TWiV 1320 Clinical Update

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Guest: Daniel Griffin

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Vincent Racaniello: This Week in Virology, the podcast about viruses, the kind that make you sick.

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From *MicrobeTV*, this is *TWiV*. *This Week in Virology,* Episode 1320, recorded on May 7, 2026. I'm Vincent Racaniello, and you're listening to the podcast all about viruses. Joining me today from New York, Daniel Griffin.

Daniel Griffin: Hello, everyone.

VR: What we have on the bow tie today, Daniel, that looks very nice, pink and black, and little dots and swirly things.

DG: Sort of a shepherd's crook look to it.

VR: Is it like Ebola virus, right?

DG: You got it. You got it.

VR: Yes, I can see, but what are the white dots? Is that just an artistic thing?

DG: Probably, yes.

VR: OK.

DG: [laughs] Those artists. All right, well, we got a lot of exciting stuff. Let me start off. This is going to be a longer one, sort of let people know. You break it up, you don't have to listen to it all at once, but anyway, I will start off with a longer-than-usual quotation. I really enjoyed this. This is from John Marshall. Maybe people know who that is. "Many opinions are taken up and supported at the moment, which, at a distance of time, when the passions of the day have subsided, no longer meet our approbation. He who lives a life and never changes his opinions may value himself upon his consistency, but rarely can be complimented for his wisdom. Experience cures us of many of our theories, and the results of measure often convince us against our will that we have yet seen them erroneously in the beginning."

VR: I like this quote. It's a bit windy, but I get the point that you need to be flexible and change your mind when the data are there, right?

DG: Really, I think it's appropriate. It's by John Marshall. I actually came across this. I was reading the book the *Last Branch Standing*, and Sarah Isgur is a very pithy condensation of this, where she says, hold strong convictions, but hold them loosely.

VR: Yes, that's good too.

DG: I like that. It really is interesting. It's too bad that as psychological beings, we value that decisiveness, but it puts you in a position where, I don't know, whenever you make that, maybe you're 12 or 14 years old and you make your decision, and then what, 90 years later, that's still your opinion. All right. Hantavirus.

VR: What's that?

DG: Hantavirus. I have this mug with me, and it's got a ship on it. If you're going to be on a ship, this is the kind of ship you want to be on, not a mug. I'm going to put a link at the end. On my way home, I was listening to your YouTube, Vincent. It was excellent.

VR: It's already out of date to some extent. Things are happening very quickly. Yes, it gives you a basic background for the whole thing, I think.

DG: Yes, no, I think it was excellent. We'll talk a little bit. I put some notes here. The interesting thing about hantavirus, to give some background here, this is during our lifetime, during my medical career. It was actually back when I was in medical school. It was during spring of 1993. A mysterious respiratory disease struck the Four Corners region of the southwestern United States. Not only was I around when this happened, but the next year I actually went to New Mexico, to the University of New Mexico. I got a chance to talk with some of the ICU doctors that were involved when these cases came in. It's really interesting. We're going to talk about hantavirus. People know I would talk about hantavirus.

We'll get there. We'll get up to 2026. Yes, back here it was 30-plus years ago, this mysterious virus. You have these previously young and healthy people get acutely ill. They end up with significant pulmonary issues. They end up in the ICU really quickly, 40% mortality. Almost half of them were dying. The CDC sends out the epidemiology intelligence service folks, back when we had a functioning CDC that was properly funded. It's a fascinating story. I'll leave a link to an article about it. What about the story I found really interesting is they do a bunch of things. They've got virologists. They've got epidemiologists.

They've got people out talking to folks. Actually, the epicenter is on one of the reservations in the Four Corners region. Some of the older natives, the elders, are like, "Oh, yes, this happens." "What do you mean this happens?" They actually describe what we're later going to see. They're like, "Whenever we have these periods of heavy rain followed by a dry period, a bunch of people will get really sick, and then they'll die." What's this about?

There's a really nice article that I'll leave a link into because we're talking about the Sin Nombre virus, this particular type of hantavirus. The article is, "Outbreak of Hantavirus Infection in the Four Corners Region in the United States in the Week of the 1997/1998 El Niño Southern Oscillation." The story is this. This is done very well in your YouTube, Vincent. We're going to leave in a link. People should watch and listen to that. That's excellent.

