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Survival of Individuals on Long-Acting Cabotegravir Injection for HIV Pre-Exposure Prophylaxis in Zambia: A Retrospective Cohort Study

Lackeby Kawanga[1,3], Eustarkio Kazonga[1,2], Bryson Musonda[1], Innocent Mwaba[1], Adamson Ndhlovu[3], Paul Kasinde[1], Norah Ndambo[1], Mangani Thanthwe[1], Andrew Phiri [1], Vincent Kapungu[1]

[1]School of Postgraduate Studies, University of Lusaka, Lusaka, Zambia
[2]Department of Public Health, School of Medicine and Health Sciences, University of Zambia, Zambia.
[3]JSI Research and Training Institute

Corresponding Author: Lackeby Kawanga

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ABSTRACT

Background: The HIV epidemic continues to pose a public health challenge in Zambia, despite advances in prevention strategies such as pre-exposure prophylaxis (PrEP). While oral PrEP is effective, daily drug administration remains a significant barrier. Long-acting cabotegravir (CAB LA), an injectable PrEP alternative, addresses this adherence challenge through reduced dosing frequency. This study aimed to assess the survival of individuals on CAB LA for PrEP and identify determinants associated with CAB LA discontinuation.
Methods: A retrospective cohort study was conducted using secondary data from the Electronic Health Record on individuals initiating CAB LA between February and September 2024 in Chibombo and Kitwe districts, Zambia. Survival analysis methods, including Kaplan-Meier estimates and Cox proportional hazards regression, were employed to determine survival probabilities and factors associated with discontinuation over a 10-month period. Survival rates between individuals with and without prior oral PrEP exposure were also compared.
Results: The survival analysis involved 1,308 individuals contributing 6,386 person-months of follow-up and recorded 823 discontinuations. The median survival time was seven months, with a discontinuation incidence rate of 0.129 per person-month. Survival probabilities decreased over time: 81.6% at one month, 66.6% at three months, 50.6% at five months, 35.5% at seven months, and 26.4% at nine months. Oral PrEP-experienced individuals had a 33% lower hazard of discontinuation, while males had a 20% higher hazard than females. Older age modestly reduced discontinuation risk.
Conclusion: CAB LA demonstrates varying survival probabilities over time, with significant predictors of discontinuation identified. These findings underscore the importance of tailored interventions to improve adherence, particularly for males and PrEP-naïve individuals.

Keywords: HIV prevention, Pre-exposure prophylaxis (PrEP), Long-acting cabotegravir (CAB LA), Discontinuation, Survival analysis.

INTRODUCTION

The human immunodeficiency virus (HIV) epidemic remains one of the most pressing global public health challenges, particularly in sub-Saharan Africa. As of 2020, approximately 37.7 million people were living with HIV worldwide, with 1.5 million new infections recorded that year [1]. Despite significant progress in scaling up access to antiretroviral therapy (ART) and preventive interventions, HIV incidence remains unacceptably high, especially in Eastern and Southern Africa [2]. These persistent infection rates underscore the need for innovative, user-friendly HIV prevention strategies to complement existing options and improve health outcomes.

Pre-exposure prophylaxis (PrEP), the use of antiretroviral drugs by HIV-negative individuals to prevent HIV infection has proven highly effective in various populations. Daily oral PrEP, typically comprising tenofovir disoproxil fumarate (TDF) and emtricitabine (FTC), was the first regimen recommended by the World Health Organization (WHO) for individuals at substantial risk of HIV infection [3]. However, uptake and adherence to oral PrEP have been hindered by factors such as daily pill burden, stigma, privacy concerns, and inconsistent access to health services [4,5].

