

Immunizations— Not Just For Kids

By *Harrison Bloom, M.D.*

Introduction

Immunizations/vaccinations are beneficial for most people of all ages. Yet the mistaken belief persists that, with the exception of the flu vaccine, children should be the primary recipients of this important area of primary disease prevention.

In fact, older persons require immunization as well. As people grow older they become increasingly vulnerable to a variety of illnesses, and, as informal caregivers of young children, grandparents need to be sensitive to their role in preventing the spread of contagious diseases to the young.

Vaccines can prevent the onset and/or consequences of these serious, often deadly, diseases:

- influenza
- pneumococcal disease
- tetanus-diphtheria-pertussis (Tdap)
- chickenpox and shingles (varicella and varicella-zoster)
- meningococcal disease
- measles-mumps-rubella (MMR)
- human papillomavirus (HPV)
- hepatitis A and hepatitis B
- polio

Diseases and Vaccines

Influenza (Flu)

What is influenza?

Influenza is a contagious viral infection of the nose, throat, and lungs that usually occurs in the winter. Viral and/or bacterial pneumonia can be caused or facilitated by influenza infection. It differs from other common respiratory infections by virtue of its ability to cause severe disease that can result in significant sickness, hospitalization and death.



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Who is most vulnerable?

On average 35,000 people in the United States die from influenza and its complications each year. More than 90 percent are persons 65 and older. The flu can worsen the condition of people with chronic lung disease, heart disease, and diabetes.

All persons over age 50, residents of nursing homes and other chronic care facilities, health care workers (to prevent transmission to others within a facility), and those with underlying chronic medical conditions should be immunized every year.

It is especially important that any person over age 50 who is admitted to an acute care setting between September and March receive a vaccination. In nursing home residents, the vaccine is most effective in preventing severe illness, secondary complications, and death. National data indicate that 65 percent of those over 65 get vaccinated. The Centers for Disease Control (CDC) and the Advisory Committee on Immunization Practices (ACIP) now recommend that all adults begin receiving annual influenza immunization at age 50. In fact, current guidelines recommend annual flu vaccine for all adults who want to reduce the risk of becoming ill with influenza or of transmitting it to others.

Although controversy exists over the degree to which influenza vaccine protects adults over 65, annual vaccination for all adults over age 50 is still recommended.

What is the financial cost to society of influenza?

During the 1990s, an average of 200,000 people each year were hospitalized because of flu-associated complications. More than \$3 billion is the estimated direct hospitalization cost of a severe flu epidemic.

When is the best time to get a flu shot?

Vaccination is best administered in October and November of each year and should continue through December (and beyond) if flu season arrives later than

usual. Influenza viruses change from year to year, and immunity, especially in older persons, declines within a year after vaccination, making it necessary for everyone to be immunized yearly. A nasal spray vaccine is available, but it has not been approved for persons age 50 and older.

Pneumococcal Disease

What is pneumococcal disease?

Pneumococcal disease is a bacterial infection caused by *Streptococcus pneumoniae*. These bacteria can cause pneumonia when they invade the lungs. In fact, the pneumococcal bacteria are the leading cause of pneumonia. When they invade the bloodstream (bacteremia) and/or tissues surrounding the brain and spinal cord (meningitis), the disease can be severe, sometimes leading to infections of the bloodstream and to death.

Fever, cough, chest pain, and shortness of breath are the typical symptoms of pneumonia. Symptoms of meningitis may include fever, stiff neck, disorientation and mental confusion, and photophobia (visual sensitivity to light). Bacteremia symptoms include some of the same as with pneumonia and meningitis, as well as joint pain and shaking chills.

Who is most vulnerable?

There are approximately 40,000 cases of invasive pneumococcal disease each year in the United States. In the general population there are 15 to 30 cases reported out of 100,000. In people over age 65, that number increases to 50–83 out of 100,000. Case fatality rate for pneumococcal bacteremia among older adults is 30 to 40 percent. The ACIP and the American College of Physicians (ACP) recommend that everyone over 65 receive the vaccine. Reimmunization is recommended for high-risk older individuals who received their first dose more than five years previously.

