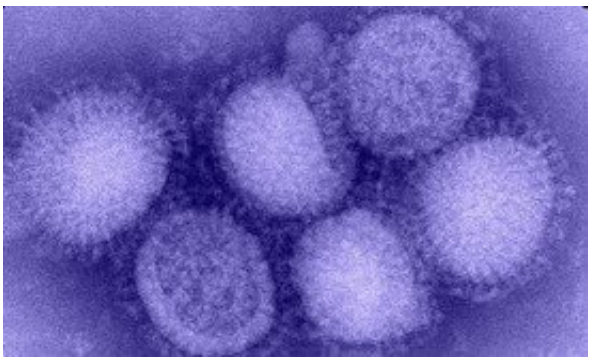
Flu and heart disease: The surprising connection that should convince you to schedule your shot

October 15 2021



Influenza virus. Credit: CDC, 2020.

If you have heart disease or risk factors for heart disease, you already know about the increased risk of heart attack and stroke. But did you know that coming down with the flu can substantially increase the risk of a serious or even fatal cardiac event? Or that getting the influenza vaccine can substantially reduce that risk, even if you do wind up contracting the seasonal virus?

Probably not, if annual influenza vaccination rates are any indication, especially if you're under the age of 65. According to a Houston Methodist review published in the *Journal of the American Heart Association*, Americans with heart disease continue to have low vaccination rates every year despite higher rates of death and

complications from influenza.

The flu vaccination rate for American adults who are less than 65 years of age and have heart disease is less than 50%, compared to 80% in older adults with heart disease.

"It seems that younger Americans with high-risk conditions have not gotten the same memo that their older counterparts have received about the importance of getting the influenza vaccine," says Dr. Priyanka Bhugra, internal medicine specialist at Houston Methodist and lead author of the JAHA article. "That's dangerous, considering people with heart conditions are particularly vulnerable to influenza-related heart complications, whether they've reached retirement age or not."

It's well-known that the flu can lead to significant respiratory symptoms such as pneumonia, bronchitis and bacterial infection of the lungs. The virus' effects on the heart have historically been harder to parse out, in part because many patients already have a known predisposition to cardiac events and in part because the cardiac event often occurs weeks after the onset of the flu.

But here's what recent research has shown:

- Cardiovascular deaths and influenza epidemics spike around the same time.
- Patients are six times more likely to experience a heart attack the week after influenza infection than they are at any point during the year prior or the year after the infection.
- In one study looking at 336,000 hospital admissions for flu, 11.5% experienced a serious cardiac event.
- Another study looking at 90,000 lab-confirmed influenza infections showed a strikingly similar rate of 11.7% experiencing

an acute cardiovascular event.
- One in eight patients, or 12.5%, admitted to the hospital with influenza experienced a cardiovascular event, with 31% of those requiring intensive care and 7% dying as a result of the event, another study found.

The reason influenza stresses the heart and vascular system so much has to do with the body's inflammatory response to the infection.

Inflammation occurs when your body's "first responders"—white blood cells and what they produce in order to protect you—convene in an area and get to work fighting an infection, bacteria or virus. When you're sick, you can typically feel the effects of these "combat zones" in the swelling, tenderness, pain, weakness and sometimes redness and increased temperature of your joints, muscles and lymph nodes.

The increased activity can also cause a traffic jam of sorts, leading to blood clots, elevated blood pressure and even swelling or scarring within the heart. The added stressors make plaque within your arteries more vulnerable to rupture, causing a blockage that cuts off oxygen to the heart or brain and results in heart attacks or strokes, respectively.

Additionally, non-cardiac complications from the viral illness, including pneumonia and respiratory failure, can make heart failure symptoms or heart arrhythmia much worse.

In short, the added stress on the cardiovascular system could be overwhelming to an already weakened heart muscle.

Because influenza viruses are constantly mutating, scientists alter the vaccine each year to match the likely prevalent strands. On average, it's effective at preventing infection 40% of the time. While that might not sound great—especially in comparison to the highly effective mRNA

COVID-19 vaccines—it's enough to significantly lower the risk of severe illness in most people.

Lately, studies have been able to show that not only is the vaccine effective at protecting the general population and the most vulnerable age groups (over 65 and under 2) from severe cases of the flu, but it's also protective against cardiovascular mortality as well, especially among the high-risk population.

Some of the recent findings:

- Adults who received the vaccine were 37% less likely to be hospitalized for the flu and 82% less likely to be admitted to the ICU because of it. Among people admitted to the hospital with the flu, those vaccinated were 59% less likely to be admitted to the ICU. Vaccinated patients admitted to the ICU spent four fewer days in the ICU than unvaccinated patients.
- Vaccination was associated with a lower risk of cardiovascular events (2.9% vs 4.7%) if the patient got the flu. Among the highest-risk patients with more active coronary disease, vaccination was associated with considerably better outcomes.
- Patients admitted to the hospital with acute coronary syndrome were randomly assigned to either receive a flu vaccine or not before discharge. Major cardiovascular events occurred less frequently in the vaccine group than the control group (9.5% vs. 19%).

As a result of the demonstrated benefits conferred by influenza vaccination and the risks posed by flu infection among those with cardiovascular disease, the CDC and numerous other international societies strongly recommend annual influenza vaccination in patients with cardiovascular disease.

Clinicians should ensure high rates of influenza vaccination, especially in those with underlying chronic conditions, to protect against acute cardiovascular events associated with influenza.

Unfortunately, many heart patients visit their cardiologist more frequently than their primary care providers, and cardiology practices typically do not provide flu vaccinations, though proposed recommendations may change in the future. Until then, it is incumbent upon both the cardiology provider and the primary care provider to communicate the increased risk to their patients and the importance of getting vaccinated.

For patients with heart conditions, there are two important steps you can take to reduce your risk:

- Make sure you do obtain your influenza vaccine from your local pharmacy or primary care provider. The earlier you get it, the better it is at protecting you, as you never know when the virus may begin to spread.
- Make sure you are taking your medications and following your recommended diet, exercise and stress reduction plans. If your heart condition is stable and you end up with the flu, chances are you'll experience fewer, less severe complications than if your heart condition is poorly managed.

More information: Priyanka Bhugra et al, Determinants of Influenza Vaccine Uptake in Patients With Cardiovascular Disease and Strategies for Improvement, *Journal of the American Heart Association* (2021). DOI: 10.1161/JAHA.120.019671

Provided by Houston Methodist