

**Strengthening the Effectiveness of National,  
State, and Local Efforts to Improve HPV  
Vaccination Coverage in the United States:  
Recommendations of the National Vaccine  
Advisory Committee  
(DRAFT for Public Comment)**

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## **Executive Summary**

The Assistant Secretary for Health of the U.S. Department of Health and Human Services charged the National Vaccine Advisory Committee (NVAC) in February 2018 to provide recommendations on how to strengthen the effectiveness of national, state, and local efforts to improve HPV vaccination coverage rates. The NVAC established the HPV Vaccination Implementation Working Group in February 2018 and tasked the group to engage with federal and non-federal partners to inform the NVAC's work and develop these recommendations. The report that follows reflects opportunities for improving the effectiveness of national, state, and local efforts to improve HPV vaccination coverage rates. The NVAC working group focused its efforts on the following four focus areas: (1) identifying additional national partners, (2) coalition-building guidance for states, (3) engagement with integrated health care delivery networks, and (4) addressing provider needs in rural areas.

## **Acronyms**

ACIP – Advisory Committee on Immunization Practices

ACS – American Cancer Society

AFIX – Assessment, Feedback, Incentives, and eXchange

ASH – Assistant Secretary for Health

CDC – Centers for Disease Control and Prevention

CMS – Centers for Medicaid and Medicare Service

HHS – U.S. Department of Health and Human Services

HPV – Human Papillomavirus

HRSA – Health Resources and Services Administration

IDN – Integrated delivery network

IHS – Indian Health Service

IIS – Immunization information system

IISAR – Immunization Information Systems Annual Report

MenACWY – Meningococcal conjugate

NCQA – National Committee for Quality Assurance

NHIS – National Health Interview Survey

NIS – National Immunization Survey

NVAC – National Vaccine Advisory Committee

ONC – National Coordinator for Health Information Technology

PCP – President’s Cancer Panel

Tdap – Tetanus-diphtheria-acellular pertussis

## Introduction

In June 2015 the National Vaccine Advisory Committee (NVAC) issued a report entitled: “Overcoming Barriers to Low HPV Vaccine Uptake in the United States: Recommendations from the National Vaccine Advisory Committee.”<sup>1</sup> The report provided recommendations to the Assistant Secretary for Health (ASH) on strategies to increase Human Papillomavirus (HPV) vaccine uptake in young adolescents by reviewing the current state of HPV immunization, exploring the root cause(s) for the observed relatively low vaccine uptake (both initiation and series completion), and identifying existing best practices. Among other recommendations in its report, the NVAC endorsed the recommendations of a report by the President’s Cancer Panel (PCP), a federal advisory committee of the National Institutes for Health’s National Cancer Institute, on “Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer.”<sup>2</sup>

Since the 2015 NVAC HPV report, significant progress on HPV vaccination has been made including the implementation of a range of policy and program changes as well as advances in research.<sup>1</sup> In 2016, the Advisory Committee on Immunization Practices (ACIP) updated the HPV vaccination guidance to routinely recommend a 2-dose schedule for people aged 9 to 14, while maintaining a 3-dose schedule for those aged 15 and older.<sup>3</sup> Shortly thereafter, two existing Healthcare Effectiveness Data and Information Set (HEDIS®) measures that assessed the receipt of adolescent vaccines were modified and combined.<sup>2,4,5,a</sup> Bundling the recommendation and administration of vaccines for this age group — and ensuring its measurement through a HEDIS measure — offers an effective strategy to increase vaccine uptake and implement the multiple ACIP recommendations that target adolescents.

The immunization system includes a diverse group of immunization partners. Although primary care providers deliver most vaccinations in practice-based settings in the United States, there is considerable state-to-state and within-state variability.<sup>6</sup> Since the 2015 report, strategies associated with improvements in HPV vaccination initiation and coverage include: more effective provider communication, systems-level operational changes in clinical practice settings, and the use of multidisciplinary approaches.<sup>7,8</sup> The recent 2018 supplement, “Raising Human Papillomavirus Vaccination Rates,”<sup>9</sup> offers some next steps toward improving HPV vaccination coverage by addressing well-established gaps and implementing proven interventions at scale to optimize HPV vaccination.

