

# Why Immunize Adolescents In Juvenile Residential Facilities?

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*The findings and conclusions in this article are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.*

Unless they receive vaccines in juvenile residential facilities, some adolescents may not receive them at all. For youths in high-risk settings such as juvenile residential facilities, vaccination and other preventive services are not always at the top of the health care priority list. While immediate threats to the health (e.g., psychiatric problems, sexually transmitted disease, pregnancy) of these adolescents must come first, the detention and incarceration periods provide an opportunity — and perhaps the only opportunity — to immunize medically underserved youths who are at risk for several vaccine-preventable diseases. In this setting, two common barriers to vaccination, availability of health care providers and cost (see Table 1), are often overcome because most facilities have staff available to administer vaccines and juvenile residential facilities can receive vaccines at no cost. This article examines the vaccines that are recommended for adolescents, the diseases these vaccines prevent, how juvenile residential facilities (and other health care providers) can get the vaccines at no cost and the key components of a program to immunize adolescents.

## Diseases and the Vaccines that Prevent Them

**Tetanus, Diphtheria and Pertussis.** The new combination tetanus, diphtheria and acellular pertussis vaccine (Tdap) provides protection against three diseases: tetanus, diphtheria and pertussis. Tetanus is caused by bacteria that enter the body through a cut or wound. Because this disease causes painful spasms of all muscles and can lead to “locking” of the jaw, preventing opening of the mouth and swallowing, it is often referred to as “lockjaw.” Tetanus leads to death in about 20 percent of all cases.

Diphtheria is also caused by bacteria but is transmitted differently, from person to person through coughing or sneezing. It can cause a thick coating in the nose, throat or airway and can lead to breathing problems, heart failure, paralysis and death. Fortunately, the disease is now rare in the United States.

Pertussis (or whooping cough, so called because of the sound produced) is a highly contagious bacterial disease that usually causes a prolonged cough. Although adolescents may miss days of school because of the cough, they rarely develop serious complications and often go undiagnosed. However, infected adolescents and adults can transmit the disease to infants who are too young to be vaccinated. In these infants, pertussis may result in pneumonia, seizures, brain damage and death. The number of diagnosed cases of pertussis in adolescents is increasing, with 8,887 cases reported among adolescents 11 to 18 years of age, and 25,827 total cases reported in the United States in 2004.



All adolescents 11 to 18 years of age should receive a single dose of Tdap instead of the previously recommended Td (the older vaccine for tetanus and diphtheria) booster that does not protect against pertussis. Even adolescents who received a Td booster around age 12 should receive Tdap; an interval of 5 years or more between Td and Tdap is recommended, although shorter intervals may be used.

Adolescents who have not received at least three doses of any tetanus and diphtheria vaccine (DTP, DTaP, or DT) during childhood should receive Tdap for the first dose and Td for subsequent doses (up to a three-dose total). A Td dose (booster) is recommended every 10 years thereafter.<sup>1</sup>

**Hepatitis B.** Infection with the hepatitis B virus (HBV) can cause jaundice (yellowing of the skin, tissues and body fluids), “flu-like” symptoms and nausea for up to six weeks. As a chronic or long-term disease, it can also cause cirrhosis and cancer of the liver. About 1.25 million people in the United States have chronic HBV infection. Each year it is estimated that 80,000 people, mostly young adults, get infected with HBV, and 4,000 to 5,000 people die from chronic hepatitis B. The hepatitis B virus is spread through contact with the blood and body fluids of an infected person. It is a threat to all adolescents but especially to those who practice unsafe behaviors such as injection-drug use and sex with multiple partners or a partner known to have HBV. Adolescents without a record of receiving the hepatitis B vaccine should receive three doses of the vaccine regardless of their known risk factors.<sup>2</sup>

**Meningococcal Infections.** Meningococcal infections are extremely severe. They can cause meningitis (an infection of the fluid surrounding the brain and spinal cord), pneumonia and blood infections that may lead to lifelong complications or death. About 2,600 people in the United States develop meningococcal infections each year, and 10 percent to 15 percent of them die, in spite of treatment with antibiotics. Of those who live, another 11 percent to 19 percent lose limbs due to amputation, become deaf or mentally retarded, or suffer from seizures or strokes. Crowded living conditions and cigarette smoke are thought to increase the risk of the disease. In addition, some adolescents may be at higher risk because of underlying medical conditions. The new meningococcal conjugate vaccine (MCV4) that was licensed in January 2005 is expected to provide protection against meningitis and other infections caused by the same bacteria. It should be administered to adolescents during their doctor’s visit at age 11 to 12 or before entering high school.<sup>3</sup>

**Chicken pox.** Chicken pox (also called varicella) is a highly contagious viral disease that causes an itchy rash and may sometimes cause life-threatening complications, mainly in adolescents and adults. Once a person has had chicken pox he or she is unlikely to ever get the disease again. Varicella deaths are now preventable by vaccine and have declined annually from 51 in 1995 to 26 in 2001.<sup>4</sup> It is recommended that adolescents 11 to

12 years old who have not had chicken pox or the vaccine be vaccinated. If the adolescent is uncertain about whether he or she has had the disease, parents should be asked or a blood test can be performed to determine immunity.<sup>5</sup>

**Measles, Mumps and Rubella (MMR).** Measles, mumps and rubella infections all have potentially serious complications. In addition to a generalized rash, the measles virus can cause ear infections, pneumonia, seizures, brain damage and death. The mumps virus can lead to deafness, meningitis, painful swelling of the testicles and ovaries, and (rarely) death. A recent large outbreak of mumps<sup>6</sup> among college-age students in Iowa reveals the potential for this disease to spread rapidly among a susceptible population. The rubella (German measles) virus causes a rash, mild fever and arthritis (mostly in women), but most important, it leads to birth defects in the babies of unvaccinated women who contract it when pregnant. It is recommended that children receive two doses of MMR vaccine; however, adolescents should also receive the MMR vaccine unless they have a record of previous vaccination or immunity (by blood test).

