TWiV 1290 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 1290, recorded on January 22, 2026. I'm Vincent Racaniello, and you're listening to the podcast all about viruses. Joining me today here in New York at The Incubator, Daniel Griffin.

Daniel Griffin: Hello, everyone. Hello, Vincent.

VR: Welcome back to The Incubator.

DG: Nice to be here.

VR: Now I can actually see your tie.

DG: It's not going to help.

VR: Oh, gosh. It's got some bacteria on it, doesn't it?

DG: Actually, they're little arthropods that you might find in your bed.

VR: Bed bugs, eh?

DG: Bed bugs.

VR: Wow. That's pretty sharp, and you have the matching pocket.

DG: Matching pocket square. I did the socks a little, but they've got purple. These are my thick, warm socks, because it's been really cold.

VR: Yes, it has been. Today warmed up, though.

DG: Yes, but it's going to get - Just a teaser.

VR: It's going to go back down, and we're going to get a lot of snow this weekend, right?

DG: As my wife said, this global warming, I don't know.

[laughter]

VR: All right.

DG: I was like, "Oh, no, you're a Republican." I ran out of the car. No, I'm joking. Actually, not, but anyway. All right. Let's jump into it. If people have been following what's going on in the world, it seemed to me like a good time to quote a Danish philosopher.

VR: You're talking about Danish cheese?

DG: The Danes, Greenland, Iceland, who can ever keep them straight? Anyway. Here, Søren Kierkegaard. "There are two ways to be fooled. One is to believe the one is to believe what isn't true. The other is to refuse to believe what is true."

VR: That's exactly what's happening in the U.S., right? By people who are ostensibly in charge, and they're all fools.

DG: We're going to get into that, actually, when we talk about measles and measles eradication.

VR: It's unbelievable.

DG: It's shocking. This week, we got the health alert. I feel like this is 18 months too late, by the way, because we've been talking about this, right? It was "New World screwworm. Outbreak moves into northern Mexico." I got a call from someone from Radiolab, Sarah. I don't know how to pronounce. [crosstalk]

VR: Kah-ree. I told her to call you.

DG: Q-A-R-I. How do we pronounce? It's [crosstalk].

VR: Kah-ree.

DG: Kah-ree. Sarah Qari. It was delightful discussion. She seems about as nerdy as I am discussing the -

VR: I figured you should talk to her about screwworm. I'm not a parasitologist.

DG: You play one on *TWiP*.

VR: I play one, yes.

DG: Even though this isn't a virus, I thought it's good in the clinical update to give people an update on what is going on.

VR: She had asked me, "Why does it matter if we want to eradicate screwworm?" Did she ask you that?

DG: She did. Why is this Sisyphean task? Do we just have to keep doing it? I was thinking, I'm not sure Sisyphus is the right - Is he the guy, I think his liver gets eaten out, and--

VR: No, no, no. He was rolling the ball-

DG: Rolling the ball up.

VR: - up the hill, and then it kept coming back down again.

DG: Who's the one with the liver? Who's the one getting the liver? Maybe our people. He's rolling, and then it comes back down, and he's got to roll it up again, I guess. As I was saying, we had gotten that rock all the way to the top of the hill. Things were good. All we needed to do was just stand there and keep it from rolling back down, and we failed. A little background. Let's just talk because you and I know this well, so we're off the cuff.

The name of the disease is a little challenging because it's the New World screwworm fly. Screwworm, what's that? It has to do with these maggots. The New World screwworm fly will find, so much as a tiny scratch, it will lay its eggs in the scratch, and then those eggs will hatch into maggots, larvae. Those maggots, this is what's really scary, they will aggressively burrow in and eat healthy flesh.

Most maggots we think of as not being so aggressive, preference for dead flesh, right? Sometimes we'll see a person living with homelessness. They'll have maggots, and the maggots are actually debriding and cleaning these infected wounds. Here, what we started seeing and started discussing with Ben LaBrot on a show of *This Week in Parasitism* is this insect with these horrible maggots was starting to be noticed in Panama.

What's the history on this? This used to be a major problem in the United States, in the Southern United States, impacting the cattle industry to the tune of over $1 billion a year in losses because livestock, they're out there, always getting little, tiny scratches. Now, that little, tiny scratch is a potential for this egg, this maggot, to basically start eating the flesh and killing your animals, and killing them in a horrific way.

VR: This is agriculturally significant, obviously.

DG: Agriculturally significant, and we'll talk about humans, too, because we're going to discuss some human cases. Agriculturally significant to the tune of over $1 billion a year. Who knows what would be in today's dollars? The way we combated this was irradiating males. Irradiated males. We released millions of these. They mate with the females, and then the females mate once, and that's it. They go on not to produce. We created a wall. We got rid of all the screwworm in the Southern U.S.

Unfortunately, this wall was the Rio Grande, this huge thousand-mile border between the U.S. and Mexico. We talked to Mexico. We used to be able to talk to Mexico. We used to have a nice relationship. We used to be able to work together on things. We said, "We've been doing this huge border. It would be better for us if we pushed screwworm all the way down and had a wall that was a smaller area, maybe down there by Panama, let's say. Good for us, also good for you, right? Because get rid of screwworm from Mexico, Guatemala, El Salvador, Costa Rica, push it all the way down," and we did push it all the way down to the Darién Gap in Panama.

