Consolidated guidelines on differentiated HIV testing services
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Web Annex H. Case examples
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Background

This Web Annex presents a compilation of all case examples collected as part of the guideline development process. Not all examples collected could be featured in the guidelines, so they are located in this annex to provide some practical examples of applying and implementing WHO guidance.

All of the contributions included in this annex highlight established good practice and innovation in the delivery of HIV testing services in a broad range of settings and for diverse populations.

Each example is organized by thematic area based on each chapter.

Chapter 3. Mobilizing demand for HIV testing services and pre-test information

India: Demand generation using virtual platforms for HIV self-testing

Through the STAR initiative, PATH, with partners, sought to demonstrate the feasibility and acceptability of HIVST among key population and other high-risk groups to inform an HIVST policy in India. The project implemented a virtual model of HIVST service delivery, which distributed 645 HIVST kits in 2022.

Phase 1: Challenges with demand generation using online platform and search engine optimization

Initially, online platforms were used to increase awareness about HIVST and to generate demand for testing via the new service delivery platform. A social media campaign was translated into eight languages and launched in April 2022. The website data showed that posts had reached 654,773 individuals, with only 151 people engaged with the posts, and 2128 clicks on the link to the website. A total of 136 people registered on the website, and 79 ordered HIVST kits. An additional 108 test kits were ordered through related activities using dating apps.

Lessons learnt: The social media profiles for the project were new, and the three-month period was not enough to generate traffic on the new sites, and the process of ordering the kits was too time-consuming, and it was reported to be too long for a virtual population.
Phase 2: Rethinking demand generation and platform design

To strengthen demand generation, PATH engaged with 28 social media influencers from the LGBTQI+ community. These influencers were supported to create two posts per week from December 2022 to February 2023. Posts included photos with messages, animated and personal videos, quizzes and polls. During the campaign, influencers created 374 posts, which were viewed 830,900 times, and a total of 54,000 people engaged with the posts. There were 7,644 people who clicked on links and explored the virtual platform; 321 people registered and 112 people ordered test kits. Demand generation on dating platforms and through other social media led to orders for an additional 346 test kits.

Influencer marketing resulted in a higher uptake of services in a limited timeframe than the previous strategy. Platform users also interacted with influencers, providing insights into testing behaviours and feedback on packaging and delivery mechanisms. This interaction informed refinement of campaign messages.

Demand generation through effective use of social media platforms requires time, strategic focus and engagement with the intended audience. Further, converting this demand into uptake of HIVST will require additional support and understanding of the testing needs and preferences of the virtual population.

Nepal, Philippines and Thailand: Online-to-offline (O2O) HIV services – Impact on HIV testing and case finding among key populations

The COVID-19 pandemic renewed emphasis on using online-to-offline (O2O) interventions strategically. In Thailand, Nepal, and the Philippines, USAID/FHI 360 EpiC Project helped community-based organizations and hospitals to adapt multiple O2O approaches to reach and test key populations.

From October 2021 to September 2022 social influencers, targeted ads, and online outreach on social media and chat apps engaged sexual, drug-use, and chemsex networks to promote HIV testing. A unique online reservation web application permitted in-depth tracking and analysis of client flow from the source of client online exposure to messaging through clinic attendance and service utilization.

In Thailand, O2O interventions brought in 11% of all project-supported HIV testing clients (5% HIV case detection among those clients). Most online clients were reached by Facebook, but two other apps – Blued and Twitter – had the highest case detection (10.4% and 7.8%, respectively). In Nepal O2O interventions brought in 10.3% of all HIV testing clients, and Facebook was the most common site for recruiting clients (57% of all O2O activity). A total of 8.4% of clients tested through O2O interventions were HIV-positive; some platforms showed higher case detection rate, WhatsApp at 11.1%. In the Philippines O2O interventions specifically assisted project-supported government hospitals, where they contributed more than one third (37%) of the clients tested for HIV and almost
one fifth (19%) of all identified HIV cases. At one government facility, the online reservation app contributed 56% of all HIV testing and 79% of all identified HIV cases.

Differentiated O2O interventions focused on key populations clearly demonstrated their added value in HIV testing and case finding across the three countries. Programs need to regularly analyse the effectiveness of specific platforms, use innovations such as online reservation apps that allow more in-depth analysis and continually adapt O2O interventions so that they remain impactful and relevant to dynamic use of social media by key population communities.

*This work was supported by Unitaid and the United States Agency for International Development.*

Chapter 4. Essential post-test service package: counselling messages and linkage to prevention, treatment and other services

**West Africa: Estimating HIVST impacts with routine data triangulation method**

The Atlas project, implemented by Solthis in collaboration with the Institut de Recherche et Développement (IRD), sought to introduce and scale up HIVST in West Africa. The project was implemented from mid-2018 to mid-2022 in Côte d’Ivoire, Mali and Senegal. Through secondary distribution,1 over 400,000 HIVST kits were distributed.

The ATLAS M&E framework used mixed methods to track the number of HIVST kits distributed, the indicator recommended by WHO. Data were disaggregated by sex, age, delivery channel and geographic areas of distribution.

