# Integrating HIV and STI prevention with family planning services for adolescent girls and young women in Kisumu, Kenya

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Abstract

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**Introduction:** Expedited partner treatment (EPT) is effective for preventing STI reinfection, but concerns about intimate partner violence and missed opportunities for HIV testing have limited its use in African settings.

**Methods**: We conducted a pilot prospective evaluation of EPT among adolescent girls and young women (AGYW) accessing HIV pre-exposure prophylaxis in an implementation project in Kisumu, Kenya. Those diagnosed with *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (GC) by nucleic acid amplification testing were treated and given the option of delivering STI treatment and HIV self-test kits to their current sexual partner(s). Three months after the index AGYW was enrolled, we assessed their experience with delivery of EPT and uptake of services by partners. We compared STI reinfection rates among those successfully delivering EPT to those who did not.

**Results:** Between September 2018 and March 2020, 63 AGYW with 74 STIs (68 CT, 13 NG and 7 both CT and NG positive) were enrolled. The majority 59/63 (94%) accepted EPT and 50/63 (79%) partner HIVST. Three-quarters (46/59) of those accepting EPT returned for the assessment visit with 41/46 (89%) successfully delivering treatment to 54 partners, of whom 49/54 used it. Seventy percent (35/50) who took partner HIVST kits returned for the assessment with 80% (28/35) reporting providing kits to 40 partners, of whom 38/40 (95% ) used it. Reported barriers to EPT and HIVST distribution included fear that the partner could become angry or violent, and or loss of relationship.

**Conclusion:** Both EPT and partner HIVST were acceptable despite the noted barriers among Kenyan AGYW with etiologic diagnosis of CT/NG and their partners.

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## INTRODUCTION

Women have the highest prevalence in the global epidemic of sexually transmitted infections (STIs) as well as bear the most significant complications from STIs (1, 2). Untreated STIs carry significant acute and chronic morbidity for women including pelvic inflammatory diseases, chronic pelvic pain, and infertility (3). Moreover, STIs have been associated with increased susceptibility to HIV acquisition and transmission (4, 5). For persons starting and using pre-exposure prophylaxis (PrEP) to prevent HIV acquisition, STI screening and treatment at initiation and periodically during follow up is recommended by the United States Centers for Disease Control and Prevention (CDC), World Health Organization and Kenya National AIDs and STI control Program (6-8). Adolescent girls and young women (AGYW), and other persons using PrEP worldwide, in theory have more high risk behaviors than the general population and a recent systematic review and meta-analysis found them to have high prevalence and incidence of STIs (9).

Primary and secondary prevention strategies have been used to control STIs. Primary strategies, which aim to prevent acquisition, involve counseling on risk reduction as well as condom promotion and provision for both general and at risk populations (10). Secondary strategies, focus on prevention of complications and further transmission with case management either through syndromic or laboratory diagnosis, provision of effective medications to cure STIs, and treatment of sex partners (10). Despite these efforts, reinfection rates in women, likely resulting from transmission from untreated male sexual partners, continue to be high (11, 12). In many settings, STI partner treatment has focused on partner notification – i.e., informing partners through a referral note, phone calls, or other mechanisms, with mostly passive assumptions that partners subsequently sought treatment. In many low income countries, male partners infrequently visit health facilities and studies in these countries have shown that half of partners who are referred using partner notification do not go for treatment (13).

An alternative STI partner management strategy is expedited partner treatment (EPT), a clinical practice of presumptively treating the sex partners of patients diagnosed with an STI by providing medication to the patient to deliver to the partner(s) without the health care provider examining the partner(s) (14). Clinical trials done in high income settings have shown that EPT can lower the risk of STIs recurrence by about 29% when compared to standard partner management strategies (15). In addition, both the US CDC and the American College of Obstetricians and Gynecologists (ACOG) recommend EPT for the prevention of

gonorrhea and chlamydial reinfection (16, 17). Despite these recommendation, only a few studies on EPT among AGYW have been done in Africa. These studies were conducted among pregnant women in Kenya and non-pregnant women in South Africa and reported acceptability of 89% and 87% respectively (18, 19).

One major concern with EPT for STIs is the missed opportunity to test sexual partners for HIV (20). The US CDC does not recommend EPT for men who have sex with men (MSM) because of high risk of coexisting infection with undiagnosed HIV. Since the male partners of AGYW in low income countries are less likely to go to the clinic to receive STI treatment, it is expected that they will most likely not visit HIV testing centers and therefore including HIV self-testing (HIVST) kits for the partners to accompany EPT could overcome HIV testing missed opportunities. Partner-delivered HIVST has been found to be safe and acceptable when provided to women in Africa (21, 22) but to the best of our knowledge, no study has coupled EPT with partner HIVST in the African region. .

We therefore sought to add into the already existing literature on EPT in Africa by evaluating the uptake, safety and effectiveness of EPT among AGYW enrolled in a PrEP implementation science project and diagnosed with *Chlamydia trachomatis* or *Neisseria gonorrhoeae* in Kisumu, Kenya, which included the novel intervention of providing women with HIVST kits as well as antibiotics to take to their partners.

## METHODS

### Study setting, population and design

This was a prospective cohort pilot study among young women, nested within the Prevention Options for Women Evaluation Research (POWER), an implementation science project that evaluated delivery of HIV pre-exposure prophylaxis (PrEP) to adolescent girls and young women (AGYW) attending two family planning clinics in Kisumu, Kenya (ClinicalTrials.gov NCT03490058). Eligibility criteria for the POWER cohort were: 16-25 years old, able and willing to provide written informed consent, recently sexually active (defined as having had vaginal intercourse at least once in the previous three months) and HIV uninfected on the date of enrollment. In the POWER study, which was conducted between August 2017 and March 2020, AGYW were offered PrEP and were followed up after one month and then quarterly for up to 36 months. All AGYW had testing for STIs at baseline and after every 6 months, specifically for CT and GC using nucleic acid amplification testing (NAAT) from a urine specimen using the APTIMA Combo 2 Assay

(HOLOGIC/GEN-PROBE, Inc. San Diego, CA). Those who tested positive were offered standard medication according to the Kenya National STI medication guidelines.

This nested EPT and partner HIV self-test pilot study was conducted between September 2018 and March 2020. All women enrolled in POWER study who tested positive (within two months of their test results) for either CT or GC or both at the two family planning clinics were eligible to participate. Women with a positive STI result were invited to participate when being informed of the results either via a phone call or when attending a scheduled POWER study visit. Willing women gave written informed consent during their POWER study visit or at their next visit after the phone invitation and received counseling on the importance of partner medication and partner HIV testing in the context of STI diagnosis. Women who initially declined were not offered EPT later.