The pneumococcal vaccine

The pneumococcal vaccine was first released in the 1940s, but was withdrawn when penicillin and

sulfonamide drugs became widely available. It was relicensed in 1977 when drug-resistant strains began to make their appearance. The vaccine available today includes over 95 percent of multidrug-resistant, invasive strains.

The vaccine can be given at any time of the year, and it can be administered at the same time (in the opposite arm) as flu vaccine.

A single dose of pneumococcus vaccine is protective against 23 different types of *Streptococcus pneumoniae* bacteria that cause most cases of pneumococcal disease.

It is recommended that people in the following categories receive the pneumococcus vaccine:

- People over age 65
- People with underlying chronic illness (e.g., heart disease, lung disease, diabetes)
- People with a weakened immune system (e.g., HIV infection, chronic renal failure)
- Residents of nursing homes and other long-term care facilities
- Alaska natives and some Native American tribes

It is sometimes recommended that older persons receive a second dose after a number of years.

Tetanus, Diphtheria, Pertussis

Tdap is a single vaccine to protect against all three.

What is tetanus?

Tetanus is a bacterial toxin that attacks the nervous system and is commonly found in soil, dust, and manure. Known colloquially as “lockjaw,” this disease is usually contracted through a wound or cut contaminated with the tetanus bacteria. Symptoms include muscular stiffness in the jaw (lockjaw), then neck

stiffness, trouble swallowing, abdominal muscle rigidity, generalized spasms, fever, and sweating.

Who is vulnerable?

Although 50 or fewer cases of tetanus occur each year in the United States, more than 15 percent are fatal and more likely to affect diabetics and persons over 60. Almost all reported cases occur in people who never had the primary series of immunizations or those who received the primary series but didn’t follow up with a booster shot in ten years.

What is diphtheria?

Diphtheria is a potentially serious bacterial disease that is spread from person to person by inhaling droplets containing the diphtheria bacteria. The tonsils, throat, nose, and skin are usually affected. The infection can cause a “membrane” to form over the throat, causing breathing problems. If untreated, heart failure, paralysis, and even death can result (mortality is close to 10 percent). The main symptoms include severe sore throat, fever, enlarged lymph nodes, and/or painful red and swollen skin lesions.

Who is vulnerable?

Most cases of diphtheria occur among persons who are unvaccinated or inadequately vaccinated.

What is pertussis?

Pertussis (whooping cough) is caused by the organism *Bordetella pertussis*. A potentially serious disease that spreads easily from person to person, its hallmark is coughing spells so severe that breathing, eating, and sleeping are difficult. Coughing can be severe enough to fracture ribs, and pneumonia and hospitalization can occur. Interestingly, adults rarely manifest the classic “whoop” (the sound made while gasping for breath during a bad coughing spell).

Who is vulnerable?

Grandparents, parents, and siblings can spread pertussis to infants not yet fully vaccinated even before

symptoms appear. The disease is increasing in prevalence in the United States. Because early symptoms may mimic the common cold or bronchitis, the diagnosis is frequently difficult to make or delayed. Adults and adolescents can spread pertussis to infants not yet fully vaccinated, even before symptoms appear. Parents, grandparents and siblings are often the source of pertussis in babies.

Currently the CDC recommends that adults ages 19 to 64 receive a single dose of Tdap in place of the Td (tetanus-diphtheria) booster previously recommended for all adults. However, they recommend that the Td booster shots be given to individuals age 65 and older.

Recommendations for additional specific adult populations include those who have or anticipate having close contact with an infant less than 1 year of age, health care workers who have direct patient contact, and women who have just given birth (before discharge from the hospital or birthing center).

Varicella-zoster (Shingles)

What is shingles?