As part of this project, ATLAS also developed a data triangulation method to estimate, at population level, the effect of HIVST distribution on access to conventional HIV testing services (HTS), new HIV diagnosis and ART initiation in Côte d’Ivoire and Senegal by performing a regression of ecological time series using linear mixed models. The following indicators were collected by health district and by quarter: (1) the number of HIVST kits distributed; (2) the number of individuals tested for HIV with results received or the number of individuals tested for HIV; (3) the number of individuals newly tested positive for HIV or the number of new positive tests; and (4) the number of people newly enrolled on ART. The identifiers or names of health districts and health regions were also collected (see Figure 4.1).

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1 In secondary distribution an individual (secondary contact) receives an HIVST kit from another person in their sexual or social network (primary contact), who received the kit from a health care worker or a peer educator.
Fig. 4.1. Example of data collected for the HIVST impact analysis, Côte d'Ivoire

Results demonstrated increased access to HTS (despite some substitution effect on conventional testing) and a positive impact on diagnosis of new HIV cases (Côte d’Ivoire and Senegal) and on ART initiation (Senegal) at population level (Table 4.1).

Table 4.1. Linear effect of the number of HIVST kits distributed via ATLAS on access to HIV conventional testing, HIV diagnosis and ART initiation in Côte d’Ivoire and Senegal (Q3 2019 to Q1 2021), adjusted by quarter, year and region.

<table>
<thead>
<tr>
<th>Country</th>
<th>Côte d’Ivoire</th>
<th>Senegal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcomes variable</td>
<td>Effect for 1000 HIVST kits distributed by Atlas</td>
<td>95% CI</td>
</tr>
<tr>
<td>Conventional testing</td>
<td>-195</td>
<td>-427 to +38</td>
</tr>
<tr>
<td>New HIV diagnosis</td>
<td>+8</td>
<td>0 to +15</td>
</tr>
<tr>
<td>ART initiations</td>
<td>-2</td>
<td>-8 to +5</td>
</tr>
</tbody>
</table>

Such evaluation enables programme staff to monitor the impact of HIVST at a population level without introducing new indicators and further data collection, in a context where countries are often burdened with multiple HIV reporting systems and numerous indicators. Following this methodology, WHO has initiated a multi-country analysis to expand the use of this triangulation method across sub-Saharan Africa.

This work was supported by Unitaid.

South Africa: B-OK bead bottles – A communication tool for HIV testing, linkage, adherence, and viral suppression

For many years, “know your status” has been a central but insufficient message – communicating the what but not the why – within the HIV response. Healthcare providers have struggled to find clear and
relatable ways to communicate the benefits of knowing one’s status, and clients often experience health communication as overly technical or too abstract to understand.

The B-OK bead bottles are designed to help healthcare providers simplify complex concepts during counselling with people living with HIV. The tool consists of three bottles of beads, with red beads representing HIV and black beads representing healthy cells.

Mixed black and red beads: the body at diagnosis, with many black beads remaining but red beads beginning to multiply. “While you may still feel well at this stage, treatment is needed because the red HIV beads are multiplying and can also be transmitted to others.”

Mostly red beads: HIV can overtake the body if someone avoids testing, delays starting treatment, or stops taking treatment. “Your body can become vulnerable to other illnesses, making it difficult or even impossible to recover.”

Mostly black beads and one red bead: viral suppression, the result of daily adherence to ART. “Your virus is under control but is still present. The single red bead is in such small amount that it cannot be detected by viral load tests and cannot be transmitted to anyone. It shows that treatment is still needed. Without treatment, red beads will begin multiplying again.

In 2021 the tool was tested among healthcare providers in South Africa. Providers reported that the tool was easy to use, facilitated a clear and intuitive understanding of ART, prompted better discussion between client and provider and increased motivation for linkage and adherence.

“The bottles encourage adherence easily and assist with clients who are sceptical.”
“After the demonstration, clients look forward to the virally suppressed state.”

The B-OK bottles have proven to be a simple, low-cost, effective tool for supporting scale-up of effective, high-quality HIV counselling and have been used by implementers in over 10 countries.

This work is supported by Population Services International

Chapter 5. Service delivery approaches for HIV testing

Canada: Our Healthbox – Interactive dispensing system for low-barrier access to HIV self-testing and harm reduction supplies for marginalized and underserved populations

In Canada, there are an estimated 6500 persons living with HIV who are undiagnosed. With Canada’s first HIV self-test approved in 2020, there are efforts underway to build and implement technology...
solutions to reach underserved populations and those who have complex health and social circumstances and housing instability so that they can get tested to know their HIV status and get connected to care.

“Our Healthbox” supports people, without judgement or stigma, with the things they need for their health. We designed a “smart” and interactive dispensing machine to provide low-barrier access to HIVST kits, plus essential harm reduction materials (e.g., unused needles, naloxone kits, inhalation supplies), sexual health supplies (e.g., condoms), personal health items and things often taken for granted (e.g., women’s hygiene products, and socks and mittens in the winter months). It also provides health information and a support services directory with maps for people to find local healthcare and social services.