To address these limitations and broaden HIV prevention options, research in use of long-acting injectable cabotegravir (CAB-LA) as PrEP method was developed. CAB-LA is an integrase strand transfer inhibitor (INSTI) administered intramuscularly every eight weeks. It maintains sustained drug levels in the body and eliminates the need for daily adherence, making it particularly beneficial for populations that experience challenges with oral PrEP [6]. The HIV Prevention Trials Network (HPTN) 083 and 084 studies provided robust clinical evidence of CAB-LA's superior efficacy. HPTN 083, involving cisgender men and transgender women, demonstrated a 69% greater reduction in HIV incidence with CAB-LA compared to daily oral PrEP [7]. Similarly, HPTN 084, conducted among cisgender women in sub-Saharan Africa, found CAB-LA to be 90% more effective [8]. These findings led to CAB-LA's regulatory approval by the U.S. Food and Drug Administration (FDA) in 2021 and endorsement by the WHO in 2022 [9,10].

Following global endorsements, several countries including Zambia initiated CAB-LA rollout in real-world settings. On 9 February 2024, Zambia received a donation of 14,850 vials of CAB-LA from the U.S. government, becoming the second country in the world to offer injectable PrEP outside of a clinical trial [11]. Initial implementation targeted nine sites across four districts: Lusaka, Kitwe, Chibombo, and Mazabuka. The intervention aligned with Zambia's National HIV Strategic Framework, which emphasized expanding access to biomedical HIV prevention tools for populations at highest risk [12,13].

CAB-LA offers key advantages over oral PrEP, including less frequent dosing, improved privacy, and better alignment with user preferences especially among adolescent girls, young women, and other key populations [4,14]. However, successful implementation depends on sustained retention and timely administration of injections. Missed doses may lead to suboptimal drug concentrations, reduced protection, and increased risk of developing resistance to integrase inhibitors if HIV acquisition occurs during the tail phase [10]. Although clinical trial data showed high retention with more than 88% of participants receiving scheduled injections [7,8] evidence from programmatic settings remains limited. In a real-world implementation in the United States with sample size of about 100 people, 83% of clients on CAB-LA were retained at six months, and 85% received injections within the designated window, compared to only 60% retention among oral PrEP users [15]. Moreover, this study found that individuals with substance use disorders were more than twice as likely to discontinue CAB-LA

(adjusted odds ratio [aOR] 2.23; p = 0.017), while those with mental health diagnoses had more than five times the odds of discontinuation (aOR 5.36; p = 0.019) [15].

Other factors, extrapolated from studies on oral PrEP adherence, may also influence CAB-LA discontinuation. These include younger age, male gender, limited health literacy, and weak healthcare infrastructure [4,16]. In rural settings, long travel distances to clinics and stock outs of injectable medications may further undermine retention [17]. Psychosocial barriers such as HIV-related stigma, fear of being misidentified as HIV-positive, and lack of partner or community support can also deter continued use [18]. Additionally, provider attitudes, clinic accessibility, and the presence or absence of client-centered follow-up systems influence adherence outcomes [19]. Together, these demographic, clinical, and structural factors constitute important considerations in designing responsive service delivery models for CAB-LA scale-up.

In Zambia, where adult HIV prevalence is estimated at 11.1%, and approximately 28,000 new infections in 2021, expanding access to effective PrEP options like CAB-LA is essential [12]. However, while efficacy in clinical trials is well established, there is limited real-world evidence on how clients in programmatic settings continue or discontinue CAB-LA over time in sub-Sahara or Zambian setting. Understanding the retention or "survival" of individuals on CAB-LA and the factors associated with discontinuation is crucial to reinforcing and scaling up a responsive and effective service delivery models in Zambia.

This study aims to assess the survival of individuals using CAB-LA for HIV prevention in Zambia and to identify the demographic, behavioural, and clinical determinants associated with discontinuation. Specifically, it examines the probability of retention at multiple time points (1, 3-, 5-, 7-, and 9-months' post-initiation), compares survival outcomes between individuals with and without prior exposure to oral PrEP, and explores the main drivers of early discontinuation.

MATERIALS AND METHODS

This study employed a retrospective cohort design to assess survival and discontinuation patterns among 1341 individuals receiving CAB-LA for HIV PrEP in Zambia. The study analysed routine program data for individuals initiated on CAB-LA between February and September 2024, with follow-up extending to December 2024 to accommodate the recommended injection schedule. This observational approach allowed for real-world assessment of CAB-LA uptake and retention during the early implementation phase.

