

Novel considerations for inventory management of long-acting PrEP in a supply-constrained environment

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CATALYST: Catalyzing Access to New Prevention Products to Stop HIV

CATALYST is a PEPFAR/USAID-supported implementation study that will characterize and assess the implementation of an enhanced service delivery package providing informed choice among three pre-exposure prophylaxis (PrEP) products—oral PrEP, the PrEP ring, and injectable cabotegravir (CAB) PrEP—among women at PEPFAR sites in Kenya, Lesotho, South Africa, Uganda, and Zimbabwe.

Gaps in CAB PrEP availability could place HIV-exposed CAB PrEP clients at greater risk of HIV drug resistance.

CATALYST developed the CAB Recruitment and Planning Tool to support inventory management for CAB PrEP, carefully monitoring supply for follow-up dosing. Similar considerations may inform national planning for program implementation.

The CAB Tool estimates the maximum number of clients who can initiate CAB to avoid gaps in supply, accounting for the:

- quantity and timing of product availability
- rate of new PrEP initiations per month
- percentage of PrEP initiators eligible for CAB
- percentage of eligible clients choosing CAB
- average percentage of the maximum doses each client uses per year
- number of times per year a client restarts CAB after missing a visit
- rates of switching to and from CAB
- rate of wastage

Wastage is accounted for up front, ensuring against either a single catastrophic loss or steady loss over time. The calculation of the maximum number of clients left to initiate CAB ensures the number of vials remaining in stock never drops below half of the number of clients currently taking CAB. For example, if the number of projected current CAB clients in a given month is 5,000, the number of vials in stock that month does not go below 2,500 or a minimum set by the user, whichever is greater.



Pharmaceutical commodity supply room, South Africa, November 2023. Photo credit, Jill M. Peterson.

Using the tool

As an illustrative example, consider a country whose CAB PrEP program is characterized by the following:

- 50,000 vials are delivered annually (1 vial = 1 dose).
- 80 people on average initiate PrEP per weekday.
- 5% of product is wasted.
- 71% of eligible clients choose CAB PrEP.
- Clients access 70% of recommended doses and restart once per year.
- The monthly rate of switching onto CAB PrEP is 1.34%.

For this illustrative example, we can use the CAB PrEP Recruitment and Planning Tool to project that the country would need to stop initiating new CAB PrEP clients after approximately 10 months (10,471 clients) to avoid gaps in CAB PrEP availability prior to resupply, given the minimum number of vials that should be on hand each month. This would provide a two-month buffer for any resupply delays before the country would run out of vials for existing and switching CAB PrEP clients.

Parameters		
Quantity	Date	Supply
50,000	Apr-2024	Tranche 1
50,000	Apr-2025	Tranche 2
	Dec-2026	Tranche 3
10%	% of clients pregnant at PrEP initiation	
yes	pregnant clients on PrEP can initiate CAB	
71%	% of clients choosing CAB regardless of eligibility	
70%	% of doses per person per year	
1.34%	monthly rate of switching to CAB minus rate of switching from CAB	
6	number of CAB vials per person per full year	
2	number of CAB initiations + restarts per year	
200	minimum reserve threshold	
5%	wastage	
21.75	number of working days per month	

[Calculate](#) ← Click to recalculate after changing any values.

Month	Calculation inputs					Calculation results		
	Maximum # of clients who can initiate PrEP per day	Monthly new PrEP initiations	Clients initiating CAB, including new switchers (not cumulative)	Clients switching to CAB (not cumulative)	Vials left at the end of the month, actual	Vials left at the end of the month, calculated	Clients ever initiated CAB, excluding switchers	Maximum # left to initiate CAB, excluding switchers (do not exceed)
Apr-2024	80	1,740	1,112	0	46,388	46,388	1,112	
May-2024	80	1,740	1,113	1	44,757	44,757	2,224	
Jun-2024	80	1,740	1,114	2	42,605	42,605	3,336	
Jul-2024	80	1,740	1,116	4	39,931	39,931	4,447	
Aug-2024	80	1,740	1,119	7	36,733	36,733	5,559	
Sep-2024	80	1,740	1,122	10	33,010	33,010	6,671	
Oct-2024	80	1,740	1,127	15	28,759	28,759	7,783	
Nov-2024	80	1,740	1,131	20	23,977	23,977	8,895	
Dec-2024	80	1,740	1,137	25	18,662	18,662	10,007	
Jan-2025	80	546	380	31	13,572	13,572	10,356	
Feb-2025	80	0	28	28	8,618	8,618	10,356	2,351

Conclusion

Careful CAB PrEP supply management will be necessary to avoid forced discontinuations of clients with ongoing HIV exposure, potentially leading to drug resistance. When parameterized with real-world data, the CAB Recruitment and Planning Tool can ensure availability by projecting the number of CAB PrEP clients to initiate per year based on supply and the timing of new initiations, and it can inform buffer stock requirements for incorporation into logistics management systems.

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