TWiV 1310 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.

[music]

VR: From *MicrobeTV*, this is *TWiV, This Week in Virology*, Episode 1310, recorded on April 2, 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: I'm in Kansas, Daniel.

DG: You were saying, Lawrence, Kansas? That's where the university is, right?

VR: That's right. Lawrence, Kansas, University of Kansas. Going to do a podcast tomorrow with a couple of virologists here at the university.

DG Oh, fantastic.

VR: It's nice out here. My driver, I told him I did virus podcasts. He said, "Let me ask you about vaccines."

DG: Excellent.

VR: He said he didn't get any COVID vaccines or never had a flu vaccine. He gets sick, but he's afraid of them. I said, "Well, let me say this. When you hit 65, conquer your fear because you're going to start getting really sick." He said, "OK, I'll do that." Then I said, "You should get the shingles vaccine and reduce your risk of dementia." He said, "Oh, OK, I'll do that. I'll tell my wife, we'll go get that." I made some progress.

DG: No, that's great. I think it's important to have those conversations because a lot of people would shut down. That would say just shake their heads off, but it's not true. Most people in this country, when they actually know the truth about vaccines, they realize, "Wow, that's really the right thing to do." There's a realization now that one of the ways to talk about vaccines is the fact that it's a way for you to maintain your freedom, your independence, because as we're going to even talk a little bit tonight, as we get older, a lot of people start to have cognitive issues and other issues that limit them.

Vaccines are a great way to keep your freedom, your independence, and your cognition and everything else going forward.

VR: The interesting thing about him was that he wasn't antagonistic like a lot of anti-vaxxers are. He just said, "I'm scared to get vaccinated." I talked to him calmly, and he was very receptive. He knew I had a podcast. He knew I was a virologist. He's very impressed that I'm from Columbia, so maybe he doesn't mind expertise.

DG: Imagine that.

VR: Imagine that.

DG: Let's jump into it. I'm wearing my prion bow tie today, bright yellow prion bow tie.

VR: All right.

DG: I'm going to start off with a quotation from a Swedish biochemist who won the Nobel Prize, just because apparently my quotation last week just wasn't up to Vincent Racaniello's snuff, but apparently I got a lot of really positive comments of a lot of *Hail Mary* fans out there. Anyway, I thought mentioning the book *Artemis* was just a good plug for Artemis II. People are following what's going on. Some pretty cool stuff online, if you don't know what I'm talking about. The moon and space exploration.

Here's the quotation. "We live in a world where, unfortunately, the distinction between true and false appears to become increasingly blurred by manipulation of facts, by exploitation of uncritical minds, and by the pollution of the language."

VR: That's a good quote, Daniel. I totally buy into that. This is 1948, right?

DG: Isn't that crazy? This is 80 years ago. Hey, just to remind people, this has been going on for a while.

VR: Yes. Excellent.

DG: I'm going to start off with a fun one. When I saw this, I just laughed. I don't know if people are familiar with the history of the five-second rule. I've looked a little into this. Apparently, it started off with the 15-second rule. This was like a Genghis Khan. If you drop your meat on the ground, you got 15 seconds to grab it back up, and everything will be OK. Come on. Genghis Khan, whatever his strengths were, he was not a microbiology, food safety expert by any means. Anyway, the article, "Five-second Rule for Dropped Food: Does it Apply to Dropped Medical Objects in the Operating Room?"

VR: Oh, gosh.

DG: Oh, my. "A Randomized Study of Disinfection Approaches for Contaminated Arthroplasty Implants," was published in the journal *Infection Control and Hospital Epidemiology*. The first line, hilarious. This so-called five-second rule has been debunked in food safety, yet a similar mindset persists in surgical environments. [laughs]

VR: Shocking.

DG: Oh, I don't know how many surgeons we have listening, but we're going to point out that that's flawed.

VR: Let me get this right, Daniel. They're going to implant something in you, and they drop it

on the floor, and it's OK?

DG: They drop it on the floor, and they're like, "Oh, quick, grab it quickly. Wipe it off, stick it in there. It'll be OK. It was less than five seconds." There's background on this where they've actually - These floors, as clean as you try to get your surgical floor, it's not that clean. There's a lot of microbes there. They do this study, and they simulated a real-world scenario, as they say, to assess the efficacy of three disinfectants on these prosthetic joint liners that they're going to put in, these PE liners.