Then all we needed to do was just keep releasing, just a little bit of pressure here, keep that ball, that rock from rolling down the hill, keep this barrier, this wall down by the Darién Gap, and then monitor. We start to see issues in Panama, jump in quick. Don't let it creep up to this really wide area.

VR: You jump in and release sterilized males.

DG: Yes. It is costing millions of dollars, but you're protecting $1 billion input. Unfortunately, we didn't do that. We started talking about cases that were happening down in Panama, cases actually were up right by the Costa Rican border. Now, as we hear in this report, we have almost 150,000 animals that have been infected. We have human beings, a number that have ended up in the hospital, because same thing with a human being, you get a scratch, the eggs, the maggots burrow in.

VR: Now, this is northern Mexico, right?

DG: Right at the border with the U.S. Only now are we getting a health alert.

VR: At least we're getting it from CDC, right?

DG: Yes.

VR: It's delayed, and that's the problem.

DG: We're only hearing about it now. Now we have turned this into this challenging task because now it's going to cost so much to push this back down.

VR: Will we do it?

DG: We've got to make that decision. I think you're hopefully going to hear voices from the cattle ranchers in the Southern U.S. saying, "Listen, we're about to face significant economic losses," maybe over $1 billion, if the government doesn't step in and spend a few million. They're already facing challenges with the import of beef from South America, with whatever's going on there, and they're already having human cases in Mexico. We're going to have cases here in the U.S. in human beings.

I worry about vulnerable populations. Again, people experiencing homelessness because you or I, if we had some maggots starting to eat away part of our limb, we'd immediately go see someone about it. A lot of times, we see these folks, alcohol, mental health, substance issues, by the time sometimes they're seen. Some of the elders down in Panama had remembered cases from when they were younger.

VR: Let's hope the U.S. does the right thing.

DG: It's horrible for the cattle industry, horrible for human beings, horrible for wild animals, right? That's our health network. We'll leave in a link. I think maybe Radio Lab's going to talk about this. Radio Lab aficionados. This is another topic I think we really love, is this connection between shingles vaccination and potential wonderful benefits. This article, I thought you'd enjoy this particularly. “The Association Between Shingles Vaccination and Slower Biological Aging: Evidence from a U.S. Population-based Cohort Study,” published in *The Journals of Gerontology*. Have we ever quoted that before, any articles?

VR: I don't think so.

DG: This might be new. These investigators use data from the nationally representative U.S. Health and Retirement Study. They looked at whether shingles vaccination was associated with more favorable profiles across seven biological aging domains. I have to say, I spent a little bit of time. This stuff gets pretty deep. They're looking at epigenetic and transcriptomic correlates of aging. They're going to look at inflammation, innate and adaptive immunity,

cardiovascular hemodynamics, neurodegeneration, as mentioned, epigenetic and transcriptomic parameters of aging. They're going to do these composite biological aging scores.

They're going to look at older adults, adults aged 70-plus (n of 3,884), with biological measures drawn from - They're going to be drawing blood, so venous blood. They're going to be doing flow cytometry. They're going to be doing physical assessments. What they found was that shingles vaccination was significantly associated with lower inflammation scores, slower epigenetic and transcriptomic aging, and a lower composite biological aging score, and vaccination was linked to higher adaptive immunity scores.

VR: It's amazing.

DG: It's amazing. I have to say, this is a little caveat. You might have guessed this. Who's benefiting the most from vaccination? Is it the men or the women?

VR: It's the women.

DG: This is really women. Women are really making up the majority of these impacts. Almost all of it, actually. If you pull out the women and you just look at guys, I'm glad they didn't just study a bunch of old white guys, which is what we would have done in the past.

VR: Shingles vaccine helps avoid dementias, and now aging. These herpes viruses are really wreaking havoc on us, aren't they?

DG: I don't think we realized. I don't think we realized.

VR: Now, we think, well, shingles, chickenpox. Shingles, I get it once, what's the big deal? Obviously, it's doing more.

DG: I think that's the crazy thing. Now, with this anti-vaccine movement, chickenpox parties. That's what I was subjected to as a child. I'm a few years old, and we're living in a duplex down in Silver Springs, Maryland. There's a little girl that is in - I don't know if we're the lower or upper, or what part of the duplex. They're in the other part of the duplex. I never spent time with this girl. For some reason, mom scoops me up, you got to go play with this girl. Here, play with her toys. It was a lot of very interactive. She's got all these things, all these things on her skin. I'm like, "What's up with that?" Then I get all these things.

VR: Of course.

DG: We used to do that, and then a bunch of people would get shingles, we'd get the skin. What we're starting to realize is that we are periodically getting a reactivation of that virus, which is triggering inflammation, which seems to be accelerating aging, which is affecting our cognitive function. I'm really encouraged. Kids these days who are getting vaccinated with, at this point, an attenuated chickenpox virus, maybe in the future they'll switch over to the protein that we get as a vaccination.

VR: It would be interesting to see if childhood vaccination also affects dementia. That's a long-term study. Life expectancy or aging is what they looked at here, because it should, right? Because you're getting it earlier in life.

DG: It really should.

VR: Because here, the shingles vaccine around 50, right? That's a really long-term study. I don't know.

DG: It'll be interesting to see this next generation that isn't getting chickenpox and having reactivation. Are they going to live longer? Are they going to maintain cognitive function? Are they going to have longer, healthy quality of life?

