How vaccinated people can make sense of the rise in breakthrough COVID-19 infections

July 27 2021, by Eva Botkin-Kowacki

Vaccinated people are getting infected by the coronavirus. That doesn't mean the vaccines aren't working, says Sehyo Yune, MD, director of the COVID-19 Wellness team at Northeastern. They are. Here's what you need to know about the current rise in COVID-19 cases. Credit: Matthew Modoono/Northeastern University

COVID-19 cases are rapidly on the rise across the United States. And even fully vaccinated individuals are testing positive.

States and counties with low vaccination rates have been hit the hardest by the rise in cases, largely driven by the highly infectious Delta variant of the coronavirus. But the post-vaccination infections, or breakthrough infections, have also generated heightened concern that this variant has found a way to make existing vaccines ineffective.

That is not the case, says Sehyo Yune, MD, Assistant Vice Chancellor of COVID-19 Wellness at Northeastern. The vaccine is effective against the variant.

How you define whether the vaccine is effective matters, she says. The goal of the vaccine is to prevent severe cases that can lead to hospitalization or death. The CDC-approved COVID-19 vaccines do that—even in the face of the variants. But you might still become mildly infected.

Yune sat down with News@Northeastern to break down the rise in cases and dispel the confusion. This interview was edited for clarity.

How could I get the coronavirus if I'm fully vaccinated?

Being fully vaccinated means that your immune system is trained to recognize the virus and attack it. So if you're exposed to the virus, lots of virus, it will still enter your body. But most likely, [the virus] will be eaten up by your immune system because it is trained to kill it. It's very less likely to cause a disease.

But it's not 100 percent. The highest efficacy rate that was reported was

about 95 percent. So it's still possible that you would get infected and be sick. If you are fully vaccinated and you tested positive, you have it. You have the virus. But it is definitely milder than in the cases that we saw in the fall and the spring when most cases were not vaccinated. So even if you catch it, [your vaccinated immune system is] going to protect you from being very ill.

What does "milder" mean? If I get a breakthrough infection, how would those symptoms be different than if I was unvaccinated?

There are definitely people who are fully vaccinated and are pretty ill. But mostly the symptoms last for a shorter amount of time and it's more like a cold or mild flu than, like, you can't breathe, you have to go to the E.R. If you're vaccinated, it is much less likely that you're going to be hospitalized or die from COVID-19 than you would have been if you were not vaccinated.

Northeastern recently announced that the university will resume COVID-19 testing at the beginning of the fall semester for everybody on campus. But the university is also requiring all students to be vaccinated. Why do both?

We don't have enough data to be comfortable saying that vaccinated people will not be the source of transmission. We have pretty good data that vaccines prevent death and hospitalization and reduce the symptoms' severity. But in the campus and the university setting, nobody has that experience yet. So it is really to protect the community until we have more data to confidently say that testing vaccinated individuals does not have as big an impact in preventing outbreaks as [testing an unvaccinated

community did before vaccines were available].

But also, by doing this, we will add to the scientific community the data that everyone needs: What does it mean to have a mostly fully vaccinated community? What do we see? And from there, where do we go? So we're really contributing to the entire scientific community.

We need that data, too, as a community. And so instead of waiting for other people to give it to us, we're generating it.

What will you be watching for?

Within the Northeastern community, what I'm most interested in is the rate of close contacts that are identified as exposed to a positive case that later develop symptoms or test positive. We're still doing contact tracing. We call everyone who is positive. We track down who they've been in contact with. So we're going to have a better idea of the transmission rate and the severity in a mostly fully vaccinated community.

If we only look at the number of positive cases, we miss the bigger picture of how [big of an outbreak] it could have been if we were not vaccinated. By following up with vaccinated people after an exposure, we will have a better understanding of the impact of vaccines on transmission.

Nothing is 100 percent. There will be someone who is going to be very sick. There will be some transmission from a vaccinated case. There will also be cases that are fully vaccinated and not very symptomatic. But those will be individual anecdotal cases. That's not what we want to look at. We want to look at the trend and the impact on the population's health and safety.

Case numbers are rising. Should we be concerned about returning to the pandemic-state of a year ago?

It is not as bad as it was last year because even with the same number of people testing positive, we're not going to see the same number of people dying from it. But case numbers are rising because fewer people wear masks and are socializing more than last year.

Can I still spread the coronavirus if I'm fully vaccinated?

When you are exposed to the virus as a vaccinated person, it enters your body, but it's less likely to infect your cells and survive and replicate inside your body—which is a prerequisite for you to spread it to other people. But if it makes you sick enough, it means that there is enough virus inside your body that you can also spread it to other people.

We're seeing those cases, too. Fully vaccinated people who tested positive, they became sick, and their close contacts are also testing positive.

If I get the sniffles or a scratchy throat, I should get tested, right?

Yes. And wear a mask.

For our students and other Northeastern community members, report it to our Daily Wellness Check. It's very, very easy, very simple. Report your symptoms, and we're going to tell you what to do. We're going to guide you through. There's going to be a number you can call, and the person is a licensed healthcare provider and they're going to be able to

help you through options and testing and all that.

What if I'm fully vaccinated, haven't tested positive, and don't have symptoms, should I put my mask back on all the time, just in case?

I think it's a great idea to put on a mask when you're going to a place where you will be in the same space with people that you don't know. You don't know if they're sick, if they're unvaccinated. So you're just protecting from the unknown. But, you know, if you're meeting with people and you know they are vaccinated and nobody is sick, it should be fine.

The Delta variant has generated a lot of concern around the world. Should I be concerned about future variants?

That's what viruses do all the time. They mutate. So it's not surprising or something to be super afraid of. It is something that the scientists and the public health officials are going to worry about. But it doesn't really matter to you as a patient which variant you are infected with. It doesn't matter if it's Alpha or Delta, you have COVID-19.

And vaccines work against all kinds of variants. You might have seen on the news that it is not as effective for this variant. Maybe. But it doesn't mean that it doesn't work. It still works. And it still works much better than many of the other vaccines that we have that are not COVID-19 vaccines.

Moving forward, how should we be thinking about disease transmission?

It's really important to shift the focus just from COVID-19 to, in general, contagious diseases. Even if it's not COVID-19, if you have the flu or the common cold, it's still important not to spread it to other people because you don't know what it's going to do to other people. A flu can kill someone.

So after what we experienced in the past year, we really need to re-think about what to do when you're sick. Yeah, you're vaccinated, so maybe it's not COVID-19, maybe it's something else. But is it OK to give that something else to other people?

Provided by Northeastern University