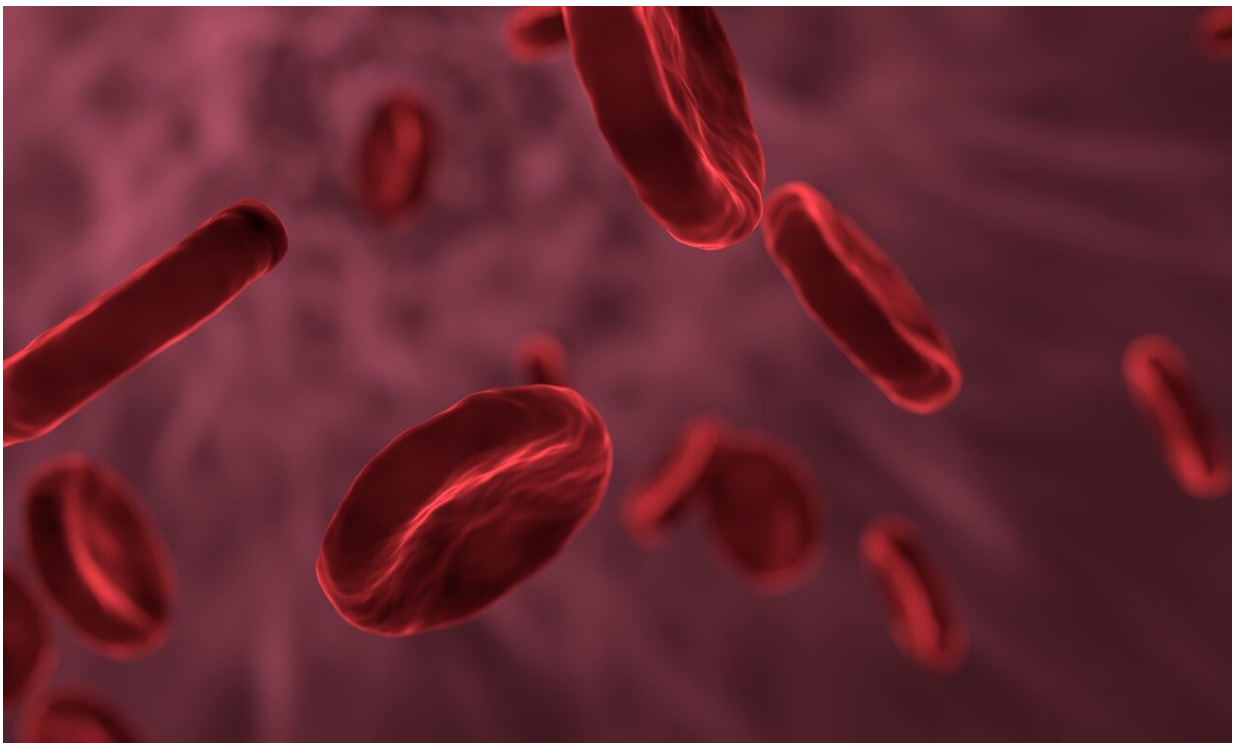


# Researchers discover that people with blood-related cancers have a higher chance of COVID breakthrough infections

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Individuals with blood-related cancers are more likely to experience a COVID-19 infection even after being vaccinated, a University of Kansas Cancer Center study has found.

Researchers of the study, published in the *Journal of Hematology & Oncology*, discovered that [patients](#) with blood-related cancers, such as leukemia, lymphoma and multiple myeloma, are 1.6 times more likely than other cancer patients to have breakthrough infections of SARS-CoV-2, the virus that causes COVID-19.

Additionally, researchers found that patients who were receiving anti-cancer therapy at the time they were vaccinated for COVID-19 were 2.7 times as likely to have breakthrough infections resulting in COVID-19, regardless of what type of cancer they were fighting. Anti-cancer therapies include chemotherapy, immunotherapy and radiation.

Anthony Rooney, M.D., is a fellow in the Department of Hematology and Oncology at KU Medical Center, under the mentorship of Qamar Khan, M.D., professor of medical oncology. Rooney said this breakthrough-infection study provides valuable information for cancer patients, their family and friends.

