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Brief communication: attitudes and preferences of long-acting injectable HIV preexposure prophylaxis among Thai adolescents and young adults

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Abstract

This study aimed to explore willingness to use and preference for long-acting injectable PrEP (LAI-PrEP) among Thai youth at risk of HIV. A cross-sectional study was conducted in 100 Thai youth aged 18 to 24 years attending a sexual health clinic in Bangkok, Thailand. Participants received information about oral and LAI-PrEP before completing a questionnaire. Of the 98 participants willing to use pre-exposure prophylaxis, 47 preferred the injectable form. Preference for the injectable form was higher among individuals not currently using oral preexposure prophylaxis, affordability and longer injection intervals were key for acceptance of long-acting injectable pre-exposure prophylaxis.

Keywords HIV, PrEP, Long-acting, Youth, Adolescents, Men who have sex with men, Preference

Introduction

Adolescents and young adults (AYA) aged 15–24 years accounted for nearly one-third of 1.3 million new HIV infections globally in 2023 [1], emphasizing a critical need for effective prevention strategies within this demographic. Global HIV prevention progress has plateaued

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with up to 61% of at-risk individuals lacking access to combination prevention methods [1]. Barriers to the uptake, adherence, and retention of HIV pre-exposure prophylaxis (PrEP) highlight the importance of accessible long-acting prevention technologies [2, 3, 4, 5].

Long-acting injectable PrEP (LAI-PrEP), such as 2-monthly intramuscular cabotegravir (CAB-LA) and twice-yearly subcutaneous lenacapavir (LEN), offer an effective and convenient alternative to oral PrEP [6, 7, 8, 9]. Initial CAB-LA implementation in select African nations demonstrated significant increases in PrEP uptake and HIV prevention coverage [10, 11]. In Uganda and Kenya, the addition of CAB-LA to standard care increased PrEP follow-up from 13.3% in the standard-ofcare group to 69.7% in the intervention group [10].

Studies on willingness to use LAI-PrEP among MSM in the U.S., Africa, and China show high acceptance rates



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(68-88%) [12, 13, 14]. Younger age, condomless sexual intercourse, and multiple sexual partners are associated with increased willingness [12, 13, 15] to use LAI-PrEP. However, concerns regarding high costs, effectiveness, potential long-term health effects, and side effects of remain [14, 15, 16]. While much is known about LAI-PrEP acceptability globally, little is understood about preferences for dosing intervals or how concerns affect AYA in low- and middle-income countries. This study aims to investigate willingness to use and pay among Thai AYA at risk of HIV acquisition.

Methods

This cross-sectional study assessed attitudes towards LAI-PrEP AYA aged 18-24 years. Participants were included if they reported at least one of the following within the preceding 3 months: (1) more than one sexual partner, (2) condomless sexual intercourse, or (3) a history of sexually transmitted infection. Those known to be living with HIV were excluded. This study was conducted at a youth-focused HIV and STI clinic called 'Buddy CU' at King Chulalongkorn Memorial Hospital, which is a public tertiary care teaching hospital in Bangkok, Thailand. Most clinic users are from low to middle socioeconomic backgrounds and either studying or engaged in irregular or temporary work. The study was approved by the Faculty of Medicine, Chulalongkorn University ethics review board (IRB 0050/67). Participants received verbal and written information about study procedures by research staff in-person, were given time to review the study protocol and informed consent papers, and provided written consent.

Participants watched a 2-minute video explaining LAI-PrEP and oral PrEP efficacy, safety, side effects and administration. A 17-item paper-based questionnaire adopted from previous studies [13, 14, 16–18] assessed demographics, sexual behaviors, HIV risk profiles, and attitudes toward oral and LAI-PrEP.

Key items measured willingness to use LAI-PrEP (via a 5-point Likert scale, with scores \geq 4 indicating willingness), familiarity with LAI-PrEP, and price willingness (from one to more than six times the Thai oral PrEP cost of \$14/month). Concerns about LAI-PrEP included long-term health effects, side effects, needle fear, drug interactions, and injection site preferences. Oral PrEP users were queried on adherence challenges, such as portability and privacy [13, 14, 16–18].

A sample size of 97 was calculated to achieve a 95% confidence level with 10% margin of error, assuming 50% willingness to use LAI-PrEP. This figure was rounded up to 100 participants. The primary outcome, willingness to use LAI-PrEP, was dichotomized into willing (score \geq 4)/unwilling (score 1–3). Willingness proportions were reported as percentages with 95% confidence intervals

(CIs). Logistic regression analyses explored associations between preference for LAI-PrEP and participant characteristics, with factors at p < 0.1 in univariate analysis included in multivariate models. Statistical significance was set at p < 0.05. Analyses were performed using Stata version 17.0.

