

Cancer Patients With More Vaccine Doses Have Less Severe COVID Breakthrough

Experts stress the need for targeted efforts to increase vaccine uptake among cancer patients with lower vaccination rates.

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People with cancer who received three doses of the Pfizer-BioNTech or Moderna mRNA COVID-19 vaccines were less likely to experience severe breakthrough infection than those who got only two shots, according to study findings published in [The Lancet Regional Health](#). Unfortunately, another recent study found that some cancer patients at high risk for complications are less likely to be vaccinated.

Research has shown that people with cancer [are at greater risk for COVID complications](#), but this risk is not evenly distributed. Those with certain blood cancers and those receiving immune-suppressing treatment are most prone to severe illness and death. While [most people with solid tumors](#) respond well to COVID vaccines, [people with blood cancers](#), those who use medications that damage antibody-producing B cells and those who receive stem cell transplants or CAR-T therapy may not fare as well.

Toni Choueiri, MD, of Dana-Farber Cancer Institute, and colleagues with the COVID-19 and Cancer Consortium evaluated the clinical characteristics of cancer patients who developed COVID in 2021 or 2022. The analysis included data from 2,486 people who received care at more than 100 cancer centers in North America, Argentina and Europe.

Within this group, 564 patients (23%) had received two doses of an mRNA vaccine and 385 (15%) had received three doses prior to laboratory-confirmed breakthrough SARS-CoV-2 infection. This left 1,537 people (62%) with no record of vaccination prior to COVID. Older people, white individuals, patients with blood cancers and those who received systemic cancer treatment were more likely to be vaccinated.

People who received two vaccine doses had a lower risk of death than unvaccinated individuals, and those who received a third dose had lower mortality than those who got two doses. All-cause 30-day mortality rates were 12% for the unvaccinated group and 10% for the two-dose group, but fell to 4% for the three-dose group. Similar patterns were seen for hospitalization (57%, 50% and

38%, respectively) and intensive care admission or mechanical ventilation (16%, 12% and 8%). After adjustment, the researchers calculated that two vaccine doses reduced the risk of death by 20% and three doses lowered the risk by 66%.

“Vaccination against COVID-19, especially with additional doses, is a fundamental strategy in the prevention of adverse outcomes including death, among patients with cancer,” the study authors concluded.

According to the Centers for Disease Control and Prevention (CDC), the initial vaccine series for immunocompromised people—including those undergoing cancer treatment—should be three doses of the Pfizer-BioNTech or Moderna vaccine. But that is not enough. In 2021, the CDC recommended a booster, meaning a fourth dose after the initial series, for immunocompromised people. In early 2022, the agency added a second booster, meaning a fifth shot, for this group.

In August 2022, the Food and Drug Administration authorized, and the CDC recommended, [an updated bivalent booster](#) that targets both the original (Wuhan) SARS-CoV-2 variant and newer omicron variants. The bivalent booster is now recommended for everyone ages five and older. People who received that booster when it first became available are now six months out from their last dose. Although the increase in antibodies after a booster lasts only a few months, the CDC has not said [if or when vulnerable individuals will be eligible for another dose](#).

While many cancer patients promptly received their initial vaccine series and boosters as soon as they were recommended, others remain unprotected, including some people at greater risk for severe COVID complications.

As described [in the journal Cancer](#), Dax Kurbegov, MD, of Sarah Cannon Research Institute in Nashville, and colleagues analyzed data from 1,155 patients from 56 practices who developed COVID in 2020 while undergoing cancer treatment.

By mid-April 2021, about 100 days after the Pfizer-BioNTech and Moderna vaccines were made available for people with cancer, 50% of the study population had received at least one dose. Vaccination rates were roughly similar across racial and ethnic groups, and more than 90% of those who received a first dose got their second shot. The proportion of people who received at least one dose rose to 59% by June and to 67% by August 2021—higher rates than the U.S. population as a whole. By March 2022, estimated vaccine uptake had reached 85%.

Not surprisingly, older patients were more likely to be vaccinated between January and March 2021, but the age difference later diminished. People with metastatic solid tumors were about 15% less likely to be vaccinated, and those with non-B-cell blood cancers were about 30% less likely, than those with non-metastatic tumors. The study authors noted that there has been considerable debate about the optimal timing of vaccination for patients receiving chemotherapy, and this may have affected vaccine uptake.

What’s more, patients with comorbidities—who are at greater risk for severe COVID—were about

20% less likely to be vaccinated than those with no underlying conditions. In addition, people living in areas with the lowest education and highest unemployment levels had vaccination rates 20% to 30% below those in areas with more education and less unemployment.

“The results of this study underscore the critical need for targeted efforts to increase COVID-19 vaccine uptake among cancer patients who fall into these lower vaccination rate categories and are at an increased risk for infection and severe outcomes due to their cancer diagnosis and treatment,” American Society of Clinical Oncology chief medical officer Julie Gralow, MD, said in an [ASCO press release](#). “These patients with cancer were in active care and likely regularly in touch with their healthcare teams. This disparity highlights the opportunity for cancer care teams to educate patients—particularly those at higher risk—about the COVID-19 virus and the importance of vaccination.”

Click here for the CDC’s [latest vaccine and booster recommendations](#).

Click here for the CDC’s [vaccine recommendations for immunocompromised people](#).

Click here for more news about [COVID-19 vaccines](#).