

ESTIMATED BENEFITS OF PROVIDING ON-DEMAND PREP OPTIONS FOR WOMEN IN CAPE TOWN: A MODELING STUDY

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BACKGROUND

Daily and on-demand oral pre-exposure prophylaxis (PrEP) have been shown to be effective at preventing HIV acquisition among cisgender men and transgender women, but only daily PrEP is recommended for cisgender women. **On-demand PrEP may be a valuable option to improve PrEP uptake, effective use, and persistence in cisgender women.** We estimated effectiveness achieved by different non-daily PrEP options and investigated which sub-groups of women may benefit most from using them. This work extends a similar analysis we have done for MSM [1].

METHODS

- Created a synthetic cohort of women with data on the frequency of sex acts, condom use, and PrEP pill taking from the Cape Town site of the HPTN 067 study [2]
- Simulated hypothetical use of the 3 PrEP regimens utilized in HPTN 067 (Table 1) & 2-1-1 PrEP for 6 months each
- Adherence to 2-1-1 PrEP was informed by observed adherence to event-based PrEP
- Estimated PrEP effectiveness based on number of pills taken around sex acts from a published adherence-efficacy curve [3]
- Analyzed assignment to 2-1-1 PrEP based on having daily PrEP adherence of <2.8 pills/week (Adherence Assignment) or hypothetical criteria combining effectiveness and pill burden (Optimal Assignment)

[1] Stansfield SE, et al. EClinicalMedicine. 2022 Dec 26;5(6):101776. [2] Bekker LG, et al. Lancet HIV. 2018 Feb;5(2):e68-e78. [3] Moore M, et al. Nat Med. 2023 Nov;29(11):2748-2752.

Table 1: PrEP regimens & descriptions

PrEP Regimen	Description
Daily PrEP*	1 pill per day
2-1-1 PrEP	2 pills before sex + 1 pill each of the following two days after sex
Time-driven PrEP*	2 pills per week + 1 pill after sex
Event-driven PrEP*	1 pill before sex + 1 pill after sex

* Regimen utilized in HPTN 067



RESULTS

- Estimated effectiveness** was median **86% for daily PrEP, 57% for 2-1-1 PrEP, 47% for time-driven PrEP, & 42% for event-driven PrEP** when all users were on the same regimen (Figure 1)
- Estimated pill taking was median **5.6 pills/week for daily, 1.7 pills/week for 2-1-1, 2.3 pills/week for time-driven, & 1.4 pills/week for event-driven PrEP**
- The Adherence Assignment & Optimal Assignment both had median 86% estimated effectiveness with 92% of users on daily PrEP and 8% of users on 2-1-1 PrEP
- PrEP users with low adherence to daily PrEP benefited most from non-daily PrEP** in the Adherence Assignment: when this group switched from daily to 2-1-1 PrEP, PrEP effectiveness *increased* from median 41% to 44% & pill taking *decreased* from median 2.1 to 1.4 pills/week (Figure 2)
- Sex act frequency had no influence on regimen optimality

CONCLUSIONS

- Daily oral PrEP was highly effective for women in this trial**
- On-demand PrEP could benefit women with low daily PrEP adherence by decreasing the number of days on which pills need to be taken and slightly increasing effectiveness**
- This would be a valuable and easy-to-implement option in places where daily oral PrEP is already available**

