Human Papillomavirus Vaccine Coverage and Prevalence of Missed Opportunities for Vaccination in an Integrated Healthcare System

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Ms Irving reports unrelated research support from Medimmune; Ms Groom reports unrelated research support from Merck, and Dr Naleway reports unrelated research support from Merck, Medimmune, and Pfizer. The remaining authors have no conflicts of interest to disclose.

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Abstract

Background: Human papillomavirus (HPV) vaccination has been recommended in the United States for female and male adolescents since 2006 and 2011, respectively. Coverage rates are lower than those for other adolescent vaccines. The objective of this study was to evaluate an assessment and feedback intervention designed to increase HPV vaccination coverage and quantify missed opportunities for HPV vaccine initiation at preventive care visits.

Methods: We examined changes in HPV vaccination coverage and missed opportunities within the adolescent (11–17 years) population at 9 Oregon-based Kaiser Permanente Northwest outpatient clinics after an assessment and feedback intervention. Quarterly coverage rates were calculated for the adolescent populations at the clinics, according to age group (11–12 and 13–17 years), sex, and department (Pediatrics and Family Medicine). Comparison coverage assessments were calculated at 3 nonintervention (control) clinics. Missed opportunities for HPV vaccine initiation, defined as preventive care visits in which a patient eligible for HPV dose 1 remained unvaccinated, were examined according to sex and age group.

Results: An average of 29,021 adolescents were included in coverage assessments. Before the intervention, 1-dose and 3-dose quarterly coverage rates were increasing at intervention as well as at control clinics in both age groups. Postimplementation quarterly trends in 1-dose or 3-dose coverage did not differ significantly between intervention and control clinics for either age group. One-dose coverage rates among adolescents with Pediatrics providers were significantly higher than those with Family Medicine providers (56% vs 41% for 11- to 12-year-old and 82% vs 69% for 13- to 17-year-old girls; 55% vs 40% for 11- to 12-year-old and 78% vs 62% for 13- to 17-year-old boys).

Conclusions: No significant differences in HPV vaccine coverage were identified at intervention clinics. However, coverage rates were increasing before the start of the intervention and might have been influenced by ongoing health system best practices. HPV vaccine coverage rates varied significantly according to department, which could allow for targeted improvement opportunities.

Keywords: adolescent; human papillomavirus vaccine; vaccine coverage; vaccine initiation

Academic Pediatrics 2018;18:S85–S92

What's New

In a quasiexperimental study, conducted in a large health system, the effect of an intervention of assessment and feedback of human papillomavirus (HPV) vaccination coverage was compared with standard of care and no significant increase in HPV vaccination coverage was found in intervention clinics compared with control clinics; missed opportunities for vaccination during preventive care visits declined only for girls age 13 to 17 years. Increasing HPV vaccination coverage in a large health system with a history of implementing recommended best practices continues to be challenging.

THE ADVISORY COMMITTEE on Immunization Practices (ACIP) recommendation for human papillomavirus (HPV) vaccination has been in place since 2006 for girls and 2011 for boys; however, coverage rates have been substantially lower than rates for other adolescent-recommended vaccines. According to data from the 2015 National Immunization Survey-Teen, only 63% of 13- to 17-year-old girls and 50% of 13- to 17-year-old boys initiated the HPV vaccine series. In comparison, coverage for 2 other adolescent vaccines, tetanus-diphtheria-acellular pertussis (Tdap) and meningococcal conjugate vaccine (MenACWY), which were added to the adolescent vaccine schedule in 2005, has climbed to 87% and 81%, respectively.[1]

High Tdap vaccine coverage is generally attributed to the mandates for Tdap vaccine receipt before secondary school entry in most (47 of 50) states.[2] School mandates for MenACWY vaccination exist in 28 states; these mandates might have played a part in coverage rates for the vaccine

reaching the Healthy People 2020 goal of 80%, although national estimates remain lower than those for Tdap.[3,4] Because of the prevalence of HPV infection in the US population, and the opportunity for reduction of HPV-related cancers, leading health organizations have made increasing HPV vaccination rates a priority and have produced and supported use of provider resources specifically focused on increasing HPV vaccination coverage.[3,5,6] Available resources focus on the importance of a strong provider recommendation for HPV vaccination at ages 11 or 12 years, and provide guidance on how to communicate effectively with vaccine-hesitant parents and teens. Also among the suggested strategies are assessment and feedback interventions, in which health educators engage with health care providers to discuss HPV vaccination rates specific to their patient population and identify opportunities for improving vaccine delivery practices.[7] Past efforts to use assessment and feedback have had some success within individual clinic settings. However, little is known about its application and use in integrated health care delivery systems, which might have consistent standards and policies in place.[8,9]

