

Study sheds new light on why the effectiveness of a popular HIV prevention method varies in women

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Why do some women get HIV infection, even though they are using tenofovir gel for prophylaxis?

A new study by scientists at the Centre for the AIDS Programme in Research in South Africa (CAPRISA), published in *Nature Medicine* this week, shows that genital inflammation significantly reduces the effectiveness of [tenofovir gel](#) in preventing HIV infection in women. These findings indicate that both genital inflammation and adherence need to be addressed to improve the effectiveness of topical pre-exposure prophylaxis strategies for HIV prevention in women.

The researchers measured small proteins, known as cytokines, in the vagina. Raised cytokines levels in the vagina indicate the presence of inflammatory immune responses, even in the absence of clinical symptoms. In this study, HIV infection rates and cytokine levels as a marker of genital inflammation were studied longitudinally in 774 women over 2.5 years.

Lead authors of the study, Lyle McKinnon, an adjunct professor of medical microbiology at the University of Manitoba, and Lenine Liebenberg, University of KwaZulu-Natal, found that women with genital inflammation were at higher risk of subsequently contracting HIV compared to women without inflammation.

"Reducing inflammation of the [genital tract](#) in women may augment the HIV prevention in women," McKinnon says.

The study highlights the major role of genital inflammation in HIV risk and in modifying the efficacy of HIV prevention strategies. Current and future attempts to improve topical PrEP efficacy would benefit from knowing the causes of inflammation, and developing new strategies to treat genital inflammation, co-author Liebenberg notes.

One such effort is currently underway at the University of Manitoba, where a study is being led by Keith Fowke to use the anti-inflammatory, Acetylsalicylic acid (known commonly as aspirin), to reduce inflammatory responses in the female genital tract.

In the meantime, Liebenberg and McKinnon's study shows that tenofovir gel provided 57 per cent protection against HIV acquisition in women who had no evidence of vaginal inflammation but provided no protection in women with genital [inflammation](#), even if they used the gel consistently.

"This study gives us an important clue to enhance HIV prevention in women. It is not only adherence-related behaviours, but also biological processes in the vaginal that need to be addressed to prevent HIV and enhance the effectiveness of topical PrEP," said Professor Salim Abdool Karim, Director of CAPRISA and CAPRISA Professor of Global Health at Columbia University.

Provided by University of Manitoba

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