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Provider-reported acceptance and use of the Centers for Disease Control and Prevention messages and materials to support HPV vaccine recommendation for adolescent males

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ABSTRACT

Purpose: We evaluated Florida-based physicians' awareness and use of the Centers for Disease Control and Prevention's (CDC) "You are the Key" campaign website, including messages to support physicians' human papillomavirus (HPV) vaccine recommendations.

Methods: Using closed-ended and free-text survey items, physicians' ($n = 355$) practices related to HPV vaccination recommendations for males and use of the CDC's materials were assessed. Descriptive statistics were calculated for closed-ended questions, and thematic analysis was conducted on free-text responses.

Results: Over half of physicians were aware of the CDC's website ($n = 186$; 57.9%); of those aware, fewer than half reported using the website ($n = 86$; 46.2%). Slightly more than half reported awareness of the CDC's messages ($n = 178$; 55.3%); however, less than one-third of those aware reported using them ($n = 56$; 31.5%). Physicians' comments on the CDC's messages were favorable; 78.6–93.2% said they would use a message in clinic.

Conclusion: Additional research is needed to identify the best mechanisms for resource dissemination and to understand why physicians do not use these messages, despite favorable attitudes.

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1. Introduction

Approximately 63% of penile cancers, 91% of anal cancers, and 72% of oropharyngeal cancers are linked to vaccine-type human papillomavirus (HPV) infection [1]. The three-dose series of quadrivalent HPV (HPV4) vaccine tested in clinical trials demonstrated high immunogenicity levels, reductions in genital lesions, and reductions in precancerous anogenital lesions in males [2,3]. Recent studies confirmed high immunogenicity levels from the three-dose series of 9-valent HPV (9vHPV) vaccine [4,5]. Consequently, the Advisory Committee on Immunization Practices (ACIP) recommends routine HPV vaccination for males ages 11–12; beginning at age 9 with catch-up vaccination ages 13–21, and up to age 26 for immunocompromised men or men who have sex with men [6]. In 2014, HPV vaccine coverage with 3 doses among males ages 13–17 was 22% in the United States (US) and 18% in Florida

(range: 9% in Alabama to 43% in Rhode Island) [7]. Florida has among the nation's highest rates of HPV-related diseases in males, including the 5th highest rate of anal cancer [8]. Given the established efficacy of preventing HPV infections that cause anal and penile cancer [2,3], HPV vaccination has tremendous potential for primary prevention in males [9,10].

HPV vaccination among adolescent males is strongly predicted by physician recommendation [11–13]. Organizations including the Centers for Disease Control and Prevention (CDC) [14] and the President's Cancer Panel [15] advocate increasing physician recommendation as the primary approach to achieve the Healthy People 2020 goal of 80% of 13–15 year old adolescents receiving 3 doses of HPV vaccine [16]. However, physicians' self-reported rates of strongly recommending HPV vaccine for males ages 11–12 in the US remains low for pediatricians (52%) and family medicine physicians (41%) [17]. Guidance for physicians' communication with parents about HPV vaccine is critical to increasing vaccination [11,18]. Given the limited time in the medical encounter [19], providing physicians with brief messages that address

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parents' main concerns about HPV vaccine may effectively promote vaccine recommendation in clinic [20].

To support physicians' recommendations, the CDC launched the "You are the Key" campaign in May 2013 [21]. This campaign included the website, "HPV Vaccine Resources for Healthcare Professionals" to support healthcare professionals provide HPV vaccination recommendations to parents of adolescent patients (<http://www.cdc.gov/hpv/hcp/index.html>). One page entitled, "Tips and Time-savers for Talking with Parents about HPV Vaccine" (referred to hereafter as "Tips and Time-savers") includes nine messages addressing common parental concerns to use when discussing HPV vaccine with parents. However, little is known about physicians' use of the messages in practice.

We evaluated pediatric and family physicians' use of the CDC's "You are the Key" campaign by exploring the Reach component of RE-AIM, an evaluation model that provides framework for appraising impact of a multilevel health intervention in a real-world setting [22]. In this model, Reach refers to the number and representativeness of the target population who receive and adopt the intervention/program. We evaluated Reach in this study by assessing the number and representativeness of physicians who were aware of and used the campaign messages when recommending HPV vaccine for their adolescent male patients. In addition, physicians' feedback was solicited on the campaign messages to inform our understanding of messages' appeal to physicians.

2. Methods

2.1. Procedure

Participant recruitment and the survey instrument are described in detail elsewhere [23,24] and are summarized below.

