Getting Curious with Jonathan Van Ness & Dr. Adam Ratner

JVN [00:00:02] Welcome to "Getting Curious". I'm Jonathan Van Ness. And every week I sit down for a 40 minute conversation with a brilliant expert to learn all about something that makes me curious. On today's episode, I'm joined by Dr. Adam Ratner, director of the Division of Pediatric Infectious Diseases at Hassenfeld Children's Hospital at NYU Langone Health, where we discuss what germs are, how they make us sick, and whether I should be cleaning with bleach wipes the entirety of my and public spaces I come in contact with. I'm very excited, you guys, for this episode. We have Dr. Adam Ratner. He is the director of the Division of Pediatric Infectious Diseases at Hassenfeld Children's Hospital at NYU Langone Health. Bienvenidos.

DR. ADAM RATNER [00:00:45] Thank you. Great to be here.

JVN [00:00:46] Thanks so much for coming. So you're a literal doctor and you are a doctor of infectious diseases. And this is why you're here, because it started off I was thinking that the title would be like this: is it weird that, or do you think that people think that I'm weird when I get on an airplane and immediately start wiping down my whole station with, like, those disinfecting, like, Wet Ones wipes? Because that started happening to me and I was like, I wonder if people are thinking that I'm, you know, a little intense with, with that. And then I was like, that title might be too long, when I was talking to my friend Emily, who is, who helps us book the show and so I was like, I think an infectious disease doctor to talk about how do germs work? Ha.

DR. ADAM RATNER [00:01:30] Absolutely. So first of all, you are not the only one wiping down your seat like that. I am, I am sure. And you know, the short answer about do you need to do that? Is probably not, although if it makes you feel better, it is OK to do.

JVN [00:01:45] Well, because here's the thing.

DR. ADAM RATNER [00:01:46] OK.

JVN [00:01:46] Obviously, airplanes are not real life all the time. Like they have become much more frequent for me because I'm just, I travel more now than I have, did in my 20s. And I get that, you know, germs probably work differently in like a flying vessel hurtling itself through the air at 30,000 feet that has recycled air with everyone hacking up a lung and stuff. But like so doesn't help at all, is what you're saying? Are you serious?

DR. ADAM RATNER [00:02:08] No, I'm not saying it doesn't help at all. I'm, I'm saying especially during flu season, it's probably a reasonable thing to do, but I don't think you need to go crazy about it. If I were, you know, if I were strapping a child into an airplane seat and they were planning on eating their Cheerios off of that tray thing that comes down-.

JVN [00:02:23] Oh, yeah yeah.

DR. ADAM RATNER [00:02:24] I would wipe that thing down.

JVN [00:02:26] Or even the buckle 'cause if the, 'cause-. So basically, you're protecting yourself from preexisting, maybe, things that were already on the buckle that someone missed. But you're not going to protect yourself from current germs that are in the plane or something.

DR. ADAM RATNER [00:02:38] Right. Stuff coming through the air. I don't think the wipes will help you.

JVN [00:02:39] What about masks? And if you don't eat and so you don't take your little mask off.

DR. ADAM RATNER [00:02:43] OK. People are going to think you're a little intense if you're on there wearing mask.

JVN [00:02:46] In gorgeous Asia, a lot of people wear masks everyday. When I was in Japan and no one looks at you different.

DR. ADAM RATNER [00:02:52] That, that is true. You can do it.

JVN [00:02:53] It's actually just polite. Do you think that as an infectious diseases expert, is, is, are masks helping me? Is that going to control something coming through my, into my nose and throat if I don't take it off to eat or drink for the duration of the flight?

DR. ADAM RATNER [00:03:06] So I don't think you need to do that.

JVN [00:03:08] Are you thinking a bubble suit is better?

DR. ADAM RATNER [00:03:11] Yes, absolutely. No, no, no.

JVN [00:03:13] Put your water in that-.

DR. ADAM RATNER [00:03:13] I think that, I think that the risk of getting sick on a plane is low, but it is non-zero. I think that the, the calculus changes a little bit if you are someone with a weakened immune system. So we have, you know, I'm a pediatric infectious disease doctor. We take care of kids who have had transplants or kids with cancer. And in those cases, we try to, to very much control the germs that they are exposed to. For a healthy adult, normal immune system. I think you can go on a plane without a mask. It's OK.

JVN [00:03:50] OK, so, but do masks prevent germies from getting in my nose and throat?

DR. ADAM RATNER [00:03:56] Sure. Some of them.

JVN [00:03:58] Not all of them?

DR. ADAM RATNER [00:03:58] But not all of them.

JVN [00:03:59] Why?

DR. ADAM RATNER [00:04:00] So there are, because germs come in different sizes. And so there are things that get transmitted through large droplets, large respiratory droplets and things that get transmitted through small droplets. So, for example, we've had this measles outbreak in, in New York recently. And we have to use not the regular masks. When we see, those, those kids in the hospital, we use these N95 masks which filter more because smaller droplets, things can get through.

JVN [00:04:29] So inside an N95 mask, if it were, like the netting or something is much tighter on the insides of those little paper, or on the outside of the paper.

DR. ADAM RATNER [00:04:39] Yes.

JVN [00:04:40] OK. So can we Amazon N95 masks, I'm wondering. Can we, sho-. I mean, OK, so what about like the common cold? Is that less dropletly or bigger? Is that?

DR. ADAM RATNER [00:04:51] So a lot of things that cause the common cold and there are a whole bunch of things that cause the common cold, not just one thing, but many of those are transmitted either through large droplets or through stuff that you get on your hands. So. So a lot of the respiratory viruses are transmitted that way. And that's why, you know, during cold and flu season, probably the most effective thing that you can do to prevent getting sick is to wash your hands, not obsessively, not necessarily with antibacterial soap or anything like that. Regular soap and water is fine. If you're not in your soap and water, Purell is fine.

JVN [00:05:23] Are you sure?

DR. ADAM RATNER [00:05:24] Yes.

