

Suboptimal adherence to HIV pre-exposure prophylaxis across administration schedules: evidence from the Italian PrIDE cohort (EPI-PrEP Study)

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Background

Adequate adherence is essential for HIV pre-exposure prophylaxis (PrEP) effectiveness. After oral PrEP reimbursement and the recent availability of long-acting injectable (LAI) PrEP in Italy, data on suboptimal adherence across regimens remain limited. Our goal was to estimate the occurrence of suboptimal adherence and identify factors linked to it within the Italian PrIDE cohort.

Methods

Epi-PrEP is a retrospective epidemiological analysis including PrEP users enrolled in the Italian multicenter observational PrIDE cohort between 2024 and 2025 with at least one follow-up visit after initiation. Suboptimal adherence was defined as self-reported use of <4 pills/week for the daily schedule; self-reported incorrect use for the 2:1:1 for the on-demand schedule; LAI injections delayed by >7 days; or report of sexual activity occurring without PrEP and without a condom. Cumulative probabilities of suboptimal adherence were estimated using the Kaplan–Meier method and compared across different administration schedules. Predictors were evaluated using a Cox regression model incorporating time-varying covariates for the PrEP schedule and behavioural characteristics.

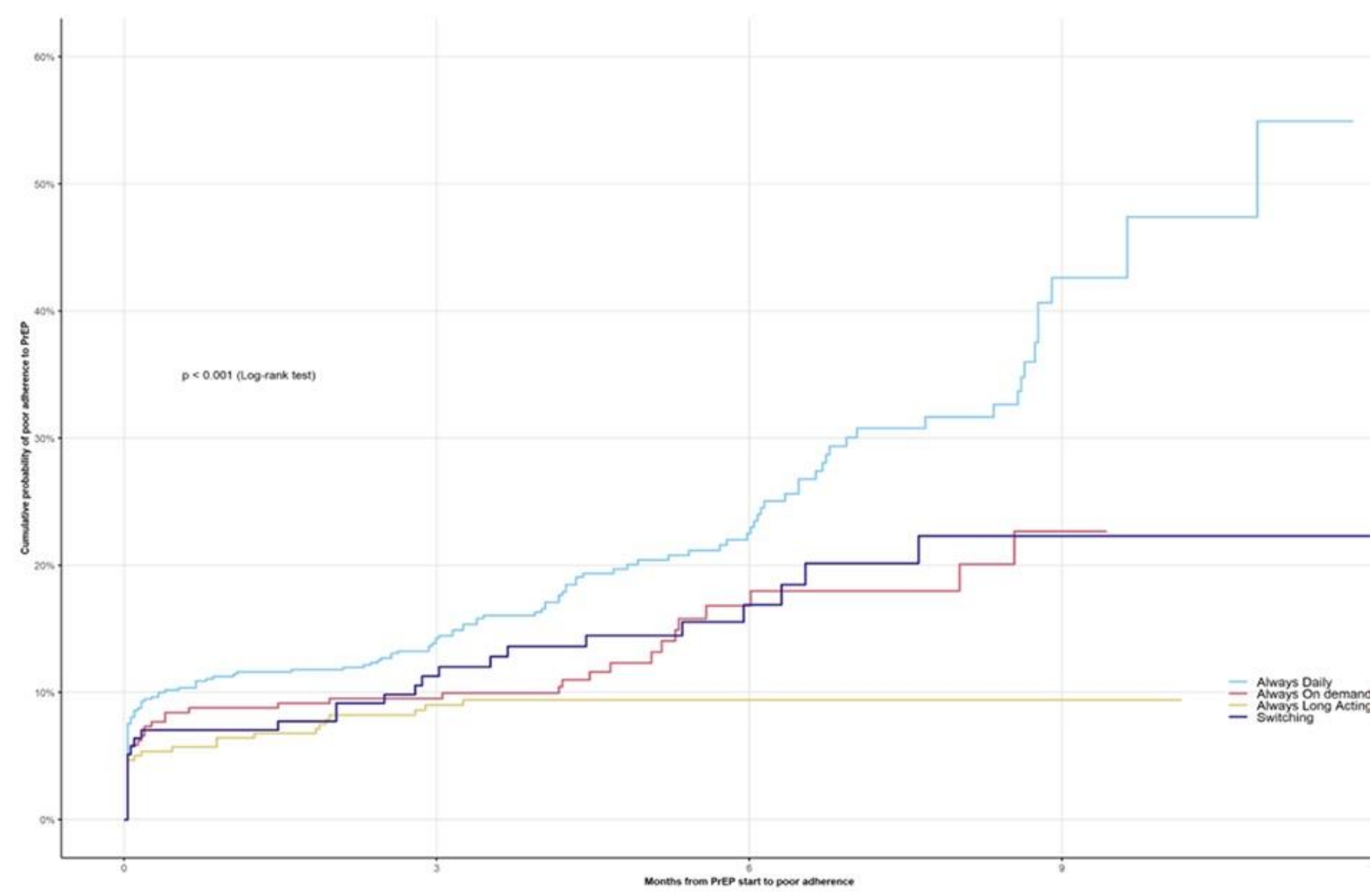
Table 1. Characteristics of study population

