This WorkCare Fact Sheet describes methods for preventing, recognizing and treating seasonal influenza (flu), a contagious respiratory illness.

The flu season typically begins in the fall, peaks during the winter and tapers off in the spring. Flu occurs year-round depending on the season in the Southern and Northern hemispheres. U.S. employers are encouraged to roll out workplace flu campaigns in September and continue them throughout the season.

Public health officials recommend annual vaccination for children starting at 6 months old and all adults, including pregnant women, unless they have a condition that precludes safe administration. Vaccination is particularly critical for the elderly, young children and people with certain diseases because they have a higher risk of serious flu-related complications, hospitalization and death.

The more people who are vaccinated, the greater the level of protection afforded to everyone. This is referred to as group or herd immunity. Children and adults who are vaccinated can build up immunity to flu strains over time.

Costly Consequences

The flu places cost burdens on employers, employees, families and communities.

According to Centers for Disease Control and Prevention (CDC) estimates, influenza has caused from 9.2 to 35.6 million illnesses, 140,000 to 710,000 hospitalizations, and 12,000 to 56,000 deaths per year in the U.S. since 2010. The 2017-2018 influenza season broke records for levels of influenza-like illness and hospitalization rates.

In the U.S., direct medical costs are estimated at $4.6 billion a year. In addition, an estimated 17 million days of absence are attributed to the flu, with $7 billion lost in sick days and productivity lapses. In addition to being sick themselves, employees often need to take time off to care for family members.

With vaccination alone, it is estimated physician encounters can be reduced by up to 44 percent and lost workdays decreased by up to 45 percent, the CDC reports. Using these percentages, a company with 100 employees would have an average of 40 fewer lost workdays annually if the entire workforce was vaccinated.
Even though it’s still possible for people who have been vaccinated to get the flu, their symptoms are likely to be milder than they would be without vaccination. A Southern Hemisphere study published Aug. 1, 2018, in Vaccine, found that adult flu vaccination during the 2012-15 flu seasons helped prevent the most severe forms of flu:

- Vaccination reduced the risk of being admitted to a hospital general ward by 32 percent and to an intensive care unit by 59 percent following hospitalization.
- Among adults in the ICU with flu, vaccinated patients on average spent four fewer days in the hospital than those who were not vaccinated.

**Flu Viruses**

The flu is caused by exposure to viruses. An understanding of virus types helps explain why the composition of influenza vaccine is seasonally adjusted to protect against strains that are expected to be the most prevalent during the upcoming season.

Human influenza A and B viruses are associated with seasonal epidemics. An epidemic is a widespread occurrence affecting certain populations, communities or regions. Influenza type C infections typically cause a mild respiratory illness and are not associated with epidemics. Influenza D viruses primarily affect cattle; they do not cause illness in people.

Influenza A viruses are divided into subtypes based on the presence of the proteins hemagglutinin (H) and neuraminidase (N). There are 18 hemagglutinin subtypes and 11 neuraminidase subtypes. Subtypes of influenza A viruses currently in circulation are H1N1 and H3N2. Influenza B viruses are categorized as lineages. Currently circulating influenza B viruses belong to one of two lineages: B/Yamagata and B/Victoria.

Viruses change over time and antibodies against them may not be included in the annual vaccine formula. For example, a new variant of H1N1 emerged in 2009 and caused the first influenza pandemic (global outbreak) in more than 40 years. The H3N2 virus that was predominant in the 2017-18 season creates public health concerns because it can produce severe symptoms and has been less responsive to the vaccine than other virus types.

**Administering the Vaccine**

Most people get a flu shot in the upper-arm muscle. However, certain vaccine formulations and/or other routes of administration are recommended for use in different groups of people. Age, health status and allergies are taken into consideration.
For example, the CDC says people younger than 65 should not get a high-dose flu shot, which is designed for older adults, or a flu shot with adjuvant, which is added to some formulas to create a stronger immune response. Children under 18 and adults older than 64 should not get an intradermal flu shot, which involves use of a tiny needle to inject vaccine under the skin rather than into the muscle.

This year the administration of live attenuated influenza vaccine (LAIV) using nasal spray may be offered as an alternative with guidance from a medical provider. During the past two seasons, it was not recommended because of concerns about low effectiveness against H1N1-like viruses.

Vaccination does not cause the flu, although there may be mild, temporary symptoms such as tenderness, redness or a hard lump at the place of injection, fever, general feelings of discomfort, aches or pain in the muscle. When live viruses are used, they are attenuated (weakened) and designed to multiply in response to cooler temperatures in the nose, not in the lungs and other warmer parts of the body. Temporary symptoms following LAIV administration may include runny nose, wheezing, headache, vomiting, muscle aches, fever, sore throat and cough.

A life-threatening allergic reaction to the vaccine, such as difficulty breathing, is rare. Evidence also suggests severe reactions to egg-based influenza vaccines are unlikely. People with an egg allergy, those who have had a previous reaction to a flu shot, or who have had Guillain-Barré Syndrome, a paralyzing illness, are advised to get medical advice regarding vaccination.

How Vaccine Works

Vaccines promote the development of antibodies that provide protection against infection beginning about two weeks after vaccination.

