



Vaccines for Preteens: What Parents Should Know

Last updated JANUARY 2017

Why does my child need vaccines now?

Vaccines aren't just for babies. Some of the vaccines that babies get can wear off as kids get older. And as kids grow up they may come in contact with different diseases than when they were babies. There are vaccines that can help protect your preteen or teen from these other illnesses.

What vaccines does my child need?

Tdap Vaccine

This vaccine helps protect against three serious diseases: tetanus, diphtheria, and pertussis (whooping cough). Preteens should get Tdap at age 11 or 12. If your teen didn't get a Tdap shot as a preteen, ask their doctor or nurse about getting the shot now.

Meningococcal Vaccine

Meningococcal conjugate vaccine protects against some of the bacteria that can cause meningitis (swelling of the lining around the brain and spinal cord) and septicemia (an infection in the blood). Preteens need the first meningococcal shot when they are 11 or 12 years old. They need a second meningococcal shot at age 16.

HPV Vaccine

Human papillomavirus (HPV) vaccines help protect both girls and boys from HPV infection and cancer caused by HPV. All 11- and 12-year-olds should receive two shots of HPV vaccine 6-12 months apart. Preteens and teens who haven't started or finished the HPV vaccine series should ask the doctor or nurse about getting them now.

Flu Vaccine

The annual flu vaccine is the best way to reduce the chances of getting seasonal flu and spreading it to others. Even healthy preteens and teens can get very sick from the flu and spread it to others. While all preteens and teens should get a flu vaccine, it's especially important for those with chronic health conditions such as asthma, diabetes, and heart disease

to get vaccinated. The best time to get the flu vaccine is as soon as it's available in your community, ideally by October. While it's best to be vaccinated before flu begins causing illness in your community, flu vaccination can be beneficial as long as flu viruses are circulating, even in January or later.

When should my child be vaccinated?

A good time to get these vaccines is during a yearly health checkup. Your preteen or teen can also get these vaccines at a physical exam required for sports, school, or camp. It's a good idea to ask the doctor or nurse every year if there are any vaccines that your child may need.

What else should I know about these vaccines?

These vaccines have all been studied very carefully and are safe. They can cause mild side effects, like soreness or redness in the part of the arm where the shot was given. Some preteens and teens might faint after getting a shot. Sitting or lying down when getting a shot and then for about 15 minutes after the shot, can help prevent fainting. Serious side effects are rare. It is very important to tell the doctor or nurse if your child has any serious allergies, including allergies to yeast, latex, or chicken eggs, before they receive any shots.

How can I get help paying for these vaccines?

The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger, who are uninsured, Medicaid-eligible, American Indian or Alaska Native. You can find out more about the VFC program by going online to www.cdc.gov and typing VFC in the search box.

Where can I learn more?

Talk to your child's doctor or nurse about what vaccines they may need. You can also find more information about these vaccines on CDC's Vaccines for Preteens and Teens website at www.cdc.gov/vaccines/teens.

DISTRIBUTED BY:



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention

If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities.

Reviewed March 2012

If you choose to delay some vaccines or reject some vaccines entirely, there can be risks. Please follow these steps to protect your child, your family, and others.

With the decision to delay or reject vaccines comes an important responsibility that could save your child's life, or the life of someone else.

Any time that your child is ill and you:

- call 911;
- ride in an ambulance;
- visit a hospital emergency room; or
- visit your child's doctor or any clinic

you must tell the medical staff that your child has not received all the vaccines recommended for his or her age.

Keep a vaccination record easily accessible so that you can report exactly which vaccines your child has received, even when you are under stress.

Telling health care professionals your child's vaccination status is essential for two reasons:

- When your child is being evaluated, the doctor will need to consider the possibility that your child has a vaccine-preventable disease. Many of these diseases are now uncommon, but they still occur.
- The people who help your child can take precautions, such as isolating your child, so that the disease does not spread to others. One group at high risk for contracting disease is infants who are too young to be fully vaccinated. For example, the measles vaccine is not usually recommended for babies younger than 12 months. Very young babies who get measles are likely to be seriously ill, often requiring hospitalization. Other people at high risk for contracting disease are those with weaker immune systems, such as some people with cancer and transplant recipients.

Before an outbreak of a vaccine-preventable disease occurs in your community:

- Talk to your child's doctor or nurse to be sure your child's medical record is up to date regarding vaccination status. Ask for a copy of the updated record.
- Inform your child's school, childcare facility, and other caregivers about your child's vaccination status. -
- Be aware that your child can catch diseases from people who don't have any symptoms. For example, Hib meningitis can be spread from people who have the bacteria in their body but are not ill. You can't tell who is contagious.



American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

When there is vaccine-preventable disease in your community:

- It may not be too late to get protection by getting vaccinated. Ask your child's doctor.
- If there are cases (or, in some circumstances, a single case) of a vaccine-preventable disease in your community, you may be asked to take your child out of school, childcare, or organized activities (for example, playgroups or sports).
- Your school, childcare facility, or other institution will tell you when it is safe for an unvaccinated child to return. Be prepared to keep your child home for several days up to several weeks.
- Learn about the disease and how it is spread. It may not be possible to avoid exposure. For example, measles is so contagious that hours after an infected person has left the room, an unvaccinated person can get measles just by entering that room. -
- Each disease is different, and the time between when your child might have been exposed to a disease and when he or she may get sick will vary. Talk with your child's doctor or the health department to get their guidelines for determining when your child is no longer at risk of coming down with the disease.

Be aware.

- 👉 Any vaccine-preventable disease can strike at any time in the U.S. because all of these diseases still circulate either in the U.S. or elsewhere in the world.
- 👉 Sometimes vaccine-preventable diseases cause outbreaks, that is, clusters of cases in a given area.
- 👉 Some of the vaccine-preventable diseases that still circulate in the U.S. include whooping cough, chickenpox, Hib (a cause of meningitis), and influenza. These diseases, as well as the other vaccine-preventable diseases, can range from mild to severe and life-threatening. In most cases, there is no way to know beforehand if a child will get a mild or serious case.
- 👉 For some diseases, one case is enough to cause concern in a community. An example is measles, which is one of the most contagious diseases known. This disease spreads quickly among people who are not immune.

If you know your child is exposed to a vaccine-preventable disease for which he or she has not been vaccinated:

- Learn the early signs and symptoms of the disease.
- Seek immediate medical help if your child or any family members develop early signs or symptoms of the disease. -

IMPORTANT: Notify the doctor's office, urgent care facility, ambulance personnel, or emergency room staff that your child has not been fully vaccinated before medical staff have contact with your child or your family members. They need to know that your child may have a vaccine-preventable disease so that they can treat your child correctly as quickly as possible. Medical staff also can take simple precautions to prevent diseases from spreading to others if they know ahead of time that their patient may have a contagious disease.

- Follow recommendations to isolate your child from others, including family members, and especially infants and people with weakened immune systems. Most vaccine-preventable diseases can be very dangerous to infants who are too young to be fully vaccinated, or children who are not vaccinated due to certain medical conditions.
- Be aware that for some vaccine-preventable diseases, there are medicines to treat infected people and medicines to keep people they come in contact with from getting the disease.
- Ask your health care professional about other ways to protect your family members and anyone else who may come into contact with your child.
- Your family may be contacted by the state or local health department who track infectious disease outbreaks in the community. -

If you travel with your child:

- Review the CDC travelers' information website (<http://www.cdc.gov/travel>) before traveling to learn about possible disease risks and vaccines that will protect your family. Diseases that vaccines prevent remain common throughout the world, including Europe. -
- Don't spread disease to others. If an unimmunized person develops a vaccine-preventable disease while traveling, to prevent transmission to others, he or she should not travel by a plane, train, or bus until a doctor determines the person is no longer contagious.

Talk to your child's doctor or nurse about the vaccines recommended for their age.

	Flu <i>Influenza</i>	Tdap Tetanus, diphtheria, pertussis	HPV Human papillomavirus	Meningococcal		Pneumococcal	Hepatitis B	Hepatitis A		Inactivated Polio	MMR Measles, mumps, rubella	Chickenpox <i>Varicella</i>
				MenACWY	MenB							
7-8 Years	Green	Orange		Purple		Purple	Orange	Purple	Orange	Orange	Orange	Orange
9-10 Years	Green	Orange	Purple, Blue	Purple		Purple	Orange	Purple	Orange	Orange	Orange	Orange
11-12 Years	Green	Green, Orange	Green	Green, Orange		Purple	Orange	Purple	Orange	Orange	Orange	Orange
13-15 Years	Green	Orange	Orange	Orange		Purple	Orange	Purple	Orange	Orange	Orange	Orange
16-18 Years	Green	Orange	Orange	Green, Orange		Purple	Orange	Purple	Orange	Orange	Orange	Orange

More information:


Preteens and teens should get a flu vaccine every year.


Preteens and teens should get one shot of Tdap at age 11 or 12 years.


All 11-12 year olds should get a 2-shot series of HPV vaccine at least 6 months apart. A 3-shot series is needed for those with weakened immune systems and those age 15 or older.


All 11-12 year olds should get a single shot of a meningococcal conjugate (MenACWY) vaccine. A booster shot is recommended at age 16.

Teens, 16-18 years old, **may** be vaccinated with a serogroup B meningococcal (MenB) vaccine.

 These shaded boxes indicate when the vaccine is recommended for all children unless your doctor tells you that your child cannot safely receive the vaccine.

 These shaded boxes indicate the vaccine should be given if a child is catching-up on missed vaccines.

 These shaded boxes indicate the vaccine is recommended for children with certain health or lifestyle conditions that put them at an increased risk for serious diseases. See vaccine-specific recommendations at www.cdc.gov/vaccines/pubs/ACIP-list.htm.

 This shaded box indicates children not at increased risk may get the vaccine if they wish after speaking to a provider.



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

American Academy of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™



AMERICAN ACADEMY OF FAMILY PHYSICIANS

STRONG MEDICINE FOR AMERICA

Vaccine-Preventable Diseases and the Vaccines that Prevent Them

Diphtheria (Can be prevented by Tdap vaccination)

Diphtheria is a very contagious bacterial disease that affects the respiratory system, including the lungs. Diphtheria bacteria can be spread from person to person by direct contact with droplets from an infected person's cough or sneeze. When people are infected, the bacteria can produce a toxin (poison) in the body that can cause a thick coating in the back of the nose or throat that makes it hard to breathe or swallow. Effects from this toxin can also lead to swelling of the heart muscle and, in some cases, heart failure. In serious cases, the illness can cause coma, paralysis, or even death.

Hepatitis A (Can be prevented by HepA vaccination)

Hepatitis A is an infection in the liver caused by hepatitis A virus. The virus is spread primarily person-to-person through the fecal-oral route. In other words, the virus is taken in by mouth from contact with objects, food, or drinks contaminated by the feces (stool) of an infected person. Symptoms can include fever, tiredness, poor appetite, vomiting, stomach pain, and sometimes jaundice (when skin and eyes turn yellow). An infected person may have no symptoms, may have mild illness for a week or two, may have severe illness for several months, or may rarely develop liver failure and die from the infection. In the U.S., about 100 people a year die from hepatitis A.

Hepatitis B (Can be prevented by HepB vaccination)

Hepatitis B causes a flu-like illness with loss of appetite, nausea, vomiting, rashes, joint pain, and jaundice. Symptoms of acute hepatitis B include fever, fatigue, loss of appetite, nausea, vomiting, pain in joints and stomach, dark urine, grey-colored stools, and jaundice (when skin and eyes turn yellow).

Human Papillomavirus (Can be prevented by HPV vaccination)

Human papillomavirus is a common virus. HPV is most common in people in their teens and early 20s. About 14 million people, including teens, become infected with HPV each year. HPV infection can cause cervical, vaginal, and vulvar cancers in women and penile cancer in men. HPV can also cause anal cancer, oropharyngeal cancer (back of the throat), and genital warts in both men and women.

Influenza (Can be prevented by annual flu vaccination)

Influenza is a highly contagious viral infection of the nose, throat, and lungs. The virus spreads easily through droplets when an infected person coughs or sneezes and can cause mild to severe illness. Typical symptoms include a sudden high fever, chills, a dry cough, headache, runny nose, sore throat, and muscle and joint pain. Extreme fatigue can last from several days to weeks. Influenza may lead to hospitalization or even death, even among previously healthy children.

Measles (Can be prevented by MMR vaccination)

Measles is one of the most contagious viral diseases. Measles virus is spread by direct contact with the airborne respiratory droplets of an infected person. Measles is so contagious that just being in the same room after a person who has measles has already left can result in infection. Symptoms usually include a rash, fever, cough, and red, watery eyes. Fever can persist, rash can last for up to a week, and coughing can last about 10 days. Measles can also cause pneumonia, seizures, brain damage, or death.

Meningococcal Disease (Can be prevented by meningococcal vaccination)

Meningococcal disease has two common outcomes: meningitis (infection of the lining of the brain and spinal cord) and bloodstream infections. The bacteria that cause meningococcal disease spread through the exchange of nose and throat droplets, such as when coughing, sneezing, or kissing. Symptoms include sudden onset of fever, headache, and stiff neck. With bloodstream infection, symptoms also include a dark purple rash. About one of every ten people who gets the disease dies from it. Survivors of meningococcal disease may lose their arms or legs, become deaf, have problems with their nervous systems, become developmentally disabled, or suffer seizures or strokes.

Mumps (Can be prevented by MMR vaccination)

Mumps is an infectious disease caused by the mumps virus, which is spread in the air by a cough or sneeze from an infected person. A child can also get infected with mumps by coming in contact with a contaminated object, like a toy. The mumps virus causes swollen salivary glands under the ears or jaw, fever, muscle aches, tiredness, abdominal pain, and loss of appetite. Severe complications for children who get mumps are uncommon, but can include meningitis (infection of the covering of the brain and spinal cord), encephalitis (inflammation of the brain), permanent hearing loss, or swelling of the testes, which rarely results in decreased fertility.

Pertussis (Whooping Cough) (Can be prevented by Tdap vaccination)

Pertussis spreads very easily through coughing and sneezing. It can cause a bad cough that makes someone gasp for air after coughing fits. This cough can last for many weeks, which can make preteens and teens miss school and other activities. Pertussis can be deadly for babies who are too young to receive the vaccine. Often babies get whooping cough from their older brothers or sisters, like preteens or teens, or other people in the family. Babies with pertussis can get pneumonia, have seizures, become brain damaged, or even die. About half of children under 1 year of age who get pertussis must be hospitalized.

Pneumococcal Disease (Can be prevented by pneumococcal vaccination)

Pneumonia is an infection of the lungs that can be caused by the bacteria called pneumococcus. These bacteria can cause other types of infections too, such as ear infections, sinus infections, meningitis (infection of the lining of the brain and spinal cord), and bloodstream infections. Sinus and ear infections are usually mild and are much more common than the more serious forms of pneumococcal disease. However, in some cases pneumococcal disease can be fatal or result in long-term problems, like brain damage and hearing loss. The bacteria that cause pneumococcal disease spread when people cough or sneeze. Many people have the bacteria in their nose or throat at one time or another without being ill—this is known as being a carrier.