Zoster, which is also known as shingles, is common in people over age 50, with an estimated 500,000 to 1 million cases diagnosed in the United States each year. The virus, the same one that causes chickenpox, lies dormant for years in nerves (in those who had chickenpox in the past, usually as children) and typically becomes reactivated in people during normal aging, especially in those whose immune systems have been weakened by cancers, HIV infection, or treatment with immunosuppressive drugs. The rash is often painful and blistering, occurring on the trunk (one side of the body only) or the face. Although the pain and rash usually resolves within weeks, it is often followed by an excruciatingly painful and long-lasting condition known as postherpetic neuralgia. This condition is usually very difficult to treat and can make an individual's life miserable.

Who should be vaccinated?

In October 2006, the ACIP recommended a single dose of zoster vaccine for adults 60 years of age or older. They further noted that most older adults have been infected or exposed to chickenpox, and it is not necessary to screen older people to determine whether there is a history of chickenpox for routine vaccination.

The zoster vaccine was licensed by the FDA in May 2006. Large studies, with a median follow-up of 3.1 years, showed a 51 percent relative-risk reduction for zoster and a 67 percent relative-risk reduction for postherpetic neuralgia. Efficacy was highest in those 60 to 69, declining with increasing age. The vaccine is considered safe, but it is not yet known how long the protection lasts. This vaccine is the first to be covered under Part D Medicare, rather than Part B (which covers flu and pneumococcal vaccines). Cost for the vaccine is \$150 to \$200.

Because the vaccine is new and long-term effects are not yet known, an individual should speak with her/his physician regarding the advisability of getting the vaccine.

Other diseases for which vaccines should be considered in susceptible adults:

Varicella (Chickenpox)

What is chickenpox?

Chickenpox is caused by the varicella virus. Very contagious and easily spread from person to person, chickenpox is characterized by a total body rash of 250 to 500 itchy blisters, as well as fever, fatigue, and sore throat.

Who is vulnerable?

Although not usually severe, the risk of hospitalization and death is greater in adolescents and adults than in children. Less than 5 percent of adults are susceptible

to infection with the varicella virus, younger adults being more susceptible than older adults. Immunocompromised individuals are particularly at risk for serious illness and complications if they contract chickenpox.

The vaccine is recommended for all susceptible adults (those who never had chickenpox) with a second catch-up dose for adults who previously received only one dose. Infrequently persons previously vaccinated can develop chickenpox, but the disease is usually mild and the rash doesn't evolve into blisters.

Measles, Mumps, Rubella

MMR is a single vaccine to protect against all three.

Measles

Of the 66 confirmed cases of measles in the United States reported in 2005, nearly 35 percent were in people over age 20. Serious lung and middle-ear infections, as well as severe diarrhea and brain inflammation, can occur. On a global basis, almost half a million deaths occur annually from 30 million infected individuals.

Mumps

Serious complications of mumps occur more frequently among adults than children. Women contracting mumps during the first trimester of pregnancy are at risk for spontaneous abortion. MMR vaccine is indicated in susceptible individuals.

Rubella (German Measles)

Rubella during pregnancy can lead to serious birth defects in the baby including deafness, cataracts, heart defects, mental retardation, and liver and spleen damage.

For travel to countries where diseases no longer prevalent in the United States are still common, check the Centers for Disease Control website (www.cdc.gov/travel/) for recommendations two to three months before departure.

Meningococcal Disease

What is meningococcal disease?

A very serious and potentially deadly bacterial infection causing meningitis, bloodstream infection, and, less frequently, pneumonia or arthritis, meningococcal disease is easily spread through sneezing, coughing, or by direct contact such as kissing. Even if treated appropriately, 10 percent of those infected die, and 20 percent develop permanent disabilities including brain damage, hearing loss, and limb amputations. Almost 3,000 persons contract meningococcal disease each year in the United States.

Who is vulnerable?