What happens is during the heavy rains, you get a growth of the pinion pines and a lot of these pinion nuts. Pinion nuts are these buttery, nutty nuts. You can either eat them raw. You can roast them. I give the recipe 350 degrees for about 10 to 15 minutes. They're really great. You go pick them up, roast them yourself. They're really good.

VR: Yes, they're delicious.

DG: Not only do we find them delicious, but the mice find them delicious. During these periods when there's a lot of pinion nuts, you might gather a whole bunch. You might store them in your house. Roast them up later. Then, after you've had all this heavy rain and you have a dry period, then this exploded mouse population that has expanded because of this great food source, they're having trouble finding food. Where's the food? It's in our homes. They come in. You end up with mouse droppings. Then somebody sweeps up, and you can aerosolize. You can breathe this stuff in. This article is nice because it actually shows you get this increase after the rainfall during the dry.

That's our background here in the U.S. We're not the only place with hantavirus. There's hantavirus all over the world. They're different. There's a particular hantavirus over in Asia, hemorrhagic fever. The Seoul hantavirus. Maybe some people are familiar with that. There's a European hemorrhagic fever hantavirus. There is a South American hantavirus. We're going to have to talk about that, the Andes virus. We hear from the WHO disease outbreak news, and all this, it's a rapidly moving story. They get alerted on the second of May that there's a cluster of passengers with a severe respiratory illness onboard a cruise ship. This ship is carrying 147 passengers and crew.

As of May 4, there's seven cases, two lab-confirmed cases of hantavirus, five suspected cases. This keeps evolving over time. The WHO outbreak page gives us a little bit of information. They say human hantavirus infection is primarily acquired through contact with the urine, feces, or saliva of infected rodents. It is rare but severe disease that can be deadly. Then they throw in, although uncommon, limited human-to-human transmission has been reported in previous outbreaks of Andes virus, a specific species of hantavirus. I'll leave in a link.

VR: There's actually a very nice *New England Journal* article that describes that outbreak.

DG: Oh, that's awesome.

VR: Published in 2024. We can put a link to that in.

DG: Yes, we should. We'll throw a whole bunch of links in. I'll leave in a link to the WHO.

VR: It's a very well-studied outbreak. It started with an index case who had rodent exposure. That person went to a party and spread it to a bunch of other people. It lasted for a couple of months. Then they put quarantine, and it stopped as soon as they did that.

DG: Yes, as soon as you step in with appropriate quarantine.

VR: Yes. No yelling about medical freedom. OK?

DG: [laughs] Medical freedom to kill people. We got that fact sheet. We've talked a little bit about what we want to know. Here are the big rubs in this case. As we mentioned, this is usually contact with infected rodents or urine. What, were there rodents on the ship, and they're sweeping it up, and it's getting sucked through those ventilation systems? As we now know, as this has developed, we've got some sequencing data. There's an exception. This type of hantavirus, the Andes virus found in South America. We're going to leave in a link to a bunch of these different articles. This vessel departed from down in that part of the world.

We now know it's this Andes virus, hantavirus, that actually can transmit from person to person. We'll talk about what that is. What about incubation period? We'll just let them sit on that ship until the incubation, because what can that be like? One or two days, maybe a week. Oh my gosh. Is it seven to 39 days? Is it all the way out to eight weeks?

VR: Amazing, right?

DG: Yes. That whole idea that we're going to wait until someone, and then I guess you've got to be really careful, because what if someone starts getting symptoms? If they're not all by themselves, then that next person probably has to wait eight weeks. I think living on the ship is going to present a little bit of problems if you think about that.

VR: Some people are going to be allowed to leave. This ship is now going to Spain because the Canary Islands wouldn't allow them to dock. It's going to Spain, and people will have to stay on the ship unless they can go right to the airport and get on a flight home. I don't think that's a great idea.

DG: I don't think that's a great - What if you're on the plane and you start to get sick on the plane?