Polio (Can be prevented by IPV vaccination)

Polio is caused by a virus that lives in an infected person's throat and intestines. It spreads through contact with the stool of an infected person and through droplets from a sneeze or cough. Symptoms typically include sore throat, fever, tiredness, nausea, headache, or stomach pain. In about 1% of cases, polio can cause paralysis. Among those who are paralyzed, about 2 to 10 children out of 100 die because the virus affects the muscles that help them breathe.

Rubella (German Measles) (Can be prevented by MMR vaccination)

Rubella is caused by a virus that is spread through coughing and sneezing. In children rubella usually causes a mild illness with fever, swollen glands, and a rash that lasts about 3 days. Rubella rarely causes serious illness or complications in children, but can be very serious to a baby in the womb. If a pregnant woman is infected, the result to the baby can be devastating, including miscarriage, serious heart defects, mental retardation and loss of hearing and eye sight.

Tetanus (Lockjaw) (Can be prevented by Tdap vaccination)

Tetanus mainly affects the neck and belly. When people are infected, the bacteria produce a toxin (poison) that causes muscles to become tight, which is very painful. This can lead to "locking" of the jaw so a person cannot open his or her mouth, swallow, or breathe. The bacteria that cause tetanus are found in soil, dust, and manure. The bacteria enter the body through a puncture, cut, or sore on the skin. Complete recovery from tetanus can take months. One to two out of 10 people who get tetanus die from the disease.

Varicella (Chickenpox) (Can be prevented by varicella vaccination)

Chickenpox is caused by the varicella zoster virus. Chickenpox is very contagious and spreads very easily from infected people. The virus can spread from either a cough, sneeze. It can also spread from the blisters on the skin, either by touching them or by breathing in these viral particles. Typical symptoms of chickenpox include an itchy rash with blisters, tiredness, headache and fever. Chickenpox is usually mild, but it can lead to severe skin infections, pneumonia, encephalitis (brain swelling), or even death.

If you have any questions about your child's vaccines, talk to your healthcare provider.

Information for Health Care Professionals about Adolescent Vaccines

The Centers for Disease Control and Prevention (CDC) recommends four vaccines for adolescents to prevent:

- Tetanus, Diphtheria, Pertussis *Note: Recommendations for catch-up dose and minimum interval*
- Meningococcal disease *Note: A booster shot for teens*
- Human papillomavirus *Note: Added indications for Gardasil; recommendation for boys*
- Influenza *Note: Universal recommendation for everyone 6 months and older*

These recommendations are supported by the American Academy of Pediatrics, the American Academy of Family Physicians, and the Society for Adolescent Health and Medicine.

What can YOU do to ensure your patients get fully vaccinated?

- *Strongly* recommend adolescent vaccines to parents of your 11 through 18 year old patients. **Parents trust your opinion more than anyone else's when it comes to immunizations.** Studies consistently show that provider recommendation is the *strongest* predictor of vaccination.
- Use every opportunity to vaccinate your adolescent patients. **Ask about vaccination status when they come in for sick visits and sports physicals.**
- Patient reminder and recall systems such as automated **postcards, phone calls and text messages are effective tools for increasing office visits.**
- **Educate parents about the diseases that can be prevented by adolescent vaccines.** Parents may know very little about pertussis, meningococcal disease, or HPV.
- **Implement standing orders policies** so that patients can receive vaccines without a physician examination or individual physician order.

Direct parents who want more information on vaccines and vaccine-preventable diseases to visit the CDC website at <http://www.cdc.gov/vaccines/teens> or to call 800-CDC-INFO.

Note about syncope: For all vaccines given during adolescence, syncope has been reported in both boys and girls. To avoid serious injury related to a syncopal episode, adolescents should always be sitting or lying down to receive vaccines, remain so for 15 minutes, AND be observed during this time.

Overview of Adolescent Vaccination Recommendations

- All 11 or 12 year olds should receive a single dose of Tdap vaccine if they have completed the recommended childhood DTP/DTaP vaccination series and have not received Tdap
- All 11 or 12 year olds should receive a single dose of meningococcal vaccine, with a booster dose at age 16 years
- All girls 11 or 12 years old should get 3 doses of either HPV vaccine to protect against cervical cancer; All boys 11 or 12 years old should get 3 doses of quadrivalent HPV vaccine to protect against genital warts and anal cancer
- All adolescents should receive a single dose of influenza vaccine every year

Age ▶	7-10 YEARS	11-12 YEARS	13-18 YEARS
▼ Vaccine			
Tdap	Childhood Catch-up	Recommended	Catch-Up
HPV		Recommended	Catch-Up
MCV4	High-Risk	Recommended	Recommended
Flu	Recommended		



Tdap (tetanus toxoid - reduced diphtheria toxoid - acellular pertussis) Vaccine

Because immunity from childhood DTaP vaccines wanes by adolescence, a booster dose is recommended. **Of the nearly 17,000 cases of pertussis reported in the United States in 2009, 4265 occurred among 10- through 19-year-olds.** Increasing immunization rates among adolescents is an important strategy for reducing disease among both adolescents and infants too young to be fully immunized. According to the 2010 National Immunization Survey-Teen (NIS-Teen), about 69% of 13- through 17-year-olds received Tdap.

Recommendations:

- **All 11- through 18-year-olds should receive a single dose of Tdap vaccine (preferably at age 11 or 12 years) if they have completed the recommended childhood DTP/DTaP vaccination series and have not received Tdap.**
- Children aged 7 through 10 years and adolescents aged 11 through 18 years who did not complete the childhood DTaP series or with unknown vaccine history should be given one dose of Tdap as part of the catch-up regimen. Td should be used for any other doses needed.
- Tdap should be administered regardless of interval since the last tetanus or diphtheria toxoid-containing vaccine. While longer intervals between Td and Tdap vaccination could decrease the occurrence of local reactions, the benefits of protection against pertussis outweigh the potential risk for adverse events.
- Tdap vaccine can be administered at the same time as other adolescent vaccines.

Vaccines licensed in the United States:

- Boostrix® (GlaxoSmithKline) is indicated for active booster immunization for the prevention of tetanus, diphtheria and pertussis as a single dose in persons 10 through 64 years of age.
- Adacel® (sanofi pasteur) is indicated for active booster immunization for the prevention of tetanus, diphtheria and pertussis as a single dose in persons 11 through 64 years of age.

Possible side effects:

Pain, redness, swelling at the injection site; mild fever; headache; fatigue; nausea, vomiting, diarrhea, or stomach ache.

Contraindications and precautions:

- Tdap is contraindicated for persons with a history of serious allergic reaction (e.g., anaphylaxis) to any component of the vaccine.
- Tdap is contraindicated for adolescents with a history of encephalopathy (e.g., coma or prolonged seizures) not attributable to an identifiable cause within 7 days of administration of a vaccine with pertussis components. This contraindication is for the pertussis components and these adolescents should receive Td instead of Tdap.

Meningococcal Conjugate Vaccine (MCV4)

Although rates of meningococcal disease are the lowest they have ever been in the United States, about 1000 cases are reported each year in this country. Each case is alarming and potentially deadly. **The incidence of meningococcal disease increases in adolescence and early adulthood.** About 10-15% of adolescents who contract the disease will die, and about 20% will suffer from a long-term disability. According to the 2010 National Immunization Survey-Teen (NIS-Teen), about 63% of 13- through 17-year-olds received MCV4.

Recommendations:

- **All 11- or 12-year-olds should receive a single dose of meningococcal vaccine, with a booster dose at age 16 years.**
- For adolescents who receive the first dose at age 13 through 15 years, a one-time booster dose should be administered, preferably at age 16 through 18 years. Persons who receive their first dose of meningococcal conjugate vaccine at or after age 16 years do not need a booster dose.
- Adolescents with persistent complement component deficiencies (e.g., C5-C9, properdin, factor H, or factor D) and asplenia should receive a 2-dose primary series administered 2 months apart and then receive a booster dose every 5 years.
- Adolescents aged 11–18 years with HIV infection should be routinely vaccinated with a 2-dose primary series.
- Vaccination is also recommended for unvaccinated college freshmen who live in dormitories, and also for unvaccinated military recruits. Older adolescents, including college students, who wish to decrease their risk for meningococcal disease, may elect to receive meningococcal vaccine.
- Meningococcal vaccine can be administered at the same time as other adolescent vaccines.

Vaccines licensed in the United States:

- Menactra® (sanofi pasteur) is indicated for active immunization of persons 9 months through 55 years of age for the prevention of invasive meningococcal disease caused by *N. meningitidis* serogroups A, C, Y and W-135.
- Menveo® (Novartis) is indicated for active immunization of persons 2 through 55 years of age to prevent invasive meningococcal disease caused by *N. meningitidis* serogroups A, C, Y, and W-135.

Possible side effects:

The most commonly reported side effects are redness or pain at the injection site. A small percentage of recipients reported fever.

Contraindications and precautions:

- Meningococcal vaccine is contraindicated among persons known to have a severe allergic reaction to any component of the vaccine, including diphtheria toxoid, or to dry natural rubber latex.

Human Papillomavirus (HPV) Vaccine

Cervical cancer, caused by HPV, is one of the most common cancers in women—every year in the United States, about 12,000 women are diagnosed with cervical cancer, and about 4,000 women die from this disease. HPV types 16 and 18 are the most common high-risk types associated with cervical cancer, while HPV 6 and 11 are the most common low-risk types associated with genital and respiratory tract warts (recurrent respiratory papillomatosis or RRP). High-risk HPV types have also been associated with other, less common cancers and precancers in women, such as vulvar, vaginal, anal, oropharyngeal carcinomas and dysplasia. HPV-associated cancers in males include certain anal, penile, and oropharyngeal carcinomas and dysplasia.

According to the 2010 NIS-Teen, about 49% of 13- through 17-year-old girls have started an HPV vaccine series. However, only about 32% received all 3 doses. **Completing the 3-dose HPV vaccine series is very important to ensure protection against cervical cancer and other HPV-related disease.**

Vaccines licensed in the United States:

- Cervarix® is indicated for the prevention of cervical cancer and precancers caused by HPV types 16 and 18.
- Gardasil® is indicated for the prevention of cervical, vulvar, vaginal and anal cancers and precancers, as well as genital warts, caused by HPV types 6, 11, 16 and 18.

Recommendations:

- **All 11 or 12 year olds should receive 3 doses of HPV vaccine to protect against HPV-related disease.**
- **All girls 11 or 12 years old should get 3 doses of HPV vaccine to protect against cervical cancer.** Girls and young women ages 13 through 26 should get all 3 doses of an HPV vaccine if they have not yet received all doses. Both brands of vaccine are highly effective for preventing cervical cancer and precancer caused by HPV types 16 and 18. Gardasil also protects against anal cancer and genital warts.
- **All boys 11 or 12 years old should get 3 doses of quadrivalent HPV vaccine (Gardasil) to protect against genital warts and anal cancer.** Boys and young men 13 through 21 years, who did not get any or all of the three recommended doses when they were younger, should also get the HPV vaccine series. MSM and immunocompromised males should receive the vaccine through age 26 years, if they did not start or complete the vaccine series when they were younger.
- HPV vaccines are administered in a 3-dose schedule. The second dose should be administered 1 to 2 months after the first dose, and the third dose should be administered 6 months after the first dose. There is no maximum interval between doses. If the HPV vaccine schedule is interrupted, the vaccine series does not need to be restarted.
- Whenever feasible, the same brand of HPV vaccine should be used for the entire vaccination series. However, if the vaccine provider does not know which brand of vaccine was previously administered or have it available, either brand of HPV vaccine can be used to complete the series.

- Individuals will get the greatest benefit from the vaccine if it is administered before they have initiated *any* type of sexual activity with another person.
- Studies demonstrate that the risk for HPV infection is high immediately following sexual debut. It is also important to note that 1 in 5 women who have only had one lifetime sex partner have been infected with a high-risk HPV type.
- Vaccination is recommended for patients with HPV-related disease and/or apparent HPV infection because the vaccine can offer protection against infection with HPV vaccine types not already acquired. However, vaccination will not have a therapeutic effect on existing HPV infection or HPV-related disease.
- HPV vaccine can be administered at the same time as other adolescent vaccines.

Possible side effects:

Pain, headache, redness or swelling at the injection site are the most commonly reported side effects.

Contraindications and precautions:

- HPV vaccines are not recommended for use in pregnancy. If a patient is found to be pregnant after initiating the vaccination series, the remainder of the 3-dose series should be delayed until completion of pregnancy. However, if a vaccine dose has been administered during pregnancy, no intervention is needed. Clinicians should report exposure to Gardasil during pregnancy to Merck at 800-986-8999, and exposure to Cervarix during pregnancy to GlaxoSmithKline at 888-452-9622.
- HPV vaccines are contraindicated for persons with a history of immediate hypersensitivity to any vaccine component. Gardasil is contraindicated for persons with a history of immediate hypersensitivity to yeast. Prefilled syringes of Cervarix have latex in the rubber stopper and should not be used in persons with anaphylactic latex allergy. Cervarix single-dose vials contain no latex.

Influenza Vaccine

CDC recommends universal annual flu vaccination for everyone aged 6 months and older. Flu can be serious, and even fatal, for healthy adolescents, but pre-teens and teens with certain medical conditions are more likely to suffer from serious flu complications. Conditions that place people at high risk include chronic lung disease (such as asthma); heart disease; endocrine disorders (such as diabetes); blood disorders; neurological and neurodevelopmental conditions; kidney, liver, and metabolic disorders; and weakened immune systems due to disease or medication. Flu seasons are unpredictable and can be severe. Each year in the United States, more than 200,000 people are hospitalized from flu-related complications.

Annual influenza vaccination is the most effective method for preventing influenza virus infection and its complications since flu viruses are constantly changing. Protective immunity generally develops in 2 weeks after being vaccinated.

Vaccines Licensed in the United States:

- Trivalent Inactivated Influenza Vaccine (TIV) is given as an injection. It can be used for people 6 months of age or older, including healthy people, those with chronic medical conditions, and pregnant women. Brands licensed in the United States include Fluarix[®], Fluvirin[®], Fluzone[®], FluLaval[®], and Afluria[®].
- Live, Intranasal Influenza Vaccine (LAIV) is given as a nasal spray. It can be used for healthy people 2 through 49 years of age who are not pregnant. FluMist[®] is the only brand licensed in the United States.

Recommendations:

- **Adolescents should receive a single dose of influenza vaccine every year.**
- Influenza vaccine can be administered at the same time as other adolescent vaccines.

Possible side effects:

TIV (injection): Soreness, redness, or swelling at the injection site; hoarseness; sore, red or itchy eyes, cough; fever, aches. If these problems occur, they begin soon after the shot and usually last 1 to 2 days. TIV contains noninfectious killed viruses and cannot cause influenza.

LAIV (nasal spray): Runny nose, nasal congestion, or cough; fever; headache and muscle aches; wheezing; abdominal pain or occasional vomiting or diarrhea. LAIV contains weakened influenza viruses that cannot replicate outside the nasal passages and cannot cause influenza.