Results

Demographics

From March to April 2024, a total of 100 Thai AYA enrolled. Ninety-four participants were male at birth and 6 were female at birth. Median age was 22.6 years (IQR: 20.7–23.6). Ninety-one reported inconsistent condom use in the previous three months. Table 1 shows participant characteristics stratified by preference for LAI-PrEP.

Willingness to use LAI-PrEP

Eighty-four participants expressed willingness to use LAI-PrEP. In terms of frequency and injection interval, 55% (55/100), 76% (76/100), and 74% (74/100) of participants expressed willingness to use LAI-PrEP at 2-, 6- and 12-month intervals respectively. Figure 1 shows willingness to use LAI-PrEP at different injection intervals stratified by active oral PrEP use. Those not using oral PrEP were more likely to express willingness to use LAI at the 12-month interval compared to active oral PrEP users (87.0% (40/46) vs. 63.0% (34/54), p = 0.006) (Fig. 1). Additionally, participants with inconsistent condom use were more likely to express willingness to use the 12-month injection compared to consistent condom users (78.0% (71/91) vs. 33.3% (3/9), p = 0.004).

Preference for LAI-PrEP

Of the 98 participants willing to use PrEP; 47 preferred LAI-PrEP, 41 were open to either oral or LAI, and 10 preferred oral PrEP. In univariate analyses, those who were not using oral PrEP and those with high to very high self-HIV risk perception had higher odds of expressing preference for LAI-PrEP over oral PrEP, at an odds ratio of 2.9 (95% CI: 1.3–6.5) and 3.1 (95% CI: 1.1–8.4) respectively. In multivariate analyses, AYA not using oral PrEP were significantly more likely to prefer LAI-PrEP, with an adjusted odds ratio of 2.4 (95% CI: 1.0–5.6).

Willingness to pay for LAI-PrEP

Among the 49 participants who expressed willingness to pay at least the current market price of oral PrEP for LAI-PrEP, 42 participants were willing to pay a similar rate to oral PrEP (14–28 USD/month), and the remaining 7 were willing to pay up to six times the price of oral PrEP (28– 84 USD/month).

| | Preferred LAI | Did not prefer LAI | <i>p</i> -value |
|--|-----------------------|--------------------|-----------------|
| | (N=47) | (N=53) | |
| Age (years), median (IQR) | 21.8 | 23.2 | 0.01 |
| | (20.7–23.1) | (21.7–23.8) | |
| Sex at birth | | | |
| Male (N=94) | 43 (45.7) | 51 (54.3) | 0.32 |
| Female (N=6) | 4 (66.7%) | 2 (33.3%) | 0.32 |
| Gender Identity | | | |
| MSM | 34 (48.6) | 36 (51.4) | 0.63 |
| Bisexual | 2 (20.0) | 8 (80.0) | 0.07 |
| Non-LGBT | 7 (53.8) | 6 (46.2) | 0.60 |
| Transgender women | 4 (57.1) | 3 (42.9) | 0.58 |
| Education | | | |
| Below university | 21 (61.8) | 13 (38.2) | 0.03 |
| University degree or above | 26 (39.4) | 40 (60.6) | 0.03 |
| Self-reported number of sexual partners in | the previous 3 months | | |
| 0–1 partner(s) | 11 (44.0) | 14 (56.0) | 0.73 |
| 2–5 partners | 20 (40.0) | 30 (60.0) | 0.16 |
| >5 partners | 16 (62.5) | 9 (37.5) | 0.05 |
| Self-Perceived risk of HIV ⁺ | | | |
| Low to moderate | 32 (41.0) | 46 (59.0) | 0.02 |
| High to very high | 15 (68.2) | 7 (31.8) | 0.02 |
| PrEP use | | | |
| Active oral PrEP user | 19 (35.2) | 35 (64.8) | 0.01 |
| Former PrEP user | 9 (69.2) | 4 (30.8) | 0.09 |
| Never used PrEP | 19 (57.6) | 14 (42.4) | 0.14 |

| Table | Participant c | haracteristics stratified | by preference | e for long-acting | injectable PrEF | P over daily oral PrEP |
|-------|-----------------------------------|---------------------------|---------------|-------------------|-----------------|------------------------|
| | | | | | | |

