

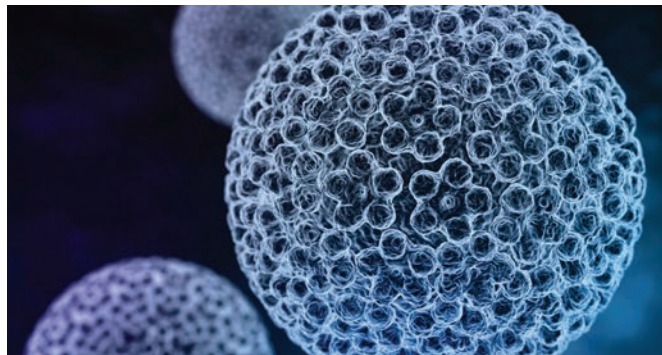
Discover how NIDCR-funded research is enhancing knowledge and improving public health.

HPV & Oropharyngeal Cancer

Overview

Each year, about 58,000 Americans are diagnosed with oral cancer, resulting in around 12,000 deaths.¹ Major risk factors for oral cancer include tobacco and alcohol use. A subset of oral cancers, called oropharyngeal cancers, affects the back of the throat including the base of the tongue and the tonsils.

Oropharyngeal cancer can be caused by certain subtypes of human papillomavirus (HPV), the same virus that causes cervical cancer. When this cancer is linked to HPV infection, it is called HPV-positive oropharyngeal cancer.



Why Is Research on HPV-Positive Cancer Important?

Rates of HPV-positive oropharyngeal cancer have dramatically increased in recent years. Experts estimate that about 70 percent of newly diagnosed oropharyngeal cancers in the United States are HPV-positive, especially among non-smoking young adults.² HPV-positive oropharyngeal cancer is more common among men than women.² In addition, people living with human immunodeficiency virus (HIV) are also at higher risk of HPV infection, increasing their chances of developing HPV-positive oropharyngeal cancer. This type of cancer is often found at an advanced stage when diagnosed, mostly due to a lack of early symptoms and because it is hard to detect. Early detection could optimize treatment options and improve outcomes. However, there are currently no standard screening methods for early detection. Additional research is therefore necessary to address this urgent need through:

- **Discovery.** Providing new insight into why HPV-positive and HPV-negative cancers progress differently and have varying outcomes.
- **Prevention.** Educating dental providers to promote vaccination against HPV and training them in the latest detection methods.
- **Detection.** Creating more effective ways for early detection of new or recurring HPV-positive cancers.
- **Treatment.** Developing better treatments, particularly for patients whose cancers are in advanced stages, recur, or don't respond well to current therapies.

How Is NIDCR Investing in Research on HPV-Positive Cancer?

NIDCR invested over \$16 million into research on HPV-positive cancer in fiscal year 2024.

NIDCR supports a wide range of basic, translational, and clinical HPV-positive cancer research to address this emerging public health concern.

Examples of NIDCR-supported Research Projects

- **Developing simple and convenient instruments and methods to detect oral HPV infection.** Creating noninvasive point-of-care diagnostic devices for self-sampling or use in dental offices and clinics that can detect HPV in a sample of saliva or cheek swab.
- **Engaging dental providers in research.** Assessing the feasibility of oral HPV screening during routine dental visits, acceptability for identifying and monitoring patients at risk of developing HPV-positive oropharyngeal cancer, and testing promotion interventions in dental settings to increase HPV vaccinations.
- **Identifying HPV-positive cancer biomarkers.** Studying biomarkers found in saliva or blood that may help improve early detection of HPV-positive oropharyngeal cancer. Biomarkers are measurable substances found in the body, whose presence or absence can indicate an aspect of health or disease.
- **Creating tools to identify HPV-positive oral cancer tissue.** Developing new imaging and other technologies that make it easier to discriminate between healthy and potentially cancerous oral tissue to enhance diagnostic accuracy.
- **Discovering new treatment strategies.** Studying HPV-positive patients whose cancers recur or do not respond well to current treatments, to understand the biological mechanisms of treatment resistance.
- **Advancing precision medicine for personalized therapies.** Using imaging and clinical data with computational modeling tools to more accurately predict HPV-positive cancer outcomes.
- **Improving early detection of initial cancer and recurrences.** Recruiting patients into clinical trials to understand the molecular factors and clinical course of cancer for early prediction of recurrence.
- **Uncovering the biology of HPV-positive cancer.** Soliciting research to understand the mechanisms of cancer progression from HPV infection, viral-host interactions, immune response to HPV, and HPV virus life cycle.
- **Understanding oral HPV in people living with HIV.** Addressing knowledge gaps related to the epidemiology and biology of HPV infection, its acquisition and persistence in people living with HIV.

References

1. National Cancer Institute (NCI). [Cancer stat facts: Oral cavity and pharynx cancer](#) [Internet]. Bethesda (MD): NCI.
2. Centers for Disease Control and Prevention (CDC). [HPV and cancer](#) [Internet]. Atlanta (GA): CDC; 2024 Sept.

Learn more about NIDCR's research investments and advances in oral health and opioids, regenerative medicine, salivary diagnostics and more at:

www.nidcr.nih.gov/grants-funding/funded-research/research-investments-advances