VR: Yes, it's great stuff. I love it.

DG: I'm excited. All right. HPV. We have a lot of great stuff this week, I have to say. This is the article, "Noninferiority of One HPV Vaccine Dose to Two Doses," published in *The New England Journal of Medicine*. I talk about this on *Puscast*, too, because it's just so good. This is really, can you just get one shot and then get the same that you're getting with multiple shots?

Here we have 20,330 participants and 3,005 unvaccinated participants. Girls 12 to 16 years of age were randomly assigned in a 1:1:1:1 ratio. What are they going to get? They're either going to get one or two doses of a bivalent HPV vaccine or one or two doses of a nonavalent HPV vaccine. What is this nonavalent? No valent? No. It's nine different in there. You've either got a vaccine that's just got protection against 6 and 18, or you've got a vaccine that has protection against 16, 18, and then 7 other HPV serotypes.

Then what they're going to do is they're going to say, you get one or two doses of the bivalent, one or two doses of the nine - They should call it 9-valent instead of nonavalent. Basically, they go ahead. The vaccine was at least 97% effective in every single group. Didn't matter whether it was single or double, looking for protection against 16 and 18. No safety concerns.

VR: They're looking at infection here, but they're not looking at cervical cancer.

DG: Yes.

VR: I don't know how they looked at infection. Probably PCR-based, I would guess, right?

DG: Yes.

VR: I'm not sure. Would you do a cervical swab to look at this? What would you actually assay?

DG: Yes, that's really an issue because you're going to have to make a decision at some point because this would be going down the road and saying, "OK, we're going to switch over to just one shot, and then we're going to see, do we suddenly start seeing cervical cancer?" It's a little tricky, right?

VR: I'm worried that it's not the whole story here. I understand that if you're not infected, you're not going to get cervical cancer, but are you really not infected?

DG: How sensitive is the assay? Does it take -

VR: Yes, how sensitive is the assay? Is it spatially limited? How big is the cervix? Is it a large organ?

DG: It's about that, people looking. If you take your index finger and your thumb and bring them into a circle, it's about that size.

VR: That's where the cancers occur, right on the cervix, right?

DG: They're really right at the interface. They usually start right at the interface.

VR: You can swab the cervix and be pretty confident whether you have HPV infection or not.

DG: Yes.

VR: I want to see the follow-up study and compare cancer rates.

DG: Because that's ultimately where you'd have to say, "OK, we feel like we could get better uptake, better compliance, adherence with just one shot versus two," but then you've got to follow these folks.

VR: If I'm not mistaken, the new vaccination schedule that RFK Jr. didn't even include just one HPV dose?

DG: You don't even get a single dose.

VR: You don't get any.

DG: They're anti-HPV.

VR: OK. They took it away entirely.

DG: Yes. It's not in there, which is really tough. Here is a vaccine that prevents cancer. The nice thing, at least, we've discussed papers where it's not too late. There's sort of this idea you've got to get a vaccine before you get infected, or you miss the train. Now it looks like if you get the vaccine after, it may help your immune system kick in and help clear a cancer if you've already got one.

VR: I don't know where this study was done. Do you know? Is it a U.S. study?

DG: I believe it's a U.S. study. Let's see.

VR: Do you think these findings apply to everyone everywhere in the world?

DG: That's an issue, too, yes. Is it going to affect everywhere?

VR: With two doses, we know we have universal data saying it prevents cervical cancer. I just don't know. I would not feel safe recommending one dose.

DG: Do you jump in already? Is this enough data to switch from two to one?

VR: A pediatrician administers these doses to kids, right?

DG: That's pretty much how it happens, yes.

VR: What's the pediatric association called?

DG: The American Academy of Pediatrics.

VR: I'm curious to see what they recommend.

DG: They're still at the two-dose recommendation. Actually, the CDC was supposed to be starting to discuss this kind of data.

VR: I don't care what the CDC thinks.

DG: The interesting thing, they were supposed to discuss it before it ceased to be helpful.

VR: I'm just a little worried about it, that's all.

DG: No, I think that's reasonable. All right. Should it be one? Should it be two? I think it's really clear that we should be doing this. The data is compelling. 97% reduction -

VR: Totally.

DG: - reduction. Here's one of the things we often talk about: is herd effect. Getting this done in the community, is there a herd benefit? We actually have a nice article from *The Lancet Public Health.* "Herd Effect of Human Papillomavirus Vaccination on Incidence of High-grade Cervical Lesions: A Population-based Cohort Study in Sweden." This is what you're asking, not just infection, but we're worried about the cancer, the high-grade lesions.

These are the results of a nationwide, retrospective, registry-based cohort study that included 857,168 girls and women born between 1985 and 2000. They used data from the Swedish National Cervical Screening Registry and several national health and population registries. They grouped the participants by birth cohorts exposed to different HPV vaccination strategies. We're talking about maybe a potential other strategy. Here, you had this opportunistic vaccination period (1985-88). That's going to be our reference group. You're not getting great penetration there.

Then it'd be a school-based vaccination (1999-2000). There's even this catch-up vaccination (1993-98), halfway between the two. Participants were followed up from age 10 up to January 1, 2006. From age 10 years or from January 1, 2006, until their first HPV dose. They're looking at high-grade cervical lesion diagnosis, emigration, death, their 35th birthday, or December 31, 2022. They're following them to any of those endpoints.

