

Flu lasts for more than an hour in air and on surfaces – why cleaning can really help

July 2 2018, by Seema Lakdawala And Linsey Marr



Credit: AI-generated image ([disclaimer](#))

Influenza, or flu, viruses cause about [200,000 hospitalizations](#) every year in the U.S. Annual seasonal vaccination is our best line of defense, but in recent years, it has become clear that [mismatches in the vaccine](#) can limit its effectiveness.

We study how the [flu virus](#) spreads between people. While we strongly encourage everyone to get the [flu vaccine](#), the findings from our recent [study](#) on the stability of [flu viruses](#) in the air can provide useful information for parents, teachers and health care officials to limit the spread of flu in the community.

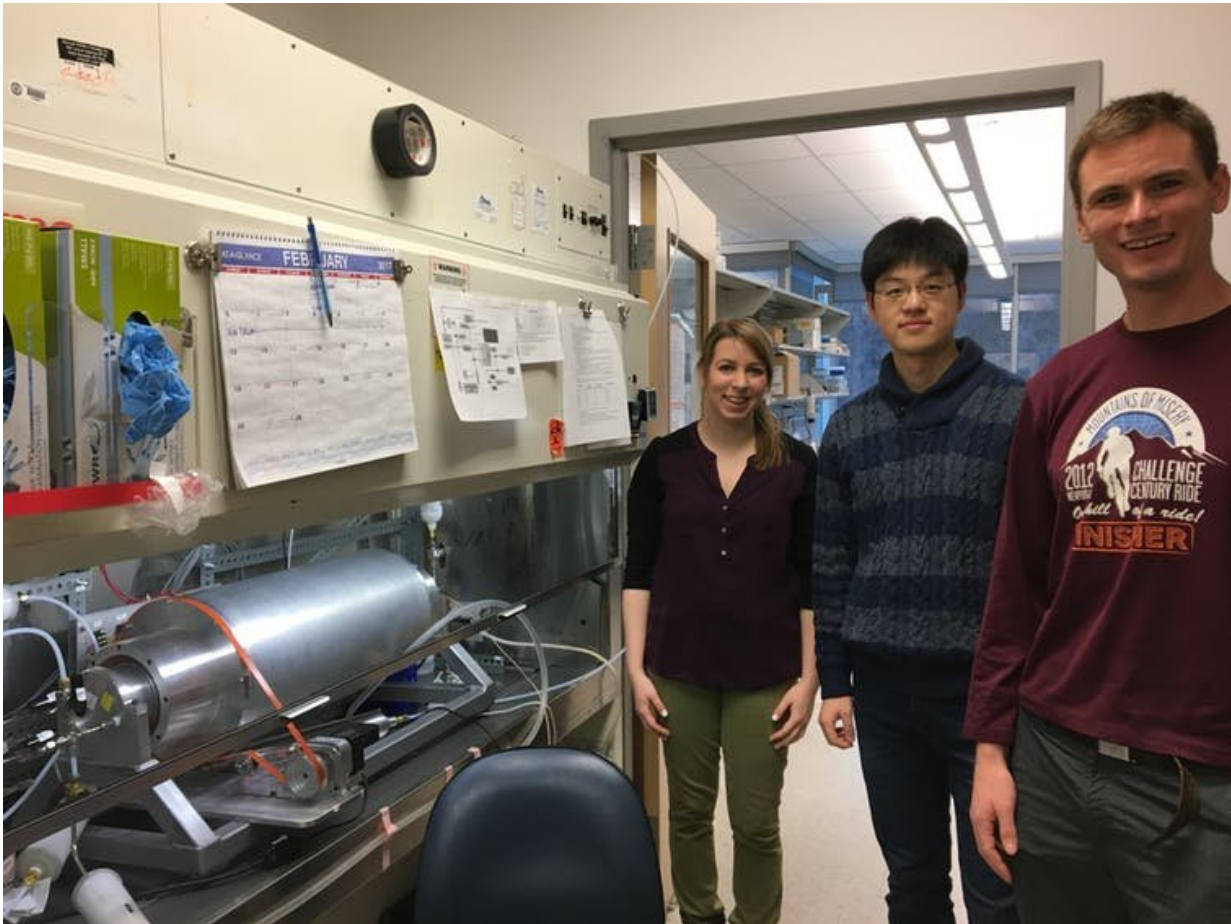
By employing simple strategies to reduce the amount of flu virus in our environment, we can decrease the number of infections every year.

How the flu spreads

1. Flu spreads through the community in three ways:
2. Direct contact – when you shake hands with or otherwise touch an infected individual.
3. Indirect contact – when the virus spreads via a contaminated [surface](#) like a door handle.
4. Aerosols – when the virus is expelled into the air by coughing, sneezing or [just exhaling](#) and is then inhaled by a susceptible individual.

It is clear that all three routes promote the spread of flu each season, but the [relative importance](#) of each is still unknown.

Scientists have long believed that flu viruses in aerosols would be inactivated quickly at moderate and high humidity. However, we recently showed that [human respiratory mucus](#) protects flu viruses that are in aerosols and in droplets on a surface from decay regardless of the humidity.



Members of the team from left to right: Karen Kormuth, Kaisen Lin and AJ Prussin stand by the rotating drum inside a biosafety cabinet.

In our studies, we sprayed flu viruses into a rotating drum to test whether they were still infectious after an hour at a wide range of different humidities. We found no loss in the amount of infectious virus at any humidity, which means that expelled aerosols containing flu viruses are stable in the air for at least one hour. Our other unpublished data suggest that flu viruses, in the presence of mucus, can persist on some surfaces for up to 16 hours with very little loss in infectivity. These data demonstrate that infectious flu viruses are highly stable in the indoor environment.

How to reduce the chances of spreading the virus

There are some simple measures that can help reduce the chances of the virus spreading to other people. The following steps can help remove infectious flu virus from surfaces and the air.

Removing flu virus from surfaces:

1. Wipe down frequently touched surfaces such as doorknobs, tables, elevator buttons and faucets. Simple alcohol-based cleaning products are [effective to inactivate flu](#).
2. The classic advice of hand-washing can also help reduce transmission by direct and indirect contact.
3. Coughing and sneezing into your shirt rather than your elbow or hand is a good way to keep droplets and aerosols from traveling through the air and depositing on surfaces.

Removing flu [virus](#) from the air:

1. Increasing air circulation in the room can dilute flu viruses in the air and limit their spread. This can be achieved by increasing the exchange rate of building ventilation systems, turning on ceiling or portable fans, and, if possible, opening windows.
2. Air purifiers designed to remove particles should be effective at removing viruses from air too, although this has not been tested directly. A purifier with a HEPA filter and a high flow rate will remove the most particles.
3. Surgical masks are particularly useful if [worn by sick individuals](#). This intervention will help keep an infected person from spreading viruses around, as they come out even when you're just exhaling. If you're not sick but are around people who have the flu, wearing a surgical mask can help [protect you from getting infected](#) as long as it's [tight-fitting](#). If there are gaps around the

sides, then it's not helping much.

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