JVN [00:05:24] Because you know how that, they said that that Purell was like, you know, not the jam anymore. Like a couple of years ago, remember when they said that? There was like that news cycle and they were like, take it out, the FDA or whoever didn't say it, it was cute anymore or whatever.

DR. ADAM RATNER [00:05:38] So there are things that Purell is good for and things that it's less good for. For, if you are somewhere where you don't have access to soap and water, like an airplane seat, when you're on the inside seat by the window and you've got the big guy sitting on the aisle and you don't want to climb over him and you feel like you need to wash your hands, Purell is fine for that. It will decrease the burden of bacteria and viruses on your hands. Is it perfect? No, not perfect, but it's better than nothing.

JVN [00:06:04] Because is it kind of. Is there some germs that it's just gonna smear around and move around on your hands?

DR. ADAM RATNER [00:06:09] Yeah. So there are some things that are super hard to kill. And Purell is not as good for, for those. But in terms of being a reasonable substitute for washing your hands in a situation like that, it is fine.

JVN [00:06:22] Would it increase your-. OK. If you had the germs and stuff and like viruses like in a petri dish. Right? And well, OK, let's say your hands are in the petri dish. Like your whole hand. Like.

DR. ADAM RATNER [00:06:33] A big petri dish.

JVN [00:06:33] Yes. A huge petri dish. And some people use Purell and then didn't take water and like, let's say-. Because also, OK. Jonathan, don't let your ADD, get, OK. Standby. I have to write it down. Hmm hmm. Hmm hmm. Hmm hmm hmm. Hmm hmm. Hmm hmm. OK, OK. So some of the people used Purell and then other people use Purell, but then took this glass bottle of water that's right here and dumped out over their hands after they use the Purell to maybe, like wash away, said viruses and bacterias on their hands. Does, would that get rid of a better? Like if you rinse it off afterwards? Or no.

DR. ADAM RATNER [00:07:11] I don't know. I don't think so.

JVN [00:07:13] I imagine in my mind that if I rinse something off, it's going to be more effective at getting the stuff off me.

DR. ADAM RATNER [00:07:20] So probably the best thing that you can do is a good soap and water wash. Doesn't have to be fancy soap. But the combination of the friction of using soap and

then the rinsing is probably the best way of doing it. Sometimes that's not practical. Having an alcohol based hand sanitizer in that case is fine, though.

JVN [00:07:41] So water is good to use when we have it, when we're like disinfecting things, but like alcohol, these things are cute too. What are the, what are the infectious diseases that stay on surfaces the most? Like, what are the hardest to kill?

DR. ADAM RATNER [00:07:54] So we, in the hospital setting the thing we worry-.

JVN [00:07:57] MRSA.

DR. ADAM RATNER [00:07:58] Oh, yes, we can talk about MRSA, but that's not what I was going to say.

JVN [00:08:01] Oh, my God. What were you going to say?

DR. ADAM RATNER [00:08:02] I was going to say clostridioides difficile. C. diff.

JVN [00:08:06] So. Oh, my God. What is it?

DR. ADAM RATNER [00:08:09] C. diff is an infection that people get when they've had too many antibiotics. It can cause horrible diarrhea. It can be bad in, in old people.

JVN [00:08:18] I love antibiotics.

DR. ADAM RATNER [00:08:20] Everyone loves antibioitcs.

JVN [00:08:21] I fucking-. When I have a cough, honey, throw me, give me a Z pack.

DR. ADAM RATNER [00:08:25] No, no, no.

JVN [00:08:26] Oh my God. Give me some. Give me. What's that? Oh, God. What's the-? When I used to like have sex with too many people back in the day, and I'd be like Doc give me a dang penicillin. I used to love a-. I only ever got one. But like if I was ever really scared, I'd be like throw a penicillin at it. So I could get C. diff expo-, I could be more exposed to C. diff because I loved antibiotics?

DR. ADAM RATNER [00:08:45] So there are a whole bunch of reasons not to take inappropriate antibiotics. Antibiotics are fantastic. I love antibiotics. I prescribed them all the time. But any drug has a danger. Right? And so-.

JVN [00:08:58] I should have thought about this before I did this episode, I'm freaking out.

DR. ADAM RATNER [00:09:01] It's OK.

JVN [00:09:01] I don't know if I can get through 40 minutes of this. I'm holding up by the skin of my tee-, teeth.

DR. ADAM RATNER [00:09:05] You weighed risks and benefits any time you prescribe any drug at all. There are drugs that have side effects and people can, can develop allergies to them. And one of the particular things that happens when you take antibiotics is antibiotics, their whole job is killing bacteria. Right? That's why we take them. And your body is not sterile. Your body, my body, everybody's body is coated with microbes and you have microbes all throughout your

intestine and they help you. Those are, those are the good guys. Those are the guys that help you with digestion and they help educate your immune system.

JVN [00:09:37] So antibiotics kill all microbes?

DR. ADAM RATNER [00:09:39] They, so any particular antibiotic doesn't kill all microbes. But there also are not antibiotics that only go after the infection that you have. They can't tell. So no matter what antibiotic you take, you're putting your microbiome, that collection of organisms that lives in your gut and on your skin and everywhere else under some pressure, you're destabilizing that community.

JVN [00:10:02] Could it make it more alkaline or acidic.

DR. ADAM RATNER [00:10:05] In your gut?

JVN [00:10:06] Yeah.

DR. ADAM RATNER [00:10:06] I guess because I mean, I think that P.H. balance and all sorts of homeostasis in, in your gut and elsewhere had, there are contributions of the microbiome to that.

JVN [00:10:18] Do you believe that whole thing that, like acidity leads to like a whole range of diseases? Like, that's not just, like, hogwash, right? Like that's like, 'cause I feel like whenever I read those acidity alkalinity things, like like I can hear my grandma from the grave being like, oh, that's hogwash. The doctors at Duke University would never say that. Like, meditating doesn't really help. And I'm like, bitch, I know that that would help your blood pressure. You know?

DR. ADAM RATNER [00:10:38] So let me address the acidity alkaline thing and then we can talk about meditating. OK?

JVN [00:10:42] OK.