The primary objective was to compare bacterial contamination before and after immersion in sterile preparations. This could be different things. It's going to be a chlorhexidine alcohol, a povidone-iodine, or ethanol. They're going to conduct this prospective randomized control. It's a bench study. They're not actually putting these in people, by the way. They're doing this down at Duke tertiary care hospital in Durham, North Carolina. Maybe some basketball fans have heard of this school.

The study was performed in four ORs, primarily assigned to orthopedic surgery, and occurred during the orthopedic operations to really get a sense of it as being put on the floor in these scenarios where they're trying to get it clean as they can. They've got a total of 213 of these polyethylene liners, the PE liners. They've got 142 hip, 71 knee liners. There randomized so there's going to be a control group, an ethanol group, a chlorhexidine alcohol, a povidone-iodine group, and as mentioned, it's going to be hips and knees.

Now, clinically important pathogens were found in 34% of these before disinfection. Drop them on the ground, grab them within five seconds. Now, there's still going to be clinically important pathogens in 19% after. As they say, the results underscore that even brief exposure to non-sterile environments can introduce microbes that are not easily or fully removed from implants, and that, I love this, whenever possible, dropped implants should be replaced rather than disinfected.

VR: Daniel, what I would have liked to have seen is an implant that wasn't dropped, and let's see if there's any microbial contamination of that, because you could imagine there might be, right?

DG: I guess that's the issue. Yes, it would have been nice to see that because this assumption that before they drop them, there's nothing on them is supposedly the idea. It's nice to just have that control in the experiment, in the same set of hands.

VR: The thing is, is it really a problem to get a new one? Does it take an hour to get a new one? Is that why they just use it?

DG: I think it's money. I think it's expense. These liners are not cheap. I think the next time, maybe at some point, if I need a joint replaced, this could be one of my things with the surgeon. Just like, "Hey, by the way, might not seem like a big issue for you, but if you drop something on the ground, leave it there and get a new one. Feel free to bill me." [laughs].

VR: Yes, but Daniel, you're going to be sleeping. You're not going to be able to watch them. They're going to do it anyway.

DG: Yes. It was earlier this week, this woman was telling me, "Oh, I slept really well." I'm like, "How do you know? You were asleep." [laughs] In Spanish culture, a lot of places they

say, "I rose well." I'm like, that's more appropriate because who knows what happened while you were asleep? You comment on how you feel when you woke up.

VR: This is a great study. I love it.

DG: [laughs] Now this next one is like, when are they going to learn? This is from the FDA. “Outbreak Investigation of *E. coli* O157:H7: Raw Cheddar Cheese, March 2026.” This is in bold. “Do not eat, sell, or serve certain RAW FARM-brand Raw Cheddar Cheese. FDA’s investigation is ongoing.” We've talked about this. This is an update. Since the last update, which was March 15, two additional illnesses have been reported. A total of nine people infected with the outbreak strain of *E. coli* have been reported from three states.

Illnesses started on dates ranging from September 1, 2025, to February 20, 2026. Three people have been hospitalized. One person developed hemolytic uremic syndrome. That's where you end up with kidney failure. So far, no one's actually died, but over half of the illnesses are in children under 5. They're feeding these poor little kids this unsafe product. Of the eight people that they interviewed, 100% had consumed raw dairy products. Then this was this link, where when they knew what the product was, it was, and I have a picture of it in our show notes, this raw cheddar grass-grazed cows.

VR: Is this the company that wouldn't withdraw the product that we talked about last time?

DG: This is the one we talked about last time.

VR: I'm glad to see the FDA is still screening, Daniel, because the CDC is not going to screen for rabies anymore. Did you hear that?

DG: Yes, no rabies, no mpox. I was just doing a talk on rabies earlier this week, and my wife was like, "Did you really say that?" One of the things I talked about is that we have a problem with vaccination in the United States. We also have a vaccination in the United States relative to dogs. In the United States, about a quarter of the dogs are not vaccinated, 60% of the cats are not vaccinated. In 2024, we have the last numbers. We had a little over 30 dogs with rabies, over 200 rabid cats. One of the arguments, one of the reasons that people are refusing to vaccinate their dogs, is, are you ready for this? There's a fear that the dogs are going to develop canine autism.

