



HPV TOOLKIT

*A resource guide for
providers & parents*

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

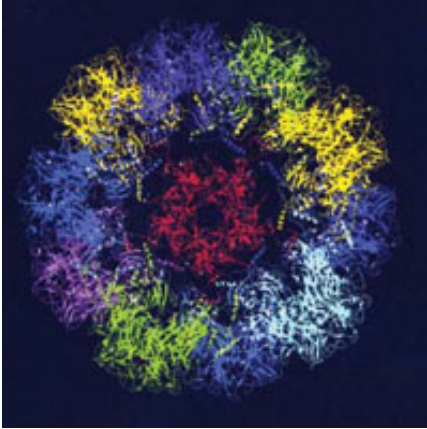


Louisiana Chapter



Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™

HPV Vaccine Information for Clinicians - Fact Sheet



Virus-like particles (VLPs) assembled from the L1 protein of human papillomavirus 16

CDC and partners, including the American Academy of Pediatrics, recommend HPV vaccination of both girls and boys at ages 11 or 12 years and suggest that clinicians strongly recommend HPV vaccination for preteens and teens who have not yet been fully vaccinated.

Background

Approximately 20 million people are currently infected with genital human papillomavirus (HPV) in the United States (U.S.). As many as half of these infections are among adolescents and young adults, ages 15 through 24 years of age. HPV is so common that most sexually active adults become infected at some point in their lives.

Of the more than 40 HPV types that infect human mucosal surfaces, most infections are asymptomatic and transient. However, certain oncogenic types that persist can cause cervical cancer and other, less common cancers, including cancers of the anus, penis, vulva, vagina, and oropharynx (back of throat including base of tongue and tonsils). Other, non-oncogenic HPV types can cause genital warts and, rarely, respiratory tract warts in children which is a condition called juvenile-onset recurrent respiratory papillomatosis (RRP).

Every year, about 12,000 women are diagnosed with cervical cancer, and about 4,000 women die from this disease in the U.S. About 1% of sexually active men and women in the U.S. have genital warts at any given time.

Two HPV vaccines are licensed by the Food and Drug Administration (FDA). The bivalent HPV vaccine (Cervarix) prevents the two HPV types, 16 and 18, which cause 70% of cervical cancers. The quadrivalent HPV vaccine (Gardasil) prevents four HPV types: HPV 16 and 18, as well as HPV 6 and 11, which cause 90% of genital warts. Quadrivalent vaccine has also been shown to protect against cancers of the anus, vagina and vulva. Only quadrivalent vaccine is licensed in use for males.

Both vaccines are administered as a 3-dose series. HPV vaccines are routinely recommended for 11 and 12 year old girls and boys. The vaccine series can be started beginning at age 9 years. Vaccination is also recommended for 13 through 26 year-old females, and 13 through 21 year-old males who have not completed the vaccination series. Males aged 22 through 26 years may be vaccinated. HPV vaccine is also recommended for gay and bisexual men (or any man who has sex with men) and persons with compromised immune systems (including HIV) through age 26, if they did not get fully vaccinated when they were younger.

These vaccines have no therapeutic effect on HPV-related disease, so they will not treat existing diseases or conditions caused by HPV. The vaccines are made from non-infectious HPV virus-like particles (VLPs) and do not contain thimerosal or mercury as a preservative.

The two vaccines use different adjuvants. The quadrivalent vaccine uses alum (225 µg amorphous aluminum hydroxyphosphate sulfate) adjuvant, while the bivalent vaccine uses AS04 (500 µg aluminum hydroxide 50 µg 3-*O*-deacyl-4'-monophosphoryl lipid A).

HPV Vaccine Recommendations

Either HPV vaccine is routinely recommended for 11- or 12-year-old girls.

Quadrivalent HPV vaccine is routinely recommended for 11- or 12-year-old boys.

The vaccine series can be started beginning at age 9 years. Vaccination is also recommended for 13- through 26-year-old females and 13- through 21-year-old males who have not completed the vaccine series.

Quadrivalent HPV vaccine may be given to 22- through 26-year-old males.