VR: The thing that happened, this elderly couple, now we know they went hiking in Uruguay, Chile, and Argentina for a while just before getting on the cruise. He dies first. She gets sick. They airlift her to Johannesburg. She's trying to fly to Amsterdam. They don't let her get on the flight, but she had brief contact with the flight attendant who's now being tested in Amsterdam, and that's really the key. She then dies.

DG: I think in the airport, right?

VR: Yes, she dies in the airport. They were right not to let her on the plane. I don't know what she was thinking, but she had some brief contact with the flight attendant at the airport. The flight attendant was exposed, and they're doing tests today. We should know by the end of today. They didn't have intimate contact, right? They're just standing at the gate and talking to the lady. That would be a little bit different kind of transmission than if you have to be in the same cabin in the cruise ship.

DG: We talked about the incubation period, maybe this one to eight weeks. Probably most of it is about three weeks, about 18 days is sort of the median, as we think, but can be up to eight weeks. The other is the type of transmission. This is not measles. This is not like you enter a room theoretically. Theoretically, this is, at least in those studies, was close contact. You're sharing a room. You're physically with the person. Apparently, there were super spreaders at one of those events, so people that are spraying you in the face with their pulmonary hantavirus.

VR: They had high levels of viremia, apparently.

DG: Yes. There's the same. There's probably that principle we've talked about, where there are certain super spreaders, and then maybe most people don't actually do any spreading. That's a little bit of an issue here as far as that goes. Along those lines, well, fortunately, we know where everyone is, and none of those folks are here in America. The CDC would be keeping track if that was the case. I don't know if you came across this article. Apparently, on April 24, nearly two weeks after the first person aboard a cruise ship died of hantavirus,

30 passengers, including six Americans, disembarked. Those Americans are back here in the U.S. Is the CDC monitoring them, Vincent?

VR: No. Imagine how many people they've contacted on the way back.

DG: Not from the CDC or the State Department, but we apparently hear from *MedPage Today.*

VR: This is ridiculous. This is totally ridiculous. That's not where you should get your news from. It should come from CDC in the U.S. Folks, if you really approve of this administration destroying the CDC, this is what happens.

DG: Yes. Normally, we would say, "Nothing to worry about here. The CDC is on top of this. It's fairly close contact."

VR: You remember when some Ebola patients came back from Africa, West Africa. They weren't sick yet, but they went to Dallas, and then they got sick. The CDC was right on it, and quarantined and isolated everyone, and it limited the spread. Bad situation. Of course, many people are already saying to take ivermectin for this, Daniel.

DG: Well, you might as well. It's to be on the safe side. A little bit of chocolate-flavored horse paste. How can that be [crosstalk]

VR: Well, this morning, I did a search for hantavirus, ivermectin, in PubMed, and it said zero results.

DG: Yes. The tough thing, and actually, I told a little bit about my personal being when this started. I actually have taken care of individuals with severe pulmonary hantavirus and was actually involved. We did trials looking at antivirals, so IV ribavirin. We have no treatment. We have no treatment, no antiviral, no treatment that we know makes a difference.

These folks get super sick, and it's supportive care. They end up on a ventilator. Maybe they end up on this extracorporeal membrane oxygenation. You cross your fingers because it's a 30% to 40% mortality, even in these young, healthy folks. All right. We'll leave a link into your YouTube. The YouTube, Vince, is really good. It's content-rich, so people should follow that.

VR: It's 30 minutes, and someone already wrote that it's too long.

DG: Too long.

VR: They already said, "You take too long to get to the Andes virus." I deleted the comment because this is typical of America today. You want everything fast. You need some background, folks, like Daniel just provided to you. You need to know what hantaviruses are and what they can do. It's what life is all about, learning stuff. I despise the fact that people don't want to learn anymore.

DG: Yes. Then you can actually have your own opinion. You can weigh the facts like, "Are we OK that there's a few Americans who might be incubating this hantavirus, cruising around? Is that OK?"

VR: Let's talk about it. Is this going to cause a pandemic?

DG: No, it's not.

VR: How do you know?

DG: The reason I'm going to say no, you got on a limb there, Vincent, is as we've seen in the past, this is something that once you implement control strategies, the reproductive number drops less than one immediately. This is something where really you can, but the problem is, the challenge in this world of medical freedom is eight weeks of incubation.