All individuals aged 16 years and above who received at least one CAB-LA injection at any of the six public health facilities in Kitwe (urban) and Chibombo (rural) districts were included. These sites were selected for their early adoption of CAB-LA and received technical support from the same non-governmental organization (NGO). The all-inclusive sampling strategy was employed due to the small eligible population size, enhancing statistical power and minimizing selection bias [20]. Clients were excluded if they had not received CAB-LA, were under 16 years of age, were transferred from outside districts, or initiated after September 2024 due to inadequate follow-up time.

Secondary data were obtained from the Ministry of Health's Health Management Information System (HMIS) and the supporting NGO PrEP electronic information system. Data fields included demographics, clinical history, CAB-LA injection dates, medical conditions, and side effects. A standardized data extraction tool, reviewed by PrEP program experts, was used to ensure accuracy and completeness.

The primary outcome variable was survival time on CAB-LA or time to discontinuation, measured in months, and defined as the duration from the first documented injection to the date of the missed scheduled injection

that preceded a confirmed discontinuation event. Discontinuation was defined as missing a scheduled injection by more than one month without subsequent continuation, based on programmatic definitions for acceptable grace periods [21]. Clients were censored if they remained on CAB-LA throughout the follow-up period or were discontinued due to HIV seroconversion or other medical contraindications. Survival was also evaluated by the number of injections received according to the standard CAB-LA dosing schedule. This includes an initial injection at month 0, a second injection at month 1, followed by subsequent injections every two months [22]. Based on this, survival milestones were defined as 1, 3, 5, 7, and 9 months, corresponding to the first through fifth injections respectively.

DATA ANALYSIS

Descriptive statistics were used to summarise client characteristics. Continuous variables such as age were analysed using means and standard deviations or medians and interquartile ranges. Categorical variables, including gender, population type, location, and prior oral PrEP use, were reported as frequencies and percentages.

Survival analysis was conducted using life tables, Kaplan-Meier and Cox regression methods. Survival probabilities at each milestone were estimated, and Kaplan-Meier curves were used to visualize survival differences by prior PrEP experience. The Log-Rank test was applied to determine statistical significance between groups. Cox proportional hazards regression models were used to identify factors associated with CAB-LA discontinuation, presenting both unadjusted and adjusted hazard ratios (aHR) with 95% confidence intervals (CIs). The variables included in the model were age, sex, location, prior oral PrEP use, reported side effects and medical problem, and initiation period. Analysis was conducted using Stata/SE version 14.2.

To ensure data quality, a pilot extraction was conducted to identify formatting and completeness issues. Data cleaning included checking for duplicates, missing values, and inconsistencies. All data were de-identified and stored on encrypted, password-protected systems, with access limited to authorized personnel.

Validity was enhanced by aligning data collection with Ministry of Health guidelines and using standardized data abstraction tools. Reliability was ensured through consistent procedures across sites and trained data extractors. All selected facilities had similar levels of CAB-LA service delivery capacity, minimising site-level variability.

Ethical approval was obtained from the University of Lusaka Research Ethics Committee, the National Health Research Authority and Ministry of Health. Since only secondary, de-identified data were used, informed consent was waived. The study posed minimal risk, with safeguards in place to protect participant confidentiality and data integrity.

RESULT

A total of 1,341 individuals-initiated CAB LA PrEP within the review period. The mean age was 29.02 years (SD = 9.14; 95% CI: 28.53–29.51), with participants aged between 17 and 79 years. Of these, 805 (60.03%) were female and 536 (39.97%) males. By population category, 550 (41.01%) were from the general population, 378 (28.19%) were adolescent girls and young women (AGYW), 55 (4.10%) from key populations, and 358 (26.70%) were young men (17 to 34 years). Geographically, 728 (54.29%) resided in the urban district of Kitwe, while 613 (45.71%) were from the rural district of Chibombo. Initiation period was categorized into two phases: 839 (62.57%) participants-initiated CAB LA between February and April early on the program, while 502 (37.43%) initiated between May and September. A total of 1,261 individuals (94.03%) reported no medical problems during CAB LA period; 80 (5.97%) had a documented

medical condition or experienced side effects. See table 1 below.

