This Week in Virology

TWiV 1164 Clinical Update

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Guest: Daniel Griffin

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

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From *MicrobeTV*, this is *TWiV*, *This Week in Virology*, Episode 1164, recorded on November 7, 2024. 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, Vincent. We're recording on a Wednesday instead of a Thursday.

VR: What a Wednesday it is. It's after Election Day. The whole landscape of the U.S. is going to change, especially public health, Daniel.

DG: That's what I hear. Well, hello, everyone. Are we allowed to talk about this? Are we supposed to like stay apolitical?

VR: Look, I don't care what your political preference was in this election. The fact is this guy is anti-science. He's anti-vaccine. He's anti-logic when it comes to science. He wants to put RFK Jr. as head of either the NIH or CDC. The man knows no science. They're both anti-vaxxers. We're going to have a tough four years, if not longer.

DG: Yes. What is his background, RFK's background? Did he even like study science at any point? Does he have any like science training?

VR: No, he's a lawyer.

DG: OK. Oh, no.

VR: What do you get when you mix science with lawyers?

DG: Yes, exactly.

VR: Politics.

DG: [laughs] Oh, my God.

VR: This is very concerning. We've covered all this anti-science for a long time on *TWiV*. Now it looks like it's a reality.

DG: I think we'll just have to keep - how do you fight misinformation; with information?

VR: Unless he shuts us down. He could say shut that *This Week in Virology* off.

DG: Really?

VR: Yes, because it's no longer democracy. I heard.

DG: Well, let's jump in. Let's start with some quotations.

VR: What's that? Wait, wait. What's on your tie? It looks black.

DG: If you look closely, you see all this stuff all over it. Actually, what it is, it's Clostridium difficile. C-diff.

VR: C-diff.

DG Yes.

VR: Very good.

DG: Alright, I have two quotations from the same gentleman. This is actually a gentleman who, though he contributed quite a bit when you start digging deeper, he was flawed like the rest of us, maybe more flawed than some. But he had some great quotations. First one is, "One special advantage of the skeptical attitude of mind is that a man is never vexed to find that after all, he's been in the wrong."

VR: Good. I like it.

DG: Really just as a complement to that, "The greater the ignorance, the greater the dogmatism."

VR: We're just talking about that.

DG: It's interesting. It was doing a board review. I'm going to be retaking my infectious disease boards next week. One of the people that was lecturing made this comment. It was about the update in how we diagnose endocarditis, like infection of the inside of the heart. He said, "Oh, Osler would turn over in his grave. They've removed the auscultation of the murmur." I was actually thinking, "You don't really know William Osler, do you?" He was a maverick. He was an innovator. He was not a man who just stayed entrenched in dogma and tradition.

He was moving, he introduced the concept of the internship in the residency, bedside teaching rounds. He was a descendant from - we actually think, pirates. No, I think that if the data suggests that our ability to auscultate a murmur or not doesn't really measure up, you follow the science, not the dogma. Let's jump in. I'm going to put right up front. Maybe this is very appropriate. The article "Identifying WHO Global Priority Endemic Pathogens for Vaccine Research and Development (R&D) Using Multi-criteria Decision Analysis: An Objective of the Immunization Agenda 2013," published in *eBioMedicine*.

While we are still allowed to discuss and research vaccines, let's take this opportunity, Vincent. I want to point out global priority pathogens here. This is different than the list of emerging pathogens of pandemic potential. We've got multiple lists. Really, this paper, for those of you out there who don't like to do too much reading, there's a really nice figure. What this figure has, it starts with global priority pathogens. Then it sort of follows, based upon which parts of the world are potentially impacted. We've got Africa, America, Eastern Mediterranean, European, Southeast Asia, Western Pacific.

They start off with extraintestinal pathogenic E. coli. They've got HIV, Klebsiella, Mycobacterium tuberculosis, which Vincent, I'm going to point out, has regained its role as the number one cause of infections and death throughout the world. It's gotten back above COVID again. Staph aureus, the friend or the nemesis of the infectious disease doctor. Group A streptococcus that's becoming more virulent and resistant to our antimicrobial therapies. Hepatitis C. I was actually listening recently to the Hepatitis B conference *TWiV* episode.

