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“It is a better option, but we need to see it work”: Perceived benefits, concerns and implementation requirements for long-acting injectable HIV treatment and prevention in Uganda

Wandera Uthmaan Muluga

wanderamuluga@gmail.com

Joint Clinical Research Centre

DRAKE MUSOKI

Mbarara University of Science and Technology

MULUGA FARID

Makerere University

IVAN SSEBANDEKE

Makerere University

CHEMUTAI BELIZA

Makerere Lung Institute

RAYMOND BENARD KIHUMURO

Joint Clinical Research Centre

ANDINDA BRACHEL

MILDMAY RESEARCH CENTRE UGANDA

NAMATOVU ANGELLA

Makerere University

CHAD STECHER

Arizona State University

CISSY KITYO

Joint Clinical Research Centre

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Abstract

Background: Long-acting injectable antiretroviral products are moving from efficacy trials into policy and service-delivery discussions. Their population impact will depend on whether prospective users consider them acceptable and whether health systems can deliver time-sensitive doses reliably.

Objective: To explore how people living with HIV, PrEP users and healthcare providers in Uganda understood the perceived benefits, concerns and implementation requirements of long-acting injectable HIV treatment and prevention products.

Methods: We conducted a qualitative study at Kajjansi Health Centre IV and Mildmay Hospital in Uganda. Through purposive maximum-variation sampling, we recruited three participant categories: people living with HIV receiving ART, current or previous PrEP users, and healthcare providers. The sample comprised 46 participants: 36 clients in six focus group discussions and 10 healthcare providers in key informant interviews. Data were audio-recorded, transcribed verbatim and analysed using hybrid deductive-inductive thematic analysis.

Results: Four themes emerged: (1) reported challenges with daily oral regimens; (2) concerns that could hinder injectable acceptance; (3) differences in preferences by social and treatment context; and (4) service requirements for injectable delivery. Participants expected injections to reduce pill burden, medication visibility, unintended disclosure and disruption during travel or work. Interest depended on confidence in effectiveness, manageable injection pain, information about prolonged adverse effects, provider competence, reliable supply, appointment reminders, missed-dose plans, privacy and accessible delivery.

Conclusions: Long-acting injectable HIV products were perceived as offering personal and programmatic advantages, but interest and anticipated acceptability were conditional and varied with product attributes, lived circumstances and expected service reliability. Roll-out in Uganda should pair product-specific counselling with evidence on safety and effectiveness, provider preparation, dependable supply and flexible delivery models.

Introduction

Long-acting antiretroviral products are expanding options for HIV treatment and prevention. The World Health Organization recommends long-acting injectable cabotegravir and, since 2025, twice-yearly injectable lenacapavir as additional pre-exposure prophylaxis choices (1, 2). These recommendations are supported by evidence from the HPTN 083 and HPTN 084 cabotegravir trials and the PURPOSE 1 and PURPOSE 2 lenacapavir trials (3–6). For treatment, cabotegravir plus rilpivirine administered every eight weeks maintained viral suppression in eligible adults in the African CARES trial at 48 and 96 weeks (7, 8).

Implementation of injectable antiretrovirals changes how adherence is organised. Although injections may reduce daily pill-taking, their delivery depends on scheduled clinic attendance, trained staff, eligibility assessment, reliable product supply, pharmacovigilance and clear procedures for delayed or missed doses (2, 9). Prolonged drug exposure may protect against daily forgetting, but it may also generate concern about adverse effects that cannot be stopped immediately (9).

African studies indicate that uptake may depend on both product characteristics and service conditions. In Uganda, people who had used injectable cabotegravir/rilpivirine reported relief from daily reminders, improved privacy and reduced medication-related stigma (11). The same study documented injection-site reactions and missed appointments, while providers raised concerns about cost, cold-chain requirements, physical space and workforce capacity (11). Ugandan clients with viraemia linked interest to convenience and privacy, but raised concerns about side effects, effectiveness, injections, mistrust and stock-outs (12). Adolescents and young people in western Kenya described reduced pill burden and stigma alongside concerns about safety, pain, clinic attendance and health-system readiness (13). Prevention studies in rural Kenya and Uganda and in South Africa further showed that acceptability was shaped by product choice, counselling, confidence in protection and the burden of returning for injections (10, 14).

