3-Month Vaginal Ring Could Offer Longer-Lasting Protection Against HIV

Some women prefer the ring even though it's less effective than daily PrEP pills or long-acting injections.

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A dapivirine vaginal ring than can be worn for three months may prevent HIV as well as the current one-month ring but with greater convenience and a lower cost, according to study results presented at the HIV Research for Prevention Conference (HIVR4P 2024) in Lima, Peru. Other researchers reported that some women prefer rings over other methods of pre-exposure prophylaxis (PrEP).

"The results of this trial are an exciting step forward as we consider the desire for additional non-systemic options for HIV prevention," Thesla Palanee-Phillips, PhD, of Wits Reproductive Health Unit in South Africa said in a Population Council news release. "Any intervention that reduces the burden associated with refill and persistence of use on end users, healthcare facilities and healthcare providers is a winning trifecta."

The flexible silicone ring, which is worn in the vagina below the cervix, slowly releases dapivirine, a non-nucleoside reverse transcriptase inhibitor antiretroviral. A ring designed to be worn continuously for one month is now authorized in 11 countries in Africa, but it is not yet approved in the United States.

Research has shown that the one-month dapivirine ring is moderately effective. The ASPIRE trial showed that the ring reduced the risk of HIV acquisition by 27% overall, rising to 56% for older women. Adherence was higher in the follow-up HOPE and DREAM trials, in which HIV risk fell by around 40% to 60%. The ring was found to be safe and acceptable, including during pregnancy. Some of the first real-world data, from Zimbabwe, showed that the likelihood of HIV acquisition was similar for women who used the dapivirine ring or daily PrEP pills.

An extended-use dapivirine ring than can be switched out every three months could offer advantages over the one-month ring, including better adherence, lower cost and less environmental waste. Jeremy Nuttall, of the Population Council, a nonprofit focused on global health, presented findings from a Phase I trial of the three-month ring. The experimental ring, which contains 100 milligrams of dapivirine, looks and feels the same as the one-month ring, which contains 25 mg.

This open-label study enrolled 124 healthy HIV-negative women in South Africa; 104 attended all study visits. The median age was approximately 29 years. They were randomly assigned to either use three one-month rings over three months then switch to the three-month ring, or vice versa.

Assessing bioavailability based on dapivirine concentrations in blood plasma and vaginal fluid, the researchers found that the three-month ring delivers the drug at higher levels compared with the one-month ring. Plasma dapivirine levels were higher during the first month and similar during the second and third months. The extended-use ring met the criteria for both non-inferiority and superiority. Both versions of the ring were safe and well tolerated.

“The efficacy of the three-month ring should be at least equal to that of the one-month ring,” Nuttall told reporters at an HIVR4P news briefing. With rings that can be replaced four times a year instead of monthly, “it’s starting to look more affordable,” added Linda-Gail Bekker, MBChB, PhD, of the Desmond Tutu HIV Center at the University of Cape Town.

Women’s Prevention Preferences

The HIV prevention landscape has changed dramatically since the development of the ring began nearly two decades ago. Women now have the option of daily PrEP pills containing tenofovir disoproxil fumarate/emtricitabine (Truvada or generic equivalents) and long-acting injectable cabotegravir (Apretude). Both are more effective than the ring, but having more options is key.

Other studies presented at the conference looked at women’s prevention preferences. Elizabeth Irungu, MBChB, PhD, MPH, of Jhpiego, another global health nonprofit, and colleagues analyzed results from CATALYST, an ongoing study of more than 3,900 HIV-negative women in five African countries. Nearly half were ages 15 to 24, and about a quarter reported sex work.

When offered a choice of prevention methods, about two thirds preferred daily PrEP pills, about 30% opted for the ring and 4% chose neither. Pregnant and breastfeeding women were less likely to choose the ring. Among women who chose oral PrEP, 59% liked its ease of use and 32% cited its effectiveness. Among those who chose the ring, 57% said it was easy to use, and 53% said they did not like taking daily pills.

In another analysis of patterns of PrEP use, just 33% of women who initially selected oral PrEP returned for a refill a month later, while 55% of those who chose the ring returned for a replacement. Young women and sex workers were less likely to return for refills, while those who had condomless sex were more likely. Among those who attended at least one refill visit, 7% switched from PrEP pills to the ring and switched from the ring to pills.

“Women are taking advantage of choice, and they are choosing a method that works for them,” Irungu said at the press conference. “For some, the ring is their choice despite its modest efficacy.”

In another study, clinical pharmacist Amauche Ngige, of the University of Nigeria, and colleagues

surveyed more than 300 Nigerian women ages 18 to 35 about their preference for the dapivirine ring or long-acting injectable PrEP. About half preferred each option, and nearly 40% said they would use either. Those who opted for the ring cited its affordability and non-invasiveness.

Finally, Ann Gottert, of the Population Council, and colleagues assessed the preferences of women in the United States regarding a non-hormonal multipurpose vaginal ring designed for both contraception and prevention of HIV and sexually transmitted infections (STIs).

The researchers surveyed more than 2,000 women from all U.S. states. The average age was 31, about half were married or living with a partner, more than half had at least one child and about 40% had ever had an unintended pregnancy. About three quarters said they would be likely or very likely to use a multipurpose ring offering good protection against pregnancy and moderate protection against HIV and STIs. About a third said they would prefer to use a ring continuously for a month, while another third would rather insert the ring before having sex. Women who were unlikely to use the ring were happy with their current prevention methods or wanted something more effective.

The International Partnership for Microbicides, which developed the dapivirine ring and transferred it to the Population Council in 2022, withdrew the ring from Food and Drug Administration consideration after receiving feedback that data are unlikely to support U.S. approval given the higher effectiveness of PrEP pills and long-acting injections. But the new findings suggest that—like women in Africa—American women also would welcome more prevention options.

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