VR: Oh, my gosh.

DG: Yes.

VR: What was the quote at the beginning of this episode?

DG: [laughs] Exactly.

VR The exploitation of uncritical minds? Oh, my gosh.

DG: Yes. There was a question about "Canine rabies. Is that a thing? If it is, how do you recognize it?" I'm like, "Oh, the dogs, they won't make eye contact," but it's even harder to tell with the cats because - Anyway. Before I say anything inappropriate. [chuckles] Moving on to another article. The article, “Directed Donations for Unvaccinated Blood:” It's getting crazier, Vincent. “A Departure from Evidence-based Medicine Associated with Clinical Harm, Resource Waste, and Oversight Gaps in a Two-year Single-center Series,” was published in

Transfusion.

This is this whole issue where people are starting to say that "If I'm going to need a transfusion, I don't want any of that blood from people who've been vaccinated. That vaccine-tainted blood." Yes, I've run into this. These are the results of a retrospective review of directed donations received at Vanderbilt University Medical Center from January 1, 2024, December 31, 2025. This is a two-year, just their single-center series of directed donations where the documented rationale was refusal of standard inventory due to vaccinated blood concerns. Yes.

They basically go through how this is just this issue with a departure from evidence-based medicine. There's evidence of clinical harm. There's resource waste. They even mention two patients clinically deteriorated in the setting of refusal of standard components.

VR: What are they concerned about here, Daniel? Do they voice it?

DG: They're concerned that the vaccine that those people got, some part of that vaccinated voodoo, is going to get into them through the transfusion.

VR: Yes, and it will probably protect them somewhat.

DG: Yes, but they're not buying any of that.

VR: There are antibodies in these non-vaccine sera also. Aren't they worried about those?

DG: Yes, but, as we know, Vincent, those are natural antibodies from people that have recovered from these illnesses.

VR: Really? There's a difference between an antibody induced by a vaccine and an infection? [laughter] Oh, this is something new. I have to go back to school.

DG: You may have to go back to school. Measles, moving on. Measles, where I see the headlines, over 1,500. According to Hopkins, we're up to 1,654. The CDC has us at 1,575 as of March 26. Basically, we're continuing to see over 100 confirmed new measles cases each week. We're on track to be over 5,000. It's really interesting. The whole idea that people used to have was, "Well, I don't need to vaccinate my kids because everyone else will vaccinate and I'll be enjoying that umbrella."

The umbrella's gone. Not good stuff. Flu, though, Vincent, it seems to be getting better. We seem to be coming out of the winter respiratory season, looking across the country. There's only a few places where there's still high activity. Oregon, Idaho, Colorado. Looks like, what is that, New Mexico?

VR: I think I'm in one of those orange states. Where's Kansas?

DG: No, you're in Kansas. Kansas is due east of Colorado, the boxy square, just northwest of Texas.

VR: North of Oklahoma.

DG: North of Oklahoma, south of Nebraska.

VR: There's high activity here still. The one below, March 14, that's old.

DG: Yes, it was, but you were in the lower edge of high. You're really coming out of that, which is nice. You can see in the upper northwest there, you see Idaho. My daughter Daisy was saying something about, "Oh, yes, out in the Midwest and Idaho." I'm like, "No, no, Daisy, that's not the Midwest."

VR: No.

DG: She must be in Iowa.

VR: Kansas is right smack dab in the middle of the country.

DG: It is smack in the center, yes.

VR: What about RSV, though? The flu curve is going down. It's quite clear. The good thing about flu, Daniel, is there's only one peak a year, not like SARS-CoV-2, right?

DG: Yes, it's really true. We're coming out of it. I was just looking at pediatric deaths. We hit almost 300 last winter, 294 as they pull in the final tallies. Another eight this last week. We're up to 123 deaths this flu season, so maybe not quite as bad. Before we jump to RSV, I am going to tell you about another paper. This is another - not only are vaccines good, but some vaccines are even better than other vaccines. I know sometimes you have trouble getting that high-dose flu vaccine, but you may want to sign up and hunt this down.