DR. ADAM RATNER [00:10:43] I think the acidity alkaline thing is hogwash.

JVN [00:10:46] Really?

DR. ADAM RATNER [00:10:47] Yeah.

JVN [00:10:48] Are you fucking serious?

DR. ADAM RATNER [00:10:50] I am fucking serious.

JVN [00:10:51] My dentist has telling me that I need to use this alkalinizing mouthwash at night.

DR. ADAM RATNER [00:10:55] I don't think so.

JVN [00:10:56] Are you serious?

DR. ADAM RATNER [00:10:57] 'Cause your body is pretty good at regulating P.H. Unless you're, unless you're super sick for some reason. Really, really. It's something your body is really good at.

JVN [00:11:08] You need to get your own podcast. Did you know?

DR. ADAM RATNER [00:11:10] OK.

JVN [00:11:11] Wow, OK. So keep telling me.

DR. ADAM RATNER [00:11:13] So things that you're-. So there are lots of things that your body takes very seriously. And one of them is what P.H., things like your your blood and other fluids are. And there's a lot of energy expended by, by your cells and to, you know, and by your microbiome and stuff. And stabilizing these-.

JVN [00:11:30] So you don't think doing things to alkalinize ourselves is cute? Like you don't believe that certain foods like might make us more alkaline or more acidic or something?

DR. ADAM RATNER [00:11:38] I don't buy it, man.

JVN [00:11:38] Really?

DR. ADAM RATNER [00:11:39] Really. I'm sorry.

JVN [00:11:41] Oh, my God. A break. Are you-? OK, fine. We'll be right back with more "Getting Curious" with gorgeous Dr. Adam Ratner right after the break. So you think it's hogwash?

DR. ADAM RATNER [00:12:02] I think that part is hogwash. We can talk about meditation, which I don't think is hogwash.

JVN [00:12:05] OK, great. Let's talk about that.

DR. ADAM RATNER [00:12:07] Not my area of expertise, but, but I think that, that relaxation, stuff like that, we do a lot of these things with, with kids in the hospital. I think that many things that aren't necessarily proven in that way can still be relaxing and can be overall good for people. But the acidity alkaline thing, I think is no-go.

JVN [00:12:28] OK, so mindfulness you think is more interest. OK, so back to the germ's thing. Are viruses or bacterias harder to kill on surfaces and on our skin and stuff? Or is one more contagious than the other?

DR. ADAM RATNER [00:12:39] So it totally depends. So, so there are, you know, when we talk about germs overall, you know, we're talking about microbes. So. So things that are too small to see with the naked eye. So viruses, bacteria, fungi. And within each of those, some of them are super hardy and some of them are much easier to kill. And there are, you know, there are bacteria that can live in the soil for, for decades. So there, there are things that form spores. That's one of the things that C. diff, which we were talking about before-.

JVN [00:13:10] Oh, yeah.

DR. ADAM RATNER [00:13:10] It forms these like shell-like component, that are spores. It's basically, it sort of holds up like a turtle going inside its shell.

JVN [00:13:20] Oh. so It's almost like harder to kill?

DR. ADAM RATNER [00:13:22] Yeah. And so it can survive in the environment for, for years.

JVN [00:13:26] C. diff can?

DR. ADAM RATNER [00:13:26] C. diff can and other, other similar bacteria.

JVN [00:13:29] I interrupted you too much earlier when you were talking about that, I just realize.

DR. ADAM RATNER [00:13:32] That's OK.

JVN [00:13:32] So the whole C. diff thing like so, so let's talk about that more.

DR. ADAM RATNER [00:13:36] OK. So this is one of the reasons that we worry about using antibiotics when we don't need them. They're wonderful when we need them. They're less wonderful when we don't. And you, anytime you use them, you put your microbiome under selective pressure, meaning that you're exposing it to antibiotics. Some of the good bacteria, some of the members of your microbiome are being killed by those bacteria and sometimes other bacteria because that community has been destabilized, can flourish. And so repeated courses of antibiotics can put you in a situation where C. diff can, can flourish. And then it can take over in the gut. And it can cause disease. It causes colitis. So inflammation of the colon and it can cause diarrhea and, and you have major problems. It can be very hard to get rid of.

JVN [00:14:26] OK, so C. diff is a threat of over use of an antibiotics.

DR. ADAM RATNER [00:14:29] Right. So that's one threat. And then the other one is the development of antibiotic resistance. And that's something we worry about too. And you mentioned MRSA earlier. And that's something that we, we spend a lot of time thinking about on the infectious disease service and in the hospital. This is a situation where we have the skin bacterium called staph aureus, which almost everybody has as, as part of the normal bacteria on their skin. It can cause problems if it gets into the wrong place on your body, meaning if it enters through a cut or something like that, it can cause a skin infection. And in rare cases, it can cause disseminated infections. It can go into the blood or into the bones. And so it's, it's serious business. When penicillin first came out in the, in the 1940s, almost all staph strains were sensitive to penicillin. And so penicillin was this fantastic drug for staph. But then very rapidly in the, in the few years after penicillin was released, there were penicillin resistant staph strains. And then there was the invention of some semi synthetic penicillin, meaning things that looked like penicillin that chemists made that that worked better on staff. And those were great for a few decades. And now there's what's called methicillin-resistant staph aureus, MRSA. And so that is resistant to a lot of the antibiotics that we use. And-.

JVN [00:15:51] What about doxy?

DR. ADAM RATNER [00:15:52] So doxy's actually pretty good for most MRSA strains, but not all of them.

JVN [00:15:56] Mmmm. What about-?

DR. ADAM RATNER [00:15:58] You know lots of antibiotics.

JVN [00:16:01] I was busy in my 20s. What about? What? What about? OK. Oh, my God, infections stress me out. What about, what about new gorgeous treatments for anti-? Is there any new, fun antibiotics coming around?

DR. ADAM RATNER [00:16:18] There are, but not enough. So the, so the deal is that we do have better options now for, for things like MRSA than we had a few years ago. There are a couple of new drugs, and that's great. There are some unrelated pathogens that, it's much harder to treat. So there are some of the, the gram negative.

