels so weird. We, it, I know that if you're watching this on YouTube, uh, the firsthand it can't usually comes later. Spoilers. There won't be one.

EAU: No.

EW: didn't have one. We're not having one. It feels weird.

EAU: It feels weird to just start out being like, well, here we go, but we're doing it because we want to.

EW: Yeah. Well also this episode is a little bit different.

EAU: It's weird.

EW: Yeah. It's weird. It's gonna be so much fun. This week we are exploring just a handful of health myths or are they myths?

EAU: Or are they, let's find out old wives tales, if you

EW: Hmm mm-hmm. If we, well, you may if, if you would. So like, well, it was really, 'cause I was like, okay, well what, what should we do? What about health myths? And then literally it was like boom, boom, boom, boom, boom. So

EAU: up with such a long list.

EW: I think this will be a repeating episode segment, maybe

EAU: Unless you, unless you all hate it and then let us know. But if you like

EW: do let us

EAU: which I feel like you will,

EW: Yeah.

EAU: because it's gonna be fun, I had um, we'll do it again sometime.

EW: Yeah. and in honor of the fact that we are doing health myths today. Just a handful. Our quarantini is named what Erin?

EAU: The Miracle Cure,

EW: Is that a question?

EAU: is that what we decided on?

EW: I think so. There were a few other ones and we were like, sure. Miracle Cure.

EAU: Let me say it again. Let me say it again. The Miracle

EW: Oh, I loved it. That was a perfect snake oil salesman pitch right

EAU: Thank you.

EW: was, yeah.

EAU: like this jacket really works for that too.

EW: Honestly, I feel like you're right. It does, yeah. For those who are listening, it is a green and cream striped, vertical striped, uh, blazer.

EAU: It's a little like Beetlejuice but green.

EW: yes. That,

EAU: So it's a very Come buy your Miracle Cure. Erin, tell him what's in it.

EW: It is ginger ale and carrot juice and lime juice. Believe it or not, we've actually done this like something similar before, which is funny,

EAU: We don't have to give ourselves away like that, but we just did.

EW: Erin, honesty, transparency, first and foremost, you know?

EAU: Anyways, this one, it's delicious. Probably,

EW: it's delicious. We will post the full recipe on our socials and maybe on our website, just depending on how that goes. If you're not following us on our socials. You really should. We're on Blue Sky. We're on uh Instagram. We are on Facebook. We're on TikTok. And also check out our website. Do you wanna do this spiel or do you want me to

EAU: sure. Yeah. Yeah. On our website, you can find really incredible things, including a link to our merch, holiday merch.

EW: Holiday merch. I.

EAU: You can find transcripts from all of our episode sources from every single one of our episodes, including this one. A link to Blood Mobile, who does the music, our good reads list, our bookshop.org affiliate account, a contact us form as submit your firsthand account form, um, and so much more.

EW: So much more. Check it

EAU: Oh, our Patreon. Thanks everyone.

EW: And also, uh, you know, we're on YouTube.

EAU: We're on YouTube on the exactly right network, so make sure that you're subscribed so that you can watch this and see the cool jacket and Erin's incredible squirrel sweater because listen, you don't wanna miss her sweaters and

EW: I mean, if you're selling snake oil with that blazer, what am I selling with my squirrel? Giant squirrel sweater.

EAU: grandma's cookies.

EW: you. Yes. But like, it's like the tin where you think it has cookies and you open it up and it's just a bunch of buttons.

EAU: Oh, that would be a real bummer.

EW: Oh, that was my childhood. Anyway,

EAU: Anyways,

EW: playing a little bit fast and loose here, and let's just cut ourselves off, take a break and get started on some health myth.

EAU: let's do it.

EW: So the way we're gonna do this is that, well, I mean, I guess we kind of discussed this, but I'm suggesting that

EAU: I am really glad that you're telling, 'cause I was like, I don't really know how this is gonna go.

EW: in my, I wrote this down and I was like, I'm pretty sure I remember us talking about this. But in any case, we have four health myths that we're gonna go through, and we're gonna go through them one by one. First I'll go into like how this belief or saying originated, and then Erin, you're gonna tell us whether there's any truth to it at all. Like what's, what's the actual low down? Yeah.

EAU: I can't wait.

EW: It's gonna be, it's gonna be so much fun. I had such a great time putting, like putting this together. But before we start with our first myth, I wanted to take a minute to talk about the other phrase that is commonly used to describe this ingrained health lore that may or may not have any basis in science. And you already said this, Erin, which is the old wives tale.

EAU: Yes.

EW: We use old wives tale to refer to something that is superstitious, outdated, flimflam from a time before science. You know, things like don't swim after eating. These are ones that definitely have to do on our future list. Shaving hair will make it grow back darker and thicker.

EAU: and

EW: Mm-hmm. Gum stays in your stomach for seven years before it's

EAU: years at least.

EW: least minimum. These like,

EAU: in your tummy if you swallow watermelon seeds.

EW: I mean literally a childhood fear of mine. But these old wives tales often refer to kind of like these, these quaint beliefs that are probably mostly false, but have nevertheless remained in public consciousness for decades or even centuries. Maybe not gum. I don't know when gum was invented. Ooh, that'd be fun. Alright.

EAU: that would be fun.

EW: But like, Erin, can you, like, you, you have heard of all of the ones I just

EAU: Mm-hmm. Yeah.

EW: Where did you learn them?

EAU: Oh, I just knew them.

EW: You were born knowing

EAU: I was born knowing.

EW: but like, I, yeah, I, I was trying to think, and I was like, I don't remember. I mean, probably like, honestly, my parents were like, don't swallow gum. You swim after whatever. Um, I,

EAU: things that you were told in childhood that like, uh, so many adults told it to you, or an influential enough that it's just

EW: right. Or your friend was like, oh, my mom said, you know, uh, the, we didn't learn these things from a book in school. Right? Like in traditional learning methods, educational methods. And this shows us like how much old wives tales are a long part of the oral tradition knowledge that has been carried down from person to person, most commonly historically, woman to woman, through storytelling, through rhymes, through recipes, through like whispered wisdom, right? That you didn't want to get out there from a time when women were the primary healers before midwives were replaced by male physicians

and prohibited from doing what had long been considered women's work. And finding the particular origin of many old wives tales, it poses a real challenge because for much of history, women were much less likely to be literate.

