

# Will the COVID-19 vaccine work as well in patients with obesity?

February 8 2021, by Cate Varney

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When researchers began to develop what they hoped would be an effective COVID-19 vaccine, they already knew that H1N1 influenza—a novel virus, like COVID-19 – [more severely affected patients with overweight or obesity](#). Patients with a body mass index of 30 or above had a higher risk of hospitalization and death from H1N1.

This is not the first time such a link has been found. A 2017 study from the University of North Carolina at Chapel Hill [discovered the flu shot](#) was less effective in patients who had [excess weight](#) or [obesity](#). This study included only 1,022 participants, but [other small](#) studies show similar results.

Flash forward to today, when the COVID-19 [vaccine](#) has been created, tested on more than 40,000 patients and is now being distributed across the nation. The data is promising; the two authorized vaccines offer more than [90% protection](#) from the virus.

But doctors and researchers are mindful of the H1N1 and UNC findings. As [a physician](#) who specializes in obesity medicine, I'm one of them. Now all of us want to know this: Will the COVID-19 vaccines be equally effective in patients who have excess weight or obesity? Initial data shows this to be the case, but additional data will need to be collected after many more patients are vaccinated.

## **What the research says**

The answer to this question is crucial. Adult patients who have excess weight or obesity are among the [most impacted](#) by COVID-19, and they make up more than [70% of the U.S. population](#). Indeed, as I read through the [Pfizer vaccine trial data](#), I saw that very familiar group: 70% of the Pfizer COVID-19 trial participants, like the U.S. demographic, had overweight or obesity. A collective cheer from [obesity specialists](#) could be heard around the world for creating a group that best represented our current U.S. population.

COVID-19 has been devastating here in the U.S. for those with overweight and obesity, [particularly younger patients](#). Initially, doctors thought younger patients as a whole had less risk of severe complications due to their age. But for people younger than 50 who have obesity, the

obesity negated the protective effect of age.

The COVID-19 vaccine is promising because it activates B and T immune cells, critical for long-term protection against viruses. B cell activity and levels have been shown to be [lower in both mice and human subjects that have obesity](#) following infections.

These [immune cells](#) can quickly produce new antibodies even if antibody levels fall over time and there are few left from previous vaccinations. Antibodies block the virus from getting into a cell and infecting it, but B and T cells destroy the virus-infected cells and prevent further replication of the virus and spread to other cells. But this may not be true for people with obesity. Researchers believe that [obesity negatively impacts the function of the immune system](#).

Although patients with obesity can produce adequate antibodies, [multiple studies show](#) they have a [lower level](#) of those B and T cells following an infection with the H1N1 influenza. This can alter the typical immune response, leaving the body one step behind after the virus invades. An important question is whether this altered immune response is also present after a COVID-19 infection. And because of this, we want to know whether the vaccine will be as effective in patients with obesity for as long as other patients who do not suffer from this disease.

## **Vaccine still a must**

Even with this concern, patients with overweight or obesity should still get the COVID-19 vaccine. Even for those patients with obesity who receive the [flu vaccine](#) but still get the flu, there's almost a [40% reduction](#) in hospitalization and 82% reduction in ICU admissions.

In short, the data released from Pfizer and the FDA show the vaccine is

not only effective in participants as a whole, but in particular, patients with obesity.

It is encouraging that Pfizer [wanted to show](#) the vaccine was just as effective in those who have excess weight or obesity. Researchers are recognizing these patients are more at risk and now design studies to reflect that.

## **Behaviors that will help**

Two things might encourage people with excess weight or obesity to exercise and improve their dietary habits: Previous studies [show a positive association](#) between regular exercise before receiving a vaccine and your response to the vaccine, producing up to [four times as more antibodies](#) after being exposed to a virus or bacteria. This means that antibodies are higher in those who exercised prior to vaccine administration versus those who did not engage in exercise. Also, it seems the type and [amount of your gut bacteria](#) may impact the vaccine response. Foods containing [prebiotics and probiotics](#) may assist with this and other disease prevention and treatment. Prebiotics can be found in barley and garlic, while yogurt, sauerkraut and some cheeses contain probiotics.

More data is needed before we know precisely how patients with excess weight and obesity respond to vaccines when compared to the rest of the population. But that data is coming quickly. Even just one year from now, we will look back and be amazed at all we have learned about COVID-19. From that research will come the knowledge we need to create a better way to deliver health care to all of us.

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