TWiV 1284 Clinical Update

Host: Vincent Racaniello

Guest: Daniel Griffin

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

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VR: From *MicrobeTV*, this is TWiV, *This Week in Virology,* Episode 1284, recorded on January 1, 2026. Happy New Year, everybody. 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: Happy New Year, Daniel.

DG: Happy New Year to you, Vincent, and Happy New Year to all our listeners and watchers. I was asking a patient today, he was commenting about hearing the fireworks outside that people were celebrating. I was like, "Were they celebrating that 2025 was over, or they're celebrating that 2026 is here, or a little of both? Is it optimism or relief?"

VR: That's right. We're hoping '26 will be much better. We have a chance to change things in November.

DG: I'm usually the optimistic one, but Vincent, I may be taking a stride in the pessimistic direction after this last year, so demoralizing.

VR: I can understand, but you have to be optimistic, though. You can never give up.

DG: You can never give up. That's true. All right, let's jump in with a quotation by Louis Pasteur. Actually, I think this is just little one-liners you can think about them and how insightful. “The role of the infinitely small in nature is infinitely great.”

VR: Like microbes and viruses?

DG: That's what Louis Pasteur was obviously talking about. You could take it in so many ways. You just think about what a profound effect microbes have on our life.

VR: It's true.

DG: I think most of us read that and we read it that way. Most of us actually, we learned about germ theory. We embraced that advance. Now we're living in a world where we have people who do not actually even believe in germ theory, like advising health. It's absurd.

VR: The absurdity is that hundreds of years of scientists have established germ theory and validated it. Some people who know nothing about science have the gall to challenge it.

Normally, we don't care, but when they get in positions of power, then it's a problem.

DG: Yes, it is. This, I thought, was really, I wanted to remind people because we just talked about germ theory, which for most of us is obvious. It's been shown that that's why we get sick because of germs, that's why we wash our hands. It's not about character and wet hair. You actually get sick because you get exposed to a microscopic infectious pathogen.

I'm old enough to remember, this is a 1992 *JAMA* article, “A new paradigm for medical practice is emerging. Evidence-based medicine de-emphasizes intuition, unsystematic clinical experience, and pathophysiologic rationale as sufficient grounds for clinical decision-making, and stresses the examination of evidence from clinical research. Evidence-based medicine requires new skills of the physician, including efficient literature searching and the application of formal rules of evidence, evaluating the clinical literature.”

VR: This is what they're trying to negate in 2025, isn't it?

DG: It's amazing. Last century, when I went to medical school, I was in medical school at the time this article was written. I hate to date myself like that. I remember it was controversial, the whole idea that you actually would look for evidence versus. "Let's just find some old guy who's been doing it for a bunch of years and ask his opinion."

VR: In my experience.

DG: Yes, in my experience. I remember I was thinking about going into family practice, and I was warned by a chief resident, like, "Yes, it's not going to go well for you, Dan, because when you start bringing up some study that apparently challenges the august clinician with 30 years of experience."

I feel like we're going back. Now we're just like, "Let's find some old guys and ask, what do you feel? What's your gut tell you on this one? Don't ask the doctor what medicines to take, let's just ask some trial lawyer, what's your gut tell you? What should I pop? What should I pick up from the vet store?"

VR: If Trump says, I feel the vaccine needs to be broken up, I feel it. That's the crap that we're up against.

DG: Yes, it is true. What is the harm? We're seeing the harm already. I'm going to mention a couple of things. Vaccine-preventable illnesses, so pertussis. I'm going to leave that link in too. I'm going to applaud the popular press for doing this CNN Health article.

The U.S. has seen nearly 28,000 whooping or whooping cough cases this year. Here's what you need to know. For the second year in a row, the U.S. has surpassed 25,000 whooping cough cases. The CDC reported nearly 28,000 cases this year,13 deaths from pertussis have been reported in the U.S. this year, most of them children under 1 year of age. Children are dying. I'm glad this is actually out there. People can read this. You don't have to read about the Epstein files. You can actually read about the fact that the undermining of our healthcare and public health is leading to children dying.

Tetanus, I can't believe this. I'm going to leave in a link to, “As tetanus vaccination rates decline, doctors worry about rising case numbers.” In 1948, when the tetanus vaccine was first combined with diphtheria and pertussis, 601 cases of tetanus were reported in the U.S.

