

Increasing HPV Vaccination Rates Through National Provider Partnerships

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Abstract

Human papillomavirus (HPV) vaccine is routinely recommended for adolescents at age 11 or 12 years for protection from cancers and other diseases caused by HPV infection. In 2012, only 53.8% of females and 20.8% of males aged 13–17 received one or more doses of HPV vaccine. Due to low vaccination uptake, the Centers for Disease Control and Prevention supported the efforts of several national partner organizations to help raise HPV vaccination rates. National partners include the Academic Pediatric Association, the American Academy of Pediatrics, the American Cancer Society, the National Area Health Education Centers Organization, and the National Association of County and City Health Officials. These national partners have focused on improving provider education on effective HPV vaccine recommendations, prioritizing HPV vaccination, forming strong partnerships, developing and disseminating HPV vaccination resources for members and the public, and quality improvement.

Keywords: human papillomavirus, human papillomavirus vaccination, partnerships, adolescent vaccination, provider education

Background

SINCE THE INTRODUCTION of the human papillomavirus (HPV) vaccine in 2006, HPV vaccination uptake has lagged behind that of other recommended adolescent vaccines such as tetanus, diphtheria, and acellular pertussis (Tdap) and meningococcal conjugate (MenACWY).¹ HPV vaccine is routinely recommended for adolescents at age 11 or 12 years for protection from cancers and other diseases caused by HPV infection.² Ideally, preteens should finish the series by their 13th birthday. Vaccination can also be started as early as 9 years of age.² Adolescents who get the first dose of HPV vaccine before their 15th birthday need two doses of HPV vaccine to be protected against HPV cancers; teens and young adults who start the series on or after age 15 years need three doses.² HPV vaccination is currently recommended for girls and women through age 26 years who were not previously vaccinated, and is also recommended for boys and men through age 21 years who were not previously vaccinated.²

From 2011 to 2012, HPV vaccination coverage estimates among females were unchanged, according to the National Immunization Survey-Teen.¹ HPV vaccination coverage estimates for ≥ 1 dose was 53.8% for females and 20.8% for males.¹ However, coverage for ≥ 1 dose of Tdap was 84.6%,

and ≥ 1 dose of MenACWY was 74.0% among adolescents in 2012. Because of this low coverage, Centers for Disease Control and Prevention (CDC) engaged several national provider organizations to improve HPV vaccination rates among adolescents aged 11–12 beginning in 2014. These multiyear projects with national partners, including the Academic Pediatric Association (APA), the American Academy of Pediatrics (AAP), the American Cancer Society (ACS), the National Area Health Education Centers Organization (NAO), and the National Association of County and City Health Officials (NACCHO), focus on several key strategies such as educating providers on effective HPV vaccine recommendations, prioritizing HPV vaccination, forming strong partnerships, developing and disseminating HPV vaccination resources for members and the public, and quality improvement (QI). APA, AAP, ACS, and NAO have 5-year projects from 2014 to 2019, while NACCHO had a 2-year project that took place from 2014 to 2016.

Studies consistently showed that an effective recommendation from a provider is the single best predictor of vaccination for any vaccine, including the HPV vaccine.³ Partner organizations helped strengthen the provider recommendation for HPV vaccine by direct outreach to and education of its members and targeted audiences. The purpose of this

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report is to showcase the HPV vaccination work that APA, AAP, ACS, NAO, and NACCHO have done throughout these 5-year projects.

Academic Pediatric Association

APA nurtures the academic success and career development of child health professionals engaged in research and improvement science, and provides educational scholarship to enhance the health and well-being of all children.⁴ The National Immunization Project with the APA (NIPA) is a large-scale, practice-based QI program.⁵ NIPA's project goals are to increase the number of providers who make an effective recommendation for the HPV vaccine for adolescents aged 11–18 years (with an emphasis on 11- and 12-year-olds), to assess HPV vaccination status at every health care visit, and to implement practice change to increase immunization rates.⁵ This goal is reached through a QI learning collaborative. Participants from the Continuity Research Network (CORNET) and the National Improvement Partnership Network (NIPN) sites receive trainings and help NIPA achieve project goals. CORNET is a national, practice-based research network composed of pediatric residency continuity practices. NIPN is a network of more than 20 states that have developed “improvement partnerships” to advance quality and transform health care for children and families. APA also offers HPV-focused Grand Rounds to explain the importance of HPV vaccination and describe current vaccination rates; discuss the rationale for vaccinating all adolescents at ages 11–12; provide useful communication strategies to inform parents about HPV; develop a plan to increase practices' HPV vaccination rates; and help providers locate resources that are relevant to current immunization practice. Grand Rounds is a teaching tool for medical education, consisting of presenting medical problems and treatments of a patient to an audience of doctors, residents, and medical students.⁶

