

Barriers to the Adoption of Human Papillomavirus Vaccines to Prevent Cervical Cancer

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ABSTRACT

Background: The purpose of this study was to investigate the potential barriers to the adoption of human papillomavirus (HPV) vaccines in physicians.

Methods: A survey was distributed to a sample of family physicians and pediatricians.

Results: Lack of patient knowledge about HPV and lack of early bothersome symptoms of cervical disease were considered by respondents to be significant barriers to optimal vaccination, as was parental reluctance to acknowledge that their child/adolescent is likely to become sexually active in her teens. The unwillingness of parents to vaccinate their child was the most commonly selected barrier to vaccine adoption. Responses did not significantly vary by specialty.

Discussion and Conclusions: Patient/parental attitudes may be the most significant barriers to the effective adoption of HPV vaccines. These results suggest that additional education focused on strategies to facilitate reductions in patient and parent barriers to adoption of the HPV vaccines is needed.

INTRODUCTION

Human papillomavirus (HPV) is one of the most common sexually-transmitted infections in the United States [1]. The lifetime risk of infection with HPV is estimated as at least 75% for US women, with more than half of new infections occurring within 3 years of first sexual intercourse [2,3]. Although many HPV infections are cleared without treatment, persistent infection with high-risk strains of HPV can cause cervical cancer [3]. Some anogenital (anal, penile, vulvar, vaginal) cancers are also caused by HPV infections, and, in addition, recent evidence suggests that HPV can cause oropharyngeal cancers [3,4]. Although there are about 40 different sexually-transmitted strains of HPV, approximately 70% of cervical cancers are caused by either HPV16 or HPV18 [5,6]. In countries with widespread screening programs (Papanicolaou [PAP] smears), the rates of cervical cancer have dropped dramatically. The screening

programs, however, carry a high cost and have not eliminated cervical cancer; in 2007, more than 11,000 new cases of invasive cervical cancer were expected in the United States [7,8].

Vaccines against high-risk HPV strains have been developed and are effective in preventing persistent infections with HPV16 or HPV18 [9]. Following the June 2006 approval of an HPV vaccine for girls and women 9 to 26 years of age, the Advisory Committee on Immunization Practices (ACIP) of the Center for Disease Control (CDC) recommended routine vaccination of girls 11 to 12 years of age and catch up vaccination of girls and women 13 to 26 years of age [10]. This recommendation was supported by other medical organizations: the American Academy of Pediatrics (AAP), the Society for Adolescent Medicine (SAM), and the American Academy of Family Physicians (AAFP) were amongst these supporting organizations [11-13].

The purpose of this study was to examine pediatrician and family physician perception of barriers to the adoption of HPV vaccines.

METHODS

This study utilized a sample of 549 US-practicing family physicians and pediatricians chosen at random from the American Medical Association Master File. US-practicing family physicians and pediatricians were surveyed. The survey was distributed using email, fax, or mail to each of the selected participants.

Statistics

Survey responses were compared using a Chi square (χ^2) test to determine significance in differences between the perceptions of family physicians and pediatricians. All analyses were performed using the Statistical Package for Social Sciences (SPSS) v15.0 (Chicago, IL, USA).

Table 1. Respondent Demographics*

	Family Physicians (n = 192)	Pediatricians (n = 82)
Years in practice	16.9 (9.5)	14.8 (8.6)
Patients seen per week, n	103.8 (31.7)	111.9 (30.1)
Percent practicing in a rural area, n	39.8% (64)	8.6% (6)

*All data are presented as mean (SD).

Table 2. Most Significant Barrier to Optimal Management of Patients with Human Papillomavirus (HPV)

	Family Physicians (n = 192)	Pediatricians (n = 82)	Overall (n = 274)
Symptoms of cervical disease are slow to appear, and even when present may not be particularly bothersome to patients	29.2%	25.6%	28.1%
Lack of patient knowledge about HPV	39.6%	31.7%	37.2%
Many parents do not want to acknowledge that their older children/young adolescents will most likely become sexually active in their teens	25.0%	37.8%	28.8%
Stigmas associated with sexually transmitted disease (STD)	3.6%	3.7%	3.6%
Communication with parents regarding STD treatments	1.0%	1.2%	1.1%
Concern about the possible side effects of HPV treatment	1.6%	0.0%	1.1%

RESULTS

A total of 274 US physicians responded to the survey (192 family physicians and 82 pediatricians), giving us a response rate of 49.9% (274/549). Demographic information for the respondents is shown in Table 1. The average number of years in practice was comparable for family physicians (16.9 years) and pediatricians (14.8 years) as was the average number of patients seen per week (103.8 patients for family physicians and 111.9 patients for pediatricians).

When presented with proposed barriers to optimal management of patients with HPV, survey respondents selected 3 of 6 barriers with approximately equal frequency (Table 2). Lack of patient knowledge about HPV was selected as the most important barrier by family physicians, and pediatricians identified parental discomfort with acknowledging the sexual activity of their children as the greatest barrier. Lack of

symptoms for cervical disease was also considered a significant barrier by physicians of both specialties.

