

Tobacco use linked to worse outcomes in HPV-positive head and neck cancer

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Thomase Carey, Ph.D. is a researcher at University of Michigan Health System.
Credit: University of Michigan Comprehensive Cancer Center

Patients with head and neck cancer linked to high risk human papillomavirus, or HPV, have worse outcomes if they are current or former tobacco users, according to a new study from researchers at the University of Michigan Comprehensive Cancer Center.

High-risk HPVs are the same viruses that are associated with cancers of the uterine cervix.

The research suggests that current or former tobacco users may need a

more aggressive treatment regimen than patients who have never used tobacco.

Past research shows that HPV-positive head and neck cancers tend to be more responsive to current treatments and these patients overall tend to have better outcomes than patients with HPV-negative tumors. However, the new study found that current tobacco users with HPV-positive tumors were five times more likely to have their cancer recur. Even former smokers had an increased risk of recurrence.

"Because the effect of HPV is so strong in giving a very good prognostic picture, we were surprised to find that smoking remained a huge issue, and it actually affected the outcome in patients who smoked," says senior study author Thomas Carey, Ph.D., professor of otolaryngology and pharmacology, and co-director of the Head and Neck Oncology Program at the U-M Comprehensive Cancer Center.

Results of the study appear in the Feb. 15 issue of *Clinical Cancer Research*.

The study looked at 124 patients with advanced oropharyngeal cancer, which is cancer of the tonsils or the base of the tongue. Most of these patients had HPV DNA in their tumors, which is consistent with HPV being a major factor in oropharyngeal [cancer development](#). All 22 of the HPV-negative patients were tobacco users, and about two-thirds of the 102 HPV-positive patients were current or former tobacco users.

Of the HPV-positive patients who had never used tobacco, 6 percent had a recurrence of their cancer. Meanwhile, 19 percent of former tobacco users and 35 percent of current tobacco users had a recurrence. Still, the outcomes were better than the HPV-negative patients, all of whom were smokers, and among whom half recurred.

Tobacco users have traditionally been more likely than non-users to develop head and neck cancers. But a recent rise in these cancers linked to HPV has meant more non-smokers are being diagnosed with the disease. HPV-positive head and neck cancers tend to be more responsive to chemotherapy and radiation treatments, which has made researchers wonder if these highly toxic treatments could be reduced in this group of patients.

"The side effects of these treatments affect critical functions such as eating and swallowing. Since the HPV-positive tumors respond so well to treatment, our research team has been asking: Could we potentially spare patients some of these side effects while maintaining good outcomes if we reduce the doses given? If we decide to reduce intensity of treatment, our study shows we will want to take tobacco use into account. Any smoking or tobacco use increases the risk of recurrence or a second primary [cancer](#)," Carey says.

Researchers from U-M's multidisciplinary head and neck oncology program are planning a clinical trial to look at reducing treatment intensity for low-risk patients - those whose tumors express certain markers, including HPV, and who are not tobacco users. The trial is expected to begin this spring.

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