

Q&A: Immunobiologist Deepta Bhattacharya discusses COVID-19 vaccines and variants

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As the pandemic dominated headlines, **Deepta Bhattacharya**, professor in the **Department of Immunobiology** ^[1] at the **College of Medicine – Tucson** ^[2], was busy collaborating with campus colleagues to develop an **antibody test** ^[3] for the virus that causes COVID-19. It was approved by the FDA as one of the most accurate tests of its kind, and is used to study the immune response to infection and vaccination.

In this Q&A, Bhattacharya, who also is a member of the **BIO5 Institute** ^[4] and **University of Arizona Cancer Center** ^[5], discusses what we know so far about COVID-19 vaccines, the interactions between the vaccines and the latest variants, and strategies for staying healthy and safe.

Why are people so concerned about the delta variant of the coronavirus?

The major problem with delta is that once people get sick, they generate huge amounts of virus, much higher than in previous variants. Because delta is somewhere around two to three times as transmissible as earlier variants, you're going to be seeing a lot more infections overall.

Almost all cases are delta now, here and in many other places in the world. Even though you're seeing fewer of those in vaccinated people relative to those who are unvaccinated, you're going to hear stories about people getting breakthrough infections. What that means is that even if someone has been vaccinated, some fraction of the time, the virus manages to slip past the initial barrier of antibodies, then starts to replicate very quickly in the upper respiratory tract. But there's still so many more antibodies in your lungs that it's not enough to cause major problems in the overwhelming majority of cases.

The bottom line is that the vaccines have lost a little bit of ground to delta in terms of preventing infections outright and in preventing symptoms, but the vaccines are doing a good job at preventing things from going really wrong.

Can you transmit the virus if you're vaccinated?

Yes, but there's some nuance. Relative to someone who hasn't gotten the vaccine, you're only half as likely to get infected in the first place. If you're not infected, you can't transmit it. If you are infected, you clear the infection much faster than you do if you were not vaccinated, so the window of time in which you can transmit to someone else is shorter.

It's possible that you can transmit to someone else if you have been vaccinated and get a breakthrough infection, but it's less likely than if you were unvaccinated.

Will we need booster shots?

I don't have a lot of doubt that getting a booster would improve protection, but how necessary it is depends on the circumstances of the vaccine itself and when you got it, so I can't really offer a blanket statement.

In the end, who should get the boosters? Immunocompromised people should do it today. It's clear that people who are immunocompromised are at very high risk, because they're on suppressive therapy for autoimmunity or they're on chemotherapy.

In addition to getting vaccinated, what else can we do to protect ourselves?

I don't know many of us who love wearing masks, but I figure if I have to wear one, I might as well wear a good one. We need to start thinking about the highest quality masks we can get, whether that's multiple-layer cloth masks or KN95s. I usually wear a KN95, which offers better protection against smaller aerosols. One of the things to remember about masks is that it's two ways. If both people are wearing cloth masks, as best we can tell, it's similar to one person wearing a KN95.

Find ways to limit the dose you may unknowingly transmit to someone else. Even though delta is much more transmissible, we're pretty sure that outdoor activities are much safer than those that are indoors. And indoor ventilation is a big thing.

All of these things together lower the amount of virus that you may be exposed to, and then tips those scales back in the favor of the vaccines. I don't think any of us envision a future where we're going to be doing this forever, but we can certainly do this until we reduce community transmission to a point where it's safer.

How do you personally feel about air travel?

My risk tolerance probably falls right in the middle of most people. Given that I'm vaccinated, if it's something important, I would probably be OK wearing a good mask and traveling. If it's something that's not so important, I'd probably punt on it.

Hear more from Bhattacharya in [this recording of a webinar](#)^[6] he gave Aug. 19.

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