

## 'Good bacteria' in women give clues for slowing HIV transmission

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Beneficial bacteria found in healthy women help to reduce the amount of vaginal HIV among HIV-infected women and make it more difficult for the virus to spread, boosting the possibility that “good bacteria” might someday be tapped in the fight against HIV.

The findings come from physicians and scientists at the University of Washington and the University of Rochester Medical Center, who worked together in an effort to learn more about how HIV survives and spreads from person to person. The study involving 57 women was done in Seattle and Rochester through the Women’s HIV Interdisciplinary Network (WHIN), which is based at the University of Washington.

The team studied the vaginal environment, examining the mix of bacteria that reside there and taking into account several other factors. Physicians tracked the level of HIV virus in the vagina as well as infection by common sexually transmitted diseases like trichomoniasis, gonorrhea and chlamydia, and other more common types of vaginal infections.

Physicians also monitored the levels of beneficial bacteria known as Lactobacillus in the vagina, as well as hydrogen peroxide, which is produced by the bacteria and hinders the virus. They also measured the level of HIV in the women’s blood and the rate of progression of the disease overall.

The team found that women with hydrogen-peroxide-producing

Lactobacillus in the vagina had lower levels of HIV virus in genital secretions – what physicians call the genital viral load. Physicians know that the lower the level of HIV in the sexual tract, the less likely that the virus will be spread from person to person through sexual contact.

Scientists have previously recognized from laboratory studies that Lactobacillus might give women some natural protection against HIV. The bacteria, commonly found in most women, bind to the virus and secrete hydrogen peroxide. The bacteria are a close cousin of the Lactobacillus bacteria found in the small intestine, a type of “good” bacteria widely found in yogurt.

While previous work in the laboratory has indicated that Lactobacillus might help prevent HIV infection in women, the current study actually links, in women, decreased levels of the virus in the vagina with the presence of Lactobacillus that produce hydrogen peroxide there.

The team also found that the amount of the virus in the vagina varied in step with the presence of Lactobacillus: Women who did not have the bacteria at first but who had acquired it by a subsequent visit had their vaginal HIV levels drop, while vaginal HIV levels increased in women in whom the good bacteria had disappeared between visits.

The research was presented this week at the Conference on Retroviruses and Opportunistic Infections in Boston by Jane Hitti, M.D., associate professor in the Department of Obstetrics & Gynecology at the University of Washington School of Medicine. Hitti has been working closely with Robert Coombs, M.D., Ph.D., the principal investigator for the WHIN study and professor of Laboratory Medicine and of Medicine at the University of Washington. Amneris Luque, M.D., associate professor of Medicine and medical director of the AIDS Center at Strong Memorial Hospital, and Susan Cohn, M.D., associate professor of Medicine at the University of Rochester School of Medicine and

Dentistry, also took part in the study.

“These findings underscore the importance of maintaining a healthy, Lactobacillus-dominant vaginal flora for HIV-positive women,” said Hitti. “I hope that we can explore Lactobacillus replacement in the future for women who do not have this bacteria, as a strategy to decrease the amount of HIV in the vagina.”

“The research opens up some doors,” said Luque. “Sexual activity is the most common mode of transmission of HIV. Perhaps we can make it less likely to spread by somehow taking advantage of good bacteria as a natural way to stop HIV and prevent transmission. These findings are striking, though preliminary, and should be looked at further.”

Luque and Cohn both care for patients at Strong’s AIDS clinic, which provides ongoing care for approximately 900 patients with HIV. The center is part of a broader AIDS treatment and research effort at the University of Rochester Medical Center. The University is the only institution in the nation to be part, since inception, of two major national AIDS research efforts – the search for a vaccine, and the testing of new treatments. More than 3,000 Rochester-area residents have taken part in treatment and vaccine studies at the University’s HIV/AIDS Clinical Trials Unit, funded by the National Institute of Allergy and Infectious Diseases.

Cohn stresses the importance of HIV-positive women participating in clinical research. “These women made a large contribution to knowledge about HIV and reproductive health by participating in this study. Advances in the care of HIV-positive women really depend on the dedication of study subjects.”

Source: University of Rochester Medical Center

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