

Influenza

Traveler Summary

Key Points

- Influenza (seasonal) is a highly contagious viral respiratory infection acquired through the inhalation of aerosolized respiratory droplets or direct contact with respiratory secretions from infected persons.
- Risk is high for travelers, depending on the destination and time of year, and for persons in close contact with infected persons.
- Symptoms include high fever, chills, severe body aches, headache, extreme tiredness, and dry cough.
- Consequences of infection may include pneumonia and respiratory failure. Death may occur, especially in those at extremes of age and in persons with underlying medical conditions.
- Prevention includes observing good respiratory hygiene (cough and sneeze etiquette), hand hygiene (frequent, thorough handwashing), and physical distancing (maintaining a distance of 2 m [6 ft] from ill-appearing persons), especially during influenza season.
- Influenza vaccine is routinely given to all persons 6 months and older (including travelers) each year (preferably in September or October in the Northern Hemisphere and in April in the Southern Hemisphere) and may be required for destinations in which the influenza season is ongoing at the time of the trip. Vaccination after the recommended time, even if influenza activity has already begun, might be beneficial in most influenza seasons.
- High-dose, adjuvanted (boosted), or recombinant vaccines are preferentially recommended for persons 65 years and older. Vaccination reduces influenza incidence and has been associated with reduced risk of SARS-CoV-2 infection and incidence of more severe COVID-19 disease.
- Influenza vaccines may be given with or at any time before or after other vaccines (including COVID-19 vaccines). Persons acutely ill with COVID-19 should postpone influenza vaccination until after recovery, and persons with mild or asymptomatic COVID-19 should consider deferring vaccination until after recovery (or at least 10 days after a positive test in the case of symptom-free COVID-19) to avoid confusing COVID-19 illness symptoms with postvaccination reactions.
- Vaccine side effects are most commonly injection-site reactions and, less frequently, fever and muscle aches.
- Duration of vaccine protection is about 6 months; no booster dose is recommended; however, revaccination should be considered by travelers who were vaccinated more than 6 months earlier if influenza risk exists at their destination (because of waning immunity).

Introduction

"Classic" (seasonal) influenza is a highly contagious, viral infection, transmitted via inhalation of aerosolized respiratory droplets or direct contact with contaminated surfaces that causes significant illness and sometimes death. Influenza is transmitted in cool months in temperate climates and variably throughout the year in the tropics.

Avian influenza (bird flu) is a type of influenza limited to certain Asian and African regions that is fatal in birds but poorly adapted to humans. Fewer than 20 human cases have been reported since 2015. Persons may present with typical seasonal influenza-like symptoms but their condition rapidly deteriorates to severe respiratory failure. Transmission is through direct contact with live birds or their droppings or secretions and through consumption of undercooked eggs or poultry. Humans have no protection against avian influenza, and no vaccines are commercially available for this infection. See *Avian Influenza*.

Risk Areas

Seasonal influenza occurrence depends on the geographic area and time of year. Influenza season usually occurs during the winter months in the Northern and Southern Hemispheres but varies in tropical and subtropical countries. Some countries have specific seasonality, whereas others have influenza throughout the year, with periods of peak activity.

The 2019-20 influenza season in the US was the longest on record, likely due to increased visits for influenza-like illness that was actually COVID-19 occurring during the last 6 weeks of the season (before COVID-19 testing became widespread). The 2020-21 Northern Hemisphere and 2021 Southern Hemisphere influenza seasons were essentially nonexistent globally, likely due to precautions taken during the global COVID-19 pandemic. Although influenza activity increased during the 2021-22 season, influenza-associated hospitalizations and deaths were overall lower than in recent previous seasons. The upcoming 2022-23

influenza season is expected to coincide with continued circulation of SARS-CoV-2 (the virus that causes COVID-19), but the timing and intensity of the influenza season cannot be predicted.

Transmission

Seasonal influenza viruses are transmitted from person to person via inhalation of aerosolized respiratory droplets (e.g., by coughing and sneezing), from close contact with an infected person, or contact with contaminated objects (e.g., touching surfaces contaminated with influenza virus and then touching the eyes, nose, or mouth).

Risk Factors

Risk is high for travelers, depending on the destination and time of year.