VR: What if it's getting into more people than it was previously, and it mutates, which viruses do all the time, and the patient randomly arises that can now make it transmit better? That is not theoretically impossible.

DG: That's true. As we know, we have hantavirus. We have it here on Long Island. We have hantavirus in upstate New York, right?

VR: You actually have Sin Nombre and Seoul virus out on Long Island. The thing is, Daniel, we are worried about avian influenza, H5N1, becoming more transmissible in people. It's the same issue. Now, there, lots more animals globally are infected, and so the worry is a little more realistic. Who knows how many rodents in South America are infected with Andes virus? We don't really have a good survey. Now, we have maybe dozens of patients who are infected. Who knows what can happen? The best thing that anyone can do is to isolate everybody so they don't pass it on.

DG: Were these the only two people that got whatever variant it is that they got, right? It's sort of like no one even knew for a while. Just think about that part of the world. Someone gets sick. They've got a pulmonary thing. They get sick. They die. What's the chance they're going to get good sequencing done by the South Africans? I think zero is the answer. That's why you have to pay attention.

VR: You have to pay attention. When you know stuff, when you have expertise, you're ready to react and answer questions and think about it, right?

DG: Yes.

VR: The press doesn't know much. All they do is speak to experts.

DG: You have to be careful. Who are these experts? Are these virologists? Are these people that have taken care of people with hanta pulmonary virus?

VR: If you go on social media, everybody's talking about this now.

DG: Yes, suddenly everyone's an expert now.

VR: They read something, and they make a video. They're suddenly an expert, right?

DG: Yes.

VR: I've been contacted by two media outlets. *Newsweek* wrote me an email, and somebody else wrote me an email. Have you been contacted by anyone to talk?

DG: No. I'm trying to lay low, Vincent.

VR: You should talk about this. You're the expert, and you're a doctor on top of being an expert. Why isn't Apoorva talking to you?

DG: They're probably talking to that cardiologist. He's an expert, yes. All right, let's move on. This other one, I was a little late getting to the *TWiV* 1319. I couldn't let this go because I was listening to the discussion between you and Alan Dove there. I had to jump in. The article you guys discussed, the article, "Emergence of Vaccine-derived Poliovirus Strains from the Novel Oral Polio Vaccine in the Central African Republic." Basically, as you guys discussed, this is really good. This really puts together the fact that when they tried to come up with this novel oral polio virus vaccine, they were a little bold. "Here, we've fixed it. This is not going to revert to a paralytic virus." They seem to not have got in their heads this combination, this recombination aspect. What was going on, Vincent? I understand the other part, but wasn't that right there, like, "Hey, this is going to recombine?"

VR: They introduced amino acid changes in the polymerase, which drive down recombination very low in cell cultures, but when you give it to a billion kids, all bets are off. It's a lot of substrate. It turned out that it does recombine, and now you have phenotypic reversion, yes. This is an interesting discussion. Alan is of the view that we can't do IPV because we can't inject people or everybody in the world. It's impossible. I don't agree. I don't think any paralyzed kid from a vaccine is any good.

DG: That was what fired me up because it is interesting, just because that tends to be the, "Oh my gosh, if you don't do OPV, IPV is just injectable vaccines are just a no-go in these tough areas. This is the best we have," but I think we need a reality check here. Right now, we are seeing, we are causing 100 to 200 cases of vaccine-derived polio per year with our current strategy. We are paralyzing hundreds of children every year. That's not OK. That's not OK with me.

VR: I agree. I totally agree. Alan's point is the Central African Republic can't do better than 50% immunization, even with Sabin oral strains. He said, how can they inject them any better?

DG: Let's talk about that. They do injectable vaccines in the Central African Republic. They do Tdap. They do MMR. The Tdap first shot is over 50%. That's a shot. That's an injectable vaccine.

VR: You can combine that with polio, IPV, right, the Tdap?

DG: And, they're rolling out injectable malaria vaccines. We're rolling out. OK, so how come suddenly we can do a four-shot injectable malaria vaccine, but we still have to give oral? I think the reality check is that we have to stop paralyzing kids with vaccines because that, one, it's horrible, two, it's not a good look, three, we're already having issues with vaccine uptake and hesitancy, et cetera, et cetera. Yes, let's see.