Vaccination is routinely recommended for both men who have sex with men (MSM) and immunocompromised persons aged 22 through 26 years. Vaccination with either the bivalent HPV vaccine or the quadrivalent vaccine is recommended for protection against HPV types 16 and 18, for the prevention of cervical cancers and precancers in females. Vaccination with the quadrivalent HPV vaccine is recommended for protection against HPV types 16, 18, 6 and 11, for the prevention of cervical, vulvar, vaginal cancers and precancers in females, as well as anal cancers and precancers and genital warts in both females and males.

Ideally, patients should be vaccinated before onset of sexual activity, when they may be exposed to HPV. Patients who have been infected with one or more HPV types still get protection from the vaccine types they have not acquired.

HPV vaccines can be given to the following:

- Lactating women.
- Patients with minor acute illnesses, such as diarrhea or mild upper respiratory tract infections, with or without fever.
- Women who have had an equivocal or abnormal Pap test, a positive HPV test, or genital warts. However, these patients should be advised that data do not indicate that the vaccine will have any therapeutic effect on existing Pap test abnormalities, HPV infection or genital warts.
- Patients who are immunocompromised, either from infection, disease or medication. However, the immune response to vaccination and vaccine efficacy might be less in immunocompromised people.


HPV vaccines should **not** be given to:

- Patients with a history of immediate hypersensitivity to any vaccine component. Quadrivalent HPV vaccine is contraindicated for persons with a history of immediate hypersensitivity to yeast. Bivalent HPV vaccine in prefilled syringes is contraindicated for persons with anaphylactic latex allergy.
- Patients with moderate or severe acute illnesses. In these cases, patients should wait until the illness improves before getting vaccinated.
- Pregnant women. Although the vaccine has not been causally associated with adverse pregnancy outcomes or adverse events to the developing fetus, data on vaccination in pregnancy are limited. Any exposure to vaccine in pregnancy should be reported to the appropriate HPV vaccine pregnancy registry:
 - The toll-free number for Gardasil is 800-986-8999
 - The toll-free number for Cervarix is 888-452-9622

HPV Vaccine Safety

HPV vaccines were studied in thousands of people in many countries around the world, including the United States. These studies showed no serious safety concerns and found that both HPV vaccines were safe. Common, mild adverse events reported during these studies include pain where the shot was given, fever, dizziness, and nausea. More than 46 million doses of HPV vaccine have been distributed in the United States as of June 2012. Most doses distributed have been Gardasil.

Syncope can occur after any medical procedure, including vaccination. Recent data suggest that syncope after any vaccination is more common in adolescents. Adolescents and adults should be seated or lying down during vaccination. Providers should consider observing patients in seated or lying positions for 15 minutes after vaccination.

For each of the vaccines, a detailed post-licensure safety monitoring plan, coordinated by the FDA and CDC, is in place. For more information about the Vaccine Adverse Event Reporting System (VAERS) visit www.vaers.hhs.gov (<http://www.vaers.hhs.gov>)  (<http://www.cdc.gov/Other/disclaimer.html>)

HPV Vaccine Efficacy Studies and Antibody Response

The main efficacy study of the bivalent vaccine was conducted in young women aged 15 through 25 years. Among women who had not been previously exposed to a targeted HPV type, the clinical trials demonstrated 93% vaccine efficacy in preventing cervical precancers due to HPV 16 or 18. In all studies of the bivalent HPV vaccine, more than 99% of females developed an HPV 16 and 18 antibody response 1 month after completing the 3-dose series.

The main efficacy studies of the quadrivalent vaccine were conducted in young women and men (16 through 26 years of age). Among persons not previously exposed to a targeted HPV type, the trials demonstrated nearly 100% vaccine efficacy in preventing cervical precancers, vulvar and vaginal precancers, and genital warts in women caused by the vaccine types, as well as 90% vaccine efficacy in preventing genital warts and 75% vaccine efficacy in preventing anal precancers in men.

In women already infected with a targeted HPV type, the vaccines do not prevent disease from that HPV type but protect against other vaccine types. Immunogenicity studies of both vaccines have been conducted in girls, ages 9 to 15 years of age. Over 99% of vaccinated girls in these studies developed antibodies after vaccination.

HPV vaccines offer a promising new approach to the prevention of HPV and associated

conditions. However, they do not replace other prevention strategies, such as regular cervical cancer screening using the Pap test, since the vaccines will not prevent all HPV types.