Project impact

Over 200 practices and more than 900 providers serving an estimated half a million adolescents between the ages of 11 and 18 participated in the QI project. The QI intervention resulted in significant improvements in missed opportunity rates. For example, the NIPN practices reduced missed opportunities from 74.9% to 52.5% (a 22.4 percentage point reduction, or a 29.9% change).⁷ APA has also given over 60 HPV-focused Grand Rounds presentations. The estimated audience size for a Grand Rounds presentation is 75 providers. APA has also supported faculty efforts in preparing for and presenting at larger webinars with audience sizes of up to 600.

American Academy of Pediatrics

AAP strives to attain optimal physical, mental, and social health and well-being for all infants, children, adolescents, and young adults.⁸ Activities for this project include provider education, QI, and local efforts aimed at promoting an effective provider recommendation for the HPV vaccine. The AAP partnership led to state chapters being prepared to effectively improve immunization rates and greatly expand collaborations with partners and organizations. AAP also

offers a forum for health care professionals to learn and improve QI skills and gain self-efficacy around HPV vaccination through Extension for Community Healthcare Outcomes (ECHO). ECHO is a telementoring hub-and-spoke platform that leverages technology to connect experts (hub) with primary care providers in local communities (spoke).⁹ Participants' QI work is presented for discussion and problem-solving. ECHO has been implemented in select AAP state chapters.⁹ From 2015 to 2017, QI activities through the hub-and-spoke initiative have reached over 600 practices.

Project impact

Three hundred pediatricians, health care providers, and AAP chapter staff have participated in one of 12 QI trainings offered by the AAP to learn QI methodology, and then apply it to HPV projects in their own practices and institutions to build state/regional capacity for improvement. Nearly all 59 U.S. AAP chapters have implemented one, if not multiple, QI project aimed at increasing HPV vaccination rates. All chapter projects resulted in increased rates of HPV vaccination initiation and series completion.

Close working relationships with CDC, HPV national partners, and other organizations, such as the Association of Immunization Managers, have led to several accomplishments. These accomplishments include educating state immunization program managers on engaging with physicians, the pediatric office perspective; promising practices for improving HPV vaccination rates, and AAP and CDC resources; and expanding the HPV Champion Toolkit content to fit the needs of various target audiences. Additionally, the AAP has assisted the state AAP chapters in connecting with local partners for conference presentations and speaking opportunities.

American Cancer Society

ACS is a nationwide, community-based voluntary health organization dedicated to eliminating cancer as a major health problem.¹⁰ ACS's Vaccinate Adolescents against Cancers (VACs) project focuses efforts on reaching health systems and providing technical assistance and QI training. Since 2015, over 250 Cancer Control staff members have engaged key stakeholders as conveners, connectors, and change-makers to prioritize HPV vaccination.¹¹ The VACs program engages health systems, payers, and federally qualified health centers (FQHCs) to increase HPV vaccination through clinic-level interventions and QI efforts to improve system-wide processes and educate providers regarding the role of HPV vaccination in cancer prevention.¹¹ Additionally, VACs, in partnership with state health departments and other state-based entities, facilitates system changes that increase the availability and utilization of HPV vaccination.

Project impact

The VACs project has demonstrated practice change through the implementation of evidence-based QI interventions in FQHC project sites. In over 100 clinics, 100% of pilot sites implemented standing orders through this project.¹¹ Standing orders allow nurses and pharmacists to administer vaccines according to a physician-approved protocol without a physician's exam.¹² VACs has also increased HPV

vaccination rates for FQHC systems engaged in QI intervention projects. The pilot projects sustained increased initiation rates of 15 percentage points.¹¹ Over 45 ACS staff members have also been trained as HPV QI coaches to lead QI interventions. From 2015 to 2016, a pilot study was conducted with 30 FQHC systems (over 300 clinics) with over 25,000 11- and 12-year-old patients. On average, HPV vaccination rates increased 10 percentage points over baseline rates in the first 6 months. In addition to increasing rates, 84% of the pilot partners reported increasing their capacity to use data they generated in QI efforts. VACs is also expanding this FQHC success into the hospital system space.

