

Maryland researchers study how flu is spread, question direct vs. indirect contact

January 25 2013, by Andrea K. Walker

Every flu season, doctors instruct their patients in the basics of respiratory etiquette: To limit spread of the disease, wash your hands, cover your mouth when you cough and practice good hygiene.

The practices are based on the belief that the [flu](#) and other viruses pass from person to person through indirect or direct contact. Somebody [coughs](#) in another's face, or an infected person touches a doorknob that dozens of others then grab, and the disease spreads.

But what if the flu isn't transmitted by direct or indirect contact? What if [flu virus](#) particles linger in the air, and people can catch the disease just by breathing?

That is a possibility researchers at the University of Maryland's School of Public Health are examining in a study that looks at the transmission of the flu virus and how it might infect people.

"Do kids in school get the flu because they are not washing their hands, or is there not enough air circulating in the classroom?" asked Dr. Donald K. Milton, a University of Maryland professor leading the research.

By improving their understanding of how the flu is transmitted, doctors can come up with better ways to treat the disease and curb its spread, Milton said. If flu particles float in the air, [hand washing](#) may not be enough of a deterrent. Face masks or other methods may provide more

protection, he said.

The research comes in the midst of the nation's worst [flu outbreak](#) in a decade, with [federal health officials](#) recently declaring it an epidemic. As of Jan. 12, more than 18,000 Marylanders had visited doctors' offices and emergency rooms with [influenza](#)-like symptoms. One child has died. The season started earlier than normal, and patients are showing symptoms much more severe than in a typical year.

There is not much doctors can do to treat the flu, which normally dissipates on its own. Anti-virals are given to high-[risk patients](#). That's why [public health officials](#) focus on preventing spread of the disease instead.

The question about how the flu virus is spread is highly controversial, said Dr. Trish Perl, senior epidemiologist for Johns Hopkins Medicine, who is conducting a separate study on reducing the flu's spread through better-made [face masks](#).

Preventive flu protocol is based largely on studies from the 1930s and '50s that found the virus is spread by direct and indirect contact, Perl said. The belief has been questioned in recent years, but not enough studies have been conducted to support any kind of change, Perl said.

The issue arose in the '70s, when an Alaskan Airlines plane was grounded and a large number of the passengers caught the flu from an infected man sitting in the back. People argued that the lack of circulation and close quarters on the plane created an environment conducive to airborne travel of the virus. Others contended that passengers came in contact with the man when they used the restroom, which was near his seat, Perl said.

"As people have learned more about flu, there are more questions about

whether we can make certain assumptions about the (virus)," said Perl, who added that more studies of the virus are needed

At a lab in College Park, the University of Maryland researchers are using a machine called the Gesundheit II to measure how much virus somebody who has the flu puts into the air. After a subject sticks their head inside a funnel, air is pulled in around the head and ends up in a collector, Milton said.

The collector accumulates every droplet, some as small as 50 nanometers, taken from a person's breathing, coughing and sneezing. Scientists then measure the amount of virus shed via droplet sprays, indicating indirect and direct contact, against the amount of tiny airborne particles that other people could inhale.

In the spring, the University of Maryland scientists will work on research in the United Kingdom that will put healthy people in a room with those infected with the flu. Half of those infected will get face shields, allowing researchers to see if that helps prevent spread of the disease.

Milton said understanding the flu's transmission could be especially important if there is ever a pandemic and no vaccine is immediately available to treat people. Stopping the spread would be crucial, he said.

"We probably can't stop flu with [public health](#) measures," Milton said. "But if we really understand it, we can slow it down so we can have time to make a vaccine work."

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