



HPV VACCINATION FOR CANCER PREVENTION: Progress, Opportunities, and a Renewed Call to Action

A Report to the President of the
United States from the Chair of the
President's Cancer Panel

November 2018

Stakeholder resources: key report findings and graphics

HPV Vaccination for Cancer Prevention: Progress, Opportunities, and a Renewed Call to Action, a report of the Chair of the President's Cancer Panel, presents the current landscape of HPV cancers and HPV vaccination and identifies strategies for building on recent progress and overcoming persistent barriers to vaccine uptake.

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Goals and Opportunities to Increase HPV Vaccine Uptake

The President's Cancer Panel concluded in its 2012-2013 report to the White House, [*Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer*](#), that underuse of HPV vaccines was a serious but correctable threat to progress against cancer. That report identified several goals and objectives to increase HPV vaccine uptake in the United States and globally.

Research and discussions with key stakeholders on the current landscape of HPV cancers and HPV vaccination led the Panel Chair to conclude that the goals outlined in the 2012-2013 report are still relevant. The report describes priorities and strategies that will help achieve these goals. Several research priorities also are highlighted.



Goal 1: Reduce Missed Clinical Opportunities to Recommend and Administer the HPV Vaccine

Communication strategies and systems changes are essential to ensure that all eligible adolescents and young adults are offered the HPV vaccine when they visit their healthcare providers. Provider- and systems-level changes hold the greatest potential for eliminating missed clinical opportunities, normalizing HPV vaccination, and ensuring that U.S. adolescents and future generations are optimally protected from HPV cancers.

Healthcare providers are urged to strongly recommend HPV vaccination for all eligible adolescents. In addition, health system leaders should make HPV vaccination a high, measurable priority.



Goal 2: Increase Parents' Acceptance of HPV Vaccination

Communication campaigns and promotion of the HPV vaccine by a growing number of healthcare providers have contributed to recent progress in vaccination rates. However, more must be done to ensure that parents have access to clear, accurate information about the HPV vaccine.

The Centers for Disease Control and Prevention, American Cancer Society, and other trusted organizations should be encouraged to continue to develop and deploy evidence-based communication campaigns to increase parents' acceptance of HPV vaccination.



Goal 3: Maximize Access to HPV Vaccination Services

Ensuring that HPV vaccination is affordable and convenient for all U.S. adolescents will support optimal vaccine uptake. National, regional, and local efforts are needed to understand and address existing and potential barriers to access.

While sources of private and public financing currently ensure that the vaccine's cost is covered for most adolescents, insurance coverage for preventive services must be maintained to ensure that cost does not limit U.S. adolescents' access to HPV vaccination.



Goal 4: Promote Global HPV Vaccine Uptake

The potential impact of HPV vaccination is greatest in less developed countries, where the vast majority of cervical cancer cases and deaths occur and HPV vaccination rates are disproportionately low.

The United States should continue to support implementation and sustainability of HPV vaccination programs around the world, particularly in low- and middle-income countries.



Partnerships and Collaborations are Essential

The coalescence of a critical mass of dedicated stakeholders has created momentum and opportunity to achieve the goals outlined in this report.

Stakeholder collaborations and partnerships should continue in implementing proven strategies to increase vaccination rates among all populations to target levels.



High-Priority Research to Advance Prevention of HPV Cancers

- Establish natural history of oral HPV infections and develop tools to detect precancers.
- Understand and address inequities among populations with high rates of HPV cancers.
- Identify ways to harness social media to communicate about HPV and HPV vaccination.
- Determine efficacy and duration of protection of a single HPV vaccine dose.