**Intervention**

The intervention involved giving women a partner treatment package (or packages, if multiple partners) that included Kenyan standard of care STI medication plus an HIV self-testing (HIVST) kit (OraQuick® HIV Self-Test, OraSure Technologies, USA), with instructions for use. STI medication consisted of a single dose of oral cefixime 400 mg for *Neisseria gonorrhoeae* and a single dose of oral azithromycin 1000mg for *Chlamydia trachomatis* (or both drugs for women with co-infection). All enrolled women who had more than one partner were provided with additional medication and HIVST for each extra partner as per their choice, though we strongly encouraged them to take medication for all partners where feasible. STI medication was accompanied by a medication card that contained information about the drug including the dosage, side effects, instruction not to take the medication in case they had had an allergic reaction in the past and a 24 hour emergency contact in case they experienced any adverse drug event. Additionally, women were instructed to inform their partners that any positive HIV test would need to be confirmed at a HIV testing center in accordance with the Kenya national HIV testing algorithm.

**Study visit and data collection**

For each positive STI episode, two visits were conducted: a dispensing visit, the visit the participant had after the positive STI results were made available and EPT was offered, and an assessment visit, the first visit after the dispensing visit. The assessment visit was synchronized with the next visit in the parent POWER study.

Standardized questionnaires were administered by a research assistant during the dispensing visit to collect information about the women's willingness to take EPT and HIVST, reasons for declining if applicable, and the characteristics of their relationship with their partner(s). During the assessment visit, we again administered questionnaires to collect information on whether they had given EPT and HIVST to their partners, how their partners reacted and if they took the medication and used the HIVST. The male partners were not considered as participants and were not contacted to provide any information. All repeat STIs test were obtained from the AGYW study visit in POWER where STI results were done at baseline and after every six months. All the repeat STI results were done more than one month after the EPT intervention.

**Assessment of social harm**

Any responses at the assessment visit that indicated that the partner had responded by becoming "angry", "violent", or "ended our relationship" were flagged and followed up with the study sites. After reviewing the sites' summary of each flagged situation, those deemed to meet the criteria of an Institution Regulatory Boards (IRB) reportable social harm were reported and the AGYW was referred for counselling or to the gender based violent center in JOOTRH.

**Measures**

Uptake was assessed by the proportion of women who accepted to take STI medication and partner HIVST kits to their partners and by the proportion of partners who accepted to use STI medication and partner HIVST kits. Safety was assessed by the proportion of response categories for declining EPT and HIVST, reasons for not delivering, and reactions of the partners after receiving STI medication and HIVST kits. Effectiveness was assessed by 1) Comparing reinfection rates between women enrolled in EPT whose partners accepted and used the STI medication and women enrolled in the POWER study who were not offered medication to take to their partners prior to and during the implementation of this pilot study and 2) Comparing STI reinfection rates within women enrolled in EPT between those whose partners used the STI medication and those whose partners did not.

**Ethical consideration**

The study protocol, informed consent forms, and participant education materials were reviewed and approved by the Institution Regulatory Boards/Ethics Committee at the Kenya Medical Research Institute (KEMRI) and University of Washington (UW).

**Statistical analysis**

We compared demographics, behavioral and relationship characteristics between women who accepted and declined EPT as proportions using chi-square tests or Fisher's exact test. We calculated the proportions of women who accepted EPT and partner HIVST and used log-Poisson generalized estimating equations (GEE) with robust standard errors and independence correlation structure to assess factors related to EPT and partner HIVST uptake. All women with an assessment visit were included in an analysis to describe the proportion of women who delivered STI medication and partner HIVST kits to their partners, the response categories for their experience with delivery and the proportion of partners who accepted and used the delivered STI medication and partner HIVST kits. We calculated the number of STI reinfections among women enrolled in EPT whose partners used the STI medication, among women enrolled in EPT whose partners did not use EPT (woman declined, woman did not deliver or partner refused) and among women enrolled in POWER who were not offered EPT. We then calculated and compared the unadjusted incidence rates of STI infections between the groups. We used two-sided p-values and considered them significant if $<0.05$. All analyses were done using Stata/SE 15.1.

**RESULTS**

Between 24th September 2018 and 27th March 2020, a total of 139 STIs episodes (126 *Chlamydia trachomatis*, 28 *Neisseria gonorrhoeae*, 15 both) were diagnosed in 124 AGYW (14 women contributed two episodes, one woman contributed three episodes while the rest contributed one episode each). Due to logistical challenges principally related to a laboratory closure resulting in very long periods between sample collection and STI results, 52 women were not assessed for eligibility to join this EPT and partner HIVST pilot. Seventy two (72) women were screened, of whom 64 met the inclusion criteria and 63 were enrolled; one woman declined to provide consent and eight had a gap in follow-up so that their time from STI diagnosis to being approached

for the study was more than two months. Of the 63 enrolled, 48 (76%) returned for the assessment visit and provided information on 70 male partners.

**Participant characteristics**

Among the 63 enrolled, the median age was 20 years (interquartile range 19-22), 52 (82.5%) were single, 23 (36.5%) had more than one sex partner, and 53 (84.1%) had primary partners who were older than them. Condom use was low, with 34 (54.0%) reporting inconsistent use and 24 (38.1%) no use. Nearly half (n=30, 47.6%) thought that their primary partner had other sex partners (**Table 1**).

**Table 1. Characteristics of Adolescents girls and young women with Chlamydia trachomatis or Neisseria gonorrhoeae according to those that accepted and declined expedited partner medication (EPT)**