The recommendations for the flu vaccines is they go through, and they pick what we're going to - A couple A's are going to be in there, we're going to get a B in there, and then the WHO meets. Nowadays, we just say, "Yes, that sounds good. We're going to take your recommendations, but not pay or help generate them." Let that be beside the point. Here's an article. Are you ready for this, Vincent? “Risk of Alzheimer's Dementia After High-Dose vs Standard-Dose Influenza Vaccination*,”* published in the journal *Neurology*.

VR: I don't even know why you would even do this study.

DG: I guess the whole idea is it's almost like a dose response. Previous studies, including large cohort analyses, they've compared vaccinated to unvaccinated adults and actually shown that routine immunizations, such as the flu vaccine, can reduce Alzheimer's dementia risk. We've talked a lot about the shingles shots. A lot of the other vaccines, we're seeing this evidence. This is a dose response. If we give you the high dose, maybe that's even better. They do this retrospective cohort study.

They're looking 2014 to 2019. They're using this U.S. healthcare claims database, really large healthcare database. They're emulating a target trial using these sequential nested trials. The effects were estimated as risk difference, but the numbers that we're really going to hit are the numbers needed to treat. We know that there's going to be a certain number needed to treat to get a reduction here. They're also going to look at sex. I don't know if I mentioned this here, but let's go into that.

They found out that the Alzheimer's dementia risk differed after high dose versus standard dose, so even better. We're looking at a high dose with 120,775 folks, average age, median age 74.4, a little more than half, so 57% female. Then we've got a standard inactivated influenza vaccine group, 44,000. Mean age 73, majority female, also in this group. The high

dose was associated with a significantly lower Alzheimer's dementia risk during, basically, the two years post-vaccination. They give us this number needed to treat.

It's really interesting, number needed to treat. You do have to vaccinate 185 people to prevent one case of dementia with high-dose versus low-dose. Who gets more of a benefit, Vincent?

VR: The women.

DG: Yes. The women needed to treat was -

VR: That's just like the shingles vaccine, the same virus -

DG: [crosstalk] The process is even longer.

VR: The shingles vaccine, it's the same effect. Women are far better off with the risk reduction.

DG: Yes.

VR: Interesting. Daniel, all vaccines are going to end up preventing dementia and cancer. How about that?

DG: That's what I'm realizing. I had a little, "Are all vaccines anti-cancer and anti-dementia vaccines?" It really looks like they are. If you want to reduce your risk of dementia, you want to reduce your risk of cancer, you want to reduce your risk of the specific issue, then yes.

VR: Daniel, this is something. RFK needs to hear this. [crosstalk]. Cancer and dementia are chronic diseases. Maybe vaccines prevent chronic diseases, Daniel.

DG: They do.

VR: He's on a crusade to show that vaccines cause chronic diseases, but now we're finding the opposite.

DG: Never let the truth stand in the way of your beliefs, right?

VR: Yes, right.

DG: That's what science is. Science is basically opening your mind and saying, "Well, what's actually the truth?" Then whatever the truth is, OK, that's what it is. Yes, RSV, Vincent, coming off the hump. I think we're going in the right direction here.

VR: Yes, it is off. It's interesting how it's displaced from other years, though, right?

DG: Yes, it definitely was delayed.

VR: We're coming down. This is all good.

DG: Good stuff.

VR: Flu is down, RSV is down, COVID is down. Did we mention COVID?

DG: COVID, yes. If we lick our multicolor line, we're really coming pretty into the low and very low in most parts of the country.

VR: Folks, enjoy COVID-free months because pretty soon it'll start up again.

DG: Yes. I think it is reasonable to refer to this as spring break because that's really what it is. It's a spring break, and then unfortunately, COVID with its double bump, July, August, it'll be coming back up. Vincent, scary stuff. I've been ignoring this, but this is *MMWR*, so at least we'll mention it. Then maybe people can already tell where this is going. We have, "Early Detection and Surveillance of the SARS-CoV-2 Variant BA.3.2 worldwide, November 2024 through February 2026."