As mentioned, 857,168 girls or women who had not been previously vaccinated for HPV or received a diagnosis of HSIL+. That's the high-grade cervical lesion. They identified 42,274 cases of the high-grade lesions, cumulative incidence differing across birth cohorts and lowest in the 1999 to 2000. That's our school-based vaccination. For participants aged 23 years, with the 1985-88 cohort as the reference group, the incidence rate ratio was 0.53 in the 1999 to 2000 cohort. About a 50% reduction.

VR: What is the onset of vaccination? What year?

DG: They start doing the vaccination here in 1985. This is an opportunistic, let's try to get people vaccinated. Then they try to do a catch-up. Then, in 1999-2000, they jump in with the school-based.

VR: How do they determine a reduction? Do they have a period when the vaccine was not

used that they're using to compare?

DG: They're looking at that 1985-88 cohort, when you just didn't have a lot of vaccination going on. They're looking at the herd effect. They're not just looking at the individuals vaccinated.

VR: That's the reference group.

DG: That's our reference group trying to do some vaccination towards, let's really pull out the stops.

VR: 0.53, about a 50% reduction. Then 1.26 in the '93-'98. What is that?

DG: That's the incidence rate ratio relative.

VR: It's higher than -

DG: Yes, it's not actually reduced.

VR: It's nothing, right? It's one. If anything, it's gone up. 1.26, right?

DG: Yes, definitely not down.

VR: There is no herd effect?

DG: It looks like there's a herd effect when you compare the school-based to the opportunistic-based. When they started just trying to do a catch-up there, they didn't actually really see something [crosstalk].

VR: Their conclusion is this HSIL+ incidence in unvaccinated women declined in the birth cohort eligible for HPV vaccination through a school-based program. This shows that the herd effect can be achieved through high coverage HPV vaccination. OK.

DG: The other analysis which I would like to see is why don't you just look particularly at people who are vaccinated, people not vaccinated? What we really want to determine is we try to talk about a herd effect, not just does the vaccine work. We know the vaccine works. We know it protects you. You almost want to be looking at what about the unvaccinated people who just happen to be in this cohort?

VR: The idea is if you reduce the amount of virus in the population, you're going to protect people, right?

DG: Yes.

VR: If you have people who are no longer infected as a consequence of the vaccine, or protected, they're less likely to give it to someone who is not vaccinated, right? There are fewer donors.

DG: Yes. All right. Bird flu. We haven't talked about that in a little while. Just to let folks know, it's going strong. We got a nice update in *CIDRAP*, where they've got data from APHIS, the U.S. Department of Agriculture, Animal and Plant Health Inspection Service. This week, several commercial poultry outbreaks of avian flu. It was an event in Kent County, Delaware, with 147,900 birds. Walker County, Georgia, had the second-largest detection this week,

71,300 birds at a commercial broiler breeder facility. Another outbreak, 9,000 commercial turkey breeder hens in Meeker County, Minnesota. Other detections in Colorado, Kansas, Oregon. You don't really hear about this, right?

VR: No.

DG: Just not on the radar. Now, in the past 40 days, we've had reported infections with the highly pathogenic avian flu in 70 commercial flocks, 53 backyard flocks. A total of 1.17 million birds have been affected. Since the outbreak began in February 2022, more than 185 million birds and over 2,000 flocks affected. In the wild birds, don't forget about the wild birds; we've got 80 detections across the country. Really, it's widespread, so it's all over the place. Dozens of ducks in York County, Maine, along with some geese in Nebraska and a bald eagle in Florida.

VR: It's really going strong still.

DG: It's as if it didn't happen because it's not in the media, right?

VR: Not at all. No.

DG: Just talking about Greenland and the Epstein files. All right. Measles. Measles is now in the wastewaterscan.org.

VR: Interesting. I like that.

DG: I'm actually really glad it's there. We saw seven out of over 300 samples in the past 10 days were positive, so we're starting to pick it up in the wastewater at a low level at this point. That brings us right into, perfect timing, right, the two *MMWR*s. The first is "Notes from the Field: Wastewater Surveillance for Measles Virus During a Measles Outbreak, Colorado, August 2025." Here we read about the Colorado wastewater surveillance program.

This was established back in 2020 in response to COVID-19. May 1, 2025, after the identification of five measles cases in the state, the wastewater surveillance program initiated a measles surveillance pilot project. Sampling occurred twice weekly at 21 sentinel wastewater treatment facilities across the state. On August 9, 2025, the state lab identified low-level measles detections in a sample collected on August 4 at a treatment plant serving 90,000 residents in Mesa County.

At that time, no measles cases had been reported, but a second wastewater sample collected on August 6, with results received on August 11, had the highest concentration of measles virus RNA, 944,000 gene copies per liter. Seems like a big number. They go on, and they confirm this is a genotype D8. Then August 13, two days after the high-concentration measles virus detection was reported, they get notified of the first suspected unvaccinated case, and then there's another one, and then later they confirm. Really great stuff here. You get the detection, "Hey, we got measles here," and then they end up confirming a couple of cases.

VR: Now, if you see measles virus in wastewater RNA, then there's probably measles activity in the region serviced by that.

DG: Yes. What's really helpful here, and this I think feeds even into the second *MMWR*,

which is “Notes from the Field: Retrospective Analysis of Wild-Type Measles Virus in Wastewater During a Measles Outbreak, Oregon, March 24, September 22, 2024,” is that you don't always have communities where the people will go and get tested. You may not be getting those confirmed cases.

