

**Influenza: Symptoms, Transmission, and Prevention**  
Influenza Working Group, Save the Children (US)  
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**I. Symptoms of Influenza**

Influenza is characterized by rapid onset of respiratory and/or generalized signs and symptoms, including one or more of the following:

- High fever,
- Muscle aches and pains,
- Fatigue,
- Headache,
- Dry cough,
- Sore throat, and/or
- Runny nose.

In addition to these principal symptoms, people may also experience:

- Nausea,
- Abdominal cramps, and/or
- Diarrhea.

During a pandemic, these symptoms could be due to either the pandemic flu strain or a non-pandemic (“seasonal”) strain of the flu, as it is likely that both normal/seasonal flu strains and pandemic strains will both be circulating in the community at the same time (and most cases of pandemic flu are likely to involve symptoms similar to seasonal flu). These symptoms can also be caused by some illnesses other than influenza.

Influenza-like-illness (ILI) is defined as:

- Fever (temperature of 100°F [38°C] or greater), and either
- Cough, and/or
- Sore throat,

in the absence of a known cause other than influenza.

Although some people who are ill with the flu will not meet this ILI case definition (and some people with ILI will not actually have the flu), ILI is useful in defining who should stay at home (away from school & work, etc.). During a pandemic, lab tests to determine who actually has flu or pandemic flu will not be feasible for the vast majority of people who have ILI.

## II. Transmission of Influenza Viruses

(from Center for Infectious Disease Research & Policy, University of Minnesota, <http://www.cidrap.umn.edu/cidrap/content/influenza/panflu/biofacts/panflu.html>, and the US HHS plan, supplement 4, <http://www.hhs.gov/pandemicflu/plan/pdf/S04.pdf>)

Most cases of pandemic flu are expected to occur during pandemic “waves.” In each community, each pandemic wave (outbreak) is expected to last about 6 to **12** weeks. The pandemic may include 1, 2, or 3 waves over a period of up to approximately 1 to 2 years. The seasonality of the pandemic & pandemic waves cannot be predicted with certainty.

Persons who become ill may be able to transmit infection to others for one-half to one day before the onset of illness (how much of this actually happens remains uncertain), with the risk for transmission from adults greatest during the first 2 days of illness, but lasting up to 7 days after the fever has disappeared. Children will shed the greatest amount of virus, over a longer period of time (up to 21 days from illness onset).

Although the relative contributions of different modes of flu transmission are currently unknown, data from observational studies is generally consistent with **transmission through close exposure (which was redefined for flu in 2007 by the US CDC & OSHA to distances up to 2 meters or 6 feet)**: large respiratory droplets, direct contact, and near-range exposure to aerosols:

Droplet transmission: Large droplets are expelled by coughing, sneezing, and talking, and generally travel through the air no more than 3 feet (one meter) from the infected person. Transmission via large droplets requires close contact between the source and recipient persons, permitting droplets, which do not remain suspended in the air, to come into direct contact with oral, nasal, or ocular mucosa (though how much transmission happens through the eyes remains uncertain). Special air handling and ventilation systems are not required to prevent droplet transmission.

Direct and indirect contact transmission: Direct contact transmission involves skin-to-skin contact (such as hand-to-hand) between an infected person and a susceptible person. Indirect contact: Influenza viruses can live for 24 to 48 hours on nonporous environmental surfaces and less than 12 hours on porous surfaces, indicating that transmission can occur when hands that touch contaminated surfaces subsequently come into contact with oral, ocular, or nasal mucosa, though this type of transmission appears to be rare.

Airborne transmission (via small-particle aerosols / droplet nuclei): The relative contribution of airborne transmission to influenza outbreaks is uncertain, but is an important issue, because droplet nuclei are smaller in size than large droplets (with implications for the type of masks most likely to be effective), can travel farther than 3 feet (1 meter), and can remain suspended in air. With flu viruses, airborne transmission may occur at short distances, particularly during medical procedures which may generate aerosols, and in shared air spaces with poor air circulation. (This implies that good air circulation / ventilation may reduce transmission in indoor areas and in other enclosed spaces, such as in vehicles, planes, trains, etc.) There is little evidence of airborne transmission over long distances or prolonged periods of time, and no evidence that influenza transmission can occur through ventilation systems.