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<sup>a</sup> The Human Papillomavirus for Female Adolescents measure first reported in 2013<sup>5</sup>, before the ACIP HPV vaccine recommendation included males, assessed the proportion of female adolescents who had received three doses of the HPV vaccine by age 13. The Immunizations for Adolescents measure assessed all adolescents’ receipt of the meningococcal and Tdap vaccines by age 13. In 2017, HEDIS combined these into a single measure that reports receipt of all recommended vaccines (meningococcal, tetanus-diphtheria-acellular pertussis (Tdap), and HPV) for both female and male adolescents for preventive health and cancer prevention.<sup>4</sup>

HPV vaccine uptake has been relatively slow over the first 10 years of the U.S. HPV vaccination program. Despite the availability of safe and effective vaccines,<sup>10</sup> a performance measure that reaches 90% of health plans,<sup>11</sup> and a public health commitment to support the ACIP-recommendation, HPV vaccination coverage remains lower than for other vaccines recommended for this age group. HPV vaccination coverage does not reach the Healthy People 2020 (HP2020) target of 80% for 13-15-year-olds<sup>12</sup> and lags behind Tdap and meningococcal conjugate (MenACWY) vaccines by 22-28 percentage points.<sup>13</sup> While HPV vaccination initiation rates among teens increased from 56.1% in 2014-2015 to 60.4% in 2015-2016, overall only 43.4% (49.5% of females; 37.5% of males) completed the vaccination series.<sup>14</sup> The difference between initiation and series completion warrants increased attention. According to the 2016 National Immunization Survey (NIS),<sup>13</sup> disparities also persist, such as:

- Lower coverage among males (58.6%) aged 17 years compared to females (72.7%);
- Lower coverage among non-Hispanic white adolescents (54.7%) compared to Hispanic (69.8%) and non-Hispanic black adolescents (65.9%);
- Lower coverage among adolescents living at or above the federal poverty level (57.3%) compared to those living below the federal poverty level (70.2%); and
- Lower coverage among those living in rural (50.4%) compared to urban settings (65.9%).

One potential cause for low HPV vaccination rates is that many adolescents do not regularly visit their primary care provider for preventive care. During a 12-month period, nearly half of adolescents did not attend a primary care appointment and only one-third had a preventive visit.<sup>15</sup> Parental refusal for vaccination is also an obstacle,<sup>16</sup> and some research suggests provider recommendations for HPV vaccine are less consistent than recommendations for other adolescent vaccines.<sup>17</sup> State vaccination mandates differ by jurisdiction, but only three require HPV immunization for 6<sup>th</sup> grade school enrollment. Lack of HPV vaccination mandates may contribute to relatively low HPV vaccine uptake.

Promoting a vaccine to prevent cancer also raises the issues of adherence to preventive services recommendations and differing personal perspectives on risks and benefits. Data from the 2015 National Health Information Survey (NHIS) show that only 83% of women reported being up to date with cervical cancer screening, which is below the HP2020 target of 93.0%.<sup>18</sup>

### **Charge to the National Vaccine Advisory Committee**

To build on the substantial progress made toward optimizing the ACIP recommendation and increasing HPV vaccination coverage rates, the ASH charged the NVAC in February 2018 to establish a working group to produce a brief report by June 2018 on recommendations to “strengthen the effectiveness of national, state, and local efforts to improve HPV vaccination coverage rates.” The ASH specifically requested the NVAC to consider the following:

1. Many national organizations are currently supporting HPV vaccination efforts. Are there additional national organizations that might contribute to increasing HPV vaccination coverage?
2. At the state level, many states have formed coalitions to support HPV vaccination efforts. Is there general guidance for states that do not yet have coalitions?
3. Integrated health care delivery networks can successfully integrate comprehensive quality improvement approaches to increase vaccination coverage rates. How can state immunization programs and coalitions engage with health systems to work together on improving HPV vaccination coverage?
4. Please specify recommendations on how to meet the needs of providers in rural areas.

