Optimizing Momentum Toward Sustainable Epidemic Control (OpCon)

Final Report

PEPFAR

HRSA
Health Resources & Services Administration

icap Global Health

About ICAP

A major global health organization that has been improving public health in countries around the world for two decades, ICAP works to transform the health of populations through innovation, science, and global collaboration.

Based at the Columbia University Mailman School of Public Health, ICAP has projects in more than 40 countries, working side-by-side with ministries of health and local governmental, non-governmental, academic, and community partners to confront some of the world's greatest health challenges.

Through evidence-informed programs, meaningful research, tailored technical assistance, effective training and education programs, and rigorous surveillance to measure and evaluate the impact of public health interventions, ICAP aims to realize a global vision of healthy people, empowered communities, and thriving societies. Online at icap.columbia.edu

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Background

The global scale-up of HIV services has been remarkably successful. By the end of December 2022, 29.8 million people were accessing antiretroviral therapy (ART); in 2022, 77 percent of all people living with HIV (PLHIV, and 82 percent of pregnant HIV-positive women to prevent HIV transmission to their child) had access to ART.

Despite these achievements, significant challenges remain as the epidemic response matures into its third decade. The COVID-19 pandemic caused substantial interruptions in access to HIV testing and linkage services, and a substantial unmet need for HIV services and program improvements remains, including HIV testing and prevention services for those most at risk; improved linkages within and between programs; support for retention in care, adherence to ART, and viral suppression; saturation ART coverage in high-prevalence communities, and increased access to HIV services for diverse groups, including men, children, adolescents and young people, and other key and vulnerable populations.

Challenges with retention and the critical threat of HIV drug resistance (HIVDR) highlight the urgent need for increased emphasis on program quality.

In October 2017, ICAP at Columbia University (ICAP) was awarded a five-year cooperative agreement under *Optimizing Momentum Towards Sustainable Epidemic Control project (OpCon)* funded by the President's Emergency Plan for AIDS Relief (PEPFAR) through the U.S. Health Resources and Services Administration (HRSA).

This multi-country award enabled ICAP to support innovative, flexible, and high-impact projects that contributed to improved HIV program outcomes, equity, efficiency, and sustainability.

The OpCon Approach

OpCon was designed as an "innovation engine" supporting a diverse portfolio of pilot projects, implementation research, and novel service delivery models. ICAP worked with ministries of health, PEPFAR country staff, HRSA headquarters staff, and local stakeholders to identify projects that would answer key questions about how to optimize HIV service delivery.

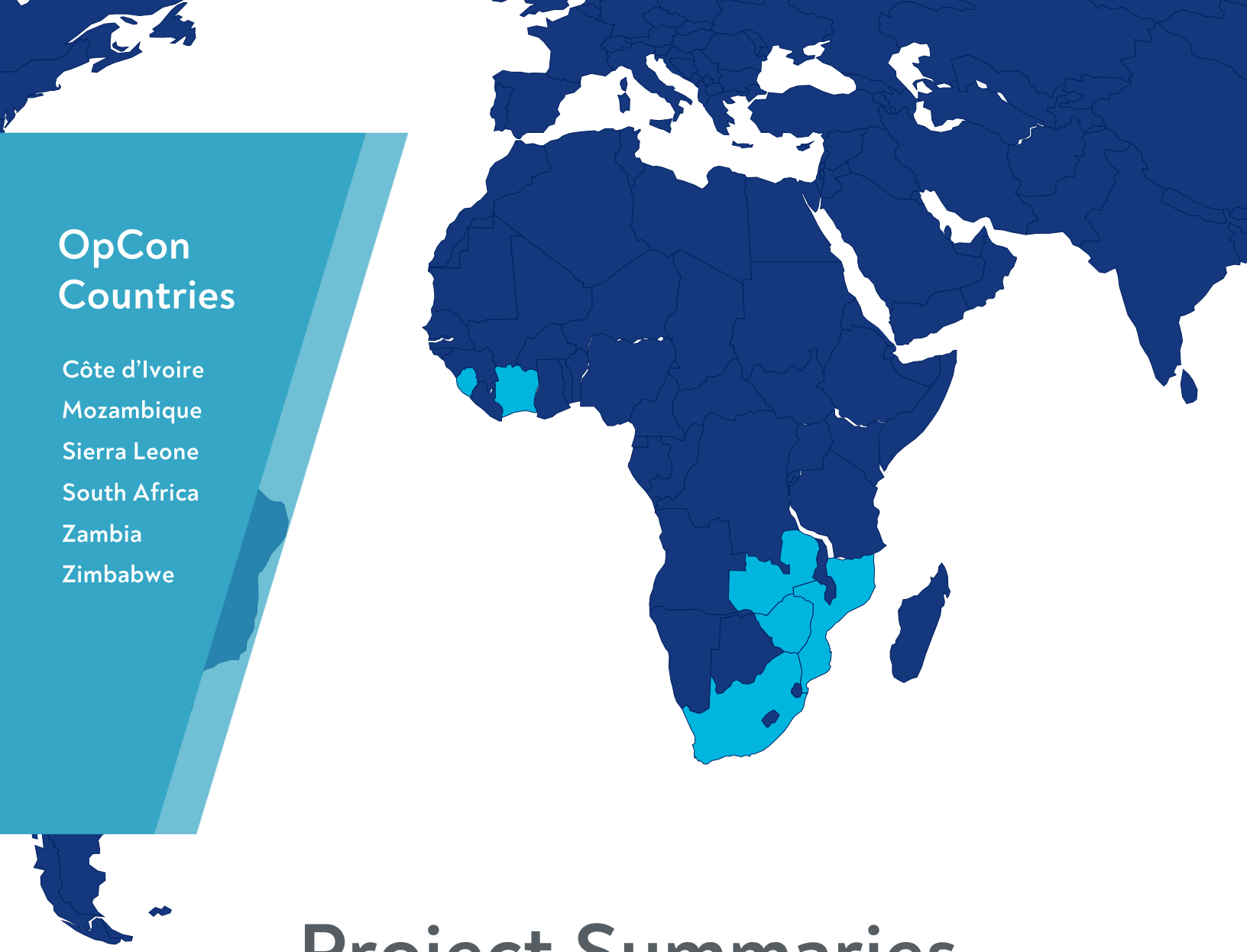
Knowledge Generation	Policy, Strategic Planning & Capacity Building	Knowledge Management	Implementation Support
Identify best practices	Support MOH to conduct strategic planning	Support country-to-country learning exchanges	Provide tailored, multi-level technical assistance
Anticipate innovations	Develop guidelines and policies	Conduct program reviews	Support pilot projects
Generate cost and health workforce data	Apply knowledge to programs	Link to communities and civil society	Engage civil society
Implement demonstration projects	Engage civil society		
Conduct operational research			
Evaluate service delivery and workforce models			

Key Accomplishments

Between October 2017 and September 2022, OpCon supported nine projects in six countries – Cote d'Ivoire, Mozambique, South Africa, Sierra Leone, Zambia, and Zimbabwe.

These included:

1. A pilot project to design a machine learning application to predict individuals at high-risk of default in Mozambique, in partnership with Dimagi (2017-2018)
2. A discrete choice experiment to evaluate preferences for no service delivery models amongst people living with HIV in urban Zimbabwe (2017-2019)
3. A formative evaluation of HIV self-testing amongst adolescent girls and young women in Zambia, in partnership with the Center for Infectious Disease Research in Zambia (CIDRZ) (2017-2019)
4. A feasibility and acceptability assessment to leverage Community Antiretroviral Groups (CARGs) to deliver tuberculosis preventive treatment (TPT) in Zimbabwe (2018-2019)
5. An evaluation of South Africa's expanded Ward-Based Primary Healthcare Outreach Teams (2018-2020)
6. An analysis of out-of-pocket spending by people on ART in Côte d'Ivoire, in partnership with RTI (2018-2020)
7. A feasibility study of integrating 3HP for tuberculosis prevention into the Fast Track differentiated ART model in Zimbabwe (2020-2021)
8. Implementing a pilot project to provide HIV pre-exposure prophylaxis (PrEP) services to key populations in Sierra Leone (2020-2021)
9. A formative assessment of health care and HIV services among fisherfolk in Sierra Leone (2021-2022)



OpCon Countries

Côte d'Ivoire
Mozambique
Sierra Leone
South Africa
Zambia
Zimbabwe

Project Summaries

Two projects in Sierra Leone
- Launching PrEP program
- Fisherfolk assessment

Evaluation of out-of-pocket spending for adults on ART in Côte d'Ivoire

HIV self-testing among adolescent girls and young women in Zambia

CHW (WBPHCOT) program process evaluation in two districts in South Africa

Three studies in Zimbabwe
- Preferences of urban clients for DSD models
- Feasibility of integrating TPT in CARGs
- Piloting 3HP in Fast Track models

Machine learning to predict defaulters in Mozambique

Mozambique

Machine Learning for Predicting Default from HIV Services

In Mozambique, ICAP tackled the challenge of predicting which people on ART are at highest risk for missed appointments and interruptions in treatment. This information can help healthcare workers to provide support and attention where it is needed most.

In 2017, ICAP partnered with the Ministry of Health and the technology company Dimagi,

ICAP explored the feasibility of leveraging a mobile health app used by community health workers. ICAP and Dimagi tested the use of a predictive machine learning (ML) algorithm, which was integrated into the existing *Infómovel* mobile health application used by facility-based

Objectives

The OpCon Mozambique project used machine learning to predict the risk that adults on ART would fail to return for a scheduled appointment using Infómovel. Key project activities included: development of the ML algorithm; preliminary design of a user interface or "flag" within *Infómovel;* and rapid field testing to elicit user feedback.

Results

The machine learning algorithm was programmed to identify the 20% of people at highest risk of missing appointments.

Dimagi then used data from four ICAP-supported health facilities in Nampula and Zambézia provinces to develop a dataset containing 1,547 scheduled visits from 491 people on ART.

Table 1 compares the actual rate of visits missed by 7, 10, 14, and 28 days with the rate of missed visits for the "high risk" individuals flagged by the machine learning algorithm.

In row 1, for example, the actual rate for all 491 people was 31.8%.

In contrast, the missed appointment rate for people "flagged" by the machine learning algorithm was 48.3%, showing that the algorithm effectively identified people at higher-than-average risk.

In addition to demonstrating the ability of machine learning to identify people at higher risk of missing appointments, the Dimagi team discussed the feasibility and acceptability of the app and its user interface with during the field-testing visit and found that there was a high level of user acceptance.

Conclusion

The ML algorithm was able to identify a subset of people at higher risk of missed appointments and interruptions in treatment, providing proof-of-concept for the project.

Users were open to the idea of a 'flag' within Infomovel and interested in learning more about how it would be used.

Table 1

# days by which a visit was missed	Rate of missed appointments for all people	Rate of missed appointments for people in ML-predicted "riskiest" 20%
7	31.8%	48.3%
10	28.3%	43.0%
14	26.2%	40.0%
28	19.8%	34.8%

Zimbabwe has made important strides towards HIV epidemic control, with more than 1.2 million people on antiretroviral therapy (ART) as of the end of 2021. However, overcrowding and long wait times strain the capability of healthcare workers (HCW), and potentially compromise the quality of care.