Contraindications and precautions:

- Influenza vaccines should not be administered to people who have anaphylactic hypersensitivity to eggs, unless the recipient has been desensitized.
- Moderate or severe acute illness with or without fever is a precaution for vaccination. People who are moderately or severely ill should not be vaccinated until they recover.
- GBS within 6 weeks following a previous dose of influenza vaccine is a precaution for use of influenza vaccines.
- LAIV (nasal spray) should not be administered to pregnant adolescents, adolescents with chronic medical conditions (including asthma, metabolic disease, or hemoglobinopathy) as well as adolescents receiving aspirin or other salicylates.

Catch-Up Vaccines for Adolescents

Pre-teens and teens should receive doses of these vaccines as indicated to complete each series:

- Hepatitis B vaccine (HepB): Complete the 3-dose series if not previously completed. Note: A 2-dose series (separated by at least 4 months) of Recombivax HB[®] is licensed for children aged 11 through 15 years.

- Varicella vaccine: Complete the 2-dose series if not previously completed, with at least 3 months between doses for persons aged 12 months through 12 years. (If the second dose was administered at least 28 days after the first dose, it can be accepted as valid.) For persons aged 13 years and older, the minimum interval between doses is 28 days.
- Inactivated poliovirus vaccine (IPV): The childhood series is 4 doses. However, only 3 doses are needed for pre-teens and teens who received their third dose after 4 years of age, as well as pre-teens and teens in your care who have not received any doses. In all cases, a minimum interval of 6 months is needed between the last two doses.
- Measles-mumps-rubella vaccine (MMR): Complete the 2-dose series if not previously completed, with at least 28 days between doses.

A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Refer to the CDC Catch-Up Immunization Schedule for more information.

Vaccine Information Statements

Vaccine Information Statements (VIS) are an excellent source of information for patients about the risks, benefits, and side effects of vaccines. **Federal law requires that VIS be given out before vaccines are administered.** To download any VIS, visit <http://www.cdc.gov/vaccines/pubs/vis/default.htm>

Vaccine Adverse Events Reporting System

Doctors and other health care professionals are encouraged to report any adverse events following administration of vaccines to the Vaccine Adverse Event Reporting System (VAERS), which is jointly administered by CDC and the U.S. Food and Drug Administration. Visit <http://vaers.hhs.gov> for more information or to file a report.

Vaccines for Children

The Vaccines for Children (VFC) program provides vaccines at no cost to professionals who serve eligible children. Children younger than 19 years of age are eligible for VFC vaccines if they are Medicaid-eligible, American Indian or Alaska Native or have no health insurance. Children who have health insurance that does not cover vaccination can receive VFC vaccines through Federally Qualified Health Centers or Rural Health Centers. VFC vaccines cannot be denied to an eligible child if a family can't afford the administration fee. For more information about participating in VFC, visit <http://www.cdc.gov/vaccines/programs/vfc/>

Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, UNITED STATES, 2018

- Consult relevant ACIP statements for detailed recommendations (www.cdc.gov/vaccines/hcp/acip-recs/index.html).
- When a vaccine is not administered at the recommended age, administer at a subsequent visit.
- Use combination vaccines instead of separate injections when appropriate.
- Report clinically significant adverse events to the Vaccine Adverse Event Reporting System (VAERS) online (www.vaers.hhs.gov) or by telephone (800-822-7967).
- Report suspected cases of reportable vaccine-preventable diseases to your state or local health department.
- For information about precautions and contraindications, see www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.

Approved by the

Advisory Committee on Immunization Practices
(www.cdc.gov/vaccines/acip)

American Academy of Pediatrics
(www.aap.org)

American Academy of Family Physicians
(www.aafp.org)

American College of Obstetricians and Gynecologists
(www.acog.org)

This schedule includes recommendations in effect as of January 1, 2018.

The table below shows vaccine acronyms, and brand names for vaccines routinely recommended for children and adolescents. The use of trade names in this immunization schedule is for identification purposes only and does not imply endorsement by the ACIP or CDC.

Vaccine type	Abbreviation	Brand(s)
Diphtheria, tetanus, and acellular pertussis vaccine	DTap	Daptacel Infanrix
Diphtheria, tetanus vaccine	DT	No Trade Name
<i>Haemophilus influenzae</i> type B vaccine	Hib (PRP-T)	ActHIB Hiberix PedvaxHIB
Hepatitis A vaccine	HepA	Havrix Vaqta
Hepatitis B vaccine	HepB	Engerix-B Recombivax HB
Human papillomavirus vaccine	HPV	Gardasil 9
Influenza vaccine (inactivated)	IIV	Multiple
Measles, mumps, and rubella vaccine	MMR	M-M-R-II
Meningococcal serogroups A, C, W, Y vaccine	MenACWY-D MenACWY-CRM	Menactra Menveo
Meningococcal serogroup B vaccine	MenB-4C MenB-FHbp	Bexsero Trumenba
Pneumococcal 13-valent conjugate vaccine	PCV13	Prevnar 13
Pneumococcal 23-valent polysaccharide vaccine	PPSV23	Pneumovax
Poliovirus vaccine (inactivated)	IPV	IPOl
Rotavirus vaccines	RV1 RV5	Rotarix RotaTeq
Tetanus, diphtheria, and acellular pertussis vaccine	Tdap	Adacel Boostrix
Tetanus and diphtheria vaccine	Td	Tenivac No Trade Name
Varicella vaccine	VAR	Varivax
Combination Vaccines		
DTap, hepatitis B and inactivated poliovirus vaccine	DTap-HepB-IPV	Pediarix
DTap, inactivated poliovirus and <i>Haemophilus influenzae</i> type B vaccine	DTap-IPV/Hib	Pentacel
DTap and inactivated poliovirus vaccine	DTap-IPV	Kinrix Quadricel
Measles, mumps, rubella, and varicella vaccines	MMRV	ProQuad



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Figure 1. Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger—United States, 2018.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE [FIGURE 2]).

These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are shaded in gray.

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	7-10 yrs	11-12 yrs	13-15 yrs	16 yrs	17-18 yrs
Hepatitis B ¹ (HepB)	1 st dose	2 nd dose	3 rd dose												
Rotavirus ² (RV) RV1 (2-dose series); RV5 (3-dose series)		1 st dose	2 nd dose	See footnote 2											
Diphtheria, tetanus, & acellular pertussis ³ (DTaP: <7 yrs)		1 st dose	2 nd dose	3 rd dose			4 th dose								
<i>Haemophilus influenzae</i> type b ⁴ (Hib)		1 st dose	2 nd dose	3 rd dose	See footnote 4		3 rd or 4 th dose, See footnote 4								
Pneumococcal conjugate ⁵ (PCV13)		1 st dose	2 nd dose	3 rd dose			4 th dose								
Inactivated poliovirus ⁶ (IPV: <18 yrs)		1 st dose	2 nd dose	3 rd dose			4 th dose								
Influenza ⁷ (IIV)							Annual vaccination (IIV) 1 or 2 doses						Annual vaccination (IIV) 1 dose only		
Measles, mumps, rubella ⁸ (MMR)					See footnote 8		1 st dose								
Varicella ⁹ (VAR)							1 st dose								
Hepatitis A ¹⁰ (HepA)							2-dose series, See footnote 10								
Meningococcal ¹¹ (MenACWY-D ≥9 mos; MenACWY-CRM ≥2 mos)						See footnote 11								1 st dose	2 nd dose
Tetanus, diphtheria, & acellular pertussis ¹³ (Tdap: ≥7 yrs)												Tdap			
Human papillomavirus ¹⁴ (HPV)												See footnote 14			
Meningococcal B ¹²												See footnote 12			
Pneumococcal polysaccharide ¹ (PPSV23)															See footnote 5

Range of recommended ages for all children
 Range of recommended ages for catch-up immunization
 Range of recommended ages for certain high-risk groups
 Range of recommended ages for non-high-risk groups that may receive vaccine, subject to individual clinical decision making
 No recommendation

NOTE: The above recommendations must be read along with the footnotes of this schedule.

FIGURE 2. Catch-up immunization schedule for persons aged 4 months–18 years who start late or who are more than 1 month behind—United States, 2018.

The figure below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. Always use this table in conjunction with Figure 1 and the footnotes that follow.

Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses				
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5	
Children age 4 months through 6 years						
Hepatitis B ¹	Birth	4 weeks	8 weeks and at least 16 weeks after first dose. Minimum age for the final dose is 24 weeks.	Dose 3 to Dose 4	Dose 4 to Dose 5	
Rotavirus ²	6 weeks Maximum age for first dose is 14 weeks, 6 days	4 weeks	4 weeks ² Maximum age for final dose is 8 months, 0 days.			
Diphtheria, tetanus, and acellular pertussis ³	6 weeks	4 weeks	4 weeks	6 months	6 months ³	
<i>Haemophilus influenzae</i> type b ⁴	6 weeks	4 weeks if first dose was administered before the 1 st birthday. 8 weeks (as final dose) if first dose was administered at age 12 through 14 months. No further doses needed if first dose was administered at age 15 months or older.	4 weeks ⁴ if current age is younger than 12 months and first dose was administered at younger than age 7 months; and at least 1 previous dose was PRP-T (ActHib, Pentacel, Hiberix) or unknown. 8 weeks and age 12 through 59 months (as final dose) ⁵ • if current age is younger than 12 months and first dose was administered at age 7 through 11 months; OR • if current age is 12 through 59 months and first dose was administered before the 1 st birthday, and second dose administered at younger than 15 months; OR • if both doses were PRP-OMP (PedvaxHib; Comvax) and were administered before the 1 st birthday. No further doses needed if previous dose was administered at age 15 months or older.	8 weeks (as final dose) This dose only necessary for children aged 12 through 59 months who received 3 doses before the 1 st birthday.		
Pneumococcal conjugate ⁶	6 weeks	4 weeks if first dose administered before the 1 st birthday. 8 weeks (as final dose for healthy children) if first dose was administered at the 1 st birthday or after. No further doses needed for healthy children if first dose was administered at age 24 months or older.	4 weeks if current age is younger than 12 months and previous dose given at <7 months old. 8 weeks (as final dose for healthy children) if previous dose given between 7-11 months (wait until at least 12 months old); OR if current age is 12 months or older and at least 1 dose was given before age 12 months. No further doses needed for healthy children if previous dose administered at age 24 months or older.	8 weeks (as final dose) This dose only necessary for children aged 12 through 59 months who received 3 doses before age 12 months or for children at high risk who received 3 doses at any age.		
Inactivated poliovirus ⁶	6 weeks	4 weeks ⁶	4 weeks ⁶ if current age is < 4 years 6 months (as final dose) if current age is 4 years or older	6 months ⁶ (minimum age 4 years for final dose).		
Measles, mumps, rubella ⁸	12 months	4 weeks				
Varicella ⁹	12 months	3 months				
Hepatitis A ¹⁰	12 months	6 months				
Meningococcal ¹¹ (MenACWY-D ≥9 mos; MenACWY-CRM ≥2 mos)	6 weeks	8 weeks ¹¹	See footnote 11	See footnote 11		
Children and adolescents age 7 through 18 years						
Meningococcal ¹¹ (MenACWY-D ≥9 mos; MenACWY-CRM ≥2 mos)	Not Applicable (N/A)	8 weeks ¹¹				
Tetanus, diphtheria, tetanus, diphtheria, and acellular pertussis ³	7 years ¹³	4 weeks	4 weeks if first dose of DTap/DT was administered before the 1 st birthday. 6 months (as final dose) if first dose of DTap/DT or Tdap/Td was administered at or after the 1 st birthday. Routine dosing intervals are recommended. ¹⁴	6 months if first dose of DTap/DT was administered before the 1 st birthday.		
Human papillomavirus ¹⁴	9 years					
Hepatitis A ¹⁰	N/A	6 months				
Hepatitis B ¹	N/A	4 weeks	8 weeks and at least 16 weeks after first dose.			
Inactivated poliovirus ⁶	N/A	4 weeks	6 months ⁶ A fourth dose is not necessary if the third dose was administered at age 4 years or older and at least 6 months after the previous dose.	A fourth dose of IPV is indicated if all previous doses were administered at <4 years or if the third dose was administered <6 months after the second dose.		
Measles, mumps, rubella ⁸	N/A	4 weeks				
Varicella ⁹	N/A	3 months if younger than age 13 4 weeks if age 13 years or older.				

NOTE: The above recommendations must be read along with the footnotes of this schedule.

Figure 3. Vaccines that might be indicated for children and adolescents aged 18 years or younger based on medical indications

VACCINE ▼	INDICATION ▶	Pregnancy	Immunocompromised status (excluding HIV infection)	HIV infection CD4+ count ¹		Kidney failure, end-stage renal disease, on hemodialysis	Heart disease, chronic lung disease	CSF leaks/cochlear implants	Asplenia and persistent complement component deficiencies	Chronic liver disease	Diabetes
				<15% or total CD4 cell count of <200/mm ³	≥15% or total CD4 cell count of ≥200/mm ³						
Hepatitis B ¹											
Rotavirus ²			SCID*								
Diphtheria, tetanus, & acellular pertussis ³ (DTaP)											
<i>Haemophilus influenzae</i> type b ⁴											
Pneumococcal conjugate ⁵											
Inactivated poliovirus ⁶											
Influenza ⁷											
Measles, mumps, rubella ⁸											
Varicella ⁹											
Hepatitis A ¹⁰											
Meningococcal ACWY ¹¹											
Tetanus, diphtheria, & acellular pertussis ¹³ (Tdap)											
Human papillomavirus ¹⁴											
Meningococcal B ¹²											
Pneumococcal polysaccharide ⁵											

Vaccination according to the routine schedule recommended
 Recommended for persons with an additional risk factor for which the vaccine would be indicated
 Vaccination is recommended, and additional doses may be necessary based on medical condition. See footnotes.
 No recommendation
 Contraindicated
 Precaution for vaccination

*Severe Combined Immunodeficiency
 For additional information regarding HIV laboratory parameters and use of live vaccines: see the General Best Practice Guidelines for Immunization "Altered Immunocompetence" at: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.
 For additional information regarding HIV laboratory parameters and use of live vaccines: see the General Best Practice Guidelines for Immunization "Altered Immunocompetence" at: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html.
NOTE: The above recommendations must be read along with the footnotes of this schedule.

Footnotes — Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, UNITED STATES, 2018
 For further guidance on the use of the vaccines mentioned below, see: www.cdc.gov/vaccines/hcp/acip-recs/index.html.
 For vaccine recommendations for persons 19 years of age and older, see the Adult Immunization Schedule.

