TWiV 1314 Clinical Update

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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 1314, recorded on April 16, 2026. I'm Vincent Racaniello, and you're listening to the podcast all about viruses. Joining me today, right here at The Incubator in New York, Daniel Griffin.

Daniel Griffin: Hello, everyone. Hello, Vincent. It's good to see you in person.

VR: Now I can see your tie. Not that it's any easier.

DG: Can you see the little red snappers?

VR: I see red, but I don't know what they are.

DG: Little red.

VR: They're snappers?

DG: Acid-fast bacilli.

VR: Oh, this is not viruses. I thought it would be viruses.

DG: It should be. I should time, like STD Friday and viral Thursday.

VR: Acid-fast, is this *Mycobacteria*?

DG: Yes. Tuberculosis.

VR: Wow, that's quite a tie. Must get comments, right? OK. Did you pay your taxes, Daniel?

DG: I always get extensions, [laughter] so I did that again. All right, let's jump in. I have a quotation. It's an interesting quotation. Started this new book, and this is actually a book from the front of the book. Quotation from the front of the book. However that works. The book is *Lion Women of Tehran* by Marjan Kamali, but the quotation is supposedly by George Lipsitz.

VR: Who is that?

DG: It's some kind of historian. I like this quotation because when things are happening, it seems like, "Oh my gosh, where did this come from?" "Ocean waves begin their journey

thousands of miles out at sea. Their form, size, and shape come from the speed of prevailing winds in the atmosphere, the power of currents hidden beneath the sea, and their long fetch, the distance between a wave's point of origin and its point of arrival. Events that seem to appear in the present from out of nowhere in actuality have a long history behind them."

VR: The waves always begin - Don't they also begin at the shore? As the water gets shallower, the waves -

DG: It's interesting. They may crest when it gets to be about half their height as far as the depth, but out in the deep sea, you've got waves.

VR: You can't see them.

DG: The waves in the deep sea, if you go out in the Gulf Stream, for instance, where you have the current maybe going one way and maybe the wind is the other, and then over time and time, the prevailing wind, the trade winds keep blowing, those waves can get pretty big, big rollers as we call them.

VR: Peaks and troughs, right?

DG: They tend not to crest unless you either get to a shallow or really a good amount of wind [crosstalk].

VR: Crest means like what the surfers want, right?

DG: A curl.

VR: A curl.

DG: The breaking wave.

VR: All right, got it.

DG: All right. When I read that, I had just read this vaccine safety. I was thinking about this as I read the article, “More Americans Doubt Vaccine Safety Than Trust It, POLITICO Poll Finds.” I've got the figure here. For many Americans, the facts on vaccines remain unclear. Isn't this shocking?

VR: No, because the questions they ask them suck.

DG: I think that's the problem, is how you ask the questions.

VR: They're totally biased. They're saying, "Do you believe the facts on vaccines are still up for debate?" That's a biased question to me.

DG: Let's keep throwing this up. "And it's damaging to enforce their uptake." They're two separate questions.

VR: Why don't they ask, "Do you think vaccines help you or protect you," or whatever? That would be a better question, right?

DG: Most people say yes. Most people don't even think there should be exemptions.

VR: The facts on vaccines, most people don't even know the facts on vaccines, right? Why ask them?

DG: That's a separate question. Are there facts about vaccines? Are we still trying to understand them?

VR: They also say, "Do you believe the science on vaccines is clear and it is damaging to question?" That's another stupid question. First of all, they don't know the science. Damaging to question? Why would you ask something? It's never damaging to question science, right?

DG: Yes.

VR: As long as you're coming from a knowledge base, or even not. If you say, "I don't understand how this HPV vaccine works. Can you tell me?" That's fine.

DG: Oh my gosh, how dare you ask questions about a vaccine, Vincent? How dare you want to understand?

VR: This poll, a lot of people have been commenting about this. I think it sucks because the questions suck.

DG: The questions, yes.

VR: We should have "Do you think vaccines protect you and your family?"

DG: Then the answer is pretty clearly yes.

VR: I think over 90% of parents in this country approve of vaccines for their children.

DG: That's clear. It's flawed. I think when you put stuff, then you start to feel like, "Hey, a lot of people are not sure about them vaccines. What about you?" You're trying to pull people over and normalize this anti-vaccine, anti-science. I wanted to make sure we got to throw that in there.