Duration of Vaccine Protection

Studies suggest that vaccine protection is long-lasting. Current studies (with up to about six years of follow-up data) indicate that the vaccines are effective, with no evidence of waning protection. This information will be updated as additional data regarding duration of protection become available.

HPV Vaccine Administration

Both brands of HPV vaccine should be delivered through a series of 3 intramuscular injections over a 6-month period. The second and third doses should be given 2 and 6 months after the first dose.

The vaccines can be administered at the same visit as other age-appropriate vaccines, such as tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine, quadrivalent meningococcal conjugate vaccine (MCV4), influenza vaccine, and hepatitis B vaccine.

Providers should consider a 15-minute waiting period for vaccine recipients following vaccination.

Cervical cancer screening recommendations have not changed for females who receive the HPV vaccine.

Why is HPV vaccination only recommended through age 26?

HPV vaccines are licensed for females and males through age 26 years. Vaccination would have the greatest benefit when administered to girls and boys, aged 11 or 12 years.

As in trials in younger women, a clinical trial of quadrivalent vaccine in women >26 years found the vaccine to be safe. This study also showed that the vaccine was effective in women without evidence of existing or past infection with HPV vaccine types. However, the study demonstrated limited or no protection against disease in the overall study population. Neither vaccine is licensed in the United States for use in women over the age of 26 years. Although women over age 26 years are not recommended to receive HPV vaccination, they should have cervical cancer screening as currently recommended.

Covering the Cost of the Vaccine

The Vaccines for Children (VFC) program helps families of eligible children who might not otherwise have access to vaccines. The program provides vaccines at no cost to doctors 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.

"Underinsured" children who have health insurance that does not cover vaccination can receive VFC vaccines through Federally Qualified Health Centers or Rural Health Centers. Doctors can charge a fee to give each shot. However, VFC vaccines cannot be denied to an eligible child if a family can't afford the fee.

State and private programs offering no- or low-cost vaccines may also be available for eligible persons. Contact your State Health Department ([/mmwr/international/relres.html](http://mmwr.international.relres.html)) to see if your state has such a program.

Vaccine providers should notify patients that:

CDC and partners, including the American Academy of Pediatrics, recommend HPV vaccination of females and males at ages 11 or 12 years and suggest that clinicians strongly recommend HPV vaccination for preteens and teens who have not yet been fully vaccinated.

- It is important to get all 3 doses of HPV vaccine to get the full benefits.
- Vaccinated females will still need regular cervical cancer screening, beginning by age 21, since vaccination will protect against most, but not all, of the HPV types that cause cervical cancer.
- All vaccinated patients should continue to practice abstinence or protective sexual behaviors (i.e., condom use), since the vaccine will **not** prevent other sexually transmitted infections. Although condoms may not fully protect against HPV, they may lower one's chances of getting HPV and developing HPV-related diseases, when used all the time and the right way. They can also lower their chances of getting HPV by being in a mutually faithful relationship with someone who has had no or few sex partners, or by limiting their number of sex partners.

CDC has developed several other resources, which vaccine providers may find useful for educating and counseling parents and young adult patients. Cervical cancer once claimed the lives of more American women than any other type of cancer. But over the last 40 years, widespread cervical cancer screening using the Pap test and treatment of pre-cancerous cervical abnormalities have resulted in a marked reduction in cervical cancer incidence and mortality in the U.S. New technologies, such as liquid-based cytology and HPV DNA tests, are now commercially available and licensed for use in women for cervical cancer screening and management. As many as 82% of women in the United States report receiving a Pap test within the last 3 years.

Despite these advances, U.S. screening programs are not reaching all women in the United States. It is estimated that half of the women diagnosed with cervical cancer have never been screened for cervical cancer, and an additional 10% have not been screened in the previous 5 years. **Cervical cancer disproportionately affects women of lower socioeconomic status, without regular access to health care, who are uninsured, and who are recent immigrants. These populations stand to benefit most from HPV vaccination.**

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Content source: [Division of STD Prevention](#), [National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention](#), [Centers for Disease Control and Prevention](#)

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Teen Vaccination Coverage

2013 National Immunization Survey-Teen (NIS-Teen)

Summary of Main Points

From 2012 to 2013, there were modest increases in vaccination coverage among U.S. adolescents between the ages of 13 and 17 years for all vaccines routinely recommended for preteens and teens. However, vaccination coverage estimates for human papillomavirus (HPV) vaccination remained low in 2013.