ACKNOWLEDGMENTS

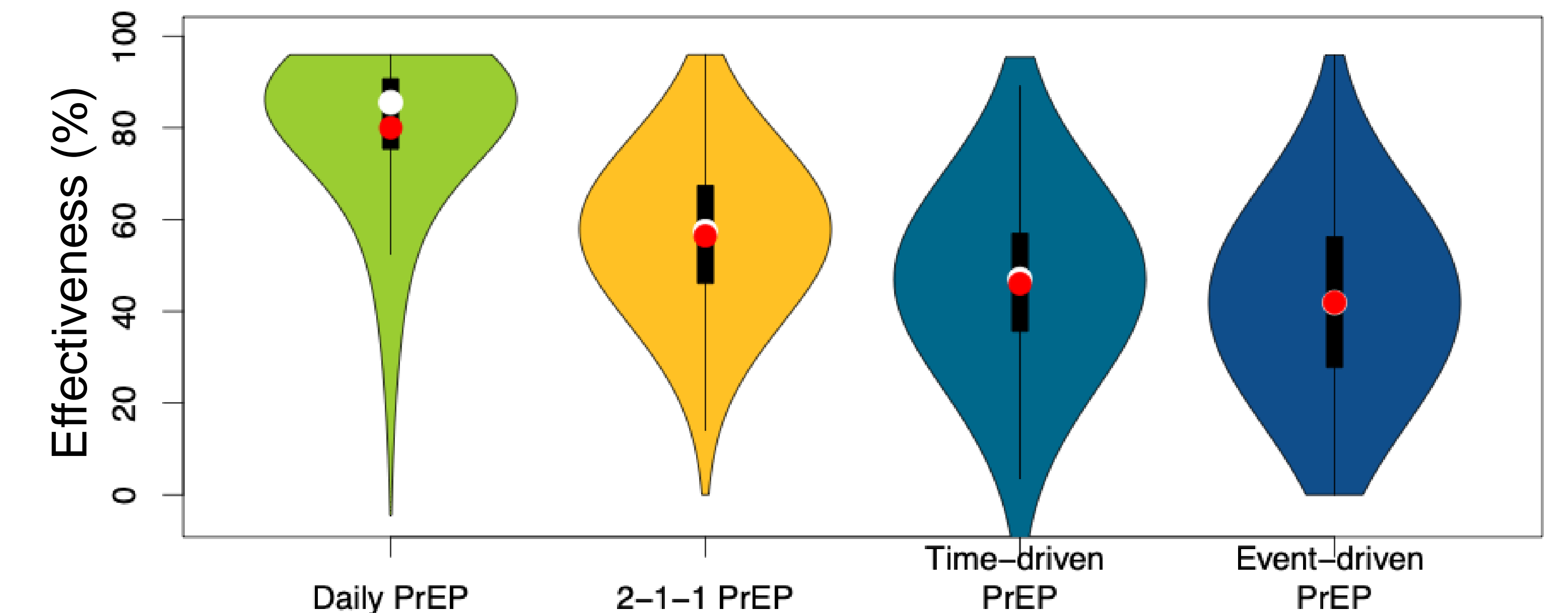


Figure 1: Estimated effectiveness of simulated HPTN 067 PrEP regimens & 2-1-1 PrEP when all women received the same regimen. Red points show mean percent effectiveness and white points (may overlap) show median percent effectiveness.

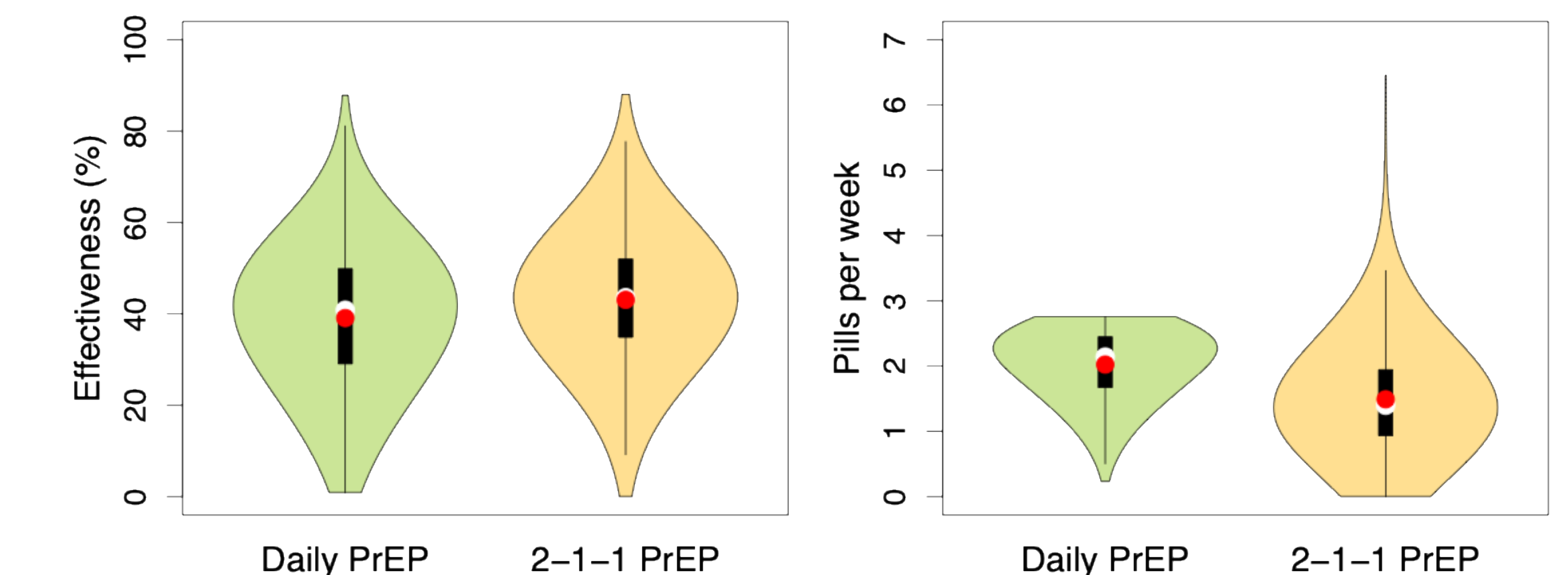


Figure 2: Estimated effectiveness (%) & pills taken per week on daily PrEP or 2-1-1 PrEP for the 8% of women with low daily PrEP adherence (<2.8 pills/week). Red points show mean percent effectiveness and white points (may overlap) show median percent effectiveness.