When presented with proposed barriers to adoption of HPV vaccines within their own practice, survey respondents most commonly selected the unwillingness of parents to vaccinate their children; this choice was selected by 38% of family physicians and 49% of pediatricians (Table 3). The lack of policies regarding mandatory vaccination and the inconvenience of the vaccination process were also commonly selected choices.

No significant distinction can be made between the choices of pediatricians and family physicians.

DISCUSSION

Lack of patient knowledge about HPV and lack of early bothersome symptoms of cervical disease were perceived by respondents

as barriers to optimal HPV treatment, as was parental reluctance to acknowledge that their child/adolescent is likely to become sexually active in her teens (Table 2). The unwillingness of parents to vaccinate their children was the most commonly selected barrier to vaccine adoption reported by the respondents (Table 3). Additional practice barriers include inconvenience of the vaccination process, which may include logistics of having a facility and staff available for immunizations.

Prior to vaccine approval, a number of studies assessed healthcare providers' knowledge of HPV and intent to recommend the HPV vaccine. In a survey of US family physicians, more than half did not know that most HPV infections clear without intervention and that HPV strains causing cervical cancer differ from those causing anogenital warts [14]. In a second survey of US family physicians, the most commonly perceived barriers to vaccinating 10- to 15-year-old patients were parental concerns about vaccine safety, the number of vaccines that children receive, and vaccination leading to risky behavior by the child, as well as parental reluctance to have children vaccinated against sexually transmitted diseases [15]. In a survey of US pediatricians, more than 30% did not know that almost all cervical cancers are caused by HPV, and most did not know that HPV strains causing cervical cancer differ from those causing anogenital warts [16]. Parental resistance to vaccination was a commonly perceived barrier to vaccination in several surveys of US pediatricians [17]; however, a survey of parental attitudes regarding vaccines for sexually transmitted disease found that parents were more concerned with disease severity and vaccine efficacy than with how the disease was transmitted [18,19]. A summary of studies published between 1992 and 2006 reported that the results varied with the kinds of questions asked, but overall general knowledge of HPV was low [20].

Since vaccine approval, several studies have assessed healthcare providers' intent to

Table 3. Most Significant Barrier to Adopting Human Papillomavirus (HPV) Vaccination into Practice

	Family Physicians (n = 192)	Pediatricians (n = 82)	Overall (n = 274)
Lack of evidence regarding the efficacy of HPV vaccines	3.2%	2.5%	3.0%
Unwillingness of parents to vaccinate their children	37.8%	49.4%	41.4%
Lack of policies regarding mandatory vaccination	21.1%	23.5%	21.8%
Parental concern about the possible side effects of vaccines	13.0%	7.4%	11.3%
Inconvenience of vaccination process	20.5%	14.8%	18.8%
Issues of confidentiality	4.3%	2.5%	3.8%

recommend the HPV vaccine. In a study of US pediatric clinicians conducted between December 2006 and February 2007, most (78 of 101) respondents were likely to recommend the HPV vaccine to girls 11 to 12 years of age [21]. Although more than half of the clinicians expected to encounter parental concerns about sexuality and lack of parent knowledge about HPV, this expectation was not associated with their intent to recommend the vaccine. In a second survey of US pediatricians conducted in October 2006, most (292 of 332; 88%) were likely to provide the HPV vaccine to all eligible patients [22]. A third survey of potential barriers to vaccination focused primarily on the logistics of providing the vaccine; commonly reported concerns included inadequate reimbursement to providers for the cost of the vaccine, high cost to patients, the burden of determining insurance coverage, and high costs of stocking the vaccine, which may expire before use [23].

There are several limitations to this analysis. As with any survey, the volunteer respondents may not be representative of all medical practitioners. In addition, the survey was distributed soon after the approval of an HPV vaccine, and practitioners and practitioner perceptions of barriers to adoption may be changing. Knowledge may have increased since then because of additional education, news articles, and the

development of vaccine information sheets. A CDC survey in late 2007, however, estimated that only 25% of US girls 13 to 17 years of age had received at least 1 dose of the HPV vaccine during the first year of availability [24]. Thus it is important to continue monitoring and improving physician and patient knowledge of HPV and the HPV vaccine, with specific emphasis on strategies to improve self-efficacy in overcoming barriers to the adoption of HPV vaccine.

The findings of this study demonstrated that there are significant perceived barriers by physicians to adopting new medical advances. In order to aid physicians in overcoming patient and practice barriers and to increase physician confidence, innovative educational approaches are needed to facilitate patient-physician communication to address these barriers. Concentrating on prevention of cancer rather than sexually transmitted disease (STD) may allow physicians and office staff another avenue for dialogue regarding the utility of the vaccine. This aspect may be useful in designing not only physician education, but also patient initiatives. Further study should be placed on examining the patient/parent-physician interaction to determine if attitudes change based on conversations regarding cervical cancer versus STDs.

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