JVN [00:16:38] Standby. Antoni, I'm recording my podcast literally right now. And it's really cute that you called, but, and we can't edit it out because it's cute. But I can't talk right now 'cause I'm doing my podcast, OK.

DR. ADAM RATNER [00:16:48] Hi, Antoni.

ANTONI POROWSKI [00:16:48] I watched your video once and it got canceled, so tell me about it later.

JVN [00:16:55] OK, bye. So sorry. Turning on airplane mode now.

DR. ADAM RATNER [00:16:56] That was amazing, by the way.

JVN [00:16:57] That was pretty cute. OK. So, yeah.

DR. ADAM RATNER [00:17:01] So there are some other organism, some other classes of organisms that are highly resistant, where we're really running out of antibiotics that we can use.

JVN [00:17:07] Like what? The clap.

DR. ADAM RATNER [00:17:09] Like gonorrhea. Yeah. There you go.

JVN [00:17:11] OK, wait.

DR. ADAM RATNER [00:17:12] No, that is no joke.

JVN [00:17:13] We got we're gonna come back to that.

DR. ADAM RATNER [00:17:15] OK.

JVN [00:17:15] Because I know that that could actually, I mean that kill people in times in our history, you know, and we don't fuck with it too much. And, you know, especially-, so. OK, but. Backing up. So I know 'cause like, like, you know, if you're in the hospital, like they, like we're starting to like want to see people kind of get out of the hospital a little quicker. So we're not exposing them to, you know, to like MRSA and other, you know, resistant things, you know, because hospitals can be a place where, you know, that can happen more. But to clear this up with antibiotic resistance, if you are someone who, I mean, how does that cause antibiotic resistance? Because I asked, my friend asked their doctor this one time because they were scared that they were taking so many antibiotics. And like the doctor said, like, well, it's not like taking antibiotics that makes you antibiotic resistant, it's if you get exposed to an antibiotic resistant strain. Are you saying that you can develop an antibiotic resistant strain by taking too many antibiotics?

DR. ADAM RATNER [00:18:11] Both things are true. So.

JVN [00:18:13] How?

DR. ADAM RATNER [00:18:14] So there are, there are a couple of ways that this can happen. So there are, there are some bacteria out there that are just highly resistant, that are resistant to most antibiotics. And that is, is just the way that they are. And then there's the thing that can happen where if you take antibiotics, certain bacteria can develop resistance while you're taking the antibiotic. And so the other thing about resistance that is super important is that in many instances, the resistance can be transmissible from one kind of bacteria to another. So you can

end up with other kinds of bacteria other than the ones that were exposed, that develop the resistance in the first place that then get that gene.

JVN [00:18:56] Wait, say that again.

DR. ADAM RATNER [00:18:57] OK.

JVN [00:18:58] And slower.

DR. ADAM RATNER [00:18:59] Ready? OK. So some bacteria can just be resistant to the antibiotic that you're using because no, there are no antibiotics that treat all bacteria. OK. Sometimes if you're taking antibiotics for an infection, even if you clear the infection, you may have made some of the bacteria that are in your gut resistant to that antibiotic because you've put pressure on them. You've exposed them to some amount of the antibiotic. If it didn't kill all of them, you've selected for the ones that are resistant. Sometimes those kinds of resistant organisms can transmit that resistance to yet another kind of bacteria, meaning that bacteria that weren't resistant before can pick up the genes that made the other, the other bacteria resistant.

JVN [00:19:49] So does that mean that someone could like? Is that how like, to bring it back to the STI thing, is that how, like antibiotic resistant, like chlamydias and gonorrheas are made because like somewhere else in your body, you develop resistance and then it just like goes over your pee hole or something?

DR. ADAM RATNER [00:20:04] So it doesn't, that doesn't have to happen within someone. The deal is that you can, if one person gets an antibiotic resistant strain of something, if it develops in that person, that strain is then transmissible to other people. And also, if you have an antibiotic resistant organism in your gut, let's say you have an E.coli that has a gene for resistance to some particular antibiotic, it may be able to transmit that gene to another organism in the gut. And so now you have two different organisms that are resistant-.

JVN [00:20:38] Like what? Like what other, what other one in your gut?

DR. ADAM RATNER [00:20:39] There are lots of different ones. We do things that we worry about now are know Klebsiella is one which is a relative of E. coli. But it's, it is-.

JVN [00:20:47] What does that give you if you get E. coli? Hep or something?

DR. ADAM RATNER [00:20:51] So, so E. Coli and Klebsiella are both things that live in your gut and can cause, you know, invasive infections, bloodstream infections, stuff like that.

JVN [00:21:01] Like sepsis?

DR. ADAM RATNER [00:21:01] Yes. Like sepsis.

JVN [00:21:03] Wow. Scare.

DR. ADAM RATNER [00:21:06] Sorry.

JVN [00:21:06] No, it's OK. It's OK. Are you scared? Like, all the time. Or no?

DR. ADAM RATNER [00:21:11] No. So. So someone asked me that during, during the measles outbreak recently. They, they said, are you upset by this or is this the kind of thing you live for? And the answer is both things are true. Like I, I don't like anything that makes kids sick. I don't like

anything that makes anyone sick. And we, you know, my team that I work with, we, we try really hard to protect kids from infection. We encourage kids to get vaccinated to, to protect, to protect them from infections. We try to use antibiotics as judiciously as we can so that we treat the kids who need to be treated. And, you know, and don't encourage resistance as much as we can. But I also am super interested in these things. And you know, that that's kind of what, what brought me into this field in the first place. So I, you know, yeah. I like these things.

JVN [00:22:01] So. Oh, God, that one's really scary. OK, so those are some of the pathogens that are becoming resistant and then obviously, you know, STIs that are becoming resistant in terms of, you, so you're saying the chlamydia and the gonorrhea. Which I mean. But so far, I've read stories about those popping up and it's like basically that happens. And then like if you do get one of the ones that's resistant, they just have to like what hook you up to like an I.V. in the hospital for like a week or something and really, like, go at your ass with some hardcore ones or something?

