Population-scale study highlights ongoing risk of COVID-19 in some cancer patients despite vaccination

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A study co-led by the Universities of Oxford, Birmingham and

Southampton and the U.K. Health Security Agency (UKHSA), published in *Lancet Oncology* today by the U.K. Coronavirus Cancer Evaluation Project, has found that while COVID-19 vaccination is effective in most cancer patients, the level of protection against COVID-19 infection, hospitalization and death offered by the vaccine is less than in the general population and vaccine effectiveness wanes more quickly.

Dr. Lennard Lee, Department of Oncology, University of Oxford who led the study said: "We know that people with cancer have a higher risk of severe COVID-19 disease and that the immune response in cancer patients following COVID-19 vaccination is lower. However, no study has looked at vaccine effectiveness and its waning in cancer patients at a population level. We have undertaken the largest real-world health system evaluation of COVID-19 in cancer patients globally."

This study analyzed 377,194 individuals with active or recent cancer who had received two doses of the COVID-19 vaccine and undergone a SARS-CoV-2 PCR test in England. The numbers of breakthrough COVID-19 infections and COVID-19-associated hospitalizations and deaths in this cohort of cancer patients were compared to a control population without active or recent cancer.

The overall vaccine effectiveness against COVID-19 infection in the general population after two doses of the COVID-19 vaccine over the study period was 69.8% whereas, in the cancer cohort, overall vaccine effectiveness was slightly lower (65.5%). This indicates that COVID-19 vaccination is effective in most cancer patients. However, vaccine effectiveness wanes more quickly in cancer patients. At 3–6 months following the second vaccine dose, vaccine effectiveness reduced by nearly a third from 61.4% in the general population to 47.0% in the cancer cohort.

While the vaccine offers higher protection against COVID-19-associated

hospitalization (83.3%) and death (93.4%) than against breakthrough infections in the cancer cohort, this protection also waned by 3–6 months following the second vaccine dose.

Looking at the differences between people with different types of cancer, vaccine effectiveness is lowest and wanes most quickly in those with the blood cancers lymphoma and leukemia.

The type of treatment that people with cancer receive also impacts both overall vaccine effectiveness and waning. In cancer patients that were treated in the last 12 months with chemotherapy or radiotherapy, vaccine effectiveness is lower and waned more by 3–6 months than in cancer patients that did not receive these treatments or were treated more than a year ago.

Professor Peter Johnson, Professor of Medical Oncology, University of Southampton commented: "This study shows that for some people with cancer, COVID-19 vaccination may give less effective and shorter-lasting protection. This highlights the importance of vaccination booster programs and rapid access to COVID-19 treatments for people undergoing cancer treatments."

Helen Rowntree, Director of Research, Services and Engagement at Blood Cancer U.K. said: "For our community, COVID-19 very much has not gone away and many people remain in their homes due to the threat of COVID-19 highlighted in this important study. We know how important the vaccines are for people with blood cancer. This study importantly shows that immunity wanes faster in people with blood cancer, who are entitled to five vaccine doses, and we'd encourage everyone with blood cancer to make sure they are getting these doses."

More information: www.thelancet.com/journals/lan … (22)00202-9/fulltext

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