Now, this next one's quite upsetting. There were many articles about it. What does not help is the headline. “Top CDC Official Delays Report on COVID Shot's Effectiveness.” I picked this *New York Times* article by Apoorva Mandavilli. I'll leave a link into it. Let me read, and then we'll chat. I'm sure Vincent has strong opinions on this. I found this quite upsetting. We read, "The acting head of the Centers for Disease Control and Prevention delayed the publication of a research report showing that the COVID vaccine significantly reduced the likelihood of hospitalizations and emergency visits last winter."

"Dr. Debra Houry," is that how you pronounce that? Huh-WAH-ree, HOOR-ee, "who served as the CDC's chief medical officer before she resigned in August said, 'A political appointee at CDC would be very rarely involved in a review or decision regarding *MMWR*,'" referring to the - "Previously, this would have been reviewed by a career scientist who worked across administrations, like the chief medical officer, Dr. Houry said." "Given staffing shortages at the agency, continuing health threats like measles, and Dr. Bhattacharya's duties as director of another agency, 'this would be even more unusual to do,' she added."

"But Andrew Nixon, a spokesman for the Department of Health and Human Services, said in

an email statement, 'It's routine for CDC leadership to review and flag concerns about *MMWR* papers, especially related to their methodology, leading up to planned publication.'" Now, "The study calculated the COVID shot's effectiveness by looking at the vaccination status of people who sought care at hospitals and emergency rooms. It found that vaccination cut the likelihood of emergency visits because of COVID by 50%, and hospitalizations by 55%," according to a summary of the study that was able to be viewed by *The Times*." What do you think?

VR: This guy, Andrew Nixon, just is so smarmy. He always makes these statements. "It's routine." How would he know? How would he know? It's not routine. The head of CDC does not review articles for *MMWR*. That would be crazy, right?

DG: Yes.

VR: This is a lie, and this is nonsense. As you know, they are holding it back only because it says good things about COVID vaccines, and they don't like that. We're in an era now where the political effect is more important than the health effect.

DG: It's interesting when you look at this, interesting, scary, but historically, politicians have influenced science, but in a positive way.

VR: By funding it, right?

DG: Funding it, encouraging it. Ben Franklin, after he lost his son to smallpox, was a big advocate for protecting people with the inoculation method back then for smallpox. Roosevelt was really pushing, sort of discovering the link between mosquitoes and mosquito-borne illnesses, right? It's always been a long history of politicians usually helping and encouraging public health efforts, but here, we have this craziness.

VR: FDR raised money to make polio vaccines, right?

DG: Yes.

VR: In fact, we have to say this, but Trump did do Operation Warp Speed. He funded the COVID vaccine development.

DG: It's like history has been rewritten on that side, right?

VR: He doesn't want to take credit for that.

DG: He wanted to.

VR: He would like to, but he can't because MAHA will get pissed at him.

DG: He tried. He got booed. I saw this. He got booed at his rallies. He was very proud of this. He was excited about it. Then he realized, like, "I keep getting booed." He doesn't like getting booed. Then everyone was all up in arms, lockdowns. I'm like, "You know who was president during 2020?"

VR: The thing about this is that Bhattacharya is a health economist. He doesn't know how to interpret a study like this. He wouldn't know how to do the statistics.

DG: The wrong person to be stepping in. Clearly politically driven. As they've realized, the whole vaccine topic, it's not going to help the Republicans in the midterms, because as we've said, most Americans want to protect their kids. They want to protect themselves. They want to protect their parents. The data is really clear that the safest, most effective way to do this in most situations is vaccination. It continues to be true with COVID.

All right. Let's do some fun. I thought this was fun. I have to say, I think this is more fun than an actual threat. We read in *CIDRAP*, "Vampire Bats in Mexico May Feed on CWD-positive Deer, Spreading Disease and Posing Species-jump Threat." Chronic wasting disease, CWD. "During a 2022 field expedition, Peter Larsen, PhD," I love this. You get this whole story, "he was asleep in an open-air house in Guyana when he was awakened by the sensation of liquid on his feet, which were pressed against his mosquito net, except it wasn't raining. He flicked on his headlamp, startled to find that the liquid was blood and a vampire bat, a species he had gone there to study, was feeding on him."

There's a couple of things. You just read that, but there's so much here. One is that the vampire bat biting him did not hurt him. That's something about bats. Bats have these razor-sharp teeth, so you'd get bit by a bat and not even notice. What he actually noticed was not the teeth going in, but actually the blood on his legs. I have a patient in the hospital now who's from Guyana. We were talking a little bit earlier. I was like, "Oh, are you from Georgetown?" He's like, "Everyone says they're from Georgetown, Dr. Griffin, but they're not." A big, long discussion about the three different counties and where people are from. He was down there being feasted on.

