



Understanding Influenza

Influenza (flu) is a contagious disease that can cause mild to severe symptoms and life-threatening complications, including death, even in healthy children and adults. Influenza viruses usually spread from one individual to another through coughing or sneezing, but they can also spread through touching a contaminated surface and then touching the mouth, eyes, or nose. Individuals can pass influenza on to others even before their own symptoms start and for a week or more after symptoms begin.

Influenza Severity and Symptoms

The severity of influenza varies depending on the specific viruses circulating. The number of individuals affected depends on how easily the circulating viruses are transmitted from person to person. The best protection against influenza is annual vaccination. Even if the influenza viruses circulating in a particular season are different from the vaccine strains selected for that season's vaccine, the vaccine can still provide some protection and make flu illness less severe. For more information, visit: www.cdc.gov/flu/about/season/vaccine-selection.htm.

Influenza can be distinguished from other common respiratory infections by the presence of some or all of the following symptoms¹:

- Fever or feeling feverish/chills
- Aches (muscle, body, and headaches)
- Chills
- Tiredness
- Sudden onset
- Other symptoms may include a cough, runny/stuffy nose, and/or sore throat
- Some people may also experience vomiting and diarrhea, though this is more common in children than adults

Influenza-Related Complications

An individual's response to influenza is difficult to predict. Some people will experience mild symptoms, while the virus may cause serious infection or even death in others. Influenza complications that can affect anyone include:

- Pneumonia
- Bronchitis
- Sinus infections
- Ear infections
- Worsening of chronic medical conditions such as asthma, diabetes, and heart disease

Impact of Influenza

Unlike many other viral respiratory infections, such as the common cold, the flu can cause severe illness and life-threatening complications. While the numbers vary, in the United States, millions of people are sickened, hundreds of thousands are hospitalized, and thousands or tens of thousands of people die from flu every year. Additionally, parents of sick children usually spend between \$300-\$4,000 treating children and miss between 11-73 hours of work.²

For more information about the burden of disease, visit: www.cdc.gov/flu/about/disease/burden.htm.

Here are some key facts about how influenza affects different populations:

- **Children and Infants:** Influenza is more dangerous than the common cold for children. Many children get sick with seasonal influenza; some of those illnesses result in death. Each year, 20,000 children younger than 5 years of age are hospitalized with influenza complications.³ Severe influenza complications are most common in children younger than 2 years of age.³

- Infants up to 6 months of age are at high risk of serious flu complications, but are too young to be vaccinated. The best way to protect them is to vaccinate the mother before or during pregnancy.^{3,4} The mother's immunity transfers to the baby through the placenta and provides protection for the first 6 months of life. In addition, all household members and caregivers who will be around these infants should be vaccinated to provide an additional "cocoon."
- **Adults 65 years of age and older:** Adults 65 years of age and older typically are at greater risk compared to younger, healthy adults because of weakened immune systems.⁵ During most flu seasons, older adults bear the burden of disease and account for the majority of flu-related deaths and over half of the flu-related hospitalizations. Several vaccine options are available for people 65 years and older, including a high dose, which contains four times the amount of antigen to help them build a higher immune response, and an adjuvant flu vaccine (also see the fact sheet "Influenza Vaccine Options"). For more information, download the NFID report on flu prevention in adults 65 years of age and older: www.nfid.org/flu-older-adults.
- **Pregnant women (and women up to two weeks postpartum):** Influenza is more likely to cause severe illness in pregnant women than in women who are not pregnant. Pregnant women with the flu are not only at increased risk of hospitalization, but of having adverse pregnancy outcomes, including premature labor and delivery.⁴ Infants born to mothers who received the influenza vaccine during pregnancy have a lower risk of contracting influenza or being hospitalized because of influenza in their first 6 months of life.⁶
- **People with chronic medical conditions**
 - **Asthma:** People with asthma, even if it is mild and well-controlled, are at increased risk from influenza complications. Influenza can increase inflammation in the lungs and airways, provoking an asthma attack and worsening asthma symptoms. People with asthma are also more likely to develop pneumonia and are at increased risk of other acute respiratory diseases.⁷
 - **Diabetes:** People with diabetes are at increased risk of severe influenza complications, including hospitalization and death. This is true even when their diabetes is well-managed. Diabetes can interfere with the body's ability to fight influenza and the influenza virus can interfere with management of blood sugar levels.⁸
 - **Heart disease:** Influenza can trigger heart attacks and stroke.⁹ According to the American Heart Association, influenza puts more stress on the heart, making it work harder to pump blood through the lungs.¹⁰ In people with heart disease, influenza can cause serious complications that can lead to death.
 - **Obesity:** People with a body mass index (BMI) of 40 or more are at increased risk for developing flu-related complications and are hospitalized at a higher rate than those with a BMI less than 40.^{11,12}
 - **Compromised immune system:** Immunocompromised individuals such as cancer patients, former cancer patients, and people living with HIV/AIDS, are among those who are at a greater risk of developing serious flu-related complications, including hospitalization and death.^{13,14}
- **Healthcare workers:** The principal rationale for routine vaccination of healthcare workers is to keep their patients safe. Healthcare workers who are vaccinated reduce the incidence of influenza-related illness and death among their patients.¹⁵⁻¹⁷ The Centers for Disease Control and Prevention (CDC) and most major medical groups recommend that all healthcare workers be vaccinated annually against influenza.