In response, Zimbabwe's Ministry of Health and Child Care (MoHCC) has adopted the HIV differentiated service delivery (DSD) approach, moving away from a "one size fits all" delivery model to a client-centered approach, enabling people doing well on treatment to attend health facilities less frequently and to access treatment closer to the community.

Preferences for HIV Treatment Delivery Models Amongst People on ART in Harare, Zimbabwe

Zimbabwe

Understanding the preferences of recipients of care was critically important to MoHCC as it developed strategies for expanding access to DSD.

In 2017, ICAP partnered with MoHCC to explore the preferences of urban people living with HIV, to see which of the country's five DSD treatment models should be prioritized for scale-up in cities: community ART refill groups (CARGs), facility-based refill clubs, community-based outreach models, fast-track/visit-spacing and/or family ART groups.

After consulting with MoHCC, the Zimbabwe National Network of People Living with HIV, and other local stakeholders, ICAP designed and conducted a mixed-methods study to explore the treatment preferences of urban PLHIV.

Evaluation Design & Methods

The evaluation was designed to explore demand-side facilitators and barriers to HIV treatment in Harare, Zimbabwe, with a focus on client preferences for characteristics of service delivery associated with Zimbabwe's five DSD treatment models. Data collection took place at seven health facilities in Harare and included:

- ✓ 35 key informant interviews (KII) with HCWs;
- ✓ 8 focus group discussions (FGD) with 54 adults on ART;
- ✓ A discrete choice experiment (DCE) in which 500 adults on ART and eligible for DSD treatment models selected their preferences for health facility (HF) *vs.* community location, individual *vs.* group meetings, provider cadre and attitude, clinic operation times, visit frequency, visit duration (including wait time), and cost to patient (including transportation);
- ✓ A survey with the 500 DCE participants exploring DSD knowledge and preferences

Key Findings

Participant preferences were consistent in the FDGs, DCE, and the survey. Participants strongly preferred HF-based services, individual DART models, respectful and understanding HCWs, and services costing less than $3/visit. They also preferred less frequent visits and shorter wait times. Participants were indifferent to variations in HCW cadre and distances from home to HF. These preferences were mostly homogenous, with only minor differences between male vs. female and older vs. younger participants. In KII, HCWs characterized the fast track/visit spacing model (a facility-based individual model) as the one most favored by clients; HCW also preferred this model, which they felt decompressed HF and decreased HCW workload.

Conclusions

People living with HIV and eligible for DSD treatment models in urban Harare preferred attributes associated with two of Zimbabwe's five DART models, fast track/visit spacing and family pick-up. MoHCC concluded that prioritizing these for scale-up in urban areas would be the most efficient way to sustain positive outcomes for people living with HIV and increase health system performance.

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Publications

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Zambia

Linkage to Care Amongst Adolescent Girls and Young Women Self-testing HIV Positive in Lusaka

The number of new HIV infections among adolescent girls and young women (AGYW) in sub-Saharan Africa remains exceptionally high. In 2021, 250,000 [150,000–360,000] new infections occurred among AGYW aged 15 to 24 years.

Zambia has made important strides towards HIV epidemic control, with more than 960,000 people on antiretroviral therapy (ART) by the end of 2018.

However, Zambian adolescents and young people remain at disproportionate risk of HIV, and AGYW have almost three times the burden of HIV compared to their male counterparts. In response, Zambia's Ministry of Health (MoH) has prioritized innovative approaches to early testing and linkage to care in this young population. Health and the technology company Dimagi.

In response, ICAP and the Centre for Infectious Disease Research in Zambia (CIDRZ) partnered with the Zambia Ministry of Health (MoH), the U.S. Health Services and Resources Administration (HRSA), and the U.S. Centers for Disease Prevention and Control (CDC) in Zambia to conduct a qualitative study to better understand the experiences of AGYW who use HIV self-testing (HIVST) strategies. The study explored the experiences of AGYW following a positive HIVST and the barriers and facilitators to linkage to clinical services among those reporting a positive HIVST.

Study Design and Methods

The study took place in three high-density urban compounds and three universities in Lusaka, Zambia. It included:

- Recruitment of AGYW at community social events and on university campuses. 1,630 AGYW attended 106 events: 80 community-based social events and 26 university-based health fairs. Amongst these, 1437 (86%) were interested in HIVST, of whom 536 (37%) met the eligibility criteria of being 16-24 years old and sexually active with inconsistent condom use and unknown or negative HIV status. All eligible AGYW gave informed consent and enrolled into the study.
- Distribution of HIVST test kits and counseling on their use to the 536 eligible AGYW.
- A survey with these 536 participants exploring their socio-demographic and socio-economic status, sexual practices and HIV testing history.
- Twelve in-depth interviews (IDIs) with AGYW who reported that the results of their HIVST were positive. All the participants were eventually linked to a health facility for confirmatory testing; 11 were confirmed to be HIV positive and one was found to be HIV negative.

Results

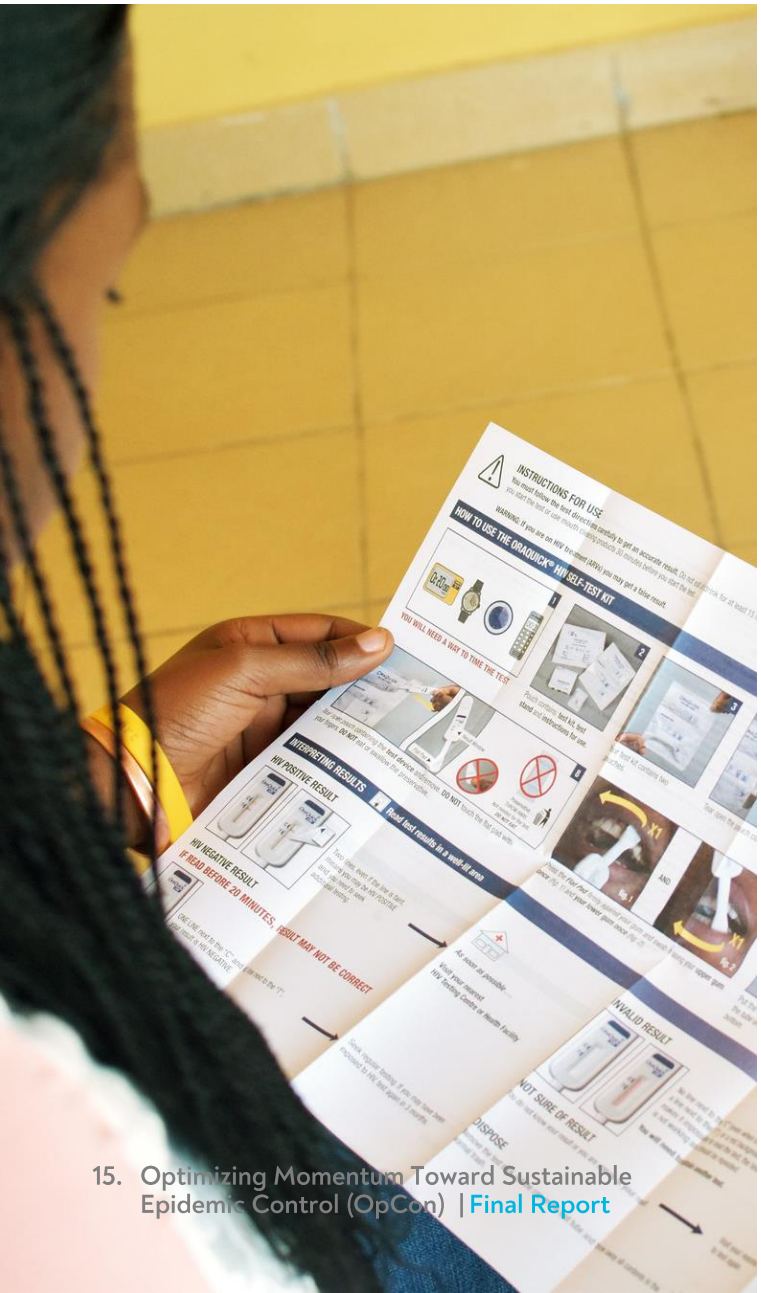
Overall, 77% (414) AGYW had tested for HIV at least once before, half (266) in the last six months, usually at a health care facility's counseling and testing services. Most enrollees (84%) and interviewees (75%) reported having one sexual partner in the last month. A higher proportion of interviewees reported never using condoms (60% vs 30%), not knowing their HIV status (66% vs 44%) and testing at most once previously (75% vs 40%).

Other key findings included:

1. **HIVST was highly acceptable:** Though the program areas had been saturated by HIV testing, almost 90% of AGYW attending social events expressed interest in trying HIVST. Interviewees said they preferred the privacy, control, and stigma-free environment of HIVST over clinic-based testing.
2. **Testing yield was highest in AGYW recruited from communities:** Of the 177 AGYW recruited in community settings, 10 (6%) reported self-testing HIV positive, compared to 1/359 (0.2%) recruited by other methods. In total, 12 (2%) AGYW reported self-testing HIVST+.
3. **Some AGYW needed help reading HIVST results:** Of 16 AGYW who initially reported being HIVST+, three wrongly read their results as positive and one as negative.
4. AGYW who went to clinic after a positive HIVST articulated a wider range of feelings and coping mechanisms than those who did not go to clinic.
5. **Many factors influenced linkage to ART:** Six interviewees reported linking to ART on the day of their confirmatory test. They displayed trust in the health system and test results, emotional maturity, and the ability to 1) seek support from female relatives and friends on ART, 2) weigh risks and benefits of being on ART, and 3) access their clinic of choice. They reported receiving swift service and good counsel at the clinic. The three who reported not linking to ART the same day as their confirmatory test said they wanted a re-test because they could not believe their HIV+ result. They expressed shame and had existential questions arising from foundational concerns related to their identity, self-image, daily life, marriage and having children. They also perceived clinics as uninviting, staff as hostile, and pharmacy pick-up as too exposed to public scrutiny.

Conclusion

This study confirms the acceptability of HIVST among AGYW. HIVST increases reach to first time testers, increases privacy and reduces exposure to perceived stigma during testing. Social supports and positive perceptions of the health system facilitated linkage to confirmatory testing and ART initiation for those with positive HIVST results. Young people need clear information on what to do if unable to perform a HIV self-test or if the result is invalid. Early social support may be critical to confirmatory HIV testing and ART initiation. Counseling needs to be adolescent-specific, addressing shame and concerns about the future.



> “At the clinic, when they find you are [HIV+] they immediately start giving you treatment, but that may not be what you want, that’s not the time you would want to start… They put you on treatment now and you may find people you know at the clinic. … So, it is better I at least go alone. I take [an HIVST kit] myself and I test myself … Then go to the clinic that I want.

Publications

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Providing TB Preventive Treatment (TPT) to People in Community Antiretroviral Groups – Feasibility and Acceptability in Zimbabwe

Tuberculosis (TB) is a leading cause of death among people living with HIV, for whom TB incidence is two to tenfold higher than their HIV-negative peers. TB preventive treatment (TPT) has been shown to markedly reduce the risk of illness and death from TB among people living with HIV, but low coverage and completion rates are challenging in many settings.

