

# Rectal gel prevents transmission of AIDS-like virus in macaques

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The HIV drug tenofovir may prevent AIDS transmission when applied rectally as a gel, according to results from a macaque study published in *PLoS Medicine*.

Rectal exposure to HIV carries a particularly high risk of transmission in both homosexuals and heterosexuals. Although condoms are generally recommended for AIDS prevention, little research has focused on the use of topical products for preventing HIV transmission via the rectum.

To simulate human rectal exposure to HIV, Martin Cranage of St. George's University of London and colleagues conducted a study of macaques that were challenged with a potent monkey AIDS virus (SIV) administered rectally. They found that most of the macaques pre-treated with rectal tenofovir gel up to 2 hours before the viral challenge were partly or totally protected from SIV infection, whereas untreated animals and most of those treated with a placebo gel, or treated with tenofovir gel following the viral challenge, became infected with SIV. The researchers also found that some of the protected macaques developed T-cell immune responses to the virus.

These findings suggest that topical treatment with antiretroviral drugs before exposure might be used to prevent rectal HIV transmission in people. However, efficacy cannot be shown conclusively in animal studies, and human trials of a potential vaginal microbicide that worked well in macaques were halted recently because women using the microbicide showed increased rates of HIV infection. Also, because HIV

targets activated T cells, experiments should be done to check that the observed immune responses do not increase the likelihood of infection on later exposure before this approach can be tested in humans.

In a related Perspective, Florian Hladik and Charlene Dezzutti, who were not involved with the research, discuss the implications of this study for future trials of topical compounds to prevent HIV infection.

Citation: Cranage M, Sharpe S, Herrera C, Cope A, Dennis M, et al. (2008) Prevention of SIV rectal transmission and priming of T cell responses in macaques after local preexposure application of tenofovir gel. PLoS Med 5(8): e157. doi:10.1371/journal.pmed.0050157  
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