



After the Fact | [The Facts Behind the COVID-19 Delta Variant](#)

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TRANSCRIPT

Dan LeDuc, host: With about half of Americans vaccinated against the coronavirus, life had slowly begun returning to normal over the summer. But just as businesses have been reopening and schools are welcoming students back, the emergence of the delta variant is sending the number of COVID-19 cases to levels not seen since spring. That's prompting new mask mandates—and new worries.

[Music break]

Dan LeDuc: Welcome to “After the Fact.” For The Pew Charitable Trusts, I’m Dan LeDuc. By the end of July, 93% of the new COVID-19 cases in the United States stemmed from the delta variant. That’s our data point for this episode as we try to sort out the facts of this new surge with Dr. Rebecca Wurtz of the University of Minnesota’s School of Public Health. She had joined us in March to explain the then-new vaccines, and listeners told us that conversation was helpful for them in understanding vaccinations and how the coronavirus works. So with this new surge, we’ve asked Dr. Wurtz to come back.

Dan LeDuc: Well, Dr. Rebecca Wurtz, welcome. Thank you for being with us again.

Rebecca Wurtz, board-certified infectious disease physician and associate professor at the University of Minnesota’s School of Public Health: Thank you for inviting me back.

Dan LeDuc: So when we last spoke in March, we began by asking you to tell us a little bit about yourself. And we’re passing on some interesting information, important health information. Sometimes people just want to know who’s telling this stuff. It helps them understand and trust it. So tell us a little bit about yourself for the people who didn’t listen back in March.

Rebecca Wurtz: I’m an infectious disease physician who’s worked clinically in infectious diseases and also in disease surveillance and control, and governmental public health—and also in a bunch of IT surveillance startups. I teach now at the University of Minnesota School of Public Health.

Dan LeDuc: When we last spoke, you were helping us understand how the vaccines work, their efficacy rates, and what those mean. And since then, about 50% of eligible Americans have gotten that vaccine. But now we seem to be stalled, if not even slipping. And the delta variant has come to the fore and others may be lurking out there. Describe the current situation for us.



Rebecca Wurtz: We're back to where we were in March and April of 2020, for those who are not vaccinated. Those folks should be staying at home, working from home, not going to school, not socializing at all, not going out to do anything much more than grocery shopping. They're at high risk for a COVID infection that can be serious and even fatal. For the rest of us, those of us who are vaccinated, were we to get a breakthrough infection, the symptoms are relatively trivial or nonexistent.

Dan LeDuc: Dr. Wurtz, just super simple, what is a virus variant, and how does it come about?

Rebecca Wurtz: Well, viruses are genetic, have genetic material. That is, every time the virus replicates itself, reproduces itself, there's a chance for that genetic material to change slightly. It's common. It happens all the time. Influenza each year has many different variants. It's a typical behavior of a virus.

Dan LeDuc: So, for example, when we get our annual flu shot, that's not the same flu shot every year. It's designed to sort of manage what our knowledge of the current variants are?

Rebecca Wurtz: Exactly right. It's very carefully calibrated to what's circulating in the world.

Dan LeDuc: Since there has been so much talk about the variants as the virus has evolved, how many COVID-19 variants are we familiar with right now in the world? And how many of them have reached the United States?

Rebecca Wurtz: Well, there are literally thousands of variants. The first variants were detected in the first weeks of the pandemic.

Dan LeDuc: Let's start with the delta variant, which is in the news. We're talking at the second week in August. And it's been called more worrisome, more troublesome. What is it, exactly, and how does it develop?

Rebecca Wurtz: Well, let's think of a variant as happening because of how it's assembled in our cells. And let's use the analogy of an automobile assembly line making tens of billions of cars a day. That's what a viral infection does in one person's body: produces tens of billions of copies of the virus. Things on the assembly line are bound to go wrong. The wrong knob on the dial for a radio, say, which doesn't have any real impact on the car's performance. Leaving off the tires, however, would mean that the car reaches the end of the assembly line and stops.

That viral variant doesn't go anyplace. Its genetic material is so out of whack. But if a high-performance engine is accidentally put under a subcompact's hood, that car or virus is going to tear off the assembly line and race out the door. And that's actually where my analogy breaks down, because the car isn't going to reproduce itself, but this new souped-up virus—let's call it a delta variant—is, across hundreds of millions of people around the world, and makes trillions of copies of itself.



But most of those variants are at the level of, using my analogy from before, the wrong knob on a car radio. It's the ones that have the evolutionary advantage—the souped-up ones, the more infectious ones—that become variants of concern and get a name. Getting a name for a coronavirus is the equivalent of getting a gold medal at the Olympics for a human. It means you're the best at what you do: causing disease.