Our Healthbox is set up as a research program to evaluate its effectiveness. Participation in the program is simple: a person can go to the machine and use the interactive interface to consent, create an anonymous user ID (needed to obtain items from the machine), complete a brief demographic survey, and select the free HIV self-tests and other harm reduction supplies to be dispensed. The machine is available 24/7; clients can get the supplies as well as care and prevention resources when they need them, and there is no limit to how many times a person can access the machine for items to support their health.

Our Healthbox launched in New Brunswick, Canada in January 2023 in four communities: in a community-based harm-reduction agency in Moncton, inside the vestibule of a church in Sackville, in a community-based pharmacy in Richibucto that has a methadone program and outside a First Nations community centre in Woodstock. In the first 14 weeks of operation, over 650 persons obtained more than 14,000 safe injecting supplies and over 800 inhalation supplies. About 125 persons obtained more than 200 HIV self-tests; 25% were first-time HIV testers. This initiative aimed to set up 25 machines across Canada by the end of 2023, and it is anticipated that, over the next three years, Our Healthbox will be available in 100 communities across Canada.

www.ourhealthbox.ca

Canada: I’m Ready – A program providing low-barrier access to HIV self-testing

In Canada, 10% of people living with HIV remain undiagnosed. Novel approaches for access to testing are necessary to reach these individuals for diagnosis and linkage to care. With Canada’s first HIV self-test approved in November 2020, and with the COVID-19 pandemic restricting in-person contacts, REACH Nexus at MAP Centre for Urban Health Solutions moved quickly to develop technology solutions to reach underserved populations with self-testing and care pathways.

“I’m Ready” is a national research program launched in June 2021 to provide Canadians with low-barrier access to HIVST options for connecting to the care they need in their communities. Participation in I’m Ready is simple: Participants download the app, consent, obtain an anonymous user ID, complete brief pre- and post-test surveys and receive up to three free HIV self-tests.

Photo credit: Stock photo, REACH Nexus
When a person decides to test, the app provides access to information on treatment, care, and prevention support in their community. For those who need support before, during or after testing, peer navigators are available (both English and French speakers) through a secure telehealth platform that can be accessed through the I’m Ready app.

From June 2021 to April 2023, over 6200 participants ordered more than 15,500 test kits. Participants were mostly young (75% were under 35 years old), 64% identified as male, 49% were employed full-time, and 52% lived in very large urban areas. The majority of participants (70%) were from key populations. An additional 19% of people who used the app were from non-key populations who were at “medium/high” sexual risk for HIV. Of the 2500 participants who uploaded a test result, 21 (0.84%) reported HIV-positive results (10 were first-time testers and 7 were not from one of the key populations).

Most I’m Ready app users tended to be first-time testers (26% to 53%) or had not tested for over a year (26% to 40%). First-time testers were 2–3 times more likely to be young, working part-time, female, transgender, living in small rural areas, and from Atlantic Canada where there are no HIV point-of-care testing services. The I’m Ready program is working to reach individuals in communities who are undiagnosed or who need access to testing so that they can know their status and make informed decisions about their health.

https://www.readytoknow.ca/

Côte d’Ivoire, Senegal and Mali: ATLAS project – HIVST secondary distribution to key populations

Secondary distribution of HIV self-test kits is the provision of one or more kits by a client of prevention and testing services to individuals in their sexual or social networks. Secondary distribution reaches populations at risk of HIV infection that are not reached by conventional HIV testing services. These may be key “hidden” or "peripheral" populations, such as casual sex workers, men who have sex with men who do not identify as gay (for example, some bisexuals, married men) or sexual partners of people in key populations (including the clients of sex workers). In West and Central Africa, these groups account for 27% of new infections (102).

The ATLAS project is implemented by a consortium of Solthis and the Institut de Recherche pour le Développement, with more than 30 institutional and civil society partners in three countries and financial support from Unitaid. From July 2019 to February 2022, ATLAS provided 400,000 free HIVST kits in 13 regions in Côte d’Ivoire, Mali and Senegal, most of which were distributed to key populations (91%). Programmatic data showed that secondary distribution increased over time (see figure below), highlighting the gradual adoption of this strategy by both peer educators and the populations themselves, and, thereby, increasing regular retesting among people at ongoing risk of acquiring HIV.
**Fig. 5.1. Mean number of HIVST kits distributed per primary contact** (outreach activities addressing key populations)

Vertical grey bars represent the emergency COVID-19 response phase (March–May 2020)

A study was done that examined experiences of HIVST secondary distribution and found that half of the respondents in the sex worker channel were men, demonstrating that clients and regular partners were reached, and 10% of respondents in the channel for men who have sex with men were women, suggesting that some female partners were reached. HIVST can reach individuals who do not perceive themselves at high risk of HIV (50% of respondents) and who are often far from testing programmes. Two fifths of respondents (41%) had never tested for HIV before using the self-test, indicating effectiveness in reaching first-time testers.

From this case study, people who received HIVST kits through secondary distribution also tested relatively quickly (on average two days after receiving it), used it on their own or with the help of primary users, and reported often using the support tools included in the kit, such as informational leaflets, hotline numbers and demonstration videos.