| Variable | Total n=63 | | Accepted EPT | | Declined EPT | | p-value |
|---|---|---|---|---|---|---|---|
| | N | (%) | N | (%) | N | (%) | |
| | 63 | (100%) | 59 | (93.7%) | 4 | (6.3%) | |
| **Age categories in years** | | | | | | | |
| 16-18 | 11 | (17.2) | 10 | (15.6%) | 1 | (1.6%) | 0.38 |
| 19-21 | 32 | (50.8%) | 29 | (46.0%) | 3 | (4.8%) | |
| 22-25 | 20 | (31.8%) | 20 | (31.8%) | 0 | (0.0%) | |
| **Marital status** | | | | | | | |
| Married | 11 | (17.5%) | 11 | (17.5%) | 0 | (0.00%) | 1.00 |
| Single | 52 | (82.54%) | 48 | (76.2%) | 4 | (6.35%) | |
| **Number of current sex partners** | | | | | | | |
| One | 40 | (63.5%) | 37 | (58.7%) | 3 | (4.8%) | 1.00 |
| Multiple | 23 | (36.5%) | 22 | (34.9%) | 1 | (1.6%) | |
| **Condom use** | | | | | | | |
| Always | 5 | (7.9%) | 3 | (4.8%) | 2 | (3.2%) | 0.06 |
| Sometimes | 34 | (54.0%) | 33 | (52.4%) | 1 | (1.6%) | |
| Never | 24 | (38.1%) | 23 | (36.5%) | 1 | (1.6%) | |
| **Age difference with partner** | | | | | | | |
| Younger | 6 | (9.5%) | 6 | (9.5%) | 0 | (0.0%) | 0.63 |
| Same age | 4 | (6.4%) | 4 | (6.3%) | 0 | (0.0%) | |
| Older | 53 | (84.1%) | 49 | (77.8%) | 4 | (6.4%) | |
| **Type of relationship** | | | | | | | |
| Primary sexual partner | 54 | (85.7%) | 51 | (81.0%) | 3 | (4.8%) | 0.08 |
| Casual sexual partner | 3 | (4.8%) | 2 | (3.2%) | 1 | (1.6%) | |
| Transactional sexual partner | 5 | (7.9%) | 5 | (7.9%) | 0 | (0.0%) | |
| **Duration of relationship** | | | | | | | |
| Less than 6 months | 11 | (17.46%) | 10 | (15.87%) | 1 | (1.6) | 0.22 |
| 6 months to 1 year | 5 | (7.9%) | 5 | (7.9%) | 0 | (0.0%) | |
| 1 year to 2 years | 11 | (14.4%) | 9 | (14.2%) | 2 | (3.2%) | |
| 2 or more years | 36 | (57.2%) | 35 | (55.6%) | 1 | (1.6%) | |
| **Partner has other sex partners** | | | | | | | |
| Yes | 30 | (46.6%) | 29 | (46.0%) | 1 | (1.6%) | 0.40 |
| No | 9 | (14.3%) | 9 | (14.3%) | 0 | (0.0) | |
| Don’t know | 24 | (38.1%) | 21 | (33.3%) | 3 | (4.8%) | |

**Uptake of EPT and partner HIVST**

Of the 63 women enrolled, 59 (94%) accepted EPT (**Table 2**). Of the 59, 22 (37%) had more than one partner of which 11/22 (50%) took medication for all the partners while the rest took for only one partner. More than three-quarters (46/59) who took medication to their partners returned for the assessment visit and 41/46 (89%) reported that they gave the medication to their partners. Among these 46 women, a total of 60 male partners were expected to have been given medication and women reported that 54/60 (90%) received the medication and 49/54 (90%) used it. For partner HIVST, of the 63 women enrolled, 50 (79%) accepted to take the kit to their partners. Of the 50, 19 (38%) had more than one partner of which 11/19 (58%) took a kit for all the partners while the remaining took a kit for only one partner. Seventy percent (35/50) who took partner HIVST returned for the assessment visit and 28/35 (80%) reported that they gave the kit to their partners. For the 28 women, a total of 50 male partners were expected to have been given the kit and women reported that 40/50 (80%) received the kits and 38/40 (95%) used them.

**Table 2. Uptake of expedited partner medication and partner HIV self-test kits among AGYW and their partners**

| | **Yes** | | **No** | |
|---|---|---|---|---|
| **Women EPT uptake n=63** | N | (%) | N | (%) |
| Took STI medication to partner | 59 | (93.7 %) | 4 | (6.3 %) |
| Returned for assessment visit | 46 | (78.0%) | 13 | (22.0%) |
| Gave STI medication to partner | 41 | (89.1%) | 5 | (10.9%) |
| **[1]Men EPT uptake n=60** | | | | |
| Partners given medication | 54 | (90.0%) | 6 | (10.0%) |
| Partner took the medication | 49 | (90.7%) | 5 | (9.3%) |
| **Women partner HIVST uptake n=63** | | | | |
| Took HIV self-test kit to partner | 50 | (79.0%) | 13 | (21.0%) |
| Returned for assessment visit | 35 | (70.0%) | 15 | (30.0%) |
| Gave HIV self-test kit to partner | 28 | (80.0%) | 7 | (20.0%) |
| **[1]Men HIVST uptake n=50** | | | | |
| Partners given HIV self-test kit | 40 | (80.0%) | 10 | (20.0%) |
| Partner took HIV self-test | 38 | (95.0%) | 2 | (5.0%) |

EPT: expedited partner medication
HIVST: HIV self-test
[1]as reported by women who returned for assessment visit

**Factors associated with uptake of EPT and partner HIVST**

Having a partner who was more than 10 years older (risk ratio [RR] 0.67, 95% CI (confidence interval) 0.47 to 0.94, p-value=0.022), lack of knowledge if the partner has other partners (RR 0.85, 95% CI 0.74 to 0.98, p-

value=0.025) and knowledge that the partner has other partners (RR 0.82, 95% CI 0.72 to 0.93, p-value=0.002) were associated with a lower chance of EPT uptake (**Table 3**). The participants' age, number of sexual partners, condom use, duration in the relationship, and knowledge of whether her partner had other sexual partners were not significantly associated with uptake of partner HIVST.

**Table 3. Factors associated with women uptake of expedited partner medication (EPT) and partner HIV self-test (HIVST)**

| | EPT(N=63) | | Partner HIVST(N=63) | |
|---|---|---|---|---|
| | Risk ratio (RR) | 95% CI | Risk ratio (RR) | 95% CI |
| **Age in years** | | | | |
| 16-18 | Reference | | Reference | |
| 19-21 | 0.95 | 0.75, 1.20 | 0.80 | 0.57, 1.13 |
| 22-25 | 1.03 | 0.82, 1.29 | 0.81 | 0.57, 1.17 |
| **Number of partners** | | | | |
| One | Reference | | Reference | |
| Multiple | 0.88 | 0.74, 1.04 | 0.85 | 0.64, 1.15 |
| **Condom use** | | | | |
| Always | Reference | | Reference | |
| Sometimes | 1.84 | 0.78, 4.36 | 0.93 | 0.60, 1.44 |
| Never | 1.65 | 0.69, 3.92 | 1.01 | 0.66, 1.54 |
| **Age of partner** | | | | |
| Same age | Reference | | Reference | |
| 1-5 years younger | 0.82 | 0.61, 1.09 | 1.21 | 0.59, 2.49 |
| 1-5 years older | 0.89 | 0.81, 0.99 | 1.23 | 0.59, 2.57 |
| 6-10 years older | 0.81 | 0.62, 1.06 | 1.03 | 0.44, 2.41 |
| More than 10 years older | 0.67 | 0.47, 0.94 | 1.67 | 0.81, 3.43 |
| **Duration of relationship** | | | | |
| Less than six months | Reference | | Reference | |
| 6 months to 1 years | 1.08 | 0.79, 1.47 | 1.33 | 0.91, 1.94 |
| 1 to 2 years | 0.91 | 0.63, 1.30 | 0.95 | 0.66, 1.36 |
| More than 2 years | 1.03 | 0.78, 1.36 | 1.06 | 0.76, 1.49 |
| **Thinks partner has other partners** | | | | |
| No | Reference | | Reference | |
| Don't Know | 0.85 | 0.74, 0.98 | 1.05 | 0.67, 1.64 |
| Yes | 0.82 | 0.72, 0.93 | 1.03 | 0.67, 1.59 |