Table 1: Descriptive Characteristics of the Study Population

Characteristic	Frequency (n = 1,341)	Percentage (%)
Age	Mean = 29.02 (SD = 9.14)	
Gender		
Female	805	60.03
Male	536	39.97
Population Category		
General Population	550	41.01
AGYW	378	28.19
Key Populations (KP)	55	4.1
Young Men	358	26.7
Location		
Kitwe (urban)	728	54.29
Chibombo (rural)	613	45.71
Initiation Period		
February–April (earlier)	839	62.57
May–September (later)	502	37.43
Medical History		
No Medical Problems	1,261	94.03
Medical problem/side effect	80	5.97

Survival analysis was performed on 1,308 participants contributing 6,386 person-months with a total of 823 discontinuations recorded. 33 participants were excluded in survival analysis due to incomplete survival data. The median survival time was 7 months, corresponding to four injections. The 25th percentile was 3 months (second injection), and upper quartile could not be estimated due to censoring. The overall incidence rate of discontinuation was 0.13 per person-month (95% CI: 0.12–0.14).

Stratified survival analysis revealed variation in discontinuation rates across key demographic and clinical characteristics. Rural participants from Chibombo had a slightly lower incidence rate of discontinuation (0.12) than their urban counterparts in Kitwe (0.13), though this was not statistically significant (Incidence risk ratio (IRR): 0.92, 95% CI: 0.80–1.06). Males exhibited a higher risk of discontinuation compared to females (IRR: 1.19, 95% CI: 1.04–1.37), with shorter median survival (5 vs. 7 months). Individuals with prior oral PrEP experience had significantly lower discontinuation rates (IRR: 0.67, 95% CI: 0.56–0.80) and longer survival compared to naïve users. Participants with a medical problem history had lower discontinuation rates than those without (IRR: 0.73, 95% CI: 0.50–1.03), although the difference was not statistically significant. Those initiated on CAB-LA between May and September 2024 showed better retention (IRR: 0.79, 95% CI: 0.68–0.93) compared to earlier initiates. Discontinuation also varied by population group, with young men experiencing the highest rate (0.16), followed by Key Populations at 0.13 and Adolescent Girls at 0.14, while the general population had the lowest (0.11). Despite these differences, median survival time remained mostly consistent at 7 months across groups. See table below.

Table 2: Incidence of Discontinuation by Key Variables

Stratifying Variable	Category	Person-Time (months)	Discontinuations (n)	Discontinuation Rate per Person-Month (95% CI)
Location	Chibombo (Rural)	3,300	406	0.12 (0.11-0.14)
	Kitwe (Urban)	3,086	417	0.13 (0.12-0.15)

Gender	Male	2,900	414	0.14 (0.13-0.16)
	Female	3,486	409	0.12 (0.10-0.13)
Oral PrEP experience	Experienced	3,200	304	0.10 (0.08-0.11)
	Naïve	3,186	519	0.15 (0.13-0.16)
Medical History	Problem/side effects	2,500	238	0.09 (0.08-0.16)
	No Problem	3,886	585	0.13 (0.12-0.14)
Initiation Period	February – April (Early)	3,000	414	0.14 (0.12-0.15)
	May – Sept (late)	3,386	409	0.12 (0.11-0.14)
Population Category	General	2,610	278	0.11 (0.09-0.12)
	AGYW	1,790	237	0.13 (0.12-0.15)
	KP	291	42	0.14 (0.11-0.20)
	Young Men	1,695	266	0.16 (0.14-0.18)

The probability of survival without discontinuation declined steadily over the follow-up period. At one month, 81.6% (95% CI: 0.80–0.84) of participants remained on treatment, but this dropped to 66.6% at three months (95% CI: 0.64–0.70), and further to 51.3% by five months (95% CI: 0.48–0.53). The decline continued, with only 35.5% (95% CI: 0.33–0.38) still on CAB-LA at seven months, and just 26.4% (95% CI: 0.24–0.29) retained by the ninth month. These findings, illustrated in the accompanying figure 1 below.

