

Some vaginal bacteria may weaken anti-HIV gel: study

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HIV infecting a human cell. Credit: NIH

Some kinds of vaginal bacteria may interfere with a gel meant to curb

the risk of contracting HIV, which infects more than one million women worldwide each year, researchers said Thursday.

The findings in the journal *Science* were based on a 2010 study of women in South Africa who used the microbicide drug tenofovir, in vaginal gel form, to assess how well it worked at preventing transmission of [human immunodeficiency virus](#) (HIV).

The drug has shown success in preventing HIV in high-risk men, but studies involving women have been "disappointing," said the report.

A 2010 randomized trial called CAPRISA 004 showed that [tenofovir gel](#), applied before and after sex, reduced HIV incidence by 39 percent.

Researchers examined a subset of women who were infected with HIV during the study, even though they used the gel regularly.

Women who became infected with HIV tended to have a dominant bacteria known as *Gardnerella vaginalis*, which "could rapidly metabolize and break down the active form of the drug," said the report.

Gardnerella vaginalis is associated with a condition known as bacterial vaginosis (BV).

BV is known to increase the risk of HIV because it increases inflammation, disrupts the vaginal wall and impairs wound-healing, and women from sub-Saharan Africa have high prevalence rates of BV, according to background information in the report.

Women with healthier vaginal bacterial compositions—those dominated by the bacteria *Lactobacillus*—showed three-fold higher protection against HIV than women with different dominant vaginal bacteria compositions.

An accompanying Perspective article in *Science* pointed out that the research sheds some light on the reasons for the trial's shortcomings, but fails to offer a solution.

Even if women were tested for vaginal [bacteria](#), it remains unclear whether the microbiome could be changed to allow for better performance of the gel, since BV returns in nearly 60 percent of women one year after treatment, wrote Susan Tuddenham and Khalil G. Ghanem of the Johns Hopkins University School of Medicine.

In the meantime, the study serves as a reminder that "without a deeper understanding of the structure, function, and dynamics of the vaginal microbiome, successful interventions to optimize it and improve [women](#)'s health will remain elusive."

More information: N.R. Klatt et al., "Vaginal bacteria modify HIV tenofovir microbicide efficacy in African women," *Science* (2017). [science.sciencemag.org/cgi/doi ... 1126/science.aai9383](https://science.sciencemag.org/cgi/doi/10.1126/science.aai9383)

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