EW: And the knowledge that they possessed was often disparaged, rarely seen as important enough to be written down by those who were doing the writing, which was primarily men. And this contributed to the connotations that are associated with the term. You know, dismissive, condescending, ridiculing, even like that's just an old wives tale, instantly dismissive instantly. Like, how could you even believe that? And so the advice that is in some of these old wives tales is shrugged off as mostly harmless and mostly false, only occasionally containing the tiniest nugget of truth. And this disdain for the knowledge held or generated by women, it extends back centuries, like long before the scientific method had been established. As far back as the 14th century old wives tale was synonymous with making stuff up. Like that's how far back it goes. Mm-hmm.

EAU: Wow.

EW: and things really haven't changed much since then. And because of these prejudices, when science and biology and medicine became more formalized and systematic, primarily, you know, done this, established by men, these old wives tales were rarely considered or examined for any nugget of truth. And while it is the case that many of these old wives tales, like it doesn't take seven years to digest gum, you know, spoilers for a future episode, many of these are not backed by science, but others might be, or they might have some sort of glimmer of, you know, scientific basis in there. And as we learned when we were recently at UIC, university of Illinois, Chicago for a talk, 50% of all currently available pharmaceuticals come from natural products, either directly or inspired by nature. Again, it bears repeating that natural doesn't equate to healthy or curative and isn't inherently better than synthetic. And also like there's issue of dose, there's issues of allergies. Like there's no, there's no, like natural is better, right?

EAU: No.

EW: But. Being said, maybe we shouldn't be so quick to dismiss traditional knowledge. At least we should test it first, because where does that knowledge come from? What, what was the basis for it? And also we should maybe give credit where credit is due. So with all that said, now let's turn to our first myth.

EAU: I can't wait.

EW: Okay. Number one, you'll catch your death if you go out in the cold with wet hair. Yeah. Like, or kind of alongside that, you lose 50% of your body heat through your head. You know, things. Things like that. Like you'll catch your death

EAU: right. Just going outside in the cold, you'll get sick.

EW: Yes.

EAU: Good. 'cause that's, that's mostly what I focused on. Just FYI.

EW: I mean, it's all, it's all, honestly, it's, it's all the same as, as we hear. So if you have ever read or watched any Jane Austen, you know that it's only a matter of time before someone recklessly mounts a horse and then tears off into the pelting rain, only to later come down with like a most severe fever hovering on death's door for weeks on end. Uh, preferably at like the local rich Hunks estate. Looking at you, Jane Bennett, um, pride and Prejudice, just saying,

EAU: I love that. I don't get that reference, but so many people will.

EW: seen Pride and Prejudice, right?

EAU: I don't know that I have, honestly,

EW: Erin, you and I have watched it together. The Kira Knightly one.

EAU: Kira Knightly. I've seen most of her films,

EW: Anyway, there is a part where I, I don't think her sister recklessly tears off. This is not a Jane Austen podcast. Um, we would be a terrible, what if it were? 'cause we don't know enough. Uh, but this is something that does happen in at least one or two or more. Jane Austen novels. And it wasn't Jane Austen alone who was obsessed with weather. Plenty of other 19th century literature spends an inordinate amount of time discussing the local weather or the quote unquote climate, weather and climate, they act as like a useful plot device. Charles Dickens' own Oliver Twist catches a fever and ague from the wet and cold quote unquote. ague by the way, I think was often, but maybe not always referred to like it was like a cyclic fever, so it was often thought to be like malaria. Mm-hmm. There was a character in George Elliot's middle March who comes down with typhoid fever after a quote unquote nasty damp ride through unsanitary streets and Marian and Wilke Collins, the woman in white is said to have unhappily exposed herself to be wedded through with a heavy rain. The

cold that followed was of an aggravated kind, and it has now brought with it the worst consequence fever end quote. It happened a lot. And climate, by the way, the way that I, like earlier when I said quote unquote climate, uh, that is the reason I pointed that out or the reason I like highlighted it, is because climate carried with it different connotations than what we think of it today in terms of like just long term weather patterns. Climate was more like the general atmosphere, right, which also different connotations, but like being, like living or being raised in a certain climate was thought to shape who you were as a person, how you thought, yeah, the, it's like the political climate, right? Your moods, your behavior, and of course your health. All of this was supposed to shape who you were if you were brought up in the English climate, and it wasn't the same as like culture either.

EAU: No, it was like, based on what, what like types of things you were exposed to, like environmentally and how that shaped who you

EW: Yeah. And it was like the people of this climate type of a thing. Mm-hmm. Mm-hmm. And weather was kind of thought to do the same thing, just over a shorter timescale. So weather could predispose an entire area to certain diseases, like sowing the seeds of fever

EAU: Mm-hmm.

EW: and the, this pervasive preoccupation with weather in Victorian novels, it reflects contemporary beliefs about its influence on a person or population. This is a time before germ theory when Myas asthma was thought to drive the spread of disease. Contagion was recognized, but it tended to play a backseat to Myas asthma, particularly in rural locations like industrialization was more tied to contagion and thus lower on like the moral ladder, you know?

EW: So it was like, yeah, contagion was thought to be just a product of, um, unsanitary conditions, kind of. And so it was like, hmm, you know this again, why like tuberculosis and blah, blah, blah anyway, and my asthma didn't act by itself. It worked in conjunction with the humoral theory of disease where everything had to be in balance. Cold weather was thought to make things congeal and obstruct. So you get a cough and then moisture, quote unquote, destroys the elasticity of solids, thereby causing ague, AKA malaria. And so in 1801, uh, in a book called Domestic Medicine by William Buchan. He writes that quote, "wet clothes, not only by their coldness, obstruct the perspiration, but their moisture by being absorbed or taken up into the body greatly increases the danger. The most robust constitution is not proof against the danger arising from wet clothes. They daily occasion fevers, rheumatism, and other fatal

disorders, even in the young and healthy" end quote. And he goes on to say that quote, "even wet feet often occasional fatal diseases". End quote. So keep your feet dry. Yeah.

EAU: Yeah. Keep your feet dry.

EW: And so the long story short is that this health myth, the reason that we see so many of Jane Austen's characters running off into the cold with wet hair and then dying, is that it's deeply rooted in ancient Greek and Roman medical ideas like the Humoral theory of disease. And it also reflects how people thought at that time and the lack of knowledge about germ theory. And so. It is just what people thought, and that has somehow to explain why it has lingered. I mean, ideas are sticky. So, Erin, tell me, is there any truth to this one?