The NVAC established the HPV Vaccination Implementation Working Group in February 2018 and tasked the group to engage with a wide-range of federal and non-federal partners from across all sectors (e.g., government, industry, health systems, associations, academia, and non-profit) to inform the NVAC's work and these recommendations. The working group also reviewed the 2015 NVAC HPV report<sup>1</sup> and found that recommendations 3 and 4 (Appendix 1) were particularly relevant to the current charge and this report, while recommendations 1, 2, and 5 were partially or fully addressed.

## **NVAC Recommendations**

### **Focus Area 1: Many national organizations are currently supporting HPV vaccination efforts. Are there additional, national organizations that might contribute to increasing HPV vaccination coverage?**

At the national level, the American Cancer Society (ACS) and the Centers for Disease Control and Prevention (CDC) established the National HPV Vaccination Roundtable (HPV Roundtable) in 2014. The HPV Roundtable is a national coalition of public, private, and volunteer organizations and individuals dedicated to reducing the incidence of and mortality from HPV cancers in the United States through coordinated leadership and strategic planning. Specifically, the HPV Roundtable seeks to improve the frequency and strength of clinical recommendations, decrease missed opportunities for HPV vaccine administration, and increase state and national vaccination rates. To achieve these goals, the HPV Roundtable identifies and engages traditional and non-traditional stakeholders and develops and disseminates best practices.

The HPV Roundtable provides clinical guidance for private practices and large health systems to engage physicians, physician assistants, and nurse practitioners and targets evidence-based interventions and strategies that engage the entire health care team.<sup>19</sup> The dental community (i.e., American Dental Association and the American Association of Public Health Dentistry) has also joined the HPV Roundtable and began HPV prevention efforts, including utilizing the ability of dentists to actively assess, recommend, and refer their patients for immunizations.<sup>20</sup> Several nursing professional organizations also support HPV vaccine advocacy and implementation

efforts, including active participation in the HPV Roundtable. Other partners include advocacy groups, corporate associations, health care organizations, government, state-level coalitions and roundtables, policy and research organizations, and agencies that deliver and pay for services (e.g., Indian Health Service, Centers for Medicare and Medicaid, state Medicaid agencies).

The HPV Roundtable has been successful at engaging a broad range of stakeholders to promote HPV vaccination through clinical guidance and evidence-based interventions. However, the 2015 NVAC HPV report,<sup>1</sup> through recommendation 3 (Appendix 1), recognized the continued need to develop evidence-based, effective, coordinated communication strategies to increase the strength and consistency of clinical recommendations. To this end, the updated adolescent HEDIS measure on HPV vaccination is one example of a tool that clinicians can use to support improved tracking and accountability for performance related to improved clinician communication with patients around HPV vaccination.

### ***Recommendations for Focus Area 1***

**1.1 To promote inclusion of new health care partners, the ASH should encourage further development and implementation of evidence-based practitioner resources and support collaborative relationships.**

**1.2 The ASH should encourage additional engagement with payers, employers, and quality improvement organizations to increase communication to beneficiaries about HPV vaccine coverage and the importance of receiving the full HPV vaccination series.**

**1.3 The ASH should encourage employers and payers to link value-based payment to provider benchmarks for the HPV vaccination HEDIS® quality measure.**

**1.4 The ASH should encourage the Health Resources and Services Administration (HRSA) to include an HPV vaccination adolescent measure in the Uniform Data System, which serves as a reporting requirement for HRSA grantees in community health centers, migrant health centers, health centers for homeless grantees, and public housing primary care organizations. The data should be used to improve health center performance and operation and to identify trends over time.**