VR: Do you know, Daniel, we could step in, give them $1 billion in personnel, and they could do it.

DG: Well, that's a crazy thing. How many billions are we dropping on Iran at the moment? People say we don't have the money to do this stuff. We have the money. It's just what we're choosing to spend it on. All right, I just wanted to make sure I brought that up.

VR: It's good.

DG: All right, and speaking of that, there was an article, “MMR Vaccine Hesitancy in a Polarized Information Ecosystem: Results from a Cross-sectional Survey of U.S. Adults,” published in the journal, *Vaccine*. I like this for a couple of reasons. One is it really seemed like something that a lot of people could do. These folks actually created a survey; they reached out to this company, Dynata, who distributed the survey for them, and then they basically got these responses.

Overall, they report that 17% of adults believe - Are you ready for this? - the risks of MMR outweigh the benefits. Most adults engage with a wide range of digital media, but engagement with "new right" media outlets was associated with an increased odds of MMR hesitancy, adjusted odds ratio of two. Seeking health information from non-authoritative sources, both online or alternative health newsletters, also increased the odds ratio of this hesitancy.

VR: This is nonsense. These people are wrong.

DG: They're being misinformed by this digital media. Now, the policy article, “CDC Communication Undermines Trust in Vaccines,” appeared in the journal, *Science*. The CDC revised its public statement on vaccines and autism in November 2025, suggesting that a possible association between vaccination and autism had not been ruled out with sufficient scientific rigor. A large-scale online experiment tested the efforts of this shift in communication, showing the new uncertainty-based statement amplifies public uncertainty, reduces vaccination intentions, and increases endorsement of science denial strategies.

VR: Basically, RFK Jr. is lying, and he's making CDC liable -

DG: He's lying, and it's having consequences. All right. Then I wasn't sure I wanted to put this in. It just made me sick. This article, “FDA Blocked Publication of Research Finding COVID and Shingles Vaccines Were Safe,” by Christina Jewett, was published in *The New York Times*. *The Times* says that in October, scientists were directed to withdraw two COVID-19 vaccine studies that had been accepted for publication in medical journals. The studies, which cost millions of dollars in public funds, were conducted by scientists at the agency who worked with data firms to analyze millions of patient records.

They found serious side effects to be very rare. Dr. Aaron S. Kesselheim, a Harvard University medical professor who studies FDA regulation, said he had worked with the agency on a number of research papers and found its work to meet the highest standards of scientific investigation. He suggested that the request to pull the papers was an act of censorship. He added, "At any other time in history, this would be a major scandal that would lead to congressional hearings, resignations of leadership, and I hope that's what happens next.”

VR: I love that quote. That's just perfect, right?

DG: It's really appropriate. This is wrong. Yes, this is censorship. All right. Let's move on to what is going on. What are we seeing? Viruses are down, ticks are up.

VR: I love that. That's great.

DG: This is really nice, these figures. If people are watching on YouTube, you can see. We've got patterns. Like us ID docs are always busy with something. One thing starts to go down, and the other thing comes up. Right now, the ED visits for tick bites are shooting upwards. It starts in March, and then it just rises all the way up. At the same time, our viral infections are on the way down.

VR: I didn't realize people went to the ED for a tick bite.

DG: Oh, yes. People get pretty worried about the tick bites.

VR: Really? They're worried about Lyme and Borrelia and what else?

DG: They're worried about everything. Lyme is the biggest concern. Then you start telling them, "I understand you're here for Lyme, but let me frighten you more. You can get anaplasma, you can get ehrlichia, you can get babesia. Oh, wait, that's a dog tick. We can worry about Rocky Mountain spotted fever." Sometimes you get more than one.

VR: All these stories, Daniel. Just stay home. Don't go walking in the woods.

(laughter)

DG: You can stay home, play video games, and get diabetes.

VR: The people who went on the hike into South America, why did you do that?

DG: All right, measles. The numbers keep ticking up. This time, I've actually got last week and this week for the measles tracker from Hopkins. We went from 1,877 up to 1,923. It's another 46 cases. As of April 30, 2026, a little behind from the CDC, 1,814 confirmed measles cases. Now, I want to point out that the majority of these, as you can see looking at the map here, these are local. These are not imported cases.