Animal-to-Person: As animal-to-person transmission (such as from birds or pigs) is expected to remain a comparatively rare event, the information above all refers to person-to-person transmission.

### III. Reducing Flu Transmission & Risk of Infection (Guidance for Individuals & Households)

Please also refer to:

- [www.who.int/csr/disease/swineflu/frequently\\_asked\\_questions/what/en/index.html](http://www.who.int/csr/disease/swineflu/frequently_asked_questions/what/en/index.html) or
- [www.cdc.gov/h1n1flu/qa.htm](http://www.cdc.gov/h1n1flu/qa.htm)

If a pandemic flu vaccine becomes available in your area, we suggest that you get this immunization. If available in your area, we also suggest that you get immunized for seasonal influenza. Though seasonal flu vaccine will not protect you from the pandemic flu strain, it will help protect you from getting both kinds of flu in the same season.

**For All Household Members** (with or without flu symptoms):

Keep Your Distance (at least 2 meters, or 6 feet) from other people, particularly from people who are coughing or sneezing, to the extent this is feasible. If you are in a high risk group or if the pandemic wave is severe:

- Avoid crowds & groups of people when possible
- Limit your travel
- Avoid crowded public transportation if possible, such as by traveling during off-peak hours
- Work from home, if possible

Wash Your Hands

- Wash hands with warm, soapy water for at least 15-20 seconds OR use a hand sanitizer after:
  - Coughing or sneezing,
  - Contact with a flu patient or with objects near or used by the patient,
  - Using the bathroom, &
  - Handling garbage or animal waste.

**For Those with Any Flu Symptoms:**

Cover Your Cough & Sneeze

- Cover your mouth & nose with a tissue, & put your tissue in the trash can
- If you do not have a tissue, cough or sneeze into your upper arm, not your hands

Separate the Ill from Other People

- All people with influenza-like illness (ILI) should avoid all public activities, & remain at home (or in a health facility) until they have recovered. (This is called “voluntary isolation.”)
- If practical, the ill person should stay in a separate room which most others do not enter. Good ventilation/ airflow in this room (except in extremely cold climates or seasons) may help to somewhat reduce the risk of transmission of the virus.

- Only one caretaker should have contact with the ill, if possible.
- Others should avoid exposures to the ill person, such as sharing toothbrushes, cigarettes, eating utensils, drinks, & linens.
- Use everyday household cleaning products to regularly clean laundry, eating utensils, & household surfaces used by the ill or likely contaminated by their secretions. (However, general disinfection of the environment during a pandemic is not recommended.)
- Those who are ill should wear a medical/ surgical mask (if available, or if not, a scarf) whenever they are in contact with others & if they must leave their home.
- Caretakers of the ill should wear a respirator (if available, or medical/ surgical mask, or a scarf) whenever they are within 2 meters of the ill. (If masks are in short supply, their use by the ill should be prioritized over use by caretakers. General use of masks or particulate respirators in homes or in the community is not recommended.)
- If the pandemic wave is severe (involving high mortality): The household contacts of ill people should minimize their level of interaction with others outside the home (this is called “voluntary home quarantine”), and isolate themselves at the first sign of any symptoms.

### **Precautions for Pregnant Women & Others in High Risk Groups**

Pregnant women are at higher risk of severe flu-related illness. Therefore, it is particularly important to take the precautions listed above to protect woman who may be pregnant. Woman who may be pregnant should not care for, or be in contact with, anyone who may have the flu. It is also particularly important for pregnant women and others in the high risk groups to promptly seek advice from health care professionals if they develop signs/ symptoms of flu. (Other groups at increased risk, in addition to pregnant women, include children less than 2 years of age, & persons with underlying health conditions – see the US CDC website for evolving information on risk groups: [www.cdc.gov/h1n1flu/](http://www.cdc.gov/h1n1flu/))

**If the Flu Outbreak is Severe** (involving high mortality):

Shelter in Place: Even after taking the precautions listed above, some flu transmission is still likely, because these measures are only partly effective, & because some flu may be spread by infected people with no symptoms. Risk of infection among household members can be reduced by staying at home & minimizing contact with all other persons, as much as possible. (This is also called “protective sequestration” & “hibernation”.)