In Uganda, daily oral regimens are embedded in routines involving pill storage, dosing schedules, food, school, work, travel, relationships and disclosure (15, 16). However, locally grounded evidence remains limited on how prospective clients and providers compare long-acting treatment and prevention products and what service conditions they consider necessary before introduction. We therefore explored the perceived benefits, concerns and implementation requirements of long-acting injectable HIV treatment and prevention products among people living with HIV, PrEP users and healthcare providers in Uganda.

Methods

Study design

We conducted a qualitative study using focus group discussions (FGDs) with clients and key informant interviews (KIIs) with healthcare providers. We report the study in accordance with the 32-item Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist (17).

Study setting

Data were collected at Kajjansi Health Centre IV and Mildmay Hospital in Wakiso District. Kajjansi is a government primary referral facility serving an urban and peri-urban population and provides HIV testing, ART, oral PrEP, adherence counselling and viral-load monitoring. Mildmay is a private not-for-profit tertiary HIV referral and teaching facility that manages approximately 14,000 people living with HIV and about 300 HIV clinic attendances per day.

The sites were purposively selected to represent two service contexts: decentralized public-sector primary care and specialized high-volume HIV care. Long-acting injectable ART and PrEP were not routinely delivered at either facility during the study period; participant accounts therefore concerned anticipated use.

Sample size, sampling and participant eligibility

We used purposive maximum-variation sampling across three participant categories: people living with HIV receiving oral ART, current or previous oral PrEP users, and healthcare providers involved in HIV service delivery (18). Variation among clients was sought by age, sex, ART or PrEP experience, duration of oral-regimen use and previous adherence challenges. Provider variation was sought by professional cadre, programme role and facility.

Eligible clients were aged 15 years or older and were either living with HIV and had used oral ART for at least one year, or were current or previous oral PrEP users. Eligible key informants were clinicians, nurses, counsellors, pharmacy personnel, and facility or programme managers directly involved in HIV treatment or prevention services. People who did not meet these criteria were ineligible. Potential participants were identified from clinic records or provider referral and approached face-to-face by trained study staff; refusal did not affect access to care.

The final sample comprised 46 participants: 36 clients in six FGDs of six participants each and 10 healthcare providers in KIIs. Recruitment ended after six FGDs and 10 KIIs when reflexive debriefings indicated recurrence of the principal meanings across participant groups and adequate information power. No enrolled participant withdrew.

Data collection procedures

Semi-structured FGD and KII guides were developed from the study objectives and relevant literature. They explored oral ART or PrEP experience; knowledge of long-acting products; perceived benefits and risks; injection pain and adverse effects; confidentiality, stigma and disclosure; work, school and travel; appointment requirements; counselling; supply continuity; cost; and circumstances in which participants would accept or decline an injectable option. The guides were reviewed for clarity and cultural appropriateness, pilot-tested and refined before data collection.

After written informed consent from adults, and assent with parent or guardian permission for participants aged 15-17 years, FGDs were conducted in private rooms at Kajjansi Health Centre IV and Mildmay Hospital. Groups were segmented by sex, age and client category where appropriate. KIIs were conducted privately with providers and programme personnel. Sessions were held in English or Luganda according to participant preference, lasted 30-45 minutes (median 42 minutes), and were audio-recorded with permission.

Facilitators maintained field notes on group dynamics, non-verbal communication, context and preliminary analytic observations, and reviewed them during post-session debriefings. Only participants and the research team were present. No repeat interviews or FGDs were conducted. Participants received compensation in accordance with the ethics-approved protocol.

Research team and reflexivity

A four-member team conducted the FGDs and KIIs: WUM, a male medical doctor and lead facilitator; DM, a male medical doctor with HIV research experience and co-facilitator/KII interviewer; LM, a female final-year medical student and field note-taker; and KS, a female social scientist and qualitative methods lead. All were proficient in English and Luganda and received study-specific training in consent, confidentiality, neutral probing, group facilitation, audio-recording, field notes and reflexive practice.