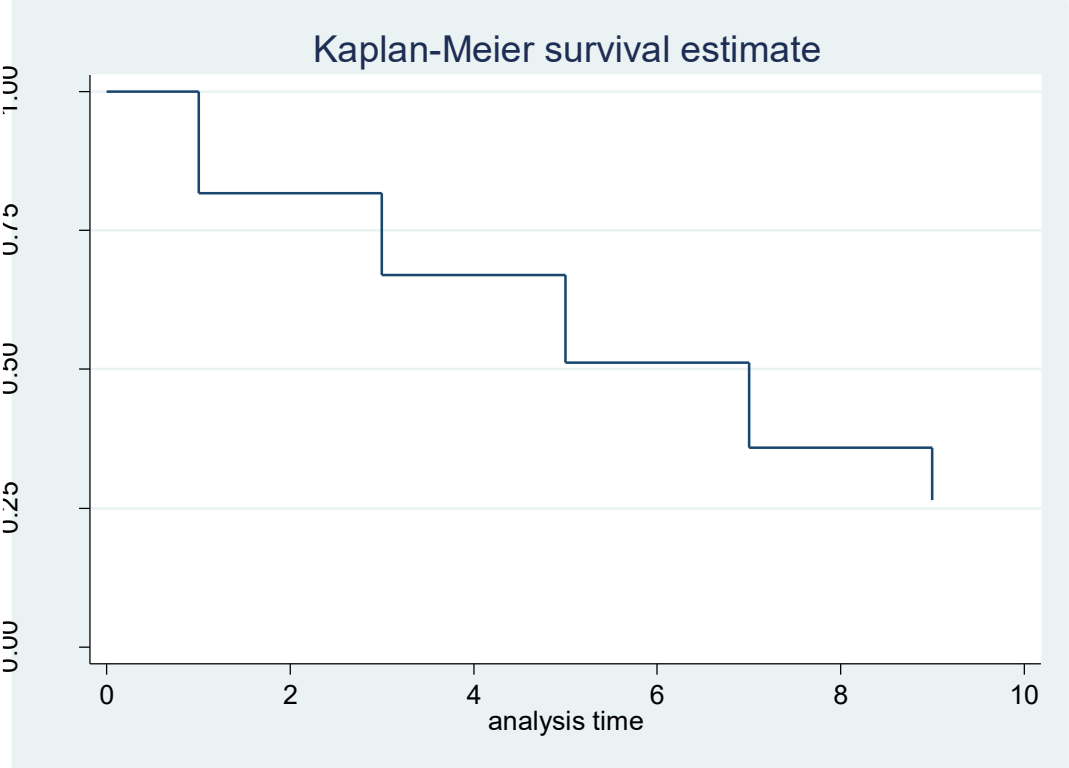
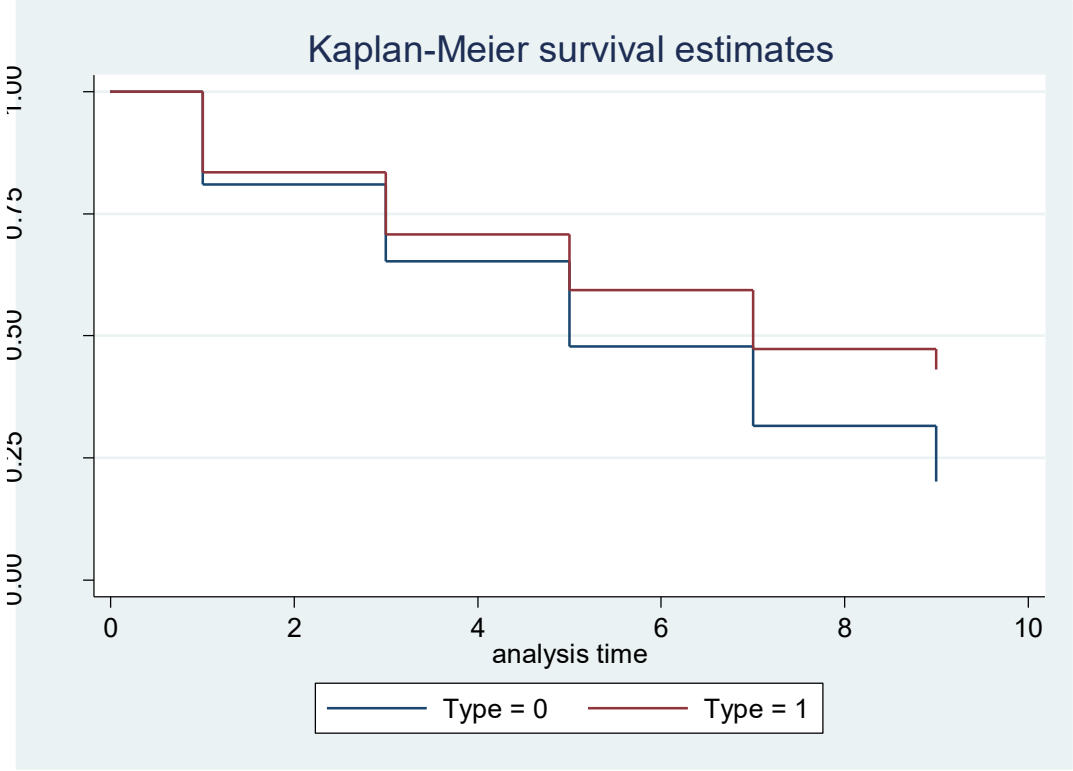