We have found that many preteens and teens are not getting HPV vaccine when they receive other recommended vaccines; 91.3% of 13 year old girls would have received at least one dose HPV vaccine if they had received a HPV vaccine at the same time they received other recommended vaccines. Instead, coverage for girls ages 13-17 who received at least one dose of HPV vaccine was 57.3%.

The Advisory Committee on Immunization Practices (ACIP) recommends that preteens (ages 11 or 12) get one dose of Tdap, meningococcal, and HPV vaccines during a single visit. A persistent gap in coverage between HPV vaccination and other vaccinations recommended for adolescents is a sign of missed opportunities to protect adolescents from HPV-related cancers. Since 2008, the yearly national vaccination coverage estimate among female teens for one dose of HPV vaccine has been lower than the estimate for one dose of Tdap vaccine, and the difference in coverage between the two vaccines remains large. The difference between Tdap and HPV vaccine show valuable opportunities are being missed to vaccinate boys and girls, leaving them at greater risk of HPV infections that can lead to cancer.

2013 HPV Vaccination Coverage for Adolescents



<http://www.cdc.gov/mmwr/preview/mmwrhtml/m>
The newest data showing coverage rates of HPV vaccine for adolescents 13-17 years of age were published July 24, 2014 in MMWR.

Engaging Parents, Clinicians, and Partners to Prevent Missed Opportunities

CDC is enhancing its efforts to support state and local immunization programs, and to partner with medical professional associations, cancer organizations, and other stakeholders to educate parents and clinicians on taking every opportunity to vaccinate adolescents. Collaborative efforts remain critical to promoting vaccination so that our nation's adolescents are protected against vaccine-preventable disease, including cancers caused by HPV. Clinicians, parents, and adolescents should also use every healthcare visit as an opportunity to review adolescents' immunization histories and ensure every adolescent is fully vaccinated; Adolescent vaccination can be as simple as 1-2-3:

- 1 dose of Tdap vaccine
- 2 doses of meningococcal vaccine
- 3 doses of HPV vaccine

Survey Data – Coverage among Adolescents 13 through 17 Years of Age HPV Vaccine

- For girls who received at least one dose of HPV vaccine, coverage increased between 2012 and 2013 (53.8% in 2012 vs. 57.3% in 2013).
 - Receipt of the recommended three doses increased, but still remained low from 2012 to 2013 (33.4% in 2012 compared to 37.6% in 2013).
 - Among girls who received one, two, or three doses of HPV vaccine, coverage rates were higher for Hispanics

than for whites.

- Overall, coverage for one or two doses of HPV was higher for girls living below the poverty level; however, no differences by poverty level were observed for three doses.
- HPV 3-dose series completion was similar between white and Hispanic girls, but was lower among Black adolescent females. This means among teen girls who started getting HPV vaccinations, Black girls were less likely than white or Hispanic girls to finish getting all the recommended doses.
- For boys, there was a 13.8 percentage point increase for at least one dose of HPV vaccine (from 20.8% in 2012 to 34.6% in 2013)
 - 13.9% of boys aged 13-17 years received all three recommended doses of HPV vaccine in 2013 (compared to 6.8% in 2012).
 - Coverage for one, two, or three doses of HPV vaccine was greater among black and Hispanic boys compared to whites.
 - Overall, coverage for all doses of HPV vaccine was greater among boys living below the poverty level compared to those living at or above the poverty level.
- National vaccination coverage data reflect a wide variation in coverage at the state level.
 - For girls who received at least one dose of HPV vaccine, state coverage ranged from 39.9% in Kansas to 76.6% in Rhode Island.
 - For boys who received at least one dose of HPV vaccine, state coverage ranged from 11.0% in Kansas to 69.3% in Rhode Island.

Meningococcal Conjugate Vaccine

- Meningococcal vaccination coverage continued to increase among 13-17 year olds. There was a 3.8 percentage point increase, going from 74.0% in 2012 to 77.8% in 2013.
- Among 17 year old adolescents who received a first dose before turning 16, 29.6% of them received the recommended second dose of meningococcal vaccine in 2013.
 - This is the first year coverage data is available for the second dose of meningococcal vaccine. ACIP first recommended a second dose of meningococcal vaccine for all teens in October 2010.

