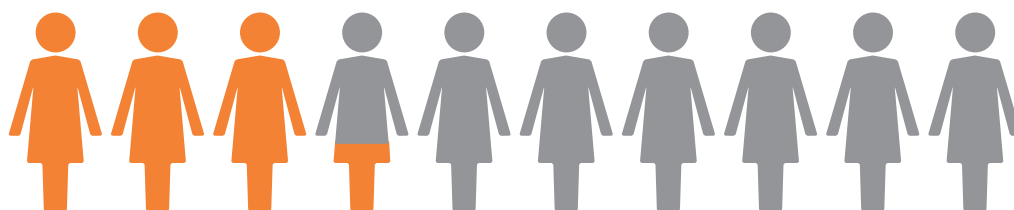


# Accelerating HPV Vaccine Uptake:

Urgency for Action to Prevent Cancer

## Executive Summary



HPV Vaccines **Prevent Cancers.**

Why Are **So Few** U.S. Adolescents Vaccinated?



A Report to the President of the United States

from

The President's Cancer Panel

# Executive Summary

Nearly 80 million people in the U.S.—1 in every 4—are infected with at least one strain of human papillomavirus (HPV), a group of over 100 infectious agents. In most people, the body is able to clear the virus, but persistent infection with certain types of HPV is associated with multiple cancers and several other diseases.

Two safe and effective vaccines are available to protect against infection with the two most prevalent cancer-causing HPV types. Widespread vaccination against HPV could sharply reduce the number of cervical and other cancers and conditions caused by the virus. But this goal will be achieved only if HPV vaccine uptake increases dramatically. With the numbers of some HPV-associated cancers rising, we cannot afford to wait to protect our young people from future HPV infections.

In 2012–2013, to energize efforts to reach the HPV vaccines' potential to save lives, the President's Cancer Panel aimed to develop a multipronged strategy to accelerate vaccine uptake in the United States and globally. By supporting HPV vaccination as an urgent national and global health priority, the U.S. National Cancer Program has an unprecedented opportunity to contribute to preventing millions of avoidable cancers and other conditions in men and women worldwide.

## Part 1: The Case for HPV Vaccination

Worldwide, about 2 million new cancer cases are caused by infectious diseases every year. More than 600,000 of these are caused by human papillomaviruses.

The vast majority of HPV infections are cleared by the immune system within two years. However, if the virus is not cleared, certain HPV types can cause abnormal growths, including several cancers, genital warts, and noncancerous but serious tumors in the respiratory tract called recurrent respiratory papillomatosis (RRP). Cervical cancer is the most common cancer caused by HPV, although the viruses also play a significant role in cancers of the vulva, vagina, anus, penis, and oropharynx.

The discovery that infectious agents can cause cancers opened the door for a new cancer prevention strategy—vaccination. Vaccines against infectious agents have been one of the greatest success stories in public health, leading to eradication of smallpox and drastically reducing the incidence and severity of many other deadly diseases attributable to infectious agents.

Vaccines capable of preventing cancers have been a goal for many years, but until recently, only one had been developed—a vaccine against hepatitis B, a leading cause of liver cancer.

Two vaccines—Cervarix® and Gardasil®—are approved by the U.S. Food and Drug Administration (FDA) to prevent several HPV-associated diseases. These vaccines prevent infections by the two most prevalent types of cancer-causing HPV: HPV16 and HPV18. Together, these types are responsible for more than 400,000 cases of cancer around the world each year, including 22,000 in the United States. Gardasil® also prevents infection by two types of HPV that cause genital warts and RRP: HPV6 and HPV11.

The vaccines are recommended by the U.S. Advisory Committee on Immunization Practices (ACIP) for males and females ages 11–12 with “catch-up” doses for females up to age 26 and for males up to age 21 who were not vaccinated earlier in adolescence. Receiving the HPV vaccine at ages 11–12 offers earlier protection against infection, and immune response to the vaccine is better in younger age groups than among older women and men.

## Part 2: Urgency for Action

HPV vaccine uptake has not kept pace with that of other adolescent vaccines and has stalled in the past few years. In 2012, only about one-third of 13- to 17-year-old girls received all three recommended doses. These levels fall considerably short of the U.S. Department of Health and Human Services *Healthy People 2020* goal of having 80 percent of 13- to 15-year-old girls fully vaccinated against HPV. Immunization rates for U.S. boys are even lower than for girls. Less than 7 percent of boys ages 13 to 17 completed the series in 2012. This low rate is in large part because the ACIP recommendation for routine vaccination of boys was not made until 2011. However, it is even lower than what was observed for girls in 2007—the first year following the recommendation for females—suggesting that concerted efforts are needed to promote HPV vaccination of males.

