

# Research indicates need for effective HPV vaccine for women and men and a simple HPV screening test

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A call to explore a broader use of HPV (human papillomavirus) vaccines and the validation of a simple oral screening test for HPV-caused oral cancers are reported in two studies by a Johns Hopkins Kimmel Cancer Center investigator.

Leading HPV expert Maura Gillison, M.D., Ph.D., the first to identify HPV infection as the cause of certain oral cancers and who identified multiple sex partners as the most important risk factor for these cancers, reports her latest work in the November 3, 2008, journal *Clinical Cancer Research* and in a Centers for Disease Control and Prevention (CDC) monograph. The CDC report on HPV-associated cancers appears on line November 3 and in the November 15, 2008, supplement edition of *Cancer*.

In the CDC report, believed to be the first and most comprehensive assessment of HPV-associated cancer data in the United States, investigators analyzed cancer registry data from 1998-2003 and found 25,000 cancer cases each year occurred at cancer sites associated with HPV infection. In additional analysis, Gillison and colleagues at the National Cancer Institute identified HPV infection as the underlying cause of approximately 20,000 of these cancers.

Gillison and team found approximately 20,000 cases of cancer in the United States each year are caused by HPV infection. Oral cancers are

the second most common type of HPV-associated cancers and are increasing in incidence in the U.S., particularly among men. Add to that anal, penile, vaginal, and vulvar cancers that are also linked to HPV infection, and Gillison says these cancers, when combined, equal the number of cervical cancers, the most common and well known of the cancers caused by HPV.

While about one-quarter of HPV-linked cancers occur in men, vaccines are currently approved only for use in girls and young women for cervical cancer prevention. "We need to have a more comprehensive discussion of the potential impact the HPV vaccine could have on cancer rates among men and women in this country," says Gillison, associate professor of oncology. "Currently available HPV vaccines have the potential to reduce the rates of HPV-associated cancers, like oral and anal cancers, that are currently on the rise and for which there no effective or widely-applied screening programs." Gillison notes, however, that studies are needed to confirm that the vaccine effectively prevents HPV infections that lead to oral and anal cancers.

Gillison's findings were part of a project known as ABHACUS (Assessing the Burden of Human Papillomavirus-Associated Cancers). The data studied came from the CDC's National Program of Cancer Registries and the National Cancer Institute's Surveillance, Epidemiology, and End Results program. More than 80 investigators from across the country participated in the project, which addressed a variety of HPV-cancer associated issues, including racial disparity, economic impact, behavioral risk factors, and cancer mortality.

Other than prevention, early detection is held by cancer experts as the best way to control cancer. In the Clinical Cancer Research study, the first to track the disease and related oral infections over an extended period, Gillison found that simple "swish and spit" oral rinses can successfully track oral HPV infection over time. These findings open the

door to a potential, non-invasive screening test to detect the disease and monitor for tumor recurrence. Head and neck cancer is the broad term for a variety of cancers of the oral cavity, including the tonsils, base of the tongue, and the side and back wall of the throat.

The study found that oral rinses successfully detected high-risk HPV infections in patients with HPV 16-positive head and neck cancers for up to five years after treatment for their cancer. Gillison says the findings indicate a high rate of persistent infection and reaffirms the connection between high-risk types of HPV and HPV-positive head and neck cancers.

In the study, the researchers used oral rinses to collect cells shed from inside the mouths of 135 head and neck cancer patients. The researchers genetically sequenced the DNA obtained from the rinses and tumor samples to identify those with HPV-positive cancers and determine the HPV type. There are approximately 120 types of HPV, but HPV 16 is one of the two most common associated with cancer.

The analysis revealed 44 patients with HPV 16-positive tumors and found that these patients were more likely to have continuing oral HPV 16 infections both before and after cancer treatment. While this study did not link the continued post-treatment infections to tumor recurrence, it was noted that patients with high-risk oral HPV infections prior to therapy, maintained high rates of infection after completing therapy. The team plans further, long-term research to determine if this continued infection leads to cancer recurrence.

In 2000, Gillison identified HPV-positive head and neck cancer as a distinct subtype of the disease and linked it to improved survival.

"There is no question of cause," says Gillison. "It has now become a question of tracking the infection over time to identify those at risk of

developing cancer or cancer recurrence."

Source: Johns Hopkins Medical Institutions

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