Figure 1: Kaplan-Meier Survival Estimate at Key Time Points in months

Kaplan-Meier survival analysis demonstrated clear differences in retention between oral PrEP experienced and PrEP naïve individuals. Survival curve showed a steeper decline among naïve clients, indicating higher discontinuation rates over time, while experienced individuals exhibited more gradual declines, suggesting better retention on CAB-LA. By the end of the follow-up period, survival probabilities were markedly lower for naïve participants compared to those with prior oral PrEP

experience. These differences were statistically significant, as confirmed by the log-rank test (χ^2 = 27.96, p < 0.001), reinforcing that prior experience with oral PrEP is associated with improved survival outcomes on CAB-LA. See figure 2 below.



Key: Type = 0: Oral PrEP naïve individuals Type = 1: Oral PrEP experienced individuals

Figure 2: Kaplan-Meier Survival Estimate by oral PrEP experience

The univariate analysis using Cox proportion hazard revealed that later initiation (May–September) significantly reduced the hazard of discontinuation compared to earlier initiation (February–April) (HR: 0.81, 95% CI: 0.69–0.94, p = 0.007). Oral PrEP experience was strongly protective (HR: 0.66, 95% CI: 0.56–0.79, p < 0.001), while being male (HR: 1.18, 95% CI: 1.03–1.36, p = 0.018) and being a young man (HR: 1.46, 95% CI: 1.23–1.73, p < 0.001) were associated with higher hazards of discontinuation. Increasing age had a small but significant protective effect (HR: 0.99, 95% CI: 0.98–0.99, p < 0.001). Location was not significantly associated with discontinuation on its own.

In the multivariate model adjusted for oral PrEP experience, gender, age, medical condition, and initiation period and stratified by location to address violation of proportional hazards, the model remained statistically significant (Likelihood Ratio chi² = 46.38, p < 0.001). Oral PrEP experience continued to show a strong protective effect (aHR: 0.67, 95% CI: 0.56–0.81, p < 0.001). Males had a 20% higher hazard of discontinuation compared to females (aHR: 1.20, 95% CI: 1.04–1.38, p = 0.012), while older age was associated with a small reduction in risk (aHR: 0.99, 95% CI: 0.98–0.99, p = 0.029). Although medical history suggested a lower hazard of discontinuation (aHR: 0.76), it did not reach statistical significance (95% CI: 0.54–1.08, p = 0.123).