In addition, the qualitative survey confirmed the feasibility and acceptability of secondary distribution as well as the diversity of people who can be reached with HIVST. Cases of tertiary distribution have been noted – for example, clients of sex workers asking for kits to offer to their spouses.

*This work was supported by Unitaid.*
Kenya: HealthPulse AI – Virtual self-care for HIV testing and prevention

Audere, a global digital health non-profit supported by the Bill & Melinda Gates Foundation, in partnership with online pharmacy provider MYDAWA in Kenya, Jhpiego and the University of Washington, has developed to reach at-risk populations with a virtual model for HIVST.

HealthPulse AI is a virtual HIVST model developed to reach at-risk populations in Kenya. HealthPulse AI is a differentiated service delivery model enabled by artificial intelligence (AI), which provides powered quality assurance throughout the user journey, and provides linkage to counselling, prevention services and referral for confirmatory testing and care (see figure below). HealthPulse AI uses a smartphone which makes it a powerful diagnostic tool, enabling quality-assured, stigma-free testing via virtual care in participating pharmacies or community-based services. HealthPulse AI can be delivered in a mobile application or WhatsApp chatbot or integrated into third-party solutions.

The pilot programme, which began in October 2022, provides subsidized HIVST kits and access to post-exposure prophylaxis (PEP) and pre-exposure prophylaxis (PrEP) via telehealth for at-risk individuals. This programme, delivered through MYDAWA’s digital platform powered by HealthPulse AI, will demonstrate the feasibility and efficacy of virtual-care models that facilitate access to HIV testing and prevention by:

- providing educational information and counselling;
- increasing confidentiality, agency and flexibility through affordable home-based testing and linkage to prevention and treatment via telehealth services;
- improving care outcomes through AI-powered quality assurance and timely follow-up.
As of November 2023, over 94% of 1425 clients had successfully uploaded high-quality HIVST results on their first try by following HealthPulse AI’s visual guidance. All participants in usability studies expressed positive opinions about the digitally facilitated client and clinician digital user journeys. AI identified bad images in 14% of cases (including refills) and requested new images in real time from clients, avoiding clients needing to retest, which would have delayed care.

HealthPulse AI quality controls ensure that only blood-based self-test results are accepted into the system, providing clinicians with highly accurate result interpretation (96.2%) to increase confidence in their decisions. This reduces risk of human error by flagging positive results, including faint lines, which prompts follow-up confirmatory testing.

Good practices and lessons learned include:

- Early co-design and usability testing of clinician and client applications and marketing materials ensure accessibility across a broad range of people’s experience, needs and attitudes.
- Flexibility in access to channels for telehealth, digital access points and choice of self-test brands support stronger uptake.
- Privacy, ease of use and affordability are key benefits for self-testers.

*https://mydawa.com/

https://www.auderenow.org/home

*This work was supported by the Bill & Melinda Gates Foundation.*
**Pakistan: Social network-based testing campaign (supplement to case examples in guidelines)**

The Eastern Mediterranean Region (EMR) is lagging on most HIV indicators, including diagnosis, treatment, and viral load suppression. In 2021, WHO and UNAIDS estimated that there were 430,000 people living with HIV in the EMR, of which only 41% were diagnosed, 27% were on treatment and 24% had achieved viral load suppression. Diagnosis remains the major bottleneck that challenges the response in most countries, indicating the need to expand testing coverage.

During December 2022, WHO EMRO in partnership with national HIV programmes and civil society organizations implemented a regional campaign with the slogan, “Tell your friend. HIV testing is free, confidential and easy.” The campaign implemented social network-based testing as a means to increase testing. The campaign relied on peer-to-peer enrollment; people with HIV and members of key populations were encouraged to engage with and bring at least one person from their social, sexual or drug-injecting network to get tested. Those who tested positive were in turn encouraged to bring peers to be tested.

The campaign was monitored through pre- and post-campaign surveys that measured monthly HIV testing and case diagnosis. For example, in Pakistan, 9,684 tests were conducted during the campaign compared to a monthly average of 2,385 tests performed from January to November 2022.

The campaign showed the potential effect of social network testing as an approach to increase HIV testing. Such campaigns can be adapted to generate demand for HIV testing and close the gap in service access.

**United Republic of Tanzania: Assessing performance of social network approaches to HIV testing**

Social network testing refers to a strategy for engaging sexual and drug-injecting partners and social contacts of people with HIV, and of those who are HIV-negative and at ongoing risk, in voluntary testing services, by leveraging social connections. In United Republic of Tanzania, social network testing was offered in both community settings and health facilities using different approaches to target different populations.

In community settings, social network testing approaches mainly target and reach key and vulnerable populations. Test promoters were identified, through peers, in the community, and were given coupons to share with social contacts or others in risk networks. The social contacts then presented the coupons at health facilities for HTS. In health facilities, social network testing complements assisted partner notification services by giving index cases an opportunity to reach unelicited social network members at substantial risk. In health facilities, social network testing is an adjunct to assisted partner notification services to reach social contacts at substantial risk who might benefit from testing but were not elicited as sexual or injection partners of the index case. These social contacts were then traced and tested either through the index case, or with assistance from health care workers. HIV self-testing kits were also made available to index clients or seeds as an option for distribution to social contacts in both community settings and health facilities.

