

## Call to Action

# Adolescent Vaccination

## *Protecting Adolescents Now and Into the Future*

Human papillomavirus (HPV) vaccination is now recommended for all girls and boys at 11-12 years of age.

Click here to view the updated recommendations:

[www.cdc.gov/mmwr/preview/mmwrhtml/mm6050a3.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6050a3.htm) or  
[www.cdc.gov/hpv/vaccine.html](http://www.cdc.gov/hpv/vaccine.html).

For the most recent adolescent vaccination rates, click here:

[www.cdc.gov/vaccines/stats-surv/nisteen/data/tables\\_2011.htm#overall](http://www.cdc.gov/vaccines/stats-surv/nisteen/data/tables_2011.htm#overall)



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## US Adolescents Are Vulnerable to Vaccine Preventable Diseases

Vaccines recommended for adolescents are underused, leaving our nation's teens vulnerable to serious illness and even death. Healthcare providers should make every effort to vaccinate adolescents according to the national immunization schedule to benefit adolescents, their close contacts, and society at large. The US immunization schedule is the result of a careful and extensive review of all aspects of vaccines (eg, effectiveness, safety, cost) by a 15-member expert panel, the Advisory Committee on Immunization Practices (ACIP), and the adoption of ACIP's recommendations by the Centers for Disease Control and Prevention (CDC).<sup>1</sup>

Vaccines recommended for adolescents can be grouped into several categories (Table 1).<sup>2</sup> Influenza vaccine is recommended annually for all children 6 months and older. Three vaccines are recommended for first-time administration at 11-12 years of age. "Catch-up" vaccines are recommended for adolescents who were not fully immunized as infants and toddlers. There are also two vaccines recommended for certain adolescents at higher risk of disease or complications. Together, these vaccines protect adolescents from more than a dozen infectious diseases.

Achieving and maintaining high immunization rates is critical for disease prevention. The highly effective US childhood immunization program has led to elimination of endemic transmission of polio, measles, and rubella viruses, while smallpox has been eradicated worldwide.<sup>3</sup> These successes are rooted in widespread infant and toddler vaccination. Widespread immunization of adolescents can lead to similar positive results.

### Adolescent Immunization Rates Increasing, But Still Low

In 2011, CDC reported results from the fifth National Immunization Survey-Teen (NIS-Teen).<sup>4</sup> This national survey assesses adolescent vaccination rates based on data gathered from healthcare providers (Figure 1). Although still too low, vaccination rates have risen each year since the survey began.<sup>4-8</sup>

Coverage went up about 13 percentage points from the previous year's estimates for tetanus-diphtheria-pertussis (Tdap) and 9 percent for meningococcal

conjugate vaccine (MCV4). However, a new booster dose recommendation for MCV4 is too new to be measured by this survey. Coverage with at least one dose of human papillomavirus (HPV) vaccine increased less than half of the others, up to 49 percent, but coverage for the recommended three doses is only about 32 percent.

Table 1

#### Vaccines for Adolescents\*

##### Vaccines for routine administration to adolescents

- Influenza (1 dose annually)
- Meningococcal conjugate vaccine (1 primary dose and 1 booster dose)
- Tetanus, diphtheria, and acellular pertussis (1 booster dose)
- Human papillomavirus<sup>†</sup> (3-dose primary series)

##### Catch-up vaccines for adolescents not fully immunized

- Hepatitis B
- Polio
- Measles, mumps, and rubella
- Varicella<sup>‡</sup>

##### Vaccines for adolescents at higher risk of disease or complications

- Hepatitis A
- Pneumococcal polysaccharide

\*See MMWR for each vaccine for detailed information.

<sup>†</sup>Recommended for routine administration to females; may also be given to males.

<sup>‡</sup>As of 2006, two doses are recommended (at 12-15 months and 4-6 years). Adolescents who received only one dose should have a catch-up dose.

Source: CDC. MMWR 2011;60(05):1-4.<sup>2</sup>

The NIS-Teen survey revealed some coverage disparities. Adolescents below the poverty level were less likely to receive Tdap than those at or above the poverty level. White adolescents were less likely to receive MCV4 than Hispanic adolescents. HPV disparities were numerous. Lower three-dose completion rates were reported in Blacks and Hispanics compared with Whites (although Hispanics were more likely to begin the series) and those below the poverty line compared with those at or above.