CI- confidence interval

**Safety of EPT and partner HIVST**

Responses (one per STI episode per partner) given by women for declining to take STI medication and HIVST to partners, not giving STI medication and HIVST to partner and partners' reaction after receiving STI medication and HIVST indicated barriers to EPT and partner HIVST exist (**Table 4**). Out of 14 responses given by the four AGYW that declined EPT, 2/14 (14%) indicated being afraid that her partner would become angry or thought her partner might end the relationship 1/14 (7%). The most common reported reaction of partners after receiving EPT was acceptance 49/54 (91%) with a small proportion of AGYW reporting that

their partner reacted angrily 6/54 (11%) or ended the relationship 2/54 (0.04%). The most common reason for AGYW's refusal to accept to take the partner HIVST kits was the knowledge that the partner routinely gets tested 16/25 (64%). Only 2/25 (8%) responses by AGYW who refused to take HIVST kits were due to being afraid that her partner would become violent. Similar to EPT, the most common reported response of partners after receiving HIVST kits was acceptance 36/40 (90%). A few partners 2/40 (5%) got angry or raised suspicions of the participant having other partners. There were a total of n=10 AGYW with n=11 flags for possible social harm situations (one participant had a flag for two partners). After reviewing the site's summary of each flagged situation, none were deemed to meet the criteria of an IRB reportable social harm because they were within the scope of 'expected' reactions to study procedures. The AGYW were however followed up and given further counseling.

**Table 4. Reasons for declining and experience with delivering expedited partner medication (EPT) and partner HIV self-test (HIVST)**

| Item | EPT | | HIVST | |
|---|---|---|---|---|
| | N | (%)* | N | (%)* |
| **ϕReasons for declining to take EPT/partner HIVST** | | | | |
| Afraid he will get angry | 2/14 | (14%) | 1/25 | (4%) |
| Afraid he will get violent | 0 | | 2/25 | (8%) |
| Afraid he will think I have other sex partners | 0 | | 0 | |
| Afraid he will end our relationship | 1/14 | (7%) | 1/25 | (4%) |
| He is away, I will not see him | 3/14 | (21%) | 2/25 | (8 %) |
| No longer having sex with partner | 2/14 | (14%) | 1/25 | (4%) |
| Partner gets routine HIV testing | N/A | | 16/25 | (64 %) |
| Other[1] | 8/14 | (57%) | 5/25 | (24 %) |
| **#Reasons for not giving to partner** | | | | |
| Afraid he would become angry | 0 | | 0 | |
| Afraid he would become violent | 0 | | 0 | |
| Afraid he would think I have other sex partners | 0 | | 0 | |
| Afraid he would end our relationship | 0 | | 0 | |
| He is away, I have not seen him | 0 | | 0 | |
| No longer having sex with partner | 1/6 | (17%) | 2/10 | (20%) |
| Other[2] | 5/6 | (83%) | 10/10 | (100%) |
| **#Partners reaction to receiving** | | | | |
| He accepted it | 49/54 | (91%) | 36/40 | (90%) |
| He got angry | 6/54 | (11%) | 2/40 | (5%) |
| He got violent | 0 | | 0 | |
| He thought I had other sex partners | 1/54 | (2%) | 2/40 | (5%) |
| He ended our relationship | 2/54 | (4%) | 0 | |
| Other[3] | 7/54 | (13 %) | 14/40 | (35%) |

ϕ Assessed at enrollment

# Assessed at 3 months follow up

Same questions were asked for both EPT and partner HIVST except for the question on HIV testing.

N: Unit of analysis is number of responses and not number of AGYW or partners like in table 1-3.

(%)* Percentages may add up to more than 100% because women were allowed to give more than one response that applied
Other[1]-EPT: Going to use condoms, partner was treated in the facility (2), wanted to talk to partner first, does not believe that partner has the infection, did not want him to be treated, angry at the partner, partner will not take.
Other[1]-HIVST: Partner is HIV positive (3), wanted to test together at HTS center, angry at the partner,
Other[2]-EPT: Partner asked they go to the hospital (2), partner disappeared, partner believed he did not have the infection, angry at the partner.
Other[2]-HIVST: Tested with the partner at HTS center (2), stopped dating the partner (2), Partner disappeared, partner said he was HIV positive, still thinking about it, partner refused, angry at the partner, misplaced the kit.
Other[3]-EPT: Took time to take the drugs, asked if they will heal him, he did not talk about it, he said doesn't like drugs, he asked if there is a repeat STI test, he was happy, he asked what they treat.
Other[3]-HIVST: Asked for another kit (4), thought she doesn't trust him (2), he preferred testing at the hospital (2), he was happy, he was afraid, he doubted if the result would be accurate, he initially refused.

**Potential effectiveness of EPT**

We calculated STI incidence rates among women who used EPT and women in the parent study who did not use EPT (**Table 5**). Forty women who took EPT and reported partners medication had a follow up STI test, of whom 9 (22.5%) had a reinfection with *Chlamydia trachomatis* and none with *Neisseria gonorrhoeae*. Of seventy-two women who tested positive for an STI and did not have the opportunity for EPT also had a follow up STI test, 22 (30.6 %) had reinfection with *Chlamydia trachomatis* and two (2.8 %) with *Neisseria gonorrhoeae*. The overall risk of any *STI* reinfection was lower among women offered EPT compared to women not offered EPT although this result was not statistically significant (RR 0.68, 95% CI 0.28-1.51, p=0.16). Six women were eligible for EPT but did not give STI medication to their partners, of whom 4 (66.7%) had reinfection, one with *Neisseria gonorrhoeae* and three with *Chlamydia trachomatis* (**Table 5**.). The risk of any STI reinfection was lower among women whose partners accepted EPT compared to women whose partners did not accept EPT, although not statistically significant (RR 0.46, 95% CI 0.13-2.03, p=0.11).