We read that the SARS-CoV-2 variant BA.3.2 was first identified in South Africa on November 22, 2024. BA.3.2 has approximately 70 to 75 substitutions and deletions in the gene sequence of the spike protein relative to JN.1 and its descendant, LP.8.1. The antigens used in the 2025, 2026 COVID-19 vaccines. CDC is using a multimodal SARS-CoV-2 genomic surveillance approach to monitor the emergence and spread of this and other SARS-CoV-2 variants internationally within the United States.

I like the fact they say variants instead of strains. Someone seems to be getting a little sciencey there. The first detection occurred June 27t 2025, through CDC's traveler-based genomic surveillance program in a participant traveling to the United States from the Netherlands. The first U.S. detection of BA.3.2 in a clinical specimen collected from a patient was reported on January 5, 2026. As of February 11, 2026, BA.3.2 has been detected in voluntarily self-collected nasal swabs from four U.S. travelers.

I go into a little bit here. They do finish off with SARS-CoV-2 continues to cause substantial morbidity and mortality worldwide. BA.3.2 mutations, I'm going to fix this, in the genetic sequence coding for the spike protein, have the potential to reduce protection from a previous infection or vaccination.

VR: If you look at the headlines, they're already predicting what's going to happen without knowing anything about this.

DG: Oh, yes. It's going to be terrible. It's going to target the children disproportionately. Guys, we're on the way down. We're about to get into spring break. It's going to be hard for you guys to blame the cicada variant on our spring break as the virus goes down.

VR: Why do they call it cicada variant?

DG: I don't know. Cicada, cicada. I don't know.

VR: Yes, cicada.

DG: Cicada. Probably our buddy up in Canada named it or something.

VR: This reminds me of Omicron. South Africa, lots of changes in the genome, suggesting it came from a persistently infected immunosuppressed patient. That's what we thought of Omicron, right?

DG: Yes. It makes sense. [crosstalk] If you go through, they do the genetic tree, and you can see where this fits in. The sky is not falling, just not particularly. Now, we have a couple of

Long COVID articles here. They're interesting. I'll start with the first one. The first one's interesting. The second one is encouraging. How about that? The open access article, "Paxlovid Shows Organ-specific and Age-specific Impacts on Risk of Developing Post-acute Sequelae of COVID-19," published in *Communications Medicine.*

The researchers analyzed data from 19,413 patients, adults, so aged 18 or older. This is a PASC research cohort in New England who had at least one COVID-19 infection episode between January 1, 2022, June 7, 2022. We've got 22,094 episodes. They found that across all age groups, Paxlovid showed no statistically significant effect in lowering overall PASC risk. Then they do this stratification by organ system. I'll have the figure here. When you start looking in different areas, you actually -

I wonder how much of this is data mining as you go into this. First, good news. 37% reduction in gastrointestinal PASC, so odds ratio, 0.63, but A 97.4% increase in eye and ear-related PASC, that's an odds ratio, 1.974. Among patients aged 65 to 75 who were not hospitalized, Paxlovid was associated with a 16.8% reduction in PASC risk. We're seeing an odds ratio of 0.832. No statistically significant effects for other organ-specific outcomes. They've got a nice figure. We can look at each different area there.

VR: What is this effect on eye and ear-related PASC? Why is it going up so much?

DG: I don't know. I'm glad that we see that because then we also see the GI going down and everything else being the same. It's one of those where I worry. You almost need to do one of these chi-squared analyses, where if you start looking at so many variables, you just expect you're going to find something. I don't really know if I can make much of this. Then they break it down into different age groups, 60 to 75. Look at that error bar. That's almost hitting zero. Even the confidence interval stretched to 0.989.

You give me a P value of 0.05, but barely. Not sure what to make of that. Just a lot of trials now. No consistent reduction in Long COVID or PASC with getting that Paxlovid. The article, "The Effect of Fluvoxamine and Metformin for Fatigue in Patients With Long COVID: An Adaptive Randomized Trial," published in *Annals of Internal Medicine*. Randomized, placebo-controlled, adaptive trial designed to look at the efficacy of fluvoxamine and metformin for Long COVID, 399 adults with fatigue persisting 90 or more days after a confirmed SARS-CoV-2 infection.