## Vaccines Prevent Serious Morbidity and Mortality

Even when treated quickly and appropriately, **meningococcal disease** kills about 10 to 14 percent of adolescents and young adults infected, and 11 to 19 percent of survivors suffer serious long-term effects such as hearing loss, brain damage, and digit or limb amputation.<sup>9-11</sup> Primary vaccination at 11-12 years of age with a booster dose at age 16 is important because adolescents are at increased risk of meningococcal disease.<sup>12</sup>

**Pertussis** is substantially underreported,<sup>13</sup> but some estimates range from 1 million to over 3 million cases per



year.<sup>14,15</sup> Whether cases in adolescents are subclinical, of minor clinical importance, or more severe, infected adolescents may serve as an important reservoir of infection for neonates and others at higher risk of serious illness or pertussis-related death.<sup>16-19</sup> Tdap is a highly effective vaccine that replaces the Td vaccine as the booster at 11-12 years of age or in older adolescents who need a Td booster.<sup>2</sup>

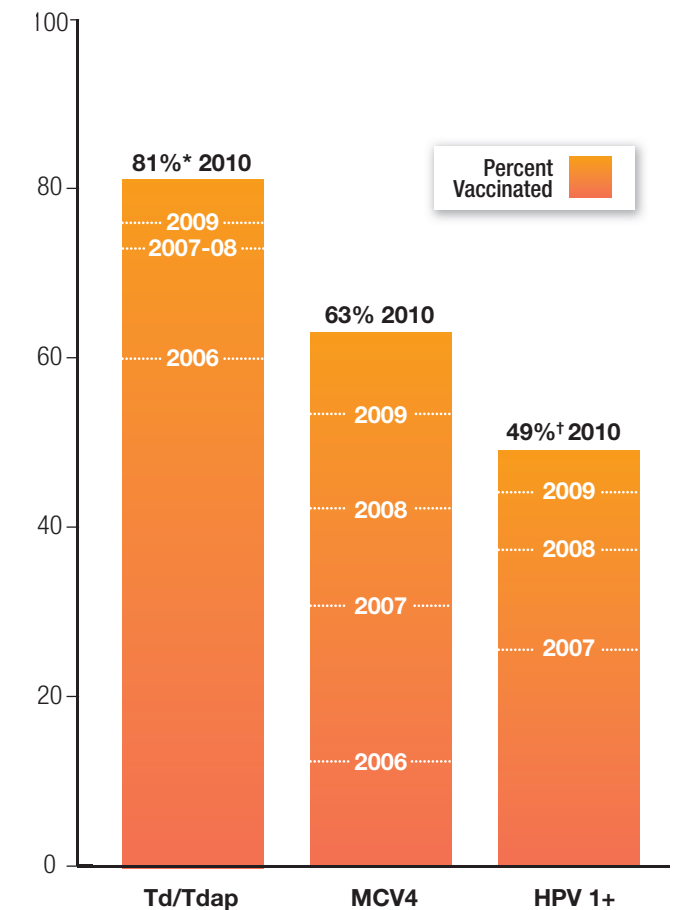
There are over 6 million new HPV infections in the US each year.<sup>20</sup> While most

infections will be cleared by the immune system, chronic infection can lead to cervical cancer. HPV infection also is associated with anogenital cancers such as cancer of the vulva, vagina, penis, and anus. HPV vaccination is recommended for routine administration in girls 11-12 years of age as a three-dose series at zero, two, and six months.<sup>21</sup>

There are currently two vaccines available: the quadrivalent HPV vaccine (types 6, 11, 16, and 18) and the bivalent HPV vaccine (types 16 and 18). Both vaccines protect against types 16 and 18 that cause about 70 percent of cervical cancers.<sup>22,23</sup> The quadrivalent HPV vaccine has also been demonstrated to prevent genital warts and vulvar and vaginal cancers and precancers.<sup>21</sup> The vaccines do not eliminate the need for cervical cancer screening, because the vaccines do not protect against all HPV infections that cause cervical cancer.<sup>23</sup> The quadrivalent vaccine may also be given to males 9 through 26 to reduce HPV infection.<sup>21</sup>

Figure 1

### Comparison of Vaccination Rates in Adolescents 13-17, US—2006-10



\*69% of adolescent boosters were Tdap.

†32% completed the three-dose series in 2010, up from 27% in 2009.

Td=tetanus, diphtheria; Tdap=tetanus, diphtheria, pertussis; MCV4=meningococcal conjugate; HPV=human papillomavirus

Source: CDC. NIS-Teen Surveys, 2006-2010.<sup>4-8</sup>

### Catch-up vaccines are more widely used, leading to substantial disease prevention

The catch-up vaccines are associated with much higher vaccination rates and, therefore, with much greater benefits to date. For example, from 1990 to 2004, the incidence of acute **hepatitis B** declined 75 percent as infant immunization increased.<sup>24</sup> The last indigenous case of **polio** reported in the US was in 1979,<sup>25</sup> and, since the introduction of vaccines to combat **measles, mumps, and rubella**, US incidence of these illnesses has decreased 99 percent.<sup>26</sup>