In recent years, that dropped to about 15 to 28 annual cases. However, in 2024, there were 32 cases. This year, there've been at least 37 confirmed cases of tetanus.

VR: That's nothing, Daniel.

DG: It's a rounding error, 37. I don't know if you've ever seen tetanus. I've seen it. Not really here in the U.S., but I've certainly seen it when I travel. It was in medical school when I saw the first case. It was a gentleman. He was in a dark room. They were giving him Ativan, just doing everything they could because when you get tetanus, you can get such horrible muscle spasms that it will actually break bones. They're trying to basically keep this gentleman in a dark, quiet space so that there wouldn't be any startle that would potentially trigger.

Then there was a boy who was being basically fed through a straw because when he got circumcised, he got tetanus from the circumcision site. This is just horrible stuff. I've seen babies die from neonatal tetanus. Again, we're actually having these vaccine-preventable diseases come back. What's the big one? I saw this headline, "World's Most Contagious Virus." What is that, Vincent?

VR: It's got to be measles virus.

DG: It's measles. It was a story about Newark, the Newark Airport.

VR: What about it? There were people with measles?

DG: Apparently, someone with active contagious measles was hanging out in the Newark Airport.

VR: This brings up an interesting question. Last night on the livestream, someone's aunt or something had tuberculosis, and she insists on moving out and about. Someone asked me if that was illegal. I said, Typhoid Mary was put in jail, right?

DG: Yes, it is interesting. It is. It's illegal if you've got tuberculosis to just be out and about spreading it to other people. It can be forcibly confined. It's interesting that measles is different, right?

VR: Yes. Why is it? Why the difference?

DG: A lot of it has to do with the history of how we've treated these things. Tuberculosis really was addressed historically with really the rigor of a public health system, case tracking, and all the rest.

VR: Someone asked, what should they do? I said, well, they should wear a mask at minimum.

DG: The tough thing, and this is part of what got us into trouble, I think, and keeps us in trouble, because I'm not sure we've actually moved forward. I feel like we started to move forward, and then everyone lost interest. About 100 years ago was this whole idea, the miasma, just like you get sick just because there's bad air. It's more your issue than anyone else's. It wasn't really that you got exposed and you came in contact with germs, and that's how you got sick.

That was where it really took a long time to go back and realize that, no, things like tuberculosis, you could be in the other room. Things like measles, you could be in the other room, and you could still get them. You can breathe it in at a distance, at a delayed time, once that person is gone. They don't need to cough in your face.

We've always seen issues with flu and other respiratory pathogens when you're in a poorly ventilated suburban home. You could be more than that six feet away from someone with flu, and if they're just coughing and sick and the windows are shut, you can get it. That was a big issue with COVID, with this concept of droplet versus airborne. Tuberculosis is very much airborne.

Children can't produce these really tiny particles, but adults produce these tiny droplet nuclei, we refer to them as, where they can actually even pass through ventilation systems. There were some famous guinea pig experiments where, down the tube, you've got guinea pigs getting tuberculosis. It's a problem.

Where did we start with? If you've got a person who's got tuberculosis and they're coughing, you wearing a mask may not be enough. We wear the N95. We want to have rooms with good air exchanges so that we don't see spread.

VR: Should TB individuals be kept at home?

DG: What we do now is we usually keep them in the hospital until they've been on effective therapy for two weeks. Then we'll check to make sure that they're no longer smear positive, that their ability to spread to others is minimized. Then they might go home. If they could be home and do this in certain jurisdictions, it's controlled at the county level by the public health. Yes, you don't want people out there spreading tuberculosis.

VR: Are there any people who cannot be cured and continue to spread it?

DG: That's a challenge. There are certain, call them MDRX, so not just multi-drug resistant, but multi-drug resistant to a whole string of things. There are some individuals who are resistant to almost all of the traditional ones. There was a point when I was in medical school when we had individuals - At that point, there were no effective treatments. We're coming up with new treatments, but no, there still are people out there that, despite multiple different medications, you can't cure the tuberculosis.

All right, back to measles. We're up to 2,065 confirmed measles cases in the United States. It's here, I think this is the month that we lose elimination status. Canada, 24 new cases this last week. We're up to 5,377. I guess we start recounting again. We restart counting the number of measles cases for 2026. Reset the odometer, so to speak.

VR: In January, the U.S. loses its measles-free status, right?