Additional information

- For information on contraindications and precautions for the use of a vaccine, consult the *General Best Practice Guidelines for Immunization* and relevant ACIP statements, at www.cdc.gov/vaccines/hcp/acip-recs/index.html.
- For calculating intervals between doses, 4 weeks = 28 days. Intervals of ≥ 4 months are determined by calendar months.
- Within a number range (e.g., 12–18), a dash (–) should be read as “through.”
- Vaccine doses administered ≤ 4 days before the minimum age or interval are considered valid. Doses of any vaccine administered ≥ 5 days earlier than the minimum interval or minimum age should not be counted as valid and should be repeated as age-appropriate. The repeat dose should be spaced after the invalid dose by the recommended minimum interval. For further details, see Table 3–1, *Recommended and minimum ages and intervals between vaccine doses*, in *General Best Practice Guidelines for Immunization* at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/timing.html.
- Information on travel vaccine requirements and recommendations is available at wwwnc.cdc.gov/travel/.
- For vaccination of persons with immunodeficiencies, see Table 8–1, *Vaccination of persons with primary and secondary immunodeficiencies*, in *General Best Practice Guidelines for Immunization*, at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html; and Immunization in Special Clinical Circumstances. (In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2015 report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics, 2015:68–107).
- The National Vaccine Injury Compensation Program (VICP) is a no-fault alternative to the traditional legal system for resolving vaccine injury claims. All routine child and adolescent vaccines are covered by VICP except for pneumococcal polysaccharide vaccine (PPSV23). For more information; see www.hrsa.gov/vaccinecompensation/index.html.

1. Hepatitis B (HepB) vaccine. (minimum age: birth)

Birth Dose (Monovalent HepB vaccine only):

- **Mother is HBsAg-Negative:** 1 dose within 24 hours of birth for medically stable infants $\geq 2,000$ grams. Infants $< 2,000$ grams administer 1 dose at chronological age 1 month or hospital discharge.
 - **Mother is HBsAg-Positive:**
 - o Give **HepB vaccine** and **0.5 mL of HBIG** (at separate anatomic sites) within 12 hours of birth, regardless of birth weight.
 - o Test for HBsAg and anti-HBs at age 9–12 months. If HepB series is delayed, test 1–2 months after final dose.
 - **Mother’s HBsAg status is unknown:**
 - o Give **HepB vaccine** within 12 hours of birth, regardless of birth weight.
 - o For infants $< 2,000$ grams, give **0.5 mL of HBIG** in addition to HepB vaccine within 12 hours of birth.
 - o Determine mother’s HBsAg status as soon as possible. If mother is HBsAg-positive, give **0.5 mL of HBIG** to infants $\geq 2,000$ grams as soon as possible, but no later than 7 days of age.
- Routine Series:**
- A complete series is 3 doses at 0, 1–2, and 6–18 months. (Monovalent HepB vaccine should be used for doses given before age 6 weeks.)

- Infants who did not receive a birth dose should begin the series as soon as feasible (see Figure 2).

- Administration of **4 doses** is permitted when a combination vaccine containing HepB is used after the birth dose.
- **Minimum age** for the final (3rd or 4th) dose: 24 weeks.
- **Minimum Intervals:** Dose 1 to Dose 2: 4 weeks / Dose 2 to Dose 3: 8 weeks / Dose 1 to Dose 3: 16 weeks. (When 4 doses are given, substitute “Dose 4” for “Dose 3” in these calculations.)

Catch-up vaccination:

- Unvaccinated persons should complete a 3-dose series at 0, 1–2, and 6 months.
- Adolescents 11–15 years of age may use an alternative 2-dose schedule, with at least 4 months between doses (adult formulation **Recombivax HB** only).
- For other catch-up guidance, see Figure 2.

2. Rotavirus vaccines. (minimum age: 6 weeks)

Routine vaccination:

- **Rotarix:** 2-dose series at 2 and 4 months.
 - **RotaTeq:** 3-dose series at 2, 4, and 6 months.
- If any dose in the series is either RotaTeq or unknown, default to 3-dose series.

Catch-up vaccination:

- Do not start the series on or after age 15 weeks, 0 days.
- The maximum age for the final dose is 8 months, 0 days.
- For other catch-up guidance, see Figure 2.

3. Diphtheria, tetanus, and acellular pertussis (DTaP) vaccine. (minimum age: 6 weeks [4 years for Kinrix or Quadracel])

Routine vaccination:

- 5-dose series at 2, 4, 6, and 15–18 months, and 4–6 years.
 - o **Prospectively:** A 4th dose may be given as early as age 12 months if at least 6 months have elapsed since the 3rd dose.
 - o **Retrospectively:** A 4th dose that was inadvertently given as early as 12 months may be counted if at least 4 months have elapsed since the 3rd dose.

Catch-up vaccination:

- The 5th dose is not necessary if the 4th dose was administered at 4 years or older.
- For other catch-up guidance, see Figure 2.

For further guidance on the use of the vaccines mentioned below, see: www.cdc.gov/vaccines/hcp/acip-recs/index.html.

4. ***Haemophilus influenzae* type b (Hib) vaccine.**

(minimum age: 6 weeks)

Routine vaccination:

- **ActHIB, Hiberix, or Pentacel:** 4-dose series at 2, 4, 6, and 12–15 months.
- **PedvaxHIB:** 3-dose series at 2, 4, and 12–15 months.

Catch-up vaccination:

- **1st dose at 7–11 months:** Give 2nd dose at least 4 weeks later and 3rd (final) dose at 12–15 months or 8 weeks after 2nd dose (whichever is later).
- **1st dose at 12–14 months:** Give 2nd (final) dose at least 8 weeks after 1st dose.
- **1st dose before 12 months and 2nd dose before 15 months:** Give 3rd (final) dose 8 weeks after 2nd dose.
- **2 doses of PedvaxHIB before 12 months:** Give 3rd (final) dose at 12–59 months and at least 8 weeks after 2nd dose.
- **Unvaccinated at 15–59 months:** 1 dose.
- For other catch-up guidance, see Figure 2.

Special Situations:

- **Chemotherapy or radiation treatment**

12–59 months

- o Unvaccinated or only 1 dose before 12 months: Give 2 doses, 8 weeks apart
- o 2 or more doses before 12 months: Give 1 dose, at least 8 weeks after previous dose.

Doses given within 14 days of starting therapy or during therapy should be repeated at least 3 months after therapy completion.

- **Hematopoietic stem cell transplant (HSCT)**
- 3-dose series with doses 4 weeks apart starting 6 to 12 months after successful transplant (regardless of Hib vaccination history).
- **Anatomic or functional asplenia (including sickle cell disease)**
12–59 months
 - o Unvaccinated or only 1 dose before 12 months: Give 2 doses, 8 weeks apart.
 - o 2 or more doses before 12 months: Give 1 dose, at least 8 weeks after previous dose.

Unimmunized* persons 5 years or older

 - o Give 1 dose
- **Elective splenectomy**
Unimmunized* persons 15 months or older
 - o Give 1 dose (preferably at least 14 days before procedure).

- **HIV infection**

12–59 months

- o Unvaccinated or only 1 dose before 12 months: Give 2 doses 8 weeks apart.
- o 2 or more doses before 12 months: Give 1 dose, at least 8 weeks after previous dose.

Unimmunized* persons 5–18 years

- o Give 1 dose

- **Immunoglobulin deficiency, early component complement deficiency**

12–59 months

- o Unvaccinated or only 1 dose before 12 months: Give 2 doses, 8 weeks apart.
 - o 2 or more doses before 12 months: Give 1 dose, at least 8 weeks after previous dose.
- *Unimmunized = Less than routine series (through 14 months) OR no doses (14 months or older)*

- 5. **Pneumococcal vaccines. (minimum age: 6 weeks [PCV13], 2 years [PPSV23])**

Routine vaccination with PCV13:

- 4-dose series at 2, 4, 6, and 12–15 months.

Catch-up vaccination with PCV13:

- 1 dose for healthy children aged 24–59 months with any incomplete* PCV13 schedule
- For other catch-up guidance, see Figure 2.

Special situations: High-risk conditions:

Administer PCV13 doses before PPSV23 if possible.

Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma treated with high-dose, oral, corticosteroids); diabetes mellitus:

Age 2–5 years:

- Any incomplete* schedules with:
 - o 3 PCV13 doses: 1 dose of PCV13 (at least 8 weeks after any prior PCV13 dose).
 - o <3 PCV13 doses: 2 doses of PCV13, 8 weeks after the most recent dose and given 8 weeks apart.

- No history of PPSV23: 1 dose of PPSV23 (at least 8 weeks after any prior PCV13 dose).

Age 6–18 years:

- No history of PPSV23: 1 dose of PPSV23 (at least 8 weeks after any prior PCV13 dose).

Cerebrospinal fluid leak; cochlear implant:

Age 2–5 years:

- Any incomplete* schedules with:
 - o 3 PCV13 doses: 1 dose of PCV13 (at least 8 weeks after any prior PCV13 dose).
 - o <3 PCV13 doses: 2 doses of PCV13, 8 weeks after the most recent dose and given 8 weeks apart.
- No history of PPSV23: 1 dose of PPSV23 (at least 8 weeks after any prior PCV13 dose).

Age 6–18 years:

- No history of either PCV13 or PPSV23: 1 dose of PCV13, 1 dose of PPSV23 at least 8 weeks later.
- Any PCV13 but no PPSV23: 1 dose of PPSV23 at least 8 weeks after the most recent dose of PCV13
- PPSV23 but no PCV13: 1 dose of PCV13 at least 8 weeks after the most recent dose of PPSV23.

Sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; congenital or acquired immunodeficiency; HIV infection; chronic renal failure; nephrotic syndrome; malignant neoplasms, leukemias, lymphomas, Hodgkin disease, and other diseases associated with treatment with immunosuppressive drugs or radiation therapy; solid organ transplantation; multiple myeloma:

Age 2–5 years:

- Any incomplete* schedules with:
 - o 3 PCV13 doses: 1 dose of PCV13 (at least 8 weeks after any prior PCV13 dose).
 - o <3 PCV13 doses: 2 doses of PCV13, 8 weeks after the most recent dose and given 8 weeks apart.
- No history of PPSV23: 1 dose of PPSV23 (at least 8 weeks after any prior PCV13 dose) and a 2nd dose of PPSV23 5 years later.

Age 6–18 years:

- No history of either PCV13 or PPSV23: 1 dose of PCV13, 2 doses of PPSV23 (1st dose of PPSV23 administered 8 weeks after PCV13 and 2nd dose of PPSV23 administered at least 5 years after the 1st dose of PPSV23).
- Any PCV13 but no PPSV23: 2 doses of PPSV23 (1st dose of PPSV23 to be given 8 weeks after the most recent dose of PCV13 and 2nd dose of PPSV23 administered at least 5 years after the 1st dose of PPSV23).

For further guidance on the use of the vaccines mentioned below, see: www.cdc.gov/vaccines/hcp/acip-recs/index.html.

- PPSV23 but no PCV13: 1 dose of PCV13 at least 8 weeks after the most recent PPSV23 dose and a 2nd dose of PPSV23 to be given 5 years after the 1st dose of PPSV23 and at least 8 weeks after a dose of PCV13.

Chronic liver disease, alcoholism:

- **Age 6–18 years:**
 - No history of PPSV23: 1 dose of PPSV23 (at least 8 weeks after any prior PCV13 dose).

*Incomplete schedules are any schedules where PCV13 doses have not been completed according to ACIP recommended catch-up schedules. The total number and timing of doses for complete PCV13 series are dictated by the age at first vaccination. See Tables 8 and 9 in the ACIP pneumococcal vaccine recommendations (www.cdc.gov/mmwr/pdf/rr/rr5911.pdf) for complete schedule details.

6. Inactivated poliovirus vaccine (IPV). (minimum age: 6 weeks)

Routine vaccination:

- 4-dose series at ages 2, 4, 6–18 months, and 4–6 years. Administer the final dose on or after the 4th birthday and at least 6 months after the previous dose.

Catch-up vaccination:

- In the first 6 months of life, use minimum ages and intervals only for travel to a polio-endemic region or during an outbreak.
- If 4 or more doses were given before the 4th birthday, give 1 more dose at age 4–6 years and at least 6 months after the previous dose.
- A 4th dose is not necessary if the 3rd dose was given on or after the 4th birthday and at least 6 months after the previous dose.
- IPV is not routinely recommended for U.S. residents 18 years and older.

Series Containing Oral Polio Vaccine (OPV), either mixed OPV-IPV or OPV-only series:

- Total number of doses needed to complete the series is the same as that recommended for the U.S. IPV schedule. See www.cdc.gov/mmwr/volumes/66/wr/mm6601a6.htm?s_cid=mm6601a6_w.
- Only trivalent OPV (tOPV) counts toward the U.S. vaccination requirements. For guidance to assess doses documented as “OPV” see www.cdc.gov/mmwr/volumes/66/wr/mm6606a7.htm?s_cid=mm6606a7_w.
- For other catch-up guidance, see Figure 2.

7. Influenza vaccines. (minimum age: 6 months)

Routine vaccination:

- Administer an age-appropriate formulation and dose of influenza vaccine annually.
 - **Children 6 months–8 years** who did not receive at least 2 doses of influenza vaccine before July 1, 2017 should receive 2 doses separated by at least 4 weeks.

- **Persons 9 years and older** 1 dose
- Live attenuated influenza vaccine (LAIV) not recommended for the 2017–18 season.
- For additional guidance, see the 2017–18 ACIP influenza vaccine recommendations (*MMWR* August 25, 2017;66(2):1–20: www.cdc.gov/mmwr/volumes/66/rr/pdfs/rr6602.pdf).

(For the 2018–19 season, see the 2018–19 ACIP influenza vaccine recommendations.)

8. Measles, mumps, and rubella (MMR) vaccine. (minimum age: 12 months for routine vaccination)

Routine vaccination:

- 2-dose series at 12–15 months and 4–6 years.
- The 2nd dose may be given as early as 4 weeks after the 1st dose.

Catch-up vaccination:

- Unvaccinated children and adolescents: 2 doses at least 4 weeks apart.

International travel:

- **Infants 6–11 months:** 1 dose before departure. Revaccinate with 2 doses at 12–15 months (12 months for children in high-risk areas) and 2nd dose as early as 4 weeks later.
- **Unvaccinated children 12 months and older:** 2 doses at least 4 weeks apart before departure.

Mumps outbreak:

- Persons \geq 12 months who previously received \leq 2 doses of mumps-containing vaccine and are identified by public health authorities to be at increased risk during a mumps outbreak should receive a dose of mumps-virus containing vaccine.

9. Varicella (VAR) vaccine. (minimum age: 12 months)

Routine vaccination:

- 2-dose series: 12–15 months and 4–6 years.
- The 2nd dose may be given as early as 3 months after the 1st dose (a dose given after a 4-week interval may be counted).

Catch-up vaccination:

- Ensure persons 7–18 years without evidence of immunity (see *MMWR* 2007;56[No. RR-4], at www.cdc.gov/mmwr/pdf/rr/rr5604.pdf) have 2 doses of varicella vaccine:
 - **Ages 7–12:** routine interval 3 months (minimum interval: 4 weeks).
 - **Ages 13 and older:** minimum interval 4 weeks.

10. Hepatitis A (HepA) vaccine. (minimum age: 12 months)

Routine vaccination:

- 2 doses, separated by 6–18 months, between the 1st and 2nd birthdays. (A series begun before the 2nd birthday should be completed even if the child turns 2 before the second dose is given.)

Catch-up vaccination:

- Anyone 2 years of age or older may receive HepA vaccine if desired. Minimum interval between doses is 6 months.