Late initiation remained a significant predictor of reduced discontinuation risk in the adjusted model, with individuals initiating CAB-LA between May and September showing a 16% lower hazard compared to those starting earlier (aHR: 0.84, 95% CI: 0.72–0.99, p = 0.037).

The global test for proportional hazards using Schoenfeld residuals confirmed the validity of the model ($\chi^2 = 9.01$, $p = 0.109$), indicating that the assumption of constant hazards over time was not violated. Population category was excluded to meet model assumptions, and stratification by location was applied. These results, summarized in Tables 3 and 4, provide an understanding of factors influencing CAB-LA discontinuation over time.

Table 3: Univariate Cox Proportional Hazards Model Results and Proportionality Test

Variable		Unadjusted Hazard Ratio (95% CI)	*p*-Value	Global Test *p*-value
Initiation	February to April	1		
	May to September	0.805 (0.69-0.94)	0.007	0.257
Medical Problem	Non	1		
	Problem/side effect	0.726 (0.52-1.02)	0.067	0.145
Age		0.986 (0.98-0.99)	<0.001	0.163
Gender	Female	1		
	Male	1.182 (1.03-1.36)	0.018	0.482
Oral PrEP Experience	Naive	1		
	Experienced	0.665 (0.56-0.79)	<0.001	0.001
Population Category	General	1		
	AGYW	1.242 (1.05-1.48)	0.014	0.764
	Key Population	1.347 (0.97-1.86)	0.072	0.764
	Young Men	1.459 (1.23-1.73)	<0.001	0.764

Table 4: Multivariate Cox Proportional Hazards Regression Results (Stratified by Location)

Covariate		Adjusted Hazard Ratio (95% CI)	*p*-Value
Oral PrEP Experience	Naive	1	
	Experienced	0.67 (0.56-0.81)	< 0.001
Gender	Female	1	
	Male	1.20 (1.04-1.38)	0.012
Age		0.99 (0.98-0.99)	0.029
Medical Problem/Side Effect	Non	1	
	Present	0.76 (0.54-1.08)	0.123
Initiation	Feb to April	1	
	May to Sept	0.84 (0.72-0.98)	0.037

DISCUSSION

This study found a median survival time of 7 months on CAB-LA, corresponding to the fourth injection, reflecting retention patterns comparable to those reported in some oral PrEP programs outside clinical trials. While clinical studies such as HPTN 083 demonstrated a 66% retention at 12 months among sub-Saharan African participants, they also observed sharp declines in the first six months a trend mirrored in this study findings [6]. The observed discontinuation rate of 0.13 per person-month (approximately 13 per 100 person-months) aligns with results from oral PrEP programs. For example, Mugwanya et al. reported an incidence rate of approximately 0.15 discontinuations per person-month in oral PrEP programs across sub-Saharan Africa, citing adverse effects, poor counselling, and lack of community support as major contributors [23]. Similarly, Eakle et al. identified early dropout rates of up to 30% within the first three months of oral PrEP use in African cohorts, linked to structural barriers such as transportation challenges and inconsistent healthcare delivery [24]. These findings support the broader understanding that while CAB-LA simplifies adherence through reduced dosing frequency, it does not automatically overcome systemic and behavioural barriers to long-term PrEP engagement.

Stratified analysis revealed important subgroup differences. Rural participants in Chibombo had slightly lower

discontinuation rates compared to their urban counterparts in Kitwe, a finding that diverges from previous literature, which often highlights rural settings as more vulnerable due to access barriers [25]. This outcome may reflect stronger patient-provider relationships and closer community ties in smaller healthcare systems. Gender based differences were also evident, with males having shorter median survival times and higher discontinuation rates, findings consistent with existing studies on male disengagement from healthcare services [26, 27]. Women's higher retention rates in PrEP programs can be linked to their frequent interaction with healthcare systems, particularly through reproductive and maternal health services. Studies have shown that women participating in family planning or antenatal care programs are more likely to adhere to PrEP due to consistent access to counselling and support [27]. Participants with prior oral PrEP experience exhibited better retention outcomes, aligning with findings which showed that familiarity with PrEP regimens supports better adherence [15]. Additionally, clients initiating CAB-LA later in the program had better outcomes, suggesting potential improvements in program delivery or client selection over time.