Tdap Vaccine

- Nationally, Tdap vaccination coverage increased by 1.4 percentage points from 2012 to 2013 (84.6% in 2012 vs. 86.0% in 2013) among children 13-17 years.
- 42 states met the *Healthy People 2020* adolescent vaccination coverage target of 80% for at least one dose of Tdap among adolescents 13-15 years, up from 36 states in 2012.

NIS-Teen Vaccination Coverage Data Tables

- [2013 NIS-Teen Vaccination Coverage Table Data \(/vaccines/imz-managers/coverage/nis/teen/data/tables-2013.html\)](/vaccines/imz-managers/coverage/nis/teen/data/tables-2013.html)
- [Go to NIS-Teen data for past years \(/vaccines/imz-managers/coverage/nis/teen/index.html\)](/vaccines/imz-managers/coverage/nis/teen/index.html)
- [NIS-teen FAQs \(/vaccines/imz-managers/coverage/nis/teen/qa-faqs.html\)](/vaccines/imz-managers/coverage/nis/teen/qa-faqs.html)
- [Related NIS-teen articles \(/vaccines/imz-managers/coverage/nis/teen/articles.html\)](/vaccines/imz-managers/coverage/nis/teen/articles.html)
- [How to use NIS-teen data \(/vaccines/imz-managers/coverage/nis/teen/how-to.html\)](/vaccines/imz-managers/coverage/nis/teen/how-to.html)
- [Technical notes for NIS-teen tables \(/vaccines/imz-managers/coverage/nis/teen/tech-notes.html\)](/vaccines/imz-managers/coverage/nis/teen/tech-notes.html)

Background on the NIS-Teen

- The National Immunization Survey on teen vaccination coverage rates (also called NIS-Teen) provides a "report card" to let us know how well we are doing in protecting our nation's teens against vaccine-preventable diseases.
- The NIS-Teen includes vaccination coverage estimates for three vaccines that are recommended at 11 through 12 years of age. These vaccines include Tdap to protect against tetanus, diphtheria, and pertussis, meningococcal vaccine to protect against meningococcal disease, and HPV vaccine to protect against infection with HPV and HPV-related diseases, including certain types of cancers.
- The NIS-Teen is a random-digit-dialed telephone survey of parents and guardians of teens 13–17 years old; in 2013, it included data for more than 18,000 adolescents. The telephone survey is followed by collection of vaccination records from clinicians.
- NIS-Teen immunization coverage estimates are based on a sample of adolescents identified from both land-line and cell phone sampling frames. Before 2011, only land-line sampling frames were used. Including cell phones helps keep a nationally representative sample, since an increasing number of families have started using only cell phones and no longer have land-line telephones.
- The report also includes coverage on some vaccines recommended for adolescents if not previously given in childhood.

Also see [Archived Teen Vaccination Coverage \(/vaccines/who/teens/vac-coverage/index.html\)](/vaccines/who/teens/vac-coverage/index.html).

Related Pages

- MMWR
[National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2013 \(http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6329a4.htm\)](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6329a4.htm)
- [Matte Article \[2 pages\] \(/vaccines/who/teens/products/downloads/matte-hpv-preteens.doc\)](/vaccines/who/teens/products/downloads/matte-hpv-preteens.doc)
Preteens and teens need HPV vaccine now to prevent HPV-related cancers later.

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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		



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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/>



Vaccines for Preteens and Teens: What Parents Should Know

Last updated JUNE 2014

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 the 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 and a second meningococcal shot at age 16. Teens who got the meningococcal shot when they were 13, 14, or 15 years old should still get a second shot at age 16. Older teens who haven't gotten any meningococcal shots should get one dose as soon as possible.

HPV Vaccine

Human papillomavirus (HPV) vaccines help protect both girls and boys from HPV infection and cancer caused by HPV. Two HPV vaccines protect girls from the types of HPV that cause most cervical cancer. One HPV vaccine also helps protect both girls and boys from anal cancer and genital warts. HPV vaccines are given to preteens as 3 shots over 6 months when they are 11 or 12 years old. 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 after 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 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?