**Table 5. Incidence of sexually transmitted infection**

| Among women who used EPT and women in the POWER study who used standard of care | | | | | | | | Among women enrolled in EPT whose partners used EPT and women whose partners did not use EPT | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EPT study[ɪ] | | POWER study[ϕ] | | | | | Partner used EPT | | Partner did not use EPT | | | | |
| Organism | n[1] | IR[*] | n[1] | IR[*] | IRR | 95% CI | p-value | n[1] | IR[*] | n[1] | IR[*] | IRR | 95% CI | p-value |
| *CT* | 9 | 43.58 | 22 | 44.26 | 0.98 | 0.40-2.23 | 0.49 | 9 | 43.58 | 3 | 71.25 | 0.61 | 0.15-3.51 | 0.23 |
| *GC* | 0 | 0.00 | 2 | 7.71 | 0.00 | 0.00-6.52 | 0.15 | 0 | 0.00 | 1 | 23.31 | 0.00 | 0.00-78.9 | 0.08 |
| Total | 9 | 21.52 | 24 | 31.73 | 0.68 | 0.28-1.51 | 0.16 | 9 | 21.52 | 4 | 47.06 | 0.46 | 0.13-2.03 | 0.11 |

EPT: expedited partner treatment, POWER: prevention options for women evaluation research

[ɪ] Participants offered EPT and partner received and used EPT

[ϕ] Participants were not offered EPT

n[1] number of new infections

IR[*] Incidence rate Per 100 woman years

IRR- incident rate ratio

CT: *Chlamydia trachomatis*

GC: *Neisseria gonorrhoeae*

Comparison in STI incidence was made among only the Kisumu POWER participants.

## DISCUSSION

EPT was acceptable with 94% of women willing to deliver STI medication to their sexual partners and 90% of these partners accepting medication. Uptake, distribution and use of HIVST was high as well with 79% of the women agreeing to take the HIVST to their partner, of whom 95% of their partners used it. These pilot results suggest that partner-delivered STI medication coupled with HIVST is a potential prevention intervention for this population.

The uptake of EPT was comparable to that reported in previous studies among pregnant women in Kenya and non-pregnant women in South Africa that reported an uptake of 89% and 87% respectively (18, 19). Identified barriers to women accepting to take EPT and partner HIVST to their partners in our study included the anticipated fear of the partner getting angry, being accused of having other partners, and losing the relationship; these would not be unexpected given the sensitive questions (e.g., are you having another partner? or being asked from whom you got it from) that an STI diagnosis can elicit. Similar barriers have been described in Kampala, Uganda for STIs and in multiple SSA countries for HIV (23, 24) .

The STI reinfection rates between women who consented to EPT and those with the standard of care were not statistically different, the point estimate was 0.68 times lower for EPT and the difference was approximately what has been seen in prior studies of EPT. Our study's reinfection rates were higher than that reported in pregnant women 14 years and older in rural Western Kenya (18), reinforcing the high STI risk of AGYW using PrEP. It is important to point out that similar to our findings, randomized controlled trials in high income countries have consistently shown a significant reduction in gonococcal infections compared to chlamydial infections for EPT (25). The findings show that women who decline EPT are at particularly high risk, indicating likely selection bias in those who are willing and able to participate in EPT. For this reason, other interventions such as doxycycline post exposure prophylaxis may also be necessary for women who fail to take up EPT.

The uptake of partner delivered HIVST mirrored that documented by past literature in Kisumu, Kenya where 90.8% of partners used HIVST delivered to them (22). Due to the possibility of STI and HIV coinfection, HIV testing is recommended for individuals who test positive for STI and concerns with EPT has been the missed opportunity to test sexual partners receiving EPT for HIV (26). HIVST has not been commonly used within

EPT programs, our results suggest that HIVST coupled to EPT could facilitate partner testing in settings where they may be reluctant to seek HIV testing elsewhere, provided clear guidelines are included on what to do in the event that the test result is positive.

Structural barriers for the implementation of EPT in Kenya and other SSA countries may include limited access to affordable STI diagnostic testing, reliance on syndromic STI medication and lack of guidelines on EPT. Even when testing is available as in the POWER study, challenges included long waiting times for the test results and need to return to the clinic for medication (27). Syndromic medication for female STI syndromes has been found to have a low diagnostic accuracy, to be less effective than diagnostic medication, and could be undermined by the rising numbers of asymptomatic cases of STIs (28, 29). There is need for cheaper point-of-care STI diagnostic tests to be included in STI clinics to address the high asymptomatic STIs in AGYW in SSA and to address missed opportunities for medication when results are provided days after sample collection when the woman may not be in a position to return to the clinic. Lessons can be borrowed from diagnostic syphilis testing that is already being implemented in antenatal care clinics (30).

Our study had limitations that should be considered when interpreting the results. Even though we had 124 women testing positive for an STI, logistical challenges for implementation of EPT included a long turnaround time of the results and AGYW having to return to the clinic for medication may have resulted in fewer women being screened for participation. Additionally, a quarter (17/63) of the women enrolled did not return for the assessment visit further reducing our sample size. Those that we attempted to reach after failing to return cited distance, lack of transport and lack of time due to work involvement as their reasons for not returning. The small sample size limited our ability to detect differences in STI reinfections rates between women whose partners used EPT and those whose partners did not. Another limitation is that we relied on reported information from the women who took EPT and partner HIVST to their partners on whether their partners took the medication or HIVST which may be subject to social desirability bias and misclassification.

**CONCLUSION**

Our findings suggests that the model of EPT and secondary distribution of HIVST to partners was acceptable to both the young women and their male partners and resulted in fewer reinfections. The high acceptability and uptake of partner HIVST coupled with STI medication is a promising intervention for addressing the

concerns of missed opportunities for HIV testing in EPT. Larger studies should evaluate the feasibility and cost effectiveness of this model.

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Abstract

Providers building trust with sexually-active adolescent girls and young women in PrEP delivery; experience from an implementation science project in Kenya

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**Background:** Daily oral pre-exposure prophylaxis (PrEP) has significant potential to reduce HIV incidence in adolescent girls and young women (AGYW) with an ongoing substantial risk of acquisition. PrEP access to AGYW is increasing, but there is limited guidance on how to effectively deliver it to that population. We set out to learn from experienced PrEP providers about how to build trust with AGYW in the context of PrEP delivery.

**Methods:** We conducted in-depth interviews with key informants from two family planning clinics in Kisumu, Kenya where PrEP was being delivered to AGYW as part of an implementation study. Interview transcripts using inductive and deductive content analysis to explore providers' perspectives on strategies for building trust with AGYW in the context of PrEP delivery.

**Results:** From August 2017 to March 2020, we conducted 15 interviews. Providers described a variety of strategies they used to establish trust with the AGYW and various mechanisms through which these strategies, grounded in successful counseling impacted client uptake, adherence, and/or persistence on PrEP. Strategies for building trust included: being friendly, reassuring about confidentiality, using younger providers, tailoring counselling messages, following up with clients and allowing AGYW time to make their own decisions. Building trust in turn led to openness, better risk assessment, better guidance on self-efficacy and promoted agency. Potential challenges to strategy implementation included limited facility space and health care provider time constraints.

**Conclusion:** PrEP providers identified building trust as a crucial component in during engagement with AGYW that ultimately enhanced PrEP use and adherence counseling.