Survival probabilities decreased progressively from 81.6% at one month to 26.4% by nine months. This pattern highlights the challenges in maintaining engagement beyond the early months of initiation, despite the initial high uptake. However, the one-month rate compares favourably to findings from oral PrEP programs, which often report significant attrition within the first month [28]. For example, data from large-scale oral PrEP implementation programs in sub-Saharan Africa have reported retention rates as low as 70% at one month [23]. The results here suggest that injectable PrEP may address some early barriers seen with oral PrEP, such as daily adherence. While CAB-LA demonstrated better early retention than many oral PrEP programs as observed by Ngure et al., the long-term decline is consistent with findings from HPTN 083 and other implementation studies [6, 28].

Importantly, the concept of PrEP as a dynamic intervention intended for use during periods of heightened HIV risk rather than indefinite adherence must be considered when interpreting these figures. WHO guidelines emphasize individualized PrEP use, suggesting that discontinuation is not always indicative of failure but may reflect changing risk profiles [29]. Nonetheless, the steep attrition highlights a need for targeted support and re-engagement strategies.

Cox proportional hazards regression identified key predictors of discontinuation. Prior oral PrEP experience significantly reduced the hazard of discontinuation, reinforcing the value of leveraging past user experience to support CAB-LA adherence [15,6]. Male clients had significantly higher hazards of discontinuation, echoing gender disparities noted in other HIV prevention programs [30]. While older age was associated with better retention, consistent with evidence suggesting more stable health behaviours among older individuals [31]. Initiation timing also emerged as a significant factor; clients who initiated later may have benefited from improved service readiness or learned behaviours from earlier cohorts. The results highlight potential programmatic improvements in client support or selection over time. They affirm that client characteristics and program maturity are key determinants of CAB-LA retention and should inform differentiated service delivery models.

This study relied on retrospective program data, which may be subject to documentation inconsistencies or misclassification of events. Additionally, the study did not capture behavioural or psychosocial factors that could influence adherence, such as stigma, partner dynamics, or user preferences. Future mixed-methods research is recommended to explore user experiences and motivations

for discontinuation, which could inform more person-centred approaches to long-acting PrEP delivery.

Recommendation

Based on the study findings, several strategic actions are recommended to improve retention in CAB-LA PrEP programs. National PrEP programs should plan around a median CAB-LA survival time of approximately seven months, or four injections, and use this benchmark to inform service delivery, resource allocation, and client support strategies. Enhanced counselling should be prioritized for individuals who are new to PrEP, focusing on understanding the importance of adherence, and navigating early challenges that could lead to discontinuation. For high-risk groups such as young men, adolescent girls and young women, and key populations, programs should implement tailored and flexible service models. Additionally, further research is needed to clarify the concept of dynamic PrEP use, with a focus on defining periods of elevated HIV risk. Establishing standardized approaches to defining risk periods will enhance the interpretation of discontinuation patterns and enable more precise planning and evaluation of both oral and injectable PrEP programs.

CONCLUSION

The study provides novel and context-specific evidence on the survival of individuals on long-acting CAB LA for HIV PrEP in Zambia, revealing a median survival time of 7 months and key determinants of early discontinuation. The findings highlight the clinical relevance of tailoring PrEP delivery to user characteristics such as gender, prior oral PrEP experience, and timing of initiation to improve retention outcomes. In particular, the elevated discontinuation among young men and PrEP-naïve individuals points to critical gaps in adherence support that require targeted, gender- and population-specific strategies. The study's insights are both timely and significant, informing PrEP programmatic refinement in Zambia and other similar settings scaling up CAB LA, ultimately contributing to more effective HIV prevention efforts.

Declaration by Authors

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