

# Study maps molecular signatures of HPV-positive throat cancer patients by smoking status

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Throat cancer patients exposed to both human papillomavirus (HPV) and tobacco smoke demonstrate a pattern of mutations along several key cancer genes, according to research presented today at the 2016 Multidisciplinary Head and Neck Cancer Symposium. These distinct molecular profiles of heavy and light smokers who develop HPV-positive oropharyngeal squamous cell carcinoma (OPSCC) may inform decisions related to treatment intensity by establishing additional prognostic criteria for this subset of patients.

Researchers examined the molecular characteristics of OPSCC caused by HPV in an effort to determine which DNA mutations predict lower

disease free and [survival rates](#) among HPV-positive throat cancer [patients](#) who smoke. Whereas most patients with OPSCC caused by HPV have an excellent prognosis for disease free survival, those who also smoke generally face more dire prognoses.

The 66 cases of HPV-positive oropharyngeal [squamous cell carcinoma](#) (OPSCC) in this study were split into heavy and light smoking behavior groups based on pack years. This metric of smoking frequency over long stretches of time is determined by multiplying the number of years a person has smoked by their average number of packs of cigarettes smoked per day. Forty of the 66 patients reported more than 10 pack years (e.g., more than one pack per day for 10 years or two packs per day for five years), and 26 patients reported fewer than 10 pack years.

"Throat [cancer patients](#) who smoked and had a history of fewer than 10 pack years had significantly better disease free and overall survival rates than the heavier smoking group," said Jose P. Zevallos, MD, MPH, FACS, assistant professor and director of oncologic research in the division of head and neck surgical oncology at the University of North Carolina, Chapel Hill and member of the Lineberger Comprehensive Cancer Center. "Our analyses identified several key differences in molecular mutational profiles of the two groups that may shape these outcomes."

Overall mutation rates were higher for HPV-positive OPSCC patients in the >10 pack year group than those in the

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