

# Metabolic syndrome linked to worse outcomes for COVID-19 patients

Keith Brannon

kbrannon@tulane.edu



Lead study author Dr. Joshua Denson, pulmonary and critical care medicine physician at Tulane University School of Medicine. Photo by Paula Burch Celentano.

Patients hospitalized with COVID-19 who had a combination of high blood pressure, obesity and diabetes were over three times more likely to die from the disease, according to a new Tulane University study.

The [study](#), published in the journal [Diabetes Care](#), is the first to look at the impact of metabolic syndrome on outcomes for COVID-19 patients. [Metabolic syndrome](#) is a cluster of at least three of five conditions — hypertension, high blood sugar, obesity, high triglycerides and low HDL cholesterol — that increases risk for cardiovascular

disease.

“Together, obesity, diabetes and pre-diabetes, high blood pressure and abnormal cholesterol levels are all predictive of higher incidents of death in these patients. The more of these diagnoses that you have, the worse the outcomes,” said lead author Dr. Joshua Denson, assistant professor of medicine and pulmonary and critical care medicine physician at Tulane University School of Medicine. “The underlying inflammation that is seen with metabolic syndrome may be the driver that is leading to these more severe cases.”

Researchers followed outcomes for 287 patients hospitalized for COVID-19 at Tulane Medical Center and University Medical Center New Orleans from March 30 to April 5, which was at the peak of the pandemic in New Orleans. More than 85 percent of patients in the study identified as non-Hispanic Black. The mean age was 61 years old and almost 57 percent were women.

The most common conditions were hypertension (80%), obesity (65%), diabetes (54%), and low HDL (39%).

Researchers looked at two groups — those diagnosed with metabolic syndrome and those who weren't. They tracked outcomes including if patients were admitted to an intensive care unit, placed on a ventilator, developed acute respiratory distress syndrome (ARDS) or died from the disease.

Almost 66% of the patients in the study had metabolic syndrome. When these cases were compared with patients without the condition, 56% vs 24% required the ICU, 48% vs 18% required a ventilator, 37% vs 11% developed ARDS, and 26% vs 10% died.

Importantly, after accounting for age, sex, race, hospital location, and other conditions, the patients with metabolic syndrome were 3.4 times more likely to die from COVID-19 than those who didn't have the condition. These patients were also nearly five times more likely to be admitted to an ICU, need a ventilator, or develop ARDS.

The study didn't find an increase in mortality for patients when only one of the conditions clustered with metabolic syndrome were examined alone. However, being obese or having diabetes was associated with increased odds of ICU admission and being put on a ventilator.

“Metabolic syndrome should be considered a composite predictor of COVID-19 lethal outcome, increasing the odds of mortality by the combined effects of its individual components,” Denson said.

He would advise anyone who meets the criteria for metabolic syndrome to be vigilant in taking measures to reduce risk or exposure to the coronavirus.

“It doesn’t matter if you’re young or old — we took that into account,” he said. “You really should be extra careful. I would say it should impact both preventing your exposures and, if you end up getting sick, you should probably see your doctor sooner.”

Co-authors of the study from Tulane include Dr. John Xie, Yuanhao Zu, Dr. Ala Alkhatib, Thaidan T Pham, Frances Gill, Dr. Albert Jang, Dr. Stella Radosta, Dr. Gerard Chaaya, Leann Myers, Dr. Jerry S. Zifodya, Dr. Christine M. Bojanowski, Dr. Nassir F. Marrouche and Dr. Franck Mauvais-Jarvis.