Dan LeDuc: Yeah, and not the sort of stuff you'd like to give gold medals for.

Rebecca Wurtz: *[Laughs]* If you were in the viral Olympics.

Dan LeDuc: And I've heard it's severe. I've heard it's contagious. Are those two the same thing?

Rebecca Wurtz: No, they're not the same thing. And as far as we know, it isn't apparently more severe. There's some conflicting data about that. Overall, hospitalizations and death rates are lower in this delta wave. Not because it's less dangerous; it's essentially the same or slightly more dangerous than what we've dealt with all along. But it's because it's mostly younger adults who are getting infected now, people who haven't been vaccinated at the same rate as older people. ICUs in parts of the country with low vaccination rates are filling up with younger people, people in their 20s to their 50s.

Dan LeDuc: Is it more contagious than the earlier versions of the virus that sort of sent us all into this strange world we're living in?

Rebecca Wurtz: That's what makes it different. The delta virus has features that make it much more contagious, more easily spread from person to person. It's stickier on our cell surfaces. And once it gets inside our cells, it's got tricks that allow it to make more copies of itself than the non-delta variants. Those two things make it much more contagious.

Dan LeDuc: Would this be happening, would this variant even have reached the point it has, if we simply had much higher vaccination rates?

Rebecca Wurtz: Well, it was evolving even before vaccines were available. And half—much of the rest of the world has very low vaccination rates. So, it would be happening around the world, including in the United States, even if we had higher vaccination rates.

Dan LeDuc: It would exist; it just may not necessarily be reaching as many people?

Rebecca Wurtz: Certainly not in the United States.

Dan LeDuc: We talked a moment earlier about some vaccinated people getting the virus. And that, of course, has been one reason why some people who are hesitant to get the vaccine say, "Well, if it's not going to protect me all the way, why should I do it?" What's the actual data of vaccinated people getting what they call the breakthrough virus?



Rebecca Wurtz: That's a good question. How likely are you to get a breakthrough infection if you've been vaccinated? We don't actually know the answer to that question. It was once thought to be very rare, but it seems to be more common than we thought.

You're much more likely to get a breakthrough infection if you're exposed to people with COVID. And given the delta surge, that's more likely than it was even in the spring. You're more likely to be exposed to someone with COVID if you're in a part of the country with COVID cases literally going off the charts—the states that we've heard about, like Florida, Missouri, Arkansas. But as we've heard from the CDC, more than 80% of the counties in the United States have rising COVID case counts. You're more likely to get a breakthrough infection if you're exposed to more people. Period. Provincetown, the Milwaukee Bucks celebration, Lollapalooza, Sturgis—they're all places where people have been exposed and will get infected.

The really good news, the good news, is that vaccines used in the United States are very effective against severe infection with delta. Very, very few hospitalizations and almost no deaths have been seen in people who've been vaccinated.

Dan LeDuc: We're trying to learn the efficacy of these vaccines. How do the vaccines compare with other sorts of things like them—like the flu shot, like previous vaccines that have sort of altered society and rid us of many diseases? It's been a long time. We've had it almost, what, six months now of vaccinations? We have to have been learning more about how these vaccines work. How do they compare?

Rebecca Wurtz: Well, the mRNA vaccines and several of the others are far more effective than traditional, say, influenza vaccines. In fact, it's likely that influenza vaccines in the future will be made using the mRNA technology.

Dan LeDuc: You've talked about this mRNA technology with us before. Let's take a second just to explain, as easily as we can, for folks so they know what that means and why it's so important.

Rebecca Wurtz: It's a remarkable achievement—we've co-opted the virus. The virus tends to co-opt our cells, but we've turned around and taken one of their tricks, a short segment of their genetic material—small, tiny pieces of their genetic material, the piece that encodes for the infamous spike protein—and we give those small pieces of that viral genetic instruction in the form of a shot, in the form of a vaccine, to our bodies.

And our cells ingest it, thinking that they're seeing the virus, when, in fact, they're only seeing a small, incompetent portion of the virus. And that piece of instruction tells our cells to make spike protein. And our immune systems see that spike protein and think it's the virus, when, in fact, it's not—it's only a small portion, a nondangerous, noninfectious portion of the virus—and start creating an immune response to it. Very quickly, those pieces of mRNA that have been given in the vaccine are degraded. All mRNA messages only last a few hours. So it turns the tables on the virus.



Dan LeDuc: And that leads me just to say that we talked about this in our previous conversation. So that people understand, again, if they haven't had a vaccine and they're curious, it's not like this medicine stays in their body all this time. Something is put into their body that triggers their own natural responses.