VR: Daniel, why isn't COVID on here? Is it not an issue anymore?

DG: Actually, it's interesting because it has really moved down. I think you and I were talking earlier. In the U.S. it's now number 11 in causes of death.

VR: These are priority for vaccine research. Maybe they think we don't need any more COVID vaccines anywhere.

DG: Well, we have vaccines. I think that's part of it. We're looking at pathogens where we could use a vaccine. That's part of it. Hepatitis C would be tremendous. Hepatitis B, why is it on the list? Because we have a vaccine.

VR: Yes, influenza too is on the list and we do have a vaccine.

DG: RSV is on the list and we have a vaccine.

VR: You never can figure out what WHO is thinking.

DG: WHO, who do they put on these publications? All right, we'll share that. Mpox, I want to just share this but put it in context. "Britain Detects Two More Cases of New Mpox Variant." Britain has detected two more cases with the new mpox variant clade 1B in - and here's where we get context - in household contacts. This individual came back, first case in the country. We're now up to three, but, this is very transmissible within a household. Just to put that in context.

Marburg, let's call this good news. Really no change. We're not seeing any new cases. It looks like Rwanda really got the Marburg situation under control.

Flu, RSV levels are still kind of on their way up. We will circle back to those. For those of you eligible for the RSV vaccine, now's the time to do it. Flu vaccine is really across the board recommending. Time to get that flu shot if you haven't gotten it yet.

COVID, in general, things look reasonable. I'm not sure what's going on in Minnesota. Minnesota was in that 2% to 4% of all deaths in the state due to COVID.

The wastewater - and this is going to be, you and I figuring out, the prediction. Here we are. Wastewater levels are still low. Really almost going into minimal in some parts of the country. Then the big question is going to be when we get our next rise. If we get our next rise? Do you think we're going to get one at some point, Vincent?

VR: Well, my prediction, of course, is not this winter. I'm an outlier.

DG: OK. I'm predicting December, January. We'll see. I would love if we only got a blip and we didn't actually really get a big -

VR: By the way, did you hear? Idaho now, the state is no longer providing COVID vaccines to people. You have to pay for it yourself. They suggested you buy this health pack that includes ivermectin and hydroxychloroquine.

DG: Vincent, I hate to say this, but I feel like we, dare I say “we,” are falling down on the job. Yes, just so people, our listeners if they're not aware. Down in the part of Idaho in the health district where Boise and some neighboring towns are, the Department of Health there will no longer be giving out COVID vaccines. It's really interesting in several points. One is they weren't giving out a lot, they were maybe giving out 50 in the last year. There wasn't this huge demand.

This was the place where people who are experiencing homelessness or people had financial issues, this is where they could get access to the vaccines. The decision was made, OK, we're not going to do this, but here's why I say we're falling down. Who from the other side went to this meeting? You had Peter McCullough. Here's a guy who's really versed with the rhetoric, and the rhetoric was really devious, I'm going to say, at risk of getting myself into trouble.

The whole idea was, listen, if you give them out, you're endorsing them, you're giving tacit approval that they are safe. Why don't you just step back and people can get those vaccines elsewhere and you're not exposing yourself, you're not complicit in suggesting that they're safe. The argument is slippery. If they're really worried about mRNA, then what about Novavax? If you're only doing 50, 60 a year, what about if you have an issue with the mRNA technology, what about Novavax? Why wasn't someone from our group, why wasn't Paul Offit or you or I up there in Idaho?

VR: Daniel, the vaccines are safe, you're not exposing anyone to risk.

DG: Yes. The other part, where does this guy get the money to go and fly up there and do this? Basically, and as you pointed out, don't get your vaccine, instead, give me your money and I will give you my COVID emergency pack with hydroxychloroquine and ivermectin.

VR: Which doesn't work.

DG: Yes. He's there selling snake oil and financing, because it's a lot of money.

VR: Welcome to the USA, folks.