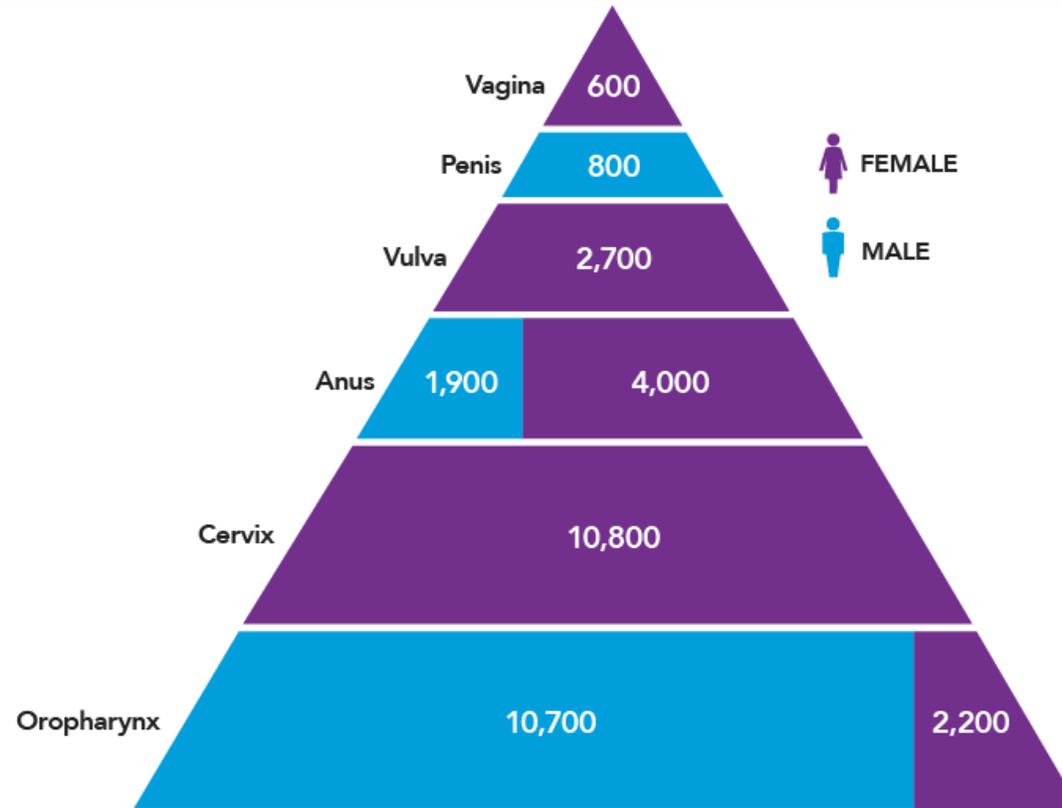
A Renewed Call to Action

Progress and momentum built over the past half decade have created a compelling opportunity to further increase HPV vaccine uptake and dramatically reduce—and perhaps eventually largely eliminate—the preventable burden of HPV cancers.

Cancer and immunization stakeholders worldwide must renew their collective commitment to achieving HPV vaccination targets. All should rally without hesitation around the ultimate goal of cancer prevention.