Here, this is another situation where they do a retrospective analysis of archived wastewater. Here they are able to detect the measles virus 10 weeks before the first confirmed measles case. Here was a discussion about certain communities maybe not getting tested. It was 10 weeks later, you finally get the first confirmed cases. Lots of cases going on, people not-

VR: Testing.

DG: Not testing.

VR: Probably if you get a rash, then they'll get tested. Maybe not even.

DG: Some communities, they don't want to get tested. They don't want to have that confirmed. They want to just take their alternative therapies.

VR: Medical freedom.

DG: It is interesting. Interesting in, I'm going to say, a bad way. I think there's a balance between personal freedoms and public health concerns. CDC deputy director says losing elimination status is just the cost of doing business on Tuesday. This is from Ralph Abraham. He's the CDC principal deputy director. He really said that losing measles elimination status is just the cost of doing business.

He's a doctor, a former Louisiana surgeon general. He didn't really think the U.S. losing measles elimination status was a big deal.

VR: Let me get this right, Daniel. This is a doctor who thinks that having measles every month for a year, thousands of cases in the U.S., a couple of deaths, that's not a big deal? How is this possible? This is completely politically motivated. He's all for medical freedom, right?

DG: A couple of things that are disturbing, to go back to our initial quote, is I don't think he really understands measles elimination status. He seems to think, "Oh, it's people coming in and out of the U.S., and that's why we don't have," but measles elimination status is based on us having a problem here with measles spreading from person. It's autochthonous. It's someone in Texas gives it to someone else in Texas. Someone in South Carolina gives it to someone else in South Carolina. It's not someone came in from another country. It's here.

VR: Here. Autochthonous. It's local transmission.

DG: One, he didn't seem to understand that when he was talking, which is really disturbing.

VR: This is the deputy director. He should understand it.

DG: He's not qualified.

VR: Daniel, like everyone else in this administration, they're not qualified for their jobs.

DG: He's not qualified. The other is he doesn't really seem to care. There's certainly a place for religious freedoms, for personal freedoms, but these freedoms, when it comes to public health, you're endangering fellow folks in your community.

VR: I don't understand the medical freedom. There's nothing wrong with getting this vaccine. There are no side effects in most people, right? Serious side effects.

DG: It's much safer than this, than letting measles spread, than letting your child have their immune system wiped clean with the amnestic response of a measles infection. There's a lot of money, right, in nutraceuticals, in undermining vaccine confidence, in going down this road.

VR: Officials saying things like this only makes people say, "Oh, I don't have to vaccinate my kid. It's not a big deal."

DG: Yes, and that's what they're saying, it's not a big deal. Not a big deal.

VR: It's really unbelievable.

DG: It really is unbelievable.

VR: It's incredible that we're at this state.

DG: Now, I went to look at updated cases. What's going on in the U.S. with total measles cases? It hasn't been updated since we last talked. The last update was January 14. I was checking it right before and wasn't seeing any update. We know there's a huge outbreak with hundreds of cases going on at the moment. We're already seeing more cases at this point than we were seeing last year at this point. Measles is going strong. At some point, we'll get updated on those numbers.

Where are we headed? I think we're headed in the wrong direction. We have the article, “Assessing MMR Vaccination Coverage Gaps in U.S. Children with Digital Participatory Surveillance,” published in *Nature Health*. We read that current surveillance systems rely primarily on telephone surveys with provider verification or school entry data, methods prone to incompleteness and systematic exclusion of vulnerable populations.

Here, to address these limitations, these investigators used a validated digital participatory surveillance platform, sounds fancy, to collect parental reports of one or more dose of the MMR vaccination among children under five years of age. They found substantial geographic variation, including areas with MMR coverage less than 60%. Analysis of spatial clustering revealed hotspots of undervaccination overlapping closely with recent measles outbreaks, particularly in Texas and New Mexico, where their model estimates substantially lower vaccination coverage than official data. A really great map of the spatial clustering of the MMR.

VR: Many of these counties are in trouble. If virus gets in them, they're going to have big outbreaks. Look at the South there, all these Southern states. Even California has a big band of low vaccination.

DG: Southern California has, yes. Southern California, New Mexico, Texas, Louisiana.

VR: Fortunately, New Jersey, where I live, it looks like there's good blue coverage.

DG: New Jersey looks OK. There are some hotspots in Upstate New York.

VR: Upstate New York, there are red spots with low vaccine coverage, yes.

DG: Is this like a measles MMR vaccine, or is this a demographic of voters in the U.S.?

VR: I don't think it's quite because there are some red states that have good vaccine coverage, although the Southern states are uniformly terrible, from East to West Coast, right?

DG: Yes. Not looking good for the future there.

VR: North Carolina, South Carolina, Alabama, Georgia, Florida, Louisiana, Mississippi, Texas, New Mexico, and California. What's the state between New Mexico?

DG: Arizona.

VR: Arizona also has a big red bit. What's happening, people?

DG: It's not good. Not good. All right. Flu. I'm a little optimistic. Flu is still high, but I think we're coming off the peak. We'll look at a few things. Maybe David will have these up for our YouTube, people watching us on YouTube. New York, for instance, went from the very high purple to just very high. We're seeing it in the hospitals, actually. I was talking to the head of the ER at one of our hospitals, and he was saying, "Finally, it's starting to let up."