EAU: Yeah, and I would add actually that I think part of the reason that maybe some of this has stuck around is because we do in temperate regions see a strong seasonality of a lot of respiratory illnesses, especially where in the colder months we see more of these illnesses. So I maybe should have, uh, coordinated with you better, Erin, to make sure I was researching the right things. Because most of what I'm gonna talk about is what data we have on weather cold specifically, rather than the wet part of it, but weather cold. 'cause I think that that is sort of what has stuck with us the most. Right? Yes. If you go outside and wet hair, it's thought, oh, you're gonna be colder. But it's the, the cold part. If you go out in the cold, you're going to catch a cold, you're going to get sick

EW: See, to me, like it was like my, my grandma would tell me, don't go outside with wet hair. Don't sleep with wet hair. It was all about the moisture and it was always like, if you like, make sure you grab a jacket because you'll catch your cold, you'll catch your death if you're not bundled up adequately. Not just being in the cold, but it was like, yeah,

EAU: If you get cold right. Yes. Um, interestingly, I only found like one paper looking specifically at wet hair and cold, and it was from like the 1960s and it was somebody's like bachelor thesis. Um, but it showed absolutely no association between wet hair. It was people who swim in the winter and they looked at hair drying methods and whether people who either towel dried or didn't dry their hair at all were more likely to catch a cold than those who blow dried their hair. And the answer was no.

EW: fascinating. Hilarious.

EAU: But there's been a lot more study trying to unpack this idea that the cold going out in the cold without a jacket, being outside in the cold, cold weather giving you a cold. Is there any truth to this idea?

EW: Mm-hmm.

EAU: And I think in part it does stem from this. Why are we. Why do we see these spikes in upper respiratory viruses during cold and flu season, which tends to be colder weather in temperate regions. So is there any truth to any of this? The easiest, shortest way to answer is just to say no, because damp or the cold is not what gives us colds

EW: right.

EAU: is not what gives us fevers, it's viruses. Right? But we can go a little bit further because people have tried to look at, okay, so is there anything that happens with exposure to cold that makes us more susceptible to these viruses?

EW: Or like lack of sunlight because cold indicates winter and shorter day lengths.

EAU: Right. And no one's looking at sunlight. I found nothing about sunlight exposure because we also, the, this is all complicated 'cause in tropical regions we have just as many of these viruses floating around.

EW: We do. And also, rainy, rainy periods where the sun might not be out and blah, blah, blah. Yeah, yeah, yeah, yeah.

EAU: exactly. So what we, what do we actually see? There are some studies that show that cooling our body temperature. So studies that have looked at like immersing our feet in cold water or breathing cold air through our nose. Some of these studies show an increase in cold symptoms in the days that follow these type of exposures. There are others that do not show these type of associations of cold exposure and cold symptoms. So what are some of the possible explanations that people have laid out for this? There are some, especially mouse model studies that suggest that some of the viruses that commonly cause colds and flu, like influenza virus, rhinovirus, some of these might replicate more efficiently at lower temperatures, which has been proposed as to why they replicate so well in our nasal passages, which are at a lower temperature to begin with compared to body temperature.

EW: Mm-hmm.

EAU: But that perhaps exposure to certain environmental or weather conditions might change the temperature in our respiratory system enough, not necessarily to impact our immune system. 'cause there's like eh, messy data on whether or not that's the case, but could affect the survivability of viruses that are already there.

EW: So it's like potentially an e an energetics thing.

EAU: Yeah, potentially these exposures to certain weather patterns or environmental conditions might allow for increased growth or replication of viruses that we have already been exposed to. And that might at least in part, explain some of the seasonality trends that we see with these viruses and explain why exposure to certain environmental conditions might predispose us to viral infections. Because another thing that's interesting about looking at the seasonality is that it's not directly correlated to temperature. Humidity actually seems to be a bigger driver, especially for some viral infections.

EW: That makes sense.

EAU: Where drier air is actually more risky, which is the opposite of this idea that the wet and cold is gonna make you sick. Um, but it's also that a, a relative change in the temperature. So when we see, as it starts to get to, into Autumn and winter, when you see an abrupt drop in temperature and humidity, then shortly thereafter is when we tend to see a spike in these respiratory viruses.

EW: I mean, I also thought that it was tied to people being inside more and

EAU: I'm so glad that you brought that up, because that is often cited as a reason that we have these infections. There's no data to support that whatsoever.

EW: funny because school time, you see these spike, like when school begins, you see these spikes,

EAU: Yes. So, and school begins often in the fall. Ah. When we also see spikes, rhinovirus actually peaks in the fall and the spring. And then influenza viruses tend to peak in the winter. And RSV also peaks in the winter. But especially in like the US for example, we spend 90% of our time indoors regardless of the season. And there is like a less than 10% difference in how much we congregate indoors in cold weather compared to hot weather. Um, and people tend to have substantially more contacts just on week days compared to week ends. And local weather conditions tend to have minor effects on the total

number of contacts on average that we have compared to just like the days of the week changes. Isn't that fascinating?

EW: Fascinating.

EAU: Uh, yeah. So, uh, there's not any data for that, which I love because I love that you brought that up. Um, and then you also mentioned this myth that we lose so much heat from your head. If you don't go outside without a hat on, you will definitely get sick because you lose too much heat from your head. There's absolutely no data of this whatsoever. And from what I could tell, it came from, like, this concept came from old army survival manuals, where the army was studying survival. And so they put subjects in these like arctic survival suits without any hats on, and they measured heat loss, and they lost most of their heat through their head because it was the only part of their body that was uncovered.

EW: Okay.

EAU: Okay. Um, but like just you lose a proportional amount of heat through any unexposed part of your body. So your head is about 10% of your body surface area. So you lose about 10% of your body heat through your head. If that's uncovered, um, kids are gonna lose a little more 'cause they have giant heads compared to their body size. Um, but it's nowhere near like 40 or 50%. If you went out without pants on, you would lose a lot more heat through your legs than you do through your head. It's just that if your head is the only part that's uncovered, then yes, you're losing heat through your head quicker than the covered parts of your

EW: And it's more likely in the winter to forget a hat than to forget your pants, I

EAU: more likely in most scenarios. And that, Erin, is this health myth busted.

EW: Hilarious. I love it. Okay, are we ready for number two?

EAU: I think so. Give it to

EW: great. Eating carrots gives you night vision.

EAU: Gives you night vision.