DR. ADAM RATNER [00:22:37] So for now, yes. But there are strains of gonorrhea out there, and fortunately, they're still pretty rare. But, but there are strains out there that are resistant to all of the antibiotics that we have.

JVN [00:22:47] And then you're just living with gonorrhea?

DR. ADAM RATNER [00:22:49] Well, we, we try thing-, then we're sort of off the map, right? Then we're trying combinations of things. We're trying other antibiotics that maybe have more side effects.

JVN [00:22:58] But is that person forever living with, you know, copies of random floaters of gonorrhea and chlamydia in their like peepee tracks or their vag tracks?

DR. ADAM RATNER [00:23:08] Not necessarily like it. It basically means that things are much harder to treat.

JVN [00:23:14] Because how contagious is gonorrhea and chlamydia, you know? I mean, cause I've definitely have had exes who claim to get it from immaculate conception. I've had people that have, you know, you know sometimes people think that you can. Is it as easy as touching peepee holes? What if you're at the gym? You can't get it from touching something in like, at the gym and then touching your peepee? I mean, how easy is it to get?

DR. ADAM RATNER [00:23:34] No. It is not easy to get like that. It is easy to get in the setting of unprotected sex with someone who has gonorrhea.

JVN [00:23:41] Oral, vaginal. Yes.

DR. ADAM RATNER [00:23:42] Yes. Yes.

JVN [00:23:42] All of them.

DR. ADAM RATNER [00:23:43] All of the above.

JVN [00:23:44] Yes. But if you're-. But. Well, rubbing peepee holes is probably kind of contagious.

DR. ADAM RATNER [00:23:50] Sure.

JVN [00:23:51] I mean, that's not, I guess it doesn't feel that good for anyone. It's like, what are you doing? But yeah. I mean, so yeah. So that's, if you're diddling in the mouth or in the butt or in the vagina or in the pee hole, that's like a good way to get it.

DR. ADAM RATNER [00:24:05] Yes.

JVN [00:24:05] But you're not getting it from, like touching towels, you know, at the gym unless you're talking about like craps.

DR. ADAM RATNER [00:24:10] Nope.

JVN [00:24:11] Right. So. Wow. Interesting. Time for a break. Saved by the bell. Welcome back to "Getting Curious". This is Jonathan Van Ness. We have Dr. Adam Ratner with a really incredibly long, gorgeous title. But, you know, you work with NYU. You were, you know, so but you work with kids in pediatrics. But when you became a doctor, you probably had to study all the germs and stuff.

DR. ADAM RATNER [00:24:47] Yes.

JVN [00:24:48] In all the people. Oh, my God. I just had, like a daydream about this person who was in med school is just telling me about, like their cadaver. I can't believe that like, you guys have to do that. It's so intense. I'm not a doctor. Blood grosses me out. You know, I can deal with it like a human way. I think in an emergency. I could deal with something, but like ew. You know?

DR. ADAM RATNER [00:25:09] Understood.

JVN [00:25:10] What about mad cow disease and that deer disease that's going around that, you know, zombie deer wasting disease? It's like in 33 states or whatever? How easy is it for, like, you know, an Armageddon like jump species, bacteria, probability, like, could that happen?

DR. ADAM RATNER [00:25:30] So mad cow and other diseases like that are super interesting because they, they are transmitted prions. They're these, these misfolded proteins that can be infectious and they're not bacteria and they're not viruses, it's sort of this, this new and really interesting way that infections can, can transmit the whole idea of things going from one species to another is, is really interesting because we have, we have some infections that are really human specific. Like, you think about measles, for example, that, that is something that that pretty much only humans-.

JVN [00:26:08] Like we don't see animals getting like these random rashes and coughs?

DR. ADAM RATNER [00:26:12] Exactly.

JVN [00:26:12] Yeah.

DR. ADAM RATNER [00:26:12] But, but if you think about something like rabies, that's something that lots of different animal species can get.

JVN [00:26:17] SARS was like that, wasn't it? 'Cause didn't come from like camels and, and-?

DR. ADAM RATNER [00:26:20] So, so there's MERS. Which is Middle Eastern Respiratory Syndrome. So, so that, that is associated with camel exposure. And that's something that camels can have and can get sick from and can transmit to humans. And so, go ahead.

JVN [00:26:32] But wasn't an HIV originally like in, I mean, isn't, didn't people, I mean, we had, my friend, an amazing former client who is an incredible surgeon and worked for the LGBTQ center at the time when she was a guest on the show. There, but I think that, you know, they have said that idea of like Patient Zero was like debunked because really, like in the family tree of like HIV, it was going on like far before him and like in decades prior. And like places in like Serbia and places in like Africa, like it had been around for like longer. But isn't there thought that it originally did jump from like a virus similar to HIV in primates?

DR. ADAM RATNER [00:27:13] Absolutely, yeah. So they're, they're, the current understanding of where HIV came from, as far as I understand it, is that there were multiples, what are called spillover events like that. There were, there were multiple instances of transmission of a virus that was like HIV and like SIV, this simian immunodeficiency virus, that probably due to blood to blood contact between humans and an infected primate jumped over was, you know, just well enough adapted to the primate to survive in the human. I mean, these, these pathogens-.

JVN [00:27:48] But wouldn't have that have been from a pri-, but that wasn't from a prion? That was, because it was a virus in the simian or like MRS was a virus in the camel, so that's-.

DR. ADAM RATNER [00:27:58] Right. So, so those are all viruses. So, so the prion diseases are something very different.

JVN [00:28:04] So like, so mad cow disease or this wasting deer disease are prion ones, which are not viruses in the first place.

DR. ADAM RATNER [00:28:12] Right.

JVN [00:28:13] They are a protein that folds weird.

DR. ADAM RATNER [00:28:15] Exactly. Which is really weird to think about. And was, was a theory that took a long time to be accepted and I think is still, you know, something that, that people don't understand as well as we-, it's not as intuitive as, as thinking about a virus or a bacterium or something like that.