Rebecca Wurtz: Exactly. We all make mRNA constantly, billions of times a day, to fuel our own cells. But those messages are quickly degraded, are quickly removed from our cells. And the same is true of the vaccine version of mRNA.

Dan LeDuc: In press interviews and elsewhere, some people who are unvaccinated are saying they just cannot make up their mind, that there hasn't been enough data for them to really know. Is there enough data for them to know?

Rebecca Wurtz: Yes. This vaccine still hasn't been authorized for nonemergency use. It's been used in a far larger population than any vaccine before in its emergency use authorization. Hundreds of millions of people have gotten it, with very effective results—very effective and safe results.

Dan LeDuc: This sort of skepticism that is existing in society today, I mean, you are a student of public health, and I'm just curious on how it fits in history. Over time, we've developed vaccines to conquer polio and smallpox and other horrific things. In the past, was there this sort of reluctance or skepticism of the process?

Rebecca Wurtz: Absolutely. For an example, with the polio vaccine, there was skepticism. And, in fact, in many parts of the world today, there continues to be skepticism. That's why polio, which is a disease that could have been eradicated, much like smallpox has been eradicated, polio could have been eradicated a generation ago. But it persists, not because there isn't a safe vaccine. There's a safe, effective, inexpensive vaccine. But polio persists because of misinformation and mistrust.

Dan LeDuc: So what can the public health community be doing differently this time around? Are there lessons from history with some of these other vaccines that could be applied here?

Rebecca Wurtz: In the past, it took years—six, eight, 10, 15 years, and we forget this now—for vaccines to be widely accepted. It took, in many cases, mandates for vaccines to be widely accepted. It took effective, thoughtful, even individual communication, public communication, but also communication from health care provider to individual, with reminders of the risk and benefit of the vaccine.

Each day this week in the United States, hundreds of people have died from COVID infection. They've suffocated, away from loved ones, in a hospital. And in contrast, in that same time, not a single person has died from the COVID vaccine. I think we need to do a better job of messaging in an urgent and accelerated way.

Dan LeDuc: So how can we do that? I mean, there's a question of trust in science. The vaccines have become a political issue for some people. There is, in fact, history on the



side of reluctance, right? It's sort of always been there. Yet here we are in a more modern age. We have the miracles of communication. We have the best science we've ever had. How do we do this better than that?

Rebecca Wurtz: Well, that's going to be one of the most important questions to ask and lessons to learn from this. And it may be that science, and I'll include medicine in here, has been its own worst enemy, when in the past, it positioned itself as though it had all the answers. It's been a humbling and confusing year for all of us, I think, and it's never wrong to hold science up to scrutiny. We're going to need to re-establish trust in the scientific method and learn how to present complex and evolving information about risk and risk assessments more effectively.

Dan LeDuc: This past year has seen the public health community having to contend with a lot. And there has been evolving advice from the CDC. You don't need a mask. You do need a mask. Things have evolved to the point where we're now again seeing mask mandates, mask recommendations. And some people who are critical of the process see that as an example of why none of this advice matters. What, in fact, has actually been occurring?

Rebecca Wurtz: Well, science evolves in response to an evolving coronavirus. It's been required to assess, recalibrate, recommunicate. That's what science is. It's a constant search for either the truth or the best practice, and it's been forced to respond as the coronavirus responds and changes.

Dan LeDuc: In the earliest days of the virus, it seemed to be a greater threat to people who were older. And, in fact, there was some sense that children were at less risk. Now we have the CDC issuing a mask mandate—or guidance, at least, that there should be a mask mandate for anyone older than 2 years old as they return to school. And there's been a lot of attention on kids. Are kids more susceptible or at greater risk of the delta variant?

Rebecca Wurtz: Well, kids are at greater risk from the delta variant only insofar as it's more infectious, like anyone is. There are a lot of people with COVID out there right now, and the virus is more infectious. So if a kid is out and about, at school, or playing sports, or living their lives, there's a greater likelihood that they'll be exposed and infected than there was, say, back in April and May of this year. It probably doesn't cause worse disease in kids.

And, in fact, kids are relatively OK when they get a COVID infection. But there's a small proportion of kids who do get serious disease. And if it's one kid in 1,000 with COVID who ends up in the hospital, and there are only 1,000 kids with COVID, then that means there's one kid in the ICU. But if there are 100,000 kids with COVID, it means the pediatric ICUs are filling up, which is what's happening.

Dan LeDuc: With these increased infection rates and everything we've just talked about, a return to mask mandates and other concerns, are we going backward or forward in this sort of fight against the coronavirus?