EW: truth, right?

EAU: My dad is like still on this train.

EW: Oh yeah. I mean, I grew up believing this.

EAU: He only eats carrots because he thinks that it's gonna give him night vision. 'cause I don't even think he likes carrots.

EW: Well, I also, I don't have great eyesight. And so when I first, when I was like in middle school and I had put glasses on for the first time and I was like, oh my God, this is what other people see. This is, I can see leaves on trees. Like it was, it blew my mind. Yeah, I know. Well, I had one, my one one eye was better than, it was better than 2020. And then, but the other eye was like trash. And so now, now that I've corrected it, they're both trash. So good stuff. Plus I stare at a computer all day, so Awesome. Really, really going well. Um, but when I first had realized that I had to wear glasses, um, and then later contacts I middle school, I was like, I'm gonna eat carrots and see if this helps.

EAU: See if that makes a difference.

EW: It didn't, unfortunately. Um, I'm a, you know, lifetime contact user. Maybe LASIK someday. Anyway, back to carrots. So.

EAU: to carrots.

EW: To trace the origin of this myth, let's take a trip to the World Carrot Museum.

EAU: Stop

EW: Okay. This is a real thing, actually. It was a real thing. It, it was a virtual museum and I don't believe it's, uh, maintained any longer. I think it ended in 2022, but it was curated and maintained by, uh, John Stolar. And so you can still access it on the way back machine. So that's where I found it. Uh, this myth originated during World War ii and the typical explanation, like if, if someone repeats this myth in the wild, what you'll often hear is that the British government invented it to explain why their pilots newly equipped with highly confidential radar on board, were able to shoot down so many German planes. And so they were like, oh, it's, we don't have radar. We just give them carrots. Right?

EAU: I love that. I had no idea that that's where that came from.

EW: Okay, so that is

EAU: that's the myth of the

EW: That's the myth of the myth.

EAU: Ah, better.

EW: layers. This is an onion girl. Okay.

EAU: an onion, not a carrot.

EW: Exactly. Okay. So the, the true story behind this myth, it's a little bit more complicated. There are elements of the real story in that myth that I just described. Okay. So during World War ii, food shortages were quite common and people living in Great Britain were under strict food rationing. And this sometimes led them to use alternative foods as a substitute for the ones that weren't available. The carrot was one of these alternate foods like they, the carrot became wildly popular and it was used often as like a sweetener. Carrots are pretty sweet. You know, I love carrots. The hype surrounding carrots was really strong. It was bolstered by propaganda posters featuring Dr. Carrot. It was a real, you know, cartoon guy will maybe try to post a picture recipe books with lots of carrot heavy dishes and incentives for people who grew carrots. Because they were like, carrots are, it's, they're easy to grow. They're easy to get. We can grow them here. Everyone should be eating more carrots. And so by 1942 during the war, there was actually a carrot surplus. And so then the British government was like, we need, we need you all to eat more Carrots. And the Ministry of Food came up with this see in the dark campaign with posters like night sight can mean life or death. Eat carrots and leafy green or yellow vegetables rich in vitamin A end quote. That's like, what a poster. Yeah.

EAU: okay.

EW: Essential for night sight. Yeah. So, okay, at why Night Sight? At the time there were lots of blackouts to conceal cities from aerial bombing campaigns. And so the Carrot Night vision link was primarily intended for civilians to maybe like, feel more confident about these scary times while also eating, taking care of the excess carrots that had accumulated. And there was the fact that, I know you'll talk about this later on, but like there's the fact that if you lack betacarotene, then your night vision can suffer as a result. And so then the inverse must be true, right? More betacarotene will give you night vision.

EAU: As

EW: Super superpower. Um, and there were, at the time, during the war, a few studies on a high care, a high betacarotene diet and night vision in British fighter pilots, but they didn't amount to anything. Um. But yeah, but those studies were kept under wraps because if this had been found out then you know, they didn't want Germans feeding their pilots carrots as well, I

EAU: Right then their, their doctor carrot posters would come to nothing.

EW: Exactly. Yeah. Okay. So where does radar fit into all of this? That's the other piece of the puzzle. So in 1940, the first onboard, like on Planes radar was used by RAF pilots. Radar stations had been in place since the start of the war, and soon after the introduction of onboard radar night attacks on German planes grew much more successful. This was a pretty big deal, and the British Air Ministry wanted to keep it under wraps for as long as possible. And so the See in the Dark Campaign, which was from the Ministry of Food, helped to some extent, but they didn't like the British. Uh, military didn't create any propaganda intentionally for this. And the secret radar, it didn't stay secret for very long. Like it was a matter of months, I think, and it was before a lot of these campaigns started. So it was like, you know, it, what, what the, uh, what the curator of the REF museum in London said is, whilst the British Air Ministry were happy to go along with the story, they never set out to use it to fool the Germans, the German intelligence service, were well aware of our ground-based radar installations and would not be surprised by the existence of radar in aircraft and quote. So, so there you go. Not to hide radar technology, but to encourage people to eat more carrots and maybe, you know, a little bit of the lack of betacarotene hurts night vision. So, Aaron, give me the nitty gritty on betacarotene and night vision and carrots and all of the things.

EAU: I can't wait. So it is true that vitamin A is essential for our eye function, especially our like night vision or dark vision, but really just our vision more generally. And it is also true that beta carotene, which is in relatively high concentration in carrots, as well as many other vegetables and fruits, is one of the most biologically active carotinoids and carotinoids are the plant pigments that serve as vitamin A precursors in our diet.

EW: Hmm.

EAU: So, yes, it is true that a deficiency in Vitamin A can lead to a condition called night blindness where your rods and cones are not working well and you really cannot see at night. And this is a really big problem in populations that

are deficient in vitamin A and in those populations. Vitamin A supplementation, though not necessarily betacarotene supplementation, or at least not to the same degree, can help to reverse at least some part of night blindness. Though it's not always a hundred percent curative, but does eating carrots alone, I mean the, the short answer is again, no. Right? It's not going to give you any night vision. To like, uh, to like supplement your diet with extra carrots. All of the studies that have been done at this, and there are quite a bit, they're not even looking at like carrots directly.

