

Study Links Certain Vaginal Bacteria and Inflammatory Biomarker to Increased Odds of Acquiring HIV

Researchers analyzed bacterial and inflammatory profiles in vaginal samples from 150 cisgender women who acquired HIV in a prevention trial.

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Fourteen vaginal bacterial species and the presence of a protein that promotes inflammation were associated with increased odds of HIV acquisition in a study of more than 500 cisgender women in African countries with high HIV incidence. The study was the largest to date to prospectively analyze the relationship between both the vaginal microbiome and vaginal tissue inflammation and the likelihood of acquiring HIV among cisgender women in this population. The NIAID-sponsored research was published in [The Journal of Infectious Diseases](#).

Research is limited regarding the potential impacts of vaginal bacteria and inflammatory markers on HIV acquisition. Only one previous study has characterized both factors in women before they had HIV to investigate their odds of acquiring the virus, but the number of HIV acquisition events in that study was low, potentially limiting their ability to detect associations.

To increase understanding of these issues, researchers analyzed vaginal swab samples from 586 cisgender women participating a large biomedical HIV prevention clinical trial in South Africa, Uganda and Zimbabwe, and compared the bacterial and inflammatory profiles of samples from 150 participants who acquired HIV during the study with the samples of 436 participants who did not.

The team identified 14 bacterial species associated with HIV acquisition and noted that participants whose samples contained most or all of those bacteria had the highest odds of acquiring HIV, while the presence of none or few of the identified bacteria was associated with the lowest odds of HIV acquisition. They similarly identified six inflammatory [cytokines](#) and [chemokines](#)—proteins that communicate with other cells to prompt the body to fight infections through inflammatory processes—associated with HIV acquisition, and identified the highest odds of HIV acquisition in participants whose samples contained all six of those proteins. Furthermore, they identified a single chemokine called interferon gamma-induced protein 10 associated with the highest odds of HIV acquisition out of the six.

These results suggest that strategies to reduce concentrations of the 14 identified bacterial species and inflammatory proteins could help prevent HIV acquisition, according to the authors. They also recommended that additional studies be conducted to understand the mechanisms by which these factors contribute to biological susceptibility to HIV.

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