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.

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



HPV Vaccine for Preteens and Teens

Last updated JUNE 2014

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.

The HPV vaccine is given in 3 shots. The second shot is given 1 or 2 months after the first shot. Then a third shot is given 6 months after the first shot. HPV vaccine also produces a higher immune response in preteens than in older adolescents.

What else should I know about HPV vaccine?

There are two HPV vaccines. Girls and young women should get either HPV vaccine to prevent cervical cancer.

One of the HPV vaccines also protects against genital warts and anal cancer in both females and males. Boys should get this HPV vaccine to prevent anal cancer and genital warts. Girls can get this vaccine to prevent cervical cancer, anal cancer, and genital warts.

Both 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.

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**U.S. Department of
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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.

Why does my child need this now?

HPV vaccines offer the best protection to girls and boys who receive all three vaccine doses 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. ❖

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

HPV vaccine is also recommended for girls ages 13 through 26 years and for boys ages 13 through 21 years, who have not yet been vaccinated. So if your son or daughter hasn't started or finished the HPV vaccine series—**it's not too late!** Talk to their doctor about getting it for them now.

Two vaccines—Cervarix and Gardasil—are available to prevent the HPV types that cause most cervical cancers and anal cancers. One of the HPV vaccines, Gardasil, also prevents vulvar and vaginal cancers in women and genital warts in both women and men. Only Gardasil has been tested and licensed for use in males. Both vaccines are given in a series of 3 shots over 6 months. The best way to remember to get your child all three shots is to make an appointment for the second and third shot before you leave the doctor's office after the first shot.

Is the HPV vaccine safe?

Yes. Both HPV vaccines were studied in tens of thousands of people around the world. More than 57 million doses have been distributed to date, and there have been no serious safety concerns. Vaccine safety continues to be monitored by CDC and the Food and Drug Administration (FDA).

These studies continue to show that HPV vaccines are safe.

The most common side effects reported are mild. They include: pain where the shot was given (usually the arm), fever, dizziness, and nausea. ►



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You may have heard that some kids faint when they get vaccinated. Fainting is common with preteens and teens for many medical procedures, not just the HPV shot. Be sure that your child eats something before going to get the vaccine. It's a good idea to have your child sit or lay down while getting any vaccine, and for 15 minutes afterwards, to prevent fainting and any injuries that could happen from fainting.

The HPV vaccine can safely be given at the same time as the other recommended vaccines, including the Tdap, meningococcal, and influenza vaccines. Learn more about all of the recommended preteen vaccines at www.cdc.gov/vaccines/teens

Help paying for vaccines

The Vaccines for Children (VFC) program provides vaccines for children ages 19 years and younger who are under-insured, not insured, 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?

One HPV vaccine—Gardasil—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.