EAU: They're looking at ex like excessive betacarotene or other carotinoids. So, uh, zeaxanthin and lutein are the other two big ones. Um, and lycopene is a smaller one as well too. These are all carotinoids that people have looked at to try and see can excess supplementation. So like above and beyond the recommended daily amount for people who are not deficient in vitamin A, can these help prevent things like age-related macular degeneration, cataracts, or other issues? the answer is mostly no. But I say mostly no because there is a little bit of nuance here. Um. There are some studies that suggest that maybe supplementation with some carotinoids, usually in combination with other antioxidants like vitamin E, vitamin C, and even minerals like zinc might help to delay the progression of age related macular degeneration. So can help to delay the development of more severe blindness and age related macular degeneration, by the way, is like responsible for 50% of blindness in high income countries. So this is a really big deal if we, and we don't really have anything to reverse it or prevent it necessarily. So a lot of people have been looking into this. There are some studies that suggest that certain. Supplement combinations that include betacarotene might help to reduce this regression. But when they've then done studies to look at, you know, the other types of carotinoids compared to betacarotene, there's not really that big of an improvement. Betacarotene supplementation also in people who smoke cigarettes actually can sub substantially increase the risk of lung cancer.

EW: What?

EAU: Yeah, I know that's like a whole, we should do a whole episode on betacarotene 'cause it's interesting,

EW: What the heck?

EAU: I know, right? What is, what is that? I don't know. I didn't go in

EW: Aaron,

EAU: but that is what, that is what the studies bear out. Um, and so it's a little bit messy. There's also some studies of like subjective improvement in older adults who have reported poor night vision, but no, like notable pathology on like retinal scans that if you supplement them in the short term with something like betacarotene, they subjectively report an improvement in their night vision compared to placebo. But again, that's short term and we don't necessarily see, uh, delay in progression. And certainly nothing that I saw suggests that if you do not have eye disease, if you do not have cataracts or age-related macular degeneration, which are two different things, but if you do not have those, there's no data that supplementation with any of these carotinoids helps to delay the like, initial onset of these diseases.

EW: Huh.

EAU: make sense?

EW: Yeah.

EAU: But on the whole adequate levels of vitamin A are important and carrots are a perfectly adequate source of betacarotene, which is what we use to make vitamin A. So there you go. Health myth

EW: Kind of busted.

EAU: kind of busted, but like, you know, they'll, they'll, it's fine to eat carrots,

EW: right. This, I feel like this is the one where it's like, it's not, it's not harm. Well, I mean, I guess there is a point at which eating too many carrots cannot be too much of anything is, you know, uh, also in our episode, a future episode on carrots, uh, or betacarotene, we'll, we'll cover that maybe, but I feel like this is one where it's like, just don't get your hopes up, that you will have

EAU: Right. And I will say too, in like larger scale, like, um, more nutrition based studies, um, there's not really any association between, like if you look at just people, uh, and their diet spectrum, people who eat more carrots or more betacarotene containing like fruits and vegetables aren't any less likely to develop age-related macular degeneration later on. So, so there's not like a, if you eat your carrots, you won't get this. There's no data to support that

EW: Why haven't we done any eye episodes?

EAU: because eyes are hard and they don't teach us enough about them in med school. So I'd have to do a lot of work for that, but we should do it

EW: Because we don't want to, is the answer you just said because it's hard. Well, I'm proposing macular degeneration at

EAU: I know. That would be a great one. It really would be.

EW: Yeah. Uh, myth three. Okay.

EAU: Yeah.

EW: The sugar rush.

EAU: I think this is my favorite.

EW: Yeah. I'm sure that we have all heard this one. Someone's like, oh, my kid doesn't need any more cookies. Please don't feed him more cookies. I don't want 'em all wired up. We're running all around the place, like knocking things over, you know, acting like a crazy, you know, whirlwind or you're like, oh, I should not have had all those nerds clusters. Now I'm totally crashing out. Speaking from experience. Um, but this is such a deeply ingrained belief that it has become like a TV show and movie trope. There are episodes like, it's like a plot point where kids somehow find like the bag of Halloween candy and then they're all like sleeping after being crazy and wrecking the place, right? Like, yeah. And yet this, it, even though it feels so ingrained, like it's like common knowledge, right? This is a relatively new myths, at least among the ones that we have explored, only originating in the 1970s.

EAU: I mean, that's, I feel like somehow that doesn't surprise me, because I feel like no one was like that up in arms about sugar until

EW: Oh, well you'd be wrong about that, but

EAU: okay. Oh, we should do an episode on sugar.

EW: We would have to do multiple episodes on sugar. Let's do it. Uh, I've been wanting to do that.

EAU: We did two on salt. Erin, let's, let's do it.

EW: salt and sugar, delicious. This but happened was, uh, in the 1970s, there was a book that promoted this idea of the sugar rush without the evidence to back it up. And before I get into the specific origins of the sugar rush, I think it's worth exploring the perception of sugar and candy in the US in the decades leading up to that, in part to explain why this book may have resonated with so many people.

EAU: Hmm.

EW: There is so much to this story, like of how candy became food and not just candy, and how food became more like candy, like sugary cereals. Um, yeah. But the short version is that candy production really only began in the mid 19th century or so. Another thing we can thank the Industrial Revolution for, but it remained kind of like an occasional treat for decades, not a food staple to be found in most or many pantries. By the end of World War II that had changed. In the 1920s, a couple of the major candy companies were established in the us, Mars, and Hershey. And soldiers in the Second World War carried with them candy, like Hershey's Bars, baby Ruths and Tootsie Rolls. They were actually issued in their rations. They were like part of their rations. And part of this was like, you know, here's something to keep your energy up here is, um, something to like, make friends with someone or like if you are helping to like liberate a town or whatever, like share your candy. But when the war ended, it wasn't like candy production stopped,

EAU: Mm-hmm.

EW: but it wasn't as widely embraced as it had been during those war years when soldiers there were literally like instructions, like, enjoy some candy every day. It'll help you with your energy levels. But it was seen as a controversial food post World War ii unhealthy at the minimum with stronger voices echoing the early 20th century discourse when sugar was said to be as addictive as drugs and alcohol. It was very like the Temperance movement. Sugar and candy was also bad.

EAU: right? We need corn flakes with no sugar on them.