That's going to be an issue because the letter came out in *The Lancet*, “Will the USA Lose its Measles Elimination Status?” This group used the elimination indicators established by the CDC National Immunization Program Expert Panel in 2000 and applied during the 2011 recertification review, introducing cutoffs based on the 2001 to the 2011 period. We have this really nice figure. What are the different criteria? We've got seven of these. You want to have a low measles incidence, so annual total reported measles cases of less than one reported cases per 10 million people. Yes, we're 77.6 per 10 million people as of January 23. As of February 17, 2026, we're up to 93.2 cases per 10 million people, so not even close.

High proportion of imported cases. If you're going to have cases, they're imported, people coming here. How are we doing with that? Nope, 7.2% of cases are imported, 6.3% of cases are imported, so mostly here. Low number and size of outbreaks. Yes, anyone paying attention, 48 outbreaks in 2025. We already have five outbreaks in the beginning part of this year already. Transmission levels, they talk about that.

We're not doing great there. All we're really waiting for at this point is some sequencing data because we do not have the high population immunity that we need to get out of this. I'll leave in a link to that. They conclude, "Given the current epidemiological context, it appears highly likely that the United States will lose its elimination status in 2026. Strengthening vaccination efforts, reducing exemption rates, and interrupting ongoing local transmission will be essential to reverse this trajectory." Are you optimistic, Vincent?

VR: Oh, no, we are losing this unless censorship happens, right? Unless RFK's people decide to censor the data because they don't like this. It's not a good vision, right?

DG: Yes. The only way we don't lose status is by lying, basically. We're just waiting for the stamp. They've already delayed this, so it wouldn't affect the midterms quite as much as they're worried.

All right. As mentioned, we're getting out of the respiratory season. At least flu is well below the baseline. Another six influenza-associated pediatric deaths reported this week. We're up to 155 children died of flu this year. RSV, also, we're coming. We're pretty much down out of the RSV season as well. Another article about another benefit. The article, "Impact of Respiratory Syncytial Virus Immunization on the Rate of Pediatric Acute Otitis Media: A Time-series Analysis," published in *CID*. The benefit of vaccination as opposed to infection with RSV.

These investigators conducted an interrupted time series analysis based on a French network involving 110 ambulatory pediatricians trained in pediatric ID. All ambulatory visits for AOM, acute otitis media, June 2017 to February 2025 were included. The main outcome was the monthly rate of pediatric ambulatory visits for acute otitis media in infants under 12 per 1,000 pediatric ambulatory visits over time. Basically, what they're going to find is the rate of acute otitis media was decreased after RSV immunization implementation. This included the passive, so nirsevimab for the babies, and active, the Abrysovo RSV vaccine for the moms. We saw about a 24% reduction. Pretty impressive.

VR: This is a disease that the pediatricians used to always give you antibiotics for.

DG: It's interesting. Here becomes the issue. Are you getting a bacterial otitis media, or is this related to the RSV? You could get the RSV, then get a secondary bacterial infection, or you could get an RSV otitis media, and they just don't know, so you end up with antibiotics.

VR: What is the proportion? Do we know viral versus bacterial of otitis media?

DG: I don't think we really know. I have to say, in a lot of places in Europe, they tried not to treat otitis media with antibiotics. We have a little bit more of an issue in the U.S., just probably more of a legal issue. Just a one-in-a-thousand cases will go on to become more serious, a mastoiditis or meningitis.

All right, COVID. Things look really good, except for Nebraska and West Virginia. What is going on? After that, everywhere else, it's very low, except it's high in Nebraska, and it's moderate in West Virginia, so crazy.

VR: What is the graph here, the multicolored lines? Is that wastewater?

Daniel: Yes, this is our multicolored wastewater line.

VR: It's way down, right? It's below. It's in the very low area.