The Centers for Disease Control and Prevention (CDC) estimates that increasing HPV vaccination rates from current levels to 80 percent would prevent an additional 53,000 future cervical cancer cases in the United States among girls who now are 12 years old or younger over the course of their lifetimes. Thousands of cases of

other HPV-associated cancers in the U.S. also likely would be prevented within the same timeframe. A growing proportion of these cancers—most notably, oropharyngeal cancers—will occur in males, who currently are vaccinated at very low rates.

The President's Cancer Panel finds underuse of HPV vaccines a serious but correctable threat to progress against cancer. Organized, mutually reinforcing efforts could have synergistic impact on HPV vaccine uptake. The Panel presents four goals to increase HPV vaccine uptake; three goals focus on increasing uptake in the United States (Part 3), and the fourth addresses ways the United States can help increase global uptake of the vaccines (Part 4). Several high-priority research areas also are identified (Part 5). All recommendations and some of the stakeholders responsible for implementing them are summarized in Appendix B. The Panel urges all stakeholders—including federal and state governments, healthcare professionals, nongovernment organizations with a focus on public health, and parents, caregivers, adolescents, and other members of the public—to contribute to efforts to achieve this goal and protect millions of men and women around the world from the burden of avoidable cancers and other diseases and conditions in the coming years.

### Part 3: Accelerating HPV Vaccine Uptake in the United States

The Panel recommends three critical goals that must be achieved to increase HPV vaccine uptake in the United States, with the ultimate goal being completion of the full three-dose vaccine series by all age-eligible adolescents for whom the vaccine is not contraindicated.

#### GOAL 1: REDUCE MISSED CLINICAL OPPORTUNITIES TO RECOMMEND AND ADMINISTER HPV VACCINES

According to CDC, missed clinical opportunities are the most important reason why the U.S. has not achieved high rates of HPV vaccine uptake. Many vaccine-eligible adolescents do not receive HPV vaccines during visits with their healthcare providers. As many as two-thirds of 11- and 12-year-old vaccine-eligible girls may not be receiving HPV vaccines at visits at which they receive at least one other vaccine.

Targeted efforts should be made to address factors that keep providers from strongly recommending HPV vaccines. Overcoming these obstacles could substantially reduce the number of missed opportunities to recommend and administer HPV vaccines.

**OBJECTIVE 1.1: CDC SHOULD DEVELOP, TEST, DISSEMINATE, AND EVALUATE THE IMPACT OF INTEGRATED, COMPREHENSIVE COMMUNICATION STRATEGIES FOR PHYSICIANS AND OTHER RELEVANT HEALTH PROFESSIONALS.**

**OBJECTIVE 1.2: PROVIDERS SHOULD STRONGLY ENCOURAGE HPV VACCINATION OF AGE-ELIGIBLE MALES AND FEMALES WHENEVER OTHER VACCINES ARE ADMINISTERED.**

**OBJECTIVE 1.3: HEALTHCARE ORGANIZATIONS AND PRACTICES SHOULD USE ELECTRONIC OFFICE SYSTEMS, INCLUDING ELECTRONIC HEALTH RECORDS (EHRs) AND IMMUNIZATION INFORMATION SYSTEMS (IIS), TO AVOID MISSED OPPORTUNITIES FOR HPV VACCINATION.**

**OBJECTIVE 1.4: HEALTHCARE PAYERS SHOULD REIMBURSE PROVIDERS ADEQUATELY FOR HPV VACCINES AND FOR VACCINE ADMINISTRATION AND SERVICES.**

**OBJECTIVE 1.5: THE CURRENT HEALTHCARE EFFECTIVENESS DATA AND INFORMATION SET (HEDIS) QUALITY MEASURE FOR HPV VACCINATION OF ADOLESCENT FEMALES SHOULD BE EXPANDED TO INCLUDE MALES.**

**OBJECTIVE 1.6: CREATE A *HEALTHY PEOPLE 2020* HPV VACCINATION GOAL FOR MALES.**

#### GOAL 2: INCREASE PARENTS', CAREGIVERS', AND ADOLESCENTS' ACCEPTANCE OF HPV VACCINES

Parents' and other caregivers' knowledge, attitudes, and beliefs affect whether their children receive vaccines, including HPV vaccines. Most parents believe that vaccines protect their children from potentially life-threatening diseases, but some refuse one or more recommended vaccines based on concerns about safety and other factors.

Studies have provided insight into parents' views, including that parents are more likely to refuse HPV vaccines than other recommended vaccines and that parents of young adolescents may feel that they can wait to vaccinate their children against HPV. Targeted efforts should be made to increase HPV vaccine acceptance among parents, caregivers, and adolescents.