Zimbabwe is a high burden TB country with a substantial HIV epidemic, but coverage of TPT has historically been low, with only 11 percent of people newly enrolled in HIV care receiving TPT in 2017.

Zimbabwe's MoHCC has scaled up multiple DSD models including community antiretroviral groups (CARGs) in which small groups of people on antiretroviral therapy (ART) meet regularly in the community to review their health status and provide mutual support. After each meeting, one CARG member visits the health facility on behalf of the entire group to report back and pick up a supply of ART for each CARG member. Integrating TPT into the CARG model could leverage the mutual support provided by CARG members and the convenience of delivery of both ART and TPT. This may increase demand for TPT amongst recipients of care, leading to enhanced coverage and completion of TPT regimens.

In order to explore the potential of providing TPT services to people in CARGs, ICAP partnered with MoHCC and the Zimbabwe National Network for People Living with HIV (ZNNP+) to conduct a rapid assessment of the feasibility and acceptability of integrating TPT into the CARG model.

Zimbabwe

Assessment Design and Methods

The assessment was designed to explore existing TPT guidelines and implementation, current CARG practices, and attitudes towards integrating TPT into CARGs. Data collection took place between March and September 2019 with 'central level' informants and 'site level' participants from four urban and three rural health facilities. Data collection included:

- 25 key informant interviews (KIIs) with 'central level' informants, including members of the MoHCC HIV, TB and pharmacy/ logistics teams, ZNNP+ members, PEPFAR staff, program implementers, and clinicians;
- 20 KIIs with CARG leaders in rural and urban settings.
- 16 focus group discussions (FGDs) with 136 CARG members in rural and urban settings; 8 FGDs with CARG members who had previously received TPT and 8 FGDs with those who had not received TPT;
- 8 CARG field observations/time motion studies.

Key Findings

Overall, the integration of TPT into CARGs was accepted by participants among all cadres. 24/25 (96%) central-level informants and 17/20 (85%) CARG leaders felt it was a "very good" or "good" idea. The perceived advantages to integration were that it would utilize a system already in place, provide psychosocial support for members, promote adherence to both TPT and ART, save time and money as well as reduce workload for health facility staff due to less clinic visits. The perceived disadvantages to integration included potential coordination challenges, potential medication stockouts, the unknown impact on TPT adherence and safety, and the need for additional training and education for CARG leaders and members as well as health facility staff.

In the KIIs, central level informants and CARG leaders were presented with two TPT demand generation strategies.

In approach #1, CARG members who had not had TPT would be encouraged to ask for it at their next scheduled clinic visit.

In approach #2, CARG members who had not had TPT would be encouraged to return to the clinic right away to request TPT. Central level informants slightly preferred approach 1 and CARG leaders slightly preferred approach 2.

Model #1
(leave the CARG for the duration of TPT)

Once a person in a CARG initiated TPT, s/he leaves the CARG and is seen at the clinic monthly for the duration of TPT. S/he would receive one month of TPT and ART at a time, with monthly clinical examinations while taking TPT. Once s/he completes the full course of TPT, s/he returns to the CARG model.

Model #2
(hybrid)

Once a person in a CARG initiates TPT, s/he makes monthly visits to the clinic for the first three months. Then, if doing well, s/he receives three months of TPT and three months of ART and returns to the CARG model.

Model 3 was generally preferred by central level informants, CARG leaders and CARG members, although all noted some concerns about safety. Trained data collectors observed eight CARG meetings:

- CARG leaders asked each participant if they were taking their ART as instructed in 7/8 meetings.
- CARG leaders asked each participant if they had any new health issues in 5/8 meetings
- CARG leaders asked each participant about TB symptoms (cough, fever, night sweats, weight loss) in 2/8 meetings

Model #3
(TPT given entirely within the CARG)

TPT is initiated at the clinic but administered entirely within the CARG. The person would not be seen at clinic following initiation but would receive 3 months of TPT and ART at a time and be monitored by the CARG leader.

Conclusions

Policymakers, implementers, CARG leaders and CARG members agreed that provision of TPT via CARGs would be a feasible and acceptable approach to increasing TPT coverage and completion in Zimbabwe. The perceived need for additional training and supervision of CARG leaders was reinforced by the observation that only 25% screened CARG members for TB symptoms.

Publications

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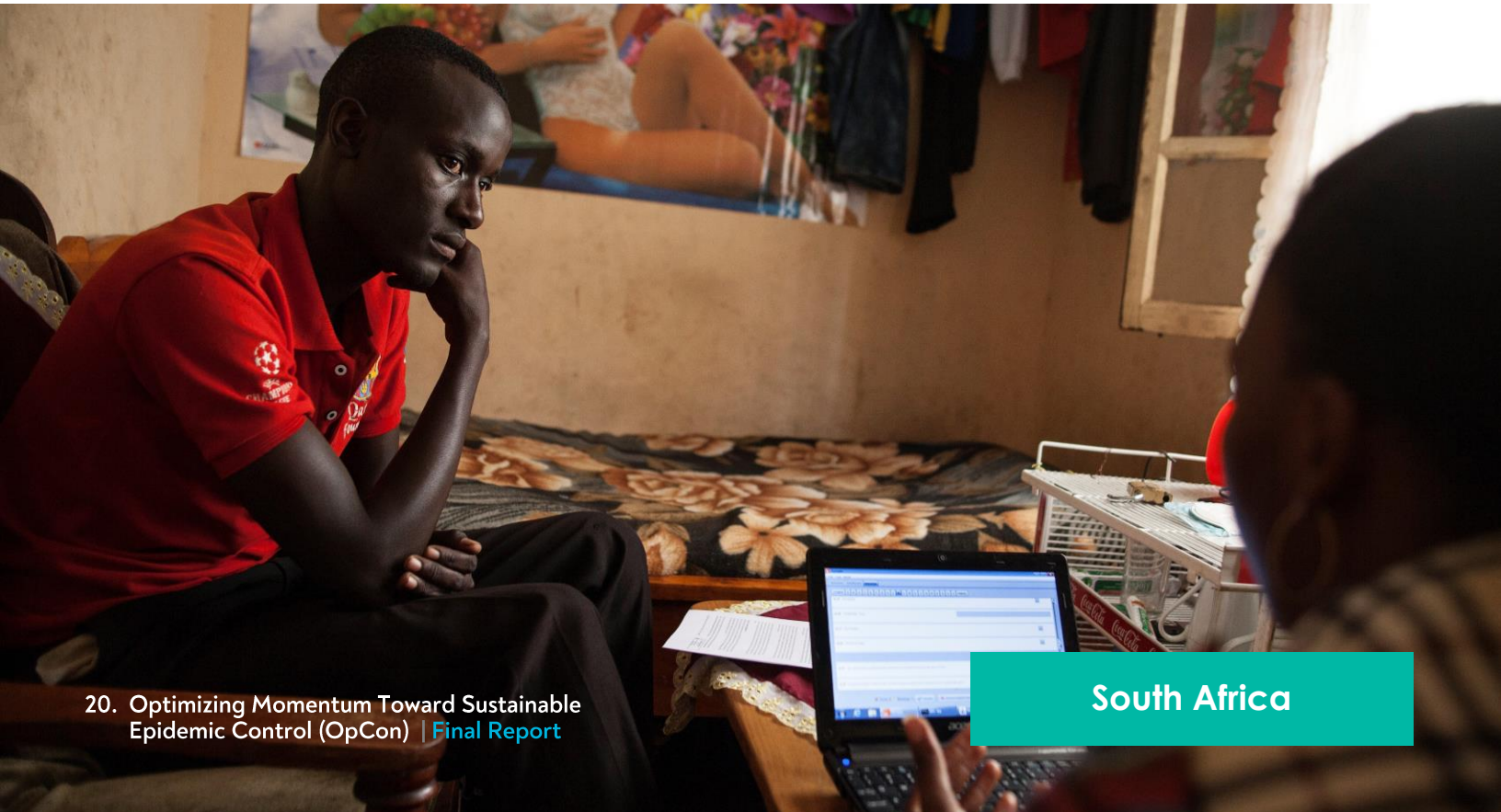
Strengthening Ward-Based Primary Health Care Outreach Teams to Support HIV Epidemic Control: An Evaluation of Expanded WBPHCOT Activities in South Africa

In 2018, South Africa's National Department of Health (NDOH), with the support of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), launched an intensive "surge" strategy to identify an additional two million people living with HIV and link them to effective and sustained treatment. One component of the initiative was a commitment to strengthen the country's existing network of ward-based primary healthcare outreach teams (OT) to enhance community-based services and facility-community linkages. The expansion of OT activities was rolled out nationally in 2018-2019 and included support for staffing, training, monitoring, and performance management of OT to improve general primary care services and the referral, linkage, adherence support and contact tracing activities so critical to achieving HIV epidemic control. In partnership with HRSA through the U.S. Centers for Disease Control and Prevention (CDC), the United States Agency for International Development (USAID), and the NDOH, ICAP at Columbia University conducted a process evaluation of the national roll-out to identify barriers, facilitators and key lessons learned from the expanded OT activities.



South Africa

Evaluation and Design Methods

The evaluation process was designed to assess implementation of the expanded OT program by triangulating the perceptions of multiple stakeholders and utilizing both qualitative and quantitative methods including site surveys, questionnaires, key informant interviews (KII), focus group discussions (FGD), tests of knowledge, and field observations of OT.

Data collection took place between September and November 2019 at 20 health facilities, which were purposively selected from two districts: City of Tshwane and Bojanala.

Table 1 summarizes the data collection and number of participants.

Table 1

Tool	# of Participants
Structured Site Assessments	20
Provincial Level Questionnaire	14
Key Informant Interviews with district-level & implementing partners level informants	28
In-depth Interviews with facility-level staff	70
Focus Group Discussions with CHWs	194 (20 FDGs)
Knowledge, attitudes and practices (KAP) Surveys: CHWs & Outreach Team Leaders	**222** *(191 CHWs & 31 OTLs)*
WBPHCOT field observations / time-motion studies	**132 (124 CHWs & 8 OTLs) (65 observations; 215 households)**

Key Findings

Participant Assessment of Expanded WBPHCOT Activities

Overall, most participants thought that the WBPHCOT "surge" had a positive impact. Participants at the district and implementing partner level had somewhat less-positive impressions than other informants due to the coordination and management challenges they witnessed. CHWs had more positive assessments and felt that their work increased the accessibility of health services and contributed to improved health outcomes.

Facility-level participants, including outreach team leaders and facility managers, had positive impressions of the WBPHCOT surge, which they felt had decongested health facilities while increasing access to health care.

Participants perceived training to be the most successful component of the WBPHCOT surge, followed by staffing, management/supervision and M&E (including mHealth).