We analysed routine monitoring and reporting program data from October 2021 to March 2023 to assess the performance of the social network testing strategy in sites supported by the United States
President's Emergency Plan for AIDS Relief (PEPFAR) in collaboration with the Government of United Republic of Tanzania. The assessment focused on the number of social contacts reached and the number of PLHIV newly diagnosed as key indicators.

A total of 121,739 social contacts were tested and 7,731 (6.4% positivity yield) previously undiagnosed individuals living with HIV were identified through the social network testing approach. Tested social contacts and newly diagnosed individuals were primarily female (80.6% of those tested, 79.4% of new HIV diagnoses). About two thirds of social contacts tested (78,763; 64.7%) and over three quarters of HIV diagnosed individuals (63,766; 82.5%) were reached in community settings. During the assessment period, the number of social contacts tested increased substantially by 11.5-fold (from 3,739 in October–December 2021 to 43,058 in January–March 2023). Social network testing increased faster in facilities compared to community venues during the same period (7.6-fold community, 40.2-fold facility). Also, during the same period, new HIV diagnoses increased by approximately 6-fold. A higher number of younger people (below 34 years old) were tested compared to older people (34 years and older).

These results indicate that social network testing is a promising HIV case-finding approach, reinforcing the need for further scale-up to accelerate HIV epidemic control in United Republic of Tanzania.

This work was supported by the Centers for Disease Control and Prevention at PEPFAR-supported sites in Tanzania.

**Viet Nam: Web-based distribution of HIVST**

To improve access to HIV testing services for key populations, the Viet Nam Administration for HIV/AIDS Prevention and Control, with support from WHO, piloted web-based distribution of HIV self-testing kits in three provinces between November 2020 and December 2021. This project sought to increase access to HTS and to assess feasibility, uptake and linkage to post-test services to inform national scale-up.

Clients registered on a web-based platform* and requested HIVST kits and also chose between home delivery or pick-up of HIVST kits. Voluntary reporting of HIVST results was encouraged. For reactive results, staff or peers supported clients to access further testing and linkage to PrEP or ART. Demographic information and risk behaviour information were collected at risk assessment and registration phase. An online voluntary client satisfaction survey was offered. Data were automatically stored and compiled in the web-based system. Staff documented post-test linkage in the same online system.

In the pilot phase, 4,320 clients registered on the website, and 3,727 (86.3% of registered clients) ordered and received 4,140 HIVST kits.** Nearly 600 others ordered and received condoms, lubricants and/or needles and syringes without HIVST. Most registered clients (90%) were male, and 92% were 15–35 years of age. Of those who received test kits, 3,088 (74.6%) reported their results, including five clients who reported invalid results: 167 (5.4%) had reactive results; 159/167 (95.2%) of these were confirmed with HIV (nine tested negative on the confirmatory test); and 156/159 (98.1%) of clients with HIV initiated ART. Of 2,925 clients who reported or confirmed negative
results of HIVST, 584 (20.0%) initiated PrEP. Nearly all clients (98%) reported being “satisfied” or “very satisfied” with the services.

Since January 2022 the web-based HIVST distribution has been scaled up, with support from the Global Fund, to include an additional 22 provinces, and the number of HIVST kits distributed on a monthly basis increased from 300 in January 2022 to 1382 in October 2022. Of the total of 6982 tests distributed (January–October 2022), 46% of testers (3198/6982) reported results: 252 (8%) reported a reactive result, 70% of which were confirmed as HIV-positive; 86% of clients with a confirmed positive result initiated treatment; and 26% (757/2946) of individuals with an HIV-negative test result initiated PrEP.

This case study demonstrated that web-based HIVST distribution is acceptable and feasible and can identify additional HIV infections and support linkage to PrEP. More males and younger individuals used this approach. The model can be scaled up or replicated in similar settings to help achieve national and global goals.

**Some clients ordered more than once; clients could order more than once but only one test kit every three months.

This work was supported by the Global fund.

**Zimbabwe: Facility-based HIVST in family planning clinics**

HIV incidence among clients at family planning clinics is high in Zimbabwe, while uptake of HIV prevention and treatment services is suboptimal. To address this gap, in October 2020 Zimbabwe began offering integrated person-centred screening and treatment for STIs, HTS, ART and PrEP for women seeking family planning services in four clinics.

To develop the new model, the Ministry of Health and Child Care and WHO formed a multi-agency team that visited family planning clinics to review staffing, client flow and service delivery data and then developed and introduced a modified HTS service delivery protocol. HTS options included provider-administered testing and HIVST for both clients and their partners. HIVST was available for use in private spaces within facilities (“self-testing booths”) or to take home. Staff members were trained to counsel and link clients receiving HIVST kits to appropriate services, including ART or PrEP. Clients who agreed to a follow-up were contacted by telephone for linkage to support services and further care.