Abbreviations: MSM, men who have sex with men; LGBT, Lesbian, Gay, Bisexual, and Transgender; PrEP, pre-exposure prophylaxis; LAI-PrEP, Long-acting Injectable PrEP *91% of participants reported inconsistent condom use in the preceding 3 months

Footnote: Age differences between groups were analyzed using the Mann-Whitney U test. All other p-values were derived from chi-square tests

Concerns about LAI-PrEP and barriers to using oral PrEP

Concerns regarding LAI-PrEP included its side effects (68%, 68/100), long-term health consequences (65%, 65/100), and drug interactions (34%, 34/100). Among those who had ever used oral PrEP (N = 67), experienced barriers included adherence and pill portability (51%, 34/67), privacy concerns (39%, 26/67) and difficulty swallowing pills (27%, 18/67).

Discussion

To our knowledge, this is one of the earliest studies to assess the willingness to use LAI-PrEP among AYA in the Asia Pacific region, focusing on injection interval preferences. Over three-quarters of Thai AYA expressed willingness to use LAI-PrEP, particularly for 6- and 12-month regimens. Stated preference for LAI-PrEP as a first or co-preference highlights its potential to meet prevention needs alongside oral PrEP. However, concerns about long-term health effects, side effects, and cost must be addressed for successful implementation. Notably, only 7% of participants were willing to pay more than twice the cost of oral PrEP, underscoring affordability challenges. Our findings of high willingness to use LAI-PrEP in Thai AYA aligns with studies in the U.S [12, 15]., China [14], and Nigeria [13], which also reported high willingness to use LAI-PrEP among MSM and transgender women. Our study found the lowest acceptability for 2-monthly injections and highest acceptance for 6- and 12-month intervals. This suggests LEN's 6-month interval may be more acceptable than CAB-LA's 2-month regimen.

Interestingly, participants not using oral PrEP were twice as likely to prefer LAI-PrEP, suggesting its potential as an additional option for HIV prevention. Offering both oral and injectable PrEP options can enhance satisfaction and uptake [11, 19]. However, stricter adherence requirements for LAI-PrEP necessitate adequate counseling and preparation [2, 20].

Affordability remains a significant barrier, with only a small proportion of participants willing to pay higher prices for LAI-PrEP relative to oral PrEP. This highlights the need for pricing strategies or subsidies to ensure equitable access, particularly given oral PrEP is currently covered under Thailand's universal health coverage scheme. Studies from Nigeria reported similar results, with limited willingness to pay higher prices for PrEP [19].



Fig. 1 Willingness to use long-acting PrEP at different injection intervals among active PrEP users and non-PrEP users^{*}. Abbreviations: PrEP, Pre-Exposure Prophylaxis. *non-PrEP users refers to former oral PrEP users and those who had never used PrEP before, PrEP users refers to active oral PrEP users

Common concerns included potential side effects and long-term health consequences, consistent with findings from Vietnam [17] and Malaysia [18]. Addressing these through clear communication and counseling on adherence can support informed decision-making and improve uptake.

This study provides critical insights into Thai AYA attitudes toward LAI-PrEP and identifies barriers to its implementation. While limited by sampling bias and reliance on stated preferences, the findings underscore the importance of cost-effective, accessible LAI-PrEP options for expanding HIV prevention efforts.

Conclusion

Thai AYA showed high willingness to use LAI-PrEP, particularly for extended injection intervals between 6- and 12-month injections. Affordable, extended interval LAI-PrEP could expand PrEP uptake. Future research should focus on practical strategies for implementing LAI-PrEP, including timely dose administration and managing potential side effects.

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Author contributions

Conception and design of work - AW, TP. Data acquisition - AW, WNS, PW, JM, SK, TP. Interpretation/Analysis of Data - AW, WNS, LP, TP. Drafted initial

manuscript - AW. Manuscript revisions - AW, WNS, LP, TP. Read and approved submitted version - AW, WNS, PW, JM, SK, LP, TP.

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Data availability

The data that support the findings of this study are not openly available due to reasons of sensitivity and are available from the corresponding author upon reasonable request. Data are located in controlled access data storage at Chulalongkorn University.

Declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board of the Faculty of Medicine, Chulalongkorn University, and all participants provided informed consent before participating in the study.

Consent for publication

All authors have reviewed and approved the manuscript for publication. No individual participant data is included that requires additional consent. The study abstract has been presented at the International Workshop on Pediatrics & HIV, Munich, July 2024, eposter number 189.

Competing interests

The authors declare no competing interests.

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