**OBJECTIVE 2.1: CDC SHOULD DEVELOP, TEST, AND COLLABORATE WITH PARTNER ORGANIZATIONS TO DEPLOY INTEGRATED, COMPREHENSIVE COMMUNICATION STRATEGIES DIRECTED AT PARENTS AND OTHER CAREGIVERS, AND ALSO AT ADOLESCENTS.**

#### GOAL 3: MAXIMIZE ACCESS TO HPV VACCINATION SERVICES

Vaccines should be available where adolescents receive healthcare. It should be convenient to initiate and complete the HPV vaccine series, and cost should not be a barrier.

Medical homes are the optimal environment for administering HPV vaccines, particularly the first dose, because medical homes provide opportunities to

educate parents and adolescents and to deliver other important preventive care services. Reducing missed clinical opportunities for HPV vaccination in medical homes will go a long way toward increasing HPV vaccine uptake. However, the Panel recognizes that providing additional venue choices may increase the likelihood that adolescents will receive all three doses of HPV vaccine. Therefore, the Panel recommends increasing the range of venues and providers for HPV vaccination.

**OBJECTIVE 3.1: PROMOTE AND FACILITATE HPV VACCINATION IN VENUES OUTSIDE THE MEDICAL HOME.**

**OBJECTIVE 3.2: STATES SHOULD ENACT LAWS AND IMPLEMENT POLICIES THAT ALLOW PHARMACISTS TO ADMINISTER VACCINES TO ADOLESCENTS, INCLUDING YOUNGER ADOLESCENTS.**

**OBJECTIVE 3.3: OVERCOME REMAINING BARRIERS TO PAYING FOR HPV VACCINES, INCLUDING PAYMENT FOR VACCINES PROVIDED OUTSIDE THE MEDICAL HOME AND BY OUT-OF-NETWORK OR NONPHYSICIAN PROVIDERS.**

## Part 4: Increasing Global HPV Vaccination

The burden of HPV-associated cancers extends beyond the borders of the United States, affecting populations in every country. Patterns of HPV-associated cancers differ by region. Cervical cancer is the most common HPV-associated cancer globally. In less developed regions, the large majority of HPV-attributed cancers are cervical cancers. In the United States and other more developed regions, other sites account for a significant proportion of HPV-associated cancers.

While the prevalence of HPV infections and distribution of HPV types vary by region, research has found consistently that HPV16 and HPV18, the cancer-causing strains HPV vaccines protect against, are responsible for at least two-thirds of cervical cancer cases in populations around the world. This provides a

### High-Priority Research Areas

- Investigate more convenient dosing schedules for current vaccines.
- Develop next-generation vaccines that provide broader protection and/or are easier to store and administer.
- Explain the natural history of oropharyngeal HPV infections.
- Develop more effective ways to communicate about HPV-associated diseases and HPV vaccines.
- Determine how best to integrate HPV vaccination with cervical cancer screening.

strong indication that HPV vaccines will be effective virtually everywhere.

As with cervical cancer screening programs, HPV vaccination programs have been implemented primarily in high-resource areas. Some of the most successful vaccination programs are in Australia, the United Kingdom, and parts of Canada. The U.S. can learn from successful HPV vaccination programs in these and other countries that in some cases have already led to measurable public health benefits.

Addressing the global burden of HPV-associated cancers requires implementation of HPV vaccination programs in low- and middle-income countries, where the majority of HPV-associated cancer cases occur.

## GOAL 4: PROMOTE GLOBAL HPV VACCINE UPTAKE

The World Health Organization recommends that HPV vaccines be introduced into national immunization programs where prevention of cervical cancer is a public health priority and vaccine introduction is feasible and sustainable. The Panel recommends that the United States collaborate with global partners to support HPV vaccine uptake and other cancer prevention and control activities worldwide.

**OBJECTIVE 4.1: THE UNITED STATES SHOULD CONTINUE ITS COLLABORATION WITH AND SUPPORT OF GAVI TO FACILITATE HPV VACCINE INTRODUCTION AND UPTAKE IN LOW-INCOME COUNTRIES.**

**OBJECTIVE 4.2: THE UNITED STATES SHOULD CONTINUE TO SUPPORT GLOBAL EFFORTS TO DEVELOP COMPREHENSIVE CANCER CONTROL PLANS AND CANCER REGISTRIES IN LOW- AND MIDDLE-INCOME COUNTRIES.**

## Part 5: High-Priority Research to Advance Prevention of HPV-Associated Cancers

HPV vaccines and their public health benefits were enabled by decades of laboratory, clinical, and population-based research. Additional research in several areas could increase the impact of HPV vaccination. Confirmation that extended dosing schedules and/or fewer vaccine doses adequately protect against HPV infections would have enormous implications for HPV vaccine programs in both high- and low-resource settings. Other areas of investigation include improved ways to communicate about HPV vaccines. Finally, it is not too early to anticipate the time when HPV vaccination is disseminated widely across populations and to ask how cervical cancer screening guidelines will need to be changed.