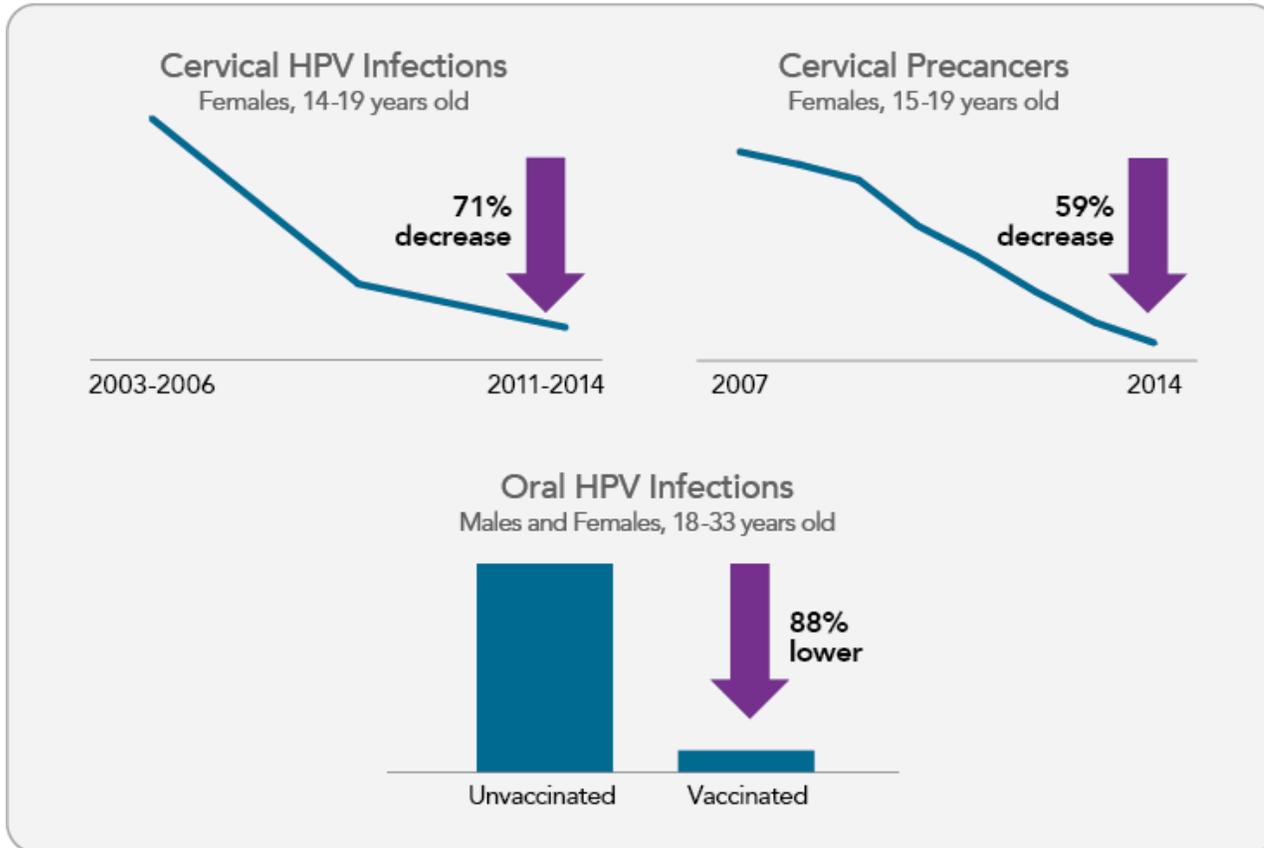
Figure 1: Numbers of U.S. Cancers Caused by HPV



Source: HPV Vaccination for Cancer Prevention: Progress, Opportunities, and a Renewed Call to Action. A Report to the President of the United States from the Chair of the President's Cancer Panel. Bethesda (MD): President's Cancer Panel; 2018 Nov. **Data from:** Centers for Disease Control and Prevention. How many cancers are linked with HPV each year? [Internet]. Atlanta (GA): CDC; [updated 2018 Aug 22; cited 2018 Aug 26]. Available from: <https://www.cdc.gov/cancer/hpv/statistics/cases.htm>



