Original Study

Physicians' Intentions to Change Pap Smear Frequency Following Human Papillomavirus Vaccination

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A B S T R A C T

Study Objective: We evaluated factors associated with physicians' intentions to perform Pap smears in human papillomavirus-vaccinated women.
Design: Physicians were mailed a survey asking about intentions to change cervical cancer screening based on patients' human papillomavirus vaccination status.
Participants: A national sample of 1,738 Family Physicians, Internal Medicine Physicians, Pediatricians, and Obstetricians and Gynecologists was selected from the American Medical Association Physician Masterfile. Completed surveys were received from 1,118 physicians, of which 791 were included in the analyses.
Main Outcome Measures: Bivariate analyses compared physician, practice, and patient characteristics by intention change screening frequency. Significant variables were included in a multivariable logistic regression model.
Results: Overall, 81.8% (n = 647) of physicians reported not planning to change Pap smear frequency for vaccinated women. Internal Medicine physicians were significantly more likely than Obstetrician/Gynecologists to report intentions to change frequency for vaccinated patients. Other factors significantly associated with the intention to change frequency were self-identification as a late adopter of new vaccines, a solo practice, and practicing primarily in a clinic or hospital-based setting.
Conclusions: Although it appears most clinicians understand that human papillomavirus vaccination should not alter current screening practices, there is a need to develop and evaluate interventions for physicians who are likely to change their screening pattern based on human papillomavirus vaccination receipt.
Key Words: Human papillomavirus, HPV vaccines, Papanicolaou test, Physicians

Introduction

In June 2006, a quadrivalent human papillomavirus (HPV) vaccine for 9-26 year old females was approved and licensed by the Food and Drug Administration. In March 2007, the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices recommended routine vaccination of females aged 11-12 years as well as catch-up vaccination for females ages 13-26 years and vaccination of ages 9-10 years at the provider's discretion.[1,2] By 2008, 37% of girls 13-17 years old had received at least 1 dose of HPV vaccine and 18% had completed the vaccination schedule of 3 doses.[3] Current screening recommendations include cervical cancer screening beginning at age 21,[4] which will soon encompass many young women who have been immunized against HPV. An understanding of the pathophysiology of HPV infection as a causative agent of cervical dysplasia would suggest that the need for screening for cervical cancer should be diminished in HPV immunized women. Results of cost effectiveness and epidemiologic studies have also indicated that a reduction in screening for HPV vaccine recipients may be forthcoming.[5–8] However, it will likely take ~15-20 years to fully evaluate the effect of widespread HPV vaccination on cervical cancer incidence.[9] Without population-based data to support the modification of current screening guidelines, the most recent cervical cancer screening guidelines in 2009 from the American College of Obstetricians and Gynecologists (ACOG) still recommend that women who have been immunized against HPV 16 and 18 should be screened with the same frequency as unvaccinated women.[4,7]

There is little information available on how physicians who provide cervical cancer screening may adapt their cervical cancer screening recommendations for their HPV immunized patients. While professional organizations

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may change guidelines based on the latest scientific and clinical advances, it is still providers who interpret and implement these recommendations at the patient level. Results from 1 study using data collected from August 2006 to May 2007 suggested almost 40% of physicians believed the HPV vaccine would impact cervical cancer screening frequency[10]; however, more research is needed to assess intentions to change screening frequency for vaccinated female patients at 3 years post-vaccine licensure. The current study evaluates primary care providers' knowledge and other practice-related factors associated with intentions to change Pap smear frequency among females who have received the HPV vaccine.

Materials and Methods

Between April 2009 and August 2009, a nationally representative sample of Family Physicians (FPs), internal medicine physicians (IM), and obstetrician/gynecologists (OBGYNs) was surveyed regarding their attitudes, knowledge, and recommendations for HPV vaccine for females. The Institutional Review Board determined the research met requirements for exemption and a waiver of informed consent was obtained. The current study represents a component of a larger study pertaining to physician recommendation of HPV vaccination. Of the previously published manuscripts using data from this larger study,[11–13] none have included the primary outcome variable used in the current study (intention to change Pap frequency) nor have any of the papers used all items from the survey.

Sample

Participants were 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.[14] FPs, OBGYNs, and Pediatricians (Peds) were sampled based on their proportional representation in the US primary care physician workforce. IM physicians were sampled as a pilot group and were not a representative sample. An external company responsible for maintaining the physician mailing list used a computer program to randomly select physicians according to study inclusion criteria. The sampling frame excluded physicians who: (1) were trainees, (2) were locum tenens, (3) *primarily* conducted non-patient care-related professional activity (e.g., teaching, administration), (4) practiced only obstetrics, (5) were from the same practice, (6) were ≥age 65 years (likely to be retired), and (7) listed a post office box for their address (precluding our ability to send the survey via Federal Express). A multiphase recruitment approach was used based on the Dillman[15] method and is detailed elsewhere.[12]

Accounting for an estimated 65% response rate, the survey was mailed to 1,738 physicians: 818 FPs, 393 Peds, 200 IMs, and 327 OBGYNs. Of those surveys, 33 were undeliverable and 10 participants were identified as ineligible. Completed surveys were received from 1,118 physicians, including 500 FPs, 287 Peds, 105 IM, and 226 OBGYNs. After accounting for undeliverable surveys and ineligible participants, the overall response rate was 66.4% and specialty-specific response rates were 63.6% for FPs, 74.6% for Peds, 55.3% IM, and 69.8% for OBGYNs. Peds were not surveyed regarding the performance of Pap smears in their practice and therefore were not included in this substudy. Given that the physicians were randomly selected for participation by specialty and prior to data collection, the exclusion of Peds in the current substudy did not affect the random selection process for the other specialties. Providers who did not respond to the main outcome variable of interest were also excluded, leaving 791 respondents for the current analyses.

Instrument

The survey used for this study is described in greater detail elsewhere[12] (the complete questionnaire can be obtained by e-mailing the corresponding author). In short, it consisted of 38 items and was developed based on existing questionnaires used to study HPV vaccination.[16–19] The primary outcome measure was the response to the following question: “Do you plan to change the frequency with which you provide Pap test screening to females who have received the HPV vaccine?” Response options included “yes,” “no,” and “don't know.” These responses were collapsed to yes/don't know and no for the univariate and multivariable analyses because we intended to focus on factors that influence practitioners to change their current screening practices for vaccinated women, despite the current recommendations.[4] This dichotomy serves to highlight differences between providers who intend to follow the current guidelines and those who might benefit from an educational intervention designed to prompt providers to follow the current guidelines. Demographic data collected about the primary care providers included age, gender, race, and ethnicity.

As shown in Fig. 1, the survey also contained 6 items designed to ascertain participants' knowledge regarding HPV infection and HPV vaccination; these items were reviewed for content validity by an expert panel. 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.

Attitudinal factors regarding new vaccines and new technologies were measured in 2 separate questions that measured early vs late adoption of new advancements[16]: (1) “Compared to my clinical peers, I am often the first to use a newly recommended vaccine,” and (2) “I tend to wait to adopt new medications, vaccines or procedures until I hear about them from several trusted colleagues” (α = .72[20]). For both questions, response options were presented on a 5-point Likert-type scale (1 = strongly disagree to 5 = strongly agree). Given the relatively small number of responses for the strongly disagree and strongly agree options, the categories strongly disagree and somewhat disagree were collapsed into “disagree,” strongly agree and somewhat agree were collapsed into “agree,” and neutral remained an independent group.