The actual peer-reviewed article that all this comes from is the article "Emerging Risks at the Vampire Bat-prion Interface: Implications for Wildlife, Livestock, and Public Health," published in the *Journal of Mammalogy*. Mammal-ogy.

VR: Mammalogy.

DG: There should be almost an extra little syllable in there, because mammal-ogy.

VR: I guess it's muh-MAL-uh-jee.

DG: Muh-MAL-uh-jee.

VR: There you go.

DG: We need to redo that. That's hard to pronounce. In this article, they explore aspects of prion biology and the natural history of the common vampire bat (*Desmodus rotundus*), vampire bat, I like that better, as the vector for chronic wasting disease. They highlight factors that they're going to say may contribute to prion exposure events. We are talking here about prion exposure events, among vampire bats and sympatric mammals.

Sympatric here is really just a fancy way of saying animals in the same geographic area. Right at the moment, you and I are very sympatric.

VR: That's a Dickson word.

DG: It is a Dickson word. "Do you know what that means, Daniel?" "Yes, Dickson. Yes, now I do." I would, of course, say, "No, no. Dickson, what does that mean? Teach me that again." Anyway. They suggest that, in light of vampire bat feeding behaviors, vampire bats could

experience elevated prion exposures over time if they keep encountering these prion-positive prey, chronic wasting disease-positive prey. They recommend risk assessments, surveillance to evaluate vampire bat prion transmission pathways that could impact mammalian wildlife, livestock, and human health.

They've got pretty cool figures. I like the *CIDRAP* picture of the vampire bat. He's very scary-looking. Little vampire teeth there. Then you've got this interface where you're having this southward expansion of chronic wasting disease and a northward expansion of the vampire bats.

VR: The idea is the bats may feed on infected animals like deer, cervids. This is very interesting. It's not something I thought of. The world is all one place. Bats don't exist on their own, obviously.

DG: Apparently, they can fly over that wall.

VR: Yes, that's right. Although maybe they shouldn't.

DG: They have this nice figure. The figure it's a cartoon, basically. You've got the vampire bat. It's feeding on the cervids and other wildlife. Then it's also feeding on livestock, domestic animals, humans, like our buddy's foot. Then they're pooping. They're co-roosting with other species. This scary idea of you've got these vampire bats potentially with prions in their blood, in their guano, and this whole thing.

VR: According to this map, the *Desmodus* range doesn't overlap the prion range yet. I don't know why they drew this purple line here.

DG: They brought in this orange guy, and he had a marker. He had a Sharpie, and he predicted the contact zone. You see, it's going to go right at me. Look, it's got Louisiana in there. See, Louisiana wasn't in there, but now with the Sharpie, it's in there.

VR: Anyway, what they should do is more environmental surveillance, right?

DG: That's what they're saying.

VR: They say the guano from the bat has prions, which is eaten by other animals. They should check guano to see. You could look for prions easily.

DG: As we know, that was the mad cow disease in Europe. You could actually ingest prions and get yourself into trouble. I think at this point, it's interesting. It's speculation. It does make sense to keep surveilling things. I know there's this, actually, it's a negative, "Oh, don't surveil the bats. You might see stuff you don't know. You might end up bringing bad stuff."

VR: Or it's too dangerous to surveil. You might get a virus and spread it, so we just keep our heads in the sand.

DG: Yes. Stay indoors, watch video games. All right. This exciting. This is exciting. I forgot my verb there. I got too excited.

VR: It's OK.

DG: This is exciting. The article "Nine-Valent Human Papillomavirus Vaccination and Related

Cancers in Males," published in *JAMA Oncology*. Here we've got a multicenter retrospective cohort study that utilized a global database. Participants included males aged 9 to 26, who were either unvaccinated or received at least one 9-Valent HPV vaccine between January 2016 and December 2024, with outcomes followed for up to 10 years.

Now, these folks are pretty young, right? It's going to be an interesting issue. I would look at this and say, "You're really probably going to have to follow these folks much longer before you see anything." Lo and behold, the primary composite outcomes were HPV-related cancers. This includes head and neck, esophageal, anal, and penile cancers. They do this whole propensity score matching. You start off with 615,155 vaccinated males. You've got 2,290,623 unvaccinated males. Then, after they go ahead and they do this matching. You've got basically about half a million participants in each group, so 510,260.

Now, compared with those in the unvaccinated group, those in the vaccinated group had a lower risk of the primary composite outcome, hazard ratio 0.54. Basically, about a 50% reduction in getting cancer.

VR: That's early. It could increase later as well, right?

