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Improving Human Papillomavirus Vaccination in the United States: Executive Summary

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This special issue of *Academic Pediatrics* highlights promising research as well as continued challenges with improving human papillomavirus (HPV) vaccination coverage among adolescents in the United States. As Markowitz and colleagues review, in the first 10 years of the US HPV vaccination program, there have been advances with available vaccines, expansion of vaccine recommendations, and early success with reducing prevalence of HPV vaccine types among adolescents and young adults.[1] However, despite the availability of a safe and effective vaccine, HPV vaccine uptake has been lower than expected. The 7 commentaries and 11 original articles, from noted experts included in this supplement highlight challenges, successes, and lessons about HPV vaccination delivery in the United States. These articles are organized according to population: parent, provider, and system.

Parents and adolescents themselves are the ultimate decision-makers regarding HPV vaccination. In the parent perspectives section, a commentary by Ernst and Shelby[2] touches on the positive and negative roles social media have played regarding HPV vaccination, encouraging the sharing of HPV cancer stories to highlight the importance of vaccination. This theme continues with a personal story from an HPV cancer survivor in the commentary by Perkins and Felder.[3] Dempsey and O'Leary[4] conduct a review of the influence that provider communication techniques have on parental attitudes regarding HPV vaccine, as well as how those techniques affect vaccination uptake, and describe the evidence that strong, brief, unambiguous provider recommendations are effective. Chhabra et al[5] use a health literacy framework (readability, suitability, and comprehensiveness of content) to evaluate 38 HPV counseling materials; although many materials scored low for readability, a qualitative review of 4 products by parents showed that the documents were influential in convincing them to vaccinate. The final article in this section, by Kornides et al,[6] summarizes the results of a survey of parents who initially refused the HPV vaccine for their child—45% reported accepting the vaccine on subsequent visits with their health care provider, showing the importance of repeatedly discussing HPV vaccination with patients even if parents initially decline the vaccine.

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Health care practitioners can help raise HPV vaccination rates by focusing on optimal communication techniques as well as implementing one or more practice-based changes. In the provider perspective section, Stratbucker et al[7] present a model for educating residents that includes experiential and longitudinal quality improvement (QI) activities focused on improving vaccination rates and reducing missed opportunities. This involves a multidisciplinary office-based team and gives the resident an opportunity to learn about office systems, communication, and QI methodology. Rand et al[8] put this model into practice with a 9-month learning collaborative QI intervention in 38 community practices and 14 pediatric continuity clinics resulting in an increase in HPV vaccination and a decrease in missed vaccination opportunities. Rosen and Kahn[9] synthesize the literature in a qualitative review of the empirical research examining health care clinicians' perceptions and professional practices concerning HPV vaccination; although providers are supportive of HPV vaccination in general, discrepancies were identified between stated intentions and recommendation practices. Finally, Zimet et al[10] present an intervention study in which the comparative effectiveness of 2 interventions were evaluated: simple prompts delivered via an electronic clinical decision support system versus elaborate prompts that include specific phrases and strong provider recommendation language, versus standard of care control; this study was conducted with 29 pediatric health care providers in 5 pediatric clinics. Zimet et al report that vaccine initiation was significantly higher in the elaborate prompt arm compared with the control arm but the same in the simple prompt versus control arms.

Interventions can occur beyond the individual doctor–patient encounter, or the individual medical practice—in fact, system-based interventions are also needed. In the final section, systems perspectives, Rand and Goldstein[11] provide an overview of health care utilization among individuals ages 9 to 21 years to highlight how often eligible children and adolescents "touch" the health care system and therefore have opportunities for vaccination. Only 35% made a preventive health care visit during the past 12 months with visits decreasing after age 16 years, highlighting the importance of taking advantage of every health care encounter and providing HPV vaccine at the recommended age of 11 to 12 years. Two intervention studies targeting large health systems included in this section show mixed results, highlighting the continued challenge of improving HPV vaccination. Fisher-Borne et al[12] describe early results from a 3-arm QI pilot study conducted in 30 federally qualified health center systems, representing 130 clinic sites. This study showed a 14.6 percentage point increase in HPV vaccine series initiation among 11- to 12-year-old patients during the first year, however, no significant increases were observed for vaccination with the second dose or series completion. An assessment and feedback intervention study by Irving and colleagues[13] conducted in 9 Oregon-based outpatient clinics in an integrated health care delivery system showed no effect on HPV vaccination coverage, demonstrating the challenges with improving coverage in a system that had already been implementing most recommended strategies. Beyond the health care setting, Choi et al[14] summarize a multi-intervention approach implemented in the City of Chicago from September 2013 through December 2015 that focused on creating a stakeholder initiative, provider and public education, and system interventions including provider peer-to-peer immunization practices assessment and feedback visits. Although this was a multipronged community intervention and not a randomized trial and vaccine coverage cannot be attributed solely to the

intervention, HPV vaccination rates in targeted Chicago areas were higher than before the intervention. Last, although school-located vaccination has been a successful model in increasing HPV vaccination coverage in other countries, Kempe et al[15] review the published literature and outline the many challenges as well as opportunities with implementing school-located vaccination in the United States.

A multidisciplinary approach, with many partners, is needed to improve HPV vaccination delivery. Saslow et al[16] describe the efforts of the National HPV Roundtable to bring together organizations with a shared goal of improving vaccine uptake and reducing cancers caused by HPV. Additionally, Reiter et al[17] outline research gaps that, if addressed, can help guide activities as we begin the second decade of HPV vaccination in the US. Indeed, as explained in the commentary by Schuchat, continued efforts are needed from many disciplines to help tackle this important public health issue and end “HPV vaccine exceptionalism” with a renewed effort to normalize HPV vaccination into standard recommended health care.[18]

As shown in this supplement, improving HPV vaccination coverage in the United States has many challenges but some approaches are showing promise. By working together and by pushing ourselves to work “smarter” and incorporate the latest evidence and expertise about HPV vaccination delivery, we can hasten the process of ridding the nation of HPV disease.

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