WUM had a prior clinical and research relationship with some participants; the other facilitators did not. Before fieldwork, the team documented assumptions arising from their HIV-care experience and interest in long-acting technologies. Post-session debriefings, field notes and reflexive memos were used to examine how prior relationships, professional roles and expectations could influence data collection and interpretation.

Data management, analysis and trustworthiness

Audio-recordings were transcribed verbatim. Luganda sessions were transcribed in Luganda and translated into English by bilingual research staff. A second bilingual researcher checked the English translations against the Luganda transcripts and audio-recordings, and discrepancies were resolved before analysis. Personal identifiers were removed and provider names were replaced with participant codes.

We used a hybrid deductive-inductive thematic approach. Analysts read complete transcripts and prepared case summaries. An initial codebook combined domains from the interview guides, including pill burden, privacy, adverse effects, appointment requirements and service readiness, with inductive codes arising from the data, including the desire to see the products work, disclosure risks and concern about dependence on scheduled injections.

Two trained qualitative analysts, OS and AR, independently coded the transcripts in ATLAS.ti and reconciled differences through consensus meetings. RBK and AB provided senior review and adjudicated unresolved differences. Codes were compared by participant category, sex and ART or PrEP experience using a framework matrix (18), then consolidated into higher-order themes.

Analysts examined divergent accounts and differences between clients and providers. Final themes were checked against coded extracts, case summaries and complete transcripts to confirm coherence, distinction and grounding in the data.

Trustworthiness was supported through comparison of FGDs and KIIs, participant checking, peer debriefing, a version-controlled codebook, an analytic decision trail and external review of coding and theme development. Quotations were checked against coded transcripts; translations were reviewed by a second bilingual researcher. Repeated filler words were removed only where this improved readability without changing meaning.

Results

Participant and data corpus

The analysis included 46 participants represented in 16 transcripts: 36 clients who participated in six FGDs, with six participants per group, and 10 healthcare providers who completed KIIs. Client participants comprised people living with HIV receiving ART and current or previous PrEP users. FGDs were organized by age, sex and treatment or prevention status, where appropriate. Healthcare providers included clinicians, nurses, counsellors, pharmacy personnel and facility or programme managers involved in HIV service delivery. Overall, 22 participants (47.8%) were female and 24 (52.2%) were male, as shown in Table 1.

Table 1. Summary of study participants by sex and data-collection method

Participant group	Data-collection method	Sessions/transcripts, n	Female, n (%)	Male, n (%)	Total participants, n
People living with HIV receiving ART and current or previous PrEP users	FGDs	6	18 (50.0)	18 (50.0)	36
Healthcare providers	KIIs	10	4 (40.0)	6 (60.0)	10
Total		16	22 (47.8)	24 (52.2)	46

Each FGD included six participants.

Analysis generated four themes. Theme 1 described burdens associated with daily oral regimens, including pill-taking, medication visibility and disruption during work or travel. Theme 2 described concerns that could hinder injectable acceptance, including prolonged adverse effects, injection pain and the need for evidence. Theme 3 described differences associated with age, treatment experience, gender, employment and access to information. Theme 4 described service requirements related to provider preparation, appointment systems, supply, cost and access. The four themes, corresponding subthemes, and summary of participant accounts are presented in Table 2.

Table 2. Themes, subthemes and summary of participant accounts

Theme	Subthemes	Summary of participant accounts	Illustrative data sources
Reported challenges with daily oral regimens	Pill burden; medication visibility; travel and work disruption	Participants expected injections to reduce daily dosing, carrying and hiding pills, while noting the need for return visits.	Client FGDs and provider KIIs
Concerns that could hinder injectable acceptance	Prolonged adverse effects; pain and privacy; need for evidence	Participants requested evidence on effectiveness and adverse effects and described pain, fertility and reversibility concerns.	Client FGDs and provider KIIs
Differences by social and treatment context	Age and treatment history; disclosure; employment and information	Preferences varied with disclosure risk, treatment experience, work schedules and access to information.	Client FGDs and provider KIIs
Service requirements for injectable delivery	Provider preparation; appointment systems; supply, cost and access	Participants requested trained providers, reminders, missed-dose guidance, reliable supply and accessible services.	Client FGDs and provider KIIs

Theme 1: Reported challenges with daily oral regimens

This theme comprised three subthemes: pill burden and the daily reminder of HIV; medication visibility and involuntary disclosure; and disruption during travel and work.