2.1.1. Recruitment

A mailing list of Florida-based pediatricians and family medicine physicians from an American Medical Association Physician Masterfile licensee was obtained. Study exclusion criteria were: (1) trainee status (i.e., residents and fellows), (2) locum tenens, (3) non-patient care reported as their primary activity, (4) age 65 years or older, and (5) post office box listed as an address. Pediatric and family physicians ($n = 770$) were randomly selected based on their proportional representation in the Florida physician primary care workforce. After receiving institutional review board approval, we began a six-wave mailing approach with pre-notice postcards mailed in May 2014, and ending with a final reminder to non-responders in August 2014. We received 367 completed surveys; after accounting for undeliverable surveys ($n = 36$) and ineligible respondents ($n = 10$), the overall response rate was approximately 51% ($367/[770-36-10]$).

2.2. Measurement

The 49-item survey assessed physicians' HPV vaccination recommendation practices, personal and perceived parental barriers to HPV vaccination, HPV-related knowledge, demographic characteristics, practice setting, strategies for remembering to discuss HPV vaccine with male patients, and current use of information/support regarding HPV vaccination. Specifically, the CDC's "You are the Key" campaign resources Reach was assessed using the following questions: (1) *Do you use the "HPV Vaccine Resource for Healthcare Professionals" website provided by the Centers for Disease Control and Prevention to guide your discussion of HPV vaccination with parents of male patients?* (2) *Do you use the "Tips and Time-savers for Talking with Parents about HPV vaccine" tip sheet*

provided by the Centers for Disease Control and Prevention to guide your discussion of HPV vaccination with parents of male patients? Response options were: yes, no, or I am unaware of this website. Awareness was operationalized by combining the "yes" and "no" responses.

The CDC's "Tips and Time-savers" document includes nine messages for physicians to use when addressing parents' questions about HPV. To reduce potential respondent burden, we created and randomly assigned physicians to one of three survey versions (referred to as versions A, B, C in this manuscript). Each survey had three of the nine messages; A1-A3, B1-B3, and C1-C3. Following each message, physicians were asked: *Would you use this message when discussing HPV vaccine with parents of male patients in your clinical practice?* Response options were: yes, no, or unsure. In addition, after each message, physicians were asked to: *Please provide any additional feedback that you feel is important regarding the recommended message.*

2.3. Data analysis

Frequencies for demographic information and closed-ended responses were calculated using SPSS (version 21). All free-text responses were provided in direct response to one of the "Tips and Time-savers" messages. However, upon initial review of all comments, themes were found across messages. Therefore, rather than analyzing specific responses to individual messages, the comments were considered holistically to identify particular message features. For example, the response "Needs to be simplified in laymen's terms for most patients" was categorized as: messages need to consider audiences' literacy level. Using thematic analysis, one researcher reviewed and categorized all free-text responses. All responses were independently coded a second time by a research assistant to assess coding scheme reliability and validity. Cohen's Kappa of .862 was achieved, an acceptable level of agreement.

3. Results

3.1. Participants

Of the 770 physicians invited to participate in this study, 367 completed the survey. Individuals who reported not providing care to males age 9–26 were excluded from analysis for a final analytic sample of 355. Approximately half of physicians were female (51.0%), age ≥ 50 years (46.1%), specialized in family medicine (49.3%), and saw between 20 and 29 patients per day (44.5%). The majority was White (67.7%), non-Hispanic (75.1%), practiced for ≥ 16 years (51.9%), and worked in private practice (67.2%). Approximately one-third practiced in an urban setting (37.7%; Table 1). We found no statistically significant difference between responding physicians and the larger population of Florida physicians for age, sex, and clinical specialty (all $p > .05$) [24].

3.2. Closed-ended responses

Over half of physicians were aware of the CDC's "HPV Vaccine Resources for Healthcare Professionals" website ($n = 186$; 57.9%). A slightly higher proportion of pediatricians ($n = 94$; 62.3%) than family medicine physicians ($n = 92$; 54.1%) reported awareness of the website. More than half of family medicine physicians ($n = 55$; 59.8%) and slightly fewer than half of pediatricians ($n = 45$; 47.9%) who were aware of the website reported not using. Similarly, just over half were aware of the "Tips and Time-savers" messages ($n = 178$; 55.3%). Slightly more pediatricians reported being aware of the messages ($n = 91$; 59.9%) compared with family medicine physicians ($n = 87$; 51.1%); a slightly lower proportion of pediatricians ($n = 58$; 63.7%) compared with family medicine

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