JVN [00:28:34] Can, is there any funguses that can kill us?

DR. ADAM RATNER [00:28:37] Yeah. So I worry about that a lot because, you know, as I was saying before, we work a lot with immunocompromised kids and in particular, you know, kids who have had chemotherapy or have, have genetic diseases where their immune system doesn't work well are very susceptible to fungi that are just in the environment. That you and I and everyone come into contact with every day, but our immune system is really good at containing them, at keeping, you know, if you breathe them in and the immune system keeps them in the, the outside part of the lung and make sure they don't get into the blood. And in kids who, you know, have altered immune systems, either transplants or chemotherapy or something like that, are a much higher risk for those. The problem with that is, number one, that they can be lethal. Number two, that our, our armamentarium of antifungal drugs is really limited compared to what we have for antibiotics. And so when we have fungi that develop resistance to those antifungal drugs, we have a major problem. So earlier this year and maybe even going into last year. There was all sorts of news coverage of Candida Auris, which was this-.

JVN [00:29:52] The ceilings?

DR. ADAM RATNER [00:29:53] Yeah. So this, this very resistant fungus that was causing infections in a whole bunch of states, New York included. And it tended to be in hospitalized and immunocompromised patients. But it's something we worry about a lot.

JVN [00:30:08] And that was like in, in, in ceilings, right? Is it like that a, it's like spore, it's what?

DR. ADAM RATNER [00:30:12] So it was environmental. You can get stuff in ceiling. There are, there are fungal spores that can, it can live in ceilings and that can be a mechanism for transmission too.

JVN [00:30:22] 'Cause they really had to, like, clean the shit out of these places.

DR. ADAM RATNER [00:30:26] Yep.

JVN [00:30:27] Could residences have this in them, in them? Like.

DR. ADAM RATNER [00:30:30] Yeah, I mean, I think that Candida Auris itself is not that widespread.

JVN [00:30:33] What the fuck is this Candida Auris?

DR. ADAM RATNER [00:30:35] It's a, it's a kind of fungus. It's related to the sort of normal kind of Candida, like the Candida that people sometimes get-.

JVN [00:30:43] Is that yeast?

DR. ADAM RATNER [00:30:43] Yeah. Exactly. So, so Candida Auris is a relative of sort of that normal kind of yeast-.

JVN [00:30:50] And they spud?

DR. ADAM RATNER [00:30:52] They, yes.

JVN [00:30:53] They like, well they, that's how they reproduce. They just-.

DR. ADAM RATNER [00:30:55] Yeah. They sort of bud off.

JVN [00:30:57] Yeah. Like they don't have to like have sex.

DR. ADAM RATNER [00:30:59] Correct.

JVN [00:31:00] And, and, and is that how they make you sick? Because that they get into you, they just keep creating and then, like is that what happens?

DR. ADAM RATNER [00:31:08] Yeah. So, so the, the deal is that often you come into contact with these things just through the air or, you know, through contact with them and they can reproduce. But at the same time, your immune system is really good at being on the lookout for bacteria, viruses, fungi. And it, your immune system can keep these things at bay. When we alter that equation, when we put people on immunosuppressive drugs or give them chemo or something. We give some of those microbes, some opportunistic infections, an advantage. And Candida Auris, like a lot of other fungi or other bacteria, can then get to places where it's not supposed to be.

JVN [00:31:47] Are there ever funguses that become contagious, like if you get a fungus from, like, the ceiling spore, but then can you give it to someone else, like if you get a cough or something?

DR. ADAM RATNER [00:31:56] That's a really interesting question. So in general, no. But there's, you know, there are specific things that you worry about with this. So in the southwest United States. There's a fungus called coccidioidomycosis, which is, it's valley fever. It's this thing that that people get in the, in the San Joaquin Valley and other places in the southwest, and you get it by inhaling dust in the air. And it's usually not contagious person-to-person. People get it through sort of common environmental exposures, but sometimes within the hospital setting, you can get transmission from person-to-person, either from people aerosolizing it from, from bandages or that's one of a few infections where we worry about the people in the microbiology lab at the hospital. We sort of warn them if we think that we have a patient with that, because it's the kind of thing that can be transmitted in the microbiology lab.

JVN [00:32:51] Oh, scare.

DR. ADAM RATNER [00:32:53] I know, right?

JVN [00:32:55] I feel like my brain wandered because I like I'm so scared about microbes and viruses and bacteria. So what about that antibiotic thing that lives in, like, the tubes that people get shoved down their throats?

DR. ADAM RATNER [00:33:10] The antibiotic-?

JVN [00:33:11] In like hospitals? Because remember how there was like that one, like CBRE or whatever?

DR. ADAM RATNER [00:33:16] Oh, yeah. So. So you can. So these, these are things that we worry about. So it's, you know, the reason that we try to get people out of the hospital as fast as possible, like you were talking about before, is that despite our best efforts, like the hospital can be a place where things get transmitted from one person to another. And, you know, we do, you know, we use things like endoscopes and bronchoscopes and stuff like that to do important procedures on people. But we have to be really careful about disinfecting things.

JVN [00:33:44] Do we just need to make them disposable?

DR. ADAM RATNER [00:33:46] So some-.

JVN [00:33:47] Or are they too expensive?

DR. ADAM RATNER [00:33:48] Some things you can and some things you can't. And so we, what we usually do for, for scopes like that is that there are sheets that are disposable, but that the, the scope itself is-.

JVN [00:33:58] I don't know if I want a scope that was shoved in someone else's bronchial tubes numerous times shoved into mine.

DR. ADAM RATNER [00:34:04] I understand.

JVN [00:34:05] Feels gross.

DR. ADAM RATNER [00:34:07] So things like that get cleaned really, really well. They get sterilized. But when there is a breakdown in protocol like that, which is what happened with the, with the antibiotic resistant organisms that you're talking about, you can get patient-to-patient transmission of things. And we have, it's why we have really good people in our infection control department who make sure that people are doing what they should do to prevent infection as much as we can.

