

Study finds blood test accurately tracks HPV-linked head and neck cancer

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Electron micrograph of a negatively stained human papilloma virus (HPV) which occurs in human warts. Credit: public domain

An experimental blood test accurately detected HPV-linked head and neck cancer recurrence and confirmed when patients remained cancer-free, according to findings from a study led by University of North Carolina Lineberger Comprehensive Cancer Center researchers.

The findings, published in the *Journal of Clinical Oncology*, were from the largest and most comprehensive study using an experimental [blood](#) test to track patients with oropharyngeal [cancer](#) linked to human papillomavirus, or HPV.

The researchers reported the test was 99 percent accurate in confirming patients remained cancer-free after treatment compared with other screening methods. For patients who had two HPV-positive blood tests after treatment, the test was 94 percent accurate in detecting cancer recurrence.

"The major utility of this test is it's going to improve our ability to monitor patients after they complete treatment," said UNC Lineberger's Bhisam Chera, MD, associate professor in the UNC School of Medicine Department of Radiation Oncology. "Currently, our methods to assess whether the cancer has recurred are invasive, expensive and not always accurate."

Infection with certain strains of HPV can cause cervical cancer, genital cancers and cancer of the oropharynx, which is the back of the throat, including the base of the tongue and tonsils.

With the goal to improve cancer tracking, UNC Lineberger researchers designed a test to detect HPV genetic material that dying cancer cells have released in to the blood. Intellectual property for a form of the experimental test was licensed to Naveris Inc.

"We developed a technology that enabled us to distinguish HPV DNA that came from a tumor from HPV that's simply related to infection," said UNC Lineberger's Gaorav Gupta, MD, Ph.D., assistant professor in the UNC School of Medicine Department of Radiation Oncology.

In their latest study, researchers evaluated 115 patients who underwent

chemotherapy and radiation treatment for oropharyngeal squamous cell carcinoma linked to HPV16.

Patients were screened for recurrence using PET/CT body scans, chest imaging, and physician evaluations. They received a blood test every six to nine months.

"For this study, we systematically applied our assay to over 1000 patient blood samples obtained from the [clinical study](#)," said Sunil Kumar, Ph.D. postdoctoral fellow at UNC Lineberger.

Initially, 28 patients had a positive HPV blood test, indicating a possible recurrence, but only 15 of those patients were diagnosed with recurrence based on a biopsy.

When 28 patients who initially received a positive test result underwent a second [blood test](#), only 16 were found to be HPV positive.

That indicated to researchers that two consecutive positive blood tests indicated a recurrence, and led to a sensitivity level for the test of 94 percent.

"In this study, we had accumulated enough follow-up data to see who was going to develop recurrence and who wasn't," Gupta said. "That allowed us to determine that the test performs best if you look at two consecutively confirmed blood tests."

Meanwhile, for 87 patients who had negative HPV blood tests in all their screening sessions, none developed recurrence.

Chera said the experimental [test](#) could improve follow-up screening for this type of head and neck cancer, which can involve imaging every six months or annually, and inserting a scope into the nose and down the

throat every two to three months in the first two years after a person completes treatment.

"With this new technology, it offers a noninvasive way to accurately monitor [patients](#) for cancer [recurrence](#)," Chera said. "In the long run, blood-based surveillance could be more effective, and possibly help us to detect cancer sooner."

Provided by University of North Carolina at Chapel Hill School of Medicine

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