Key Findings, continued

Training

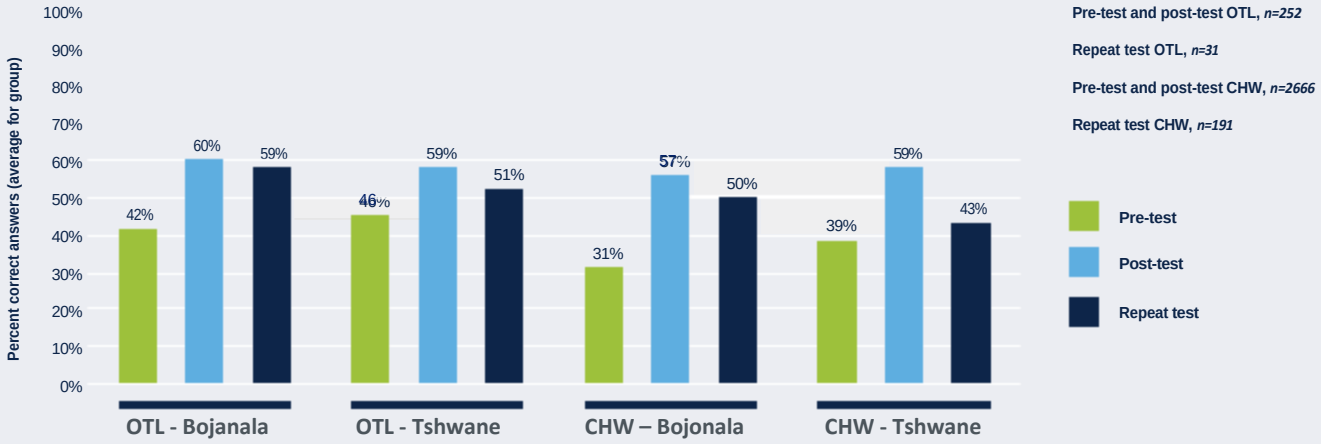
The KAP survey included the 40-question pre and post-test developed and administered by I-TECH prior to and immediately after the baseline training. Figure 2 shows these results and the repeat test included in our KAP survey 3-12 months later.

Overall, there was substantial knowledge retention among CHWs and OTLs.

There were a large number of CHWs and OTLs trained, and the training included supervisory training for the OTLs. Some respondents noted that the training was too short to cover all the content. Additionally, not all CHWs received Phase 2 training and it was difficult to train CHWs who had low literacy levels.

Figure 2

CHW and OTL Test of Knowledge



Staffing and Management

At the 20 participating health facilities, there was a median of 2 active OTLs per site (mean = 2.5, range = 1-4). Of these, a median of 65% had been trained on the new curriculum developed by I-TECH. There was a median of 25 active CHWs per site (mean = 26, range = 3-58) and a median of 70% of the active CHWs had been trained on the new curriculum. Respondents reported an increased number of CHWs and OTLs hired, which helped reduce workloads substantially in some facilities, as a main strength of the expanded WBPHCOT staffing & management activities.

Other successes included implementing a clear management structure with defined roles and responsibilities for OTLs and CHWs. Despite these achievements, participants still felt that WBPHCOT's were understaffed and noted that OTLs did not have enough time to supervise all the CHWs. At some facilities, a shortage of equipment and supplies and lack of support from clinic staff and leadership made it difficult for some WBPHCOTs to complete their daily activities and reach their targets.

Facilitators of and Barriers to WBPHCOT Implementation Success

Table 2 outlines the perceived facilitators of and barriers to the successful implementation of the expanded WBPHCOT activities.

> **"lack of transport, the distance and travel time between households. Limited availability of resources, like teams, for instance, teams running short of stationery. Sometimes you find that you don't have the machines, printers to assist them with.**
>
> – District Level KII participant

Table 2 Main Facilitators and Barriers to Implementation Success

Facilitators	Barriers
Leadership/ political will	Lack of support of CHWs at facility level
Increased staffing numbers	Staff shortages
Introduction of new systems/improved systems	Low wages and lack of benefits for CHWs
Additional resources/equipment to execute expanded activities (transportation, workspace at clinics, stationary, health supplies)	Shortages of resources/ equipment Long distances/ transportation challenges for CHWs
Community support, awareness, and engagement	Safety concerns for CHWs

Conclusions

The evaluation included diverse perspectives, including those of policy makers, implementers, facility-level staff and WBPHCOT members. The use of qualitative and quantitative methods, including direct observation of WBPCHOTs in the field provided depth, and the relatively large sample size provided rigor. However, generalizability of the results may be limited by the purposive selection of two districts and 20 health facilities.

Key findings included broad support for the WBPHCOT surge, and appreciation of the enhanced training, staffing and supervision. The surge did not mitigate some longstanding challenges, including relationships between the WBPHCOTs and facility-based staff, the need for dedicated workspaces for WBPHCOT team members, and limited access to needed transportation, equipment, and supplies.

Publication

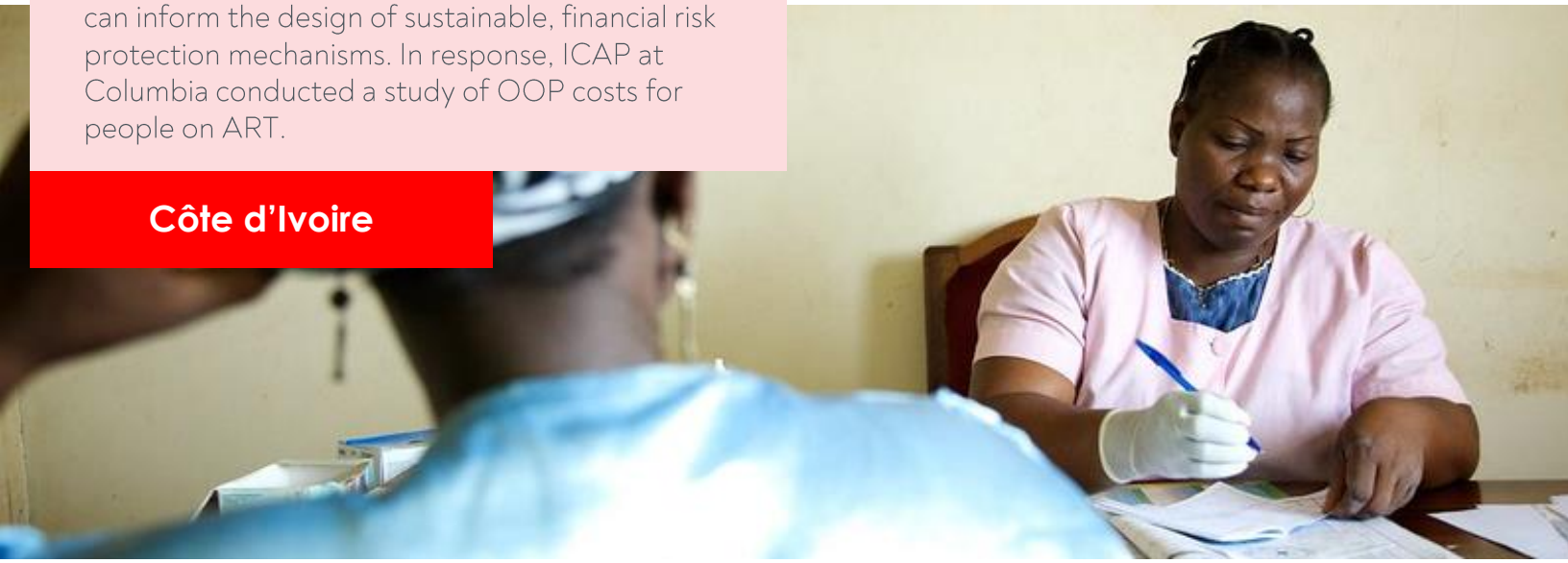
- Mantell JE, Masvawure TB, Zech JM, et al. "They are our eyes outside there in the community": Implementing enhanced training, management and monitoring of South Africa's ward-based primary healthcare outreach teams. PLoS One. 2022;17(8):e0266445. Published 2022 Aug 26. doi:10.1371/journal.pone.0266445

Out-of-Pocket Expenditure on HIV and Chronic Disease Care in Côte d'Ivoire

HIV prevalence amongst adults in Côte d'Ivoire is estimated to be 2.8%, with approximately 500,000 people living with HIV and 30,000 new HIV infections each year. Under current national policy, antiretroviral therapy (ART) and some lab tests (VL, CD4) are provided free of charge, but people living with HIV pay other direct and indirect costs for their HIV care.

In addition, people living with HIV pay for all non-HIV services, including those for noncommunicable and chronic diseases. These repeated out-of-pocket (OOP) payments may deter retention in care. Understanding the level of current OOP expenditure among people on ART in Côte d'Ivoire can inform the design of sustainable, financial risk protection mechanisms. In response, ICAP at Columbia conducted a study of OOP costs for people on ART.

Côte d'Ivoire



Key Findings

- In a convenience sample of 400 adults with HIV, 91% reported out of pocket expenditures for their visits for HIV care. The median expenditure was $16 USD (IQR $5-$48) per year. Most of these costs were indirect[1]; transportation was the most common expenditure.
- 26% of participants reported at least one chronic illness in addition to HIV. Among those who reported a chronic illness, median annual out-of-pocket costs of chronic disease care were $50 USD (IQR: $6-$107).
- 27 participants (5%) reported out of pocket expenditures as a primary reason for missing HIV care, but annual expenditures did not appear to be associated with missed care.
- No participants reported paying user fees for HIV care at their most recent appointment. 49 of the 102 with a chronic illness (48.0%) reported paying user fees for chronic illness services, at a median of $7 USD per year (IQR: $3-$21).
- 68% of participants reported using savings, borrowing money, and/or selling assets to pay for health care. 21.3% of participants reported spending more than 10% of their annual household income on HIV and/or chronic disease care.

1Direct costs include money spent on the goods or services themselves, such as payments for medication, tests, or hospitalizations. Indirect costs include other resources lost due to the patient's receiving the services, such as payments for transportation, wages lost, or gifts given in return for childcare.

Methods

A convenience sample of HIV-positive adults scheduled for routine ART appointments at one of the 10 study sites was recruited. Inclusion criteria included having missed at least one appointment in the previous 12 months; having been on ART for at least 12 months; speaking French, English, or a local language spoken by the interviewer; being at least 18-years-old; and not being acutely ill on the day of the appointment. Because chronic NCDs occur more frequently among older people, we purposively recruited a sample with an equal number of participants aged 18-39 years old and 40 or more years old.

Data Collection

A trained interviewer administered a tablet-based electronic survey in French, English, or a local Côte d'Ivoire language (e.g., Senoufo or Dioulain) in person or over the phone. Data were collected on encrypted tablets. All participants gave informed consent. In addition to costs of HIV care, participants were asked about costs related to care for other health conditions and chronic diseases.

Data Analysis

We conducted descriptive statistics using median, range, and interquartile range (IQR) to describe results.

We also conducted simple tests of significance to explore the associations between costs of HIV care and total costs of HIV and chronic disease care with the number of HIV appointments missed.

For both, we performed simple linear regressions with bootstrapped 95% confidence intervals (CIs) using the bias-corrected and accelerated method.

To examine affordability of care, we compared the total OOP expenditure as a percentage of the median value of the reported household income in each quintile.