They're randomly assigned. They either get fluvoxamine, this is an antidepressant, usually, it's how we would use it, 100 milligrams twice a day, metformin, 750 milligrams twice a day, or they get a matching placebo for 60 days. No one knows what they're getting. Then they're going to ask people to fill out this fatigue severity scale. It's a nine-question. It's one of these one-through-seven - I call these Likert scales. What they found is that - Is that accurate to call this a Likert scale when they do the one through seven like that?

VR: I don't know.

DG: Someone can write in because I did this before, and there was some subtlety about whether or not it's appropriate to call it a Likert scale. Basically, one through nine, motivation, exercise bringing on fatigue, getting easily fatigued, really questions about this. What they found was that fluvoxamine showed a significant reduction in fatigue compared with placebo, and it was sustained at day 90. Fluvoxamine improved quality of life scores. Metformin, no benefit. Also, the fluvoxamine had, actually, the lowest number of adverse

events, 50% lower than metformin, 50% lower than placebo. That's consistent, people feeling better on this medication.

VR: It is a Likert scale. I looked it up.

DG: Excellent.

VR: This is an antidepressant, the fluvoxamine, so maybe that is not really addressing fatigue directly. Maybe it's relieving depression, which makes you tired, right?

DG Yes, or even your perception of - It says, this is subjective feeling. You're like, "No, I feel better. I don't feel quite as fatigued." What would be nice to couple with this is you want to do some actual performance testing, like, "OK, you say you're less tired, but can you walk a little bit longer? Are you able to do more activities?" Nice to know. You basically look at this and say, "Hey, this is something to consider in patients with Long COVID reporting fatigue, because you are at least going to get this reported benefit. Patients are going to feel better.

No one is safe until everyone is safe. I want everyone to pause the recording, go to Parasites Without Borders, click on that Donate button. We're in April. This is the third month of our Floating Doctors fundraiser. We're trying to get up to that $10,000 maximum donation to support the great work they're doing down there in Panama.

VR: It's time for your questions for Daniel. You can send yours to daniel@microbe.tv. Rich writes, "Daniel, I am 75. What is your recommendation about traveling overseas and having flu-COVID tests, Xofluza, and Paxlovid prescriptions with me in case I get an infection?

DG: I was looking around to see if I have any of those testing around. They make these quad tests now, which are really great, where you can actually figure out, because if you're sick with a virus, you don't know what it is. We've talked about this. The only way to know is by doing a test because I've got these great tests where you can, "Do I have flu A? Do I have flu B? Do I have COVID? Do I have RSV?" If you have flu or COVID, then potentially if you had one of these prescriptions on hand, you can jump in sooner, better, particularly if it's Tamiflu or Xofluza.

We've talked about some of the data may say that Xofluza has certain benefits, not only for you, but even for those traveling with you. If you're traveling with me, I would love you to take the Xofluza, reduce your risk of giving me the flu, and Paxlovid as well. If you're going to get these, these are prescriptions. Talk to your provider. Make sure there's no issues with drug-drug interactions, but very reasonable to travel with one or two, actually, of these rapid tests, is that repeating in 48 hours if you're not sure. Then, on-demand Xofluza or Tamiflu and Paxlovid.

VR: Can a prescription written by a U.S. doctor be filled in any foreign pharmacy?

DG: I would bring the medicine with you.

VR: Bring it. You're going to have to buy the tests and the medicines, right?

DG: Yes. The medicine is going to last. This could be a once-a-year thing. You just restock.

VR: Then in that case, if he could get a prescription, then he could just fill it.

DG: Yes, do fill it. Don't walk over there with a prescription and think you're going to find Xofluza or Paxlovid.

VR: That's the other thing. You won't find it. Simon writes, "Love all you do, but wonder if you could push on details of meningitis B. I keep hearing that the big issue is if the bacteria crosses the blood-brain barrier. However, as I understand it, for the vast majority, the bacteria never crosses the mucus-blood barrier. If it does, then it's more than likely it will also cross the blood-brain barrier. Even if it doesn't, it is likely to cause sepsis. Specifically, 60% to 90% of those cases will develop meningitis either alone or with sepsis. 50% to 80% will develop sepsis either alone or with meningitis, AKA, the focus on blood-brain barrier is the wrong focus.