JVN [00:34:36] OK, really quick sidebar. Do you remember a couple months ago when like that guy, like, hacked up one of his fucking bronchial tubes and it went viral because, like, it was, he like-.

DR. ADAM RATNER [00:34:44] Oh, yes. That was crazy.

JVN [00:34:45] But then, like, didn't they say that like wasn't true or something? Or like-?

DR. ADAM RATNER [00:34:48] Oh, that I don't know. I saw the pictures.

JVN [00:34:51] That was crazy. Do you guys remember that? Everyone is like reacting. It was so crazy. Like it was like a big old red-purple fucking bronchial tube. OK. I'm going to write that down later. OK. OK. Question. Are you scared about like say like an Ebola or like could something become like airborne that hasn't classically been?

DR. ADAM RATNER [00:35:12] So yes. But I worry less about-. So for people who are right here, I worry less about Ebola than I do about things like influenza.

JVN [00:35:21] That's what I mean. Like, well, I guess I, Ebola just jumped out at me. But like, could any disease that isn't classic, like just like have a mutation and become like, like a swine flu or like an avian flu that just becomes like really easily contagious from likes, well, I guess the flu is already easily contagious.

DR. ADAM RATNER [00:35:37] Yeah. And that's the thing about the flu. So one of the things we worry about with the flu is that a strain of flu that hasn't circulated in the population very much will become very contagious within humans. So that's what people talk about when they're talking about like the bird flu strains, like there are lots of strains of flu that mostly infect birds or mostly infect swine. And that's part of the, the evolutionary cycle of, of influenza. But for the most part, there's host restriction, meaning, meaning that the bird flu strains stay in birds and are less fit when they make it into a human host. But if that's not true, if there's recombination between strains, if you end up with a bird flu strain that is very fit within humans, that's something you worry about because that's something to which people in general won't have immunity.

JVN [00:36:28] Is that how the great flu of "Downton Abbey" of 1918 happened?

DR. ADAM RATNER [00:36:32] So, yes. So, so what happened with that is that every year flu changes a little bit. There, there is this sort of slow antigenic drift of flu, meaning that the, the proteins on its outside change slowly from year to year, which is the reason that you have to get a new flu shot every year. Do you get your flu shot?

JVN [00:36:52] I do.

DR. ADAM RATNER [00:36:52] Good man. Thank you. So you, you get your flu shot every year because there's this antigenic drift. But every once in a while and fortunately, it's not that common. You can get this antigenic shift, which means it's a big change in those proteins on the

outside and that can cause a pandemic of flu. And that's, that's what happened in 1918. And that's something that's happened a couple of times since then.

JVN [00:37:20] Right. And then, but is our ability to fight the flu or other viruses like it, has that changed? Because was Tam-? Because like had Tamiflu been available in 1918, would that have helped save anyone? Like, or do we know that the, staying hydrated is more important now than we did then? Like?

DR. ADAM RATNER [00:37:35] So, so the good news is we definitely have access to better supportive care now than we did then. And one of the major reasons that people who get influenza die is that they, they die of bacterial superinfection, meaning you get the flu, it lowers your defenses, you get bacterial pneumonia and the bacterial pneumonia kills. Flu can kill you on its own also. But even with everything we have, even with flu shots and with the availability of Oseltamivir, which is Tamiflu and other antiviral drugs, flu still kills tons of people every year in the United States. And-.

JVN [00:38:12] When you say tons, like thousands? Hundreds?

DR. ADAM RATNER [00:38:14] Tons like millions.

JVN [00:38:17] Millions a year?

DR. ADAM RATNER [00:38:18] Like.

JVN [00:38:20] Thousands.

DR. ADAM RATNER [00:38:20] Many, many thousands.

JVN [00:38:23] But prob-, like people that have like suppressed immune systems, younger, like babies, old people.

DR. ADAM RATNER [00:38:27] So, so young, young people, very young people and very old people are at the highest risk. Right? So-.

JVN [00:38:32] And suppressed immune system people, like cancer.

DR. ADAM RATNER [00:38:34] Yep, yep. Yep. But one of the things about flu is that it can kill people in, you know-.

JVN [00:38:42] Young, seemingly healthy people. Right.

DR. ADAM RATNER [00:38:42] Yeah, exactly. And I-.

JVN [00:38:44] Just like fucking that guy like that poor, that really cute redheaded girl in "Downton Abbey". Oh, it was really upsetting. I can't even handle it. OK. We're running out of time and we have more things to talk about.

DR. ADAM RATNER [00:38:55] OK.

JVN [00:38:56] So there, we need more antiviral treatments basically. There isn't like any really new kid on the block that's a super major? Is anyone working on that?

DR. ADAM RATNER [00:39:02] Yes, but people need to get their flu shots. That is the most important thing that people can do to, to prevent the flu is get your flu shot.

JVN [00:39:09] Because even if you still get the flu, you might not get it so bad?

DR. ADAM RATNER [00:39:13] Yep, exactly. That-.

JVN [00:39:13] And it helps keep the.-, Does it help keep the anti flu or does it help keep the flu shot more current? Like the more people get it or something? Like does that help?

DR. ADAM RATNER [00:39:21] No, but, but the first thing that you said I think is really insightful. So a lot of, a lot of people will say, oh, I'm not going to get the flu shot because I read on in the news that it was only 30 percent effective last year or something like that. And so the first response to that is A, 30 percent is way more than zero percent, which is what it is if you don't get the flu shot. And then the second thing is, even if it's only 30 percent, quote unquote "effective", that means it's 30 percent effective at preventing all cases of flu. It's much better in terms of preventing serious cases of flu. So it decreases your rate of hospitalization or of dying much more than that 30 percent.

JVN [00:39:59] And you would probably hear those horror stories that we hear of people having the flu vaccine and having something happen to them if, like, we would hear more of that, if less, if people got less flu shots. You know what I'm saying? Like, I'm sure the people that get that 30 percent protection like that is doing something. Like 30 percent is better than nothing.

DR. ADAM RATNER [00:40:17] Yes, exactly.

JVN [00:40:18] OK. So we are running out of time, but I have two more things that I want to cover. But we're going to have to do it like rapid fire.

