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Missed clinical opportunities: Provider recommendations for HPV vaccination for 11–12 year old girls are limited

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ABSTRACT

Objective: The purpose of this study was to determine the prevalence of physician recommendation of human papillomavirus (HPV) vaccination in early (ages 11–12), middle (13–17), and late adolescent/young adult (18–26) female patients by physician specialty, and to identify factors associated with recommendation in early adolescents.
Methods: A 38-item survey was conducted April 2009 through August 2009 among a nationally representative random sample of 1538 Family Physicians, Pediatricians, and Obstetricians and Gynecologists obtained from the American Medical Association Physician Masterfile. A multivariable model was used to assess factors associated with frequency of physician recommendation of HPV vaccination ("always" = 76–100% of the time vs. other = 0–75%) within the past 12 months.
Results: Completed surveys were received from 1013 physicians, including 500 Family Physicians, 287 Pediatricians, and 226 Obstetricians and Gynecologists (response rate = 67.8%). Across the specialties, 34.6% of physicians reported they "always" recommend the HPV vaccine to early adolescents, 52.7% to middle adolescents, and 50.2% to late adolescents/young adults. The likelihood of "always" recommending the HPV vaccine was highest among Pediatricians for all age groups ($P < 0.001$). Physician specialty, age, ethnicity, reported barriers, and Vaccines for Children provider status were significantly associated with "always" recommending HPV vaccination for early adolescents.
Conclusions: Findings suggest missed clinical opportunities for HPV vaccination, and perceived barriers to vaccination may drive decisions about recommendation. Results suggest the need for age and specialty targeted practice and policy level interventions to increase HPV vaccination among US females.

1. Introduction

In June 2006, the Food and Drug Administration (FDA) approved a quadrivalent human papillomavirus (HPV) vaccine for 9–26-year-old females. The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) subsequently recommended routine vaccination of females aged 11–12 years, as well as catch-up vaccination for females aged 13–26 years and vaccination of ages 9–10 years at the provider's discretion [1,2]. Despite these recommendations, HPV vaccination rates remain suboptimal, with only 44.3% of 13–17-year-olds

Abbreviations: FDA, Food and Drug Administration; HPV, human papillomavirus; ACIP, Advisory Committee on Immunization Practices; Peds, Pediatricians; FPs, Family Physicians; OBGYNs, Obstetricians/Gynecologists; AMA, American Medical Association; SE, standard error; OR, odds ratio; CI, confidence interval; VFC, Vaccines for Children.

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receiving at least one dose in 2009 [3]. Data from the 2008 National Health Interview Survey indicated 14.7% of 11–12-year-olds and 25.4% of 13–17-year-olds received at least one dose of the HPV vaccine, and only 5.5% of 11–12-year-olds and 10.7% of 13–17-year-olds received all 3 doses [4]. Although patient factors including concerns about vaccine safety [5], moral or ethical concerns [6,7], and insurance/access to care issues [8] have been cited, another equally important factor with regard to vaccine uptake among children [9–12] and adults [13–19] is physician recommendation [20].

Three physician specialties typically provide preventive care for females between the ages of 9 and 26: Pediatricians (Peds), Family Physicians (FPs), and Obstetricians/Gynecologists (OBGYNs) [21]. Studies conducted predominantly prior to availability of the HPV vaccine demonstrated variability in intention to recommend HPV vaccination across these specialties [22–24]. Understanding provider recommendation among a representative sample of physicians from the 3 specialties is an important first step in promoting optimal utilization of HPV vaccination. The primary aim of this study was to determine the prevalence of physician recommendation of HPV vaccination in early (ages 11–12), middle (ages 13–17), and late adolescent/young adult (ages 18–26) female patients by specialty among a nationally representative sample of US physicians. Given that females aged 11–12 years are the primary target group for routine vaccination [1,2], a second aim was to identify factors associated with recommendation of vaccination for early adolescents.