DG: All right. We will move on to COVID active vaccination. Boy, we're talking a lot about vaccines today, Vincent. Why? Because it was one of the most tremendous introductions. This next article addresses an important question. This is: Once I complete my initial COVID-19 vaccination series, what's the advantage of getting boosters? I've already got my initial series, am I done? What's the story? For the under 65, we can say healthy crowd, because we pointed out there's a lot of people under 65 who have health issues.

Maybe they're sedentary, about only one in four Americans actually get appropriate amount of exercise. We don't say obese anymore. We say maybe they have an elevated BMI. What about their risk of hospitalization and death? It's already significantly decreased by getting your primary series. Really the big question for a lot of folks out there is there any point to getting my boosters in terms of protecting me from {ong COVID?

Here's this article, "Symptoms Six Weeks "- maybe that's medium COVID – "Symptoms Six Weeks after COVID-19 are Reduced among U.S. Health Care Personnel Receiving Additional Vaccine Doses During the Omicron Period, December 2021 through April 2022," published in *Open Forum Infectious Diseases*. Instead of three months or 12 weeks, we are going to read here that the objective of the study was to test the hypothesis that subsequent doses of the COVID-19 vaccine are associated with a lower incidence of COVID-19 like symptoms at six weeks after infection.

As I point out, we're really into that medium COVID, which is that four-to-12-weeks after acute infection. We're not really at Long COVID, which a lot of us say really give it to 12 weeks. Still six weeks after the infection and you're still sick and can I reduce the chance of that by just getting one of those boosters? These are results from a case-control analysis of healthcare personnel in this ongoing multi-center COVID-19 vaccine effectiveness study.

The investigators enrolled participants at the time of COVID-19-like symptoms during this period, which corresponded to the early Omicron predominant period. I do think it's helpful. We're talking about Omicron because people are like, "Oh, Omicron." Now they're going to report on the prevalence of symptoms six weeks after the onset of symptoms in people that just got the primary series versus people that received a subsequent vaccination. Got a booster. They enrolled 2,478 participants of whom 57% had COVID-19.

The prevalence of symptoms at six weeks was 26%. It's kind of in line with that Marine study. A quarter of the folks are not all better at six weeks. Now fatigue, that was a big one. Difficulty sleeping. These were really associated with COVID-19. Now participants with COVID-19 who received a subsequent vaccination, who got a booster had about a 45% reduction. Adjusted

odds ratio, 0.55. Symptoms at six weeks. 45% reduction in symptoms at six weeks is, I'm going to suggest, dare I say, a good reason to think about getting a booster.

Particularly now that we have the option of Novavax, where, for many, you can get the booster and not even suffer through much immunogenicity, get the protection without paying much of the price. I'll suggest that this might even underestimate the benefit. As we've talked before, they're using a binary here. At six weeks, you had no symptoms versus some symptoms. You might even get a little more if you say, "OK, so you got a little bit of a cough, but this person over here is like hacking out a lung." You both count as symptoms, but there's also symptom severity.

Also, same with fatigue. “I feel a little bit of tired,” versus, “I can't get out of bed, I can't go to work.” I always think it's important not to just look at the binary. The other is, let's sort of go through a little bit, what are the different symptoms that we're talking about. We talk about general symptoms, talk about respiratory, cardiac. The biggest is cardiac. This like 80% reduction in cardiac, about a 50% reduction in neurological, which I have to say, for me, is something I'm really concerned about. Timing of the vaccine or durability was, again, an issue.

As we see, when they examine the relationship between vaccine timing and symptom onset at six weeks, the analysis showed that among the healthcare personnel who had COVID-19, those who received their most recent vaccine dose within 16 weeks, that's about four months, had lower odds of respiratory symptoms, so that timing, about a 31% reduction. Psychiatric symptoms, that's that depression, that's despair, that was 32% reduction. Any symptoms at all, 32% reduction compared to those, these are folks that got that last dose more than 16 weeks ago.

VR: That's the issue. This means you need to get a booster every 16 weeks, every four months.