It seems like we're getting a little bit of a let-up. You can look at the epidemic trend, so you can see where we are. That data's a little bit old. It takes a couple weeks for us to get the data. What's the epidemic trend? Most parts of the country it looks like it's declining. It's also a nice curve from the CDC, where you can follow over time. It's different colors for the different seasons. The highest-peaking dark red, if you can see that there, Vincent, that's this year, the 2025-2026 season.

Now, the thing I worry about, that I'm hoping it's like the 2021-22 season, where we get this December peak, then it just comes down, and that's it. Unfortunately, we have a couple patterns we've seen historically. Last year, it didn't peak quite as high. It came down, reached about this level, and then shot back up.

VR: Back up.

DG: We also had, a few years back, where it came down, I think that was 2023-24, came down, and then it shouldered, before it finally dropped off. We'll be seeing in the next -

VR: Thirty-two pediatric deaths so far this year.

DG: For those that think it's "just the flu," there's already 32 children that have died so far, just in this short period of time. Terrible. It was 15 just this last recorded week, so really horrible. What can we do about this? You can do something. A little more data on vaccination, the article, “Effectiveness of Influenza Vaccination to Prevent Severe Disease -”it's what we care mostly about. “A Systematic Review and Meta-Analysis of Test-negative Design Studies,” published in *CMI*.

It is a meta-analysis. We've got to worry about those cow pies. I've got to break this out.

They do this systematic review meta-analysis, 7,727 publications. Actually, 461 are reviewed. Ultimately, only 165 are included. What are the different influenza vaccine effectiveness that we're going to get? 42% against ending up in the hospital. Wide confidence there. 36% against death. They don't really give us much confidence there. 51% against lower respiratory tract infection, so pneumonia, airspace disease. 52% reduction in ending up in the ICU. 55% reduction in requiring ventilatory support.

It really varies by age. The kids are getting the best benefit from all this. Also, you're doing a little bit better with H1N1 versus H3N2. H3N2 was the major player this year. They've got some nice figures where they break this down. Also, what I think is important, too, is to look at over time. Some years, you're really seeing that good 50% reduction. Some years, like 2021, where I think we had incomplete data, it was hard to see a big difference. Really, since 2010, we've seen consistently 30%, 40%, 50% reduction.

How are we doing this year? We have some rapid communications. “Interim Vaccine Effectiveness against Influenza Virus among Outpatients, France, October 2025, January 2026,” published in *Eurosurveillance*. Here, vaccine effectiveness against confirmed influenza cases, 36.4%. Again, we're seeing that trend. The highest effectiveness was in the kids, 0 to 17. That was at 57%. Adults, 18 to 64, 45%. Then the older adults, 65 and older, only 27.7%.

VR: This is with a poor match between the H3N2 vaccine?

DG: Poor match, mostly H3N2, which vaccines are never as good against, but sort of the consistent. China, also rapid communication, “Moderate Protection from Vaccination against Influenza A, H3N2, Subclade K,” that's mainly what it was, “Beijing, China, September to December 2025,” published in *Eurosurveillance*. Here, vaccine efficacy against confirmed cases, 41.3%, 39.9% against the H3N2, and very similar. The kids are doing the best with a 70.9% effectiveness, and then it drops to 25% for the adults.

VR: It's interesting. In both studies, the kids are doing way better than the adults. Why is that? What's the mechanism?

DG: Why do the kids get such a better -

VR: It's vaccine protection, right?

DG: Yes.

VR: What is it? Do they have a better immune response?

DG: I would suspect so.

VR: The adults are 18 to 64, so there are some -

DG: You wouldn't think a huge drop-off there.

VR: No, it shouldn't be.

DG: I understand the over 60, over 65. Remember treatment, one, you can get vaccinated. Two, if you get the flu, you can be treated. The main workhorses out there are oseltamivir (Tamiflu) and baloxavir (Xofluza).

VR: I see there's a coupon now for Xofluza that's bringing down the price.

DG: You can go to this link. You probably should do that because without the coupon, it's like $100 with a lot of insurance.

VR: With the coupon, is it-

DG: I think it's like $50. Still more expensive than the generic Tamiflu, which is like $10. Part of the issue with baloxavir (Xofluza), we think it's a better drug, not great marketing, still too expensive.

VR: You may have heard that Merck just bought a company that's making an influenza drug, which is a drug-antibody conjugate that works intracellularly. It inhibits the endonuclease. You can take it before you get infected, and it protects you for many months.

DG: Oh, wow. I like that.

VR: It's in phase three, so when it's published -

DG: Maybe if people are anti-vax, they could just take that.

VR: They would not want to put things in their body?

DG: I don't know. All right. RSV. Still at high levels. Interesting enough, there are some parts of the country where RSV is still growing, like Vermont, certainly increasing up there in New Hampshire, a lot of the Northwest, but also Arizona, New Mexico, Colorado going gangbusters.

VR: Declining in many states also.

DG: I should say, Florida, Texas, Southern, that's the thing. It starts there, it comes up, then it declines. At this point, it should be declining, so it's interesting that there's areas that are not declining. New York, New Jersey, Pennsylvania, we're on the way down. We'll just keep track of that. We're not seeing a lot, I have to say, locally, which is good. We are seeing some COVID cases.

VR: Looks like it's starting to turn down.