### **Focus Area 2: At the state level, many states have formed coalitions to support HPV vaccination efforts. Is there general guidance for states that do not yet have coalitions?**

States have the responsibility and authority to manage and allocate public health resources to address their specific immunization priorities. The HPV Roundtable provided a synthesis of various coalition resources to help support states in establishing and strengthening their HPV vaccination coalitions in a “State Coalitions and Roundtable Guide.”<sup>21</sup> The guide provides information for states and coalitions seeking to improve or build upon coalition engagement and management; data collection and use; evidence-based interventions; policies related to HPV vaccination; establishing partner networks and other stakeholder engagement tools; education tools for providers, parents, and state and local health departments; and messaging for targeted

audiences. While not all states may be positioned to establish a coalition, the NVAC supports the use of these resources as general guidance to states. The working group recognizes that coalitions should capitalize on existing strengths and programs of partners within each jurisdiction and that the strength of the coalition will depend on relational networks and active engagement. Where and when appropriate, immunization advocates may take the lead on promoting HPV immunization, while at other times the cancer prevention community may be the logical lead. Information and data exchange should remain a central activity within coalitions, in addition to enhanced coordination of efforts in order to ensure coherent messaging and optimal use of shared resources.

***Recommendations for Focus Area 2:***

**2.1 The ASH should engage with and encourage State Health Officials to use existing, publicly available resources for coalition building and partner coordination, including the National HPV Vaccination Roundtable’s “State Coalitions and Roundtable Guide.”**

**2.2 The ASH should encourage collaboration and active engagement between immunization and cancer advocacy groups, at all levels and encourage efforts to increase the availability of resources to these groups for HPV immunization activities.**

**Focus Area 3: Integrated health care delivery networks can successfully integrate comprehensive quality improvement approaches to increase vaccination coverage rates. How can state immunization programs and coalitions engage with health systems to work together on improving HPV vaccination coverage?**

Health systems and integrated delivery networks (IDNs) play a unique role in their ability to track patients, invest in health information technology, and incorporate population health approaches and preventive strategies that meet the strategic needs of the populations they serve. Increased attention to strategies and interventions that support population health and wellness can help manage the total costs of care through the delivery of quality services. Health systems and IDNs can and should promote ACIP recommendations, including those for HPV vaccination. The inclusion of accountability measures for HPV vaccination into the strategic and operational plans of health systems and IDNs can support sustained attention, not only for HPV vaccination, but for all ACIP-recommended vaccinations.

Improved utilization of immunization information systems (IIS) by health systems and health delivery networks offers a significant, but underutilized, opportunity to improve HPV vaccination uptake. The 2015 NVAC HPV report,<sup>1</sup> through recommendations 4.1 and 4.1.2, (Appendix 1) emphasized the importance of addressing barriers to vaccination in non-traditional venues including through the strengthening of immunization information systems to view, query, and submit immunization records from a range of venues. While all IIS accept HPV immunization information, it generally accounts only for teens receiving three doses. In addition, some federal agencies, including the Department of Defense (DoD) and Department of Veterans



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Affairs (VA) are not required to participate in meaningful use of certified EHR technology.<sup>22</sup>

The 2016 IIS Annual Report, which assesses the 64 CDC-funded immunization programs across the United States,<sup>23</sup> found that 28.3% of females and 21.8% of males aged 13-17 received at least three doses of HPV in 2016. In comparison, the NIS<sup>13</sup> reported that 43% of females and 31.5% of males received 3 doses of HPV vaccine. These disparities suggest underreporting of HPV vaccination to IIS.

