Another Reason to Get the HPV Vaccine: Possible Reduced HIV Risk

The vaccine protects against nine types of human papillomavirus, including those that cause cervical and anal cancer.

August 12, 2021 By Heather Boerner

Women, have you had your human papillomavirus (HPV) vaccine yet? New data presented at the 11th International AIDS Society Conference on HIV Science (IAS 2021) and published in the journal AIDS suggest that getting it could reduce your chances of acquiring HIV.

The analysis included 138 women with a median age of 23 who acquired HIV while participating in the HIV prevention trial VOICE from 2009 to 2013. Those women were then matched three to one with 412 women in the trial who did not acquire HIV. The women in the control group were selected to resemble the women who acquired HIV in terms of age, country of residence and study visits. What's more, the women were equally likely to have engaged in transactional sex. However, the women differed in education level—the women who acquired HIV had completed less education.

Researchers then looked at all the cervical swabs—those typically collected during a Pap smear—for evidence of any HPV infection. And if there was evidence of HPV, they categorized the strains by high or low risk for cervical cancer and whether they are covered by HPV vaccines and looked for the presence of multiple types of HPV in one person.

They found that most of the women across both arms had at least one type of HPV: 84% of women living with HIV and 65% of women without HIV had any HPV. That difference was significant, though, indicating a 2.6 times increased risk for acquiring HIV if they had any strain of HPV. This held true in the remainder of the categories too. Women with high-risk strains of HPV were also 2.6 times more likely to acquire HIV than their HPV-negative counterparts. Women with low-risk strains of HPV were 1.8 times more likely than their HPV-negative peers to acquire HIV.

"In addition, we found that the risk of HIV increased with the number of HPV types detected," said Gui Liu, PhD, research scientist for the Center for Clinical Research at the University of Washington, who presented the data. "While infection with a single HPV type increased risk for HIV by about two, infection with four or more types of HPV was associated with more than four times higher risk of HIV acquisition, compared to no HPV."

The good news is that 60% of women with HPV who acquired HIV had HPV types that would be covered by the Gardasil 9 HPV vaccine, which targets nine high-risk strains. A smaller proportion, 36%, of women with HPV who acquired HIV had virus types covered by the older HPV vaccine that targets four high-risk strains.

Women who acquired HIV had similar rates of bacterial vaginosis, which also has been associated with increased HIV acquisition.

But other factors could have contributed to the increased HIV rate for women with HPV. For instance, 31% of the women who acquired HIV also tested positive during the trial for a sexually transmitted infection (STI) aside from HPV, such as syphilis, gonorrhea, chlamydia or trichomoniasis. Researchers for years have wondered whether STIs like HPV physiologically alter the body enough to increase the risk of acquiring HIV or whether having a higher rate of STIs, including HPV, is an indicator of behaviors that expose someone to HIV, such as having condomless sex (before pre-exposure prophylaxis, or PrEP, and Undetectable Equals Untransmittable, or U=U), having more sex partners and so on.

In this study, women who acquired HIV were less likely to have a primary partner in the last three months and were more likely to say they were unsure whether their partner had other partners or that they knew they did have other partners compared with women who did not acquire HIV. Women who didn't acquire HIV were more likely to have been taking oral tenofovir disoproxil fumarate/emtricitabine (Truvada or generic equivalents) or the oral PrEP placebo, while women in the tenofovir gel arm were slightly more likely to acquire HIV.

Still, because the study adjusted for many sexual risk behaviors, Giu said the data indicate that physiology plays a role.

"The direction and magnitude of this association are consistent with other studies that adjusted for sexual behavioral confounders, adding to the evidence that HPV increases the biological susceptibility to HIV among women," she said. "This suggests that widespread HPV vaccination may have the potential to reduce HIV risk in a high-burden setting."

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