Medical Xpress

Study suggests obesity may also impact flu transmission, not just severity of illness

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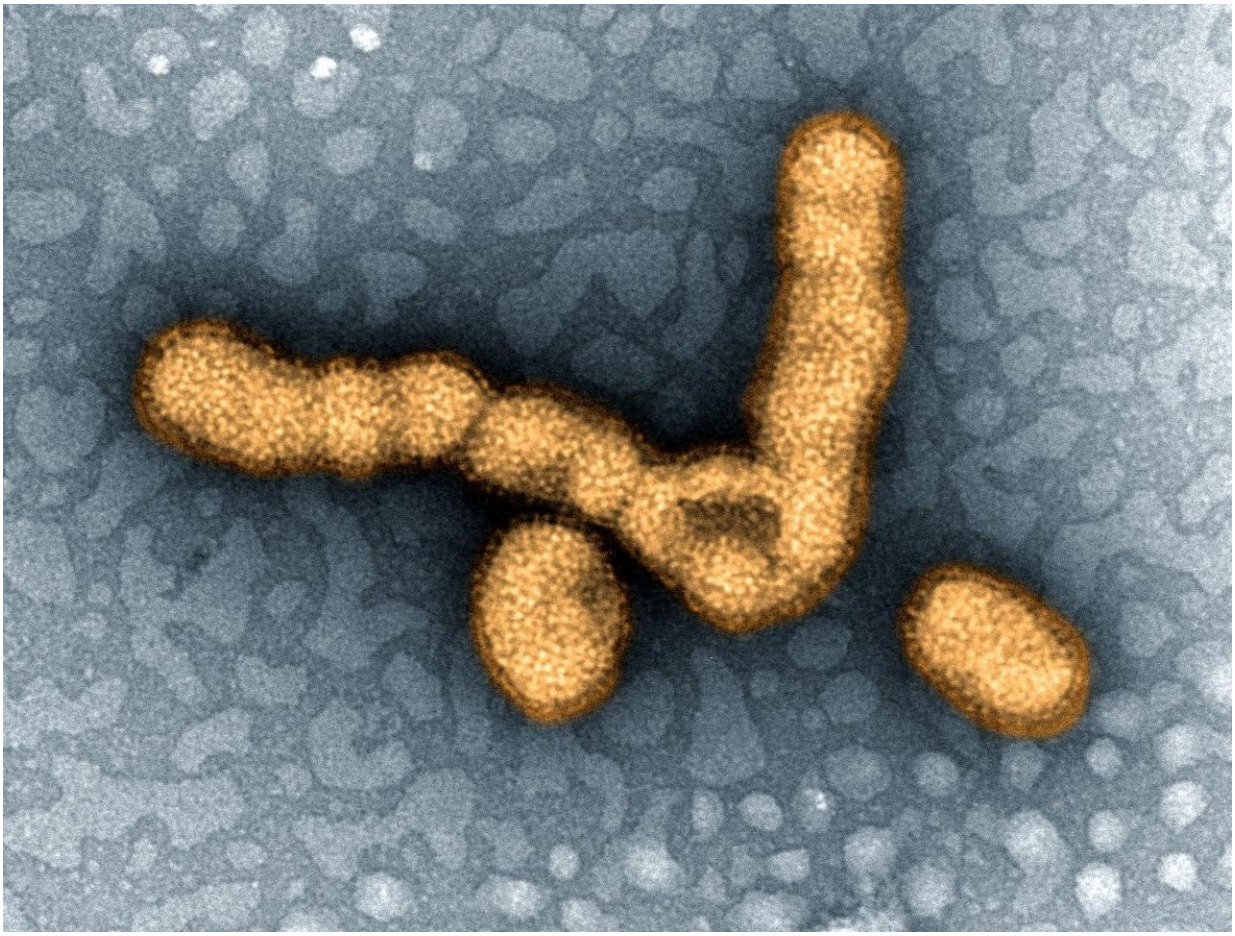

H1N1 influenza virus particles. Credit: NIAID

Obesity increases a person's risk for severe complications from

influenza, including hospitalization and even death. It may also play a role in how flu spreads, according to a new study published in *The Journal of Infectious Diseases*. The findings suggest that obese adults infected with flu shed the virus for a longer time than adults who are not obese, potentially increasing the opportunity for the infection to spread to others.

"This is the first real evidence that obesity might impact more than just disease severity," said senior study author Aubree Gordon, MPH, Ph.D., of the University of Michigan School of Public Health. "It might directly impact transmission as well."

Analyzing data collected from approximately 1,800 people in 320 households in Managua, Nicaragua, researchers investigated the effect of obesity on the duration of viral shedding over three influenza seasons from 2015 to 2017. Obese adults with flu symptoms and laboratory-confirmed influenza shed influenza A virus for 42 percent longer than adults with flu who were not obese. Among obese individuals infected with flu who were only mildly ill or had no symptoms, the difference was even greater: These obese adults shed influenza A virus for 104 percent longer than non-obese adults with flu.

The duration of viral shedding was determined by tests of nose and throat samples, which detected the presence of influenza virus RNA but did not indicate whether the viruses were infectious. Additional research, now underway, will help determine if the flu virus shed for longer periods by obese individuals is indeed infectious and can spread the illness to others, Dr. Gordon said.

In addition, the differences seen in the duration of viral shedding were limited to influenza A viruses, one of two types of flu viruses that can cause epidemics in humans. Researchers found no association with obesity and the duration of shedding of influenza B virus, which

typically causes less serious illness in adults and does not cause pandemics. Obesity also did not appear to impact the duration of viral shedding among children included in the study.

Obesity can alter the body's immune response and lead to chronic inflammation, which increases with age, in addition to making breathing more difficult and increasing the need for oxygen. These factors may help explain how obesity could affect influenza risk, severity, and transmission potential, the study authors noted.

With rates of obesity rising around the world, the new findings, if supported by future studies, suggest that obesity may play an increasingly important role in flu transmission. In a related editorial commentary that appears with the new study in The *Journal of Infectious Diseases*, Stacey Schultz-Cherry, Ph.D., of St. Jude Children's Research Hospital, noted several potential public health implications, including increased opportunities for influenza to spread in some populations.

"It is therefore even more important to develop effective strategies to prevent and control influenza, especially in the overweight and obese population, which could be challenging because of the poor vaccine responses in this population," wrote Dr. Schultz-Cherry, who was not involved with the study. "With increasing focus on the development of a universal influenza vaccine, improved protection from influenza is on the horizon. The question remains whether these approaches will not only protect this target population, but also reduce viral shedding duration."

More information: Hannah E Maier et al, Obesity Increases the Duration of Influenza A Virus Shedding in Adults, *The Journal of Infectious Diseases* (2018). DOI: 10.1093/infdis/jiy370