DG: Maybe, actually. I think it's great, because we've got our multicolored curves, which we love. If we look at the different regions, the Midwest it hasn't been this high in a while. It's in the very, very high Midwest. Also, the Northeast got pretty high. Everywhere, it looks like maybe we reached the peak, and maybe we're on the way down. If we do our epidemic trend, most of the country, except for Washington, DC, looks like it's declining. I don't know what's going on in Washington, DC. Maybe we're going to come out of this. Maybe this is going to be just an intense period that we just got through, and it's going to get better from here.

All right. COVID. Again, as we mentioned, you can treat COVID just like you treat the flu. Early effective antivirals. Not a good time to turn off the immune system with steroids. Avoid steroids in that first week. Consider antivirals. Second week, that's when we think about steroids, pulmonary support. Then, still, so many people suffering with Long COVID, and just not a lot of great answers on therapeutics in that space.

I will wrap us up before we get to emails. No one is safe until everyone is safe. We're getting near the end of our *MicrobeTV* fundraiser, where we're going to double your donations, sending that maximum donation of $20,000 to *MicrobeTV*. I would say if you like what we're doing or you just want us to keep doing it, go to parasiteswithoutborders.com and click donate.

VR: It's time for your questions for Daniel. You can send yours to daniel@microbe.tv. Lori writes, "Thank you for your review of vaccine-preventable illnesses. As an experienced pediatrician, I have lived through the pre-Hib vaccine era and have seen children die of this disease. Then one magic day, the Hib vaccine was approved for two, four, and six-month-olds, and Hib meningitis literally went away overnight, and it should never, ever come back." Isn't that one of the vaccines that's been taken away early on?

DG: I don't know if that's been removed, but boy, that is not one we want to see removed.

VR: "I'm writing, however, about a quick comment Vincent made about 'Why can't people just wash their hands?' and a bit about hep A. Although I agree that handwashing is essential and poorly done, it's my understanding that while sanitation protocols exist, in reality, many folks who work in the fields who pick and pack our foods are likely from a low resource area, may not have received the hep A vaccine and may not have access to proper sanitation in the field, which can make handwashing difficult, so it's a bit hard to blame them."

DG: Were you blaming people, Vincent?

VR: You pack the food in the fields, OK, you can't wash your hands, but it gets to the restaurant, they can wash their hands. As far as I know, there are sinks in restaurants.

DG: There are signs in the bathroom that if you're an employee, you have to wash your hands, but apparently, if you're a patron, you can just go and -

VR: Sorry, Lori. I understand that the pickers can't wash their hands, but when they unpack it in this restaurant-

DG: They serve it to you.

VR: - they can wash it and wash their hands and everything else.

DG: That is a challenge. Maybe we need to actually start cleaning our produce before we serve it to people in the restaurants, washing our hands.

VR: Laura writes, "Thank you for your important podcast. I'm a weekly listener. As an epidemiologist married to an award-winning American artisanal cheese maker-

DG: Oh.

VR: - my husband developed two cheeses for Cowgirl Creamery and now manages Shelburne Farms cheddar cheese production. I couldn't help but smile at the suggestion that American cheeses are nonexistent. In fact, there's a vast selection of delicious artisan cheeses developed in America and readily available, including in New York City. Shops like Murray's Cheese on Bleecker Street and Saxelby Cheesemongers have championed exceptional American cheese producers for years. I suggest you take a tour of their shops

and ask for tastes of their favorite American cheeses." I think we should go and have it recorded.

DG: I think we should go there. Yes, we should. We should make that a little outing. I have to say, I always check the comments on YouTube. One of the things I always like to mention to people is everything we say, I reference, I footnote, I just say stuff off the top of my head. I noticed this last week; instead of all the negative stuff, it was all about cheese.

VR: Good.

DG: It's all about cheese.

VR: I don't know about cheese, so I didn't know what American cheeses there were. Thank you for that. "PS: Regarding the ongoing discussion of the lab origin hypothesis for COVID-19, it is also important to note the following factors. The emergence of SARS-CoV-2 in Wuhan, China, where a major coronavirus research institute is located, is significant, but not for the reasons suggested.

The lab was established in this location in China because it's geographically close to regions of Southern China where bat populations harbor a wide diversity of coronaviruses, allowing researchers to effectively conduct field sampling. Additionally, wildlife traders supplying the live animal market in Wuhan harvested animals from these same regions where bat-human and bat-animal interfaces are common. This shared geographic exposure provides an important explanation for zoonotic spillover and supports the likelihood of natural emergence through bat-wildlife-human interface."

Robert writes, "Hello, *TWiV*. Cheddar cheese originates in Cheddar, England, where it traditionally is aged in the caves of the Cheddar Gorge. Thank you for the clinical updates." This is Robert, who is an MD. He says, "I'm an immigrant from England as a child, two doctors in our family, and starting to feel unwelcome despite living here as an infant."

DG: That's really tough.

VR: Horrible.

DG: It really is tough. One that's great is vanilla ice cream is my favorite. Cheddar cheese is my favorite. Maybe you think it's bland, but it's a great cheese.

VR: You should not feel unwelcome because the greatness of America is because of its diversity of people.

DG: It is horrible. I have a friend from England as well. He just became an American citizen. Part of it is because his children were worried. His wife's a U.S. citizen, his kids are U.S. citizens. He's been here on a Green Card, but his kids were actually becoming anxious, worried about what they were seeing, like, "Is dad going to be safe?"

