



Addressing concerns about COVID-19 breakthrough infections

The Issue

Like most vaccines, COVID-19 vaccines are not 100% effective at preventing infection. In fact, no vaccine is 100% effective. Some people who are fully vaccinated will still get COVID-19—an infection referred to as a “breakthrough infection.” The possibility of breakthrough infection may cause confusion or anxiety among vaccinated people, especially as sensationalistic media coverage of these infections increases. Other people may view reports of breakthrough infections as further evidence that the COVID-19 vaccines are not effective.

Sound Bites

- > Like most vaccines, COVID-19 vaccines are not 100% effective at preventing infection. Breakthrough COVID-19 infections are expected; they are not a sign that the vaccines don't work.
- > Even when **fully vaccinated people** develop COVID-19 symptoms, those **symptoms tend to be less severe than in unvaccinated people**; fully vaccinated people are much less likely than unvaccinated people to be hospitalized or die.
- > **Everyone 12 years of age and older should get vaccinated** to protect themselves from serious COVID-19 illness and death.¹
- > Most people who contract COVID-19 are unvaccinated. Although the number of breakthrough infections is increasing as the number of people who are fully vaccinated increases, the risk of COVID-19 infection still is much lower among fully vaccinated people.
- > If you are fully vaccinated, your individual risk for a breakthrough COVID-19 infection depends on local conditions (i.e., low vs. high transmission), your overall health, the precautions you take, and how often you are exposed to unvaccinated people who could be infected.
- > Fully vaccinated people who get breakthrough infections can transmit the virus that causes COVID-19. *Everyone* who lives or works in an area with substantial or high transmission of COVID-19 should wear a mask in indoor public places and utilize other precautions.



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What We Know

Breakthrough COVID-19 infections are expected.¹ As the number of people who are fully vaccinated increases, the number of breakthrough infections also will increase.

However, the risk of infection remains much lower for vaccinated people than unvaccinated people and, for vaccinated people, the risk of the disease progressing to severe illness or hospitalization is low. An analysis in *The New York Times*—based on detailed reporting data from Utah, Virginia, and King County in Washington (which includes Seattle)—estimated that the chances of the average vaccinated American contracting COVID-19 are about 1 in 5,000 per day.² The risk would be even lower for people who take precautions (e.g., wear a mask in indoor public places) or live in a highly vaccinated community.

Seattle and King County Health Officer Jeffrey Duchin, MD, shared some specific numbers on Twitter in late August 2021.³ During the recent Delta variant surge in that area, the age-adjusted rate of COVID-19 cases among people who were not fully vaccinated increased from 7 daily cases per 100,000 people at the beginning of July to 77 daily cases per 100,000 people as of August 17—an increase of 70 new cases per day. During the same period, the age-adjusted case rate among fully vaccinated people increased from 1 daily case per 100,000 people to 10 daily cases per 100,000 people—an increase of 9 new cases per day.

These results were echoed in COVID-19 breakthrough infection surveillance data analyzed by vaccination status across 13 U.S. jurisdictions that routinely linked case surveillance and immunization registry data.⁴ Even after Delta became the most common variant in June/July 2021, the risk of COVID-19 infection was 5 times higher for persons who were not fully vaccinated.

These findings are in direct contrast to current perceptions of risk among vaccinated adults. In one poll conducted by ABC News and *The Washington Post* in early September 2021, 45% of vaccinated respondents reported being “somewhat” or “very worried” about getting sick from the coronavirus, compared with 22% of unvaccinated respondents.⁵

Fully vaccinated people should be reassured that most people who currently get COVID-19 are unvaccinated. Importantly, fully vaccinated people with a breakthrough infection are less likely to develop serious illness than those who are unvaccinated. For example, Jeffrey Duchin reported that in the previous 30 days in King County, unvaccinated people were 37 times more likely to be hospitalized with COVID-19 and 67 times more likely to die from COVID-19.³ In the COVID-19 breakthrough infection surveillance data, the risk of hospitalization and the risk of death both were more than 10 times higher for persons who were not fully vaccinated. Older vaccinated people were most vulnerable to serious illness after a breakthrough infection.

People who are fully vaccinated should understand that it is possible to transmit SARS-CoV-2, the virus that causes COVID-19, during a breakthrough infection. The Centers for Disease Control and Prevention recommends that *everyone* who lives or works in an area with substantial or high transmission of COVID-19 should wear a mask in indoor public places.¹



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References

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