

# PrEP Ring for Adolescent Girls and Young Women

Summary of research findings

RESEARCH BRIEF  
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A recent study has published critical new data on use of the dapivirine vaginal ring (PrEP ring or ring) among adolescent girls and young women in eastern and southern Africa, offering evidence that the ring **is safe, effective, and highly acceptable**.

In 2021, the World Health Organization recommended the PrEP ring as an additional prevention option for women at substantial risk of HIV, noting some variability in effectiveness due to low use or adherence among young people. Since then, several African countries have updated their national HIV prevention guidelines to include the PrEP ring, but all maintain restrictions on use by adolescent girls and young women (AGYW) under the age of 18 years old.

Recent studies on PrEP ring use by AGYW provide evidence of the safety, efficacy, and acceptability of the PrEP ring. Moreover, a recent study among AGYW in Africa found that individuals who chose the ring had moderately high adherence and would benefit from having a choice of pre-exposure prophylaxis (PrEP) options to best meet their needs and preferences.<sup>1</sup> These studies could pave the way for the PrEP ring to be included in national guidelines and become a more accessible HIV prevention method for AGYW, a population with an already high likelihood of exposure to HIV.



## What do we know about the PrEP ring?

**Efficacy:** The monthly PrEP ring reduced HIV-1 incidence by about 30 percent compared to placebo in two Phase 3 trials.<sup>2,3</sup> Efficacy was lower among participants ages 18–21 due to low adherence and greater among participants who used the ring at least some of the time. Two

<sup>1</sup> Nair G, Celum C, Szyld D, Brown ER, Akello CA, Nakalega R, et al. Adherence, safety, and choice of the monthly dapivirine vaginal ring or oral emtricitabine plus tenofovir disoproxil fumarate for HIV pre-exposure prophylaxis among African adolescent girls and young women: a randomised, open-label, crossover trial. *Lancet HIV*. 2023 Oct;10(12): E779-E789. doi:10.1016/S2352-3018(23)00227-8.

<sup>2</sup> Baeten JM, Palanee-Phillips T, Brown ER, Schwartz K, Soto-Torres LE, Govender V, et al. Use of a vaginal ring containing dapivirine for HIV-1 prevention in women. *N Engl J Med*. 2016 Dec 1;375(22):2121-2132.

<sup>3</sup> Nel A, van Niekerk N, Kapiga S, Bekker L-G, Gama C, Gill K, et al. Safety and efficacy of a dapivirine vaginal ring for HIV prevention in women. *N Engl J Med*. 2016 Dec;375(22):2133-43. doi: 10.1056/NEJMoa1602046

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subsequent open-label extension studies — DREAM and HOPE — found increased ring adherence compared to adherence in the clinical trials.<sup>4,5</sup> Multiple efficacy analyses among participants who used the ring consistently suggest that the PrEP ring can reduce the likelihood of HIV acquisition during receptive vaginal intercourse by 50% or more with consistent use throughout the month.<sup>6,7</sup> A recent secondary analysis suggests a 63% risk reduction per-sex-act when ring is used consistently.<sup>8</sup>

### Policy considerations:

An expansive body of evidence can inform updates to national PrEP guidelines on use of the PrEP ring by people younger than 18 years old.

**Safety profile:** The ring was well-tolerated with long-term use, with no statistical difference between the active dapivirine group and the placebo group in the Phase 3 trials.<sup>8,4</sup> Fifteen safety studies of different PrEP ring formulations on multiple continents support the ring’s tolerability profile, including one study of ring safety among users ages 15–17; another study among ring users ages 16–21 in Africa confirmed tolerability in this age group.<sup>2,9</sup> In both studies, the safety profile of the ring among people younger than 18 was similar to the strong safety profile seen in adults.<sup>3,5</sup> Safety studies of PrEP ring use during pregnancy and breastfeeding have shown a favorable safety profile among pregnant and breastfeeding people and their infants; these were not powered to conduct sub-analyses by age.<sup>10,11</sup>