Special populations:

- Previously unvaccinated persons who should be vaccinated:
 - Persons traveling to or working in countries with high or intermediate endemicity
 - Men who have sex with men
 - Users of injection and non-injection drugs
 - Persons who work with hepatitis A virus in a research laboratory or with non-human primates
 - Persons with clotting-factor disorders
 - Persons with chronic liver disease
 - Persons who anticipate close, personal contact (e.g., household or regular babysitting) with an international adoptee during the first 60 days after arrival in the United States from a country with high or intermediate endemicity (administer the 1st dose as soon as the adoption is planned—ideally at least 2 weeks before the adoptee’s arrival).

11. Serogroup A, C, W, Y meningococcal vaccines. (Minimum age: 2 months [Menveo], 9 months [Menactra]).

Routine:

- 2-dose series: 11–12 years and 16 years.

Catch-Up:

- Age 13–15 years: 1 dose now and booster at age 16–18 years. Minimum interval 8 weeks.
- Age 16–18 years: 1 dose.

For further guidance on the use of the vaccines mentioned below, see: www.cdc.gov/vaccines/hcp/acip-recs/index.html.

Special populations and situations:

Anatomic or functional asplenia, sickle cell disease, HIV infection, persistent complement component deficiency (including eculizumab use):

- **Menveo**
 - o 1st dose at 8 weeks: 4-dose series at 2, 4, 6, and 12 months.
 - o 1st dose at 7–23 months: 2 doses (2nd dose at least 12 weeks after the 1st dose and after the 1st birthday).
 - o 1st dose at 24 months or older: 2 doses at least 8 weeks apart.
- **Menactra**
 - o Persistent complement component deficiency:
 - 9–23 months: 2 doses at least 12 weeks apart
 - 24 months or older: 2 doses at least 8 weeks apart
 - o Anatomic or functional asplenia, sickle cell disease, or HIV infection:
 - 24 months or older: 2 doses at least 8 weeks apart.
 - **Menactra** must be administered at least 4 weeks after completion of PCV13 series.

Children who travel to or live in countries where meningococcal disease is hyperendemic or epidemic, including countries in the African meningitis belt or during the Hajj, or exposure to an outbreak attributable to a vaccine serogroup:

- Children <24 months of age:
 - o **Menveo (2-23 months):**
 - 1st dose at 8 weeks: 4-dose series at 2, 4, 6, and 12 months.
 - 1st dose at 7–23 months: 2 doses (2nd dose at least 12 weeks after the 1st dose and after the 1st birthday).
 - o **Menactra (9-23 months):**
 - 2 doses (2nd dose at least 12 weeks after the 1st dose. 2nd dose may be administered as early as 8 weeks after the 1st dose in travelers).
- Children 2 years or older: 1 dose of **Menveo** or **Menactra**.

Note: **Menactra** should be given either before or at the same time as DTaP. For MenACWY booster dose recommendations for groups listed under “Special populations and situations” above, and additional meningococcal vaccination information, see meningococcal *MMWR* publications at: www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html.

12. Serogroup B meningococcal vaccines (minimum age: 10 years [Bexsero, Trumenba]).

Clinical discretion: Adolescents not at increased risk for meningococcal B infection who want MenB vaccine.

MenB vaccines may be given at clinical discretion to adolescents 16–23 years (preferred age 16–18 years) who are not at increased risk.

- **Bexsero:** 2 doses at least 1 month apart.
- **Trumenba:** 2 doses at least 6 months apart. If the 2nd dose is given earlier than 6 months, give a 3rd dose at least 4 months after the 2nd.

Special populations and situations:

Anatomic or functional asplenia, sickle cell disease, persistent complement component deficiency (including eculizumab use), serogroup B meningococcal disease outbreak

- **Bexsero:** 2-dose series at least 1 month apart.
- **Trumenba:** 3-dose series at 0, 1–2, and 6 months.

Note: **Bexsero** and **Trumenba** are not interchangeable.

For additional meningococcal vaccination information, see meningococcal *MMWR* publications at: www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html.

13. Tetanus, diphtheria, and acellular pertussis (Tdap) vaccine. (minimum age: 11 years for routine vaccinations, 7 years for catch-up vaccination)

Routine vaccination:

- **Adolescents 11–12 years of age:** 1 dose.
- **Pregnant adolescents:** 1 dose during each pregnancy (preferably during the early part of gestational weeks 27–36).
- Tdap may be administered regardless of the interval since the last tetanus- and diphtheria-toxoid-containing vaccine.

Catch-up vaccination:

- **Adolescents 13–18 who have not received Tdap:** 1 dose, followed by a Td booster every 10 years.
- **Persons aged 7–18 years not fully immunized with DTaP:** 1 dose of Tdap as part of the catch-up series (preferably the first dose). If additional doses are needed, use Td.

- **Children 7–10 years** who receive Tdap inadvertently or as part of the catch-up series may receive the routine Tdap dose at 11–12 years.
- **DTaP inadvertently given after the 7th birthday:**
 - o **Child 7–10:** DTaP may count as part of catch-up series. Routine Tdap dose at 11–12 may be given.
 - o **Adolescent 11–18:** Count dose of DTaP as the adolescent Tdap booster.
- For other catch-up guidance, see Figure 2.

14. Human papillomavirus (HPV) vaccine (minimum age: 9 years)

Routine and catch-up vaccination:

- Routine vaccination for all adolescents at 11–12 years (can start at age 9) and through age 18 if not previously adequately vaccinated. Number of doses dependent on age at initial vaccination:
 - o **Age 9–14 years at initiation:** 2-dose series at 0 and 6–12 months. Minimum interval: 5 months (repeat a dose given too soon at least 12 weeks after the invalid dose and at least 5 months after the 1st dose).
 - o **Age 15 years or older at initiation:** 3-dose series at 0, 1–2 months, and 6 months. Minimum intervals: 4 weeks between 1st and 2nd dose; 12 weeks between 2nd and 3rd dose; 5 months between 1st and 3rd dose (repeat dose(s) given too soon at or after the minimum interval since the most recent dose).
- Persons who have completed a valid series with any HPV vaccine do not need any additional doses.

Special situations:

- **History of sexual abuse or assault:** Begin series at age 9 years.
- **Immunocompromised* (including HIV) aged 9–26 years:** 3-dose series at 0, 1–2 months, and 6 months.
- **Pregnancy:** Vaccination not recommended, but there is no evidence the vaccine is harmful. No intervention is needed for women who inadvertently received a dose of HPV vaccine while pregnant. Delay remaining doses until after pregnancy. Pregnancy testing not needed before vaccination.

*See *MMWR*, December 16, 2016;65(49):1405–1408, at www.cdc.gov/mmwr/volumes/65/wr/pdfs/mm6549a5.pdf.

Talking to Parents about HPV Vaccine

Recommend HPV vaccination in the **same way** and on the **same day** as all adolescent vaccines. You can say, *“Now that your son is 11, he is due for vaccinations today to help protect him from meningitis, HPV cancers, and pertussis.”* Remind parents of the follow-up shots their child will need and ask them to make appointments before they leave.

Why does my child need HPV vaccine?

HPV vaccine is important because it prevents infections that can cause cancer. That's why we need to start the shot series today.

Is my child really at risk for HPV?

HPV is a very common infection in women and men that can cause cancer. Starting the vaccine series today will help protect your child from the cancers and diseases caused by HPV.

Why do they need HPV vaccine at such a young age?

Like all vaccines, we want to give HPV vaccine earlier rather than later. If you wait, your child may need three shots instead of two.

I'm worried about the safety of HPV vaccine. Do you think it's safe?

Yes, HPV vaccination is very safe. Like any medication, vaccines can cause side effects, including pain, swelling, or redness where the shot was given. That's normal for HPV vaccine too and should go away in a day or two.

Sometimes kids faint after they get shots and they could be injured if they fall from fainting. We'll protect your child by having them stay seated after the shot.

Would you get HPV vaccine for your kids?

Yes, I gave HPV vaccine to my child (or grandchild, etc.) when he was 11, because it's important for preventing cancer.

Why do boys need HPV vaccine?

HPV vaccination can help prevent future infection that can lead to cancers of the penis, anus, and back of the throat in men.

What diseases are caused by HPV?

Some HPV infections can cause cancer—like cancer of the cervix or in the back of the throat—but we can protect your child from these cancers in the future by getting the first HPV shot today.

How do you know the vaccine works?

Studies continue to prove HPV vaccination works extremely well, decreasing the number of infections and HPV precancers in young people since it has been available.

I'm worried my child will think that getting this vaccine makes it OK to have sex.

Studies tell us that getting HPV vaccine doesn't make kids more likely to start having sex. I recommend we give your child her first HPV shot today.

Can HPV vaccine cause infertility in my child?

There is no known link between HPV vaccination and the inability to have children in the future. However, women who develop an HPV precancer or cancer could require treatment that would limit their ability to have children.

What vaccines are actually required?

I strongly recommend each of these vaccines and so do experts at the CDC and major medical organizations. School entry requirements are developed for public health and safety, but don't always reflect the most current medical recommendations for your child's health.



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

HPV VACCINE
IS CANCER PREVENTION

Human papillomavirus (HPV) is a virus that can lead to genital warts and various forms of cancer, including those of the cervix and other reproductive organs as well as cancers of the head and neck. HPV is the most common sexually transmitted infection in the United States and around the world; in fact, each year, about 300,000 women die from cervical cancer caused by HPV.

Q. What is human papillomavirus?

A. Human papillomavirus (HPV) is a family of viruses that commonly infect the genital area and lining of the cervix. Some types of HPV infect the genital areas of men and women, causing warts. Genital warts can be unsightly and emotionally debilitating. Other types of HPV cause cervical cancer, as well as other cancers of the reproductive organs. On occasion, HPV infections can lead to cancers of the head and neck.

Q. How common is HPV?

A. HPV is the most common sexually transmitted infection in the United States and around the world. More than half of sexually active people will be infected with HPV at some time in their lives. Twenty million Americans are currently infected with HPV, and another 6 million become infected every year. Half of those newly infected with HPV are between 15 and 24 years of age.

Q. Is HPV dangerous?

A. Yes. Most of the time, HPV goes away on its own and doesn't cause any health problems. But sometimes HPV can linger and lead to cancer. Every year in the United States, approximately 39,000 men and women develop cancers caused by HPV. Cervical cancer is one of the most common cancers in women, killing about 300,000 every year worldwide.

Q. How do you get HPV? How can you avoid it?

A. HPV in the genital area is passed from one person to another through genital contact, most often, but not always, during sex. The best way to avoid HPV infection is to abstain from any sexual activity. You can also lower your chance of getting HPV by having sex with only one person who isn't infected with HPV. But most people who have HPV don't know they have it, so it can be hard to avoid. Although condoms are recommended as a way of decreasing sexually transmitted infections, they don't offer complete protection against HPV.

Q. Can't women avoid cervical cancer by getting routine Pap tests?

A. Not always. Once, cervical cancer was the most common cause of U.S. cancer deaths. The Pap test changed that. HPV infection causes changes in the cervix that can result in cancer. The Pap test is performed by scraping cells from the cervix and examining them to see whether they show changes consistent with the early development of cancer (called precancerous changes). If these changes are detected, the doctor can perform surgery on the affected areas before cancer develops. Typically, the length of time from infection with HPV to development of cervical cancer is decades. So, although most HPV infections occur in teenagers and young adults, cervical cancer is more common in women during their 40s and 50s.

The Pap test is one of the most effective cancer screening tests and has dramatically reduced the incidence of cervical cancer in the United States. But the test isn't entirely predictive of cancer, and not all women get tested as often as they should. Further, the Pap test will not detect cancer caused by HPV in areas other than the cervix.

Q. Is there a vaccine to prevent HPV?

A. Yes. Gardasil® 9, protects against nine types of HPV. Studies in thousands of girls and young women found the vaccine to be safe and effective in preventing persistent infections caused by HPV. Studies in boys and young men found that the HPV vaccine was safe and prevented anal and genital warts. The vaccine is given as a series of two or three shots depending on the age of the recipient. Those who are younger than 15 years old should get two doses separated by 6 to 12 months. Those 15 years and older or any recipient with a compromised immune system should get three doses. The second shot should be given one or two months after the first, and the third shot, six months after the first.



more ▶

Human Papillomavirus: What you should know

Q. Who should get the HPV vaccine?

A. The HPV vaccine is recommended for all boys and girls between 11 and 12 years of age. The vaccine can be given to those as young as 9 years of age. It is also recommended for all teenagers and adults between 13 and 26 years of age if they did not get the vaccine when they were younger. Some people wonder why boys are recommended to get the HPV vaccine. First, because boys can get genital warts as well as cancer caused by HPV, they benefit



from receiving the HPV vaccine; in fact, about one-third of the cancers caused by HPV occur in males. Second, by immunizing boys, they will be less likely to transmit the virus to their sexual partners. Although studies in boys lagged behind those in girls, the vaccine has now been shown to be safe and effective in boys as well.

Q. Why is the vaccine recommended for adolescents when it protects against a sexually transmitted disease?

A. Although most 11- and 12-year-olds are not sexually active, it is important to get the vaccine at that age for a few reasons. First, studies have shown that the vaccine is more protective when it is received at an earlier age. Second, in order to have the best protection, all doses should be completed before sexual activity begins and the series takes at least six months to complete. Third, logistically, teens get busier as they get older, so it is often easier to get the doses completed at the younger age. Finally, because studies indicate that the protection is long-lasting, delaying the vaccine provides no benefit and only increases the risk of cancer.

Q. How is the HPV vaccine made?

A. The HPV vaccine is made using a protein from the surface of nine types of HPV virus that most commonly cause either cancers or genital warts.

Q. Is the HPV vaccine safe?

A. Yes. Because the HPV vaccine is made using only a single protein from each type of the virus, it can't cause HPV and, therefore, can't cause cervical cancer or other cancers. The most common side effect of the vaccine is redness and tenderness at the injection site. The vaccine may also cause a slight fever. Because people of the age group recommended to get the HPV vaccine might faint, it is recommended they remain at the doctor's office for about 15 minutes after receiving this or other vaccines. Although adverse events such as blood clots, neurological damage and death have been reported following receipt of the HPV vaccine, scientific studies have found these events were not caused by the vaccine.

Q. Do young women who get the HPV vaccine still need to get Pap tests?

A. Yes. Because the HPV vaccine does not protect against all HPV types that cause cervical cancer, women should continue to be screened with routine Pap tests.

Q. Do women who have received the HPV vaccine still need to worry about sexually transmitted infections?

A. Yes. The HPV vaccine does not prevent other sexually transmitted infections such as syphilis, gonorrhea, chlamydia and herpes. Also, the vaccine doesn't protect against all HPV types.

Q. Do people immunized with older versions of the HPV vaccine (HPV2 or HPV4) need to get the HPV9 vaccine?

A. At this time, additional doses of the vaccine are not routinely recommended by the CDC. However, those who decide to get HPV9 following completion of HPV2 or HPV4 will be protected against five additional serotypes that cause several thousand cases of cancer and several hundred deaths every year. In this situation, HPV9 should be given as two doses separated by 6 to 12 months.

For additional information about HPV disease and vaccination, visit www.prevent-HPV.org.