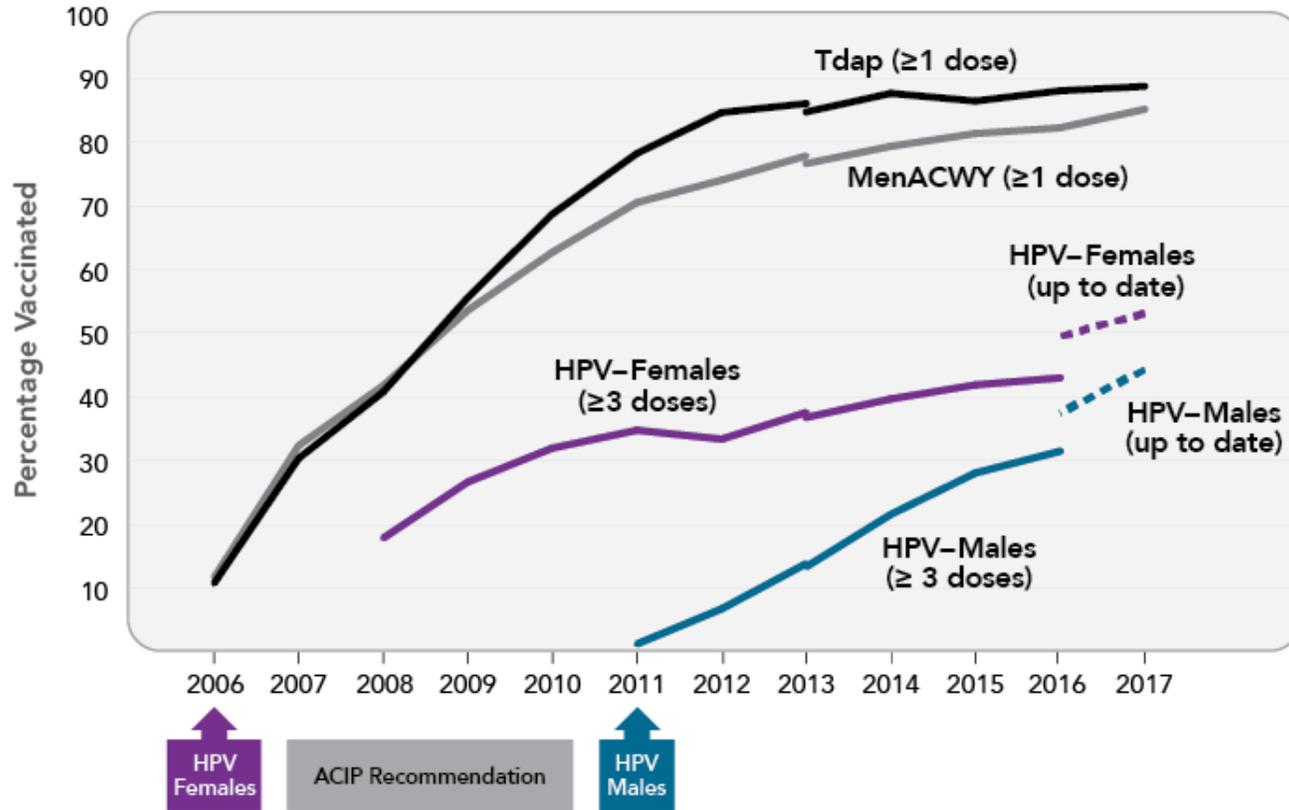
Figure 2: Prevalence of Cervical HPV Infection, Cervical Precancers, and Oral HPV Infection in the HPV Vaccine Era



Source: HPV Vaccination for Cancer Prevention: Progress, Opportunities, and a Renewed Call to Action. A Report to the President of the United States from the Chair of the President's Cancer Panel. Bethesda (MD): President's Cancer Panel; 2018 Nov. **Note:** Cervical and oral infection data represent prevalence of HPV 16/18/6/11 among select National Health and Nutrition Examination Survey (NHANES) participants. Oral HPV infection prevalence is based on cross-sectional data from NHANES 2011-2014. Cervical precancer data represent prevalence of cervical intraepithelial neoplasia grades 2 and 3 among privately insured U.S. female adolescents and women. **Data from:** Oliver SE, Unger ER, Lewis R, et al. Prevalence of human papillomavirus among females after vaccine introduction-National Health and Nutrition Examination Survey, United States, 2003-2014. *J Infect Dis.* 2017;216(5):594-603. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28931217>; Flagg EW, Torrone EA, Weinstock H. Ecological association of human papillomavirus vaccination with cervical dysplasia prevalence in the United States, 2007-2014. *Am J Public Health.* 2016;106(12):2211-8. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/27736208>; Chaturvedi AK, Graubard BI, Broutian T, et al. Effect of prophylactic human papillomavirus (HPV) vaccination on oral HPV infections among young adults in the United States. *J Clin Oncol.* 2018;36(3):262-7. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29182497>