"These patients and their loved ones should be sure to talk to their oncologists about strategies to prevent infection, including vaccination, avoidance of high-risk activities and accessing currently available pre-exposure preventative therapies," Rooney said. One such pre-exposure therapy is the drug combination packaged under the name of Evusheld. The U.S. Food and Drug Administration provided emergency authorization of Evusheld for anyone who may not be able to mount an adequate defense against of SARS-CoV-2.

## **Impact of the study**

Rooney said numerous studies have been done to find out just how much more susceptible cancer patients are to SARS-CoV-2 breakthrough infections than the general population. What makes this study important is its findings regarding patients with blood-related cancers, also known

as [hematologic malignancies](#), which are defined by the cancer's start in the blood or blood-producing tissues.

This particular study did not compare vaccinated blood cancer patients with the general population, but Rooney pointed to a recent study in Washington state that examined breakout infections in the [general population](#) during the same period as KU Medical Center's study. The Washington study reported a breakthrough rate of only 0.02% of vaccinated individuals. Blood cancer patients studied as part of the KU Medical Center inquiry had a breakthrough rate of 1.1%.

The two percentages seem dramatically different, but Rooney cautioned against direct comparison, since COVID-19 affects geographic areas differently, even if the regions are measured at the same time. Also, the direct comparison doesn't account for human behavior within the populations. "Cancer patients may be more cautious or more likely to practice social distancing than other populations," Rooney said.

## **Why blood cancers?**

Figuring out why blood-related cancers have a higher rate of COVID breakthrough infection than other cancers was not the focus of the study either, but Rooney said he can hypothesize. Blood-related cancers hit the [immune system](#) harder than other types of cancers because "they are often cancers of the immune cells themselves," he said.

"As such, patients with blood-related cancers are often not able to mount as robust of a response to vaccination and may not have the same degree of protection after receiving vaccines," Rooney said.

Another reason might be the type of treatments used in these types of cancers, which can suppress the immune system even more than other cancers' methods of treatment, he added.

## Timeliness of the information

The researchers were able to produce study results quickly in part because they had access to a special database already in existence. Instead of having to poll cancer patients individually and then analyze the results, researchers requested information from the University of Kansas Cancer Center Curated Cancer Clinical Outcomes Database, also known as C3OD.

David Streeter, director of cancer informatics for The University of Kansas Cancer Center and a co-author on the study, gathered and quantified information from cancer patients and maintained these statistics in C3OD with a team of informatics specialists.

"It is our belief that as a small, agile team, we were first to provide COVID cancer-specific data to our organization," Streeter said. "Using the power of C3OD, we were able to provide very specific data that (otherwise) could not have been abstracted without it or in the time required."

Rooney, too, gave credit to C3OD and the informatics team. "With the help of our C3OD team, we were able to quickly identify our vaccinated patient population and obtain the information we needed to study breakthrough infections in this group of patients," he said.

C3OD was originally created to match cancer patients to suitable clinical trials, and it has since become a valuable resource for researchers at the KU Cancer Center.

"Today's clinical trial landscape includes trials with increasing complexity and decreasing patient treatment windows. Both aspects require a solution that can abstract data quickly, that is accurate, and that can curate complex data in such a way that makes it searchable and

consumable," Streeter said. "It is our belief that there must be technological intervention to provide solutions to these problems within the cancer research and analytics domains."

The researchers are hoping the results of this study can provide a starting point for the medical community to improve institutional practices in reducing the risk for infection in the vulnerable [cancer](#) population.

"Understanding the rate of breakthrough SARS-CoV-2 infections and the outcomes of [cancer patients](#) who develop [breakthrough infections](#) is critical to make sure that we can properly counsel our patients about the risks of developing [infection](#)," Rooney said.

**More information:** Anthony Rooney et al, Risk of SARS-CoV-2 Breakthrough Infection in Vaccinated Cancer Patients: A Retrospective Cohort Study, *Journal of Hematology & Oncology* (2022). [DOI: 10.1186/s13045-022-01290-8](#)

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