In adults, the vaccine is recommended for college freshmen living in dormitories and individuals up to age 55, based upon their living situation (e.g., military personnel), travel plans, or underlying medical conditions. For those over age 55, a version of the vaccine, a polysaccharide vaccine, is available.

Human Papillomavirus (HPV)

What is HPV?

HPV is the most common sexually transmitted infection in the United States. About 6 million men and women become infected each year, and more than 20 million are infected in 2007.

Who is vulnerable?

It is most prevalent in persons in their late teens and twenties. At least 80 percent of sexually active women will have become infected by age 50. HPV causes almost 100 percent of cervical cancer in women and contributes to the development of other cancers that can affect both men and women. In the United States, 9,700 women are diagnosed with cervical cancer, and 3,700 deaths occur from cervical cancer yearly. The vaccine should ideally be given to girls or women before the onset of sexual activity and is currently recommended for all previously unvaccinated women through age 26.

Hepatitis A and Hepatitis B

What is hepatitis A?

Hepatitis A is a viral disease of the liver that is easily spread by a variety of routes. Symptoms and their severity can vary significantly among infected individuals, but older persons usually have more severe symptoms than children. Once contracted, there is no specific treatment. About 10 to 20 percent of people with hepatitis A require hospitalization.

Who is vulnerable?

A vaccine is recommended primarily for travelers to countries where the disease is common. It is also recommended for individuals with specific medical conditions.

What is hepatitis B?

Hepatitis B (HBV) is a very serious viral disease of the liver. It can result in lifelong infection that increases the risk of developing chronic liver disease, including cirrhosis and liver cancer. An estimated 1.25 million people in the United States have chronic HBV infection, and about 5,000 die from its complications yearly. It is classified as a sexually transmitted disease and is 100 times more infectious than HIV, the virus that causes AIDS.

Who is vulnerable?

The vaccine is effective and safe. The list of persons for whom the vaccine is recommended is long, but any adult wishing to obtain immunity may receive it.

Avian Flu Virus (Bird Flu)

At the present time there is no vaccine to protect against this highly pathogenic virus found in many bird populations. Its presence in humans has thus far been very limited, but all experts agree that this virus, or a variant, could possibly cause a pandemic. The World Health Organization has issued pharmacologic guidelines addressing prophylaxis and treatment for patients infected with the avian flu virus, and it is constantly monitoring all developments in this area.

Conclusion

Some people are fearful that a vaccine will give them the very disease it is supposed to prevent. Actually, the potential risks associated with contracting the diseases prevented by the vaccines are much greater than the potential risks from the vaccines themselves. Mild side effects are not uncommon and usually include a sore arm or low-grade fever for a day or two, but the risk that serious problems will occur following vaccination is minimal.

Most family physicians and internists, hospital clinics, city and county health departments, and many pharmacies administer influenza, pneumococcal, and hepatitis A and hepatitis B vaccines. Sometimes special vaccination clinics are held in shopping malls, senior centers, and other community settings. Medicare Part B covers the cost of influenza and pneumococcal vaccinations. Private insurance plans vary in their rates of coverage.

In 2003, the *American Journal of Medicine* reported that 100 percent of vaccinated patients said their physician recommended the vaccine versus 63 percent of unvaccinated patients. Busy health care providers may neglect to address the need for immunizations or may suggest only that patients receive a flu shot. All adults must be actively involved in their health care and assure they receive appropriate immunizations.

Finally, all adults should keep a permanent immunization record, both to ensure that protection has been provided against vaccine-preventable diseases and also to prevent needless revaccination if there is a change in a health care provider or during a health emergency.

Bottom Line: Immunizations are among the safest, most inexpensive, most cost-effective, and accessible preventive measures available for adults as well as children.

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The International Longevity Center–USA

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The organization is part of a multinational research and education consortium, which includes centers in the United States, Japan, Great Britain, France, the Dominican Republic, India, South Africa, Argentina, the Netherlands, and Israel. These centers work both autonomously and collaboratively to study how greater life expectancy and increased proportions of older people impact nations around the world.

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