Results

Participant Characteristics

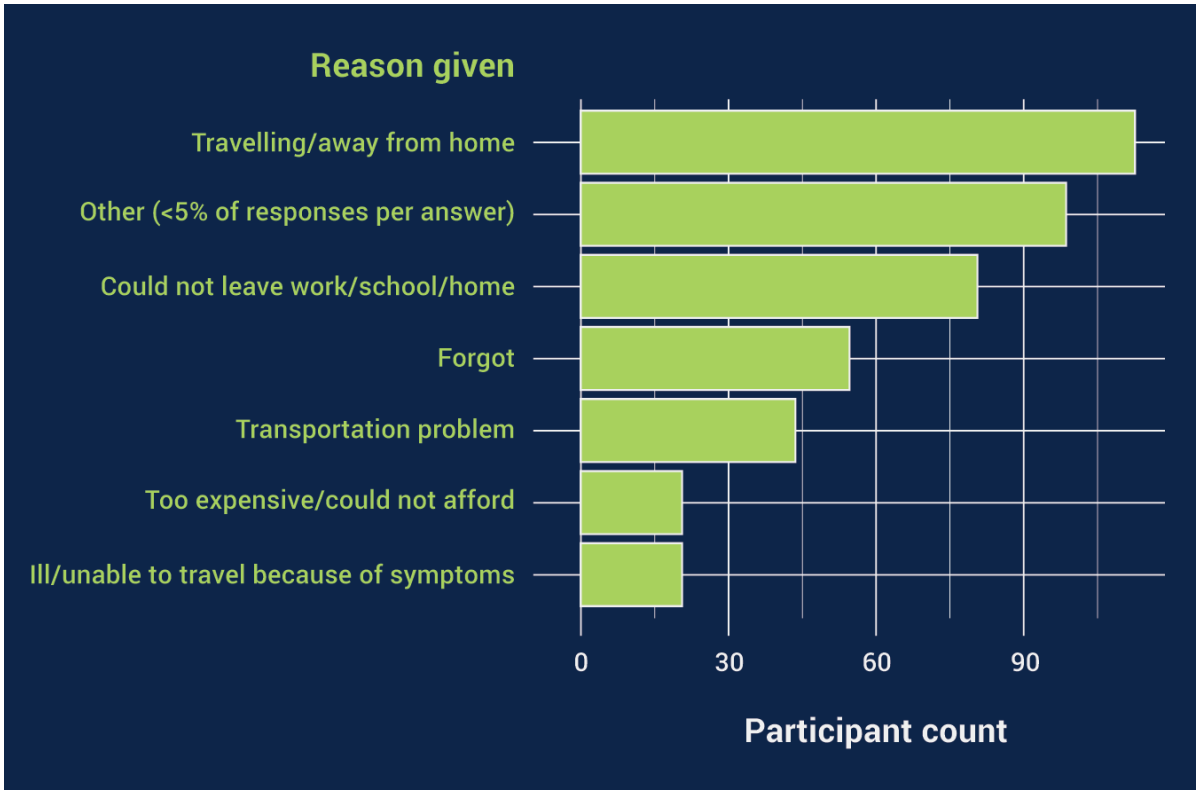
Participants were a median of 39 years of age (IQR: 33-49), and 77.2% were female. They attended a median of 8 HIV appointments per year (IQR: 4-10) and had been on ART a median of 4.7 years (IQR: 2.8-7.4). 148 (37.0%) participants reported a personal monthly income of less than $38 a month.

Overall Costs of HIV Care

365 participants (91.3%) reported OOP costs for HIV-related care. 136 (34.0%) participants reported paying direct costs, including payments for medication (excluding ART), tests (excluding VL and CD4), hospitalization, and gloves. No participants reported paying a user fee at their most recent visit. 349 (87.2%) participants reported indirect costs, primarily payment for transportation and lost wages during visit days. 178 participants paid only transportation costs, which represents 48.8% of participants reporting any OOP costs while 120 participants (30.0%) reported both direct and indirect OOP costs.

Participants reported a median total (direct and indirect) cost of HIV care of $16 (IQR: $5-$48) per year. Excluding inpatient costs, participants reported a median total cost of $14 (IQR: $5-$43) per year. Among those who reported any HIV-related OOP costs, the median reported cost was $21 (IQR: $7-$56) per year.

Primary reasons for missing HIV appointments



Affordability

263 (65.8%) participants reported that they or someone in their household had used savings to pay for health care costs. 121 (30.2%) reported that they or someone in their household had borrowed money to pay for their health care costs. 22 (5.5%) sold assets to pay for health care. At the household level, participants reported spending a median of 2.6% of annual income on chronic disease and/or HIV care (IQR: 0.5%-8.2%).

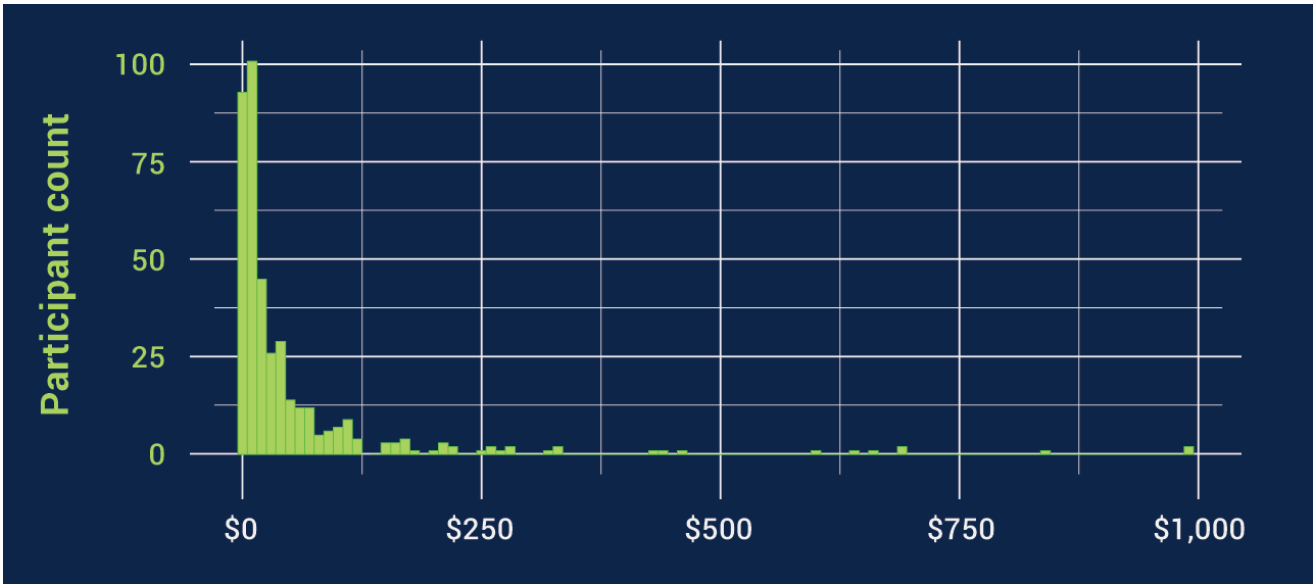
Results, continued

Overall Costs of Chronic Disease Related Care

One hundred and two participants (25.5%) reported at least one chronic illness, including hypertension, diabetes, heart disease, lung disease, cancer, or depression. Of those with a chronic illness, 80 (78.4%) reported paying for chronic disease care. The median OOP cost of chronic disease care for all 102 participants reporting a chronic disease was $50 (IQR: $6 $107); among those (80) paying for chronic disease care, the median annual expenditure was $80 (IQR: $32-$127).

Of the 80 people who reported any cost for chronic disease care, 76 (95.0%) reported direct OOP costs. Unlike for HIV care, 49 participants (48.0%) participants reported paying user fees for chronic disease related care. Fifty-nine of these 80 participants (73.8%) reported indirect costs for chronic disease related care. As with HIV care, the most common indirect cost was transportation: 57 (71.3%) participants paying for chronic disease care reporting OOP transportation costs.

Reported annual costs of HIV care (N = 400)



Annual cost in 2019 USD

Publications

- Stelmach RD, Rabkin M, Abo K, et al. Financial burdens of HIV and chronic disease on people living with HIV in Côte d'Ivoire: A cross-sectional out-of-pocket expenditure study. PLoS One. 2021;16(7):e0255074. Published 2021 Jul 29. doi:10.1371/journal.pone.0255074

- Stelmach R, Rabkin M, Abo K, et al. Out-of-pocket spending on health for people living with HIV in Côte d'Ivoire. Abstract presented at Conference on Retroviruses and Opportunistic Infections 2020; March 8-11, 2020; Virtual. Abstract 1091. Available from: https://www.croiconference.org/croi2020-boston-abstract-ebook/

- Msukwa M, Stelmach R, Rabkin M, et al. Out-of-pocket health spending was not associated with missed appointments for adults on antiretroviral therapy in Côte d'Ivoire. Abstract presented at AIDS 2020; July 6-10, 2020; Virtual. Abstract PEE1379. Available from: https://www.aids2020.org/wp-content/uploads/2020/09/AIDS2020_Abstracts.pdf

Providing 3HP to People Living with HIV in Zimbabwe's Fast Track Model is Feasible and Acceptable: Results from a Pilot Project

TB preventive treatment (TPT) has been shown to reduce TB incidence when combined with ART and independently improves survival. However, TPT coverage among PLHIV is suboptimal, in part due to misperceptions about safety, fear of drug resistance, and concerns about treatment duration, leading to preventable illness and death. In 2018, the WHO endorsed the use of shorter TPT regimens in high burden settings, including three months of once weekly rifapentine and isoniazid (3HP).

Rigorous studies have shown that 3HP is as safe and efficacious as other TPT regimens, can be co-administered with dolutegravir- and efavirenz-based ART, and in low TB burden countries, is associated with higher completion rates.

In Zimbabwe, 3HP was adopted as a preferred TPT regimen in 2019 together with the new DTG-based ART regimens and incorporated in the addendum to the 2016 ART guidelines. Currently, 40 health facilities are implementing 3HP. Zimbabwe's Ministry of Health and Child Care (MoHCC) has scaled up multiple differentiated service delivery (DSD) treatment models including facility-based individual models such as fast-track (FT). FT visits generally occur quarterly and involve ART pickup and brief screening questions about adherence and new symptoms or issues, which reduces time spent at the facility. Approximately 15% of PLHIV on ART in Zimbabwe are enrolled in the FT model.

ICAP at Columbia University (ICAP) partnered with MoHCC and the Zimbabwe National Network for People Living with HIV (ZNNP+) to assess the feasibility and acceptability of the integration of 3HP into the FT model.

Assessment Design and Methods

To explore the feasibility and acceptability of administering 3HP through the FT model, the project included:

- Adapting and implementing national 3HP algorithms, training, counselling, and tools for the FT setting (Box 1)
- Piloting the use of 3HP for 50 adults enrolled in FT at a high-volume urban hospital in Harare
- Assessing 3HP initiation and completion rates
- Surveying patient participants about their experience with the integration of 3HP into the FT model, including adherence, tolerability, side effects, perceived quality of counselling and care, convenience, and acceptability
- Surveying healthcare providers about their experience providing 3HP and their assessment of feasibility and acceptability

The pilot project was approved by the Columbia University IRB and the Medical Research Council of Zimbabwe (MRCZ). Quantitative data was analyzed using descriptive statistics. Interviews were transcribed, anonymized, and translated before thematic coding and content analysis were performed.