For more information about people who are at higher risk for developing flu complications, visit: www.cdc.gov/flu/groups.htm.

Influenza Prevention and Treatment

Since it is not possible to know in advance how severe a flu season will be or how sick an individual will get due to flu, prevention and treatment are critical. The Centers for Disease Control and Prevention (CDC) "Take 3" Actions to Fight the Flu urges everyone age 6 months and older to get vaccinated as the first and best defense against the flu, and also to follow everyday preventive actions like hand hygiene, covering coughs and sneezes, and staying away from people who are sick. Those who do get the flu should take antiviral medications if they are prescribed.¹⁸ For more information, see the visual on CDC's "Take 3 Actions to Fight Flu".

References

1. Centers for Disease Control and Prevention. Flu Symptoms and Severity. www.cdc.gov/flu/about/disease/symptoms.htm. Accessed September 23, 2016.
2. Centers for Disease Control and Prevention. CDC Study: Treating Children's Flu Illness Costly. www.cdc.gov/flu/spotlights/childrens-flu-costly.htm. Accessed September 23, 2016
3. Centers for Disease Control and Prevention. Children, the Flu, and the Flu Vaccine. www.cdc.gov/flu/protect/children.htm. Accessed September 23, 2016.
4. Centers for Disease Control and Prevention. Pregnant Women & Influenza (Flu). www.cdc.gov/flu/protect/vaccine/pregnant.htm. Accessed September 23, 2016.
5. Centers for Disease Control and Prevention. What You Should Know and Do this Flu Season If You Are 65 Years and Older. www.cdc.gov/flu/about/disease/65over.htm. Accessed September 23, 2016.
6. Centers for Disease Control and Prevention. Flu Vaccine Safety and Pregnancy. www.cdc.gov/flu/protect/vaccine/qa_vacpregnant.htm. Accessed September 23, 2016.
7. Centers for Disease Control and Prevention. Flu and People with Asthma. www.cdc.gov/flu/asthma/. Accessed September 23, 2016.
8. Centers for Disease Control and Prevention. Flu and People with Diabetes. www.cdc.gov/flu/diabetes/. Accessed September 23, 2016.
9. Centers for Disease Control and Prevention. Flu and Heart Disease & Stroke. www.cdc.gov/flu/heartdisease/index.htm. Accessed September 23, 2016.
10. American Heart Association. The Flu and Pneumonia Prevention. www.heart.org/HEARTORG/Conditions/More/MyHeartandStrokeNews/The-Flu-and-Heart-Disease_UCM_445089_Article.jsp. Accessed September 23, 2016.
11. Centers for Disease Control and Prevention. People at high risk of developing flu-related complications. www.cdc.gov/flu/about/disease/high_risk.htm. Accessed September 23, 2016.
12. Morgan OW, Bramley A, Fowlkes A, et al. Morbid obesity as a risk factor for hospitalization and death due to 2009 pandemic influenza A(H1N1) disease. *PLoS ONE*. 2010;5(3):e9694.
13. Centers for Disease Control and Prevention. Cancer, the Flu, and you. www.cdc.gov/cancer/flu/. Accessed September 23, 2016.
14. Centers for Disease Control and Prevention. HIV/AIDS and the Flu. www.cdc.gov/flu/protect/hiv-flu.htm. Accessed September 23, 2016.
15. Centers for Disease Control and Prevention. Influenza Vaccination Information for Health Care Workers. www.cdc.gov/flu/healthcareworkers.htm. Accessed September 23, 2016.
16. Saxén H, Virtanen M. Randomized, placebo-controlled double blind study on the efficacy of influenza immunization on absenteeism of health care workers. *Pediatr Infect Dis J*. 1999;18(9):779-83.
17. Ahmed F, Lindley MC, Allred N, et al. Effect of influenza vaccination of healthcare personnel on morbidity and mortality among patients: systematic review and grading of evidence. *Clin Infect Dis*. 2014;58(1): 50-57.
18. Centers for Disease Control and Prevention. CDC Says "Take 3" Steps to Fight the Flu. www.cdc.gov/flu/protect/preventing.htm. Accessed September 23, 2016.

September 2016