Rebecca Wurtz: I think that's a very important question. I think for people who are not vaccinated, the clock has been reset to the early months of the pandemic. People who continue to wrongly believe that vaccination is more dangerous than COVID infection should isolate at home, not go to school or work, not take public transportation, not go to a gym or a restaurant, not go grocery shopping—certainly not without a mask.

COVID, whether it's the delta or the lambda variant or any future variants all the way through the Greek alphabet, is here to stay. I guess I'd tell people who choose not to be vaccinated that it's best to go home and stay home forever. But I think what we're seeing now is the ragged edge of early endemicity. And by that, what I mean is that SARS coronavirus is here to stay, and it will circulate in the population at low levels year-round, just like the common cold-causing coronaviruses do.

New human coronaviruses have appeared repeatedly over the last thousand years. And maybe the first time each one appeared, it swept through a population much like what we've experienced in the last year and a half. Of course, the earlier coronaviruses didn't have the opportunities of long-haul direct plane flights or mega cities, but with time, they circulated around the whole world.

But then once that had happened, the adults who were immune, or newborns who got antibody from their mothers prenatally or through breast milk, or when the population was infected routinely in childhood, when the infection was less serious, they grew up to get breakthrough infections, so-called breakthrough infections, with each new variant of the coronavirus that was circulating at the time. But they experienced a breakthrough infection much like the people who are getting breakthrough infections experience them now—a summer cold, a sore throat, a runny nose, a low-grade fever, some fatigue.

The vast majority of people who've gotten vaccinated who are getting breakthrough infections are experiencing COVID as a summer cold. It's very contagious, but either there are no symptoms or trivial symptoms. And that may be how we experience COVID in the future after a large proportion, a larger proportion, of the population is either immune through vaccination or through having experienced COVID and survived it. At the moment, I think what we're seeing is a serious, potentially fatal, pandemic in the nonimmune and the beginnings of endemicity for the rest of us.

Dan LeDuc: So almost two different scenarios based on who you are in the population.

Rebecca Wurtz: Based on vaccination or not, yes.

Dan LeDuc: So I think what you're describing is a future, at least for the immediate future, there's like two separate populations at work here. And there's like a good news side and a bad news side. How would you describe these two populations?

Rebecca Wurtz: Well, I think the number of cases is climbing in the United States and worldwide, fueled mostly by the delta variant. This is a tragedy in the parts of the world with limited access to the vaccine, but in the United States, it's a tragedy and a disgrace. Because it didn't have to happen. The delta surge in some parts of the United States is



the worst surge of the pandemic so far. And people who are unvaccinated and remain unvaccinated will be at high risk for delta. Other people have said, if you're not vaccinated, delta will find you. And if it's not delta, it will be a future variant that is perhaps as contagious as delta but even more serious, more deadly.

Dan LeDuc: And for the vaccinated population—not out of the woods, but almost—how would you describe, I guess, that group moving forward?

Rebecca Wurtz: We're in a weird threshold time right now, in August of 2021. We've been a little bit blindsided by this delta surge. Back in June and July, those of us who were vaccinated were pretty optimistic that life was starting to return to normal. I think once we get a handle on this delta surge and understand more about who is subject to serious infections—that is, people who are unvaccinated and those who are vaccinated and have breakthrough infections, which are starting to prove that it's a trivial occurrence—I think once we're past this kind of, again, threshold period of uncertainty and recalibrating, those of us who are vaccinated will be able to start living more freely as we had before, back in April, May, June.

Dan LeDuc: I heard one of your colleagues in the public health community on another podcast talking about the goal is to sort of make the coronavirus similar to the flu, where we'd get a vaccine or annual shot or whatever the proper course is determined to be, and it remains a risk, but it's a completely manageable risk if we're smart about it.

Rebecca Wurtz: Either that or even—we don't get shots against the common cold. And it may be that coronavirus—there are many other versions of coronavirus that do cause common colds that just tend to plow on through. Hopefully we've all learned the importance of staying home when we have a common cold now and not spreading it at work. But it may be that ultimately there won't even need to be a vaccine for SARS-CoV-2 or even its variants because we achieve immunity either through vaccination or having been exposed to it. We just have to be better ready for the next—not variant, but the brand-new next coronavirus, SARS-CoV-3.

Dan LeDuc: Well, Dr. Wurtz, thank you again for your time and advice and insights. We appreciate it.

Rebecca Wurtz: Thank you so much, Dan, for the chance to talk.

[Music break]

Dan LeDuc: You can listen to our previous episode with Dr. Wurtz at our website, pewtrusts.org/afterthefact. As she said then, if you have questions about the coronavirus, the best place to get information is from your medical provider.

Until next time, stay healthy. For The Pew Charitable Trusts, I'm Dan LeDuc, and this is "After the Fact."