BOX 1

Implementation tools and services to support 3HP delivery

- Provider training and mentorship
- Patient counseling and education
- Provider/patient check-ins and SMS reminders
- Job aids: clinical algorithm, pocket card, illustrated flip chart, dosing charts
- M&E tools: 3HP patient management tool, SMS logs

> **“What helped me most is Fast Track because I could collect my medication fast; I got my ARCs and 3HP at the same time. I did not collect the medication at different serving points.**
>
> – Female Participant 30-years-old.

Key Findings

Fifty 3HP-eligible adults 18 years or older who were in FT for at least three months were enrolled into the pilot between April-June 2021 and followed up through September 2021.

Participants had been in FT for a median of 1.83 years (IQR 0.75,2.67) and their median age was 32 years (IQR 24,41). All but one participant (n=49; 98%) completed the full 3HP regimen and most (n=44; 88%) within the desired 12 weeks.

One participant had to stop taking 3HP due to jaundice. Most participants (n=46; 94%) reported ‘always’ or ‘almost always’ taking 3HP correctly. Overall, participants were highly satisfied with receiving 3HP through FT.

All participants reported they were very satisfied with the counselling, education, support, and quality of care they received from providers.

All participants, except the participant who had to stop taking 3HP due to jaundice, agreed they would take 3HP through FT in the future if needed and all participants said they would recommend it to other patients.

At the end of the study, almost all participants strongly agreed (62%) or agreed (36%) that by taking 3HP they reduced their risk for TB.

Participants voiced the need to raise awareness of TPT/3HP in their communities and the desire for scaling up the pilot, especially for other people on ART.

Some participants reported challenges including pill burden (n=6; 12%) and tolerability (n=12; 24%), but none had difficulty with phone-based counselling or wished for additional health facility-based visits. The study was conducted during COVID-19, but no participants reported missing their end of treatment visits. Eleven interviews were conducted with health care providers.

The median age for health care providers was 43 years (IQR 37,51) and over half (N=7; 64%) had been providing FT services, as well as TPT services at the facility for over 12 months. All providers reported that it is very important (n=9; 82%) or important (n=2; 18%) to scale up TPT for HIV-positive people in Zimbabwe and that the shorter 3HP regimen led to high rates of adherence.

Additionally, all providers acknowledged that the integration of 3HP into the FT model was a success, and mentioned benefits, including reducing provider workload and decongesting the health facility.

Conclusions

Using the FT model to deliver 3HP was feasible and acceptable to adults on ART. Some toxicity and tolerability challenges were reported but 98% of participants completed 3HP, none wished for additional health facility visits, and all appreciated the efficiency of phone-based counseling. Scaling up 3HP for PLHIV in the FT model has the potential to expand TPT coverage in Zimbabwe.

Publications

- Mapingure M, Zech J, Hirsch-Moverman Y, et al. Integrating 3HP-based tuberculosis preventive treatment (TPT) into Zimbabwe's Fast Track HIV Model: Aligning TPT and HIV visits, multi-month dispensing, and telephone follow-up is feasible and acceptable. Abstract presented at 16th International Workshop on HIV Treatment, Pathogenesis and Prevention Research in Resource-Limited Settings INTEREST 2022; May 10-13, 2022; Kampala, Uganda. Abstract 243. Available from : http://interestworkshop.org/wp-content/uploads/2022/06/INTEREST-2022-Abstract_Book.pdf

- Mapingure M, Zech J, Hirsch-Moverman Y, et al. Integrating 3HP-based tuberculosis preventive treatment (TPT) into Zimbabwe's fast-track HIV model: aligning TPT and HIV visits, multi-month dispensing, and telephone follow-up were feasible and acceptable. Abstract presented at AIDS 2022; July 29-August 2, 2022; Montreal, Canada. Abstract EPB032. Available from: https://aids2022.org/wp-content/uploads/2022/08/AIDS2022_abstract_book.pdf

- Mapingure M. Large-scale implementation of short-course TB preventive treatment regimens: Experiences from the field-- Providing 3HP to people living with HIV in a differentiated care model. Symposia presentation presented at 53rd Union World Conference on Lung Health; November 8-11, 2022 ; Virtual. Session SP-07. Available from: https://theunion.org/sites/default/files/2022-11/Abstract_Book_2022-compressed.pdf

Sierra Leone

HIV Pre-exposure Prophylaxis (PrEP) Services Amongst Key Populations in Sierra Leone: Early Lessons from the Country's First PrEP Program

Oral pre-exposure prophylaxis (PrEP) is a high-impact HIV prevention intervention in which antiretroviral drugs (ARV) are used to reduce the risk of acquiring HIV.

PrEP for HIV prevention is currently recommended by the World Health Organization (WHO) and Sierra Leone's Ministry of Health and Sanitation (MOHS) for individuals at substantial risk for HIV, including members of key populations (KP) such as people who inject drugs (PWID), men who have sex with men (MSM), transgender individuals (TG) and female sex workers (FSW).

In 2020, MOHS included PrEP as a prevention strategy in its revised Consolidated Guidelines on HIV Prevention, Diagnosis, Treatment and Care, but prior to 2021, PrEP was unavailable in Sierra Leone, representing a significant gap in HIV prevention services that limited efforts towards epidemic control.

With the support of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through the U.S. Health Resources and Services Administration (HRSA) and the Global Fund for AIDS, TB and Malaria (GFATM), MOHS was able to launch the country's first PrEP program in 2021 with implementation support from ICAP at Columbia University.

Program Design and Planning

To ensure national ownership of the PrEP initiative, ICAP provided technical assistance and support to MOHS, the National AIDS Control Program (NACP), the National AIDS Secretariat (NAS), and KP-led Civil Society Organizations (CSOs) to reactivate and strengthen the national KP Technical Working Group, and to develop and review national KP guidelines and policies.

In order to tailor PrEP service delivery, ICAP engaged with MOHS, NACP, NAS, UNAIDS, the AIDS Healthcare Foundation, Solthis, JSI, and five KP-led CSOs [Social Linkage for Youth Development Child-Link, Women in Crisis Movement, Dignity Association, Rofunta Development Association, Society for Women and AIDS in Africa-Sierra Leone] to coordinate population size estimation and mapping, with an emphasis on FSW and MSM.

After the mapping exercise, ICAP collaborated with key stakeholders to determine the best approach to PrEP program design. The final decision was to provide PrEP services at community-based drop-in-centers (DICs) run by KP-led CSOs.

This approach enabled high-quality counseling, contextually appropriate HIV testing services, rapid linkage of those testing HIV-positive to treatment, careful assessment of PrEP eligibility for those testing negative (including creatinine screening for renal function and testing for hepatitis B virus), and support for PrEP initiation and retention.

Preparing for PrEP Implementation

Following the rapid situational analysis and planning phase, ICAP supported the launch of the KP PrEP program in October 2020, providing technical assistance to MoHS, NAS, NACP & KP-led CSOs to:

- Develop an M&E plan and reporting tools, including an individual client form, a weekly reporting form, a monthly summary form, PrEP registers, health facility and DIC reporting templates, and standard operating procedures (SOPs) for data collection and management
- Develop a PrEP training curriculum tailored for the Sierra Leone context
- Develop information and education campaign (IEC) messages, SOPs, job aids, training slides and other materials in collaboration with the Health Education Division Unit to equip healthcare workers with relevant skills on ethical, safe, and confidential KP-friendly HIV services
- Complete minor repairs and refurbishment of 10 DICs to enhance a KP-friendly environment
- Develop an SMS client reminder model to enhance PrEP retention
- Add HIV health promotion, education and information to the National Emergency Call Center 117 toll free line platform

Utilizing the PrEP training package, ICAP, MoHS and NACP trained:

- 8 National training-of-trainer (TOT) PrEP Trainers, 8 MoHS nurses from facilities within the DIC catchment areas, 8 DIC nurses, and 16 peer navigators and educators on PrEP services
- 32 candidates in PrEP service delivery and pharmacovigilance including staff from two DICs, the toll-free National Call Center, Pink-Power, Women Power Hour, HIV focal point persons from Bo and Kenema, and Health Promotion Officers

Preparing for PrEP Implementation

Additionally, 76 peer navigators and educators from 8 DICs were oriented and mentored on PrEP services. Twenty advocacy meetings with ~1000 potential KP beneficiaries in DICs were held to inform them about PrEP and promote retention. With support from HRSA, ICAP provided stop-gap commodities and procured PrEP medications for the PrEP program roll-out. ICAP used the Enhanced Peer Outreach Approach to reach KPs including the following:

- Moonlight HIV Testing, conducted between 6-11PM in priority hotspots & congregate settings for KPs.
- The "Nichoto" HTS Approach, in which KPs are invited to KP-friendly locations and offered HTS and integrated multi-disease screening

All HIV-negative KPs were referred for PrEP services and all HIV-positive KPs were referred to health facilities linked to the DICs to be initiated on ART retention.

FIGURE 2

KP PrEP initiation cascade across 8 drop-in centers, 5/5/2021 - 9/30/2021

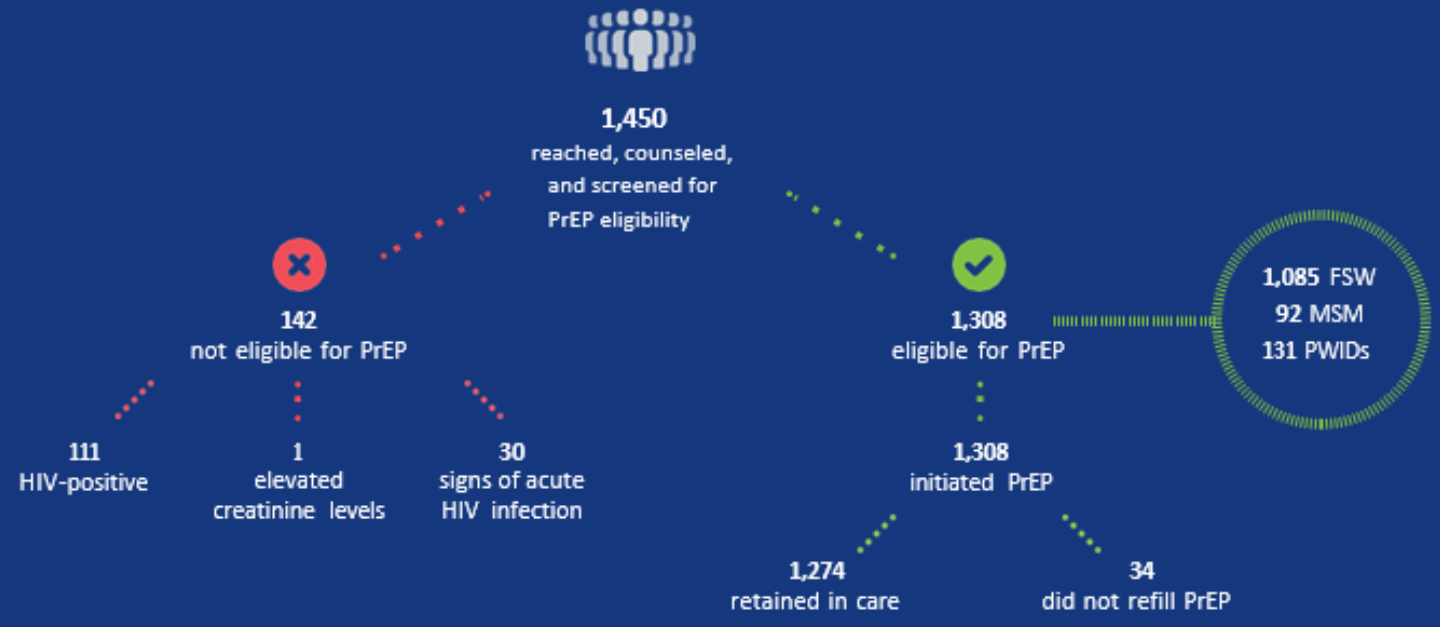


FIGURE 3

Best practices for PrEP implementation

Moonlight HIV testing

HIV testing is conducted between 6-11pm in priority hotspots and congregate settings for KPs. HIV positive KPs are linked to ART whilst negative KPs are linked to DICs for PrEP uptake