ACS health systems staff members have also contributed over 357 hours each week to HPV vaccination-related efforts. VACs has trained and deployed 165 health systems staff in HPV-related interventions around the United States, Guam, and Puerto Rico. Thirty-one state systems managers are positioned in HPV leadership roles, and 44% of state managers are engaged with at least one health plan on HPV vaccination activities. Additionally, 115 HPV initiatives were implemented in state systems work, including patient reminders, provider education, systems change, and reducing structural barriers to HPV vaccination.

The VACs team has disseminated information from ACS, CDC, and other evidence-based educational materials to FQHC providers and state-level constituents. The team also partnered with comprehensive cancer control programs and coalitions, public and private health care plans, and academic partners to increase provider awareness using existing CDC materials and resources. Coordinated efforts with CDC and other key state-level organizations were conducted to increase state and local coordination on HPV vaccination initiatives.

National Area Health Education Centers Organization

NAO represents a network of more than 300 AHEC program offices and centers that serve over 85% of the US counties.¹³ The AHEC mission is to enhance access to quality health care, particularly primary and preventive care, by improving the supply and distribution of health care professionals via strategic partnerships with academic programs, communities, and professional organizations.¹⁴ NAO provides education to health professionals to strengthen HPV vaccination recommendations, resulting in a decrease in missed opportunities to vaccinate adolescents aged 11–12.

One AHEC entity per state was selected to carry out state and local HPV project training activities in coordination with four project specialists in the areas of marketing, partnership development, continuing education, and AHEC integration.¹⁴ AHECs use their unique niche in serving the rural and underserved to reach health care providers and students that do not have access to large-scale QI projects most often available in urban settings. Over 71% of health care professionals trained at AHEC events serve rural/frontier and/or urban underserved populations. AHECs have also historically leveraged multiple partnerships, including CDC national partners, public health training centers, educational institutions, health profession programs, and local, state, and national immunization and cancer coalitions.

Project impact

AHECs have trained more than 32,000 health professionals using in-person, webinar, or self-study trainings. Additionally, AHECs have supported more than 730 HPV vaccination education programs since project inception. Nearly all (96%) health care professionals reported an increase in their effectiveness in raising HPV vaccination rates among their patients. Nine out of 10 trained were “definitely” or “somewhat using” the training information or enhanced their practice to increase patient HPV immunization rates 3 months after the training. AHECs have also trained over 5000 health profession students. AHECs and NAO have disseminated over 1.2 million educational materials on HPV vaccination, and also targeted uniform awareness messages for Cervical Health Month and National Immunization Awareness Month and presented at national conferences.¹⁵

National Association of County and City Health Officials

NACCHO seeks to improve public health by being a leader, partner, catalyst, and voice-for-change to local health departments (LHDs) around the nation.¹⁶ Beginning in 2014, NACCHO worked with 20 LHDs in states with some of the lowest HPV vaccination rates and assisted them in action planning and implementing initiatives to increase HPV vaccination rates in their communities.¹⁷ NACCHO designed an action planning process that engaged LHDs in conducting an environmental scan of their community resources, identifying key community stakeholders, and developing strategic focus areas. NACCHO also provided ongoing technical assistance and capacity-building support over a 1–2-year timeframe. LHDs participated in an initial action planning meeting and in-person meetings that provided opportunities to receive information from experts in the field and national partner organizations. To provide convenient access to existing HPV promotional materials and strategies, NACCHO developed the *Guide to HPV Resources for Local Health Departments*,¹⁸ a collection of HPV resources and practice-based tools. NACCHO continues to update this guide to provide up-to-date resources.