Between October 2020 and December 2022, 18 756 women presented for family planning services at the four sites. A total of 6680 clients (35.6%) were tested for HIV, of which 6.7% (448) were diagnosed with HIV. All those diagnosed with HIV were referred for treatment, 4.7% (21/448) of whom were initiated on ART. Of the 6232 clients with non-reactive test results, 2114 were assessed to be eligible for PrEP, 133 (6.3%) opted for PrEP initiation onsite, and the rest were referred to external PrEP services. In addition to the 6680 self-test kits, a total of 2010 kits were distributed, with 1453 (72.3%) used directly by family planning clients and the remainder shared with partners. HIVST kits were used onsite or taken for use in a private location at the users’ discretion. Among the 998 (68.7%) HIVST users who shared their results with providers, 7.6% (n=76) were reactive, and all of those individuals indicated that they confirmed their results with provider-delivered testing. In a
qualitative assessment, most clients interviewed indicated that they were satisfied with the integrated service package.

The project demonstrated high service acceptability and uptake by providing both HIVST and standard testing, including by lay providers, within the clinic setting. The approach is now being scaled up nationally.

*This work was supported by the Children’s Investment Fund Foundation.*

**Chapter 6. Priority populations**

**Central African Republic: Law reform for lowering the age of consent for HIV testing**

Central African Republic has among the most severe HIV epidemics in west and central Africa: HIV prevalence is estimated at 2.9%, and women constitute nearly 60% of people with HIV. Half of youth and adolescents in the country have their first sexual intercourse before the age of 15. HIV estimates show adolescent girls and young women are at higher risk of HIV infection than their male counterparts and older women and men.

Between 2016 and 2022 the Central African Network for HIV/AIDS Ethics and Law (RCED), Ministry of Justice, the Ministry of Health and UNAIDS worked collaboratively to revise the 2006 law that required parental authorization for HIV testing for adolescents up to the age of 18. Lowering the age of consent was a key provision of the new proposed law, which also took into consideration new scientific data and the Central African social context.

**Efforts to change the age of consent for testing and self-testing included:**
- Hosting a stakeholder consultation to draft the law
- Forming an expert group to validate and revise the draft law
- Presenting the rationale for the new law at a parliamentarian forum
- Adoption of the law by the National Assembly (November 2022) and signature by the President (December 2022)

The enacted law now lowers the age of consent for HIV testing to 12 years old, based on the understanding that the health and life of the child is more important than some social considerations. It also strengthens the rights of people with HIV and people at high risk of HIV infection, and it reflects the latest science on HIV prevention, testing and treatment. In addition, the revised law requires free and informed consent prior to screening, ensures confidentiality of test results and prohibits all forms of stigma and discrimination against people with HIV.

Keys to the success of policy reform included sufficient resources, a dedicated and fully supported staff person to follow up on the law reform process and engagement with parliamentarians to generate support for the law.

*This work was led by the Ministry of Health and UNAIDS, Central African Republic, 2022.*
In Georgia, the HIV epidemic is concentrated among key populations, and integrated community-based testing, together with prevention services, is implemented by a network of community-service organizations. Among them is Association Xenon in Zugdidi, which works primarily with people who inject drugs. Zugdidi is located in the Samegrelo region, which borders the Abkhazia conflict zone and has the highest HIV, TB and viral hepatitis burdens in the country. According to the 2022 Integrated Biological and Behavioural Surveillance (IBBS) report, HIV prevalence was 2.7 times higher in Zugdidi than the overall HIV estimated prevalence in Georgia among people who inject drugs.

Xenon was established in 2004 to serve the most vulnerable populations in the region, and it has earned the trust of the community and support from local stakeholders. The initial package of services included HIV and drug injection risk reduction counselling, screening for HIV, HBV, HCV and distribution of communication materials. Xenon also provides needle and syringe services. In 2012, lay provider testing was introduced and in 2016 Xenon began providing expanded mobile outreach using integrated HIV, HBV, HCV and syphilis testing to more than 10 cities in the region. This effort led to a 60% surge in testing coverage among individuals who inject drugs when compared with the start of mobile outreach services in 2014.

Fig. 6.1 summarizes the number of RDTs performed for HIV, HBV, HCV and syphilis since 2012 at the Xenon testing services centre and through mobile outreach.

**Fig. 6.1. Numbers of RDTs performed by Association Xenon, 2012–2022**

![Chart showing the number of RDTs performed by Association Xenon from 2012 to 2022](chart.png)

*Source: Association Xenon*
Since 2012 Xenon has linked to care 104 people with HIV, 853 people with a positive HBsAg test result, 5130 people with HCV antibodies and 337 people with syphilis. Between 2018 and 2022 Xenon used point-of-care RNA HCV to identify 1494 anti-HCV-positive clients, of which 82% (1225) were tested for HCV RNA, 691 (56%) were confirmed with active HCV infection, and 470 (68%) received free direct-acting antiviral treatment through the National Hepatitis Elimination Programme.

The achievements of Xenon and its partners were crucial in convincing the government to start investing in community-based testing of people who inject drugs and other key populations. The government now fully covers the cost of screening for all four infections as well as HCV RNA testing.

This work was supported by the Global Fund HIV Programme of Georgia and FIND.