2. Methods and materials

2.1. Sample

A nationally representative sample of FPs, Peds, and OBGYNs was randomly selected from the American Medical Association (AMA) Physician Masterfile, a database of all licensed US physicians irrespective of membership in the AMA or any other elective organization [25]. FPs, Peds, and OBGYNs were sampled based on their proportional representation in the US physician primary care workforce. The sampling frame excluded physicians who were: (1) trainees, (2) locum tenens, (3) *primarily* conducting non-patient care related professional activity, (4) OBGYNs who solely practiced obstetrics, (5) from the same practice, (6) ≥age 65 years (likely to be retired), and (7) listed a post office box for their address (precluding our ability to mail surveys via Federal Express). The survey was mailed to 1538 physicians: 818 FPs, 393 Peds, and 327 OBGYNs. Of those surveys, 33 were undeliverable and 10 participants were identified as ineligible. Completed surveys were received from 1013 physicians, including 500 FPs, 287 Peds, and 226 OBGYNs, for an overall response rate of 67.8%. The specialty-specific response rates were 63.6% for FPs, 74.6% for Peds, and 69.8% for OBGYNs.

2.2. Instrument

The survey was developed using the Competing Demands Model which proposes that patient, physician, and practice level factors impact a physician's decision to provide a preventive service (e.g., HPV vaccination) [26]. Where possible, items were used from previous surveys of physician recommendation of HPV vaccination [22,23,27,28]. Face validity was established through 2 rounds of expert panel review with HPV researchers and clinicians, qualitative interviews with academic and community physicians ($n = 7$), and a pilot study with physicians ($n = 16$) randomly selected using online medical association directories. The final 38-item survey included sections assessing demographic and practice characteristics, HPV knowledge, perceived barriers related to HPV vaccination, vaccine practices, and vaccine recommendation. The survey instructions specified that the questions pertained to the quadrivalent HPV vaccine.

HPV knowledge was measured using 6 items designed to ascertain participants' knowledge regarding HPV infection and HPV vaccination. Response options included "true," "false," or "don't know." Correct responses were summed to create a total knowledge score (range: 0–6), which was dichotomized into "high knowledge" (≥5 correct responses) and "low knowledge" (≤4 correct responses) based on a median split.

Perceived barriers to HPV vaccination were measured using 14 items pertaining to concerns about: vaccine safety and efficacy, discussing sexuality, vaccinated teens practicing riskier sexual behaviors, cost and reimbursement, ensuring 3-dose series completion, and school attendance requirements linked to HPV vaccination. Response options were on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Items were summed and averaged to create a mean barrier score. Scores for the sample were divided into thirds to classify participants reporting low, medium, and high barriers.

Participants were asked to identify strategies used to ensure 3-dose series completion: providing a paper-based reminder card to the patient, reminder letters or telephone calls, flagging patient charts, scheduling patients for the next dose during their current office visit, using a computerized immunization database or registry, or another strategy. Participants could select all options that applied. Responses were classified into 3 groups: no strategies, 1 strategy, or 2 or more strategies.

HPV vaccine recommendation for females was assessed using the following question: "In the past 12 months, how often did you *recommend* the HPV vaccine to your female patients?" Physicians reported their recommendation practices separately for early, middle, and late adolescents/young adults. Response options included a qualitative descriptor and quantitative estimate: "never" (0%), "rarely" (1–25%), "sometimes" (26–50%), "often" (51–75%), or "always" (>75%).

2.3. Data collection

After Institutional Review Board approval, a multiphase recruitment approach was used based on the Dillman method [29]. First, participants were mailed a postcard to inform them about the survey. Two weeks later, physicians were sent a Federal Express packet that included a cover letter, scannable survey, prepaid return envelope, pen, USB drive, and $25 cash incentive. A reminder card was mailed 1 week later, followed by another survey, another reminder card, and a final survey. Data collection took place between April and August 2009. Ten percent of the surveys were randomly selected and verified to check for errors that may have occurred during scanning.

2.4. Data analysis

Pearson Chi-square or Fisher's Exact tests were conducted to investigate differences between specialty and variables of interest. The primary response variable, physician recommendation of HPV vaccination, was dichotomized into "always" (>75% of the time) or "other." This comparison was selected as "always" as it most closely reflects recommendation practices based on ACIP guidelines for routine vaccination of females [1,2]. Prevalence of recommendation was also summarized by patient age group and physician specialty. Respondents who reported they do not see patients in an age group were excluded from those age-specific analyses. Additionally, weighted specialty-specific prevalence estimates and their standard errors (SEs) were calculated using the reciprocal of actual respondents to the total number of physicians for each specialty.