

Problem

Cancers of the head and neck occur in a number of anatomical areas including the oral cavity, pharynx, larynx, the paranasal sinuses, nasal cavity, and salivary glands.¹ The main causes of head and neck cancers are from one or more of an array of behavioral, environmental, cultural, and viral factors with the majority (approximately 75%) of these attributed to tobacco and alcohol use.¹

Recent studies show that an increasing proportion (approximately 60% to 70%) of oropharyngeal cancers (OPC) may be linked to the Human Papilloma Virus (HPV).^{1,2,3,4,5} Cancers of the oropharynx, the middle part of three anatomical areas comprising the pharynx, impact the back of the throat, which includes the soft palate, base of the tongue, and tonsils;¹ HPV-related OPC mainly affect the base of the tongue and tonsils.¹ However, it remains unclear whether HPV is linked to other head and neck cancer areas including the oral cavity.^{6,7}

HPV is the most common sexually transmitted virus and infection in the U.S.⁵ A person can have HPV for many years, even decades, before it is detected or develops into cancer.² The vast majority of infected people, even those with a high risk strain of HPV, will not develop cancer.⁸ In the US, estimates show an average of 15,738 new cases of HPV-associated OPC are diagnosed each year in sites where HPV is found, with 3,100 new cases in women and 12,638 in men.^{3,4,Error! Bookmark not defined.}⁹ Findings from the National Health and Nutrition Examination Survey (NHANES) indicate that on any given day, approximately 26 million Americans have an oral HPV infection, with approximately 2,600 of these individuals infected with a high-risk cancer-causing strain.⁹ According to the CDC, the highest prevalence of HPV-associated OPC is found in non-Hispanic males.¹⁰ The fastest growing segment of the HPV-related OPC population is healthy, non-smokers in the 25-50 age range.^{Error! Bookmark not defined.} White, non-smoking males age 35 to 55 are most at risk, four to one over females.²

Because of an array of non-traditional risk factors associated with HPV-related OPC, including a younger age cohort and no history of significant tobacco and alcohol use, diagnosis may be delayed since both patients and practitioners may not readily be considering and looking for such oral pathology. HPV-related OPCs may also be more difficult to detect than tobacco-related cancers because the symptoms are not always obvious to the individual or to the professionals.² As with most head and neck cancers, the symptoms may be subtle and painless. Because the affected areas for OPC are approximate to the back of the throat, OPC, including those caused by HPV, are generally more difficult to detect and diagnose early when compared to other oral cavity cancers.³

According to the Oral Cancer Foundation, the best way to screen for head and neck cancers, including HPV-related OPC, is through a visual and tactile exam given by a medical or dental professional.² However, traditional screening techniques may not always be effective for OPC since the oropharynx is located deep inside the neck and cannot be easily visualized or palpated. The exam should be accompanied by a thorough medical history asking about signs and symptoms of OPC along with possible exposure specific to HPV. If the practitioner suspects possible pathology based on the history, a follow-up exam using mirrors (indirect pharyngoscopy) or special fiber-optic scopes (direct pharyngoscopy) will likely be needed to thoroughly examine the oropharynx.¹¹ An oral health professional or physician should

evaluate any symptoms that persist for two or more weeks including a sore in the mouth that does not heal, pain that doesn't go away, a white or red patch, persistent sore throat or lump/swelling of unknown origin. Persistent problems should be assessed for a definitive diagnosis.

According to the Oral Cancer Foundation, about 12,000 people between the ages of 15 to 24 are infected with HPV every day in the U.S.² Yet despite the availability of a vaccine for young boys and girls, HPV OPC rates have increased in recent years. Many factors may pose barriers to receiving the vaccine in healthcare settings including the hesitancy of healthcare providers to discuss HPV in a clinical setting. It is likely that dental professionals, while routinely screening for oral cancer, may not be recommending the HPV vaccine to their patients because: (1) they may be unaware of HPV-related OPC; (2) they may be aware of HPV-related OPC but not about the vaccine and its purported use and effectiveness; and (3) perhaps the most likely reason, dental professionals may feel uncomfortable discussing HPV since it is a sexually transmitted disease.

Method

The Advisory Committee on Immunization Practices (ACIP) recommends routine HPV vaccination for girls and boys ages 11 and 12.¹² Vaccination is also recommended for females ages 13 through 26 and for males ages 13 through 21 who have not been vaccinated previously or who have not completed the recommended series.¹³ Vaccination is also recommended through age 26 for men who have sex with men and for immunocompromised persons (including those with HIV infection) if not vaccinated previously.¹³ These vaccines are most effective if given to children before they become sexually active.

Given the intricacies in effectively diagnosing HPV-related OPC in a timely manner, receiving the HPV vaccine at a young age by both boys and girls becomes ever more critical. Integrating effective communication strategies to discuss HPV and the HPV vaccine in a clinical setting can build awareness for the possible risk of HPV-related OPC. Healthcare professionals must feel comfortable discussing HPV and the HPV vaccine in their practices. At times it is difficult discussing sexual concerns in a healthcare setting, but rephrasing the message as a cancer prevention strategy can help encourage conversations with patients. If healthcare providers, particularly dentists and dental hygienists, are uncomfortable discussing the subject of sexually transmitted diseases, emphasizing how the HPV vaccine can reduce the risk of OPC and other cancers may be the most prudent tactic to encourage more providers to discuss this topic. Webinars and continuing education courses can help healthcare providers learn the most effective communication tools to implement in their practice.