Figure 3: Vaccine Uptake Among U.S. Adolescents Aged 13-17 Years, 2006-2017



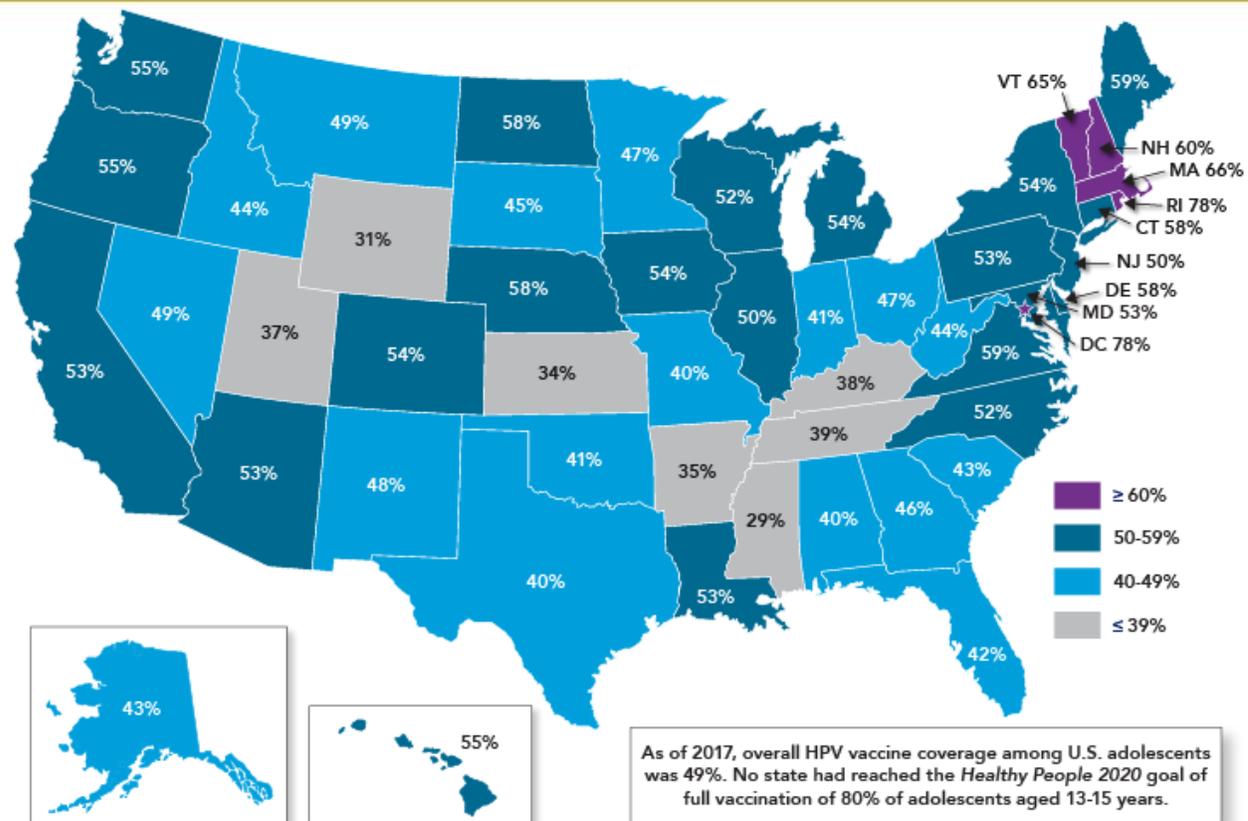
Source: HPV Vaccination for Cancer Prevention: Progress, Opportunities, and a Renewed Call to Action. A Report to the President of the United States from the Chair of the President's Cancer Panel. Bethesda (MD): President's Cancer Panel; 2018 Nov.

Data from: Walker TY, Elam-Evans LD, Yankey D, et al. National, regional, state, and selected local area vaccination coverage among adolescents aged 13-17 years—United States, 2017. MMWR Morb Mortal Wkly Rep. 2018;67(33):909-17. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30138305>

Note: Adolescents were considered to be up to date for HPV if they had received ≥3 doses, or if all of the following applied: 1) they had received two doses; 2) the first dose was received before the 15th birthday; and 3) the interval between the first and second doses was ≥5 months minus 4 days, the absolute minimum interval between the first and second doses. NIS-Teen implemented a revised adequate provider definition in 2013 and retrospectively applied this definition to 2013 data, which causes a shift in trendlines in 2013.