Pill burden and the daily reminder of HIV

Participants reported that oral medication required them to remember dosing times, swallow, carry and sometimes hide pills, and at times plan food around treatment. Some described daily dosing as a repeated reminder of HIV and said an injectable option could reduce these burdens at school and during work or travel. A male FGD participant described these combined concerns:

"The idea of injectable ART made me happy because there will be no more pressures regarding hiding the pills while at school, failure to swallow the pills on time, and it will be easy for those who travel very far for work." **(FGD-M-01)**

A healthcare provider similarly reported that clients associated injectables with relief from pill timing and pill burden:

"What my clients say is that if they are injected, there is no worry about the pill burden or the timing for taking the pills, because time in adherence is very crucial." **(KII-HCW-03)**

Participants and providers also said that injectable use would require clients to remember and attend scheduled dosing visits.

Medication visibility and involuntary disclosure

Participants reported that pill bottles, the sound of tablets moving inside containers and fixed dosing times could reveal HIV status to partners, peers, co-workers or fellow travellers. They said an injectable option could reduce these disclosure risks. A male FGD participant described how taking medication in public created worry:

"You may be in public and it is time to take your medication, but you are worried to pull it out and take it. The injectable ART would stop us from worrying about people seeing us." **(FGD-M-02)**

Another male participant described how the sound of tablets in a pill container drew attention during travel:

"The tin with our pills makes so much noise in the taxi, especially when the taxi hits the humps. Everyone in the taxi will look at you in a suspicious way." **(FGD-M-01)**

Participants discussing school, shared housing and intimate partnerships reported that visible medication could lead to stigma, rejection or relationship problems. Some women said concealment was important where disclosure to a partner was considered unsafe.

Mobility, work and continuity during travel

Participants said injectable products could help them maintain treatment or prevention during abrupt travel, long-distance work and time away from home. They reported that carrying pills could be inconvenient, attract questions or fail when travel was unplanned. They also noted that frequent injection visits could be difficult for employees who could not leave work. A female participant recounted forgetting oral medication during travel:

"One day I travelled and noticed that I did not have my oral medication. If I had received the injectable ART, I would just travel knowing that nothing was demanding other than remembering the return date." **(FGD-F-01)**

Participants compared the frequency of injection visits with both daily dosing and multi-month oral refills. Some considered a two-monthly injection easier than daily tablets, whereas others preferred a six-month oral refill to frequent clinic visits.

Theme 2: Concerns that could hinder injectable acceptance

This theme comprised concerns about prolonged adverse effects, injection pain and bodily privacy, and the need for evidence and trusted information before accepting an injectable product.

Concerns about prolonged adverse effects

Participants contrasted the ability to stop tablets immediately with the perceived inability to remove a long-acting medicine after injection. They asked how long adverse effects would last and what treatment would be available if a problem occurred. A healthcare provider summarized this concern:

"For tablets, if you get any challenge, you can stop taking them. But if you take a two-month injection and get a problem tomorrow, there is no way they can reverse the effects." **(KII-HCW-01)**

Participants also referred to unknown effects and expressed mistrust of products introduced before communities had observed their use. Some raised fears about severe complications or effects on fertility.

Injection pain, site reactions and bodily privacy

Participants and providers reported fear of needles, pain, swelling, abscesses and exposure of the body during gluteal injections. They also said dosing frequency influenced acceptability: some who rejected monthly injections considered a six-monthly option acceptable. A healthcare provider described concerns about pain, abscesses and privacy:

"Some clients are hesitant about injections on the buttocks because of previous experiences where they may result in an abscess, pain or an invasion of privacy." **(KII-HCW-06)**

Another provider explained how injection frequency affected acceptability:

"If the injection is once a month, it is not worth it; if it is once in six months, then that is okay. The frequency of being pricked is a big factor." **(KII-HCW-09)**

Need for evidence, testimonials and provider information

Many participants said they would wait until they had seen results among people who had used the product. They wanted information on effectiveness and adverse effects and expected healthcare providers to explain differences between treatment and prevention products. A male FGD participant described the importance of local user experience:

"We need to first see and hear testimonies from those who have used it, because you may want it but you do not know how it will treat you." **(FGD-M-03)**

Another male participant said provider explanations would influence acceptance:

"Health workers have to tell us the benefits of the injectable ART over the daily oral pills so that we can accept to take it." **(FGD-M-01)**

Participants said that both local user experience and clear information from trusted providers would inform their decisions about injectable products.