Rates of infection are highest among children, but rates of serious illness, medical complications, and death are highest in children younger than 5 years, persons 65 years and older, and persons with underlying medical conditions that place them at increased risk for complications. Also at high risk are American Indians, Alaska Natives, and blacks/African Americans; pregnant, soon-to-be pregnant, and postpartum women; persons who are extremely obese; nursing home staff and residents; and persons with a weakened immune system. Approximately 8% of the US population become ill from influenza each season.

On aircraft, a risk (very low) of infection exists for persons sitting within a 2-seat range (in back, front, and beside) of an infectious traveler.

Symptoms

Influenza symptoms most commonly develop about 1 to 4 days (average: 2 days) following exposure and include high fever, severe body aches, chills, headache, extreme tiredness, and dry cough. Sore throat may occur. Influenza symptoms are usually more severe than cold symptoms (sore/scratchy throat, sneezing, runny/stuffy nose, and a mild cough) and are similar to those of COVID-19. With a cold, unlike with influenza, fever is rare in adults and older children, and severe body aches and extreme tiredness are not symptoms of a cold. Persons ill with influenza are contagious from 1 day before to up to 7 days after symptom onset (up to 10 days in children).

Consequences of Infection

Complications can include pneumonia and respiratory failure; inflammation of the heart, brain, or muscles; and worsening of underlying medical conditions (such as asthma or chronic heart disease). Death may occur in certain more serious cases.

Need for Medical Assistance

Persons who develop symptoms of influenza should seek immediate medical attention. Samples sent to public health laboratories for influenza testing will also be tested for influenza A, influenza B, and SARS-CoV-2; separate tests will need to be done for tests done in medical offices. Antiviral medications given with 48 hours of symptom onset may reduce the duration and severity of illness.

Prevention

Nonvaccine

Observe respiratory hygiene (cough and sneeze etiquette), hand hygiene (frequent, thorough handwashing or alcohol-based hand sanitizer containing $\geq 60\%$ alcohol), and physical distancing (maintaining a distance of 2 m [6 ft] from ill-appearing persons), especially during influenza season. Antiviral medications, an important adjunct to vaccination, are up to 90% effective in preventing influenza if started within 48 hours of first exposure.

Vaccine

A variety of influenza vaccines (inactivated, recombinant, adjuvanted, high dose, and live) are available for protection against the main types of seasonal influenza (2 strains each of influenza A and B) with varying degrees of effectiveness that depends on the match between the seasonal vaccine strains (updated annually to provide optimal protection) and the currently circulating strains. Vaccine effectiveness against infection has been suboptimal for several consecutive influenza seasons; however, vaccination still

provides significant protection from influenza illness and its potential complications and reduces hospitalization and mortality. High-dose (Fluzone High-Dose Quadrivalent), adjuvanted (Fluad Quadrivalent), or recombinant (Flublok) vaccines are preferentially recommended for persons 65 years and older, and every effort should be made to receive one of these vaccines; however, any other age-appropriate influenza vaccine may be used if the preferred vaccines are not available.

Influenza vaccination remains emphasized for the 2022-23 influenza season because the timing and intensity of this season cannot be predicted. Vaccination will reduce influenza incidence and thereby influenza symptoms that may be confused with those of COVID-19 and has been associated with reduced risk of SARS-CoV-2 infection and incidence of more severe COVID-19 disease.

Vaccination is recommended annually for all persons 6 months and older and is especially important for:

- Travel during the influenza season at the destination
- Travel to areas with current widespread influenza activity
- Travel to countries with a high intensity of influenza activity occurring in international gateways or highly visited destinations
- Cruise travel at any time of year
- Travelers in large, organized tourist groups
- Travelers 50 years and older; children aged 6 months to 18 years; travelers of any age with chronic or immunocompromising conditions
- Persons in mass gatherings (e.g., Hajj and Umra pilgrims)

Side Effects

The most common vaccine side effects are mild and include soreness at the injection site for up to 2 days. Less frequent side effects include fever, extreme tiredness, headache, and muscle aches occurring 6 to 12 hours after vaccination and lasting for 1 to 2 days.

Persons with underlying medical conditions or who have concerns about the vaccine should speak to their health care provider before vaccine administration.