DG: That's interesting. What can I say? There are certain pathogens that have the ability to basically get across this barrier and get into the brain. They tend to have certain virulence factors that allow them to do this. Really, it might break down in two different ways. I'm sure we've covered this on some of the other *MicrobeTV* podcasts, where the bacteria can either go between cells, or they can actually go through the cell. There's this ability to travel through and get in.

Pneumococcus can do this, the meningococcus can do this. Not all bacteria are particularly good at this unless there's something devastating that really permeabilizes the blood-brain barrier. We do. We see gram-negatives get into the CNS. Now, when it comes to meningitis B, this can happen very quickly with the meningococcal bacteria. That's why we talk about the vaccinations. In the past, we talked about how in the UK, they made a cost-benefit and we don't see enough of it. It doesn't make sense.

Here in the U.S., we do actually recommend before our kids go off to university, before people are in these military settings where there's a higher risk. It's getting not only the meningococcal B, but the A, C, Y, W. Really getting all five variants protected.

VR: David writes, "I believe I heard on *TWiV* that you have received the Novavax Nuvaxovid vaccine. I had a severe reaction to my third dose of Pfizer mRNA vaccine in 2021, so I decided not to take the mRNA vaccine again. I had no reaction to Nuvaxovid a few months ago. Is there any evidence that Nuvaxovid is more or less effective than the mRNA vaccines? If there is no proven difference, why not recommend Nuvaxovid more widely, especially for those who have had side effects to the mRNA vaccines or are wary of the technology?"

DG: Yes, David, I've been getting, my family's been getting the Nuvavax. What a horrible - Just the Novavax vaccine. [laughter] Who can even pronounce that" I think it was my in-laws were like, "We want the Novavax. We don't want this Nuvaxovid or whatever it's called." We've talked about a lot of the studies. It's an effective option, and if you're wary of technology, if you've had issues with reactogenicity in the past, it's a great choice. I really think it has not gotten the publicity, the education that it really needs.

VR: Sue writes, "I can't thank you enough for continuing to provide invaluable information and insights every week. You both shine a bright light to enable all of us to escape the darkness of disinformation. My healthy granddaughter, who lives in Brooklyn, is seven months old and so is eligible for Moderna COVID vax. She is tentatively scheduled for the first dose at eight months of age. During the most recent clinical update, Dr. Griffin mentioned that currently, COVID incidence is decreasing in the Northeast, likely at least for the spring. Unfortunately, there will be a summer wave.

Question one, is it better to change my granddaughter's first COVID vaccine appointment later to say mid or end of May to try and somehow better time it to the summer wave? Her parents are willing to change the appointment." Take that one first.

DG: A lot of this has to do with the fact that there's going to be two doses here. Let's see. If you go ahead and you get a dose, let's say - We're already in April now. Let's say you get a dose in April and then the next dose is going to be June. That's really good timing for setup for the summer wave. Yes, I think you're at a good time. Go ahead, get that first dose, and then eight weeks later, you can go ahead and get that second dose. That was the interesting - How long should you wait?

Early on, there was a lot of discussion about trying three to four weeks to get the second dose. Part of this is we're in the middle of a pandemic. We're trying to get as many people protected as possible. Waiting a little longer probably gives your germinal center a little bit better time to mature. Also, we found over time that it was associated with a better safety profile. Yes, I think you're looking at a pretty good time. Then the second dose, about eight weeks later.

VR: Her second question was how far apart, four or eight weeks? You're saying eight weeks, right?

DG: Yes.

VR: Question three, once she completes the two-dose series, when would be her next COVID vax?

DG: Then you get into this cadence of once a year. Let's say it was June, and then you're looking at maybe getting the next shot, maybe it's five months instead of six months. You're looking at probably each early November getting into that cadence.

VR: Thanks for your expertise and kindness. That's *TWiV* weekly clinical update with Dr. Daniel Griffin. Thank you, Daniel.

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

[music].

[00:40:24] [END OF AUDIO]