DG: No, overall, this is as low as it's been. This is fantastic. All right, and we're going to wrap us up with just a couple of articles here in the Long COVID section. The article, "Multisystem Inflammatory Syndrome in Children, (MIS-C), United States, 2023/2024," published in *JID*. It's a nice update. This is that rare issue following SARS-CoV-2 infection, but we're still seeing sporadic cases. This analysis of cases during this time period showed little change in clinical

presentation among vaccine-age-eligible children. 99% occurred in children who were not up-to-date with their vaccines, 99%. Just craziness.

We also have the article, “Current Status and Future Perspectives on the Mechanistic and Pathophysiological Understanding of Long COVID,” published in *Communication Medicine*. This is really a review, and I'll leave in a link, but it's what I have to say. All right, and we'll conclude as we have for a while. No one is safe until everyone is safe. We're in our FIMRIC, our Foundation International Medical Relief of Children fundraiser, May through June, where we're going to try to raise that $10K. We're going to double your donations up to that maximum donation of $10,000.

VR: It's time for your questions for Daniel. You can send them to daniel@microbe.tv. Now, we got many emails asking us to talk about the Paxlovid study. Well, we thank you very much, but we covered it already, didn't we, Daniel?

DG: We did. Maybe they just have to go back and listen to 1318. We covered it in-depth.

VR: It's the last one. Yes, and we're still getting lots of emails, so it just tells me that maybe you're not up-to-date on your listening, so check it out.

DG: All right.

VR: Anonymous writes, "I listen to your podcast and really appreciate your solid science-based views. I would love your recommendations on my questions. One, would you recommend my 14-year-old daughter with Alpha-1 antitrypsin deficiency, clinically extremely well, take an antiviral if she gets flu this winter? We live in New Zealand, so we're going into winter now. She had flu vaccine. She's never taken antivirals before, but I hear we have Super-K influenza coming, which our vaccines aren't covering very well. Tamiflu has been around longer, has a good safety profile compared to Xofluza, which has no carcinogenicity studies. However, Xofluza has a lower risk of liver tox compared with Tamiflu. My daughter has frequently had raised liver enzymes as part of Alpha-1 antitrypsin deficiency. Our GP is reluctant to prescribe antivirals as they 'only shorten length of sickness for one day,' as she's healthy and vaccinated, and we want to avoid the possible liver issues or possible long-term issues. What are your thoughts on this?"

DG: Yes, I would recommend it in this context. As we keep covering this whole idea that "Oh, it's just the flu," we are seeing one to 200 children die. The majority of these are completely healthy. You're describing your daughter, who is not completely healthy, who actually has this Alpha-1 antitrypsin deficiency. I see this as a risk-benefit. I would talk to your doctor a little bit more about this.

VR: "Number two, would you recommend that I ask for antivirals if I get influenza? I'm 54 and vaccinated against flu. My doctor advised me not to take antivirals as they are only for people at high risk."

DG: Oh, dude. Not only should you take it, but remember we talked about the study, how the Xofluza, the baloxivir, you take it, you reduce your risk of spreading it to your daughter.

VR: We discussed that a couple of episodes ago, probably. Letter writer, you should go find that study and show it to your GP. Then the last question, "Would you recommend me taking Paxlovid if I test positive for COVID? I'm not in a high-risk group again, and my GP is

not recommending it for me. I'm keen to know your thoughts. My first COVID infection knocked me out for 12 weeks. I did take Paxlovid and suffered a 'rebound.' I'm not sure what to do. I really want to avoid Long COVID and other complications and get vaccinated every six months. My risk factors are anxiety, and that I had a large number of symptoms last time. I am female and over 50."

DG: Yes. This is perfect to the study we talked about last time, where basically it was, as we discussed, healthy women in their 50s getting Paxlovid was associated with feeling better seven days sooner. I appreciate your comment about the rebound. The rebound is an inflammatory rebound. Symptomatically, it's not different. This is not something that was triggered by the Paxlovid. As we saw in the study, basically looking at folks like you, women in their early 50s, you could actually feel better a week sooner, which might be helpful if you've got a daughter and, well, a life to live. 14-year-old daughter, oh my gosh, that and feeling sick for an extra week.