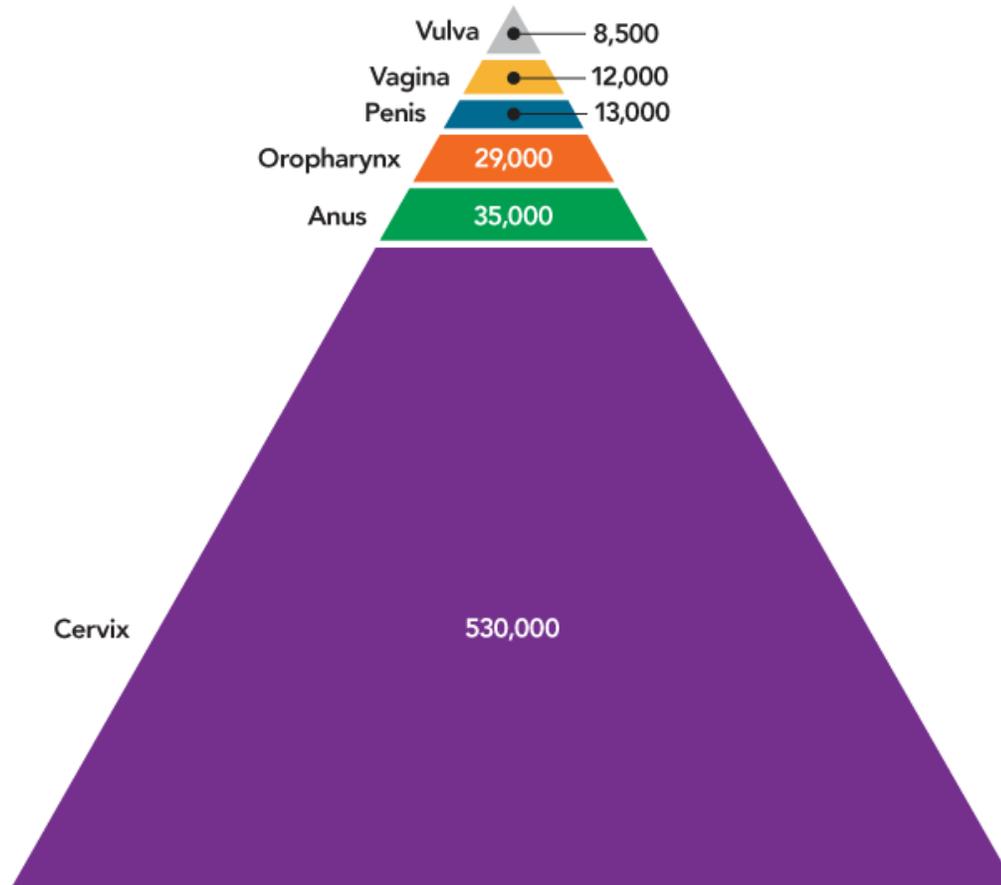
Figure 4: Rates of Up-to-Date HPV Vaccination Among U.S. Adolescents Aged 13-17 Years, 2017



Source: HPV Vaccination for Cancer Prevention: Progress, Opportunities, and a Renewed Call to Action. A Report to the President of the United States from the Chair of the President’s Cancer Panel. Bethesda (MD): President’s Cancer Panel; 2018 Nov. **Data from:** Source: Walker TY, Elam-Evans LD, Yankey D, et al. National, regional, state, and selected local area vaccination coverage among adolescents aged 13-17 years—United States, 2017. MMWR Morb Mortal Wkly Rep. 2018;67(33):909-17. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30138305>



Figure 5: Cancers Caused by HPV Worldwide



Source: HPV Vaccination for Cancer Prevention: Progress, Opportunities, and a Renewed Call to Action. A Report to the President of the United States from the Chair of the President's Cancer Panel. Bethesda (MD): President's Cancer Panel; 2018 Nov.

Data from: de Martel C, Plummer M, Vignat J, Franceschi S. Worldwide burden of cancer attributable to HPV by site, country and HPV type. *Int J Cancer*. 2017;141(4):664-70. Available

from: <https://www.ncbi.nlm.nih.gov/pubmed/28369882>;

Note: de Martel et al. include cancers of the oral cavity and larynx in their estimate of HPV-attributable cancers. The U.S. Centers for Disease Control and Prevention has concluded that HPV causes some cancers of the oropharynx, but that the evidence that HPV causes cancers of the oral cavity and larynx is insufficient. Thus, numbers in this figure include estimates for oropharyngeal but not oral cavity and laryngeal cancers.



Contact Us

President's Cancer Panel

9000 Rockville Pike

Bld. 31/B2B37

Bethesda, MD 20892

(240) 781-3430

PresCancerPanel@nih.gov

<http://PresCancerPanel.cancer.gov>

@PresCancerPanel on Twitter