Even so, vaccination rates must remain high or we are vulnerable to new outbreaks of “old” diseases. For example, by the middle of 2011 the US had 156 measles cases, half of them hospitalized. This is the most cases in any single year since 1996.<sup>27</sup>

### Influenza vaccine recommendations include all adolescents

Influenza immunization is recommended annually for all children 6 months and older.<sup>28</sup> While deaths in children are not common, they do occur in children of all ages and health status.<sup>29</sup>

### A Broad Approach Is Necessary to Increase Vaccination Rates

Adolescent immunization rates lag far behind childhood rates.<sup>30</sup> Increased attention on both addressing barriers and identifying opportunities for immunization is needed to increase adolescent rates.

One of the most important issues affecting delivery of adolescent vaccines is suboptimal use of medical homes and lack of regular well-care visits. A comprehensive healthcare visit is recommended at 11-12 years of age.<sup>31</sup> Making this visit routine would provide an opportunity to deliver much needed preventive health services, including vaccines. However, the absence of such a routine visit should not deter healthcare providers from using other opportunities (eg, sick visits, sports physicals) to provide vaccines or education and counsel about the importance of immunization. The end-of-high-school/college entry point is also a great time to review immunization status and provide necessary vaccines before insurance coverage changes.<sup>32</sup>

Changing behavior among adolescents and their parents or guardians will require education and outreach. While younger children have little or no control over healthcare decisions, adolescents often play a key role in decision-making and are also influenced by their parents or guardians. Therefore, it is important that adolescents, as well as their parents or guardians, are educated about the value of vaccines and the seriousness of vaccine-preventable diseases, and that they are empowered to seek information from healthcare providers.

Healthcare providers must assess their practices and put systems in place to meet increased demand for immunization in adolescents. They can establish standing orders for vaccination services, use existing immunization information systems, develop vaccination “quick visits,” especially for multiple-dose vaccines, establish office

guidelines for vaccine delivery, implement reminder and recall systems, create immunization teams whose job is to focus on this issue, and use the CDC’s Comprehensive Clinic Assessment Software Application (CoCASA) to assess office immunization practices. Healthcare providers also need to educate themselves and their colleagues about vaccines.



Vaccinations administered at alternative sites, including schools, pharmacies, and emergency departments may be an important component of optimizing immunization rates. School-based programs were a focal point of pandemic influenza vaccination efforts, and may hold potential for increasing overall immunization rates in our youth.

State mandates requiring vaccination for school entry help to increase coverage rates. For example, adolescents in states with mandates are significantly more likely to complete the hepatitis B vaccination series than adolescents in states without mandates (75 percent vs 39 percent). If adequately funded, state mandates can help eliminate preventive care disparities and can often help drive reimbursement and insurance coverage.<sup>33-35</sup> However, to work, school mandates require public acceptance, provider support, demonstrated vaccine safety, adequate supply, and established funding systems.<sup>36</sup>

System-related vaccination barriers are not remedied easily by the action of individual healthcare providers or the public. However, supportive efforts to minimize such barriers (eg, a nationwide immunization tracking system and a vaccine financing system that allows adolescents to receive all necessary vaccines without cost barriers at their medical home location) may be instituted.

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## Organizational Supporters

The following organizations agree that immunization rates in adolescents need to be improved to reduce the impact of vaccine-preventable diseases.

- American Academy of Nurse Practitioners
- American Academy of Pediatrics
- American Academy of Physician Assistants
- American College of Obstetricians and Gynecologists
- American Medical Association
- American Nurses Association
- American Pharmacists Association
- American Public Health Association
- America's Health Insurance Plans
- Asian and Pacific Islander American Health Forum
- Association of State and Territorial Health Officials
- Center for Vaccine Awareness and Research at Texas Children's Hospital
- Centers for Disease Control and Prevention
- Immunization Action Coalition
- Infectious Diseases Society of America
- Kaiser Permanente Northern California
- National Alliance for Hispanic Health
- National Association of Community Health Centers
- National Association of County and City Health Officials
- National Association of Pediatric Nurse Practitioners
- National Association of School Nurses
- National Foundation for Infectious Diseases
- National Medical Association
- National Meningitis Association
- Partnership for Prevention
- Pediatric Infectious Disease Society
- Society for Adolescent Health and Medicine
- Vaccine Education Center at The Children's Hospital of Philadelphia
- Vermont Child Health Improvement Program
- WellPoint Inc.

### *About the National Foundation for Infectious Diseases (NFID)*

NFID is a non-profit, tax-exempt (501c3) organization founded in 1973 and dedicated to educating the public and healthcare professionals about the causes, treatment, and prevention of infectious diseases.

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