DG: If you follow, they've got a really nice figure where you do years after index.

VR: Good.

DG: You actually see it's really starting to separate when you get out to nine years. It's this big separation.

VR: This is good because usually these studies are done in women, right?

DG: Yes.

VR: This is a good way to look at the effect in men. Get your vaccine.

DG: It's a cancer vaccine. We're beginning to realize a lot of these infectious disease vaccines are cancer vaccines or cancer-preventing vaccines, dementia-preventing vaccines, aging-preventing vaccines, right?

VR: They prevent chronic illnesses.

DG: Oh my God.

VR: They don't cause them. By the way, someone on my stream last night said there's a connection between HPV infection and lymphoma. I found this Danish study. Is that OK, Denmark, to mention that country?

DG: I like the Danes. I like their cheeses, their smoked fish.

VR: It's entitled "Human Papillomavirus Infection and Lymphoma Incidence Using Cervical Conization as a Surrogate Marker." They find an association between certain kinds of lymphomas, like Hodgkin's and so forth. Hodgkin and non-Hodgkin lymphoma associated with HPV infection, so they think maybe the general immune activation caused by HPV infection may be part of it.

DG: Interesting.

VR: Get vaccinated.

DG: Yes, get vaccinated. Going to reduce your risk of all these diseases, but also dementia, heart attacks, strokes, aging, cancer.

VR: I bet all vaccines do that.

DG: I thought it was interesting that you guys did the deep dive on the flu vaccine, right?

VR: Yes.

DG: Something about these vaccines, it's like a jump start, right? A boost.

VR: That was the dementia, right? Yes.

DG: It was the high dose versus the standard dose.

VR: You had originally discussed that. We have Shingrix. We have flu vaccines. Pneumococcal vaccines also decrease dementia. I don't know. I think anything that reduces inflammation is probably going to have a positive effect on aging and dementia. Isn't that great?

DG: It's amazing, right?

VR: Let's get rid of all the vaccines. Doesn't it make sense?

DG: Makes no sense. All right. Let's see here. *Wall Street Journal*, "Despite all the upheaval, Erica Schwartz, who was the deputy surgeon general during the first Trump administration, is expected to be selected to head the CDC. This nomination is thought to reflect the administration's desire to rein in RFK Jr. and mitigate some of the damage he has done to vaccine policy."

VR: Let me get this straight. He's her boss. How is she going to rein him in?

DG: I think he's been told, "Stop with the vaccines. You and Tyson can talk about ultra-processed foods. People are OK with that. Let her take the mantle," and then after the midterms -

VR: He was testifying today, and he was going off about vaccines.

DG: He can't help himself. He can't.

VR: Anyway, Erica Schwartz, do you know her or of her at all?

DG: I don't.

VR: She's been in the Armed Forces for a long time. I think she's a rear admiral or something like that. She was deputy surgeon general during Trump One, and she was the person who signed off on the testing centers because they had to write an order for testing to test all these Americans at the testing centers for COVID, and she signed off. She'd signed millions of test prescriptions for Americans.

DG: Oh, wow.

VR: Maybe she's good.

DG: I hope so. I hope so, actually.

VR: We don't know if she's going to actually be nominated. This is still an idea.

DG: Expected to be selected. All right. Moving into measles. We're nearing 2,000. If you look at the Hopkins U.S. tracker, and as we've talked about, these numbers are probably lower, because these are confirmed, counted. Hopkins tracker, we're up to 1,802. It looks like the South Carolina outbreak may be getting under control. It's been a little bit of time since we've seen a new case there, but really, we're having problems out in -

VR: Utah.

DG: - Utah. CDC has us at 1,714 confirmed, but if you look out at Utah, 405 already so far this year.

VR: We're going to exceed last year's numbers, most likely.

DG: We're almost there. We'll be there by summer. Last year, it was 2,242. We're already approaching 2,000, and we're only in April. It's only three and a half months in, so already quite a clip. All right. Flu. It looks good. This may be the last time we have to talk about flu for a little while. We're still seeing a little bit of flu B activity. I just consulted on a lady this morning. In New York, we're at moderate. Massachusetts is moderate. Everywhere else except for Washington, the great state of Washington.

VR: Washington, but it also looks like - Oh, that's April 4, so the week before it was higher. Yes, it's gone down.

DG: We're moving in the right direction.

VR: What is that state? Rhode Island? That's Massachusetts with the cape, right?

DG: Yes. Massachusetts is still -

VR: They're a little moderate.