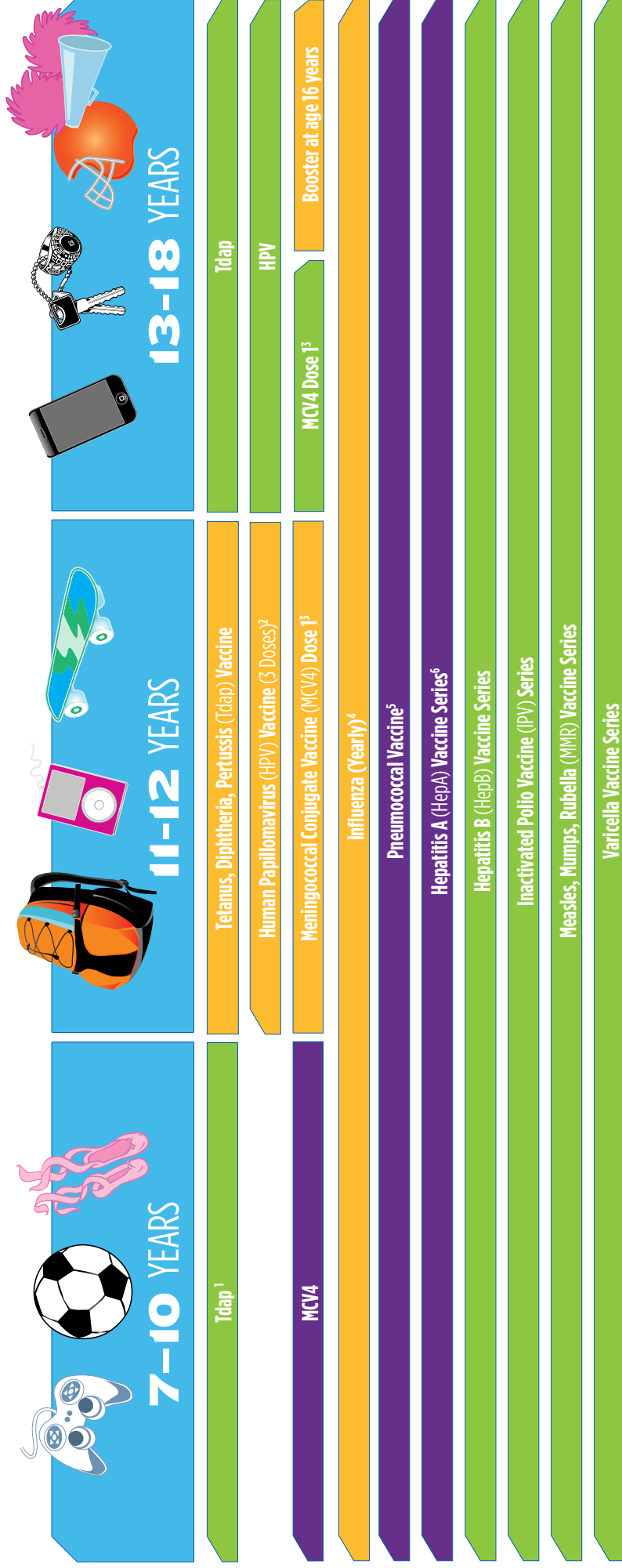
Learn more about HPV and HPV vaccine at www.cdc.gov/hpv

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

800-CDC-INFO (800-232-4636)

<http://www.cdc.gov/vaccines/teens>

2014 Recommended Immunizations for Children from 7 Through 18 Years Old



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 conditions that put them at high risk for serious diseases. Note that healthy children **can** get the HepA series⁶. See vaccine-specific recommendations at www.cdc.gov/vaccines/pubs/ACIP-list.htm.

FOOTNOTES

¹ Tdap vaccine is combination vaccine that is recommended at age 11 or 12 to protect against tetanus, diphtheria and pertussis. If your child has not received any or all of the DTaP vaccine series, or if you don't know if your child has received these shots, your child needs a single dose of Tdap when they are 7-10 years old. Talk to your child's health care provider to find out if they need additional catch-up vaccines.

² All 11 or 12 year olds – both girls *and* boys – should receive 3 doses of HPV vaccine to protect against HPV-related disease. Either HPV vaccine (Cervarix[®] or Gardasil[®]) can be given to girls and young women; only one HPV vaccine (Gardasil[®]) can be given to boys and young men.

³ Meningococcal conjugate vaccine (MCV) is recommended at age 11 or 12. A booster shot is recommended at age 16. Teens who received MCV for the first time at age 13 through 15 years will need a one-time booster dose between the ages of 16 and 18 years. If your teenager missed getting the vaccine altogether, ask their health care provider about getting it now, especially if your teenager is about to move into a college dorm or military barracks.

⁴ Everyone 6 months of age and older—including preteens and teens—should get a flu vaccine every year. Children under the age of 9 years may require more than one dose. Talk to your child's health care provider to find out if they need more than one dose.

⁵ Pneumococcal Conjugate Vaccine (PCV13) and Pneumococcal Polysaccharide Vaccine (PPSV23) are recommended for some children 6 through 18 years old with certain medical conditions that place them at high risk. Talk to your healthcare provider about pneumococcal vaccines and what factors may place your child at high risk for pneumococcal disease.

⁶ Hepatitis A vaccination is recommended for older children with certain medical conditions that place them at high risk. HepA vaccine is licensed, safe, and effective for all children of all ages. Even if your child is not at high risk, you may decide you want your child protected against HepA. Talk to your healthcare provider about HepA vaccine and what factors may place your child at high risk for HepA.



