

# COVID-infected adults with 4 or more underlying diseases, or advanced age, face higher risk of ICU stay, death

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Whether vaccinated or not, having at least four disease risk factors put adults hospitalized due to COVID-19 at higher risk for critical outcomes, according to a 10-state study from the Centers for Disease Control and

Prevention's (CDC's) VISION Network. The study describes the characteristics of adults hospitalized with COVID-19 from June 2021 through March 2023 and enumerates their risk factors for critical outcomes, defined as intensive care unit (ICU) admission and/or in-hospital death.

It is not uncommon for [older adults](#) hospitalized for COVID-19 to have four or more of these disease risk factors. The study authors note that this suggests that overall frailty may play a large role in susceptibility to critical disease regardless of vaccine status.

The majority of hospitalizations which resulted in ICU admission or death, regardless of vaccination status, were among male or [female patients](#) with multiple disease risk factors across multiple organ systems. Disease risk factors include hypertension, all types of diabetes, heart disease, chronic obstructive pulmonary disease (COPD), kidney disease, obesity, dementia and other long-term conditions.

Data from statewide immunization information systems, [electronic health records](#) and insurance claims of 60,488 individuals aged 18 or older from 10 states, who were hospitalized with COVID-19 across periods of Delta predominance to the post-BA.4/BA.5 period were analyzed.

From summer 2021 to spring 2023, the epidemiology of COVID-19 changed markedly. The researchers determined that the proportion of adults hospitalized with COVID-19 who experienced critical outcomes decreased with time, as did their hospital lengths of stay. Over the same time period the median patient age increased from 60 to 75 years.

"This is one of the first studies to examine and describe how the characteristics of seriously ill COVID-19 patients and the risk factors associated with those hospitalizations changed over time," said study co-

author Shaun Grannis, M.D., M.S., Regenstrief Institute vice president for data and analytics and a professor at Indiana University School of Medicine. "Our findings provide insight into factors that influence outcomes for hospitalized patients and can help us be alerted to those potential risks, so we can pay special attention to the most at-risk individuals."

Vaccinated individuals, age 65 or older or with four or more underlying chronic medical conditions, were 1.7 times as likely to have a critical outcome. Unvaccinated individuals, age 65 or older or with four or more underlying medical conditions, were 2.3 times as likely to have a critical outcome. Both tendencies are in comparison to younger individuals or those with fewer than four disease risk factors.

"The number of patients hospitalized due to COVID-19 infection has decreased over time for a variety of reasons, including vaccination and natural immunity acquired due to past infection, advances in medical care as well as the severity of variants. But the virus hasn't gone away and it's important to note that people are still being infected or reinfected and are being hospitalized," said study co-author Brian Dixon, Ph.D., MPA, interim director of the Center for Biomedical Informatics at Regenstrief Institute.

"Our analysis shows that the people hospitalized for COVID who are at higher risk of an ICU stay or even an in-hospital death tend to be older and sicker with underlying conditions, some of which may be undiagnosed. If you are or have family members who are at higher risk, you and your family members should stay up to date on vaccinations and avoid spreading the disease with vulnerable members."

"Clinical epidemiology and [risk factors](#) for critical outcomes among vaccinated and unvaccinated adults hospitalized with COVID-19—VISION Network, 10 States, June 2021-March 2023" is

[published](#) in *Clinical Infectious Diseases*.

**More information:** Eric P Griggs et al, Clinical epidemiology and risk factors for critical outcomes among vaccinated and unvaccinated adults hospitalized with COVID-19—VISION Network, 10 States, June 2021–March 2023, *Clinical Infectious Diseases* (2023). [DOI: 10.1093/cid/ciad505](#)

Provided by Regenstrief Institute

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