DG: They're still in the high moderate. We're almost out of it. We're almost out of flu season. Actually, if you follow the epidemic trend, the visits are actually below our threshold. I think we're going to get a break there. We're already up to 139 pediatric deaths from flu. Over 100 little kids died from flu. As we've talked about, 90% of them unvaccinated. The majority of them, no preexisting illnesses. These were happy, healthy kids until they got the flu and died. The big thing really upsetting, it used to be, a few years ago, the majority of kids in the United States got flu shots. Now, the minority. We're not protecting our children.

A study from Denmark in the flu section. The article "Influenza Vaccination Attenuates Acute Myocardial Infarction and Stroke Risk Following Influenza Infection: A Register-based, Self-controlled Case Series Study, Denmark, 2014 to 2025." This was published in *Eurosurveillance*. Let's dive into this. Now, catching influenza increases the short-term risk of

heart attack and stroke.

We've talked about RSV does the same. Really, a lot of these respiratory infections, you get them, and in the next month, you actually have an elevated risk. Starting to think that those cardiologists actually may need to study a little more about infectious disease.

VR: They don't so far.

DG: Now, influenza vaccination has been shown to reduce the risk by preventing infection. Now, in adults 40 years or older in Denmark, hospital admissions for heart attack and stroke were more frequent in the first week after testing positive for flu than during any other period in the year before or after their test. Almost threefold for stroke, fivefold for heart attack. This increased risk was about half as high among people who tested positive for flu but had received the flu vaccine that season.

The idea is that the influenza infection can trigger this acute cardiovascular event through short-lived systemic inflammation that favors a prothrombotic state and destabilizes vulnerable atherosclerotic plaques. That's the theory in terms of mechanism, but it might even be more complicated than that. What we know is that multiple studies have shown that individuals have transient increases in cardiovascular risk after lab-confirmed flu. They cited a number of studies where the incidence rate ratio might increase to as high as six times the baseline for that first week and then taper down, maybe a peak three days after symptom onset, then dropping down over the next four weeks.

Now, several other studies suggesting that flu vaccination reduces cardiovascular risk included a meta-analysis of RCTs, about a 32% lower risk there. Here, they looked at whether people who get the flu despite vaccination basically are less likely to have a heart attack or, as I say, you may have gotten the flu, but did you die or have a heart attack? I guess I'll add that on.

Some nice figures. Cardiovascular outcomes in this study included not just heart attacks, but the endpoint of first-ever hospitalization admission for acute myocardial infarction or stroke in Denmark. They identified 202,785 first-ever hospital admissions for acute myocardial infarction or stroke in Denmark. Among these, 4,916 occurred in people with a PCR-confirmed influenza infection from the 2015-2016 up to the 2023-2024 flu seasons. Among cardiovascular events, 65% were strokes, 35% were MIs. Really nice figure here where you can see the main benefit is really in the first three days, really in the first week, out to two weeks, but then you really start to drop off after that.

VR: This is a complement to the paper we did on *TWiV* a couple weeks ago, where they showed that what happens in influenza, the myeloid cells get infected with the virus in the lung, they traffic to the heart because the heart is making a chemokine that attracts them, and they infect the cardiomyocytes, and then the interferon response damages them. That's cardiac disease. I don't know if it includes MIs or not.

DG: That was, I think, the gamma interferon-mediated.

VR: Yes. Vaccination also prevents that from happening. Yes, if you vaccinate against flu, you're going to prevent heart disease.

DG: Yes. It's crazy. All right. Our next, RSV. We're actually still on the way down. I'm going to

paste this in for you, Vincent, because you're sitting here saying, "Dr. Griffin, where's the data?" We're on our way down. You can really see our curve this year is really headed down. We're finally coming out of that RSV season. It was delayed.

VR: Yes, that's the curve you've been putting in. Yes, there it is.

DG: Yes. It's popping.

VR: That's just RSV diagnoses, correct?

DG: Yes. That's RSV on its way down.

VR: I went to the same page, and I see respiratory viral activity, which I guess is everything. Look at that.

DG: That's everything. Then just page on down.

VR: Look how beautiful this is.

DG: Isn't that beautiful?

VR: This is our winter peak, and this is August. This is our flu season. That's last year's season, and this is this year's season.

DG: Which not as bad, actually. It's not high peak-

VR: The peaks are lower.

DG: -but broader, right?

VR: I see. This is the one here.

DG: Yes. Then if you page down. Maybe David can go to that link and take a look, because you start off at the top of this page, Trends in respiratory viral activity in the U.S., and you get this.

VR: Look at this. This is trends by age. That's very cool.

DG: All kinds of things you can -

VR: Nice.