EW: Exactly. I mean, there were, there were people who were like, I'm gonna do a study about, uh, sugary soda and violence and, you know, try with the hypothesis being that. People who drank more soda were violent, more violent. I don't think it wore out. But in any case, it was like sugar had, generally speaking, a bad rap. And there's always a moral association with this too. Right. You know, and in the 1960s and the 1970s, people began warning against eating

candy and artificial sweeteners. And the growth of like the health foods market during this time kind of provided this unwelcome comparison for candy and other junk foods. Right? It was like, come on, like, all right, you got your kale, you got your Brussels sprouts, so I guess, you know, no one really wants these pixie sticks anymore. And then enter, so in this environment, right, we in this atmosphere, we're now in 1975. Enter Benjamin Feingold's book, why Your Child Is Hyperactive. We talked about this book in our Food Dies episode. Yeah.

EAU: we did.

EW: This is where that link, uh, initially comes from the food dies and hyperactivity. And so in this book, Finegold links a suite of behavioral issues and allergies and children to food additives, artificial dyes, artificial flavors, and sugary snacks, which often contain a lot of these artificial flavors, dyes, et cetera. And he outlined an elimination diet where if you are supposed, you're supposed to avoid certain foods as a way to treat hyperactivity in children. And even in like, it wasn't just junk food that was cut out, it was also even some vegetables that contained salicylic acid or something like that. Those were a no go at the start of the diet like tomatoes. Yeah, yeah.

EAU: tomatoes.

EW: I know even, but like also it's, it's a really, it's a really kind of odd. There are some parallels with like the, uh, kind of a t tra wife stuff today where a lot of the foods that would be considered, you know, junk food were okay as long as you made them from scratch. So ice cream was totally fine, but you had to make it from scratch.

EAU: Oh, because ice cream doesn't have any artificial colors in it. If you use vanilla, so it's just your raw milk. Sorry.

EW: make your, yeah, yeah. You could make your own fruit loops with like beet juice and carrot with juice and whatever, all that. Um. Sugar. But sugar, right. Like sugar was, was pretty much okay. Sugar was allowed. It was mostly the artificial, yeah, it was mostly artificial dyes and flavors. But since candy often contain, it was like, that was like the trigger food. And so in why your child is hyperactive, fine gold goes through case studies of a few kids as they're put on the diet. And he describes what he observes. Like this quote, "on July 27, Johnny C sneaked some candy and turned into a whirling dervish for 24 hours. Predictable, I thought." End quote.

EAU: First of all, love the term whirling dervish. That's a great one. Second of all, predictable.

EW: Predictable I thought.

EAU: I mean,

EW: He's just like, pat, pat, pat. I knew this would

EAU: I knew it told you so.

EW: It is. It is. So yeah, some of these other case studies are hon, honestly, just ridiculous. And so this is like, and that was the evidence that he presented.

EAU: Of

EW: That was Anec anecdote equals evidence. Right. I mean this, this book sold like hotcakes. I mean, we, we talked about this in our Food Dies episode. Um, sold like candy. Really like, um, yeah. But so once, once this came out, a bunch of other studies were created to kind of see like, okay, what's the actual low down on this between sugar or candy and hyperactivity? And they showed no association. Um, but the sugar rush myth persisted and as to why. And maybe there is truth to it. Maybe you'll tell me that there is, but like as to why, from what my understanding, my cursory look through, there isn't evidence to, to back up as association between eating candy and hyperactivity. But my guess is that it's for the same reasons why supplements are so popular. Like why we all want to know that one trick our doctor doesn't want us to know and why we develop like a kale or super green or whatever obsession we want to optimize and improve our lives in the like, just fine tune everything. It's relatable. It provides an easy explanation and the promise of a cure. And so for people who are desperate for solutions, like it is not being a parent myself, I don't know what it's like to have a hyperactive kid, but I've been around kids who are running all over the place and I can understand that parents who are like, I am gonna lose my mind with this. Anything that I can do to prevent this whirling dervish, I will try. And so, um, and so I think that's part of the reason why it makes such, these ideas have such sticking power. And also because it's just like, you can say it in one sentence, candy causes hyperactivity, three words, like that's it,

EAU: an easy, it's an easy answer. It's an easy fix.

EW: And it also makes sense because maybe kids are eating candy at times when things are really exciting, otherwise. Right. But, we'll, I'll let you talk about that. So, but now, um, before I turn it over to you, Erin, I do just wanna point out that these three old wives tales, quote unquote, that we've gone through so far, have all been created by men, which is hilarious to me. So now tell me about sugar rush.

EAU: Listen, this is so shockingly persistent that like you go to any kid's birthday party today, and every parent won't be like, Ugh, I'll have the sugar. It's gonna be a rough night, da da, da, da, right? Like even, even when we know better, it is still what we say at birthday parties, et cetera.

EW: yeah,

EAU: We have so much evidence against this, against this.

EW: that's what I

EAU: There is a paper that summarized at least 12, and this is an old paper at this point. This isn't new data. There is a paper that summarized at least 12 different double-blind, placebo controlled randomized trials that looked at whether sugar consumption causes hyperactivity in kids. And literally none of them show any actual behavior change after sugar consumption. And that means if we're talking natural sugars, if we're talking chocolate, if we're talking candy, if we're talking kids who have underlying A DHD or hyperactivity or kids without hyperactivity at baseline, the studies just do not show this association to be true. And they have taken this one step further because most of the studies that looked at this initially, were looking at it in the short term, the immediate effects, right? We see very little behavior change on clinical scales in terms of aggressiveness, hyperactivity, inattention. When you take kids and you give them sugar and then you watch them, okay? So people have taken it one step further and said, okay, but it's not, it's not the short term, it's the long term sugar consumption in the long term puts kids at higher risk of developing A DHD. Is that true? Probably not. There are some studies that are not great. Many of them don't necessarily have like a, you can't make a causal assumption because they look at kids with A DHD and kids without A DHD and look at their sugar consumption and say, oh, the kids with A DHD are consuming higher amounts of sugar, but that's not causal.

EW: Right, right.

EAU: There are some, there's a, at least one study that looked at like a birth cohort and like sugar consumption over time in this birth cohort of kids and showed no association with sugar consumption and the development of A DHD. Um, and there are some others that show maybe some associations with things like sugar sweetened beverages. But again, that's not sugar alone. Right. And you can't separate out all of the other things that might be in sodas or Gatorades or whatever it is from the sugar that's in there. So the, the consensus, the overall overarching data is no. Myth busted. There's no association between sugar and hyperactive behavior or A DHD and hyperactivity. Now what's really interesting is that some studies do show that there is a significant effect of sugar on parental perception of behavior. If you tell parents, we just gave your kids a bunch of sugar, they will rate their kids as more hyperactive regardless of whether or not they ate sugar.

