Policy on Human Papilloma Virus Vaccinations

Latest Revision

2024

How to Cite: American Academy of Pediatric Dentistry. Policy on human papilloma virus vaccinations. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2024:143-5.

Purpose

The American Academy of Pediatric Dentistry (**AAPD**) recognizes there is a link between human papilloma virus (**HPV**) and development of oral pharyngeal cancers. This policy is intended to promote the dentist's role in discussing the association of oral cancers with HPV as well as the HPV vaccination for age-appropriate patients.

Methods

This policy was developed by the Council on Clinical Affairs, adopted in 2017[1], and last revised in 2020[2]. This revision is based on a review of current dental and medical literature. An electronic search was conducted using the PubMed®/MEDLINE database using the terms: HPV vaccines, HPV and oral cancer, HPV and cancer, Gardasil® and prevention of cancer; fields: all; limits: within the last 10 years, humans, English, birth through age 99. The search returned over 5,296 articles. Papers for review were chosen from this list and from the references within selected articles.

Background

HPV transmission can occur through both sexual and non-sexual contacts; skin-to-skin, skin-to-mouth, oral sex, and sexual intercourse are all potential routes of transmission.[3,4] Persistent infection with high-risk HPV genotypes is associated with anogenital, skin, as well as oral and oropharyngeal cancers (**OOPC**).[5,6] Oropharyngeal (i.e., tonsils and base of tongue) squamous cell carcinoma is the most common type of HPV-associated OOPC.[7] HPV accounts for 70 percent of all OOPC in the United States[8], of which over 90 percent are caused by HPV 16 strain[7,9]. Other high-risk HPV genotypes implicated in OOPC are types 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, and 68.[5,10] Patients with HPV-associated OOPC generally are younger and healthier than patients with HPV-negative OOPC, with negligible smoking history which is a shift from the traditional risk factors of tobacco and alcohol abuse.[11]

Vaccines for prevention of HPV infections via subtypes 16 and 18 have been available since 2006.[12] Reduction in prevalence of HPV-types 6, 11, 16, and 18 from the prevaccine era to 2015-2018 has been significant among females aged 14 through 19 years (88 percent) and 20 through 24 years (81 percent).[13] In sexually-experienced females who reported receiving one or more HPV-vaccine doses, HPV prevalence decreased 97 percent among those aged 14 through 19 years and 86 percent in those aged 20 through 24 years.[13] In females who reported no vaccination, prevalence decreased 87 percent and 65 percent respectively, suggesting herd effects.[13] HPV vaccine efficacy against anal and oral infection is high and similar to that against cervical infection.[14] A recent study showed 88 percent reduction in prevalence in females and males aged 18 to 33 years.[15] No studies show that the HPV vaccine prevents the development of OOPC; however, it is reasonable to postulate the vaccine's potential to do so as the vaccine has been shown to reduce HPV-related oral infections.[16,17] Evidence extrapolated from large epidemiologic studies on HPV-vaccination efficacy in reducing risk of vulvovaginal and cervical cancer caused by the same viral strains associated with OOPC further supports this postulate.[18-20]

With regard to vaccine safety, robust data from prelicensure trials and postlicensure monitoring indicate that, other than expected minor adverse effects (e.g., fever, injection site reaction, syncopal episode) in adolescents, no serious adverse events or concerns have been identified.[21,22] A history of severe allergic reaction (e.g., anaphylaxis) to a component of the vaccine (e.g., baker's yeast) or subsequent to a previous dose of HPV vaccine is a contraindication to immunization.[23] Vaccination is not recommended for individuals having moderate or severe acute illness until symptoms improve or during pregnancy.[23]

In 2016, the Centers for Disease Control and Prevention (**CDC**) Advisory Committee on Immunization Practices (**ACIP**) recommended HPV vaccination at age 11 or 12 years, but it can be given as early as age nine years.[24,25] For immunocompetent children younger than 15 years, a two-dose schedule with both doses six-12 months apart is recommended.[24] For children ages nine through 14 who received two HPV vaccines doses less than five months apart or age 15 or older at the time of initial vaccination, as well as for those with immunocompromising conditions, a three-dose series is recommended.[23,24] The American Academy of Pediatrics (**AAP**) updated its HPV vaccination policy in 2017 to reflect the CDC/ACIP recommendations.[25] Despite recommendations

ABBREVIATIONS

AAP: American Academy of Pediatrics. **AAPD:** American Academy of Pediatric Dentistry. **ACIP:** Advisory Committee on Immunization Practices. **CDC:** Centers for Disease Control and Prevention. **HPV:** Human papilloma virus. **OOPC:** Oral and oropharyngeal cancer.

from various authorities on the benefits of HPV vaccination, barriers to immunization[25-29] (e.g., parental concerns regarding safety, the patient having special needs or not being sexually active, lack of knowledge, belief it is not necessary; lack of provider recommendation) persist.