DG: Yes, we'll lose measles elimination status. It's really, it's a tragedy. Now we are moving into the triple-demic, and so lots and lots of influenza. If we look at our wastewater data here, we can see that influenza A is at a very high level.

This is a beautiful on one level map of the United States. We look at the influenza seasonal week 51 ending December 20, and each state is color-coded. From very high, there are states like New York. We have more - and we're going to say this again, more flu in New

York than we ever have since we started keeping track. Isn't that crazy? More cases of flu than ever in the history of New York.

VR: This week, 71,000 cases just this week.

DG: Yes, just per week. It's just cranking; 71,123 flu cases just this last week, it's up. We may break 100,000 this coming week. It's very high in multiple states: New York, Colorado, Louisiana, South Carolina. It's high in a number of other states. What's even more concerning is it's growing in a number of states.

The timing of this is terrible. I remember when the early days of SARS-CoV-2, when it was right before the Chinese New Year. I was just thinking, "This is a bad time for a bunch of people to start traveling all around the world." What do people do right now? Everyone's heading back to school, heading home for the holidays. The story I get was so-and-so was sick at Christmas Eve, so-and-so was sick at Christmas.

We just had this thing last night where you were busy live-streaming. I was busy getting a good night's sleep so I could be there at the hospital this morning, but a lot of other people are gathered in these poorly ventilated areas, making sure that if one of their friends didn't have the flu yet, that they got it, so that they could now head back to college or head back to their hometown and spread it to everyone else. Flu cases are up, hospitalizations are up, you guys are keeping us busy.

What could people do? This is going to be a refresher. I'm going to hit on this because we're going to talk about flu, we're going to talk about COVID, we're going to talk about RSV. If you're feeling sick, if you have a runny nose - I hear this all the time. They say, "Yes, a bunch of us just had a common cold, something, but then grandma got the flu." I'm like, "Really?" "Well, I knew I didn't have the flu because I didn't really feel that bad, a little scratchy throat and runny nose." I'm like, "You know." [chuckles]

VR: At this time of year, anything that people get, they say, I got the flu.

DG: Then you get the other, but now people are in flu denial because usually they call everything the flu, and that upsets me. Now nothing's the flu until grandma's in the hospital on high-flow oxygen because she caught the flu somehow from their common cold. [laughter]

I remember it was one of the ICU doctors, Lisa Santorella, who's like, "Listen, SARS-CoV-2, it's a virus. It presents a viral illness. You don't know whether or not you have COVID until you get a test." It's the same with flu, same with RSV.

The nice thing now is we've got these over-the-counter tests. You can actually go, and if you want to tell people you don't have the flu, you can do a test, and if it's negative, then OK, maybe you don't have the flu. If you're feeling crummy, and what's the point? If you're feeling crummy and you test positive for the flu, one, you might kick yourself and say, "I should have gotten that flu test. I should have gotten that flu vaccine." The other is that you may say, "I'm going to go get that because there's not just one type of circulating flu." Even though 80% of it is this H3N2. It's a clade K, I guess, but there's also treatment.

If you have the flu and you test positive, you could get Tamiflu. You could get baloxavir, which might actually be a little bit more effective. Nobody's really using Relenza. Someone

sent me an analysis of the Relenza market share, it's like zero. You could go down that road, but no one probably stocks it. If you test positive for SARS-CoV-2, if you've got COVID, then there's things you can do there. If you test positive for RSV, you may want to avoid - and same with all these, giving it to high-risk individuals who are younger or older. There are treatments, so I'm going to keep circling back to that.

If you've been exposed, let's say someone calls and says, "Yes, I came over for that New Year's party. It wasn't that great, but yes, by the way, I've got the flu." You can take Tamiflu, oseltamivir, Zofluza, baloxavir prophylactically. The Tamiflu is you just take one pill every day for 10 days after the last exposure, and that last exposure, for me, can keep moving forward every single day I go to work. Baloxavir, you take a pill, and it's a one-and-done. Then maybe you're exposed a week later, you might have to do that again. You can take it for treatment, you can take it for prevention.

RSV, super high. I was thinking we'd be coming off the hump, but actually, if you look at the epidemic trend, most of the places is still growing across the country. Again, RSV vaccinations, monoclonal antibodies. We don't have any great acute treatment for RSV, but you can avoid giving it to people that might end up in the hospital with it.