Timing

Influenza vaccine is given annually as follows:

- Persons aged 6 months through 8 years: 1 to 2 doses, depending on previous vaccination history. If 2 doses are necessary, both doses (separated by at least 4 weeks) should be given before the end of October; 2 doses are still recommended even if the child turns 9 years between receipt of doses 1 and 2.
- Persons aged 9 years and older: 1 dose

Duration of vaccine protection is about 6 months.

Influenza vaccines may be given with or at any time before or after other vaccines (including COVID-19 vaccines) and should be given at the same time as a COVID-19 vaccine in persons needing both vaccines. Persons acutely ill with COVID-19 should postpone influenza vaccination until after recovery. For persons with mild or symptom-free COVID-19, consider deferring vaccination until after recovery (or at least 10 days after a positive test in the case of symptom-free COVID-19) to avoid confusing COVID-19 illness symptoms with postvaccination reactions.

Influenza is seasonal, usually occurring from October through May (peak activity occurs in January or later) in the Northern Hemisphere and from April through September (peak activity occurs in April or later) in the Southern Hemisphere. The best time to be vaccinated is in September or October (although vaccine administered in December or later might still be beneficial in most influenza seasons) in the Northern Hemisphere and during April in the Southern Hemisphere (if feasible) due to concerns over waning immunity in persons vaccinated 1 to 2 months before the season begins, in case a late influenza season extends 6 months beyond vaccination.

Pregnant women can be vaccinated during any trimester; those in the third trimester should be vaccinated as soon as possible for this season (instead of waiting until after birth) to provide protection for the infant during the first months of life; those in the first or second trimester should be vaccinated in September or October. Pregnant women should not receive FluMist (live intranasal vaccine).

Children aged 6 months through 8 years requiring 2 doses of influenza vaccine should be scheduled early enough so that the second dose (administered at least 4 weeks after the first dose) is received by the end of October. Travelers going to the opposite hemisphere or to the tropics who have not been vaccinated that season should be vaccinated prior to their trip.

Travelers who are facing influenza risk at their destination should consider revaccination if they were vaccinated with the current formulation more than 6 months earlier. Persons who do not recall whether they received influenza vaccine in the current vaccination season should be vaccinated.

Antiviral Drugs

Although vaccination is the best prevention against influenza, some travelers are not able to receive influenza vaccine, and, in some circumstances, the vaccine may not be well matched to the circulating strains.

Antivirals to Treat Influenza

Antivirals can be used by travelers who become ill with fever and influenza-like symptoms. Treatment begun within 48 hours of the onset of symptoms can shorten illness by 1.5 days and reduce the risk of complications from influenza. "Standby" antiviral therapy (prescribed prior to travel and taken on the trip) is considered for persons at high risk for influenza complications and inadequately vaccinated travelers who are going on cruises at any time of year or going to countries during the influenza season at that destination. Inadequately vaccinated persons might include those who are unable to be vaccinated due to a medical contraindication or vaccine supply issues, who present to their health care provider for vaccination less than 2 weeks prior to departure, or who have been vaccinated with a vaccine that is not a good match with currently circulating influenza viral strains. Self-use of antivirals is not a substitute for seeking immediate medical care, and travelers should make every effort to start treatment only under medical advice.

Travelers going to areas with a high prevalence of malaria should remember that a fever could be caused by malaria, which is a medical emergency. Thus, travelers with influenza-like symptoms should contact a health care provider before taking antivirals.

Antiviral agents that may be used for treatment (and less frequently prevention) of influenza include: oseltamivir (Tamiflu), zanamivir (Relenza), baloxavir marboxil (Xofluza), and peramivir (Rapivab).

Side effects of oseltamivir, such as nausea or vomiting, may be lessened by taking the drug with food. Zanamivir is not recommended for use in persons with asthma, chronic lung diseases, or living in a nursing home. Delirium or abnormal behavior may occur with these drugs. Diarrhea is the most frequently reported side effect with peramivir and headache, nausea, vomiting, and bronchitis are reported with baloxavir marboxil.

Antivirals to Prevent Influenza

Antivirals are generally not recommended for prevention if more than 48 hours have elapsed since the first exposure to an infected person. Some travelers may be advised to carry oseltamivir or zanamivir to prevent influenza after exposure and, ideally, the antiviral should be started within 48 hours of exposure and taken daily for 7 days. Persons taking an antiviral who develop a respiratory illness with fever suggestive of influenza should seek medical care.