DG: [laughs] I think twice a year might be reasonable. This is a problem, and this is why I want to see more data comparing, the Novavax to the mRNA. The protein-based versus the - because is this an issue with just the vaccines in general? Is this an issue with the mRNA platform and durability? Is this an issue with just, you need to maintain a certain level of antibodies? Yes, I'd love to better understand this. It is hard, this whole idea that you'd have to do a vaccination every - well, every four months is just maybe too much. Not for me, I'd be OK. Twice a year, okay, that might be too much. Once a year -

All right, passive vaccination. We have the article, "2024 Clinical Practice Guideline Update by the Infectious Diseases Society of America on the Management of COVID-19: Anti-SARS-CoV-2 Neutralizing Antibody Pemivibart for Pre-exposure Prophylaxis." We've talked a little bit about this. This was published in *CID, Clinical Infectious Diseases,* and this article focuses on the update, the clinical practice guidelines, treatment management of patients with COVID-19 developed by the ID Society of America.

The panel presents a recommendation on the use of pemivibart for pre-exposure prophylaxis. We read that the recommendation is based on evidence derived from a systematic review and adheres to a standardized methodology for rating the certainty of evidence and strength of recommendation according to the grade, grading of recommendations, assessment,

development, and evaluation. What do we get in moderately or severely immunocompromised persons? This is not just mild, this is moderate and severe.

There's a section where they define this. Patients aged 12 years and older, the question, should pemivibart compared to no pemivibart be used for pre-exposure prophylaxis?" The recommendation is yes, in moderately severely immunocompromised individuals at risk for progression to severe COVID-19, the IDSA panel suggests PrEP, pre-exposure prophylaxis, with pemivibart.

VR: This is a more recent monoclonal that's hitting the Omicron variants that are around now.

DG: Yes. When Evusheld, which was every six months, was taken out of the arsenal, now this is the current one. I have to say, not a lot of great access. There is a pemgarda.com website you can go to. I think I mentioned in our local area, you can just reach out to primeinfusions.com and they can help you get access.

VR: Pemgarda and pemivibart, are they similar?

DG: Pemgarda, pemi-v, it's the same. Yes, it's just the same. It's the brand name. All right. COVID, the early viral phase. What do we do, Vincent? Your high risk of progression to severe disease, what do we recommend?

VR: Paxlovid.

DG: Yes. Number one, Paxlovid. Number two, remdesivir. Number three, molnupiravir. Some situations, convalescent plasma. I want to point out, we were talking about this earlier today, hundreds of thousands of people in the United States over the last year have ended up in the hospital with "mild Omicron COVID," hundreds of thousands. We're still averaging over the last year, over 1,000 deaths a week. Most of those are preventable. The across-the-board common denominator, 90% of those folks were not given early treatment.

This is not a wait and you can see. You may not be reading about this in the media, in the mainstream media, but that's a lot. Hundreds of thousands of hospitalizations are preventable and tens of thousands of deaths are preventab.

Early inflammatory phase, we're going to have something a little bit new here. Number one, steroids. Number two, anticoagulation. We have guidelines there. We just updated those. As in the American Society of Hematology, I think that'll be our final updated guidance.

Pulmonary support, remdesivir, immune modulation. Then the issue is, do you need to worry? Do some people have more than one thing going on? This is the paper, "Microbial Dynamics and Pulmonary Immune Responses in COVID-19 Secondary Bacterial Pneumonia," published in *Nature Communications*. You've actually met the first author, Natasha Spottiswoode. She was a guest on probably *TWiP*. We were talking about avian malaria.

VR: Yes. It was at ASTMH.

DG: Yes. Then she published on the brain-eating amoeba. She's done well.

VR: Good.

DG: My one bit of advice as a mentor was, Natasha, you are a little too smart. You're intimidating the rest of us. [laughs] Natasha, keep being brilliant anyway. What we see here is that, yes, secondary bacterial pneumonia is definitely something we see with viral infections that can often be a timing. A lot of times, this timing can be such that they get sick, there's that early inflammatory phase, and then often during that third week, you can see the secondary bacterial pneumonia.

It's interesting because they sort of go down the pathway with the 1918 influenza pandemic, which led to over 50 million deaths in that retrospective autopsy study suggesting that the bacterial pneumonia was going on in the majority of cases. I don't know what your thoughts are, Vincent, but some other data says maybe that's not true. Maybe a lot of people just died during the first week from flu itself.