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For more information, call toll free 1-800-CDC-INFO (1-800-232-4636) or visit <http://www.cdc.gov/vaccines/teens>

Vaccine-Preventable Diseases and the Vaccines that Prevent Them

Diphtheria (Can be prevented by Tdap vaccine)

Diphtheria is a very contagious bacterial disease that affects the respiratory system, including the lungs. Diphtheria bacteria are passed from person to person by direct contact with droplets from an infected person's cough or sneeze. When people are infected, the diphtheria bacteria produce a toxin (poison) in the body that can cause weakness, sore throat, low-grade fever, and swollen glands in the neck. Effects from this toxin can also lead to swelling of the heart muscle and, in some cases, heart failure. In severe cases, the illness can cause coma, paralysis, and even death.

Hepatitis A (Can be prevented by HepA vaccine)

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 include fever, tiredness, loss of appetite, nausea, abdominal discomfort, dark urine, and jaundice (yellowing of the skin and eyes). An infected person may have no symptoms, may have mild illness for a week or two, or may have severe illness for several months that requires hospitalization. In the U.S., about 100 people a year die from hepatitis A.

Hepatitis B (Can be prevented by HepB vaccine)

Hepatitis B is an infection of the liver caused by hepatitis B virus. The virus spreads through exchange of blood or other body fluids, for example, from sharing personal items, such as razors or during sex. Hepatitis B causes a flu-like illness with loss of appetite, nausea, vomiting, rashes, joint pain, and jaundice. The virus stays in the liver of some people for the rest of their lives and can result in severe liver diseases, including fatal cancer.

Human Papillomavirus (Can be prevented by HPV vaccine)

Human papillomavirus is a common virus. HPV is most common in people in their teens and early 20s. It is the major cause of cervical cancer in women and genital warts in women and men. The strains of HPV that cause cervical cancer and genital warts are spread during sex.

Influenza (Can be prevented by annual flu vaccine)

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 vaccine)

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 MCV vaccine)

Meningococcal disease is caused by bacteria and is a leading cause of bacterial meningitis (infection around the brain and spinal cord) in children. The bacteria are spread through the exchange of nose and throat droplets, such as when coughing, sneezing or kissing. Symptoms include nausea, vomiting, sensitivity to light, confusion and sleepiness. Meningococcal disease also causes blood infections. About one of every ten people who get 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 vaccine)

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 fever, headaches, painful swelling of the salivary glands under the jaw, fever, muscle aches, tiredness, 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 can lead to sterility in men.

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

Pertussis is caused by bacteria spread through direct contact with respiratory droplets when an infected person coughs or sneezes. In the beginning, symptoms of pertussis are similar to the common cold, including runny nose, sneezing, and cough. After 1-2 weeks, pertussis can cause spells of violent coughing and choking, making it hard to breathe, drink, or eat. This cough can last for weeks. Pertussis is most serious for babies, who can get pneumonia, have seizures, become brain damaged, or even die. About two-thirds of children under 1 year of age who get pertussis must be hospitalized.

Pneumococcal Disease

(Can be prevented by Pneumococcal vaccine)

Pneumonia is an infection of the lungs that can be caused by the bacteria called pneumococcus. This bacteria can cause other types of infections too, such as ear infections, sinus infections, meningitis (infection of the covering around the brain and spinal

cord), bacteremia and sepsis (blood stream infection). Sinus and ear infections are usually mild and are much more common than the more severe forms of pneumococcal disease. However, in some cases pneumococcal disease can be fatal or result in long-term problems, like brain damage, hearing loss and limb loss. Pneumococcal disease spreads 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 vaccine)

Polio is caused by a virus that lives in an infected person's throat and intestines. It spreads through contact with the feces (stool) of an infected person and through droplets from a sneeze or cough. Symptoms typically include sudden fever, sore throat, headache, muscle weakness, and pain. In about 1% of cases, polio can cause paralysis. Among those who are paralyzed, up to 5% of children may die because they become unable to breathe.

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

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 vaccine)

Tetanus is caused by bacteria found in soil. The bacteria enters the body through a wound, such as a deep cut. When people are infected, the bacteria produce a toxin (poison) in the body that causes serious, painful spasms and stiffness of all muscles in the body. This can lead to "locking" of the jaw so a person cannot open his or her mouth, swallow, or breathe. Complete recovery from tetanus can take months. Three of ten people who get tetanus die from the disease.

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

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.