Theme 3: Preferences differed by social and treatment context

This theme comprised differences associated with age, treatment history and comorbidity; disclosure and reproductive concerns; and employment, education and access to information.

Age, treatment history and comorbidity

Participants and providers reported that some adolescents and younger adults were interested in injectables because daily medication interfered with school, peer relationships and privacy. They described some older clients who were stable on oral ART as reluctant to change. They also reported differing views among people managing diabetes or other conditions involving injections. A healthcare provider compared perceived preferences among older and younger clients:

"The older clients are comfortable with daily oral ART, while younger clients are interested because of the burden of keeping time, taking medication every day and hiding it from colleagues." **(KII-HCW-06)**

Accounts varied within age groups, and participants linked preferences to treatment history, current regimen, previous injection experience and perceived disruption.

Gendered disclosure risk and reproductive concerns

Participants said some women might prefer injectables to reduce the risk of partners seeing their HIV medication, particularly where disclosure could lead to rejection or relationship conflict. They also reported fertility concerns. Some accounts described men as wanting stronger evidence, although views about gender were not consistent. A female FGD participant described concealment by both women and men:

"Women find it difficult to take their pills because they fear that their husbands may know their status, yet sometimes the men are also taking and hiding their drugs." **(FGD-F-02)**

Employment, education and access to information

Participants reported that injections could remove the need to take pills at work, but scheduled injection visits could require leave or explanations to employers. They also said people with greater access to trusted information were more likely to ask about new products, whereas others encountered rumours about cost, experimentation or government intentions. A male FGD participant described the trade-off between injection visits and multi-month oral refills:

"Those with jobs may be affected by hospital visits every two months. They may prefer pills that are refilled every six months." **(FGD-M-03)**

Theme 4: Reported service requirements for injectable delivery

This theme comprised provider knowledge and administration skills; appointment reminders and missed-dose plans; and reliable supply, affordability and accessible delivery.

Provider knowledge, counselling and administration skills

Participants said healthcare providers needed product-specific knowledge, injection skills, eligibility criteria, side-effect management plans and the ability to respond to misinformation. They reported that inconsistent information from staff could reduce confidence. A healthcare provider described the expected role of health workers:

"The health workers are meant to advise clients about side effects and how the drug works. If they do not know how to administer it or give a health talk about it, then patients' attitudes will be challenged." **(KII-HCW-01)**

Appointment reminders and missed-dose plans

Participants requested reminder calls or messages, flexible booking and clear instructions for delayed visits. Some said reminders could support attendance, while others worried about the consequences of missing an injection. A female FGD participant described when reminders should be sent:

"Doctors and counsellors should inform and remind us two days or one week before the appointment." **(FGD-F-06)**

Supply, cost and accessibility

Participants and providers raised concerns about stock-outs, cold-chain and storage capacity, staffing, private space, transport distance and cost. A healthcare provider described possible supply interruptions:

“Some facilities may run short of the drugs and have to wait until funds are available. The supply chain may be affected.” **(KII-HCW-07)**

A male FGD participant linked access problems to travel distance:

“Some people were not able to get tablets, not only because they did not want them, but because of distance.” **(FGD-M-05)**

Participants asked for injectable services to be integrated into existing HIV care, made available at peripheral facilities and supported by private administration space, trained staff and referral pathways for adverse events.

Discussion

Principal findings

This study shows that anticipated acceptance of long-acting injectable HIV products in Uganda was neither a simple dislike of pills nor an unconditional positivity for new technology. Participants evaluated injectables through the practical and emotional demands of daily oral regimens, the social risks of visible medication, their confidence in product safety and the reliability of the service system expected to deliver it. The most compelling perceived advantages were reduced pill burden, greater privacy, easier mobility and protection from daily forgetfulness. The most consequential concerns were prolonged or irreversible adverse effects, injection pain, uncertainty about effectiveness, misinformation and dependence on time-sensitive clinic visits.