Project impact

Participating LHDs consistently reported that initiatives implemented through the NACCHO HPV Demonstration Sites Project have increased partner and other stakeholder interaction and engagement, increased provider training opportunities, and provided opportunities to disseminate HPV vaccination messages and education to parents and adolescents. LHDs reported an overall increase in the number of HPV vaccine doses administered and an increase in HPV vaccination series completion. LHDs are uniquely situated to capitalize on effective strategies and best practices to increase HPV vaccination as they serve as a resource for health care professionals and the community. LHDs can include HPV vaccination coverage rates in Assessment, Feedback, Incentives, and eXchange (AFIX) visits; convene community members to discuss the importance of HPV vaccination; and educate providers to effectively recommend the HPV vaccine to parents and adolescents.

Several best practices arose from the NACCHO HPV Demonstrations Sites Project, including stakeholder engagement, provider education and support, data and information systems, and communications. Strategic stakeholder engagement assisted with gaining the communities' trust and tailored campaign messages to the needs of target populations. Provider education is an essential component of any HPV vaccination campaign, as a provider's recommendation is the strongest predictor of an adolescent receiving the HPV vaccine. Data and information systems allowed for the ability to generate data and conduct other vital functions, which assisted the program in decision-making and sustainability. A broad and effective communication strategy was used to widely disseminate HPV vaccination campaign messages. A tailored communication campaign assisted in establishing trust and reducing stigma when relaying the message about HPV prevention and vaccination.

Discussion/Future Directions

Five national partners have worked toward improving HPV vaccination rates among adolescents for several years. These partners have shown increased HPV vaccination rates among individual projects, and also have educated providers on effective HPV vaccine recommendations, developed and disseminated HPV vaccination resources for members and the public (Table 1), and led several QI initiatives. Additionally, all partners have participated or collaborated with the National HPV Vaccination Roundtable, which is a coalition of organizations and experts dedicated to reducing the incidence of and mortality from HPV cancers in the United States.³⁰

Since 2013, there has been a steady increase in HPV vaccination. The latest HPV vaccination coverage estimates

in the 2017 National Immunization Survey-Teen showed that most parents are choosing to have their children vaccinated against HPV. In 2017, 66% of teens aged 13–17 years received one or more doses of HPV vaccine, an increase of 5 percentage points from 2016.³¹ Forty-nine percent of teens are up-to-date on all recommended doses of HPV vaccine.³¹ It is encouraging to see the progress that is being made every year with HPV vaccination rates among adolescents.

While HPV vaccination rates continue to increase around the United States, the national partners are working to sustain HPV vaccination activities after select projects end in 2019. In addition to working with members throughout their organizations, partners also collaborated with each other to ensure consistent HPV vaccination messages were being disseminated. By working together and sharing knowledge, states and communities can function better to increase HPV vaccination rates among adolescents. HPV vaccination rates may still be lagging compared with Tdap and MenACWY vaccines,³¹ but the efforts these partners have put in have helped in training providers, disseminating HPV vaccination educational materials, and bettering each organization's effectiveness as a whole. This prioritization of HPV vaccination outreach from the national partners could set an example for other organizations wanting to increase HPV vaccination rates and protect adolescents from future HPV-associated cancers.

Author Disclosure Statement

No competing financial interests exist.

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TABLE 1. SELECT HUMAN PAPILLOMAVIRUS VACCINATION RESOURCES FROM NATIONAL PARTNERS

	<i>Practice tools</i>
APA	Improving HPV immunization rates in practice-based settings virtual toolkit ¹⁹
ACS	Steps for increasing HPV vaccination in practice action guide ²⁰
NAO	HPV vaccination resource book ²¹
AAP	Provider tools Nursing tip sheet ²²
APA/AAP	HPV clinical champion toolkit ²³ HPV vaccine: same way same day app ²⁴ Partnership tools
NAO	HPV state profiles ²⁵
AAP	Childhood vaccination map ²⁶
ACS	HPV cancer survivor speakers database ²⁷ Vaccine initiative contact map ²⁸ Strategies to engage hospitals and cancer centers ²⁹
NACCHO	HPV vaccination roundtable website ³⁰ Guide to HPV resources for local health departments ¹⁸

APA, Academic Pediatric Association; AAP, American Academy of Pediatrics; ACS, American Cancer Society; NACCHO, National Association of City and County Health Officials; NAO, National Area Health Education Centers Organization; HPV, human papillomavirus.

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