***Recommendations for Focus Area 3:***

**3.1 The ASH should work with State Health Officials as key immunization leaders to engage with health systems and IDN executives within their jurisdictions to prioritize HPV vaccination as an effective means for cancer prevention and to develop accountability mechanisms to track and incentivize performance.**

**3.2 The ASH should engage the Office of the National Coordinator for Health Information Technology (ONC), State Health Officials, and partners to encourage bi-directional electronic data exchange and broad use of immunization data across electronic health records (EHR), IIS, and all federal partners, particularly as it relates to HPV immunization. Activities may include:**

**3.2.1 Develop a memorandum of understanding or data use agreement between DoD, VA, and IIS to support immunization data exchange.**

**3.2.2 Support the acceleration of current EHR, pharmacy information systems, and IIS standardization efforts, including query and response for clinical decision support.**

**3.3: The ASH should work with State Health Officials and partners to encourage the use of IIS and EHRs to:**

**3.3.1 Generate coverage assessments for a provider's population, which can then be used to target reminder efforts for adolescents that are due and past due for HPV vaccination.**

**3.3.2 Assess opportunities to vaccinate individuals within a provider's practice to reduce missed opportunities to vaccinate and increase protection for populations (e.g., through the use of clinical decision support and quality improvement processes such as AFIX).**

**Focus Area 4: Please specify recommendations on how to meet the needs of providers in rural areas.**

Rural providers and communities face many of the same challenges as other communities, including increasing health care costs, overextended health care infrastructure, and lower HPV vaccination coverage rates relative to other adolescent vaccines. However, HPV vaccination initiation among adolescents living outside of urban areas remains 16 percentage points lower than for adolescents who live in urban areas.<sup>13</sup> Critical shortages of primary care providers may partially account for lower vaccination rates in rural communities.<sup>24, 25</sup>

Limited research exists to support assessments of the specific challenges of rural communities, which may include limited:

- Access to vaccines, particularly HPV vaccine;
- Support for communication to patients and the community;
- Consultation and referral networks (e.g., less access to cancer experts, vaccination sites, and pharmacies).; and
- Availability of community-based vaccine and immunization education for providers.

Opportunities to investigate HPV vaccine uptake in rural communities may include leveraging existing and active pediatric clinical trial networks focused on health care provision in rural communities, as well as telemedicine services.<sup>26, 27</sup> Recognizing the strength of solving local problems with local solutions using available resources and innovative approaches, rural communities can develop and share best practices with other similarly situated communities.

#### ***Recommendations for Focus Area 4:***

**4.1 The ASH should request further research be conducted to better understand the needs of rural providers in supporting the administration of or referral to vaccination services and to determine barriers to accessing vaccination services for patients in rural settings.**

**4.2 The ASH should encourage the increased use of technology-based, telemedicine systems such as tele-consulting and tele-mentoring partnerships to reach rural and underserved communities to strengthen provider education on HPV vaccination and cancer prevention.**

**4.3 The ASH should support a stronger HHS-wide social media presence to improve the reach of communication strategies and engage parents and adolescents directly about the importance of HPV vaccination.**

### **Implications for Future Consideration**

Strengthening the effectiveness of national, state, and local efforts to improve HPV vaccine coverage will require effective partnerships and consistent messaging. The HPV Roundtable's activities demonstrate that a focus on HPV vaccination as cancer prevention provides compelling and unifying messages for a broad range of stakeholders. Earlier messaging that emphasized HPV vaccination as prevention of a sexually transmitted infection was less effective in garnering public support. In addition to consistent messaging from national organizations, a stronger social media presence will likely improve the reach of communication strategies and directly engage parents and adolescents. Future HPV vaccination messaging approaches should particularly assess and address the needs and concerns of parents, who serve as the primary decision-makers regarding adolescent vaccination.

Although the working group found significant progress since the 2015 NVAC HPV report, several recommendations still emerge as priorities. Much work remains to optimize health systems to improve vaccination coverage, particularly for underserved subpopulations, and to develop more effective communication strategies for distinct populations and communities.

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Although HPV vaccination coverage rates improved since the 2015 NVAC HPV report “Overcoming Barriers to Low HPV Vaccine Uptake in the United States,”<sup>1</sup> further progress requires additional investment to address remaining gaps and disparities.