VR: Yes. It's hard to know. It's hard to know because it's a long time ago.

DG: A hundred years ago. Here in their cohort, they saw a large percent of mechanically ventilated patients have a secondary bacterial pneumonia. They did some really interesting things where they're sampling the upper airways early, and they're finding pathogens, they're finding resistance genes before the individuals develop airspace disease. Giving you sort of a signal to be ready. Then when people develop the lower respiratory airway pneumonia, there's this whole connection where it actually may help guide what you need to treat, what antimicrobials you might be using. It's a great article, very deep, there's a lot in here. It's worth a read.

VR: We have a lot of tissue blocks left over from 1918. You could extract DNA, and what would you look for? What bacteria would you look for?

DG: Strep pneumo is still number one, it probably was number one back then. Then some of the common gram-negatives, maybe Klebsiella, E. coli. Staph aureus is about tenfold more common as a secondary bacterial pneumonia in flu, still only is about 10%. It still is not as common as strep pneumo, Staph aureus would be another one I would be thinking about. No, that would be a great study.

All right. This is, I think, a really important article for thinking about the concept of PASC, sort of this umbrella term above Long COVID. This is the article, "Long-Term Risk of Autoimmune and Auto-Inflammatory Connective Tissue Disorders Following COVID-19," published in *JAMA Dermatology*. You'll see here, why *JAMA Dermatology*. This might seem obvious to many that have listened over time, you'll sort of recognize some of these. I suspect, Vincent, that in the coming months, we're going to have a lot of discussions about vaccine safety versus the safety of getting an infection without vaccines.

Maybe you suggested early on what sort of change in the tide might be behind the importance of having those discussions. I want to point this out, and we've actually talked about the fact that there are risks of getting a disease, significant risks of getting a disease without the protection of a vaccine. There also are real but rare risks associated with getting a vaccine. We talked about with the young lads, either side of 20, sort of a one in 10,000 chance of a temporary, less-than-24-hour myocarditis.

There are the Guillain-Barre and some of the others that we're seeing more in the one in 100,000. Rare, but real. Rare for a population, but 100% for a person impacted in either scenario, either rare vaccine or much more common disease associated. Then as I started off, really important that we think about this larger umbrella of PASC because a lot of these people are not going to end up going to a Long COVID clinic. They're basically going to end up with a different post-acute sequela of COVID. What did they do here?

These investigators conducted a retrospective nationwide population-based study where they used the Korea Disease Control and Prevention Agency cohort, individuals confirmed COVID-19. This is October 8, 2020 to December 31, 2022. We're going to get some vaccinated, some unvaccinated in there. They've got controls that were identified, 2018 included in the analysis. We end up with a total of almost 7 million, so 6,912,427 participants, about half of them are male. The mean age is 53. We end up with over 3 million with COVID-19.

We end up with almost 4 million controls. We've got an observational period of more than 180 days, about half a year, and they're going to look at a number of, let's say, diseases. The first, and I'll explain what each one of these are. Alopecia areata. We talked about this. People go, they get COVID, and then their hair falls out. It can be like just clumps, oh my gosh, I've got a patch on my head where there is no hair. It might be alopecia totalis, where I've lost all my hair and I have no hair. Alopecia areata, we're seeing about a 10% increase just from getting COVID.

The alopecia totalis, where you lose it all, 24% increase over baseline. Vitiligo. This is where you have this immune reaction where you have all these, lack of pigmented areas, about a 10% increase. Then you have Behçet's disease. This is where you end up with all these ulcers. It could be in the mouth, it could be in the general area, 45% increase. Crohn's disease, 35% increase. Ulcerative colitis, which is involving the large restricted inflammatory bowel disease, restricted, 15% increase. Rheumatoid arthritis, a 9% increase. Lupus, 14% up.

Sjögren's is up 13%. Ankylosing spondylitis, it's another autoimmune disease, up about 11%. Crohn's disease, small and large bowel, ulcerative colitis, inflammation of just the large bowel, rheumatoid arthritis. All the joints, but also can involve the lungs and skin.