Trivalent flu vaccine protects against an influenza A H1N1 virus, an influenza A H3N2 virus and an influenza B virus. Quadrivalent vaccine contains an additional B virus. Quadrivalent rather than trivalent vaccine is recommended for the 2018-19 season in the U.S. The vaccine formulation recommended by the World Health Organization (WHO) is for:

- H1N1, an A/Michigan/45/2015-like virus
- H3N2, an A/Singapore/INFIMH-16-0019/2016-like virus
- B Victoria, a B/Colorado/06/2017-like virus
- B Yamagata, a B/Phuket/3073/2013-like virus

Flu Vaccine Safety and Declinations

The Food and Drug Administration and the Centers for Disease Control and Prevention (CDC) Immunization Safety Office are among U.S. agencies responsible for ensuring the safety of vaccines.

The CDC identifies possible vaccine side effects and conducts studies to determine whether health problems are caused by vaccines. Scientists say the data show that the current U.S. vaccine supply is the safest in history.

Millions of Americans have safely received flu vaccines over the past 50 years. However, for various health-related, religious or other personal reasons, some people do not want to get a flu shot or get their children vaccinated. People who work in health-care settings that require employees to get flu shots may opt to decline vaccination. Depending on an institution’s policies, an employee may be required to wear a respiratory protection mask while on duty or avoid patient contact during flu season.
Based on that formula, the U.S. Advisory Committee on Immunization Practices (ACIP) recommends the use of “any licensed, age-appropriate influenza vaccine,” including LAIV.

Most influenza vaccines are prepared by injecting candidate vaccine viruses into fertilized hen’s eggs and incubated to allow the viruses to replicate. The virus-containing fluid is harvested from the eggs.

For flu shots, viruses are inactivated (killed) and virus antigen is purified. For nasal spray vaccine, candidate viruses are put through a different production process. (Click here to learn more about how vaccine is made using various techniques.)

Illness Prevention

Infection control experts consider annual vaccination as the first line of defense to be used in combination with good-hygiene practices. A combination of deterrents are needed because:

• People can be contagious before they experience symptoms.
• Some viruses can survive on surfaces up to eight hours.
• People with suppressed immune systems are more vulnerable to illness.

Influenza prevention methods include:

• Frequent hand washing with soap and water (minimum of 20 seconds).
• Using alcohol-based hand sanitizer when water is not available.
• Covering one’s mouth when coughing or sneezing and throwing soiled tissues away.
• Disinfecting surfaces such as countertops, phones and door handles.
• Avoiding close contact with people who have symptoms (at least 3 feet away).
• Staying home when feeling ill (24 hours after fever is gone).
• Promoting a healthy immune system.

In general, helpful disease prevention habits include getting enough sleep, exercising on a routine basis, taking steps to manage stress, drinking plenty of water and eating nutritious foods.

Workplace infectious disease management may include using personal protective equipment (PPE) such as gloves, gown, mask, eye protection, total face shield and safe injection practices. Surgical masks or respirators may be used to help reduce the spread of disease via airborne or droplet contamination. Gloves are worn when there is the likelihood of contact with infected materials and when handling or touching contaminated items or surfaces.

Employment law attorneys advise employers to:

• Prepare a written vaccination policy and educate the workforce about it.
• Understand objections based on sincerely held religious beliefs or disabilities as defined by the federal Equal Employment Opportunity Commission.
• Consider accommodations for employees who decline the vaccine and document accommodations that are used. Options may include job modification or transfer, wearing a protective mask or taking a leave of absence.
• Once an accommodation is in place, continue working with the employee to make sure it remains effective and feasible.

Here is a sample declination form provided by the Immunization Action Coalition, a non-profit organization that distributes educational materials on safe and effective immunization services.

To learn more about the safety of flu vaccines, click here: Influenza Vaccine Safety.
Symptoms and Treatment

Sometimes it’s hard to tell if it’s influenza or a bad cold.

Common influenza symptoms include:
- Headache
- Dry cough
- Runny nose
- Sore throat
- Muscle aches
- Fatigue
- Fever* or feverish/chills

Potential complications include:
- Pneumonia
- Bronchitis
- Sinus infection
- Ear infection
- Asthma attacks
- Dehydration

*Not everyone with flu will have a fever

People with chronic conditions such as asthma, heart disease or diabetes tend be more vulnerable to the effects of certain flu viruses.

Non-prescription and home remedies for flu-like symptoms include:
- Over-the-counter medications to relieve fever, congestion and muscles aches
- Staying warm and getting plenty of rest
- Drinking clear fluids such as water or broth
- Using a washcloth to cool the skin
- Gargling a 1:1 mixture of salt and water for sore throat

Antiviral drugs may be prescribed to help shorten the course of illness and reduce risk of serious complications. They are most effective when started within the first two days of experiencing symptoms. Antibiotics are not effective against flu viruses and should not be used. Misuse and overuse of antibiotics is linked to the development of potentially fatal medication-resistant infections.

There are three Food and Drug Administration-approved antiviral drugs recommended by the CDC to treat flu symptoms:
- Oseltamivir (Tamiflu®)
- Zanamivir (Relenza®)
- Peramivir (Rapivab®)

Generic oseltamivir and Tamiflu® are available as a pill or liquid suspension. Relenza® is a powder that is inhaled; it is not recommended for people with breathing problems. Rapivab® is given intravenously by a health care provider.

The typical incubation period for influenza is one to four days. Most healthy adults may be able to infect others beginning one day before symptoms develop and up to five to seven days after becoming sick. Uncomplicated influenza illness typically resolves after a week for most people, although cough and malaise can persist for more than two weeks.

Prevention is the best medicine.