DG: -do.

VR: When you have data, you can do really cool things.

DG: Yes. If you don't have data, then you can just make stuff up, you see.

VR: Yes, unfortunately.

DG: All this data standing in the way of these. Remember, there's stuff that we can do about RSV, right? We've got vaccinations. We've got vaccination for not only older folks, but at-risk folks, 18 all the way up. We've got passive vaccination for the kids. We've got moms getting

vaccinated to protect their kids. Really, we have a lot of tools when it comes to RSV.

All right, moving into COVID. They updated our fancy multicolored curve page.

VR: Look at that.

DG: This is new. It's the same data. It's the same data. It's represented a little bit differently. Basically, what we're seeing is, when it comes to COVID, it is spring break time. We're down pretty much low across the country.

VR: Do you think we're going to have a summer peak again?

DG: Yes, yes, yes, we are, in July. I think it'll be in July. I was listening to an interview with - a couple of people from *The Pitt* have been showing up. There's a young doctor in training who, I think, her sister has autism, and maybe she is on the spectrum herself. She was over at Cohen's yesterday in their studio getting interviewed. My daughter got to see her. Then I was listening to NPR earlier today. They had the doctor who has the drug addiction problem who ends up gone for a season. Why am I mentioning *The Pitt*?

VR: I don't know. You like *The Pitt*.

DG: Oh, I know why I'm mentioning it. You do these takes. They're like, "Oh, hey, are you interested potentially in auditioning for this part?" Apparently, it's like a Zoom thing. You just look at your camera, you do your little take, your real recording, and they send it off. Apparently, he was home with COVID. He was home. He's in a sweat. It's only the top part of your body, so he's not even wearing pants at the time. We wear pants, as people maybe they can see if David - Proper nice pants here.

All right, moving on. The article "Deep Disadvantage in Mortality on the Frontlines of the COVID-19 Pandemic" was published in *Scientific Reports*. Here, these investigators looked at burial records from Hart Island. We've talked about Hart Island before. This is the City's potter's field. Potter's field, sort of interesting, why do they call it potter's field? Maybe we'll talk about that. This is where people who are unclaimed, it's like paupers' graves. Unclaimed people are buried in these mass burial sites on Hart Island.

They studied the distribution of unclaimed deaths over time and across boroughs in 2020 compared to pre-pandemic levels. They saw that the Hart Island deaths began deviating from the historical pattern in early March 2020, peaked five weeks later at 22 deaths for every death in the same week. A 22-fold increase compared to the same week in 2019. COVID-19 excess death rates were more than twice as high in the Bronx compared to other boroughs. There's a racial and an economic disparity there. Citywide, they estimated that 10% of all COVID-related excess deaths during the initial outbreak were unclaimed.

VR: Wow.

DG: Really, a lot. These findings suggest the pandemic greatly magnified existing inequalities in the city and more broadly illustrate the especially devastating impact of COVID-19 on economically and socially vulnerable populations.

VR: It's over a million burials on this potter's island. It's not far from you, is it?

DG: It's right where we sail. You can actually see this from my house. There's the bay where

we sail. You go out, and there's Hart Island out there. We actually have a photo that I pasted in. You can see there's this inlet on the southeast side. There's a navigational buoy that in a lot of our races, you race and you round the Hart Island nun, I think it is.

VR: Wow.

DG: There's over a million people buried here. I think it's controlled by the National Forest Service. Then if you have a relative, there's ways that you can go and visit there.

VR: For anywhere in the country? Is it just New York?

DG: It's really just New York.

VR: It's the city.

DG: It's New York's largest U.S. paupers' grave site.

VR: Wow.

DG: During the pandemic, actually, they dug these huge mass graves. There were some great photos in *The New York Times* of just body bags being dumped into these massive graves.

VR: From the air, it doesn't look like there are any graves there in that photograph.

DG: They bury them. They put soil. [crosstalk] That's the tough thing, right? You go to some of these cemeteries, and everyone's got their nice headstone.

VR: That's not what happens here. They have mass graves.

DG: Definitely during the pandemic.

VR: They put a lot of bodies in and just cover them up. It's ignominious, huh?

DG: It is. It's pretty horrible just how many people died, thousands of people, during the early days of the pandemic.

VR: Each week, right?

VR: Yes.

DG: What were we up to? Over 2,000 a day in early April 2020. Everyone seems to forget that, but we had refrigerator trucks on the streets here. It was just horrible.

VR: No, all they can focus on is that mRNA vaccines hurt people, they made us take it, and all this stuff, when, in fact, it saved lives.