VR: Aaron writes, "First, thank you for all that you do. I never miss an update. Along with *TWiV*, I also really enjoy *Puscast* and all the other MicrobeTV podcasts. I'm sure you want to hear that it's a spring-like rainy day and 5 degrees C here in southwestern Ontario, Canada. I am a professor of nursing, and my research focuses on effective vaccine communication techniques.

I frequently give talks in collaboration with Merck on the HPV vaccine, and I truly appreciate the HPV papers and discussions you've shared over the past year. I recently received a question during one of these talks, and I wanted to pass it all along to you. How long does HPV survive on fomites and non-human surfaces? I realized I didn't have a clear evidence-based answer and was hoping you might have insight.

DG: This is good. My first thought, Vincent, before I went into thinking about the time course, was, "How is HPV transmitted?" Even if it survives on these surfaces, is it really going to end up infecting someone from those surfaces? I think that's something to think about. Some of the stuff you can look at is PCR detection, but what you really want is you want to know, "Are there still infectious HP viruses?" What we usually quote based upon somebody's studies is hours to days, maybe out to three days, but there is some evidence that maybe you get out to seven days or something like that. Vincent, you had -

VR: Yes, I think that it's not easy to measure infectivity of HPV, so you can compare it to other papillomaviruses. In one study, 50% infectivity retained after three days at room temperature, half-life on dry materials about three days, infectivity of about 30% for seven days. It doesn't last forever, but it is a sexually transmitted infection. I don't know what surface contamination would play in that.

DG: Yes, unless it was something that was being used that would have contact with that part of the body.

VR: Yes, but this is sexually transmitted, which means you have to get virus near the cervix, right?

DG: Yes, you would need something that would do that.

VR: I don't know that that's going to be. Anyway, it's a short-lasting on surfaces. Anonymous writes, "What do you think would be best for me to say to an immunologist who believes

Pemgarda is no longer effective against current variants and who therefore won't refer me to an infusion center to get it? I realize it could be politically difficult for him to refer me since it could be seen as implying that the administration of the local hospital where he works, and I'm a patient, made a mistake in no longer offering Pemgarda infusions. I'm concerned, though, about stopping the infusion since I'm over 70 years of age and immunosuppressed."

DG: Yes, I hate when they do this. A lot of times, institutions will run the numbers, and they're making decisions based upon the bottom line. We've talked about the evidence that the Pemgarda infusions should continue to have efficacy. Yes, this could be awkward, and somehow you've got to navigate this because the evidence, forget about the beliefs, forget about the decisions some administrator made. The science would suggest that those Pemgarda infusions would still be a reasonable option for you.

VR: Marie writes, "You mentioned how Paxlovid shortens the COVID course and helps prevent hospitalization on May 2. Does Paxlovid help prevent Long COVID, also?"

DG: Yes, unfortunately, Marie, the data on that has been mixed. I would say that we don't have compelling evidence that it's going to prevent Long COVID. We really thought it would. There were studies that maybe it would even be a treatment, but sorry.

VR: Joy writes, "You often advise pregnant people to get certain vaccines in the last trimester of their pregnancy to protect their babies until the babies can get vaccinated. Just curious, are there certain types of vaccine that this will not work for? Wouldn't it be great if women could get booster measles, pertussis, chickenpox, et cetera, vaccines to protect their babies? I'm assuming it doesn't work for all childhood illnesses, or you would be recommending it."

DG: Yes, I think part of it is studies. It would be reasonable to start looking at more vaccines because we do this with RSV, right? We do it with COVID, we do it with flu. Would it make sense to start doing some of these other vaccines during that last trimester, then helping to protect the babies during this window? Vincent, any thoughts?

VR: Yes, I think it's a great idea. Why don't we do it?

DG: I think we need to study it, right?

VR: Yes.

DG: It's one of those things that, just like that, it's got to be humility, "We don't know," and so you've got to study it and find out. If we have evidence that it's safe and effective, then I think we can move forward.

VR: Also, Joy writes, "Every time I hear RFK Jr. talk, I like to imagine that the ghost of his father has him by the throat trying to stifle his foolishness. It gives me some comfort." That's *TWiV* weekly clinical update with Dr. Daniel Griffin. Thank you, Daniel.

DG: Thank you, and everyone, be safe.

[music]

[00:44:41] [END OF AUDIO]