VR: Catherine writes, "Hello. I was shocked recently to learn that only patients severely ill with influenza are tested and treated with antivirals in Ontario. The data for efficacy of Tamiflu is maybe not compelling, but there seems to be consensus that it can improve symptoms and shorten the duration of symptoms. In addition, it does cut down on transmissibility, which surely must be a desirable outcome for those at the extremes of age. Could you please discuss this at your next clinical update?"

DG: That's tough. We've talked about the data. Here in the U..S, it's fairly common to use Tamiflu. It's generic. It's a low-cost intervention. It certainly would be standard for anyone who ends up in the hospital to end up on Tamiflu, so a little discouraging to hear this approach.

VR: Sherry writes, "First, long-time listener. You've got me through COVID so far without catching it, shared your PDF on COVID treatment with many. I still avoid crowds and masks. I'm 82 and diabetic. I have a new aortic valve, and I hope that and clinical update can keep me alive until November 28 and the electoral downfall of MAGA. Thank you and Vincent for standing strong for science and against the crazies. How can one not rant? Vincent seems sometimes cavalier about throwing 80-plusers under the bus, but I've forgiven him since he is so livid about the RFK crowd." I don't throw 80-plusers under the bus, do I?

DG: I hope not. I hope not.

VR: "You like Denmark, and since I've been doing a lot of streaming TV, thought I would pass along some Danish favorites." She lists some TV shows that are of Danish origin.

DG: Oh, OK

VR: We'll put these in there so you could look at. "Thank you again for your work for public health." Sherry's from South Bend, Indiana. She writes, "Indiana football? Who knew?" I don't get what that means.

DG: Let's see.

VR: Indiana football, who knew? I don't know. Is something going on in Indiana?

DG: I guess Sherry's from South Bend, Indiana, which is where Notre Dame is. I know there's a bunch of Notre Dame folks who are quite serious about their football.

VR: Jeff writes, "Daniel, my wife and I are loyal listeners every Saturday morning with our breakfast. Our dogs also listen, but I don't think they appreciate your discussion as much as we do. Both of us are in our 70s, fully vaccinated, received the COVID vaccines twice a year. We would appreciate your insight on when and where to wear high-quality masks, both in the non-medical and medical settings.

I'm a cardiologist working in a large outpatient clinic. We both are avoiding restaurants and trying to avoid shopping and other close interaction with others as possible. While the viruses are peaking, we wear masks at those times. I'm now masking at work, especially when seeing patients. I would appreciate your recommendations for us to follow and for me to recommend to coworkers and patients."

DG: A nice thing we have here in New York at Columbia is that they have different levels of recommendations relative to masking. When you reach levels like we've been at recently, it is recommended that you mask at all times when clinical encounters. It's interesting because it's really about us not giving it to patients. Here, you see individual in your 70s, you might be fully vaccinated, that's going to have a certain impact, but it's not, it's not this bulletproof shield that people thought of it as.

When you're in these situations, one is avoid high-risk situations, which sounds like you're doing, particularly during peak periods of time. It's like pulling out the umbrella when it's

raining, so not going to the restaurant when it's at a peak period. Looking at shopping at off-peak times. I think when you're in these situations, then wearing a mask makes sense.

VR: Do you wear a mask when you see patients?

DG: We do, yes.

VR: I wear a mask on the subways, on the trains, any crowded area. I try and stay away from crowded places in the winter when it's peak respiratory season.

DG: At work, it's either a regular mask or a lot of times it's the N95.

VR: All right. One more from Jacqueline. "As a person who travels between the U.S. and France regularly, I have a couple of traveling questions. One, is it a problem to use my expired Paxlovid prescription when I travel? I realize this is not a question a physician likes to answer for a lot of reasons, but I travel back and forth to France from the States regularly, and my GP previously and willingly wrote me just-in-case prescriptions.

I'm getting ready to go again soon, and I'm guessing I won't be able to get a new prescription under the current administration, especially hearing how people are having difficulty getting a script when they do have COVID. If so, how far out from the expiration date would you feel likely still efficacious?" Take that one first.

DG: Yes, let me get that one first. One of the things during the period of time you'd have Paxlovid, it would have an expiration date. That time would come around. They would put stickers that extended the expiration date. I don't think at this point we're thinking that any of the Paxlovid that's been produced is actually degraded to the point where it's going to lose efficacy. A lot of that is medicines have to have an expiration date. As time goes by, I think we're realizing that those medicines actually continue to have efficacy for prolonged periods of time.

VR: Over a year, maybe.

DG: Probably. Yes.

VR: "Two, along different travel lines, much of the cheese in France is unpasteurized and delicious, I might add. Is that of concern with the current bird flu issue?"

DG: I think we talked about something where we were thinking maybe the cheese process would get rid of the virus, but they were still actually able to isolate infectious virus from some of the different cheeses.

VR: Not clear if it's enough to infect you or not, though, right?

DG: That's the issue, too, putting that in your gut, is that OK? Maybe if you're grating it and somehow aerosolize it.

VR: Maybe swallowing it directly is OK. "I've been listening to *TWiV* regularly and Weekly Update with Dr. Griffin religiously, and greatly appreciate you keeping the light on for all of us, Jacqueline."

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

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

[music]

[00:57:25] [END OF AUDIO]