**Adherence:** While early studies suggested that adherence might be lower among AGYW when compared to older women, later studies showed this might not be the case. Early clinical trials on PrEP ring use in Africa found lower adherence among AGYW younger than 21 compared to women 21 and older. Additional placebo-controlled trials and open-label extension studies showed similarly low use in women younger than 21. However, in a more recent study, adherence to the ring was moderately high among AGYW ages 16–21 who chose the ring and similar to adherence by those who chose oral PrEP.<sup>1</sup> Participants who adhered well to oral PrEP were more likely to choose oral PrEP when given an option, while participants chose PrEP ring regardless of previous adherence. A menu for adherence support was employed, including weekly phone calls, daily SMS, in-person and remote support groups, and additional counseling sessions were offered.

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<sup>4</sup> Baeten JM, Palanee-Phillips T, Mgodini NM, Mayo AJ, Szyldo DW, Ramjee G, et al. Safety, uptake, and use of a dapivirine vaginal ring for HIV-1 prevention in African women (HOPE): an open-label, extension study. *Lancet HIV*. 2021 Feb;8(2): e87–e95.

<sup>5</sup> Nel A, van Niekerk N, Van Baelen B, Malherbe M, Mans W, Carter A, et al. Safety, adherence, and HIV-1 seroconversion among women using the dapivirine vaginal ring (DREAM): an open-label, extension study. *Lancet HIV*. 2021 Feb;8(2):e77–e86.

<sup>6</sup> Peebles K, Brown ER, Hendrix CW, Palanee-Phillips T, van der Straten A, Harkoo I, et al. Dapivirine ring HIV-1 prevention effectiveness for women engaged in vaginal and anal intercourse: insights from mathematical modeling. *J Acquir Immune Defic Syndr*. 2023;92(2):122–126. doi: 10.1097/QAI.0000000000003110.

<sup>7</sup> Brown ER, Hendrix CW, van der Straten A, Kiweewa FM, Mgodini NM, Palanee-Phillips T, et al. Greater dapivirine release from the dapivirine vaginal ring is correlated with lower risk of HIV-1 acquisition: a secondary analysis from a randomized, placebo-controlled trial. *J Int AIDS Soc*. 2020 Nov;23(11): e25634.

<sup>8</sup> Stalter RM, Dong TQ, Hendrix CW, Palanee-Phillips T, van der Straten A, Hillier SL, et al. Assessing per-sex-act HIV-1 risk reduction among women using the dapivirine vaginal ring. *J Infect Dis*. 2023 Dec 14;jjad550. doi: 10.1093/infdis/jjad550.

<sup>9</sup> Bunge KE, Levy L, Szyldo D, Zhang J, Gaur AH, Reirden D, et al. Brief report: phase IIa safety study of a vaginal ring containing dapivirine in adolescent young women. *J Acquir Immune Defic Syndr*. 2020 Feb;83(2):135–139.

<sup>10</sup> Owor M, Noguchi L, Horne E, Matimbira M, Ssemambo PK, Madhlopa-Mandiwa V, et al. Dapivirine ring safety and drug detection in breastfeeding mother-infant pairs. Conference on Retroviruses and Opportunistic Infections 2023 Feb 19–22; Seattle (WA).

<sup>11</sup> Bunge K, Balkus JE, Fairlie L, Mayo AJ, Nakabiito C, Mgodini N, et al. DELIVER: a safety study of a dapivirine vaginal ring and oral PrEP for the prevention of HIV during pregnancy. *J Acquir Immune Defic Syndr* 2024 Jan;95(1):65–73.