EW: That is very interesting.

EAU: it is, there's only one big study that I saw on this. So like, this is one study, but it is really interesting. Um, and I tried to find, 'cause you mentioned this, Erin, and this is, I think, uh, the explanation that I always hear is, oh, it's not the sugar, it's the party that causes the, the, you know, whirling dervish behavior. It's the situation in which the sugar is consumed that causes these behavior changes. It's not the sugar itself. Well, there's no data on this. Like that's not a thing that has been studied. So it is one of those, we can now make this a new myth that it is like, it seems logically to be true. Kids are wild at parties, but there's no like data to be like, if you give a kid like, you know what I'm saying? There's no data on it, but

EW: I mean, it makes sense also, it's like, do, do, do we need to to study

EAU: we need to say it?

EW: make people excited?

EAU: parties make you have fun?

EW: we need evidence for that. We need a P value, we need some sort of, yeah.

EAU: yeah. But it is not the sugar, it's just your, it's just the kids.

EW: It's, I mean, that's, that is really interesting about parental perception and I wonder how a study like that results from a study like that prior to Fine Gold's book and prior to this myth becoming so persistent and

EAU: Yes. Was would it still have been true? Yeah. 'cause that study was in the late 90, mid to late nineties.

EW: Sugar rush.

EAU: sugar rush. Myth busted.

EW: Uh, okay. Our last, our last Myth. It's gone by fast. Okay. Probably not for listeners. Just kidding. Um, all right. Our last myth is Ginger Ale Cures Tummy Aches.

EAU: Mm-hmm.

EW: Okay. Uh, growing up when I was sick from, you know, sick and had to stay home from school, I had some sort of stomach bug. My mom would, I would always remember a steady diet of like, ginger ale, Sprite, saltines, especially Saltines. And for years, like I could not taste any of those without instantly feeling nauseous, especially saltines. I'm just like,

EAU: I mean, that's fair. Do you need saltines in your diet? Like, you know,

EW: I mean, I do really love a saltine with a little dab of peanut butter on there. It's so good. Yeah. Um, but that's definitely a desperation snack when I'm like rummaging around my pantry, like, please, there's gotta be something I can eat. But Ginger has long been hailed as an aid in digestion, nausea, inflammation and other GI issues. And the first descriptions of the power of Ginger in this way date back thousands of years at least to 2000 BCE in ancient Indian medical texts. And in the sixth century, BCE Confucius mentioned ginger and recommended to take it with every meal to help with digestion. Ginger, as we know, it does not exist in the wild. It's cultivated, meaning that humans have intentionally grown it for thousands of years and it likely originated somewhere from India to China and Southeast Asia around there. Ginger was a major and early component of the spice trade, and by the turn of the millennium it was widely used across southeastern Asia into the Middle East and into the Greek and Roman empires. And soon it had made its way to the rest of Europe. In 14th century England, ginger was all the rage. Second in popularity as a spice to pepper was number two behind pepper. Isn't that fascinating?

EAU: I That is fascinating.

EW: And it was allegedly quite expensive.

EW: So one pound of ginger cost as much as one sheep. So for reference, just to help put this into perspective, I looked up contemporary prices of sheep and ginger in Colorado

EAU: Okay.

EW: and I found.

EAU: Sorry. How much does a sheep cost in Colorado? Erin?

EW: I'm about to tell you it's actually much cheaper than I thought. Like I guess, I guess, you know, people could get a sheep fairly easily. Sheep prices range quite a bit. There's like show sheep and stuff. I don't know anything about sheep and I didn't learn too much more after Googling this. However, you can go to like Safeway or whatever and find ginger for 3 99 a pound. Okay? Sheep prices vary. But you can get, you can get one for as few as like, you know, few hundred bucks and then some that are like much more expensive. But like I would say safe price would be between four and $500 for a single sheep. So, safe to say that the cost of ginger has gone down quite substantially since mid 14th century England while sheep have gone up, something like that. Yeah. So for thousands of years, sheep, sorry, ginger had been used pretty heavily. I guess sheep had been used pretty heavily in foods as well, not beverages. Uh, but ginger was used in beverages like ginger tea for instance. And the first references or records of ginger beer come from England in the mid 18th century. This ginger beer was, uh, made alcoholic through the fermentation of added sugar in contrast to other beer, which is from fermented grains. And so ginger beer, as it used to be known, you can now buy ginger beer today that is, does not have alcohol in it. But, um, ginger beer historically was alcoholic.

EAU: right. Like cider and

EW: Yeah, exactly.

EAU: cider, but it's not alcoholic and cider still is

EW: Yeah. It's, um, confusing. But at some point, uh, most sources suggest in the 1850s in Ireland, people began producing less alcoholic or non-alcoholic versions of ginger beer that they call ginger ale to distinguish it. So, you know, um, Canada Dry the Ginger Ale, that brand, that dry, the name dry comes from the fact that it was non-alcoholic, like a dry county.

EAU: Oh, I never knew that.

EW: I know. And then it's also like crisp and

EAU: Yeah, cri, that's what I just assumed, but I

EW: it's both. You know, it's multipurpose, but So these non-alcoholic ginger ails were made with soda water and had ginger flavoring with added sugar rather than being fermented products. And they were popular as health tonics because ginger helps to aid in digestion. And so ginger ales were often sold as like a healthy beverage. Like I always weirdly thought of ginger ale as like the health soda, which is does not work, is

EAU: Growing up I didn't like it. 'cause I was like, it's too spicy and

EW: yeah, it was me. I was like, my tummy hurts and ginger ale makes me feel sick because I'm. Drinking ginger ale. 'cause my, I'm sick. Yeah. But in addition to being really popular as health tonics, they were also popular as mixers, uh, for other alcoholic beverages or cocktails. And it, ginger Ale experienced a huge surge in popularity during prohibition when people used it to hide the nasty taste of like, bootleg liquors. So like, I think even Al Capone had some sort of ginger ale producing plant or something, or like own shares in it or something like that. So, long story short, the association between ginger ale and nausea probably stems from Ginger's reputation as a nausea reliever and a healthy spice. Even though most store-bought ginger ails don't contain any real ginger, just ginger flavoring. So. Tell me, does Ginger ale actually help with nausea or does ginger help with nausea? Where, where's, where does the truth fly?