Ghana: Using dual HIV/syphilis testing to increase syphilis testing coverage in antenatal care

In 2018 the Ghana Health Service, through the National AIDS/STI Programme, began introducing the dual HIV/syphilis test and in 2020 fully adopted the WHO guidance for using dual tests in all antenatal care sites. From the beginning, key stakeholders, including community groups, were engaged in planning dual test introduction and scale-up. This broad and extensive stakeholder engagement was essential for the success of the dual test rollout, which began in October 2020.

A verification study was completed to select the correct dual test for the national algorithm. Quantification and procurement of the selected test kits was followed by training of service providers.

Following the initial introduction of the dual test, between 2018 and 2021 syphilis testing coverage increased from 53% to 91% (Fig. 6.3). Overall, syphilis testing coverage in Ghana increased by 70%, and the gap between HIV and syphilis testing coverage was virtually eliminated over this period. Health care workers reported that dual tests were very convenient to use. The national programme found that dual tests reduced overall quantification and procurement costs by at least 16%.

There were some challenges: Not all PMTCT sites were trained on the new algorithm before the rollout; some providers were using the more convenient dual test instead of the approved test for the non-pregnant population; and treatment of partners is not optimal. However, adoption of the dual HIV/syphilis rapid diagnostic test in ANC proved feasible and has been critical in improving syphilis testing coverage. Ghana’s early adoption of the dual test has accelerated progress toward the national targets of the triple elimination strategy. As Ghana’s experience indicates, national programmes should establish robust systems to facilitate rapid evaluation, adoption and scale-up of innovative approaches such as the dual testing of pregnant women.
Chapter 7. Strategic planning

Guinea: Conducting a situational analysis for planning HTS

In 2017, nearly 50% of adults in Guinea did not know their HIV status, 80% of HIV-exposed children had not been diagnosed, and approximately 56% of pregnant women had not been tested as part of antenatal care. To accelerate progress towards testing targets, Guinea’s National HIV/AIDS and Viral Hepatitis Program (PNLSH), with technical support from WHO, conducted a comprehensive situational analysis on HIV testing services (HTS).

This analysis was conducted in four stages: (1) a review to analyze epidemiological trends by location, by sub-population and over time, and to refine the definition of target populations; (2) an analysis of programmatic data to identify effective HTS models and missed opportunities; (3) a systematic review of normative and policy documents to identify policies requiring revision, particularly in light of recent WHO recommendations; and (4) complementary interviews with key stakeholders to better understand the context and identify main challenges and opportunities.

This situational analysis produced a comprehensive picture of HIV testing in Guinea to guide national policy development. Key indicators were disaggregated by gender, age, region, sub-population, site type and entry point, and were analyzed for changes over time. Indicators included:

- prevalence
- HTS sites
- HTS performed
- positivity rate
- new patients on treatment
- change in indicators over time.

Detailed epidemiological analyses were produced, showing changes in HIV prevalence and the number of PLHIV by gender, age, region and sub-populations. Numerous HTS indicators were identified, including evolution and geographical distribution of HTS sites (VCT, PMTCT, key
populations) as well as the number of HIV tests carried out by entry point, the seropositivity rates by entry point, or the number of new patients on treatment. Finally, cascades of PITC, PMTCT and HIV-exposed children were produced.

This analysis showed that HIV cases were likely to be concentrated in urban centers (aside from Conakry), where HIV service coverage was lowest, with only 10% of health facilities offering PITC at the national level (excluding PMTCT). While the Conakry region accounted for 51% of HTS offered, only 22% of the country’s PLHIV lived there (Table 1). Findings also highlighted that HTS was not offered systematically at certain essential entry points: only 66% of TB sites offered HTS to TB patients, and only 45% of estimated pregnant women in ANC services were tested, with particularly large gaps in certain regions, largely due to stock-outs.

Table 7.1. Number of PLHIV and tests performed in 2017, by region

<table>
<thead>
<tr>
<th>Region</th>
<th>PLHIV</th>
<th>% of country total</th>
<th>Tests</th>
<th>%</th>
<th>Tests/1 000 habitants</th>
<th>Tests/PLHIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conakry</td>
<td>27 132</td>
<td>22</td>
<td>53 060</td>
<td>51</td>
<td>28</td>
<td>1,9</td>
</tr>
<tr>
<td>Kindia</td>
<td>15 453</td>
<td>13</td>
<td>11 068</td>
<td>11</td>
<td>6</td>
<td>0,7</td>
</tr>
<tr>
<td>Boké</td>
<td>12 949</td>
<td>10</td>
<td>6 094</td>
<td>6</td>
<td>5</td>
<td>0,4</td>
</tr>
<tr>
<td>Mamou</td>
<td>6 385</td>
<td>5</td>
<td>3 198</td>
<td>3</td>
<td>4</td>
<td>0,5</td>
</tr>
<tr>
<td>Labé</td>
<td>13 248</td>
<td>11</td>
<td>4 459</td>
<td>4</td>
<td>4</td>
<td>0,3</td>
</tr>
<tr>
<td>Kankan</td>
<td>18 392</td>
<td>15</td>
<td>11 676</td>
<td>11</td>
<td>5</td>
<td>0,6</td>
</tr>
<tr>
<td>Faranah</td>
<td>9 829</td>
<td>8</td>
<td>4 909</td>
<td>5</td>
<td>5</td>
<td>0,5</td>
</tr>
<tr>
<td>N’Zérékoré</td>
<td>19 548</td>
<td>16</td>
<td>9 461</td>
<td>9</td>
<td>5</td>
<td>0,5</td>
</tr>
<tr>
<td>Total</td>
<td>122 937</td>
<td></td>
<td>103 925</td>
<td>9</td>
<td></td>
<td>0,8</td>
</tr>
</tbody>
</table>
This case study highlights the importance of knowing the epidemic and the response as the epidemic evolves, and the need to take stock of where, among whom, and why new HIV infections are occurring.