Lupus, autoimmune, a lot of things. Sjögren's, that's that no tears and dry mouth. Ankylosing spondylitis an inflammation of usually the sacroiliac joints. Down where the spine and the pelvis are joining. Bullous pemphigoid, that's going to be our highest. That's a 62% increase. That's where basically you end up with these blisters, often all over your body. That's the first thing I'm going to say. You get COVID-19 and you have all these increased risks, but then, and this is going to be what I think is really a take-home here, is what about vaccination? If I get vaccinated, can I reduce my risk of these different things? I had to dig for this, Vincent. It's taken me a bunch of time. I'm digging through, I finally go to eFigure 11, which I pasted in.

Here you can look at what are the rates after COVID if you had a booster vaccination, if you had complete vaccination, if you were vaccinated but didn't finish it, and then compare this to no vaccination at all. It's different for each of the different things. Clearly for almost all of these, not being vaccinated is associated with a much higher risk. Some of them are actually pretty significant. I'm looking up here at losing all the hair in your body, which we saw a ton of early on. It's about a four-fold increase.

VR: I'd love to see this done with influenza.

DG: Actually, yes.

VR: We're doing this because we have so many COVID patients, but we have lots of flu patients. I really'd like to know, is this a general inflammatory process with many viral infections.

DG: I'm particularly seeing, because a friend of mine who's a medical student had a new diagnosis of rheumatoid arthritis while in medical school. There's almost a twofold increase after COVID if you didn't have the vaccine protecting you. Then if you look at folks that are vaccinated, you don't see much of a signal. Much of the signal we're seeing is the risk of getting COVID without the protection of a vaccine.

I think we always have to balance this. I think that we've done a good job, I think Paul Offit's done a really good job of not just being like, everyone needs a vaccine every four months, no matter who you are, one size fits all. Talking a little bit about the subtleties and the fact that, there's risks both sides, but boy, the risks are really when you don't have that protection.

All right, and I will finish our section before we get to emails with no one is safe until everyone is safe. I do want everyone to pause the recording right here, go to parasiteswithoutborders.com, and click on Donate. Particularly now during November, December, and January, we are doing our microbe.tv fundraiser. We will double your donations. We're really trying to get to that $20,000 donation for microbe.tv.

VR: It's time for your questions for Daniel. You can send yours to daniel@microbe.tv. Now this first one, we have an answer. We just talked about it, but let's read it. Sara writes, "After almost four years and several vaccinations, COVID found me. Symptoms don't worry me much, but I'm afraid of getting Long COVID. My mother was diagnosed with ME/CFS when I was a child and has been living with this cruel disease ever since. I'll soon be 40. There's no way of getting Paxlovid here in Switzerland. What can I do to minimize the chance of developing Long COVID?"

DG: Yes. Sara, this is very, very timely. When a lot of people ask, "Why do I keep having to get these boosters? I'm kind of done with it." Well, for you. you're 39. You're young. I'm assuming you're healthy in other ways. Your concern with COVID is Long COVID, is not being better at six weeks, not being better at 12 weeks. Getting that booster vaccination we saw can actually be another way to reduce your risk.

VR: Walt writes, "Your latest clinical update fussed about people saying Paxlovid prevents death when indeed it does not prevent 100% of people who get it from dying. How can Lipitor substantially reduce the statistical risk of dying except by preventing thousands of deaths each year among those who get it? It seems the medical profession long ago made its choice on the wording. My Atorvastatin bottle is clearly labeled to take one tab daily to prevent heart attacks and strokes. Let's keep saying prevent, acknowledging that no medical intervention, even the very best like measles vaccines, are 100%."

DG: Yes. Well, I like this and words matter and I think we have to be careful. I remember it was a couple of years back and one of the patients was leaving and he's a very anxious

individual. The person at the front desk, "It's OK, don't worry, you're not going to die," and my partner is like, "Don't tell her that. She is going to die." It's just a question of when. She's not going to die from this. She's not going to die now, but she is not immortal.

VR: Yes. I agree. It's not a 100%, but I don't think most people are going to understand it. When they see prevent, they're going to think 100%.