That's interesting. Why did I bring this up? Vincent, in Denmark, they don't really do the whole RSV vaccine stuff. They end up with people in the hospital, they end up with people dying. The population of Denmark is like a fraction of the population of New York City. If you roll that out, people have run the numbers, just the numbers of RSV cases that we would see in the U.S. if we don't move forward with the vaccines that we've started doing.

VR: It's much less in Denmark, so they don't bother?

DG: Well, it's fewer because it's a fewer denominator. When you've only got 6 million people in your whole country. I think the rotavirus was the number I saw where they're like, "Oh, so they only end up with 1,700 kids end up in the hospital with rotavirus each year." In the U.S., that's 70,000 hospitalizations, which you start to overwhelm our healthcare systems.

COVID, SARS-CoV-2, we've got our multicolored graph, and not only is the epidemic trend moving in the wrong direction, but our wastewater curves are on their way up.

VR: Very clear now.

DG: The Midwest is already higher than it was with the summer surge. SARS-CoV-2, it is interesting, I don't know how many people are testing for both. You get your positive flu test, and then you call it a day, but we're going to start in coming weeks to start seeing dual infections. Remember, during that early week with COVID, SARS-CoV-2, that's when we have our most effective treatment. Recommended early antiviral therapy.

I saw there was a letter. We'll talk about that, which will be good, like, do you give them antibiotics during that first week just to be sure? We'll talk about that. The answer is no. It's really potentially during the second or third week when we start seeing those bacterial secondary infections.

I want to keep this a little short because I'm hoping this will be the episode that you introduce to the other side, the non-listeners, the people that don't normally listen. Just to

hear that we're just giving good advice, telling people what to do, how to stay safe, how to stay healthy. No one is safe until everyone is safe. I want to thank everyone for all the contributions during December. We still have our last month here. *MicrobeTV* fundraiser extends through the end of January. Hopefully, going to send our maximum donation of $20,000 to help them out. Thank you, everyone, for listening. Keep listening and keep supporting us.

VR: It's time for your questions for Daniel. You can send yours to Daniel at microbe.tv. Kip writes, “Hello from rainy San Francisco. Thought you might be interested. CPMC is now in their second week of admitting patients who are extremely sick with mushroom poisoning.” This is a hospital in San Francisco, I guess.

“Wild mushrooms, *Amanita phalloides*, aka death cap mushrooms, which thrive following our winter rains in the San Francisco Bay Area, are responsible for a significant outbreak of poisonings. Entire families are affected after foraging for the highly toxic mushrooms, which appear similar to edible varieties. The victims prepare the wild mushrooms in such dishes as omelets and tacos. Cooking does not remove the toxins. The older poisoning victims are on the list for liver transplants, and it appears the younger individuals, now moved out of the ICU, are possibly responding to the cocktail of medications that Laura's Hospital Pharmacy is acquiring from disparate sources, including one prescription being overnighted from Germany.

There really ought to be some public service announcement going out this time of year when the caps rise up from the ground after wet weather. Every fall, winter, we should put the word out, "No foraging." The drugs used in the attempted treatment of *Amanita* mushroom poisonings include N-acetylcysteine aka Mucomyst, PCN-G, and silibinin from Germany, a product derived from milk thistle.

DG: Wow. I guess we can serve this as our public announcement to you folks in San Francisco. Stop the foraging of the poison mushrooms. Oh my gosh, horrible.

VR: Amanitin is the source of α-Amanitin, a drug that we use in the lab. It inhibits RNA Polymerase II in cells, the enzyme that makes messenger RNAs from DNA, and so that's why it's toxic. It inhibits your RNA Polymerase II.

DG: That's a problem.

VR: Quite a problem. Anonymous writes, “Hi, Daniel. I hope you're doing well. I have a question about prophylactic antibiotic use in at-risk patients. I have a friend who is a primary care provider with a primarily geriatric patient population. They have mentioned seeing older patients in the clinic who have just tested positive for flu or COVID and prescribing both the appropriate antiviral as well as antibiotics such as azithromycin.

When I questioned why they would prescribe antibiotics, they said it's appropriate for the patient population because they are at increased risk of developing a secondary bacterial infection. Is this accurate? Would it depend on comorbidities in addition to age?