State oral health programs (SOHP) can play an important role in communicating information regarding HPV and the HPV vaccine. SOHPs can facilitate partnerships, including referral relationships among stakeholders. Because of their positioning with external as well as internal partners, SOHPs have the opportunity to work with private and public health medical and dental clinical professionals and their professional associations to craft messages that clinicians can use in discussing HPV and promoting the HPV vaccine. Such messages can include the importance of referrals to primary care medical and dental providers for HPV vaccination, depending on what individual state practice acts allow. These messages might also form the basis of broader, community-based campaigns employing public health approaches, using risk communications techniques and framing appropriate to the intended audiences. Similarly, SOHPs' relationships with state health department colleagues in programs such as Chronic Disease and Cancer Prevention enable them to discuss HPV-related oral cancers and for the programs to make their own networks aware of the OPC risk due to HPV. In both situations, the SOHP can help develop messages for dissemination on how best to promote use of HPV vaccination in preventing OPC.

The primary focus of HPV vaccines has been on reducing cervical cancer. However, increased awareness should focus on the prevention of OPC in males and females as well.¹⁴ The SOHP and other public health programs can address HPV-related OPC through the establishment of collaborative partnerships resulting in an interprofessional workforce that encompasses healthcare professionals and includes immunization staff. Together, they can help raise public awareness about signs, symptoms, risk factors and changes in the demographics of head and neck cancer, including OPC. Further, this integrated workforce can counsel patients about the HPV vaccine and how it can help reduce the risk of HPV-related OPCs. Offering head and neck cancer screenings for targeted, high risk populations during an immunization clinic also might create an important opportunity to discuss the increasing trends of OPC and HPV.

Finally, and perhaps most important, integrating HPV and OPC education into dental, dental hygiene and other health professions curricula can increase the comfort level of healthcare providers in addressing HPV and the HPV vaccine in a clinical setting. The next generation of healthcare professionals needs to be well versed in the emerging evidence as it relates to HPV and OPC.

Concluding Statement:

The Association of State and Territorial Dental Directors (ASTDD) endorses promotion of the HPV vaccine to reduce the risk of HPV-related oropharyngeal cancer. State oral health programs (SOHPs) can play a critical role in facilitating evidence-based state and community practice interventions and messaging campaigns aimed at effectively promoting the HPV vaccine. Through external and internal partners, SOHPs can help develop collaborative partnerships and referral networks that can empower an interprofessional workforce of dental and medical practitioners to promote use of the HPV vaccine for their patients and increase the rates of completion of the HPV vaccination series. A cost-effective approach to promoting overall health in evidence-based state and community practice interventions is to incorporate HPV-related oropharyngeal cancer awareness strategies into oral health promotion efforts and healthcare professional academic curricula.

The ASTDD Dental Public Health Resources Committee is pleased to acknowledge Christina Demopoulos, DDS, MPH, for her assistance in preparing this paper.

¹ National Cancer Institute. <https://www.cancer.gov/types/head-and-neck/head-neck-fact-sheet#q2>. Accessed 5/13/17.

² Saraiya M, Unger ER, Thompson TD, et al. U.S. Assessment of HPV types in cancers: implications for current and 9-valent HPV vaccines. *Journal of the National Cancer Institute*. 2015 June 29; 107(6): djv086.

³ Chaturvedi AK, Engels EA, Pfeiffer RM. HPV and rising oropharyngeal cancer incidence in the United States. *Journal of Clinical Oncology*. 2011 Nov 10; 29(3): 4294-301.

⁴ Gillison ML, Chaturvedi AK, Lowy DR. HPV prophylactic vaccines and the potential prevention of noncervical cancers in both men and women. *Cancer*. 2008 Nov 15; 113(10 Suppl): 3036-46.

⁵ Oral Cancer Foundation. HPV Oral Cancer Facts. <http://oralcancerfoundation.org/understanding/hpv/hpv-oral-cancer-facts/>. Accessed November 21, 2016

⁶ Hubbard CU, Akgul B. HPV and cancer of the oral cavity. *Virulence*. 2015 Apr;6(3):244-248.

⁷ Lingen MW, Xiao W, Schmitt A, et al. Low etiology fraction in high-risk human papilloma virus in oral cavity squamous cell carcinomas. *Oral Oncology*, 2013; 49:1-8.

⁸ Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Hamborsky J, Kroger A, Wolfe S, eds. 13th ed. Washington D.C. Public Health Foundation, 2015. Also at <https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html>.

⁹ Gillison ML, Broutian T, Pickard RK, et al. Prevalence of oral HPV infection in the United States, 2009- 2010. JAMA. 2012 Feb 15; 307(7) 693-703.

¹⁰ Centers for Disease Control and Prevention. HPV-associated oropharyngeal cancer rates by race and ethnicity. <http://www.cdc.gov/cancer/hpv/statistics/headneck.htm>. Accessed November 21, 2016.

¹¹ American Cancer Society, <https://www.cancer.org/cancer/oral-cavity-and-oropharyngeal-cancer/detection-diagnosis-staging/how-diagnosed.html>. Accessed 5/14/17.

¹² Markowitz LE, Dunne EF, Saraiya M, et al. Centers for Disease Control and Prevention (CDC). Human papillomavirus vaccination: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2014;63(No. RR-05):1–30.

¹³ Petrosky E, Bocchini JA, Hariri S, et al. Centers for Disease Control and Prevention (CDC). Use of 9-Valent human papillomavirus (HPV) vaccine: updated HPV vaccination recommendations of the advisory committee on immunization practices (ACIP). MMWR 2015;64(11):300-304.

¹⁴ Kreimer, AR. Prospects for prevention of HPV-driven oropharynx cancer. Oral Oncol. 2014 June ; 50(6): 555–559. doi:10.1016/j.oraloncology.2013.06.007.