The central interpretive finding is that acceptability was relational and conditional. A participant could simultaneously prefer the idea of an injection and delay adoption until peers had used it, providers could answer questions and supply was dependable. This distinction matters because hypothetical willingness can be high even when implementation conditions are weak. Demand should therefore be understood as something programmes produce or erode through counselling, service design and repeated experiences of reliability.

Comparison with existing evidence

The anticipated relief from pill burden, stigma and unintentional disclosure is consistent with Ugandan studies of both prospective users and people who had received injectable cabotegravir/rilpivirine (11, 12). Zakumumpa and colleagues found that clients with direct experience of long-acting treatment valued freedom from daily reminders, privacy and reduced stigma, while providers identified missed appointments, cost, cold-chain, space and workforce constraints (11). The convergence between experienced users and our participants’ anticipatory accounts increases confidence that these are not

abstract preferences; they are plausible mechanisms through which long-acting treatment may improve daily life (19).

Our findings also align with evidence among adolescents and young people in western Kenya, where reduced pill burden and easier adherence coexisted with concerns about safety, injection discomfort and delivery readiness (13). The prominence of school, peer visibility and the sound of pills in containers illustrates how formulation preferences are embedded in adolescent social environments (20). However, participants in our study also warned against assuming that youth automatically prefer injections. Frequency, anatomical site, evidence of safety and clinic accessibility remained decisive.

The prevention findings reinforce the importance of choice. In the SEARCH Dynamic Choice extension in rural Kenya and Uganda, cabotegravir was feasible and acceptable among users when integrated into a choice-based model (10). Qualitative work in South Africa similarly showed that counselling and the ability to choose among methods shaped women's PrEP experiences (14). These studies support our interpretation that programmes should not market a long-acting product as universally superior. A product can be highly efficacious while still being a poor fit for a client who values self-administration, fears injections, has difficulty attending clinics or experiences changing prevention needs.

Participants' concern about the inability to "reverse" an injection is particularly important. Long duration is the defining advantage of products such as twice-yearly lenacapavir, but it creates a different risk calculus from oral regimens (1, 5, 6). Effective communication should acknowledge this trade-off, describe expected local and systemic reactions, explain clinical management and avoid promising that long-acting products are risk-free. Trust is more likely to grow from transparent uncertainty than from promotional messages that minimize legitimate questions.

Implementation and policy implications

The findings support five priorities for Ugandan implementation.

1. Differentiate treatment and prevention counselling. Cabotegravir/rilpivirine for treatment, cabotegravir for prevention and lenacapavir for prevention have different indications, dosing schedules, injection routes, eligibility requirements and missed-dose considerations. Umbrella messaging about "the injection" risks confusion.
2. Make benefit-centered counselling specific and balanced. Clients should be helped to consider privacy, pill burden, travel and routine fit, while receiving equally clear information on pain, side effects, clinic schedules and what happens when a dose is late.
3. Prepare appointment and continuity systems before scale-up. Registries, reminders, rapid follow-up, differentiated booking, tracing safeguards and clinically appropriate bridging procedures are core components of the intervention.

4. Build provider and facility readiness. Training should cover product knowledge, eligibility, administration, adverse-event management, respectful myth correction and shared decision-making. Facilities need private space, reliable stock, storage systems and referral capacity.
5. Design for equity and choice. Decentralized delivery, flexible hours, transport-sensitive models, gender-responsive counselling and safe disclosure support are needed so that work, distance, disclosure risk and limited access to information do not determine who benefits.

These priorities are consistent with broader analyses of barriers to long-acting product uptake in low- and middle-income countries, which identify affordability, procurement, workforce, cold chain, monitoring and differentiated delivery as central implementation constraints (19,20). The policy objective should not be maximal uptake of a single technology, but sustained access to a reliable method mix in which clients can make informed choices.