This work led to the formulation of 42 recommendations that serve as the basis for Guinea’s Differentiated HTS Strategy, validated at the national level in 2018. Priority areas of these recommendations relate to services aimed at reaching undiagnosed HIV cases (PITC, PMTCT, children and adolescents, TB, key and vulnerable populations) as well as more structural and cross-cutting areas (governance/policy, human resources, supply chain, and quality assurance/monitoring and evaluation) to improve implementation and quality of services.

This work was led by the National HIV/AIDS and Viral Hepatitis Program, Guinea-Conakry.

Malawi: Screen-in “nudge” tool utilization

In 2019 incident infections among women during the postnatal period accounted for over 70% of new HIV infections among infants in Malawi. To better reach women in need of maternal HIV retesting and identify HIV-exposed infants, a national taskforce developed a screen-in tool to identify mothers of exposed infants at outpatient departments and other high volume entry points outside of PMTCT services (for example, under-five clinics, immunization services), where HIV testing is not universal.

The one-page tool can be administered by lay cadres in the waiting area by discreetly reviewing the mother and child health records and ticking off questions on the tool that lead to a final...
recommendation on whether to refer the mother and/or infant to an HTS provider. The questions focus on the HIV status of mothers of infants 0–24 months old. In accordance with national guidelines, the tool refers to HTS the mothers of unknown HIV status and those who missed HIV testing opportunities at PMTCT in the previous six months. If the mother’s test result is positive, the infant is referred to HIV testing.

Across 32 facilities 10 675 mothers were screened from July to September 2019 using this tool, and all responses and outcomes were recorded on screening slips. Of the mothers who were screened, 44% (4584) were screened in for HIV testing, 0.7% of these (26) had positive HIV status, and 0.1% (5) had inconclusive test results.

In a situation where universal HIV screening is not feasible or recommended, the screen-in tool successfully identified mothers who had missed other opportunities to be tested or retested for HIV during the course of their pregnancies or during breastfeeding. Referred mothers and infants who were identified as HIV-positive were linked to care and treatment, started on ART the same day and supported with follow-up as needed.


Chapter 9. Quality management systems

South Africa: Leveraging digital health for scaling up HIV Rapid Test Continuous Quality Improvement

The RTCQI initiative, developed by the United States Centers for Disease Control and Prevention (CDC) and supported by WHO, has been used to improve HIV testing quality. South Africa adopted RTCQI tools which were paper-based, and were and time-consuming and difficult to implement at scale, causing variability in the quality of interventions and challenges with data capture. This limits the potential to scale up QI and QMS approaches.

The National Health Laboratory Service (NHLS), supported by Strategic Evaluation Advisory & Development Consulting (Pty) Ltd (SEAD), adapted existing RTCQI modules in a digital health platform using mobile apps for data collection (and including training materials), with immediate upload of data where internet connectivity is available. The app can also work offline. This platform includes field-worker apps with a digital tester competency and facility-assessment checklist, a management platform with dashboards for real-time data review and analysis, a centralized national database for coordinated reporting countrywide and a supervisory module and video-based assessor training course for the Ministry of Health (MOH) and other partners. To standardize implementation, an e-Learning platform of 11 modules for instructor-led or self-paced training was developed. The SEAD team worked closely with CDC/PEPFAR and the MOH to refine course content, including video lectures, animations and demonstrations.

Stepwise Process for Improving the Quality of HIV Rapid Testing (SPI-RT)* assessments from 2015–2017 showed that >80% of the facilities received ratings at or below level 2 (<80%). However, since
the launch of the digital version of the SPI-RT checklist, over 7118 assessments have been conducted, facilitating timely identification of quality issues and targeted interventions: in 2021–2022, 53% of the facilities were assessed at level 4 (≥90%); 37% at level 3 (80–89%) and only 10% at level 2 and below. As of 2022, tester competency assessments had been conducted for over three quarters (5283/6841) of primary testers countrywide, with a pass rate of 80%. Over 4871 learners have enrolled in the RTCQI e-Learning platform, with a completion rate of 82% and a pass rate of 94%.

This digital health approach has enabled active HIV RTCQI programme and partner management. It has the potential to be used for other POC testing services across the continent.

* SPI-RT is a central tool on this digital platform. It uses a standardized checklist that evaluates eight quality domains related to rapid HIV testing, generating a rating in one of five levels, from level 0 to level 4.

This work was supported by the US President’s Emergency Plan for AIDS Relief (PEPFAR) and led by the National Health Laboratory Service and Centers for Disease Control and Prevention (South Africa).