DG: Yes, it saved lives. Over a million people died. What we're seeing, a disproportionate number of them were people who already were disadvantaged, and, as we'll point out, folks that got COVID, not all of them got better. Moving on to Long COVID, we have the nice article "Interdisciplinary Pediatric Long-COVID Care: A Descriptive Study of Interventions and Health-Related Quality of Life," published in *Open Forum Infectious Diseases*.

I say nice because I feel like a lot of people have not talked about Long COVID in children. This study describes demographic, clinical, symptom severity, and intervention characteristics within a pediatric Long-COVID clinic involving collaboration between infectious disease and integrative medicine physicians. It's a little context. We're looking here at University Hospitals' Rainbow Babies and Children's Hospital. This is a 244-bed hospital that serves Northeast Ohio.

In March of 2021, the UHRBC (University Hospitals' Rainbow Babies and Children's Hospital) Pediatric COVID Recovery Clinic was established to formally assess and manage children with persistent symptoms following a COVID-19 infection. Patients aged 1 to 26 years could be enrolled, although most patients over 21 were managed by the Adult COVID Recovery Clinic. Clinical data was extracted from the electronic health records for patients aged 4 to 25 with Long-COVID being seen within this clinic. A subset of patients completed validated PROs of well-being, fatigue, sleep-related impairment, disturbance, depression, and anxiety. Basically, getting these quality-of-life assessments.

A cohort of 214 patients, median age 14.7, 61% female, 83% white, were seen between March 2021 and June 2023, with about 40% reporting Pediatric Quality of Life Inventory and 30% providing Patient-Reported Outcomes Measurement Information System (PROMIS) measurement. They reported that the common documented conditions were fatigue (85%), headache (75%), dizziness (64.5%), anxiety (62%), nausea (60%).

Now, this is descriptive. They describe common interventions. Dietary changes were recommended in 82% of the time. Pacing was recommended in 66%. Sleep hygiene (61%). Other self-care techniques (47%). The Long-COVID cohort reported elevated PROMIS sleep disturbance, sleep-related impairment, anxiety, depression, as well as total fatigue. Basically, across the board, these kids all had higher scores for all these issues than national norms.

What we really need to see next, this is descriptive; we need to see if any of these interventions are actually leading to improved outcomes.

VR: This is why you can't say kids shouldn't get COVID vaccines.

DG: Just this one clinic in Northeast with hundreds of little kids who are still suffering for months and months.

VR: When Bhattacharya said, "Let it rip," that was a bad idea.

DG: I think people need to remember that. The Great Barrington Declaration was based on ignorance. We've got a brand new disease. We know nothing about it. You know what? I'm going to just say, let it rip. Let's see what happens.

VR: Very smart.

DG: Even with what we did, over a million people died. Over a thousand little kids died. Thousands of kids are suffering, ongoing.

VR: You know, according to Robert Malone, it's not a lot of kids.

DG: Robert Malone, oh, they all were fat and had problems to begin with. What is that? What is this? They all were unhealthy. It was their fault.

VR: They're humans anyway. They have to be protected, right?

DG: Yes, they're human beings. It's not in any way OK. All right. As we've been saying for a number of years now, no one is safe until everyone is safe. We're in the middle of April. We're getting towards the end of our Floating Doctors fundraiser. Guys, we need a little more people clicking on parasiteswithoutborders.com, clicking that Donate button, because we're not going to get to that goal unless we get a little help. Help us do what we're doing.

I would say if you like what we're doing or you just want us to keep doing it, you can go to parasiteswithoutborders.com and click. If you want to be part of the Floating Doctors fundraiser, go there as well.

VR: It's time for your questions for Daniel. You can send yours to daniel@microbe.tv. Jean writes, "I'm a long-time listener to *TWiV*. I have a quick question. Would you still use an unopened box of Paxlovid with an expiration of April 2023? I saved it because it's so expensive."

DG: Jean, what you need to do is you need to get a small sticky note, you write EXP2027, and you put it on the box. Then it will be fine. It's by law that all these products have to have an expiration date, but what we've seen over time is there's not a significant degradation. I would not see this as being a problem.

VR: Mary writes, "When I log into MyChart through the hospital health network, I see a notification indicating that I'm due for a COVID vaccine since it's been six months since my last dose. However, my doctor, who's also part of the same hospital health network, says wait until one year. Which should I follow? I'm confused by the difference. I'm 74."

DG: Look, the computer says it's time for a vaccine. It is funny, right? We've talked about this data. If you're over 65, the science-based recommendation is to get a shot every six months. Listen to your MyChart.

