



After the Fact | [Misinformation and the Coronavirus Vaccines](#)

Originally aired Mar. 12, 2021

Total runtime: 00:15:47

TRANSCRIPT

Rebecca Wurtz, board-certified infectious disease physician and associate professor at the University of Minnesota School of Public Health: If the vaccine were as dangerous as COVID, given the number of people who've gotten the vaccine by now, 40,000 people would have died from the vaccine. No one has died from the vaccine.

Dan LeDuc, host: That's Rebecca Wurtz, an infectious disease physician at the highly respected School of Public Health at the University of Minnesota. We'll be hearing a lot more from her about the coronavirus vaccines in just a moment.

Music transition

Dan LeDuc: Welcome to "After the Fact." For The Pew Charitable Trusts, I'm Dan LeDuc.

As of March of this year, more than 2½ million people have been lost to COVID 19, with more than a half a million in the U.S. alone. Lives have been upended, masks have become part of our daily lives, and many of the long-term implications and effects are still unknown.

But there is light at the end of the tunnel. Multiple vaccines have been developed and are being distributed, reducing virus transmission rates among key groups of people. But as recent surveys have shown, skepticism remains about the vaccines. According to the latest Pew Research Center data, 30% of U.S. adults said they do not currently plan to get vaccinated.

That's our data point for this episode as we discuss vaccines with Dr. Rebecca Wurtz.

Dan LeDuc: Dr. Rebecca Wurtz, thank you so much for joining us.

Rebecca Wurtz: My pleasure, thank you for having me.

Dan LeDuc: So we're trying to learn more about the data behind the vaccines. And sometimes, when people doubt things or are curious about things, it helps to understand who's explaining things to them. So maybe you could tell us a little bit about yourself, why you got into public health.

Rebecca Wurtz: I was trained as an infectious disease clinician, meaning I saw patients. But as an infectious disease doctor, you're always interested in the communicable aspects of disease. And I ended up getting an M.P.H., master's public health, and I worked at public health departments in the city, county, and state level and consulted nationally and internationally,



because communicable diseases don't stop at borders. I worked early on in my career in slow-moving pandemics like HIV/AIDS, tuberculosis, West Nile virus, and more rapid outbreaks like H1N1. And then after 9/11, when we were more worried about bioterrorism, I had a chance to supervise the smallpox vaccine campaign for a state health department.

Dan LeDuc: It seems an important part of that job is communicating to the public.

Rebecca Wurtz: So much of medical and science communication is around a new medication for heart disease or for cancer. When a medical communicator, a science reporter communicates that to an individual and the individual makes a choice with his or her health provider, they're making a choice for themselves and perhaps for their family. But communicating about public health, about communicable diseases in particular, influences people to make choices that impact not only themselves but their family, their neighbors, their workplaces, their communities. So it's a different challenge in terms of communicating about communicable diseases.

Dan LeDuc: Let's talk about the vaccine specifically. There are different effectiveness rates; we're hearing about those numbers. What do those rates actually mean? Does it mean I should want one instead of the other?

Rebecca Wurtz: All four of the vaccines have been shown to be extremely effective in clinical trials. And as the Pfizer, Moderna vaccines are being rolled out, they're proving that their efficacy out in the real world is the same as they were in clinical trials. The difference of a few percentage points, even 10 percentage points in efficacy is really irrelevant in our efforts to stop the outbreak and to protect individual people. They seem to all have extremely high rates of protecting against serious disease, which is really what we want.

Dan LeDuc: When people hear the rate isn't 100%, they sometimes will say, well then, why bother, I still have a chance of getting COVID. What should we say to the folks who are thinking that way?

Rebecca Wurtz: None of our vaccines, the ones that we all got as kids, are 100% effective. They are all on the range of the efficacy of the vaccines that we're hearing about for COVID. And yet we don't have measles, we don't have polio in the United States. The reason to participate is that you yourself are very, very likely to be protected. But if you're not protected, if your neighbor is protected at a 95% rate, your chance goes down from 100% right there. So even if there's a small gap in your individual protection, if everyone around you is protected, then that makes you safer as well.

Dan LeDuc: The other thing some people will hear was, well, I'm going to get to the vaccine, but we still have to wear masks. And the world is not going to really change for a long time. Why is that?