Anticipatory guidance for child and adolescent patients includes counseling across a variety of preventive (e.g., caries, trauma) and behavioral (e.g., diet, tobacco) considerations.[30] Given that dental professionals are already involved in secondary and tertiary prevention and, to a limited extent, in the treatment of OOPC, offering primary prevention in dental clinics seems a logical and clinically-appropriate approach. Provision of an additional avenue for promotion of HPV vaccination is desirable, as evidenced by the persistent resistance towards HPV vaccination and the continued increase in HPV-related OOPC incidence despite increased availability of HPV vaccines.[8] As children and young adolescent patients tend to see the dentist twice yearly and more often than their medical doctor, this provides a window of opportunity for the dental profession to counsel the patient and parent about HPV's link to oral cancer and other HPV-related oral lesions as well as the potential benefits of the HPV vaccine[31]. The dental office could be an additional access point for HPV vaccine delivery.[31-33]

Policy statement

The AAPD supports measures that prevent OOPC, including the prevention of HPV infection, a critical factor in the development of oral squamous cell carcinoma.

The AAPD encourages oral health care providers to:

- educate patients and parents on the serious health consequences of OOPC and the relationship of HPV to OOPC.
- counsel patients and parents regarding HPV vaccination in accordance with CDC recommendations as part of anticipatory guidance for adolescent patients.
- routinely examine patients for oral signs of and changes consistent with OOPC.
- follow current literature and consider incorporating other approaches for HPV prevention in their practices to minimize the risk of disease transmission.

References

1. American Academy of Pediatric Dentistry. Policy on human papilloma virus vaccinations. Pediatr Dent 2017; 39(6):81-2.
2. American Academy of Pediatric Dentistry. Policy on human papilloma virus vaccinations. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2020:102-3.
3. Allen AL, Siegfried EC. What's new in human papillomavirus infection. Curr Opin Pediatr 2000;12(4):365.
4. Centers for Disease Control and Prevention. Human papilloma virus: Genital HPV infection – Basic fact sheet. Last reviewed April 12, 2022. Available at: "https://www.cdc.gov/std/hpv/stdfact-hpv.htm". Assessed February 8, 2024.
5. National Cancer Institute. HPV and cancer. Last revision October 18, 2023. Available at: "https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-and-cancer". Accessed February 8, 2024.
6. Cogliano V, Baan R, Straif K, Grosse Y, Secretan B, El Ghissassi F. Carcinogenicity of human papillomaviruses. World Health Organization International Agency for Research on Cancer. Lancet Oncol 2005;6:204.
7. Gillison ML, Chaturvedi AK, Anderson WF, Fakhry C. Epidemiology of human papillomavirus-positive head and neck squamous cell carcinoma. J Clin Oncol 2015; 33(29):3235-42.
8. Senkomago V, Henley SJ, Thomas CC, Mix JM, Markowitz LE, Saraiya M. Human papillomavirus—Attributable cancers—United States 2012-2015. MMWR Mor Mortal Wkly Rep 2019;68:724-8.
9. Weatherspoon DJ, Chattopadhyay A, Boroumand S, Garcia I. Oral cavity and oropharyngeal cancer incidence trends and disparities in the United States: 2000-2010. Cancer Epidemiol 2015;39(4):497-504. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4532587/". Accessed February 8, 2024.
10. Bouda M, Gorgoulis VG, Kastrinakis NG, et al. "High risk" HPV types are frequently detected in potentially malignant and malignant oral lesions, but not in normal oral mucosa. Mod Pathol 2000;13(6):644-53.
11. Lechner M, Liu J, Masterson L, Fenton TR. HPV-associated oropharyngeal cancer: Epidemiology, molecular biology and clinical management. Nat Rev Clin Oncol 2022;19(5):306-27.
12. Markowitz LE, Dunne EF, Saraiya M, et al. Quadrivalent human papillomavirus vaccine: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2007;56(RR-2):1-24.
13. Rosenblum HG, Lewis RM, Gargano JW, Querec TD, Unger ER, Markowitz LE. Declines in prevalence of human papillomavirus vaccine-type infection among females after introduction of vaccine – United States, 2003-2018. MMWR Morb Mortal Wkly Rep 2021;70 (12):415-20. Available at: "https://pubmed.ncbi.nlm.nih.gov/33764964/". Accessed February 1, 2024.
14. Beachler CK. Multisite HPV 16/18 vaccine efficacy against cervical, anal, and oral HPV infection. J Natl Cancer Inst 2015;108(1):djv302. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4862406/". Accessed February 8, 2024.
15. Chaturvedi AK, Graubard BI, Broutian T, et al. Effect of prophylactic human papillomavirus (HPV) vaccination on oral HPV infections among young adults in the United States. J Clin Oncol 2018;36(3):262-7.
16. Gheit T, Muwonge R, Lucas E, et al. Impact of HPV vaccination on HPV-related oral infections. Oral Oncol 2023;136:106244.