## BACKGROUND

In 2018, there were approximately 37.9 million people living with HIV and 1.7 million people were newly infected (31). HIV pre-exposure prophylaxis (PrEP) is a daily oral medication which has been proven safe and effective in preventing HIV infection in heterosexual men and women, men who have sex with men (MSM) and people who inject drugs (PWID) (32-34). In recognition of the potential for PrEP to dramatically shift the HIV prevention landscape, the World Health Organization (WHO) recommended PrEP for anyone at ongoing substantial risk of acquiring HIV (35, 36).

Globally, PrEP is being scaled-up to both key and general populations using delivery locations such HIV comprehensive care clinics for HIV discordant couples, safe spaces for female sex workers and drop-in clinics for MSM (37, 38). Since new HIV infections in Sub-Saharan Africa (SSA) disproportionately affect adolescent girls and young women (AGYW) between 15-24 years (31), PrEP is also being made available through platforms routinely accessed by this population for their sexual and reproductive health (SRH) needs, such as antenatal care (ANC) and family planning (FP) clinics (39, 40). Diversifying points of access for PrEP has been an important step in increasing young women's PrEP uptake; however, PrEP persistence, and adherence have remained considerably below levels required for population level impact (41-44). In addition to understanding *where to* best deliver PrEP to increase coverage of AGYW, more information is needed about *how* to effectively involve this population in PrEP services.

Data from a range of clinical settings have identified strong client provider relationships (CPR) , i.e., a relationship that allows for the creation of a shared meaning about patients' health conditions, as an important factor in successfully engaging youth in managing their own health (45, 46). Strong CPRs have been widely associated with improved medication adherence, treatment retention and better clinical outcomes (47-50). In the context of PrEP, a recent scoping review on service delivery and programming identified CPR as important for PrEP delivery among MSM (51). One key component of creating a strong CPR is the ability of the providers to establish trust with clients (52-54). Although the current literature on building trust with clients in the context of PrEP delivery for AGYW is lacking, building trust will likely be crucial for engaging them to initiate and persist in taking PrEP, especially given ongoing negative cultural attitudes and stigma surrounding sexual activity among unmarried women (55, 56).

As Ministries of Health (MOH) in sub-Saharan Africa further attempt to increase effective PrEP use, in-depth interviews of PrEP providers who are counseling African AGYW initiating PrEP could identify providers' perspectives about building trust with AGYW to enable effective assessment of AGYW's need for PrEP, and establishment of an effective communication about PrEP use. The purpose of this analysis is to describe these experienced PrEP providers' perspectives on strategies for building trust with AGYW in the context of PrEP delivery.

## METHODS

Prevention Options for Women Evaluation Research (POWER) is a prospective cohort implementation science study to evaluate PrEP delivery to AGYW in Kisumu, Kenya and Cape Town and Johannesburg, South Africa. In Kisumu, POWER delivered PrEP at two FP clinics, the Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) and the Kisumu Medical Education Trust (KMET) clinic. Between August 2017 and October 2019, health care providers at these sites enrolled 1000 AGYW into the study and continued to provide PrEP services to them until March 2020, at which point PrEP services were transitioned to the FP clinics themselves.

AGYW were eligible to receive PrEP through POWER at these clinics if they were 16 to 25 years old, HIV negative and sexually active (defined as having at least one vaginal sexual intercourse in the last three months). HIV risk assessments were conducted by either a HIV counsellor or a nurse counselor, and further PrEP counseling was completed by a nurse counselor if the AGYW decided to take PrEP. Return visits were scheduled at one month and then every three months thereafter for up to 36 months. At each follow-up visit, participants underwent HIV testing, risk assessment, and PrEP counseling (including adherence counseling).

### Study Setting

JOOTRH and KMET are located in Kisumu County in Western Kenya where HIV prevalence is 17.5%—the second highest among Kenya's 47 counties— and 28% of all new HIV infections occur among AGYW (57). JOOTRH is a public teaching and referral hospital that attends to an average of 50 clients per day in its FP clinic located within the Maternal and Child Health (MCH) Department. KMET is a private non-governmental organization that offers maternal, child, and family health and education services and sees an average of four clients per day in its FP clinic.

In both clinics, POWER staff worked with existing facility staff to establish a client flow that integrated PrEP into routine FP services and staff were encouraged to adapt as needed to fit the clinics' needs.

**Key informant interviews**

The sampling frame for the key informant interviews included healthcare providers (HIV testing counselors, participant counselors and nurse counselors) involved in direct PrEP service delivery in the POWER project either as study or implementing site staff. The frame work also included individuals not directly involved in PrEP delivery but who had experience with PrEP implementation for AGYW.

We used maximum variation sampling to purposefully recruit providers to participate in the KII. The selection involved the study coordinator in collaboration with study manager first developing a list of potential direct PrEP providers and individuals with experience with PrEP implementation for AGYW to be interviewed. The study coordinator then contacted the selected individuals, briefly described to them the purpose of the interview, and informed them that they would be contacted by a research assistant (who had never worked with the providers) to see if they would like to participate in a confidential in-depth interview. Thereafter, the RA contacted each individual by email or phone, and interviews were scheduled at a time and location convenient to the participant.

Interviews were conducted in English, using a semi-structured interview guide to solicit information on the perceived advantages and disadvantages of the PrEP delivery model, strategies used to increase uptake, adherence, and persistence among PrEP clients, and recommendations for other FP clinics interested in adding PrEP to their services. The interviews were audio recorded with participant consent, and transcribed verbatim.

**Data analysis**

Interview transcripts were uploaded to Atlas.ti version 8 (Scientific Software Development GmbH, Berlin, Germany) and analyzed using thematic content analysis. Two experienced qualitative researchers developed a coding scheme in consultation with other POWER staff. The codebook included both inductive codes and deductive codes drawing on multiple implementation frameworks. One researcher coded the documents, and a second researcher reviewed coded documents. Disagreements in coding were resolved through discussion and consensus.

## RESULTS

### Data Collected and Participant Characteristics

We conducted 15 in-depth interviews with key informants, of whom 60% (9/15) were female. The median age was 30 years old, and about two-thirds were staff employed in the POWER study (10/15, 67%) (**Table 6**).

**Table 6.** Characteristics of interview participant

| Characteristic | Number |
|---|---|
| **Providers interviewed** | 15 |
| **Median age (IQR)** | 30 (29-42) |
| **Female** | 9 (60%) |
| **POWER staff** | 10 (67%) |
| **Primary occupational role**[1] | |
| *Healthcare provider* | 10 (67%) |
| HTS Counsellor | 3 (30%) |
| Clinician[2] | 6 (60%) |
| Other | 1 (10%) |
| *Other key informant* | 5 (33%) |

[1] Based on providers' primary role vis-à-vis PrEP and POWER. For example, a participant who is a doctor by profession but whose primary role in POWER is as a study coordinator is counted as "other key informant."
[2] Includes nurses and doctors/medical officers.
IQR- interquartile range
POWER- prevention options for women evaluation research

### Strategies for building trust

The providers consistently emphasized building trust as an important first step of establishing a strong client-provider relationship (CPR) that ultimately led to effective and successful counseling that is critical to PrEP uptake, adherence, and persistence among AGYW.