DG: I think that's our problem with the vaccines. Because even deans of certain medical institutions like, "Oh, wait. Vaccines prevent you from getting infected." They don't. Yes, we've got a lot of education ahead of us.

VR: That's why they're deans.

DG: Yes, exactly. You get away from the patients.

VR: Nikki writes, " Mycoplasma pneumonia in preschoolers is rising. I personally know a child who was hospitalized. Why haven't we reconfigured our point-of-care PCR machines to screen for it? Currently, we have to send a nasopharyngeal swab to the lab. Very few providers are ordering that lab test. Routinely prescribing amox to these little ones is not the answer. If we diagnose the correct organism, we can prescribe the correct antibiotic."

DG: Yes, Nikki, this is great. Say, like a doctor without a lab is like a feral dog. There's no correction here. The kids come in, we've seen quadruple the number of mycoplasma pneumonia cases being diagnosed ,but I bet it's even more because most of the places, I'll say like don't necessarily include it. They move to this, "Oh, you only need to test for influenza A, influenza B, RSV and COVID in these little quad tests."

If it's not that, a lot of times they end up getting amoxicillin when it might be mycoplasma pneumonia, which amoxicillin does not treat. Or they might end up getting the Z-Pak when it's not the right thing. We saw this during the pandemic. There was a drive to get antigen point-of-care testing. If you actually know what a person has, then you can intelligently give them the correct antibiotic.

VR: Dr. Paul writes, "Here's what can happen during a COVID-19 outbreak in a skilled nursing facility. In 2024, 28 residents became ill with COVID. 100% were treated with an antiviral, 22 receiving Paxlovid and six receiving molnupiravir. It takes less than five minutes to assess the patient's renal function and drug interactions before prescribing Paxlovid. Two residents died aged 90 and 98, 20 patients over 85, including seven 95 or older. One resident was hospitalized with severe disease and survived. One resident was unvaccinated and had mild disease.

Two were incompletely vaccinated, 25 fully vaccinated. Credit for this outcome is due to vigilant bedside nurses and aides, a very committed and capable infection control nurse specialist facility, leadership support, and a physician practicing science-based medicine. This is in contrast to a skilled nursing facility outbreak in November 2020 I was involved with where all 79 residents of the facility became ill and 25% died. Thanks for all you do and keep at it. I'm a regular listener, *MicrobeTV* supporter in a past *TWiP* case-solving participant who lucked into a copy of *Parasitic Diseases*.

DG: This is fantastic. I love to hear a story like this.

VR: Sara writes, "Huge fan of *MicrobeTV* and you I'm hoping you can provide some advice. My mom is 67 diagnosed with COPD 10 years ago. No symptoms but former smoking. Healthy aside from high BP, which she's on meds for. She's pretty healthy, 5'4", no more than 100 pounds, very intelligent, but her doc keeps telling her that vaccines are bad and she shouldn't be getting them.

She even dissuades her from getting seasonal flu vaccine. When my mom questions her, this doctor tells her only to listen to Fox News and that in Europe no one gets vaccines. My mom doesn't agree with her but is afraid to switch doctors because she doesn't want to be labeled as difficult. My dad, brother and I keep telling her she needs a different doctor and to offer help her find one, but we have no luck convincing. Any advice is greatly appreciated.

DG: I'm just kind of dumbfounded here. Sara, your mom's got to switch to a doctor who actually is practicing medicine. This is anti-science. This is not great. If anything we have more vaccines. I wonder what other vaccine she's not getting. Let's see. She's 67, COPD. Did she get the RSV vaccine? She would be eligible for that. Did she get the new PCV20, so the updated pneumonia vaccine? I'm thinking not. Is she up to date with flu and COVID? No. What about shingles for that matter? Yes, you're not doing your mother any service. I think if you go to a new doctor, and if you go and point out that you switched doctors because the other doctor gave you this advice, I think that the other doctor will be labeled as difficult and not your mother.

VR: That's *TWiV* weekly clinical update with Dr. Daniel Griffin. Thank you, Daniel. Oh, thank you. Everyone be safe.

[END OF AUDIO]