

# People with obesity are at high risk for severe COVID-19. That poses serious medical and social challenges

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The United States and many other developed countries are confronting intertwined public health crises—the coronavirus pandemic and obesity.

About 40% of U.S. adults have obesity, and recent studies show it's a risk factor for severe and fatal COVID-19, even in young adults.

Obesity can cause metabolic, immune, and blood clotting abnormalities that could worsen COVID-19 outcomes. But that means a vast part of the population, including people in their prime years, are in a particularly awful bind. Doctors advise them to be extra careful, stay home, if possible, and keep their social "bubble" tiny. Being safe, however, may discourage weight-loss activities like walking and going to the gym, while increasing isolation, depression, frustration, and overeating.

"With COVID-19, it's clear that they are a vulnerable group," said Rohit Soans, director of bariatric surgery at Temple University Hospital. "But it's hard to tell someone 30 or 40 years old, 'You need to be treated like your 80-year-old Grandma.'"

It's also hard to couch the message in a way that doesn't reinforce cultural prejudices that assume being too heavy is merely a moral failure, not a chronic disease. People with obesity often internalize these negative stereotypes.

Internalized weight bias, "is a pretty significant barrier for people in treatment," said dietitian Colleen Tewksbury, a senior research investigator and bariatric program manager at the University of Pennsylvania.

It's no surprise that senior citizens are particularly vulnerable to severe COVID-19, a disease that can wreak havoc on virtually every organ system. Many people over 65 already have age-related chronic illnesses that have damaged their lungs, heart, [blood vessels](#), and kidneys.

But obesity—defined as a Body Mass Index of 30 or more (174 pounds for a 5-foot, 4-inch woman)—is a risk factor that transcends age. A

French study of COVID-19 patients in intensive care found those with a BMI over 35 had a seven-fold higher chance of needing mechanical ventilation than those with a BMI in the healthy range. A study of COVID-19 patients under age 60 who were hospitalized in New York City found that a BMI over 35 almost quadrupled the chance of needing critical care.

Exactly why is not clear, but the virus appears to exploit a number of weight-related abnormalities, as explained in a review of eight studies published this month in the journal *Endocrinology, Diabetes & Metabolism*.

First, having a lot of excess weight puts added pressure on the chest and abdomen, restricting breathing. Second, people with obesity often develop [chronic diseases](#), such as diabetes and hypertension, that raise the risk of severe COVID-19. Third, obesity enhances formation of blood clots that can block vessels, and so does the [coronavirus](#).

Blood clotting problems "are inherent with obesity," Tewksbury said.

Two other explanations for why obesity may worsen COVID-19 involve unique characteristics of each disease.

Adipose (fat) tissue acts almost like a separate organ. It can disrupt metabolism by reducing sensitivity insulin, the hormone that regulates blood sugar, and by causing constant inflammation. Normally, inflammation is the [immune system](#)'s temporary, healing response to injury. But severe COVID-19 can trigger a life-threatening immune overreaction, called a cytokine storm, that ends up destroying healthy tissue.

"We don't fully understand it," said Tewksbury at Penn, "but obesity leads to an immunocompromised state."

The coronavirus also uses a cell surface protein called ACE2 to break into cells, where it replicates and emerges to infect adjacent cells.

"Even though the lung is the main entry point for COVID-19, there is an increased ACE2 (production) in adipose tissue, making it a more vulnerable target for COVID-19 infection," wrote the review article authors, led by researchers at the University of Leicester, UK.

Before the pandemic, the global increase in obesity was a major public health concern. COVID-19 has only heightened it.

"This pandemic has highlighted that more—not less—must be done to tackle and prevent [obesity](#)," University of Glasgow researchers wrote in the journal *Circulation*.

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