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## **CANCER-CAUSING VIRUS ASSOCIATED WITH HIGHER RISK OF NEW HIV INFECTION**

Infection with anal human papillomavirus (HPV), a virus that can cause anal and cervical cancers, is associated with a higher risk of new HIV infection in previously HIV-negative men who have sex with men (MSM), according to new UCSF research.

Reported online ahead of print in the journal *AIDS*, the findings are available now. They are scheduled for publication in an upcoming print issue.

In previous studies, other sexually transmitted infections have been associated with higher risk of HIV infection and HPV is the most common sexually transmitted infection.

“We looked at HIV-negative men who have sex with men who were at high risk for HIV infection and who had multiple risk factors. Our results showed a strong independent association for increased risk of HIV acquisition among those men who were already infected with anal HPV,” said the study’s lead investigator, Peter V. Chin-Hong, MD, associate professor of clinical medicine and director of the program in transplant and immunocompromised host infectious diseases at UCSF.

The 1400 study participants were part of the EXPLORE trial, a large clinical trial to test the efficacy of a behavioral intervention for HIV-negative MSM with sites in Boston, Denver, New York and San Francisco. Risk factors were calculated from those men who became HIV-infected over the course of the trial and infections were identified by blood tests.

“We think that HPV enhances susceptibility to HIV infection through two mechanisms. Anatomically, the virus causes anal lesions. These lesions bring blood vessels closer to the surface and also the lesions’ skin layer is thinner and more easily shredded, which frequently causes bleeding. These disruptions of the mucosal barrier could allow easier entry for HIV,” said Chin-Hong.

In addition, HPV activates the immune system. The inflammatory cells recruited to the HPV lesions—dendritic cells, macrophages and CD4 T cells—are the immune cells most

susceptible to HIV infection.

HPV vaccine has been found effective in preventing acquisition of the virus by women. Clinical trials testing the effectiveness of the vaccine among MSM are currently under way.

“To date, the focus of attention on HPV has been almost exclusively on its key role in causing squamous cell cancer. This study points to another important means by which HPV infection may be associated with morbidity and mortality, i.e., through potentiation of HIV infection. A direct role for HPV in this process will need to be confirmed in additional studies, and additional studies will be needed to understand the mechanisms by which HPV may do this, said the study’s senior investigator and author, Joel Palefsky, MD, professor of medicine and director of the Anal Neoplasia Clinic at UCSF.

“But it is encouraging to note that to the degree that HPV truly plays a role in increasing the risk of acquiring HIV infection, primary prevention of HPV infection through HPV vaccination may potentially reduce that risk,” he added.

Co-authors of the study include Marla Husnik, Fred Hutchinson Cancer Research Center in Seattle; Ross D. Cranston, University of Pittsburg; Grant Colfax and Susan Buchbinder, San Francisco Department of Public Health; Maria Da Costa and Teresa Darragh, UCSF; Dana Jones, Centers for Disease Control; Franklyn Judson, Denver Department of Public Health; Beryl Koblin, New York Blood Center; and Kenneth H. Mayer, Fenway Community Health Center in Boston.

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The AIDS Research Institute (ARI) at UCSF houses hundreds of scientists and dozens of programs throughout UCSF and affiliated labs and institutions, making ARI one of the largest AIDS research entities in the world.

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