Strengths and limitations

A major strength of this study is the inclusion of client and provider perspectives, allowing anticipated product value to be interpreted alongside delivery constraints. FGDs captured shared social meanings around stigma, work, gender and community narratives, while KIIs provided insight into counselling, workflow and supply systems. The analysis retained tensions and negative cases rather than collapsing findings into a simple list of facilitators and barriers. Reporting against COREQ and the accompanying completion matrix make methodological gaps explicit.

Several limitations require careful interpretation. First, most accounts concerned anticipated rather than experienced use; participants may evaluate products differently after injections become routinely available. Second, the term “long-acting injectable” may have evoked different products and dosing intervals across participants, particularly where knowledge was limited. Third, clinic-based recruitment may under-represent people disengaged from HIV services or unable to attend facilities, although these groups may face the greatest delivery barriers. Fourth, group discussions can be influenced by dominant speakers and social desirability, particularly when healthcare staff are associated with the study. Finally, the findings are context-specific and should inform transferability rather than statistical generalization.

Conclusion

Long-acting injectable HIV treatment and prevention products were perceived as offering meaningful relief from pill burden, medication visibility, stigma and disruption during travel. Yet participants’ interest was contingent on evidence, product-specific information, manageable adverse effects and confidence that health services could deliver every dose reliably. Acceptability should therefore be treated as a dynamic implementation outcome created at the intersection of biomedical attributes, lived experience and service performance. Uganda’s roll-out strategy should combine informed choice, differentiated counselling and community trust-building with robust appointment systems, trained providers, reliable

supply and equitable access. The success of long-acting products will be judged not by initial positivity alone, but by whether clients can start, continue and safely switch methods within a dependable HIV service system.

Abbreviations

ART, antiretroviral therapy; COREQ, Consolidated Criteria for Reporting Qualitative Research; FGD, focus group discussion; HCW, healthcare worker; HIV, human immunodeficiency virus; KII, key informant interview; MUREC, Mildmay Uganda Research Ethics Committee; NIHR, National Institute for Health and Care Research; PrEP, pre-exposure prophylaxis; WHO, World Health Organization

Declarations

Ethics approval and consent to participate

The Mildmay Uganda Research Ethics Committee approved the parent study (MUREC-2026-1828). The study was conducted in accordance with the Declaration of Helsinki. Adults provided written informed consent; participants aged 15-17 years provided written assent with permission from a parent or legally authorized guardian, in accordance with the approved protocol.

Consent for publication

Participants consented to the use of de-identified quotations for research dissemination.

Availability of data and materials

De-identified qualitative data are not publicly available because transcripts contain potentially identifying contextual information. Data may be made available on reasonable request to the corresponding author and subject to ethics, institutional and participant-confidentiality requirements.

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Competing interests

The authors declare no competing interests.

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Authors' contributions

WUM led the study conceptualization, methodology, funding acquisition, investigation, project administration, supervision, formal analysis and preparation of the original manuscript. IS, DM contributed to methodology, investigation, analysis and manuscript review. NA, MF and CB contributed to investigation, data curation and manuscript review. CS, CK, RBK contributed to methodology, senior analytic review, supervision and manuscript revision. AB contributed to methodology, analysis, data interpretation and manuscript revision. All authors approved the final manuscript and accept accountability for the work

References

1. Organization WH. Guidelines on lenacapavir for HIV prevention and testing strategies for long-acting injectable pre-exposure prophylaxis. 2025.
2. Organization WH. Guidelines on long-acting injectable cabotegravir for HIV prevention: World Health Organization; 2022.
3. Landovitz RJ, Donnell D, Clement ME, Hanscom B, Cottle L, Coelho L, et al. Cabotegravir for HIV prevention in cisgender men and transgender women. New England Journal of Medicine. 2021;385(7):595-608.
4. Delany-Moretlwe S, Hughes JP, Bock P, Ouma SG, Hunidzarira P, Kalonji D, et al. Cabotegravir for the prevention of HIV-1 in women: results from HPTN 084, a phase 3, randomised clinical trial. The Lancet. 2022;399(10337):1779-89.
5. Bekker L-G, Das M, Abdool Karim Q, Ahmed K, Batting J, Brumskine W, et al. Twice-yearly lenacapavir or daily F/TAF for HIV prevention in cisgender women. New England Journal of Medicine. 2024;391(13):1179-92.
6. Kelley CF, Acevedo-Quiñones M, Agwu AL, Avihingsanon A, Benson P, Blumenthal J, et al. Twice-yearly lenacapavir for HIV prevention in men and gender-diverse persons. New England Journal of Medicine. 2025(13):1261-76.
7. Kityo C, Mambule IK, Musaazi J, Sokhela S, Mugerwa H, Ategeka G, et al. Switch to long-acting cabotegravir and rilpivirine in virologically suppressed adults with HIV in Africa (CARES): week 48 results from a randomised, multicentre, open-label, non-inferiority trial. The Lancet Infectious Diseases. 2024;24(10):1083-92.