Variable	Overall n= 1298 (100%) ¹		Overall n= 1298 (100%) ¹
Sex at birth		Sex-worker	
Male	1278 (98.5%)	No	1211 (93.3%)
Female	20 (1.5%)	Yes	39 (3.0%)
		Unknown	48 (3.7%)
Age (years)	39.0 (33.0, 47.0)		
Age group		Gender Identity	
18-24	40 (3.1%)	Cisgender	1257 (96.8%)
25-39	655 (50.5%)	Transgender	10 (0.8%)
40-64	583 (44.9%)	Non-binary	31 (2.4%)
65+	20 (1.5%)		
Place of birth		Setting	
Italy	1137 (87.6%)	Hospital based	1219 (93.9%)
Abroad	161 (12.4%)	Community-based	79 (6.1%)
Education level		Sexual orientation	
Middle school or less	50 (3.9%)	GBMSM	1268 (97.7%)
High school	407 (31.4%)	Bisexual Female	10 (0.8%)
University	818 (63.0%)	Heterosexual	20 (1.5%)
Unknown	23 (1.8%)		
Employment status		Geographic area	
Employed		North	720 (55.5%)
Student	1197 (92.2%)	Centre	570 (43.9%)
Retired	63 (4.9%)	South and Islands	8 (0.6%)
Unemployed	17 (1.3%)		
Unknown	0 (0.0%)		
	21 (1.6%)		
PrEP Schedule		Previous PrEP use	
Always Daily	570 (43.9%)	No	320 (24.7%)
Always On demand	273 (21.0%)	Yes, ongoing	930 (71.6%)
Always Long Acting		Yes, interrupted	47 (3.6%)
Switching	299 (23.0%)	Unknown	1 (0.1%)
	156 (12.0%)		
¹ n (%); Median (Q1, Q3)			

Results

Overall, 1,298 PrEP users were included; the population mainly consisted of cisgender GBMSM, with a median age of 39 years (IQR 33–47), and about a quarter were PrEP-naïve. Details are summarized in **Table 1**. Suboptimal adherence was observed in 226 participants (17.4%) and differed significantly across administration schedules (p<0.001).

Figure 1. Kaplan-Meier curve for the one-year cumulative probability of suboptimal adherence according to the administration schedule



Median follow-up was 147.5 (111-197) days. The overall 1-year cumulative probability of suboptimal adherence was 34.63% (95% CI 25.96-42.29). According to the PrEP schedule, it was highest among daily users (54.92%; 34.18-69.13), intermediate among on- demand users (22.67%; 13.76-30.65), and switching users (22.31%; 13.27-30.41), and lowest for LAI users (9.42%; 5.96- 12.74) (**Fig. 1**). In multivariable Cox models, using daily as the reference, on-demand (HR 0.46; 95% CI 0.29–0.74; p=0.001) and LAI PrEP (HR 0.29; 95% CI 0.16–0.51; p<0.001) were both linked to a lower risk of suboptimal adherence. Chemsex was independently associated with a higher risk of suboptimal adherence (HR 2.12; 95% CI 1.18–3.79; p=0.012).

Conclusions

Suboptimal adherence was common. LAI PrEP and oral on-demand regimens were associated with better adherence profiles than daily dosing, while chemsex increased the risk of suboptimal adherence. Person- centred support should be integrated into PrEP delivery to maximise prevention impact.

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