Nichoto HTS Approach

KPs are invited at KP-friendly locations and offered HTS and integrated multi-disease screening. HIV positive KPs are linked to ART whilst negative KPs are linked to DICs for PrEP uptake

Partnering with KP groups & CSOs

Partnering with KP groups and CSOs in Hotspot mapping, Moonlight and Nichoto HTS approaches outreaches enhanced HIV case identification among KPs and improved demand for PrEP services

SMS client reminder model

Used SMS texts for PrEP refills to enhance appointments and retention

WhatsApp groups for PrEP clients / PEs / PNs

WhatsApp groups for all PrEP clients, PEs/PNs, Nurses have been created to monitor the program

Use of locally designed slogans

Locally designed slogans e.g. *'Go tellyu Pardi for com take PrEP'* (*Go and tell your friend to take PrEP*) is an effective strategy to create demand for PrEP

Integrated multi-disease screening

Combined multi-disease screening interventions with HTS (*malaria, hepatitis B&C serology tests, blood pressure check, and HIV testing*) improved PrEP service uptake among KPs

Using Pink Power tricycles (Keke)

To improve sub-optimal linkage of HIV positive KPs identified during Moonlight and Nichoto approaches to ART, escorted referrals are done using tricycles (keke) driven by peer educators

Integrated Next Step Counseling (iNSC)

To enhance PrEP adherence, HIV risk reduction, and motivation to remain negative, KPs are provided a comprehensive package of iNSC through small group sessions

Training & mentoring the healthcare workers

Improved PrEP service delivery and enhanced program ownership

Pharmacovigilance monitoring of side effects

Used a government department to monitor PrEP side effects

PrEP Service Delivery

Overall, 3,141 KPs (63% FSW, 21% MSM, 16% PWID) were reached and provided with individual and/or small group-level HIV prevention interventions (condoms, lubricants, sensitization on prevention of HIV etc.). Demand for PrEP services was high, and within 18 weeks after launch, more than 1,300 people had initiated PrEP.

Conclusions

Demand creation and community-based delivery of PrEP via KP-led DICs supported by ICAP and by public-sector health facilities facilitated rapid PrEP roll out to a high-risk population. Close monitoring as the program matures will be important as MoHS and its partners scale up PrEP in Sierra Leone.

Publications

- Ikoona E, Msukwa M, Eleeza O, et al. High demand for HIV pre-exposure prophylaxis (PrEP) services amongst key populations in Sierra Leone: Early lessons from the country's first PrEP program. Abstract presented at 16th International Workshop on HIV Treatment, Pathogenesis and Prevention Research in Resource-Limited Settings INTEREST 2022; May 10-13, 2022; Kampala, Uganda. Abstract 267. Available from: http://interestworkshop.org/wp-content/uploads/2022/06/INTEREST-2022-Abstract_Book.pdf

- Ikoona E, Msukwa M, Eleeza O, et al. High demand for HIV pre-exposure prophylaxis (PrEP) services amongst key populations in Sierra Leone: early lessons from the country's first PrEP program. Abstract presented at AIDS 2022; July 29-August 2, 2022; Montreal, Canada. Abstract EPE006. Available from: https://aids2022.org/wp-content/uploads/2022/08/AIDS2022_abstract_book.pdf

Mitigating the Impact of HIV on Fisherfolk in Sierra Leone: A Formative Assessment

Fisherfolk, including fishermen, fishmongers, fish traders, fish processors, and community members engaged in the fishing economy as brokers and sex workers, face structural, cultural, social, and economic factors that affect HIV risk, and many fishing communities are characterized by relatively high HIV prevalence.

The 2010 Sierra Leone HIV Modes of Transmission Study and the 2011 HIV Surveillance on Fisherfolks in Sierra Leone report found HIV prevalence in fisherfolk to be 3.9% and incidence to be 560/100,000, both significantly higher than the general population.

Given the importance of fisherfolk to Sierra Leone's economy and their potential to serve as a bridging population for HIV, the Ministry of Health and Sanitation (MoHS) identifies fisherfolk as a priority group for the national HIV response.

In 2022, ICAP at Columbia University partnered with the National AIDS Control Program (NACP) at MoHS, the National HIV and AIDS Secretariat (NAS), the Ministry of Fisheries and Marine Resources (MFMR), and the Unions of Artisanal Fishermen (Sierra Leone Indigenous Artisanal Fishermen Union, Sierra Leone Amalgamated Artisanal Fishermen Union, Sierra Leone Artisanal Fishermen Union Consortium) to conduct a policy-relevant formative evaluation to assess knowledge, attitudes, and preferences for health and HIV services amongst fisherfolk in Sierra Leone.

> **"In this community a lot of people believe that there is no HIV. A lot of people don't believe that HIV is real so we want the government to come with the test so that we can do the test. And I am very much convinced that if they come with the test here, a lot of people will be tested positive**
>
> – Fisherman, Male, Tombo

Study Design and Methods

Following ethical approvals from the Sierra Leone and Columbia University Institutional Review Boards, key informant interviews (KII), surveys, and focus group discussions (FGDs) took place in May 2022 with fisherfolk from Goderich and Tombo landing sites and national and regional fisherfolk stakeholders.

Data collection included:

- 17 KII with national and regional stakeholders (including MFMR, MoHS, unions, fishing organizations, and health care providers)
- 12 FGDs and 113 interviewer-administered surveys with fishermen, fishmongers, and other adults in the fishing community

Descriptive statistics from surveys and closed-ended KII questions were analyzed using SPSS. KII and FGD recordings were transcribed, and qualitative data were analyzed using Dedoose software to perform thematic coding and content analysis.

Key Findings

Participant Demographics

Fisherfolk demographics: The 113 fisherfolk included 37 fishermen, 38 fishmongers, 9 fish processors, 15 sex workers, and 14 other professions. Sixty-three (56%) were female, median age was 40 years; 64% had a primary education or less; 71% were married; in the past month, 36% made less than $50 USD and 59% made less than $70 USD. Participants were highly mobile, with 20% reporting being away from the community for more than one month at a time in the last 12 months.

Key informant demographics: KII participants included five staff members from MOHS, one from NAS, and one from UNAIDS, as well as two staff from national fishing organizations, four members of fisherfolk consortiums/unions, three site-level fishing community leaders, and one healthcare provider. Their median age was 50 years, five (29%) were female, and participants had worked at their current organization for a median of 12 years.

Health and Health Care

Survey results showed that two-thirds of fisherfolk participants reported current health issues and that 20% said that their current health was poor or very poor.

They perceived the most common health issues in the community to be upper respiratory infections, tuberculosis, pneumonia, musculoskeletal pain, and malaria/fever; almost half reported ever having a sexually transmitted infection. Fisherfolk had access to both public and private health care services, which were within a 60-minute distance for 77% of respondents. Private health care services were perceived to be higher quality. Of the participants who accessed services, 71% were somewhat satisfied or very satisfied with the services they received.

HIV Knowledge, Risk, and Prevalence

Perceived HIV prevalence and community views: All participants had heard of HIV. Most fisherfolk reported that HIV prevalence in their community was low and said HIV was not a big health problem for fisherfolk, though some were concerned about HIV in the community and aware of HIV-positive community members. Respondents agreed that levels of HIV stigma and discrimination in the community are high, and some reported avoiding people living with HIV.

> **"We know the fisherfolks are a vulnerable population, but they are not given that prominence [of a key population] … these are the people that we really need to focus on… in terms of HIV because [they are considered] a mobile population.**
>
> – KII Participant
> National HIV Organization

HIV Knowledge

All fisherfolk had heard of HIV, mainly through radio/media and community workshops/ campaigns. There was some knowledge of condoms as a prevention strategy. However, misconceptions about HIV transmission were reported, with some stating that sharing utensils and toilets can lead to infection.

KII participants highlighted the lack of HIV knowledge in the community and the need for community sensitization.

Only 8% of survey respondents had ever heard of PrEP.

Once PrEP was described to the 100 fisherfolk who reported being HIV-negative, 57% said they would be interested in taking PrEP.

Self-reported HIV Status

Despite the perception that HIV was rare in the fishing community, 13 fisherfolk (12%) reported that they themselves had been diagnosed with HIV.

Only two reported currently being on ART– one had been on ART for less than a year and the other for one to five years.

Of the 11 fisherfolk not currently on ART, 10 said the main reason they were not on ART was due to feeling healthy and one said they were not taking ART due to stigma.

Self-reported HIV Risk

Sixty-nine percent of fisherfolk described themselves as at no or low risk of HIV. Of the 100 survey respondents who reported being HIV-negative, 35 had never been tested for HIV. However, when asked specifically about personal risk factors, these were common, with 66% reporting sex without a condom in the past four weeks, 61% unaware of the HIV status of their regular partner, 36% having more than one partner in the past month and 3.5% using injection drugs within the past three months.

Demographics – reported being diagnosed with HIV (N=13)

- **Diagnosed:** Median 24 months (range: 4-60)
- **Gender:** 69% (9) female
- **Age:** Median age = 44 (26-54)
- **Education:** 46% (6) had no formal education
- **Marital status:** 62% (8) married, 23% (3) single (never married), 15% (2) widowed
- **Employment**: 46% (6) fishmongers, 23% (3) fishermen, 15% (2) sex workers, 8% (1) fish processor, 8% (1) other profession

> **"The HIV/AIDS people were coming here to do free tests for the community people, the HIV people will fix megaphones all over inviting people to go for free HIV tests, but they would never go there. And the few that would decide to go cannot go up to fifty in number.**
>
> – Fishmonger, Female, Goderich

Current HIV Services & Delivery Preferences

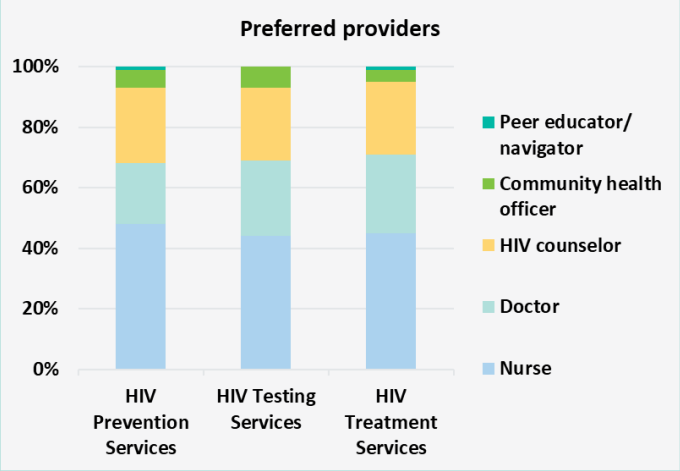
Current HIV Testing, Prevention and Treatment Services: Of the 65 survey respondents who had tested for HIV, most had been tested at community health centers (63%) and mobile outreach services (16%).