This information is provided by the Vaccine Education Center at Children's Hospital of Philadelphia. The Center is an educational resource for parents and healthcare professionals and is composed of scientists, physicians, mothers and fathers who are devoted to the study and prevention of infectious diseases. The Vaccine Education Center is funded by endowed chairs from Children's Hospital of Philadelphia. The Center does not receive support from pharmaceutical companies.

 The Children's Hospital of Philadelphia®

 VACCINE EDUCATION CENTER

vaccine.chop.edu

Children's Hospital of Philadelphia, the nation's first pediatric hospital, is a world leader in patient care, pioneering research, education and advocacy.

©2016 Children's Hospital of Philadelphia, All Rights Reserved. 17VEC0119/NP/12-16



What Parents Should Know About HPV Vaccine Safety and Effectiveness

Last updated JUNE 2014

HPV vaccines prevent cancer

About 14 million people, including teens, become infected with human papillomavirus (HPV) each year. When HPV infections persist, people are at risk for cancer. Every year, approximately 17,600 women and 9,300 men are affected by cancers caused by HPV. HPV vaccination could prevent many of these cancers.

HPV vaccines are safe

All vaccines used in the United States are required to go through extensive safety testing before they are licensed by FDA. Once in use, they are continuously monitored for safety and effectiveness.

Numerous research studies have been conducted to make sure HPV vaccines were safe both before and after the vaccines were licensed. No serious safety concerns have been confirmed in the large safety studies that have been done since HPV vaccine became available in 2006. CDC and FDA have reviewed the safety information available to them for both HPV vaccines and have determined that they are both safe.

The HPV vaccine is made from one protein from the HPV virus that is not infectious (cannot cause HPV infection) and non-oncogenic (does not cause cancer).

HPV vaccines work

The HPV vaccine works extremely well. In the four years after the vaccine was recommended in 2006, the amount of HPV infections in teen girls decreased by 56%. Research has also shown that fewer teens are getting genital warts since HPV vaccines have been in use. In other countries such as Australia, research shows that HPV vaccine has already decreased the amount of pre-cancer of the cervix in women, and genital warts have decreased dramatically in both young women and men.

HPV vaccines provide long-lasting protection

Data from clinical trials and ongoing research tell us that the protection provided by HPV vaccine is long-lasting. Currently, it is known that HPV vaccine works in the body for at least 10 years without becoming less effective. Data suggest that the protection provided by the vaccine will continue beyond 10 years.

HPV vaccine is recommended and safe for boys

HPV vaccination can help prevent boys from getting infected with the HPV-types that can cause cancers of the mouth/throat, penis and anus as well as genital warts.

Like any vaccine or medicine, HPV vaccines might cause side effects

HPV vaccines occasionally cause adverse reactions. The most commonly reported symptoms among females and males are similar, including injection-site reactions (such as pain, redness, or swelling in the area of the upper arm where the vaccine is given), dizziness, fainting, nausea, and headache.

Brief fainting spells and related symptoms can happen after many medical procedures, including vaccination. Fainting after getting a shot is more common among adolescents. Sitting or lying down for about 15 minutes after a vaccination can help prevent fainting and injuries that can be caused by falls.

When fainting was found to happen after vaccination, FDA changed prescribing information to include information about preventing falls and possible injuries from fainting after vaccination. CDC consistently reminds doctors and nurses to share this information with all their patients. Tell the doctor or nurse if your child feels dizzy, faint, or light-headed.

HPV vaccines don't negatively affect fertility

There is no evidence to suggest that HPV vaccine causes fertility problems. However, not getting HPV vaccine leaves people vulnerable to HPV cancers. If persistent high-risk HPV infection in a woman leads to cervical cancer, the treatment of cervical cancer (hysterectomy, chemotherapy, or radiation, for example) could leave a woman unable to have children. Treatment for cervical pre-cancer could put a woman at risk for problems with her cervix, which could cause preterm delivery or other problems.

How can I get help paying for these vaccines?

The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger, who are uninsured, Medicaid-eligible, American Indian or Alaska Native. You can find out more about the VFC program by going online to www.cdc.gov and typing VFC in the search box.

DISTRIBUTED BY:



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention



HPV Vaccine for Preteens and Teens

Last updated JULY 2015

Why does my child need HPV vaccine?

This vaccine is for protection from most of the cancers caused by human papillomavirus (HPV) infection. HPV is a very common virus that spreads between people when they have sexual contact with another person. About 14 million people, including teens, become infected with HPV each year. HPV infection can cause cervical, vaginal, and vulvar cancers in women and penile cancer in men. HPV can also cause anal cancer, throat cancer, and genital warts in both men and women.

When should my child be vaccinated?

The HPV vaccine is recommended for preteen boys and girls at age 11 or 12 so they are protected before ever being exposed to the virus. HPV vaccine also produces a higher immune response in preteens than in older adolescents. If your teen hasn't gotten the vaccine yet, talk to their doctor about getting it for them as soon as possible.

HPV vaccination is a series of shots given over several months. The best way to remember to get your child all of the shots they need is to make an appointment for the remaining shots before you leave the doctor's office or clinic.

What else should I know about HPV vaccine?

Girls need HPV vaccination to prevent HPV infections that can cause cancers of the anus, cervix, vagina, vulva, and the mouth/throat area. Boys need HPV vaccination to prevent HPV infections that can cause cancers of the anus, penis, and the mouth/throat area. HPV vaccination can also prevent genital warts.

HPV vaccines have been studied very carefully. These studies showed no serious safety concerns. Common, mild adverse events (side effects) reported during these studies include pain in the arm where the shot was given, fever, dizziness and nausea.

Some preteens and teens might faint after getting the HPV vaccine or any shot. Preteens and teens should sit or lie down when they get a shot and stay like that for about 15 minutes after the shot. This can help prevent fainting and any injury that could happen while fainting.

Serious side effects from the HPV vaccine are rare. It is important to tell the doctor or nurse if your child has any severe allergies, including an allergy to latex or yeast. HPV vaccine is not recommended for anyone who is pregnant.

HPV vaccination is recommended by the Centers for Disease Control and Prevention (CDC), the American Academy of Family Physicians, the American Academy of Pediatrics, and the Society for Adolescent Health and Medicine.

How can I get help paying for these vaccines?

The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger, who are not insured, Medicaid-eligible, American Indian or Alaska Native. You can find out more about the VFC program by going online to www.cdc.gov and typing VFC in the search box.

Where can I learn more?

For more information about HPV vaccines and the other vaccines for preteens and teens, talk to your child's doctor or nurse. More information is also available on CDC's Vaccines for Preteens and Teens website at www.cdc.gov/vaccines/teens.

DISTRIBUTED BY:



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention

HPV
also known as Human Papillomavirus

As parents, you do everything you can to protect your children's health for now and for the future. Today, there is a strong weapon to prevent several types of cancer in our kids: the HPV vaccine.

HPV and Cancer

HPV is short for Human Papillomavirus, a common virus. In the United States each year, there are about 17,500 women and 9,300 men affected by HPV-related cancers. Many of these cancers **could be prevented with vaccination.** In both women and men, HPV can cause anal cancer and mouth/throat (oropharyngeal) cancer. It can also cause cancers of the cervix, vulva and vagina in women; and cancer of the penis in men.

For women, screening is available to detect most cases of cervical cancer with a Pap smear. Unfortunately, there is no routine screening for other HPV-related cancers for women or men, and these cancers can cause pain, suffering, or even death. **That is why a vaccine that prevents most of these types of cancers is so important.**

More about HPV

HPV is a virus passed from one person to another during skin-to-skin sexual contact, including vaginal, oral, and anal sex. HPV is most common in people in their late teens and early 20s. Almost all sexually active people will get HPV at some time in their lives, though most will never even know it.

Most of the time, the body naturally fights off HPV, before HPV causes any health problems. But in some cases, the body does not fight off HPV, and HPV can cause health problems, like cancer and genital warts. Genital warts are not a life-threatening disease, but they can cause emotional stress, and their treatment can be very uncomfortable. About 1 in 100 sexually active adults in the United States have genital warts at any given time.

HPV vaccination is recommended for preteen girls and boys at age 11 or 12 years

All preteens need HPV vaccination so they can be protected from HPV infections that cause cancer. Teens and young adults who didn't start or finish the HPV vaccine series also need HPV vaccination. Young women can get HPV vaccine until they are 27 years old and young men can get HPV vaccine until they are 22 years old. Young men who have sex with other men or who have weakened immune systems can also get HPV vaccine until they are 27.

HPV vaccination is a series of shots given over several months. The best way to remember to get your child all of the shots they need is to make an appointment for the remaining shots before you leave the doctor's office or clinic.

Is the HPV vaccine safe?

Yes. HPV vaccination has been studied very carefully and continues to be monitored by CDC and the Food and Drug Administration (FDA). No serious safety concerns have been linked to HPV vaccination. **These studies continue to show that HPV vaccines are safe.**

The most common side effects reported after HPV vaccination are mild. They include pain and redness in the area of the arm where the shot was given, fever, dizziness, and nausea. Some preteens and teens may faint after getting a shot or any other medical procedure. Sitting or lying down for about 15 minutes after getting shots can help prevent injuries that could happen if your child were to fall while fainting. ▶



Why does my child need this now?

HPV vaccines offer the best protection to girls and boys who complete the series and have time to develop an immune response **before** they begin sexual activity with another person. This is not to say that your preteen is ready to have sex. In fact, it's just the opposite—it's important to get your child protected before you or your child have to think about this issue. The immune response to this vaccine is better in preteens, and this could mean better protection for your child. ❖

DISTRIBUTED BY:



Serious side effects from HPV vaccination are rare. Children with severe allergies to yeast or latex shouldn't get certain HPV vaccines. Be sure to tell the doctor or nurse if your child has any severe allergies.

Help paying for vaccines

The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger who are uninsured, Medicaid-eligible, or American Indian/Alaska Native. Learn more about the VFC program at

www.cdc.gov/Features/VFCprogram/

Whether you have insurance, or your child is VFC-eligible, some doctors' offices may also charge a fee to give the vaccines. ■

Jacquelyn's story: "I was healthy—and got cervical cancer."

When I was in my late 20's and early 30's, in the years before my daughter was born, I had some abnormal Pap smears and had to have further testing. I was told I had the kind of HPV that can cause cancer and mild dysplasia.

For three more years, I had normal tests. But when I got my first Pap test after my son was born, they told me I needed a biopsy. The results came back as cancer, and my doctor sent me to an oncologist. Fortunately, the cancer was at an early stage. My lymph nodes were clear, and I didn't need radiation. But I did need to have a total hysterectomy.

My husband and I have been together for 15 years, and we were planning to have more children. We are so grateful for our two wonderful children, but we were hoping for more—which is not going to happen now.

The bottom line is they caught the cancer early, but the complications continue to impact my life and my family. For the next few years, I have to get pelvic exams and Pap smears every few months, the doctors measure tumor markers, and I have to have regular x-rays and ultrasounds, just in case. I have so many medical appointments that are taking time away from my family, my friends, and my job.

Worse, every time the phone rings, and I know it's my oncologist calling, I hold my breath until I get the results. I'm hopeful I can live a full and healthy life, but cancer is always in the back of my mind.

In a short period of time, I went from being healthy and planning more children to all of a sudden having a radical hysterectomy and trying to make sure I don't have cancer again. It's kind of overwhelming. And I am one of the lucky ones!

Ultimately I need to make sure I'm healthy and there for my children. I want to be around to see their children grow up.

I will do everything to keep my son and daughter from going through this. I will get them both the HPV vaccine as soon as they turn 11. I tell everyone—my friends, my family—to get their children the HPV vaccine series to protect them from this kind of cancer. ❖



What about boys?

HPV vaccine is for boys too! This vaccine can help prevent boys from getting infected with the types of HPV that can cause cancers of the mouth/throat, penis and anus. The vaccine can also help prevent genital warts. HPV vaccination of males is also likely to benefit females by reducing the spread of HPV viruses.

Learn more about HPV and HPV vaccine at www.cdc.gov/hpv

For more information about the vaccines recommended for preteens and teens:

800-CDC-INFO (800-232-4636)
www.cdc.gov/vaccines/teens

Screening won't protect your patients from most HPV cancers.

protect your preteen patients today with HPV vaccine.

Cervical Cancer

Just the tip of the iceberg.

Even with screening, in the United States **12,000** women are diagnosed with cervical cancer each year.

Source: CDC. Cancers associated with human papillomavirus, United States—2010–2014. USCS data brief, no. 1. Atlanta, GA: Centers for Disease Control and Prevention. 2017. (<https://www.cdc.gov/cancer/hpv/pdf/USCS-DataBrief-No1-December2017-508.pdf>)

Cervical cancer is the only type of HPV cancer for which there is a recommended screening test.

Cervical Precancers

While cervical precancers are routinely screened for, these precancers may require invasive testing and treatment.

Sources: Joura EA, et al. Cancer Epidemiol Biomarkers Prev. 2014 Oct;23(10):1997-2008. Guan P, et al. Int J Cancer. 2012 Nov 15;131(10):2349-59.

Cases Every Year

~216,000

High Grade Cervical Lesions

~468,700

Low Grade Cervical Precancers

Other HPV Cancers

Cases Every Year

800 Penile Cancer

3,200 Vulvar & Vaginal Cancer

5,700 Anal / Rectal Cancer

12,200 Oropharyngeal Cancer

Recommended cancer screening tests are not available yet for these cancers. These cancers may not be detected until they cause health problems.

OVER 90% of HPV cancers are preventable through HPV vaccination.

Source: CDC. Cancers associated with human papillomavirus, United States—2010–2014. USCS data brief, no. 1. Atlanta, GA: Centers for Disease Control and Prevention. 2017. (<https://www.cdc.gov/cancer/hpv/pdf/USCS-DataBrief-No1-December2017-508.pdf>)

Don't rely on screening to catch it later. Protect them now with HPV vaccination.

<https://www.cdc.gov/hpv/hcp/more-than-screening/index.html>



HPV VACCINE
IS CANCER PREVENTION

You're
not
opening
the door
to sex.

●
You're
closing
the
door to
cancer.

HPV vaccine is
cancer prevention.

Talk to your child's doctor about
vaccinating your 11-12 year old
against HPV.

www.cdc.gov/vaccines/teens



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention



Distributed by:

A large, empty white rounded rectangle with a thin white border, intended for a distributor's name or logo.



**YOU WOULD DO
ANYTHING TO
PROTECT YOUR
CHILD FROM
CANCER. BUT
HAVE YOU DONE
EVERYTHING?**


HPV vaccine is cancer prevention for boys and girls. Just two shots at ages 11–12 provide safe and lasting protection against the infections that cause HPV cancer. Ask your child's doctor or nurse for HPV vaccine.



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

HPV VACCINE
IS CANCER PREVENTION

www.cdc.gov/HPV



If there were a vaccine against cancer, wouldn't you get it for your kids?