8. Kityo C, Mambule IK, Musaazi J, Sokhela S, Mugerwa H, Yawe I, et al. Cabotegravir and rilpivirine for treatment of HIV infection in Africa: week 96 results from the phase 3b randomized, open-label, noninferiority CARES trial. Nature medicine. 2026;32(1):168-77.
9. Schmidt HMA, Rodolph M, Schaefer R, Baggaley R, Doherty M. Long-acting injectable cabotegravir: implementation science needed to advance this additional HIV prevention choice. Journal of the International AIDS Society. 2022;25(7):e25963.
10. Kakande ER, Balzer LB, Kabami J, Ayieko J, Chamie G, Sutter N, et al. Feasibility and acceptability of persons on long-acting cabotegravir for HIV prevention in the SEARCH Dynamic Choice HIV Prevention trial extension in rural Kenya and Uganda: a longitudinal cohort study. Journal of the International AIDS Society. 2025;28:e26465.
11. Zakumumpa H, Alinaitwe A, Kyomuhendo M, Nakazibwe B. Long-acting injectable antiretroviral treatment: experiences of people with HIV and their healthcare providers in Uganda. BMC Infectious Diseases. 2024;24(1):876.
12. Kennedy CE, Zhao T, Vo AV, Nakubulwa R, Nabakka P, Jackson J, et al. High acceptability and perceived feasibility of long-acting injectable antiretroviral treatment among people living with HIV who are viremic and health workers in Uganda. AIDS patient care and STDs. 2023;37(6):316-22.
13. Hassan SA, Munyoro D, Maju M, Biegon W, Bakari S, Kaguiri E, et al. Perceived benefits and barriers to the use of long-acting injectable antiretroviral treatment among adolescents and young people living with HIV in Western Kenya: qualitative findings from the KuwaFree! LiveFree! Study. Frontiers in Medicine. 2025;12:1518719.
14. Dada S, Musvipwa FM, Cholo FA, Pleaner M, Kutywayo A, Butler V, et al. “People have options”: a qualitative study of experiences and influences of PrEP choice among women in South Africa. Journal of the International AIDS Society. 2025;28:e26462.
15. Atukunda EC, Owembabazi M, Pratt MC, Psaros C, Muyindike W, Chitneni P, et al. A qualitative exploration to understand barriers and facilitators to daily oral PrEP uptake and sustained adherence among HIV-negative women planning for or with pregnancy in rural Southwestern Uganda. Journal of the International AIDS Society. 2022;25(3):e25894.
16. Stecher C, Palimaru AI, Odiit M, Lunkuse L, Walukaga S, Linnemayr S. Barriers and facilitators of antiretroviral therapy (ART) adherence habit formation in Sub-Saharan Africa: Evidence from a qualitative study in Kampala, Uganda. Social Science & Medicine. 2023;317:115567.
17. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International journal for quality in health care. 2007;19(6):349-57.
18. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Administration and policy in mental health and mental health services research. 2015;42(5):533-44.
19. Sekhon M, Cartwright M, Francis JJ. Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. BMC health services research. 2017;17(1):88.

20. Kose J, Howard T, Lenz C, Masaba R, Akuno J, Woelk G, et al. Experiences of adolescents and youth with HIV testing and linkage to care through the Red Carpet Program (RCP) in Kenya. PloS one. 2024;19(1):e0296786.