Rebecca Wurtz: There have been questions raised about whether or not someone could be infected, despite being vaccinated, and shed virus. Those concerns are theoretical; there's no data to support either shedding virus or not shedding virus following the vaccine. So I think



people are erring, at least at this moment, on the better side of caution of saying that we don't know yet. That data is being gathered; we will probably know within a couple months.

I think there's also social norms that we should adhere to; we should wear masks out in public to prove that we agree that wearing masks are important. So over time, we'll know better whether we need to wear masks after we've been effectively vaccinated.

Dan LeDuc: You mentioned the other vaccines that we all receive as youngsters. Let's talk a little bit more about how these vaccines for COVID compare with others in history, like polio and even the annual flu shot that we all get. In terms of how they work with our bodies, but also those rates of success.

Rebecca Wurtz: The vaccines, in general, work by introducing our immune systems to a small, not dangerous version of the virus or the bacterium. Usually a piece of the germ, sometimes the whole germ that's been killed or weakened. And when our immune systems see that piece of the vaccine or piece of the germ, they say, OK, I'll recognize that bad boy when I see it again.

And the COVID-19 vaccines work in exactly the same way, the same way that the vaccines we had as kids work. They expose our immune systems to a small and nondangerous piece of the coronavirus. The Pfizer and Moderna vaccines use a new technology for delivery of that piece, this mRNA technology, which, frankly, is genius and will probably become the standard vaccine delivery modality over the next few decades. So the general principles are exactly the same, and there's a new and really cool way of getting the vaccine working in our bodies.

Dan LeDuc: You mentioned the mRNA platform—this is going to change things moving forward. Describe what that means for people.

Rebecca Wurtz: Our current vaccine technologies, to be frank, are fairly crude. We take the germ itself, kill it by dunking it in formalin or some other way of killing it, and then inject it into our bodies. And our immune system still perceives it as a foreign invader and responds appropriately. The mRNA technology is fascinating because it's not even the real germ itself. It's a tiny patterned piece, a tiny piece of genetic material that causes our bodies to create just the provoking part of the germs, just the antigen, the spike protein on the germ's surface.

To create just that protein and then present it to our immune systems for their reaction, it's so much more precise, it's so much more refined, it's so much less risk of contamination during the manufacturing process compared to all the other existing vaccines. It's cleaner, it's more targeted, and it is quickly eliminated by our bodies, the original vaccine, once it's no longer needed.

Dan LeDuc: That seems like a real game-changer. If we're looking for the silver lining out of this horrible year that we've all been through, that to see the practice of science changing in such a rapidly positive way has got to be a lasting effect.



Rebecca Wurtz: It's exciting, the mRNA technology. The technological platform has been around for 25 or 30 years—that's not brand new. How it's been deployed in this particular instance, with regard to developing a vaccine again in such a rapid time frame, is new.

Dan LeDuc: When the Salk vaccine came out, it was this historic moment for the world. And the COVID vaccine was developed even more quickly. And—am I correct—it's just as effective at doing what it's supposed to do as the Salk vaccine did for polio.

Rebecca Wurtz: Depending on how you define effective, more effective. You need four doses of the polio vaccine to have it be up to the 95%, 98% effective that the polio vaccine is. So if you define effectiveness on how long it takes to get to immune, these vaccines are better. They're faster and, as far as we know, as safe as the Salk vaccine.

Dan LeDuc: Well, you raise safety, and that's on some people's mind. The government program that helped get this going was called Operation Warp Speed. So, some people are wondering, did it go too fast, were corners cut? Because it did happen; it was amazingly fast. So, what do we say about all that?

Rebecca Wurtz: I think it's been a chaotic year; it's really challenged our understanding of the world on a daily, sometimes an hourly basis. And I think people are concerned about what we know and when we know it about the vaccine and are watchfully waiting. And I appreciate that; I appreciate the need to be reassured. I think the vaccine rollout has been the most recent chapter in this chaotic year. And people have, I think, misattributed doubt or concern about the vaccine itself to the vaccine instead of to the rollout. Yes, it's been fast; yes, it's been safe, the clinical trials. And with each day, we accrue more knowledge that it's safe and effective.

Dan LeDuc: One of the other questions we sometimes hear is, well, we don't know what the long-term impacts of this is going to be—20 years from now, taking this vaccine, what will it do to me? Did we really know that about the Salk vaccine at the time? Or any of the other flu shots that we get?