Kaiser Permanente Northwest (KPNW), which serves approximately 570,000 patients in Oregon and southwest Washington, is an example of an integrated health care delivery system that uses a variety of evidence-based practices for improving adolescent vaccination rates. However, HPV initiation rates within KPNW are far lower than those for other adolescent vaccines. In an effort to examine the effect of assessment and feedback on HPV vaccination rates in the KPNW population, a quasiexperimental intervention study entitled 'Boosting Recommended Adolescent Vaccination in Oregon' (BRAVO) was implemented in select Oregon clinics in 2015 to 2016.

The primary study objective of BRAVO was to evaluate an assessment and feedback intervention designed to increase HPV vaccination coverage and reduce missed opportunities for HPV vaccine initiation at preventive care visits compared with standard of care. A secondary study objective was to assess the effect of the intervention according to clinical department (Pediatrics and Family Medicine).

METHODS

All BRAVO protocols, materials, and study procedures were approved by the KPNW institutional review board.

Study Period and Population

Adolescents aged 11 to 17 years, with at least 6 months of continuous health plan enrollment and assigned to either a Pediatrics or Family Medicine provider at 1 of the participating clinics, were included in the study. Intervention clinics included the 9 largest KPNW clinics in the state of Oregon, which included approximately 150 physicians and their health care teams. Only Oregon-based clinics were included because of the partnership with the Oregon Immunization Program (OIP) whose jurisdiction was limited to Oregon. For comparison purposes, we included adolescent populations in 3 KPNW clinics in southwest Washington, which served as our nonrandomized convenience control sample. Intervention as well as control clinics had best practices in place at intervention onset: standing orders for vaccination if eligible, walk-in vaccination, electronic medical record prompts, vaccination reminder birthday letters, and vaccine coverage reports of Healthcare Effectiveness Data and Information Set measures.

The BRAVO intervention period lasted from April 2015 through June 2016. A baseline data collection period—April 2011 through March 2015—was included to evaluate trends in HPV vaccine coverage and missed opportunities at preventive care visits that predated the intervention period and draw conclusions regarding the effectiveness of the intervention.

Intervention

We implemented a provider-focused assessment and feedback intervention to promote HPV vaccination in our intervention clinics. In partnership with the Centers for Disease Control and Prevention, the OIP, and KPNW's health plan leadership, we developed a 30-minute education session combining information on HPV infection, parental communication strategies,[10] and clinic- and department-specific coverage and missed opportunity data.

Baseline education sessions were presented to Family Medicine and Pediatrics departments in 9 KPNW clinics in April 2015; the content of the education sessions has been described elsewhere in detail.[11] Briefly, at each of these baseline education sessions a study team member paired with a health educator from the OIP to deliver the intervention. The study team member presented information on HPV disease and HPV vaccination using the Centers for Disease Control and Prevention-developed "You are the Key to Cancer Prevention" materials, as well as vaccine coverage and missed opportunity for HPV vaccine initiation at preventive care visit data tailored according to clinical department (Pediatrics and Family Medicine). The OIP health educator then led the health care teams (physicians, nurses, medical assistants, and department administrators) in participatory dialogue, reviewing communication strategies related to HPV vaccination and department-specific challenges to HPV vaccine communication.

The HPV vaccination data presented during the meetings, as well as provider-specific population reports, were distributed to the health care teams via paper copies after the meetings in the form of Assessment Reports; the provider- and clinical department-specific Assessment Reports were sent to the health care teams electronically and via paper copies on a quarterly basis for the duration of the study period. The Assessment Reports included: 1) HPV vaccine coverage rates for the 11- to 17-year-old populations paneled to the specific clinical department and provider, compared with rates of MenACWY and Tdap in the same populations, and 2) missed opportunities for HPV vaccination at vaccine-eligible preventive care visits. Calculation of coverage and missed opportunities are described in more detail under Data Assessments.

In January 2016, the research team returned to all clinical departments for follow-up visits to discuss new and