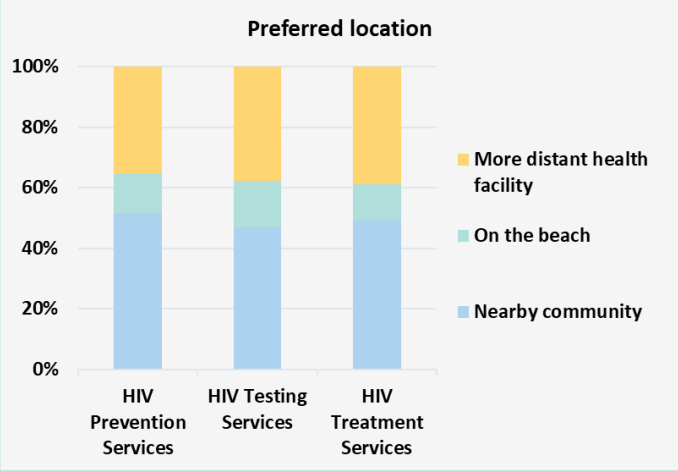
Fisherfolk and KII participants reported that community facilities often had condoms available, but that condom distribution programs had not taken place in the community for some time.

Preferences for HIV Service Delivery

Fisherfolk preferred to receive HIV prevention, testing, and treatment services in the nearby community vs. on the beach or at more distant health facilities.

Fisherfolk preferred to receive HIV prevention, testing, and treatment services from nurses vs. doctors or HIV counselors or community health officers, or other cadres.





Conclusions

Although current HIV prevalence amongst fisherfolk in Sierra Leone is unknown, 12% of fisherfolk in this small study reported having been diagnosed with HIV. Participants also reported limited awareness of prevention strategies, relatively high levels of HIV risk behaviors, very low uptake of antiretroviral therapy, and substantial stigma and discrimination towards people living with HIV. These findings strongly suggest the need for additional research and active outreach to fishing communities to provide information, education, and health services designed for their needs and preferences. Fisherfolk are eager to receive more health care services in general and more HIV prevention, testing, care, and treatment services specifically. They are clear about health care barriers such as mobility, cost, and perceived low-quality public sector health services, and open to participating in the optimal design of HIV service delivery. Working with fishing communities to design differentiated service delivery strategies will be an important part of expanding access to HIV testing, including provider-initiated testing, self-testing, index testing, and social network testing services, linkage to prevention, including PrEP, for those testing negative, and linkage to treatment for those testing positive.

OpCon Partners

- Ministry of Health, Public Hygiene, and Universal Health Coverage,
- Santé Espoir Vie Côte d'Ivoire (SEV-CI)
- Research Triangle Institute (RTI International)
- Mozambique Ministry of Health Mozambique
- Dimagi
- National Department of Health (NDOH) South Africa
- Aurum
- Wits RHI
- U.S. Centers for Disease Control (CDC)
- United States Agency for International Development (USAID)
- The International Training and Education Center for Health (I-TECH)
- Ministry of Health, Zambia
- Centre for Infectious Disease Research in Zambia (CIDRZ)
- Ministry of Health and Child Care, Zimbabwe
- Zimbabwe National Network for People Living with HIV (ZNNP+)
- Clinton Health Access Initiative (CHAI)
- National AIDS Control Program, Ministry of Health and Sanitation, Sierra Leone
- Dignity Sierra Leone
- Women in Crisis (WIC), Sierra Leone
- Rufutha Development Association (RODA), Sierra Leone
- Society for Women and AIDS in Africa, Sierra Leone (SWAASL)
- Ministry of Fisheries and Marine Resources (MFMR), Sierra Leone
- Sierra Leone Artisanal Fishermen Union (SLAFU)
- Sierra Leone Amalgamated Artisanal Fishermen Union (SLAAFU)

List of OpCon Publications

A Discrete Choice Experiment to Evaluate Preferences for 'No Service' Delivery Models Amongst People Living with HIV in Urban Zimbabwe

Title	Type of Publication	Journal/Conference	Lead Author
Optimizing Differentiated Treatment Models for People Living with HIV in Urban Zimbabwe: Findings from a Mixed Methods Study	Manuscript	PLOS ONE PMCID: PMC6986745 Published: January 28, 2020	Miriam Rabkin
Optimizing Differentiated HIV Treatment Models in Urban Zimbabwe: Assessing Patient Preferences Using a Discrete Choice Experiment	Manuscript	AIDS and Behavior PMCID: PMC7846512 Published: August 18, 2020	Michael Strauss
"For it [HIV Positive Status] to be known by Everyone… It is not Good.": Experiences of and Responses to Stigma Among HIV Treatment Patients in Urban Zimbabwe	Abstract- Poster	AIDS Impact, London, July 2019	Tsitsi Masvawure
Optimizing Treatment Models For People Living with HIV in Urban Zimbabwe: Findings from a Mixed Methods Study	Abstract- Poster	International AIDS Society, Mexico City, July 2019	Michael Strauss
Optimizing Treatment Models for People Living with HIV in Urban Zimbabwe: Findings from a Discrete Choice Experiment	Abstract- Oral Presentation	International Health Economics Association, Switzerland, July 2019	Michael Strauss
Family Support as a Source of Resilience to Counter HIV-related Stigma Among Adults on Antiretroviral Therapy in Urban Zimbabwe	Abstract- Oral Presentation	AIDS2020 Virtual, July 2020	Tsitsi Masvawure
Using Mixed Methods in Discrete Choice Experiments to Determine Patients' Preferences for HIV and TB Services	Abstract- Poster Presentation	AIDS2020, Virtual, July 2020	Yael Hirsch-Moverman
'Stable Patients' Need Health Services Too: HIV-related Symptoms are Common Amongst People Eligible for Less-intensive Differentiated Service Delivery Treatment Models in Harare, Zimbabwe	Abstract- Poster Presentation	IAS 2021, Virtual/Berlin, July 2021	Jennifer Zech

List of OpCon Publications

A Formative Evaluation of HIV Self-Testing Amongst Adolescent Girls and Young Women in Zambia, in Partnership with the Center for Infectious Disease Research in Zambia (CIDRZ)

Title	Type of Publication	Journal/Conference	Lead Author
The Journey from a Positive HIV Self-Test to Linkage and Treatment: Barriers and Enablers Among Adolescent Girls and Young Women in Zambia	Abstract- Abstract Book	International Workshop on HIV & Adolescence, October 2019, Kenya	Jenala Chipungu
Recruiting High-risk Adolescent Girls and Young Women for Short-term Follow-up After HIV Self-testing: Strategies that Work	Abstract- Poster	International Workshop on HIV & Adolescence, October 2019, Kenya	Mwila N'gandu
Self-testing HIV Positive and Linking to Treatment: A Tale of Resilience and Fortitude among Adolescent Girls and Young Women in Zambia	Abstract- Poster	International Workshop on HIV Pediatrics, 2021, Virtual/Berlin, July 2021	Jenala Chipungu

A Feasibility and Acceptability Assessment to Leverage Community Antiretroviral Groups (CARGs) to Deliver Tuberculosis Preventive Treatment (TPT) in Zimbabwe

Leveraging Zimbabwe's Community Antiretroviral Groups (CARGs) to Deliver TB Preventive Treatment is Feasible and Acceptable: Findings from a Mixed Methods Study	Abstract- Poster	AIDS2020 Virtual, July 2020	Martin Msukwa
Support for Integrating Tuberculosis Preventive Treatment (TPT) into Community Antiretroviral Refill Groups (CARGs) Among People on Antiretroviral Treatment (ART) in Zimbabwe	Abstract- Oral Presentation	The Union World Conference on Lung Health, Virtual, October 2020	Jennifer Zech
Acceptability of Community-Based Tuberculosis Preventive Treatment for People Living with HIV in Zimbabwe	Manuscript	Healthcare PMCID: PMC8775984 Published: January 7, 2022	Martin Msukwa

An Evaluation of South Africa's Expanded Ward-Based Primary Healthcare Outreach Teams

"They are our eyes outside there in the community." Implementing Enhanced Training, Management and Monitoring of South Africa's Ward-based Primary Healthcare Outreach Teams	Manuscript	PLOS ONE PMCID: PMC9417004 Published: August 26, 2022	Joanne Mantell

List of OpCon Publications

Title	Type of Publication	Journal/Conference	Lead Author
An Analysis of Out-of-Pocket Spending by People on ART in Côte d'Ivoire			
Financial Burdens of HIV and Chronic Disease on People Living with HIV in Côte d'Ivoire: A Cross-Sectional Out-of-Pocket Expenditure Study	Manuscript	PLOS ONE PMCID: PMC8320983 Published: July 29, 2021	Rachel Stelmach
Out-of-Pocket Spending on Health for People Living with HIV in Côte d'Ivoire	Abstract- Poster	CROI 2020, Virtual, March 2020	Rachel Stelmach
Out-of-Pocket Health Spending was not Associated with Missed Appointments for Adults on Antiretroviral Therapy in Côte d'Ivoire	Abstract- Poster	AIDS2020 Virtual, July 2020	Martin Msukwa
A Feasibility Study of Integrating 3HP for Tuberculosis Prevention into the Fast Track Differentiated ART Model in Zimbabwe			
Integrating 3HP-based Tuberculosis Preventive Treatment (TPT) into Zimbabwe's Fast Track HIV model: Aligning TPT and HIV Visits, Multi-month Dispensing, and Telephone Follow-up is Feasible and Acceptable	Abstract- Poster	INTEREST, Uganda, May 2022	Munyaradzi Mapingure
Integrating 3HP-based Tuberculosis Preventive Treatment (TPT) into Zimbabwe's Fast Track HIV Model: Aligning TPT And HIV Visits, Multi-month Dispensing, and Telephone Follow-up is Feasible and Acceptable	Abstract- Poster	AIDS2022 Virtual, July 2022	Munyaradzi Mapingure
Large-scale Implementation of Short-course TB Preventive Treatment Regimens: Experiences from the Field	Symposia presentation	The Union World Conference on Lung Health, Virtual, November 2021	Munyaradzi Mapingure
Implementing a Pilot Project to Provide HIV Pre-exposure Prophylaxis (PrEP) Services to Key Populations in Sierra Leone			
High Demand for HIV Pre-exposure Prophylaxis (PrEP) Services Amongst Key Populations in Sierra Leone: Early Lessons from the Country's First PrEP Program	Abstract- Poster	INTEREST, Uganda, May 2022	Eric Ikoona
High Demand for HIV Pre-exposure Prophylaxis (PrEP) Services Amongst Key Populations in Sierra Leone: Early Lessons from the Country's First PrEP Program	Abstract- Poster	AIDS2022 Virtual, July 2022	Eric Ikoona

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