HPV vaccine is cancer prevention. Talk to the doctor about vaccinating your 11–12 year old sons and daughters against HPV.

www.cdc.gov/vaccines/teens



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

YOU ARE THE KEY TO HPV CANCER PREVENTION

Distributed by:

Outbreaks of pertussis (whooping cough) have sickened thousands and led to the deaths of several infants less than 3 months of age over the last few years in the United States. Although outbreaks of pertussis typically occur every three to five years in the United States, the recent outbreaks have brought attention to two important points — immunity to pertussis is not life-long, and pockets of unimmunized people in a community make controlling outbreaks extremely difficult.

Q. What is pertussis?

A. Pertussis, or whooping cough, is caused by a bacterial infection. The disease occurs in three stages. The first stage appears similar to the common cold, with runny nose, sneezing, low-grade fever and coughing. After a week or two, illness progresses to the second stage where coughs worsen, often ending with a big intake of air or a “whoop.” The fits of coughing can be so violent that blood vessels can rupture and ribs can break. Infants, whose windpipes are narrower than those of older children, often turn blue during coughing spells because of lack of oxygen. This stage can last up to two months. During the final stage, which also often lasts for weeks or months, coughing spells will gradually decrease in frequency and intensity. Pertussis used to be called the “100-day cough” because of how long the cough lasted.

Q. Is there a vaccine to prevent pertussis?

A. Yes. The history of pertussis vaccines in the United States is long and complicated.

In the 1920s, vaccines to protect against diphtheria, pertussis and tetanus became available. In the 1940s, these three vaccines were combined into a single shot (called DTP).

The pertussis component of the DTP vaccine was made by killing whole pertussis bacteria with the chemical formaldehyde. The pertussis part of DTP was called “whole-cell” pertussis because whole bacteria were used to make it. The vaccine was given to young children and dramatically reduced the incidence of hospitalizations and deaths caused by pertussis. However, the vaccine also rarely caused side effects that could be severe, such as seizures, high fever and persistent crying.

In the 1990s, a safer pertussis vaccine became available. This vaccine was made by purifying several pertussis proteins and inactivating them with formaldehyde. Because this new pertussis vaccine was purer and didn't contain whole bacteria, it was called the acellular pertussis vaccine (or aP). This new pertussis vaccine was combined with the diphtheria and tetanus vaccines in a combination called DTaP. The new DTaP vaccine caused fewer and less frequent side effects, so it replaced DTP and was recommended for all young children. Unfortunately, the DTaP vaccine couldn't be used in teenagers and adults because side effects from the vaccine (such as

fever, headache, fatigue, and pain and swelling at the site of injection) were common in anyone 7 years of age or older.

Fortunately, researchers found that by reducing the quantities of diphtheria and pertussis proteins contained in the DTaP vaccine, teenagers and adults didn't experience the high rate of side effects. This newer version for teens and adults, called “Tdap,” reflects the fact that it contains lower quantities of diphtheria (hence the lowercase “d”) and pertussis proteins (hence the lowercase “p”) as compared with the childhood version, known as DTaP.

Q. Who should get DTaP?

A. DTaP is the version of diphtheria, tetanus and pertussis vaccines used for infants and young children. The first three doses, typically given at 2 months, 4 months and 6 months of age, will protect most infants from these diseases. Unfortunately, infants who have not received all three doses are among the most vulnerable to pertussis infections. An additional dose at 15 to 18 months and another at 4 to 6 years are given as boosters.

Q. Who should get Tdap?

A. Tdap is recommended for all adolescents beginning at 11 or 12 years of age.

Adults, including those 65 years and older, should receive a single dose of Tdap to replace their next tetanus booster. Because healthcare workers are at increased risk of contracting pertussis, they should get the vaccine as soon as possible. Likewise, people who will be in contact with infants younger than 12 months of age should get the vaccine at least two weeks before coming into contact with the baby. Pregnant women should get the vaccine between 27 and 36 weeks gestation during *each* pregnancy. Any woman who does not get the vaccine during pregnancy should get it before going home.

By giving Tdap vaccine to pregnant women during the late second trimester or third trimester, antibodies generated by the mother can be transferred to the baby before birth most efficiently. Because babies less than 2 months of age are most likely to die from pertussis — an age before they would have received the first few doses of vaccine — this strategy of immunizing pregnant women is most likely to protect babies from dying from pertussis.

more ▶

Pertussis: What you should know

Q. Are the DTaP and Tdap vaccines safe?

A. Yes. About one of every three babies and young children will have pain, redness or swelling at the injection site, mostly after the doses around 1 and 5 years of age, and a small number will develop a fever following the DTaP vaccine. For those who get the Tdap vaccine, about half will experience pain or swelling at the site of injection, and a small number will develop headaches and fatigue.

Although about one of every 10,000 children who get the DTaP vaccine will experience a frightening reaction such as uncontrollable crying, high fever or seizure, none will be permanently harmed. However, a child who has a severe reaction to the vaccine should not get additional doses.

Q. Do DTaP and Tdap prevent pertussis?

A. Yes. In medical studies, both DTaP and Tdap have been shown to protect about 80 to 85 of every 100 people who receive them. However, data from recent outbreaks have indicated that immunity wanes, so children become increasingly susceptible between the kindergarten and adolescent doses. These data have emerged following the change from the whole cell to the acellular pertussis vaccine in the mid-1990s. We now know that the price paid for increased safety was decreased protection. However, until a better pertussis vaccine is developed, the current vaccine affords the best opportunity for protecting ourselves and our families from pertussis, so continued use is important. To address waning immunity, the CDC may recommend additional booster doses in the future.



This information is provided by the Vaccine Education Center at The Children's Hospital of Philadelphia. The Center is an educational resource for parents and healthcare professionals and is composed of scientists, physicians, mothers and fathers who are devoted to the study and prevention of infectious diseases. The Vaccine Education Center is funded by endowed chairs from The Children's Hospital of Philadelphia. The Center does not receive support from pharmaceutical companies.

Q. Can people get the Tdap vaccine if they recently had the Td vaccine?

A. Yes. A vaccine to prevent tetanus and diphtheria, called Td, is also available for teenagers and adults. Many people have already gotten this vaccine. Because Td doesn't protect against pertussis, Tdap is still recommended regardless of when Td was given.

Q. Can Tdap be given at the same time as other vaccines?

A. Yes.

Q. Why is pertussis more serious in babies?

A. Because an infant's windpipe is much smaller than that of older children and adults, babies are much more likely to die from pertussis. Babies typically catch the disease from teenagers and adults living in the same home.

Approximately 15 to 20 babies in the United States die every year from pertussis. Almost all are younger than 4 months of age — too early to have been fully protected by the DTaP vaccine.

Because young babies get sick from pertussis and because they are not fully protected until they have had several doses of the DTaP vaccine, healthcare providers recommend that older children and adults who will be around newborns be protected; this is known as cocooning.

Teens and adults who will be around young infants should get a dose of the Tdap vaccine in anticipation of the baby's arrival.

Mothers should request the Tdap vaccine between 27 and 36 weeks gestation during *each pregnancy* or before leaving the hospital if they did not receive Tdap during pregnancy.

 The Children's Hospital
of Philadelphia®

 VACCINE EDUCATION CENTER

vaccine.chop.edu

 The Children's Hospital of Philadelphia®
Hope lives here.®

The Children's Hospital of Philadelphia, the nation's first pediatric hospital,
is a world leader in patient care, pioneering research, education and advocacy.

©2015 The Children's Hospital of Philadelphia, All Rights Reserved. 15VECO011/NP/04-15



Tdap Vaccine for Preteens and Teens

Last updated JUNE 2014

Why does my child need Tdap vaccine?

Babies and little kids get shots called DTaP to protect them from diphtheria, tetanus, and pertussis (whooping cough). But as kids get older, the protection from the DTaP shots starts to wear off. This can put your preteen or teen at risk for serious illness. The tetanus-diphtheria-acellular pertussis (Tdap) vaccine is a booster shot that helps protect your preteen or teen from the same diseases that DTaP shots protect little kids from.

- **Tetanus** is caused by a toxin (poison) made by bacteria found in soil. The bacteria enter the body through cuts, scratches, or puncture wounds in the skin. Tetanus can cause spasms which are painful muscle cramps in the jaw muscle (lockjaw) and throughout the body. The spasms can cause breathing problems and paralysis. A preteen or teen with tetanus could spend weeks in the hospital in intensive care. As many as 1 out of 5 people who get tetanus dies.
- **Diphtheria** is not as common as tetanus but can be very dangerous. It spreads from person to person through coughing or sneezing. It causes a thick coating on the back of the nose or throat that can make it hard to breathe or swallow. It can also cause paralysis and heart failure. About 1 out of 10 people who get diphtheria will die from it.
- **Pertussis (whooping cough)** spreads very easily through coughing and sneezing. It can cause a bad cough that makes someone gasp for air after coughing fits. This cough can last for many weeks, which can make preteens and teens miss school and other activities. Whooping cough can be deadly for babies who are too young to have protection from their own vaccines. Often babies get whooping cough from their older brothers or sisters, like preteens or teens, or other people in the family.

When should my child be vaccinated?

All preteens should get one Tdap shot when they are 11 or 12 years old. If your teen is 13 years old up through 18 years old and hasn't gotten the shot yet, talk to their doctor about getting it for them right away.

What else should I know about the vaccine?

The Tdap shot has been studied very carefully and is safe. It is recommended by the Centers for Disease Control and Prevention (CDC), the American Academy of Family Physicians, the American Academy of Pediatrics, and the Society for Adolescent Health and Medicine.

The Tdap shot can cause mild side effects, like redness and soreness in the arm where the shot was given, headache, fever, or tiredness. Some preteens and teens might faint after getting the Tdap vaccine or any other shot. To help avoid fainting, preteens and teens should sit or lie down when they get a shot and then for about 15 minutes after getting the shot. Serious side effects from reactions to the Tdap shot are rare.

How can I get help paying for these vaccines?

The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger, who are not insured, Medicaid-eligible, American Indian or Alaska Native. You can find out more about the VFC program by going online to www.cdc.gov and typing VFC in the search box.

Where can I learn more?

Your child's doctor or nurse can give you more information about the Tdap vaccine and the other vaccines your child may need. There is also information on CDC's Vaccines for Preteens and Teens website at www.cdc.gov/vaccines/teens.

DISTRIBUTED BY:



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention

Meningococcus can be devastating — claiming a child's life in hours. Although infants less than 1 year of age are at the highest risk of getting this disease, adolescents and teens are most likely to die from it. One meningococcal vaccine that protects against four of the five types of meningococcus is recommended for all adolescents and teens and for some infants. A newer vaccine, specific for type B meningococcus, is recommended for some high-risk groups as well as for adolescents between 16 and 18 years of age.

Q. What is meningococcus?

A. Meningococcus is a bacterium. Meningococcal bacteria live on the lining of the nose and throat and are spread from one person to another by close personal contact. Occasionally, the bacterium enters the bloodstream and causes severe disease.

Five different types of meningococcal bacteria, classified on the basis of a complex sugar that coats the bacteria (called polysaccharide), cause virtually all meningococcal disease in the world. These five different types of meningococcal bacteria are called types A, B, C, Y and W-135.

Q. Is meningococcus dangerous?

A. Yes. Every year in the United States approximately 500 people are infected with meningococcus and as many as 50 die from the disease. Also, about one



of every five survivors live the rest of their lives with permanent disabilities, such as seizures, loss of limbs, kidney disease, deafness and mental retardation. The highest incidence of meningococcal disease occurs in infants less than 1 year of age. In children between 2 and 10 years of age, the incidence of meningococcal infections is low, but starting in adolescence the incidence of disease rises. Although adolescents are less likely to be infected than infants, they are more likely to die when infected. Meningococcal bacteria are particularly dangerous because they rapidly make large quantities of a poison called endotoxin. Endotoxin damages blood vessels and causes low blood pressure and shock. For this reason, meningococcal bacteria can kill people soon after they enter the bloodstream. Children can be perfectly healthy one minute and dead four to six hours later; the disease can be so rapid and overwhelming that even appropriate, early medical care may not be sufficient. Because

outbreaks occur in colleges, schools, childcare centers, army barracks and other areas where people have close contact, meningococcal infections often cause panic in the community.

Q. What are the symptoms of meningococcal infection?

A. Meningococcus infects the bloodstream (causing sepsis) as well as the lining of the brain and spinal cord (causing meningitis). Symptoms of sepsis include fever, chills, rash, low blood pressure and dark purple spots on the arms and legs. Symptoms of meningitis include fever, headache, confusion and stiff neck.

Q. Is there a vaccine to prevent meningococcus?

A. Yes. Two different vaccines are now available. The vaccine recommended for all adolescents between 11 and 12 years of age protects against four of the five different types of meningococcus (A, C, Y and W-135), but not meningococcus type B. The second vaccine protects against meningococcus type B, which accounts for two-thirds of all meningococcal disease in infants and one-third of cases in adolescents. This vaccine is currently recommended for high-risk groups, including those with complement deficiencies, no spleen or a spleen that does not function, lab personnel regularly exposed to the bacteria, and individuals or groups at risk during an outbreak, such as on a college campus. The vaccine has also been recommended for all adolescents between 16 and 18 years of age.

Q. How are the meningococcal vaccines made?

A. The meningococcal vaccine currently recommended for all 11- to 12-year-olds is made using the complex sugar (called polysaccharide) that resides on the surface of the bacteria. Polysaccharides are stripped from the surface of four of the five different types of meningococcal bacteria that cause disease (types A, C, Y and W-135) and each is linked (conjugated) to a harmless protein. The four conjugated polysaccharides are combined into a single shot and protect against four different types of meningococcal bacteria. High-risk infants can also get this version (Menactra®) or one of two similarly manufactured versions (Menveo®). Menveo, like Menactra, contains types A, C, Y and W-135.

The meningococcal serogroup B vaccines, Trumenba® and Bexsero®, contain two or four proteins, respectively, that reside on the surface of the bacteria.

[more ▶](#)

Meningococcus: What you should know

Q. Are the meningococcal vaccines safe?

A. Yes. The meningococcal vaccines can cause pain or redness at the site of injection as well as low-grade fever, but because they are not made from whole bacteria, they cannot possibly cause bloodstream infections or meningitis.

Q. Do the meningococcal vaccines work?

A. Yes. The routinely recommended meningococcal vaccine protects recipients from most of the meningococcal disease caused by types in the vaccine, but not from type B. The type B vaccine will likely protect recipients against type B but not other types of meningococcus.

Q. Who should get the meningococcal vaccine?

A. The meningococcal vaccine currently recommended for all 11- to 12-year-olds — the one containing types A, C, W, and Y — is given in two doses. The first dose is recommended to be given between 11 to 12 years of age, and a booster dose is recommended at 16 years of age. If the first dose is given between 13 and 15 years of age, a booster dose should be given between 16 and 18 years of age. Any 16 to 18-year-olds who have not previously received this vaccine should also get a single dose, as should first-year college students through age 21 years who are living in residence halls and have not had the vaccine between the ages of 16 and 18 years.



High-risk infants between 2 and 23 months of age are recommended to receive two to four doses of meningococcal vaccine depending upon which product is used. Infants considered to be at high risk include those with complement deficiencies, those with no spleen or with a spleen that is not functional, those who live in an institution or in a community currently experiencing an outbreak and those who will be traveling to the Hajj or to a destination in Africa that is located in the meningitis belt.