DR. ADAM RATNER [00:40:22] I'm ready.

JVN [00:40:22] OK. I don't know if you remember this, but in 2017, Donald Trump directed the CDC that they couldn't use like those seven words like transgender. There's seven words you couldn't use, like transgender, science based. Can you pull them up for me really quickly? But I mean, how is the climate of this administration and in general, have you seen any difference in how we're researching thing in the culture of science in the age of Trump? Are you seeing those have any sort of coexistence?

DR. ADAM RATNER [00:40:55] This is a major, major issue. I'll touch on two things with that, if that's OK. So, so the first is there has been, the, the first rumblings of what I think is going to be a broad ban on fetal tissue research. You know, one of the things that I am most alarmed about is that I think that under the policies of this administration, we're, we're seeing the beginnings of what is going to be a broad based ban on the use of fetal tissue in research. And so already NIH scientists are being prohibited from getting fetal tissue for research. And even other scientists that are funded by NIH are worried that there is going to be an approval process and that they are going to try to phase out fetal tissue research. And this is a major, major problem and a barrier to progress in a wide variety of areas of research. But particularly in infectious diseases research.

JVN [00:41:54] Because wasn't like the chicken pox vaccine developed from like fetus, fetal tissue?

DR. ADAM RATNER [00:42:00] So, so lots of vaccines are made in cells that were originally from either amniotic membranes or placental cells. These are essentially immortal cells that have been, you know, passage since the 1960s. It's not like there is ongoing use of new fetal tissue for those.

JVN [00:42:21] OK. That's important to explain.

DR. ADAM RATNER [00:42:24] Right.

JVN [00:42:24] Explain that because I, say that again for people that aren't doctors.

DR. ADAM RATNER [00:42:26] Sure. Absolutely. So. So people you know, a lot of the anti vaccine tropes that are out there on the Internet seem to imply that there is ongoing use of fetal tissue for production of vaccines, which is false. There are vaccines that are made in cell lines that originated from fetal tissue or from, from amniotic membranes. But those cell lines are propagated and are used and do not require the use of new fetal tissue for, for them to produce vaccines now. So, so that, those were fetuses that existed long, long ago and not new fetuses. And then the second thing, though, is that people use-.

JVN [00:43:12] But so then why is it a barrier for, why is it a barrier for developing? Because can't we just use those old fetal tissues like membranes to test things?

DR. ADAM RATNER [00:43:21] So, so you can use certain cell lines like that. But we need the ability to use new fetal tissues, new fetal cells to, to create organoids, which are these sort of in vitro simulations of, of organs to understand the physiology of the placenta. One of the things that I work on is how infections happen in pregnant women and how things get transmitted to the fetus. And that's, that's research that's impossible to do without fetal tissue.

JVN [00:43:54] Oh, how interest.

DR. ADAM RATNER [00:43:59] Thank you.

JVN [00:43:59] Yeah, you can't. So that's what you study. So now we literally have like one minute left.

DR. ADAM RATNER [00:44:02] OK.

JVN [00:44:02] So like what can people do if they want to learn more about you? Since we didn't talk about that very much on this podcast. Are you on Twitter or something?

DR. ADAM RATNER [00:44:08] I am. So I am on Twitter @GramStain. G-r-a-m-s-t-a-i-n. And on Instagram, but not that active on Instagram @ RatnerA.

JVN [00:44:17] But you are on Twitter?

DR. ADAM RATNER [00:44:19] Yep.

JVN [00:44:19] OK. And well start using your Instagram more actively to talk about medical things that you are passion about. Because like Instagram can be really multifaceted, you know?

DR. ADAM RATNER [00:44:25] OK.

JVN [00:44:25] And then I was just really going to ask just like oversight. Like, who is responsible for oversight of like cleaning the tubes of the thing. Like, of, if you get if you get a procedure and you get, like is there? What is medical oversight or is that a different podcast? That's probably a different episode, isn't it?

DR. ADAM RATNER [00:44:39] So, you know, all hospitals, I think ours in particular is very good at this, have, have teams of people that not only do those things, but that oversee all of that and make sure that the instruments that you are, you know, that, that people are using are cleaned properly-.

JVN [00:44:57] Is there a governing body for all the hospitals? Because what about like for your county hospitals? Or your hospitals that would service, say, like a detention center or like a private prison or something? Like, is there a governing body that governs like all?

DR. ADAM RATNER [00:45:08] So, so there are standards that cut across all hospitals, but, but what you just brought up, actually takes me back to your question about Trump. Can I say one more thing?

JVN [00:45:18] Yes.

DR. ADAM RATNER [00:45:18] Which is that, you know, the conditions in the, the essentially the concentration camps on our southern border, especially for children, are appalling. And, you know, one of the, one of the things that we're seeing are children showing up to local hospitals, having been not diagnosed, having been misdiagnosed with infections. There've been several children who've died in, in that way. And so oversight of, of those and medical access in those areas is particularly important because that is a, that is a, an administration created public health emergency.

JVN [00:45:57] Dr. Ratner, thank you so much for your time and for your expertise.

DR. ADAM RATNER [00:46:00] Thank you. This was great.

JVN [00:46:01] You're incredible. And we, I want to hit on that, on our Instagram that we make outside. Thank you so much for your time. I really appreciate it. Let's go, let's go make some content.

DR. ADAM RATNER [00:46:07] Yay.

JVN [00:46:10] You been listening to "Getting Curious" with me, Jonathan Van Ness. My guest this week was Dr. Adam Ratner. You'll find links to Dr. Ratner and NYU Langone Health socials in the episode description of whatever you're listening to the show on. Follow us on Instagram and Twitter @CuriousWithJVN. Our theme music is "Freak" by Quiñ. Thank you to her for letting us use it. If you've enjoyed our show, introduce a friend or family member, tell them how to get involved and take a listen. We love it. Show them how to subscribe. "Getting Curious" is produced by Emily Bossak, Julie Carrillo, Rae Ellis, Harry Nelson and Colin Anderson.