17. Markowitz LE, Hariri S, Lin C, et al. Reduction in human papillomavirus (HPV) prevalence among young women following HPV vaccine introduction in the United States, National Health and Nutrition Examination Surveys, 2003-2010. J Infect Dis 2013;208(3):385-93.
18. Dehlendorff C, Baandrup L, Kjer SK, et al. Real-world effectiveness of human papillomavirus vaccination against vulvovaginal high-grade precancerous lesions and cancers. JNCI J Natl Cancer Inst 2021;113(7):869-74.
19. Lei J, Ploner A, Elfstrom KM, et al. HPV vaccination and the risk of invasive cervical cancer. N Engl J Med 2020;383(14):1340-8.
20. Porras C, Tsang SH, Herrero R, et al; Costa Rica Vaccine Trial Group. Efficacy of the bivalent HPV vaccine against HPV-16/18-associated precancer: Long-term follow-up results from the Costa Rica HPV Vaccine Trial (CVT). Lancet Oncol 2020;21(12):1643-52.
21. Phillips A, Patel C, Pillsbury A, Brotherton J, Macartney K. Safety of human papillomavirus vaccines: An updated review. Drug Saf 2018;41(4):329-46.
22. World Health Organization Global Advisory Committee on Vaccine Safety. Safety of HPV vaccines. 2017. Available at: "https://www.who.int/groups/global-advisory-committee-on-vaccine-safety/topics/human-papillomavirus-vaccines/safety". Accessed January 29, 2024.
23. Centers for Disease Control and Prevention. Vaccines and preventable diseases. Human papillomavirus (HPV) vaccination: HPV vaccination recommendations. Last reviewed November 16, 2021. Available at: "https://www.cdc.gov/vaccines/vpd/hpv/hcp/recommendations.html". Accessed February 14, 2024.
24. Meites E, Kempe A, Markowitz LE. Use of a 2-dose schedule for human papillomavirus vaccination — Updated recommendations of the Advisory Committee on Immunization Practices. Morb Mortal Wkly Rep 2016; 65(49):1405-8. Available at: "https://www.cdc.gov/mmwr/volumes/65/wr/mm6549a5.htm". Accessed January 29, 2024.
25. O'Leary ST. Why the American Academy of Pediatrics recommends initiating HPV vaccine at age 9. Hum Vaccin Immunother 2022;18(6):2146434. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9746363/". Accessed February 8, 2024.
26. Henrikson NB, Opel DJ, Grothaus L, et al. Physician communication training and parental vaccine hesitancy: A randomized trial. Pediatrics 2015;136(1):70-9.
27. McRee AG. HPV vaccine hesitancy: Findings from a statewide survey of health care providers. J Pediatr Health Care 2014;28(6):541-9.
28. Siddiqui M, Salmon DA, Omer SB. Epidemiology of vaccine hesitancy in the United States. Hum Vaccin Immunother 2013;9(12):2643-8.
29. Sonawane K, Zhu Y, Montealegre JR, et al. Parental intent to initiate and complete the human papillomavirus vaccine series in the USA: A nationwide, cross-sectional survey. Lancet Public Health 2020;5(9):e484-e492. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7484349/". Accessed February 4, 2024.
30. American Academy of Pediatric Dentistry. Periodicity of examination, preventive dental services, anticipatory guidance/counseling, and oral treatment for infants, children, and adolescents. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2024:293-305.
31. National Institutes of Health. Oral Health in America: Advances and Challenges. Section 2B: Oral Health Across the Lifespan: Adolescents. Bethesda, Md.: National Institute of Dental and Craniofacial Research (US); December 2021. Available at: "https://www.ncbi.nlm.nih.gov/books/NBK578291/". Accessed February 8, 2024.
32. Cloidt M, Kelly A, Thajjar-Samtani M, et al. Identifying the utility of dental providers in human papillomavirus prevention efforts: Results from the National Health and Nutrition Examination Survey 2015-2018. J Adolesc Health 2022;70(4):571-6.
33. Irwin CE Jr, Adams SH, Park MJ, Newacheck PW. Preventive care for adolescents: Few get visits and fewer get services. Pediatr 2009;123(4):e565-72. Available at: "https://dx.doi.org/10.1542/peds.2008-2601". Accessed February 5, 2024.