Q. Who should get the new type B meningococcal vaccine?

A. People aged 10 years or older and who are considered to be at higher risk of infection should get two or three doses of the vaccine depending upon which one is used. High risk groups include those with complement deficiencies; no spleen or a spleen that does not function; lab personnel regularly exposed to the bacteria; and individuals or groups at risk during an outbreak, such as on a college campus. In addition, the type B meningococcal vaccine is recommended as two doses separated by six months for all 16- to 18-year-olds.

This information is provided by the Vaccine Education Center at Children's Hospital of Philadelphia. The Center is an educational resource for parents and healthcare professionals and is composed of scientists, physicians, mothers and fathers who are devoted to the study and prevention of infectious diseases. The Vaccine Education Center is funded by endowed chairs from Children's Hospital of Philadelphia. The Center does not receive support from pharmaceutical companies.

Q. Should college freshmen get the meningococcal vaccine?

A. Yes. All college freshmen, especially students living in dormitories, should receive the meningococcal vaccine containing types A, C, W, and Y if they have not had it between 16 and 18 years of age. College freshmen living in dormitories are five times more likely to get meningococcal disease than people of the same age who do not attend college.

Type B outbreaks of meningococcus have occurred in recent years on college campuses. Therefore, it would be of value for all incoming freshmen to receive the type B vaccine before college entry.

Q. If someone in my child's school gets meningococcal infection, what should I do?

A. Children in close contact with someone with meningococcal infection should receive an antibiotic to prevent the disease. Close contact with someone with meningococcal disease is defined as 1) living in the same house, 2) sharing the same preschool or daycare classroom during the week before illness, 3) kissing or sharing utensils or toothbrushes or 4) sitting next to the person on an eight-hour or longer flight. Antibiotics used to prevent meningococcal infection include rifampin, ceftriaxone, azithromycin and ciprofloxacin.

Q. Does the meningococcal vaccine prevent all cases of meningitis?

A. Neither of the meningococcal vaccines will prevent all cases of meningococcal meningitis since no vaccine is 100 percent effective. In addition, other bacteria, such as pneumococcus and *Haemophilus influenzae* type b (Hib), cause meningitis. Fortunately, vaccines to prevent pneumococcus and Hib are routinely given to all children before 2 years of age. Some viruses also cause meningitis, but meningitis caused by most viruses is usually not as severe as meningitis caused by bacteria.





Meningococcal Vaccines for Preteens and Teens

Last updated NOVEMBER 2015

Why does my child need to be vaccinated?

Meningococcal vaccines help protect against the bacteria that cause meningococcal disease. These infections don't happen very often, but can be very dangerous when they do. Meningococcal disease refers to any illness that is caused by *Neisseria meningitidis* bacteria. The two most severe and common illnesses caused by these bacteria include infections of the fluid and lining around the brain and spinal cord (meningitis) and bloodstream infections (bacteremia or septicemia). Even if they get treatment, about 10 to 15 out of 100 people with meningococcal disease will die from it.

Meningococcal disease can spread from person to person. The bacteria that cause this infection can spread when people have close or lengthy contact with someone's saliva, like through kissing or coughing, especially if they are living in the same place. Teens and young adults are at increased risk for meningococcal disease.

Meningococcal disease can become very serious, very quickly. The meningococcal vaccine is the best way to protect teens from getting meningococcal disease.

When should my child be vaccinated?

All 11 to 12 year olds should be vaccinated with a single dose of a quadrivalent meningococcal conjugate vaccine. Older teens need a second shot when they are 16 years old so they stay protected when their risk is the highest.

Teens who got meningococcal vaccine for the first time when were 13, 14, or 15 years old should still get the booster shot when they are 16 years old. If your older teen didn't get the meningococcal shot at all, you should talk to their doctor about getting it as soon as possible.

Teens and young adults (16 through 23 year olds) may also be vaccinated with a serogroup B meningococcal vaccine (2 or 3 doses depending on brand), preferably at 16 through 18 years old. Talk with your teen's doctor or nurse about meningococcal vaccination to help protect your child's health.

What else should I know about the vaccination?

Like many vaccines, meningococcal shots may cause mild side effects, like redness and soreness where the shot was given (usually in the arm). Note that both meningococcal vaccines can be given during the same visit, but in different arms. Some preteens and teens might faint after getting a meningococcal vaccine or any shot. To help avoid fainting, preteens and teens should sit or lie down when they get a shot and then for about 15 minutes after getting the shot.

How can I get help paying for these vaccines?

The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger, who are uninsured, Medicaid-eligible, American Indian or Alaska Native. You can find out more about the VFC program by going online to www.cdc.gov and typing VFC in the search box.

Where can I learn more?

Talk to your child's doctor or nurse to learn more about meningococcal vaccines and the other vaccines that your child may need. You can also find out more about these vaccines on CDC's Vaccines for Preteens and Teens website at www.cdc.gov/vaccines/teens.

DISTRIBUTED BY:



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention

Seasonal epidemics of influenza (flu) occur every year in the United States, beginning in the fall. Typically, the epidemics cause thousands to tens of thousands of deaths and about 200,000 hospitalizations each year. Since the 1940s, a vaccine has been available to prevent influenza; unfortunately, the vaccine is not used as much as it should be. To prevent the hospitalizations and deaths caused every year by influenza virus, the Centers for Disease Control and Prevention (CDC) has recommended that all U.S. citizens more than 6 months of age receive the influenza vaccine. ***This recommendation has the potential to save thousands of lives.***

Q. What is influenza (flu)?

A. Influenza (flu) is a virus that infects the nose, throat, windpipe and lungs. The virus is highly contagious and is spread from one person to another by coughing, sneezing or talking. Influenza infections typically occur between October and April each year.

Q. What are the symptoms of influenza?

A. Typical symptoms of influenza include fever, chills, muscle aches, congestion, cough, runny nose and difficulty breathing. Other viruses can cause symptoms similar to influenza. But, influenza virus is a more common cause of severe, fatal pneumonia.

Most, but not all, people who die from influenza are older than 65. Sadly, each year about 50 to 150 children die as a result of influenza. Children younger than 4 often require hospitalization because of high fever, wheezing, croup or pneumonia.

Because influenza is a virus, it can't be successfully treated with antibiotics. While some antiviral medications are available by prescription, not all strains of influenza are susceptible to them, and they work best when used early in the infection.

Q. Who should get the influenza vaccine?

A. The influenza vaccine is recommended for everyone 6 months of age and older.

Children under 9 years of age require two doses of influenza vaccine separated by four weeks if they have never received an influenza vaccine or have an uncertain vaccination history.

Q. How is the vaccine made?

A. In recent years, more types of influenza vaccines have become available:

- **Trivalent inactivated influenza vaccine** – This is the traditional influenza vaccine shot that has been used in the past; it is made by taking three different influenza viruses, growing them (individually) in eggs, purifying them and completely inactivating them with the chemical formaldehyde. A few brands of this vaccine are available with specific ages for use; however, this version is typically given to the broadest group of individuals, including infants.
- **Quadrivalent inactivated influenza vaccine** – This version is made in the same way as the trivalent version; however, it contains four types of influenza viruses. This vaccine is given as a shot and can be used for people 6 months and older.
- **Cell culture-based influenza vaccine** – This version currently contains three different influenza viruses and is made in a manner similar to the other inactivated vaccines; however, instead of growing the viruses in eggs (avian cells), they are grown in mammalian cells. This vaccine represents an advance in technology because it contains less egg protein than the version grown in eggs. It is given as a shot.
- **Recombinant influenza vaccine** – This version of influenza vaccine contains only one surface protein of the virus known as hemagglutinin. The protein is produced by inserting the gene for hemagglutinin into an insect virus that then produces large quantities of the hemagglutinin protein. The protein is purified and used as the vaccine. First available in the fall of 2013, this version represents an advance in technology because it is the first egg protein-free influenza vaccine. This version is given as a shot and can be used in people between 18 and 49 years of age. It currently contains three types of influenza virus.

A “live, weakened” influenza vaccine given as a nasal spray was previously available. However, in recent years, people who got this version were not adequately protected against influenza. Therefore, beginning in the fall of 2016, experts at the Centers for Disease Control and Prevention no longer recommend this vaccine.



Influenza: What you should know

Q. Does the influenza vaccine work?

A. The influenza vaccine typically prevents about 70 of every 100 people who receive it from developing moderate-to-severe influenza infection. Even though the vaccine might not completely prevent influenza infection, it will still lessen the length and severity of the illness.

Q. When should I get the influenza vaccine?

A. Immunizations should be administered throughout the season because the peak incidence of influenza can occur as late as February or March.

Q. If I got the influenza vaccine last year, do I need this year's influenza vaccine?

A. Yes, getting the current vaccine is still of benefit for a few reasons. First, some people are not protected after getting the vaccine, so another dose will increase their chance of being protected. Second, antibody levels wane, particularly in the elderly, so another dose will boost antibody levels before the start of influenza season. Finally, sometimes influenza viruses change significantly from one year to the next, so immunization or natural infection the previous year is not protective.

Q. Are the influenza vaccines safe?

A. Yes. Influenza vaccine shots can cause pain, redness or tenderness at the site of injection as well as muscle aches and low-grade fever, but because the vaccine viruses are completely inactivated or the vaccine contains only individual proteins, they cannot possibly cause influenza.

Although most versions of the influenza vaccine are made in eggs and some people are severely allergic to eggs, the quantity of egg proteins is typically insufficient to cause a severe allergic response. But just to be sure, it is suggested that people with egg allergies remain at the provider's office for 15 minutes after vaccination.

Q. Does the influenza vaccine contain thimerosal?

A. Some multi-dose preparations of the inactivated influenza vaccine given as a shot still contain a small quantity of the mercury-based preservative known as thimerosal. However, the quantity contained in vaccines does not cause harm. Influenza infections can cause severe illness and death, so the benefits of receiving the vaccine clearly outweigh the theoretical risks.

Q. What is the difference between epidemic, or seasonal, influenza and pandemic influenza?

A. Every year in the United States and throughout the world, influenza viruses cause epidemics. Because many people have some immunity, yearly epidemics don't infect everyone.

A pandemic is a worldwide epidemic caused when new strains of influenza virus form. This happens when genetic material from both human and animal strains of influenza mix. Because virtually no one is immune to these new viruses, they have the potential to sweep across the world unchecked. Typically, many more people become ill and die during pandemics than during yearly epidemics.

In 2009 a pandemic centered on the novel H1N1 strain. Luckily, this new strain was not as fatal as some previous pandemic strains. Still, 60 million people in the United States became ill, 270,000 were hospitalized and about 12,000 died. Of those who died, between 1,100 and 1,200 were children, about 10 times the number who die during a normal influenza season.

Q. Can pregnant women get the influenza vaccine?

A. Yes, in fact, this is one of two vaccines that pregnant women are urged to get during pregnancy; the other is Tdap. Because pregnant women are more likely to experience complications and hospitalization as a result of infection with influenza, it is important for them to be immunized. In addition, studies have shown that babies of women who were immunized with influenza vaccine during pregnancy are less likely to be infected with influenza during the first six months of life, before they are old enough to be vaccinated.

Q. Can I avoid getting the vaccine and the virus by washing my hands and staying away from others who are ill?

A. While careful hand-washing, covering coughs and sneezes, and staying home when ill can help prevent the spread of disease, we cannot be certain that others will do the same. Further, not everyone infected with influenza realizes they are transmitting it since infected people begin to spread the virus a day or two before they have symptoms.

So, while these measures can reduce your chance of getting influenza, and in fact helped to stem transmission during the pandemic of 2009, they can only do so much to prevent influenza infections. The reality is that the only way to ensure protection from a specific disease is to have immunity acquired through immunization or previous exposure to the disease.



 The Children's Hospital
of Philadelphia®

 VACCINE EDUCATION CENTER

vaccine.chop.edu

The Children's Hospital of Philadelphia, the nation's first pediatric hospital, is a world leader in patient care, pioneering research, education and advocacy.

©2016 The Children's Hospital of Philadelphia. All Rights Reserved. • 17VEC0083/NP/07-16



Flu Vaccine for Preteens and Teens

Last updated JUNE 2014

Why does my child need the flu vaccine?

The flu is an illness that infects the nose, throat, and lungs caused by influenza viruses. Flu spreads when infected people cough or sneeze. Flu can cause mild to severe illness, and in some cases it can cause death. While most preteens and teens who get sick with the flu recover within a couple of weeks, some will get complications like sinus infections, or pneumonia (a serious lung infection). Preteens and teens who have chronic health problems like diabetes (type 1 and 2) or asthma, are at a greater risk for complications from the flu, but even healthy adolescents can get very sick from the flu. The flu usually causes a cough, runny or stuffy nose, body aches, fatigue (tiredness) and sometimes fever. Flu spreads easily when sick people cough, sneeze, or talk.

When should my child be vaccinated?

Preteens and teens should get the flu vaccine every year, ideally by October. However, as long as flu viruses are circulating, vaccination should continue throughout the flu season, even in January or later. Flu vaccine is available at your child's doctor's office or clinic, and sometimes other places like the local health department, pharmacies, urgent care clinics, grocery stores, and schools. You can find a flu vaccination clinic near you with the vaccine finder at <http://vaccine.healthmap.org>.

What else should I know about the flu vaccine?

Flu vaccines can be given to preteens and teens in two ways:

- **Most flu shots** are made from killed flu viruses. This vaccine is a shot that is given in the arm.
- **The nasal spray flu vaccine** is made with live, but weakened, flu virus. This vaccine is sprayed up the nose. Preteens and teens with chronic health conditions, like asthma, diabetes, or heart disease should **NOT** get the nasal spray vaccine and instead get the flu shot.

Talk to your child's doctor or nurse about which flu vaccine is best for your preteen or teen.

Both types of flu vaccine have been studied carefully and are safe. They cannot cause the flu. The annual flu vaccine is recommended for preteens and teens by the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices, the American Academy of Family Physicians, the American Academy of Pediatrics, and the Society for Adolescent Health and Medicine.

Both flu vaccines can sometimes cause mild, flu-like symptoms. The most common side effects from a flu shot are a sore arm and a low fever or achiness. The nasal spray flu vaccine might cause congestion, runny nose, sore throat, or cough. These mild effects usually go away a day or two after vaccination. Serious side effects from either type of flu vaccine are rare. It is very important to tell the doctor or nurse if your preteen or teen has a severe allergy to chicken eggs.

How can I get help paying for these vaccines?

The Vaccines for Children (VFC) program provides vaccines for children ages 18 years and younger, who are uninsured, Medicaid-eligible, American Indian or Alaska Native. You can find out more about the VFC program by visiting www.cdc.gov/vaccines/programs/vfc/index.html or typing VFC in the search box of the CDC homepage (www.cdc.gov).

Where can I learn more?

Talk to your child's doctor or nurse to learn more about the flu vaccine and any other vaccines your preteen or teen needs. There is more information about these vaccines on CDC's Vaccines for Preteens and Teens website at www.cdc.gov/vaccines/teens.

DISTRIBUTED BY:



**U.S. Department of
Health and Human Services**
Centers for Disease
Control and Prevention