VR: Laurie writes, "It's Laurie from San Francisco with another question, this time on RSV. The Beyfortus giving season has been extended through the end of April."

DG: I like that.

VR: "What would you do if you had a newborn whose mom did not receive RSV vaccination during this baby's pregnancy and they are coming in for their first well visit on 4/29? Would you give your best shot then in April, knowing that RSV season is basically over, or wait until fall to give better coverage for the upcoming ‘26-’27 season? Do we know how long the protection from Beyfortus lasts?"

DG: We believe it works about six months. We just talked about the RSV and where we are. We're still not out of the woods yet, so to speak. It is, it's this interesting issue. You can have a conversation with mom depending on how mom's going to act. My mom turned 88 a couple weeks ago. We all celebrated. We all, meaning a lot of us were out. There were some of the little newborns, some of these young kids in their first year. In a situation like that, if mom says, "Oh, no, we want to have the kids out, we're going to potentially put them at risk," but if mom's like, "Listen, I'm a new mom, whatever else. I'm going to be home," you may individualize. RSV activity is still going on in California.

VR: Anonymous writes, "I assume that Invivyd hasn't gotten back to you with any reports about Pemgarda's continuing efficacy since I haven't heard you mention a reply from them. Would you consider sending them a reminder? Hopefully, that might increase their motivation to answer you, or at least remind them if they've forgotten. It would be helpful for me to know the answer since I need to decide whether to get a new infusion in a couple of weeks despite potentially serious medical shortcomings. I've read about some local infusion sites, which are all owned by the same company."

DG: We shared a little data, really suggesting that the product, the Pemgarda, should still be effective against the current circulating variant. I think it's reasonable to continue. I don't see much of a downside.

VR: Hayden writes, "I'm listening to the question you answered in *TWiV 1312* regarding the possibility of fomite transmission of SARS-CoV-2. As a resident in Singapore, I thought I am qualified to help. I recall during the early days of the pandemic, Singapore mustered a thousand-strong force of contact tracers to source every single infection. A big thanks to their efforts on behalf of all expats living here."

"During that period in January 2020, there was a cluster from a church where someone got infected sitting in the same seat as the pre-symptomatic index patient during a later mass at the same church. There was fomite transmission. That said, and with the benefit of thousands of updates from the government during this time, I do not recall a single other case where transmission did not involve some kind of respiratory transmission." I guess they were touching the pews, right? Aren't there things in front of where you sit in churches these days?

DG: I feel like you haven't been in church in a while.

VR: I haven't been in a long time.

DG: It was just Easter. You should have been there for Easter.

VR: Because when I was a kid, and I went to church because my parents made me go, you sit on a bench, but then it was a bench, and you could always hang on that. I used to.

DG: I was working Easter, but I showed up afterwards at coffee hour. Now I'm going to be found out. Snuck in the back as service was ending, so people thought I was just sitting in the back.

VR: Yes, it's good.

DG: Like a little less time in purgatory. Yes, you're right. There's the thing that comes down. You were probably raised Catholic, right?

VR: Yes.

DG: There's a lot of kneeling going on, and then you're holding the thing in front of you. Maybe the person was holding that, and maybe they're touching their face or something. It's also, how do you know that was the transmission, right?

VR: You don't, but the point is that it happened later. The guy went, he left, and then some other people came. It can't be aerosol.

DG: Probably not. It wasn't floating in that little zone, not moving. I think we've talked about the fact that they've calculated it's like one in 10,000 or less. There may have been some transmission, but that was not a major transmission route. One of the new residents was from Singapore. We were chatting about the marauding gangs of vicious otters that you have to worry about in Singapore.

VR: Really?

DG: Yes. I went for a run through the botanical garden there in Singapore, and there are signs up everywhere because there are these two main gangs of -

VR: Otters.

DG: -of otters.

VR: Wow.

DG: They maraud about. They go into people's yards.

VR: Anyway. Continuing, one additional note. "I found it quite interesting that some swimmers in my local pool were wearing masks and face shields later in the pandemic. I would have thought there was near-zero transmission risk in a tropical climate with chlorine splashing around where everyone is swimming separately. I guess in Singapore, some people feel they can't be too careful. Thanks for your continued focus on evidence. Some Republicans are pro-science and on your side."

DG: Yes.

VR: He gives a link to this outbreak.

DG: Oh, that's great.

VR: That's *TWiV*, weekly clinical update with Dr. Daniel Griffin. Thank you, Daniel.

DG: Oh, thank you. Everyone, be safe.

[music]

[00:47:00] [END OF AUDIO]