COVID-19 surges linked to spike in heart attacks

October 24 2022

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New data analysis from the Smidt Heart Institute at Cedars-Sinai found that deaths from heart attacks rose significantly during pandemic surges, including the COVID-19 Omicron surges, overall reversing a heart-

healthier pre-pandemic trend.

Prior to the COVID-19 pandemic, heart attacks were the leading cause of death worldwide but were steadily on the decline. However, the new study—recently published in the *Journal of Medical Virology*—shows that heart attack death rates took a sharp turn and increased for all age groups during the pandemic. The spikes in heart attack deaths have tracked with surges of COVID-19 infection—even during the presumed less-severe omicron phase of the pandemic. Furthermore, the data showed the increase was most significant among individuals ages 25-44, who are not usually considered at high risk for heart attack.

"The dramatic rise in heart attacks during the pandemic has reversed what was a prior decadelong steady improvement in cardiac deaths," said Yee Hui Yeo, MD, first author of the study and a Cedars-Sinai physician-scientist. "We are still learning the many ways by which COVID-19 affects the body, regardless of age, gender, ethnicity or race."

Using data from the Centers for Disease Control and Prevention's National Vital Statistics System, the Cedars-Sinai researchers identified 1,522,699 deaths from heart attacks—medically called acute myocardial infarctions—between April 1, 2012, and March 31, 2022.

Investigators then compared age-related mortality rates between pre-pandemic and pandemic periods, as well as demographic groups and regions.

Key findings from the study include:

- In the year before the pandemic, there were 143,787 heart attack deaths; within the first year of the pandemic, this number had increased by 14% to 164,096.
- The excess in acute myocardial infarction-associated mortality

has persisted throughout the pandemic, even during the most recent period marked by a surge of the presumed less-virulent omicron variant.
- Researchers found that although acute myocardial infarction deaths during the pandemic increased across all age groups, the relative rise was most significant for the youngest group, ages 25 to 44.
- By the second year of the pandemic, the "observed" compared to "predicted" rates of heart attack death had increased by 29.9% for adults ages 25-44, by 19.6% for adults ages 45-64, and by 13.7% for adults age 65 and older.

"There are several potential explanations for the rapid rise in cardiac deaths in patients with COVID-19, yet still many unanswered questions," said Yeo. "Importantly, our results highlight disparities in mortality that have emerged from the COVID-19 pandemic and that are persisting even through the omicron era." The possible explanations, Yeo said, include that COVID-19 may trigger or accelerate the presentation of preexisting coronary artery disease, even in younger adults.

Reasons for the spike in heart-related conditions could also be related to psychological and social challenges associated with the pandemic, including job loss and other financial pressures that can cause acute or chronic stress leading to cardiac disease.

The research team members say they have long known that infections such as the flu can increase risk for heart disease and heart attack, but the sharp rise in heart attack deaths is like nothing seen before.

"There is something very different about how this virus affects the cardiac risks," said Susan Cheng, MD, MPH, director of the Institute for Research on Healthy Aging in the Department of Cardiology at the Smidt Heart Institute and senior and co-corresponding author of the

study. "The difference is likely due to a combination of stress and inflammation, arising from predisposing factors and the way this virus biologically interacts with the cardiovascular system."

Yeo, Cheng and the broader Smidt Heart Institute team hope that greater awareness and more research will expand the medical community's ability to manage and mitigate these risks.

More information: Yee Hui Yeo et al, Excess risk for acute myocardial infarction mortality during the COVID-19 pandemic, *Journal of Medical Virology* (2022). DOI: 10.1002/jmv.28187

Provided by Cedars-Sinai Medical Center