Preferences differed drastically by country, but the most popular strategies were in-person clubs and weekly calls. Preferences changed over time in the study as well (i.e., daily SMS to weekly calls) suggesting that participants felt less of a need for adherence support over time.<sup>12</sup>

**Acceptability:** Multiple acceptability studies were conducted to assess product preferences among women in Africa, and acceptability data were also collected in clinical studies of the PrEP ring. All these studies found vaginal rings to be acceptable for HIV prevention, and nearly all participants expressed interest in using the ring if it were shown to be effective and made available.<sup>13,14</sup> More than 90 percent of participants in Phase 3 trials of the PrEP ring reported that the ring was comfortable to wear on a daily basis, and many noted that neither they nor their partner could feel it during sex.<sup>4,14</sup> Research on PrEP ring use among people ages 15–21 in Africa showed that ring was highly acceptable among in this age group; AGYW may actually be more likely to report the ring as acceptable in comparison to oral PrEP.<sup>1</sup> Furthermore, among African AGYW who had experience with both ring and oral PrEP use, about two-thirds opted to use ring when give a choice of products. When given a choice between oral PrEP, ring, and no product, most AGYW chose a PrEP method rather than no method at all, and continued to use a method for six months with limited switching.

## Conclusion and recommendation

Research conducted with the PrEP ring in eastern and southern Africa is expansive, including clinical trials, open-label studies, acceptability studies, and qualitative/behavioral research. Ring research carried out in this region to date has included more than 8,700 participants, including adolescent girls and young women and emphasizes the following:

- The PrEP ring is safe, effective, and well tolerated by people under 18 years old
- AGYW who choose the PrEP ring show moderately high adherence, similar to those who choose oral PrEP
- When given a choice of PrEP methods, most AGYW choose to use PrEP rather than no method at all
- AGYW who were able to use oral PrEP well are more likely to select oral PrEP when given a choice of methods
- AGYW who have used oral PrEP and PrEP ring find both products highly acceptable

This evidence helps support a recommendation that PrEP ring to be made available to AGYW as an additional PrEP option.

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<sup>12</sup> Roberts ST, Mancuso N, Williams K, Nabunya HK, Mposula H, Mugocha C, et al. How a menu of adherence support strategies facilitated high adherence to HIV prevention products among adolescent girls and young women in sub-Saharan Africa: a mixed methods analysis. *J Int AIDS Soc.* 2023 Nov;26(11):e26189.

<sup>13</sup> Mayo AJ, Browne EN, Montgomery ET, Torgesen K, Palanee-Phillips T, Jeenaarain N, et al. Acceptability of the dapivirine vaginal ring for HIV-1 prevention and association with adherence in a phase III trial. *Aids Behav* 2021 Aug;25(8):2430-2440.

<sup>14</sup> Montgomery ET, van der Straten A, Chitukuta M, Reddy K, Woeber K, Atujuna M, et al. Acceptability and use of a dapivirine vaginal ring in a phase III trial. *AIDS* 2017 May;31(8):1159-1167.

## PrEP ring research among AGYW in eastern and southern Africa

Study	Description	Study location(s)	Participant sample	Status
<a href="#">MTN-034/REACH</a>	Phase 2a, randomized, open-label, crossover study. Participants used the PrEP ring monthly for 6 months, oral PrEP (Truvada) for 6 months, and then chose the ring, Truvada, or neither for the final 6 months. The study will evaluate the safety and acceptability of and adherence to the ring and oral PrEP in users ages 16–21.	4 sites in Zimbabwe, Uganda, South Africa	<b>Total sample: 247 AGYW ages 16–21 (inclusive)</b> Zimbabwe: 60 (28 ages 16–17)  Uganda: 60 (20 ages 16–17)  South Africa (2 sites): 127 (37 ages 16–17)	Data collection completed in September 2021. <a href="#">Interim results</a> presented at IAS 2021. Final results presented at CROI 2022, and <a href="#">final manuscript</a> published in 2023.
<p><b>MTN-034 key takeaways:</b> Most participants reported that the ring and oral PrEP were acceptable (88% and 64%, respectively). More than 50% of participants had high adherence levels with both products. About two-thirds of participants chose the ring during the choice period, with those who had high adherence to oral PrEP during the randomization period more likely to select oral PrEP in the choice period.</p>				