Rebecca Wurtz: Correct, we only know six months, 12 months at the most, 18 months of research, clinical trial data at the time these vaccines have been rolled out in the past. They are studied in animal models whose lives are accelerated and who go through all of the changes of aging that human beings go through, but on a much faster pace. And the longer-term consequences are studied in animals. One of the interesting things about all of these four vaccines is that the vaccines themselves disappear from our bodies within days and weeks; they don't linger. They themselves are not in any way retained in our bodies in a way that might have caused ongoing difficulties.

Dan LeDuc: Explain that a little bit more. We get this shot, we think some medicine, for lack of a better phrase, is staying in our body forever. That's not exactly what's happening.

Rebecca Wurtz: Our immune systems are complex. One of the main things that the vaccines do is induce antibody against a germ—in this case, against coronavirus. And then our immune systems rev up and clear it away, just like they might a real infection. So there's no material



that's in the vaccine that in any way stays behind. It's all designed to vanish when its initial purpose is over.

And I like to liken antibody to butter on popcorn. The germs are like popcorn, and our immune systems are phagocytic cells. Those are the cells that go around in our bodies like Pac-Man, looking for germs, looking for popcorn. They'll eat unbuttered popcorn, but they like germs that are coated with antibody. Popcorn that's coated with butter, much better. They'll eat it faster. So if the antibody is present because the vaccine has induced it, our immune systems snap to immediately when they see that germ in the future and are much more quickly address the presence of the infection.

Dan LeDuc: A lot of the media reports or when we talk to scientists and researchers, there's talk of risk and uncertainties and these percentages and possible problems. Are those important for us to know, or are they really just cluttering up our basic understanding of what has happened?

Rebecca Wurtz: There are lots of reasons why people are concerned about a vaccine, but it's usually not about efficacy, even though that's the number that we're putting out there. Right now, it's more about safety. And I think the perception—what people are weighing is the relative risk of the vaccine versus the disease it's going to prevent.

Dan LeDuc: Let's talk a moment about those, then. Because as I've read media reports about risk, the efficacy rate is very high. And the test groups of what, 30,000 patients, the risks seem to be almost minimal.

Rebecca Wurtz: The risks are negligible. In studies and now in actual rollout in tens of millions of people around the world, the risks have been essentially zero.

Dan LeDuc: That's important—let's stay with that for a moment. Because you rightly say that, maybe if people are concerned about the vaccine, they are trying to weigh the risk of this shot in their arm versus getting the virus. Can you describe that scale?

Rebecca Wurtz: If the vaccine were as dangerous as COVID, given the number of people who've gotten the vaccine by now, 40,000 people would have died from the vaccine. No one has died from the vaccine. And we know already it's prevented around the world tens of thousands of deaths, let alone hundreds of thousands of cases. So I think if we're weighing the risk of disease versus the risk of the vaccine, the conclusion is clear.

Dan LeDuc: We get a flu shot every year; other vaccinations we get once, twice in our lifetimes. Do we know what's going to happen with the COVID-19 vaccine—is this going to be something that is one and done? Or are we going to be getting a shot every year, like we do our flu shot?

Rebecca Wurtz: We simply don't know. It's hard to remember that we've only been facing this pathogen in the United States for 11 months, much shorter than the average cycle in which we deal with flu. So it remains to be seen how long the immunity induced by the current vaccines



persists and whether coronavirus can change in ways that mean that we need to re-up or modify the immunity each year.

Dan LeDuc: Any advice to members of the public as they talk to a health care provider, read stories in the media about all this stuff, on how to help them sort through all of this stuff, to really understand it? What are the important things for them to be paying attention to?

Rebecca Wurtz: I think to speak with their individual provider about that person's recommendations is going to be more important than reading the competing and eye-grabbing columns in social media and in newspapers. What's in the media, it's based on press releases. We've been trying to manage this pandemic and this vaccine rollout using press releases on data on the vaccine trials. And it's been misleading and, frankly, alarming. And I think to speak with a trusted health care provider about whether the vaccine is right for them will be the most persuasive and compelling.

Dan LeDuc: Dr. Wurtz, thanks so much for a great conversation and helping us clear some of the clutter. We wish you continued success with it.

Rebecca Wurtz: My pleasure. Thank you.

Music transition

Dan LeDuc: Thanks for listening. To hear more on this subject, listen to our "Conversations on Science" at pewtrusts.org/afterthefact. And to read more, check out *Trend*, Pew's annual journal of ideas. The latest issue is "Science Matters." You can find it at pewtrusts.org/trend.

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