

COVID-19 outcomes for patients on immunosuppressive drugs on par with non-immunosuppressed patients

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People taking immunosuppressive drugs to prevent organ transplant rejection or to treat inflammatory or autoimmune diseases do not fare worse than others on average when they are hospitalized with COVID-19, according to a study from researchers at the Johns Hopkins Bloomberg School of Public Health.

Estimates suggest that there are approximately 10 million immunocompromised people in the U.S. alone. Suppression of the immune system has been considered a potentially major risk factor for severe and fatal COVID-19 because it could allow the SARS-CoV-2 virus to spread unchecked in the body. At the same time, there have been anecdotal reports of immunosuppressed people who experienced only mild COVID-19 or even no symptoms at all—suggesting that immunosuppressive drugs might have a protective effect by preventing the inflammatory storm sometimes associated with severe COVID-19.

For their study, the researchers analyzed the anonymized records of 2,121 hospitalized COVID-19 patients seen at the Johns Hopkins Medicine medical system in Baltimore, MD, and Washington, D.C., from March 4 to August 29, 2020. They found that the COVID-19 patients who were immunosuppressed prior to their COVID-19 hospitalization did not, on average, have worse COVID-19 outcomes—such as longer length of stay in the hospital, death in hospital, or use of a ventilator—compared to their counterparts who were not immunosuppressed.

The study was published January 5 in *Clinical Infectious Diseases*.

"The COVID pandemic has released a wave of scientific investigations that examine who fares better and who fares worse with this new virus. We examined one important group of individuals, those on chronic immunosuppressive medicines such as people with a history of organ transplantation or rheumatologic disease and found some good news," says senior author G. Caleb Alexander, MD, a professor in the Bloomberg School's Department of Epidemiology at the Johns Hopkins Bloomberg School of Public Health and a practicing internist.

"There has been concern that immunosuppression might be an important risk factor for severe COVID-19, but reassuringly we found no sign of that," says study first author Kayte Andersen, a Ph.D. candidate in the Bloomberg School's Department of Epidemiology.

To date, there have been 83 million COVID-19 cases confirmed around the world, and the Northern Hemisphere's recent shift to cold weather has brought the largest surge in new cases. Many health care systems are struggling to cope with this surge and are trying to allocate limited resources.

Knowing which incoming patients are more likely to progress to severe COVID-19 helps them do that. But whether patients who are "immunocompromised" due to immune-suppressing drug treatment belong in the highest risk category has been a mystery.

Provided by Johns Hopkins University Bloomberg School of Public Health

The Johns Hopkins researchers found that 108, or about 5 percent, of the total COVID-19 cases hospitalized in the Baltimore/Washington Johns Hopkins medical network during the study period could be classified as immunosuppressed because they were taking an anti-inflammatory drug such as prednisone or an anti-rejection drug such as tacrolimus after organ transplant.

These results were obtained after using [statistical methods](#) to account for differences between the groups in factors such as age, sex, and non-COVID-19 disease burden that might have skewed the analysis. But even the researchers' raw, unadjusted analysis found no statistical association between worse COVID-19 outcomes and immunosuppression status.

The researchers are now following up with an analysis of a much larger set of data of nationwide COVID-19 cases, which should allow for more precise estimates, potentially including findings of different risks for different types of immunosuppression medications. However, they note, the findings in this smaller study suggest at the very least that immunosuppression does not appear to be associated with a major worsening of COVID-19 outcomes.

"At this point, there is no indication that people taking [immunosuppressive drugs](#) for other diagnosed conditions should be concerned that their medication increases their risk for severe COVID-19," Andersen says.

More information: Kathleen M Andersen et al, Association Between Chronic Use of Immunosuppressive Drugs and Clinical Outcomes From Coronavirus Disease 2019 (COVID-19) Hospitalization: A Retrospective Cohort Study in a Large US Health System, *Clinical Infectious Diseases*, ciaa1488, doi.org/10.1093/cid/ciaa1488

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