I work in a research lab, and I have no clinical experience, so I don't want to question my friend's judgment as a provider, but I'm a big advocate for antibiotic stewardship. I know you've talked before about inappropriate antibiotic use in early COVID leading to worse outcomes, but I don't know if that applies specifically to the geriatric population or if the

benefits outweigh the risks for that group."

DG: Thanks for writing this. Again, I think we've slipped into this, I'll say, poor practice. If people have a viral illness, and we've looked at this several times, we've covered papers on the *Puscast*, we've covered papers on the *This Week in Virology* clinical update, giving these individuals with a viral infection with no evidence of a secondary bacterial infection, and if you need to get a chest X-ray, if you need to really do a careful lung exam, whatever it is, you do them nothing that is helpful, but what you do is you do push us towards the antimicrobial apocalypse. You also risk the side effects.

First, let's talk about the antimicrobial apocalypse because we all live in this world that we're creating. It's gotten to the point now where a lot of strep pneumo, a lot of the strep pharyngitis that we see, a lot of other microbes are becoming resistant to that Z-Pak. I'm going to actually cover a couple articles on *Puscast* about how the Z-Pak became this go-to drug that everyone gets. What do they think they're covering? You can think about it that way. "Oh, well, maybe they have a secondary bacterial pneumococcal infection."

In the last five years, we are basically losing azithromycin. Thirty percent, 40% of the time, it's not even effective. If they really were actually trying to cover a bacterial thing, this is the wrong drug. Number of studies looking specifically in COVID. It did not benefit patients. The big doxycycline, it was a trend towards higher mortality, so not statistically significant, but again, not helpful. All the side effects, potential cardiac issues. Are they getting EKGs? Are they measuring the QT before they give these people azithromycin when they have a cardiac issue?

No, the recommendation is not. This is bad antimicrobial stewardship. You're not doing anyone a favor by inappropriately using antibiotics in a viral illness.

VR: Bill writes, "Why is it that when you are showing us maps, there are usually no data from Arkansas?"

[laughter]

DG: That's awesome. It makes me want to go right now and look, and "Yes, that's funny." Arkansas is just not sharing data.

VR: Neither are some other states, though. They're white.

DG: Yes. I'm looking at the epidemic trend here for, what is it, flu, and nothing from Texas. Florida is not sharing. We are getting data on flu from the CDC link that I go to. We go to CDC FluView, but then that's the actual what's going on right now, but the epidemic trends for the different - A lot of times, they're not actually giving us the data that gets plugged in.

VR: Ellen writes, "I had a partial hysterectomy after a failed cone biopsy for cervical cancer when I was 40 years old. Now 80 with zero risk for further HPV infection. I was wondering whether to ask my internist for a Gardasil 9 vaccine, just in case there are cancer cells hanging around somewhere. If so, what can I say to convince my GP that this is recommended? By the way, will insurance, (Medicare, private) pay for it? Looking forward every Saturday morning for up-to-date enlightenment."

DG: Ellen's obviously been listening to all our coverage of how the vaccine can be preventive

ahead of time and then potentially trigger a nice antiviral response even if you've already been infected. Let's see here. Failed cone biopsy for cervical cancer. There was cervical cancer. There was HPV infection in the past.

Partial hysterectomy. I'm trying to figure out partial hysterectomy, because I would have expected a total hysterectomy with removal of the cervical tissue. Is there a risk associated with HPV and maybe vaginal cancer? This falls into following the logic of the science. I'm not sure your GP is going to be particularly convinced in this particular context. A person could always private-pay for it if your GP is on board.

VR: I don't think that it's widespread enough, this idea that the insurance is going to pay for it.

DG: No. I think you'd be out on your own.

VR: Finally, Chirag writes, “In the letter in *TWiV* 1270 about when to vaccinate with Shingrix after shingles, you suggested three months. Wait, I looked at NACI. I think of it as Canada's ACIP before this year. It suggested waiting one year after shingles before administering Shingrix.” Gives a link for that.

DG: I'm curious if there's actually any sort of science behind that. If it was just, what do you call it, the Delphi consensus, where a bunch of old guys get in a room, and they breathe some vapors and then make proclamations. The three months is waiting until the acute issue goes down, and then thinking about the fact that you've had an exposure. There may be some germinal center maturation. Three months makes sense from an immunological standpoint. Yes. I'd be curious if there's any actual science that might shift those recommendations.

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

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

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