## Appendix

### Appendix 1: Strategies for Overcoming Barriers to Human Papillomavirus Vaccine (HPV) Uptake

#### “Overcoming Barriers to Low HPV Vaccine Uptake in the United States: Recommendations from the National Vaccine Advisory Committee”<sup>1</sup>

**Recommendation 1:** The ASH should endorse the PCP report, *Accelerating HPV Vaccine Uptake: Urgency for Action to Prevent Cancer*, and adopt the recommendations outline therein.

**Recommendation 2:** As the PCP recommended, NVAC should monitor “the status of uptake and implementation of the recommendations.” This should be done by hearing an annual progress report from HPV vaccination stakeholders identified in the PCP report.

**Recommendation 3:** The ASH should work with relevant agencies and stakeholders to develop evidence-based, effective, coordinated communication strategies to increase the strength and consistency of clinician recommendations for HPV vaccination to adolescents (both males and females) in the recommended age groups and to improve acceptance among parents/guardians, adolescents, and young adults.

*Recommendation 3.1.* Develop practical tools to increase clinicians’ skills and confidence in promoting HPV vaccination as a routine adolescent vaccine and part of routine adolescent care. These communication tools should equip clinicians to emphasize HPV vaccine as a cancer prevention strategy, to increase clinicians’ ability to respond to questions from parents/guardians and adolescents about HPV as a sexually transmitted infection, and to enable clinicians to effectively address parental hesitancy.

*Recommendation 3.2.* Develop evidence-based, culturally competent communication strategies for parents/guardians, adolescents, and young adults that address key beliefs driving decisions to vaccinate and address barriers to vaccination.

*Recommendation 3.3.* Promote collaboration among all stakeholders to coordinate communications and messaging that increase message consistency across professional organizations and their constituencies.

*Recommendation 3.4.* Utilize multiple methods for communication, including one-on-one counseling, public health messaging, social media, and decision support systems.

*Recommendation 3.5.* Promote science-based media coverage about HPV vaccination and appropriate response to media coverage that does not adequately reflect the science of HPV vaccines and HPV vaccination recommendations.

**Recommendation 4:** NVAC recommends the ASH should work with the relevant agencies and stakeholders to strengthen the immunization system in order to maximize access to and support of adolescent vaccinations, including HPV vaccines.

*Recommendation 4.1.* Addressing barriers to vaccination in venues outside the traditional primary care provider office, including pharmacies, schools, and public health departments. This may include immunization status assessment and administration of the appropriate doses toward completion of the HPV vaccination series.”

*Recommendation 4.1.1.* Develop strategies to overcome barriers regarding reimbursement for vaccination administration and compensation of vaccine administrators and their staff.

*Recommendation 4.1.2.* Strengthen immunization information systems (IISs) to allow pharmacies, school-located programs, and public health clinics to view and query patient immunization records and submit records of immunizations administered to their state IIS, which ensures proper communication and record of immunization histories are available to the patient’s primary care provider, vaccination administrator, and the state public health system.

*Recommendation 4.1.3.* Encourage collaboration and sharing of best practices for successful vaccination programs at pharmacies, schools, and public health clinics.

*Recommendation 4.2.* Working with relevant agencies and stakeholders to increase the widespread use of quality improvement strategies, such as Assessment, Feedback, Incentives, and eXchange (AFIX) visits, to support and evaluate HPV immunization practices within all vaccination venues.

*Recommendation 4.3.* Encouraging widespread adoption of state-centralized reminder recall for adolescent vaccines and reporting of vaccinations into existing immunization information systems and electronic health records.

**Recommendation 5:** The ASH should encourage the review or development of available data that could lead to a simplified HPV vaccination schedule. In addition to a review that could impact existing vaccines, manufacturers of HPV vaccines in development should also consider opportunities to support the simplest HPV immunization schedule while maintaining vaccine effectiveness, safety, and long-term protection.

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