***It's all about counseling and trust. [IDI 12]***

***The good relationship between our clients and our staff has really worked … [As a client, if] I'm really comfortable with you, the probability of me coming back again is very high. [IDI 08]***

Providers described a variety of strategies they used to establish trust with the AGYW and various mechanisms through which these strategies, grounded in successful counseling impacted client uptake, adherence, and/or persistence on PrEP.

#### I. Being friendly sets up the ground for building trust

A first step in establishing trust with the AGYW was frequently described as being "nice", "friendly", "non-judgmental", and/or "open." Although treating clients kindly is an important component of any successful gaining ones trust, providers felt it was especially important in the context of delivering PrEP to AGYW as "you only get one chance" with an AGYW whereas with other populations they may come into the clinic again..

***Adolescents, young people … are a very special group. I can say that because they can just come to the clinic one time, and you just comment something in a negative manner, and you won't see this person again. They are gone. [IDI 01]***

**II. Constant reassurance about confidentiality**

Because disclosure of sexual activity could pose a reputation risk, providers emphasized that AGYW need to be reassured that their information will not be shared with a third party in order to buy their trust:

***You have to really assure [clients] that whatever they are going to tell you, you are not going to share with somebody else. That is always their biggest worry. [IDI 02]***

One strategy that providers reported using to boost clients' sense of confidentiality in order to win their trust was to wait to document the visit until after the client had left:

***We usually avoid … asking the client [about their risk] then marking the RAST [risk assessment tool] … so that the client doesn't [think], "There is an interview going on which might be used later to [identify] me." [IDI 06]***

**III. Providers that are their peers enables them to open up**

Several providers mentioned that establishing trust and developing strong CPR was facilitated by closer proximity in age between provider and client and having a provider that the AGYW feel they can easily identify with. Providers noted that AGYW often feel more at ease with younger service /care providers.

***What has worked well is … the fact that most of us [providers], we are young generation like them. So they don't feel like there is stigma attached or judgmental because most of the things in the [PrEP] eligibility criteria touch on a lot of personal issue. So if you meet with a young person and you're the same age [as them], they feel like you know them better. So they open up more. [IDI 03]***

### IV. Tailored counseling enables better risk assessment

According to providers, part of trust building is that clients feel understood and not just queried about their sexual activity. They reported that friendly and tailored counseling helps clients speak freely and honestly about their life circumstances, which is an important facilitator to accurately assessing HIV risk. Providers—especially direct service providers—emphasized the importance of tailoring counseling to fit clients' personal situations. Providers described eliciting information about the client's life, not only about her sexual relationships, but also her living arrangements, social support network, financial situation, and personal aspirations.

***[How you counsel clients] is on a case-to-case scenario … When a client comes, you tell them, 'Tell me something. Tell me about yourself. Where do you live?' You start asking some questions and then, 'How is your partner? How long have you been with him? How many children? Or are you trying to look for a baby?' Once you talk to someone, they'll open up … From there, you can pick up and build momentum because you know every relationship is different. So based on that relationship, you'll know how to advise the client. [IDI 03]***

Providers reported clients often had a limited understanding of key concepts related to HIV transmission and exposure and, without an open conversation, meaningful risk assessment was unlikely to happen. For example, several providers reported that some clients believe that having only one partner themselves is a sufficient HIV prevention method and do not consider the possibility that their partner has other partners. Other providers reported clients too frequently emphasize their *partner's* sexual relationships rather than their own.

***Most of the clients … view risk as someone putting you at risk, rather than you putting yourself at risk. For example, we have had … clients say that, "I want to take PrEP because I don't trust my partner. So he may be putting me at risk." But then when you are collecting information [from the client,] you ask, "How many sexual partners do you have?" Then she says, "Three." [IDI 12]***

Whereas establishing trust with clients was a critical first step to getting them to open up and self-reflect on their HIV risk, it leads to successful counseling and accurate assessment of risk, which in turn, was viewed as a major driver of uptake, adherence, and persistence. One participant explained:

***Those that we helped to identify their risks and knew that they were at higher risk adhered better to the medication compared to maybe those who, in their mind, told us that, "I know I'm not at risk," and they stuck to that … They didn't adhere well to their medication. Even their visits were so erratic. They would come, and they would disappear. [IDI 17]***

**Tailored counselling promotes self-efficacy**

The key informants described how the trust developed using tailored counseling enabled AGYW to talk about PrEP misconceptions which the providers were able to target during counseling. This promoted AGYW self-efficacy, increasing knowledge, skills, and confidence in their ability to take PrEP.

***You talk to the clients [about] what is PrEP, why do you need PrEP, how do you take PrEP, what are the benefits of taking PrEP. They ask you all the questions … ……. Everybody has information—the wrong ones and the right ones—so if they come, you also have to listen to what they have heard about PrEP. [IDI 01]***

For example, several providers reported that prospective clients were sometimes surprised to learn that PrEP did not have to be taken for life, but rather could be taken during periods of risk, and that this information sometimes made the prospect of daily-pill taking less daunting.

Providers also reported tailoring counselling messages aimed at adherence skill-building by aligning PrEP-taking with other parts of their daily routine. Some providers, upon hearing that clients had disclosed their PrEP use to someone else, would encourage the client to use that other person as a "treatment buddy" who reminds them to take PrEP.

Finally, tailored counseling was also described as influencing self-efficacy by decreasing clients' doubts about whether they are taking PrEP correctly. One participant described:

***I think what they really need is continuous reassurance because some of them start taking the PrEP and start having the side effects, but if you continue engaging them and telling them that, "We told about these side effects from the start, and it's going to be there for some few days or few weeks, then it will go away," then you really encourage them to continue using it. [IDI 17]***

### V. Following-up with clients helps them feel valued

Providers reported developing trust through follow-up interactions that communicate to clients that they truly matter to healthcare providers. Providers reported contacting clients with phone calls or text messages to see how they were doing, especially at key moments, such as shortly after PrEP initiation. Our providers believed these follow-up communications invoke a sense of "being cared about" which in turn, positively influences their uptake, adherence, and persistence.

***[If] they don't turn up, the following week we'll follow up [by phone]: "Hi, you were supposed to come last week. What happened?" in a friendly way …… We just tell them, "If you're busy, just tell us." And, "Are you ok? Are you safe? … "Any day you need PrEP, come." So you know, when you create rapport with a client—when you tell them about how you miss them, like you really need to see them—some respond. [IDI 03]***

Providers believed that while some AGYW may feel cared about by their partners, families, or friends, some—especially those who prefer to keep their PrEP use confidential—significantly benefited from getting this kind of affective support from a healthcare provider.