EAU: Where does the truth lie? 'cause it is somewhere right in the middle there. There is a lot of data that have looked at ginger, using ginger to treat nausea and vomiting, whether it's nausea and vomiting associated with pregnancy, nausea and vomiting from chemotherapy induced nausea, postoperative nausea, even seasickness. And while the data for some of these is a little bit heterogeneous, it's not as strong for every type of nausea. Ginger likely, based on all of this data, has some benefit in reducing nausea and vomiting associated with a variety of conditions. The data is strongest for pregnancy and chemotherapy.

EW: Okay.

EAU: What does that mean though, ginger. Okay. Because like, that's just a root. Most of the studies that looked at this used at least one gram a day of ginger. How does one ingest a gram of ginger? Usually in ginger capsules or ginger powder, although some studies looked at ginger biscuits, which I love.

EW: Love ginger biscuits. I'm assuming cookies is what? Biscuit is meaning in this context.

EAU: That's what they meant. Yeah. The British biscuit. Um, and so, and in those studies consuming at least a gram of ginger via capsules or powder or ginger biscuits in most of them did show at least some improvement in nausea and vomiting. What is the mechanism of this? We still don't know. There are some studies that suggest that active compounds in Ginger might interact with some of our serotonin receptors. eyo throwback to our SSRIs episode. We talked a little bit in one of those about how some of our other antiemetics like Zofran or Odansetron, also works on serotonin receptors in our brain. There's also some other studies that may be ginger or some of the compounds in ginger help to increase gastric motility. Now

EW: hmm.

EAU: that is why I assume that is why people say ginger ale will help. There is no data that I found on Ginger ale specifically, and like you said, most ginger ales don't even have any ginger in it. And even if they do, how are you gonna get to a gram of ginger a day from drinking? You know, even the ginger ales that have real ginger in them, you're gonna be hard pressed to get to a gram. Um,

EW: And then you're eating, you're also drinking a lot of carbonated beverage, which,

EAU: Which is interesting because one of the big side effects of ginger, especially consuming like enough ginger, like in these studies, a gram of ginger, one of the big side effects is acid reflux, which you might also get more of with carbonated beverages,

EW: Right. So it might not. Help in that situation.

EAU: So, you know, ginger may be helpful for nausea and vomiting. Um, and I think one of the issues with this is that you run into the same issue that we talked a lot about in our supplements episode, which is that none of the ways that you would get ginger are licensed drug products. And so whether you're taking capsules, whether you're doing those ginger chews, whether it's a ginger tea or a ginger ale, it's really, you're gonna be hard pressed to actually get the amount of ginger that they have done in these studies. And that doesn't mean that it might not help your individual nausea and vomiting because there's some data that Ginger might be helpful.

EW: right.

EAU: not, I would say not quite

EW: myth clarified

EAU: Clarified. Well,

EW: much less exciting conclusion to these stories.

EAU: yeah.

EW: Um, that's our last myth for today.

EAU: We have so many more though. You guys, we thought about doing feed, a cold starve a fever. Do you wanna know where that came from and whether there's any truth to that? Um, we thought about doing what else was on our list, Aaron? And there was so many more.

EW: Um, let's see. There was, uh, joints ache in the

EAU: Ooh. Joint ache in the cold or, Ooh, cracking your knuckles causes

EW: your knuckles, uh, gum in your stomach, sitting too close to this. The TV will make you go blind. wait to swim, cranberry juice and UTIs, air hand dryers versus paper towels. Hilarious. Uh, zinc, I mean, that's zinc. We should just do an epi, a full episode on zinc, uh, dairy products if you have a cold. 'Cause it'll make you all mucusy. Eight spiders a year. Yeah,

EAU: Oh yeah. Eight spiders a year that you eat. Chicken soup will cure your colds.

EW: Chicken soup will cure your colds. Uh, if you have more health myths, please send them our way because we would love to add them to this ever growing, rapidly growing list.

EAU: If you like. Do you like these episodes? Let, can we do more of these?

EW: Yeah. Tell us, tell us what you think. Yeah. Um,

EAU: And until then,

EW: until then, well, we have some sources.

EAU: sure do.

EW: I Okay. I'm gonna chat out like one for each of these. For, uh, wet hair or cold, the cold will make you sick. There were a couple actually dissertations that I read. Um, one was called Talking about the Weather Climate and the Victoria Novel by Joanne, Sarah Wa uh, and then Carrots Give You Night Vision again. Got a shout out the World Carrot Museum. Several helpful articles there. Sugar Rush at the, uh, there was a book I read excerpts from called Candy, A Century of Panic and Pleasure by Samira Kosh. And then from Ginger Ale there was a, um, there were a few different sources 'cause there's like the history of Ginger plus a history of soda and there's another book I read excerpts of by Tristan Donovan called Fizz How Soda Shook Up the World Published in 2013.

EAU: Love that. Um, I'll do the same. I'll shout out like one for each, but I've probably got like five to 10 for each of these, which just seems funny. It is. Um, but for colds in the cold, one of my favorites was by Stewart in the Journal Medical Hypothesis from 2016 titled Seasonality and Selective Trends in Viral Acute Respiratory Tract Infections. Um, but there was a bunch of other ones that were fun. Some like from the sixties, these original trials, and then some that much newer. For Betacarotene and Eyes, I had a number of these, but I think two of the biggest, like most well cited studies are the age related eye disease studies. So there was one from 2001, and then there was an update in 2013. Um, so both of those are cited, uh, for Sugar rush and kids. The one that is cited universally, the, the most well known is by Rummel at all from 1986, and it's titled Hyperactivity is Candy Causal. Um, and then for Ginger and Nausea, I've got several different ones. Each of them are specific for the type of nausea and vomiting, but so one was Thompson at all from 2014, the effects of Ginger for nausea and vomiting in early pregnancy, and another from 2000 by Ernst at all. That was efficacy of ginger for nausea and vomiting, a systemic review of randomized clinical trials. There's so many more. Erin, for all of these. You can find them on our website. This podcast will kill you.com under the episodes tab.

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

EAU: Thank you to Leanna and Tom and Brent, and Pete and Jessica and everyone else. I'm exactly right for everything you do to make this possible.

EW: Yes. Thank you. Thank you. And thanks to you listeners for listening, watchers, for watching whoever you're, you are participating in this pod, in podcast in some way. We appreciate it. We really do. And a special thank you to our patrons. I mean, we, we can't re express how much we appreciate your support.

EAU: Yeah. Thank you.

EW: Well, until next time, wash your hands.

EAU: You filthy animals.