**Cervical Cancer (HPV).** It is now commonly accepted that the human papillomavirus (HPV) is associated with almost all cases of cervical cancer as well as the development of other less common anal and genital cancers. There are more than 30 types of HPV but only two of them cause 70 percent of all cervical cancer cases in the United States.<sup>7</sup> Other types are associated with genital warts. HPV is the most common sexually transmitted viral infection in the United States, and about half of those who are infected are sexually active adolescents and young adults, ages 15 to 24. Presently, two vaccines that would prevent strains of HPV associated with cervical cancer are in the final stages of testing and may soon be available in the United States.

It is important to note that some adolescents with specific health risks may need additional vaccines. Vaccines to consider may include hepatitis A, influenza (annually) and pneumococcal. For additional information on adolescent vaccines and recommendations, visit <http://www.cdc.gov/nip/publications/acip-list.htm>.

## How Juvenile Residential Facilities Can Receive No-Cost Vaccines

Any provider authorized under state law to prescribe vaccines can receive free vaccines through the Vaccines for Children (VFC) program. VFC is a federally funded

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**Table 1. Adolescent Vaccine Price List (Private Sector Cost vs. VFC Enrolled Facility)**

Vaccine	Disease	Private Sector Cost/dose	VFC Enrolled Facility Cost/dose
Tdap	Whooping cough (pertussis)	*\$35.75	\$0
Td	Tetanus and diphtheria	*\$17.50	\$0
Hepatitis B	Hepatitis B infection	*\$21.37	\$0
Meningococcal Conjugate	Meningitis, meningococcal infections	*\$82.00	\$0
Varicella	Chicken pox	*\$66.81	\$0
MMR	Measles, mumps and rubella	*\$40.37	\$0
HPV	Cervical cancer, genital warts	**TBD	TBD

\*Prices do not include variable federal excise tax per dose (\$0.75 - \$3.75/dose)

\*\*To be determined

\*\*\*Prices last reviewed/updated March 1, 2006

program that provides government-purchased vaccines to eligible children through the age of 18. The VFC program automatically covers vaccines that are recommended by the U.S. Health and Human Services' Advisory Committee on Immunization Practices (ACIP) and approved by the Centers for Disease Control and Prevention (CDC). Most youths in juvenile residential facilities are entitled to receive vaccines from this program. Using the VFC program will enhance the ability of juvenile facilities to provide needed vaccines while eliminating expenses associated with their purchase. VFC also provides excellent customer service to address questions and minimize the amount of required paperwork. The vaccine may be ordered by fax or email. Additional information about the VFC program can be found at [www.cdc.gov/nip/vfc/Default.htm](http://www.cdc.gov/nip/vfc/Default.htm) as well as through the list of local state VFC coordinators at [www.cdc.gov/nip/vfc/contacts\\_vfc\\_coord.htm](http://www.cdc.gov/nip/vfc/contacts_vfc_coord.htm).

A survey was recently administered to immunization program managers in each state to determine the current status of VFC enrollment in selected juvenile residential facilities. Out of 173 public facilities, 135 (76 percent) were enrolled in the VFC program, and 115 (85 percent) ordered vaccines between July and December 2005. As a next step, CDC, in collaboration with state immunization program staff, will conduct facility visits to determine the best methods for improving vaccination rates among eligible youths.

## Programs for Vaccination Of Youths in High-Risk Settings

Although these new vaccines provide increasing opportunities for disease prevention, delivering them will require some added effort by the juvenile justice system. Pro-

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grams that have been successful in vaccinating high-risk youths in alternative settings have previously focused only on

hepatitis B vaccination because of its significance for high-risk youth.<sup>8</sup> However, now programs should be able to deliver up to five vaccines (six when HPV vaccine is licensed) and make even more significant contributions to the health of all adolescents.

Collaboration with community partners and local or state health department staff is essential to adolescent vaccination programs in juvenile justice facilities. To establish successful vaccination programs, facilities should register as VFC providers and teach staff about the vaccines, as well as safe vaccination practices.<sup>9</sup> One of the most difficult immunization problems correctional staff face is determining which vaccines the adolescents already received. Fortunately, some states have immunization registries in which vaccinations received by the juveniles are recorded. Local health departments can provide information about how to access this information and provide technical support for vaccine administration by contacting guardians by telephone to obtain medical records, and reinforcing the importance of follow-up doses and other issues. Hand-held vaccination records obtained from the parent/adolescent may also be available and helpful in determining vaccination status. Close collaboration between juvenile justice

facilities, public health departments and private health providers may prove to be an essential component to overcoming many of the challenges of dose completion among detained adolescents, thereby improving their overall health and well-being.

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