### VI. Involving and allowing clients to make their own decisions on their own time promotes deliberate decision-making and client agency

Providers frequently cited the importance of conveying to clients that the choice to take or not take PrEP is theirs alone and that AGYW should be given time to make up their mind. Providers believed it was important to show their trust in clients' judgment and establish the client, rather than the provider, as the one with ultimate decision-making power.

Allowing clients to make their own decisions on their own time was viewed as influencing uptake, adherence, and persistence in several ways. First, it can encourage clients to self-reflect as to whether PrEP is really right for them.

***[Providers] should not force [PrEP on clients]. They should just give them time because they are the ones who are going to take the drug. If you force them, they won't take it. They'll just pick the drug, maybe reach the road, and throw it away. [IDI 08]***

Second, this strategy was believed to enhance clients' sense of agency or capacity to act independently and make free choices about their health. Providers thought AGYW who felt empowered to take charge of their health tended to have better uptake, adherence, and persistence.

***We tell them [clients,] … 'You are in charge of your health.' … And we also tell them that it's a personal decision … Most of them, they resonate well with this because most of our young women, they come from places whereby they don't [usually] have decision-making power. But if you teach them how to make a decision [for themselves] and how to identify risk, they can … It should not be like, "The nurse is the one who told me to take PrEP" [but rather] "I decided on my own. It is fit for me." [IDI 03]***

**Time and privacy limitations may hinder trust development**

Providers identified several potential structural barriers to developing trust with AGYW. The primary barrier was lack of a private room for one-on-one counseling with clients.

***PrEP [counseling] requires a lot of privacy and confidentiality in terms of risk assessment of the clients … [In many] family planning clinics, the rooms are squeezed. The clients are many. [IDI 06]***

A second potential barrier reported was time constraints. Providers noted that some of the strategies for fostering strong CPRs (e.g., customizing counseling, following up with clients) can be time-intensive.

***PrEP is really about a conversation. It is about understanding someone's reproductive health and sexual choices, understanding their goals and aspirations, and helping them understand and adopt PrEP as a lifestyle choice for a period of time, if it … helps them meet those desires and aspirations. Now that's not an easy thing to do in a short period of time, and then the healthcare worker may not have the luxury of time to be able to do that in depth. [IDI 13]***

## DISCUSSION

Our analysis identified six strategies that have the potential to build trust with the client, enhance counseling and impact PrEP use: 1) being friendly, 2) reassuring about confidentiality, 3) having young providers, 4) tailoring counselling messages, 5) following up with clients and 6) Involving AGYW in decision making. Providers who counsel Kenyan AGYW about PrEP and individuals involved in PrEP implementation for AGYW identified the importance of building trust with AGYW, ensuring confidentiality of sexual behavior information, and empowering and supporting AGYW to make their own decisions about PrEP.

The providers emphasized that gaining client trust was foundational to fostering a productive counseling. One crucial way that the providers described for winning AGYW trust was to be friendly and sensitive to their reactions to perceived verbal and non-verbal judgement. The importance of health care providers (HCPs) verbal and non-verbal communication during clinical encounters has been extensively described in the literature (58-60). Consistent with these providers' perspective, literature describes how patients tend to withhold information from HCPs when they feel that they will be judged (61). Studies have reported clients' anticipated negative treatment from HCP as a reason for disengaging in care in both antiretroviral treatment (ART) (62, 63) and family planning services (64, 65). Though HCP may find it challenging to speak non-judgmentally about AGYW sexuality, there is evidence that training can strengthen their communication skills which can result in improved health outcomes (66-70).

Through tailored counseling, providers noted that part of trust building is that AGYW initiating and continuing with PrEP feel understood and not just queried about their sexual activity. This is a crucial step in getting accurate information and providing effective guidance especially on adherence and persistence. Understanding patients in the context of their own social world has been described in literature as a fundamental characteristic of patient-centered care (71, 72). Evidence has shown that a patient's belief that their HCP is listening to them and is interested in them as a person facilitates health-promoting behaviors, such as recall of information from the clinical encounter, understanding of treatment recommendations and improved medication adherence (72-76). In line with other peer reviewed literature, the providers identified time constraints as a potential challenge in providing tailored counselling in routine clinical settings (77, 78).

However, evidence from other clinical settings suggests that after a relatively lengthy initial visit, during which trust is established and significant information is exchanged, subsequent visits can be much shorter (79-82).

Although many studies identify following up with clients as a strategy that serves a cognitive function (e.g., reminding clients to take their medication) (83-85) our findings suggest this strategy may also win clients' trust through an affective function (e.g., making clients feel valued and cared about by providers). Technology such as SMS may be helpful in mitigating the health care provider time burden of client follow-up communication. Even unidirectional, automatically generated follow-up messages – such as SMS reminders triggered by a clinic's electronic appointment-tracking systems – may give clients a feeling of being valued and positively influence their health outcomes (86-89).

The providers believed affirming AGYW as the primary decision-makers was important to gaining their trust and ultimately promoted agency, self-efficacy, and empowerment, which they believed were important factors for successfully engaging with PrEP. Other studies have reported that clients' perceived self-efficacy may influence the actions they take, the amount of effort they exert, and the overall "grit" they possess to keep going in the face of obstacles, such as side effects, pill burden, social stigma, and the financial and opportunity costs of getting to the clinic for drug refills (90-93). Studies based on self-determination theory (SDT) have further shown that an autonomy-supportive environment increases individuals' intrinsic motivation for sustained self-regulation of health behavior and result in higher quality decision-making, greater perceived confidence, and better medication adherence (94-97) .

One major limitation for this study was that data was obtained from only the providers and does not include data from interviews with AGYW. It would seem stronger to also look at the IDIs conducted with AGYW in POWER to include their perspectives on whether the strategies described by the providers was overall positive, how it influenced their PrEP use and communications with providers about PrEP adherence and persistence issues. Both HCP and AGYW perspectives on the value, specific strategies and feasibility of building trust is important for understanding how to successfully provide PrEP to AGYW and support their HIV prevention behaviors. However, the strength of our analysis draws on health care provider expertise and experience with delivering PrEP to 1000 AGYW as a component of integrated SRH services.

## CONCLUSION

Given the disproportionate HIV incidence among AGYW in sub-Saharan Africa, successful scale-up of PrEP delivery to this population will be crucial for successful HIV epidemic control. As PrEP delivery is increasingly integrated into existing health services, a renewed emphasis cultivating a trust between the providers and the clients will contribute to the creation of an effective counselling environment for this vulnerable population. The trust building strategies identified in this study could be included in PrEP training curricula as a core component of PrEP training and delivery. Although specific to FP clinics, our findings may also be useful for informing other integrated PrEP delivery platforms as well as other adolescents and youth delivery services generally.

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