

# Reaching the unreached: towards HIV elimination in the Western Pacific Region a systems approach to strategic HIV testing

May 2021

## 1. Introduction

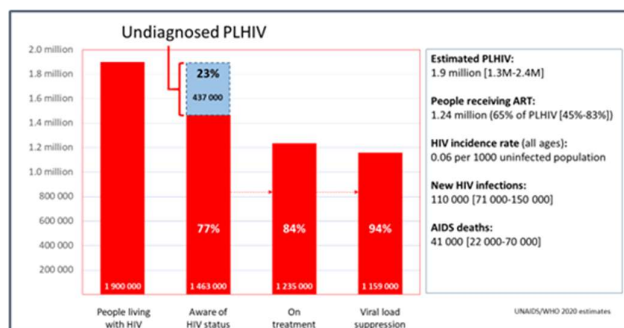
### Background and rationale

In 2019, there were an estimated 1.9 million people living with HIV (PLHIV) in the Western Pacific Region. Regional HIV prevalence and annual new HIV infections have remained unchanged since 2010 at 0.1% and 100 000 new infections per year, respectively. Among PLHIV, 77% have been diagnosed and 84% of diagnosed PLHIV were receiving antiretroviral therapy (ART). Of those on ART, 94% achieved viral suppression. While countries in the Region are making progress towards elimination of HIV, there were an estimated 437 000 PLHIV still undiagnosed in 2019 (Fig. 1a) (1).

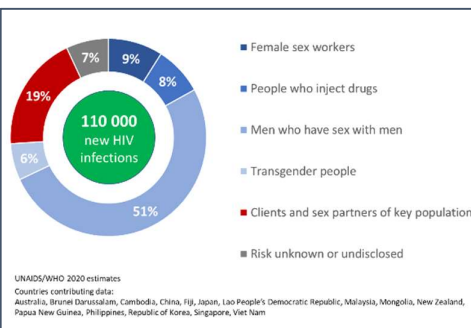
The HIV epidemic is concentrated among “key populations”. In 2019, an estimated 74% of new infections were among men who have sex with men (MSM), people who inject drugs (PWID), sex workers, transgender people and prisoners; 19% were among partners and clients of “key populations” and 7% were among people with unknown or undisclosed risk (Fig. 1b) (1).

**Fig. 1. HIV epidemiology in the Western Pacific Region, 2019 data**

**1a. The HIV 90-90-90 care cascade**



**1b. Distribution of new HIV Infections**



HIV testing is necessary for PLHIV to access treatment and contributes significantly to prevention efforts. Ensuring that unreached populations access HIV testing is critical to achieving HIV elimination, through reducing HIV-related mortality and new HIV infections. “Reaching the unreached” is one of four thematic priorities in *For the Future: Towards the Healthiest and Safest Region*, WHO’s vision of its work with Member States and partners in the Region. The last mile towards achieving HIV elimination is long and difficult, requiring a focus on very hard-to-reach and hidden people and/or populations currently unreached with HIV testing.

Some people with undiagnosed HIV are current “key populations” but others are former “key populations” or their current or ex-clients and/or partners. Other groups, including young people,

older people, migrants, prisoners and men, who in general have lower access to health-care services than women, also contribute to undiagnosed infections. Across the Region, countries are implementing HIV testing approaches focused on “key populations” that have had some success in reaching people who are reachable. However, available evidence suggests that targeting HIV testing only on “key populations” will not be enough to achieve HIV elimination because very hard-to-reach “key populations”, ex-“key populations”, their partners and others listed above, may be missed.

For example, Cambodia and China, countries that have made good progress, are experiencing the challenges of completing the last mile, with case-finding becoming progressively more difficult. As the number of undiagnosed PLHIV decreases, the proportion of people among the undiagnosed who belong to hidden “key populations”, ex-“key populations” or partners of “key populations” and people truly from the general population increases. Data collected in 2019 in Cambodia showed that 60% of newly diagnosed HIV cases were categorized as coming from the general population with no risk factors reported or identified at testing. In China, 60.5% of estimated new HIV infections and 73.8% of HIV cases newly diagnosed in 2019 were attributed to heterosexual transmission. Key population targeted HIV testing must be complemented by additional approaches to active case finding to reduce missed or delayed HIV diagnoses.

Changes in HIV testing approaches are needed to actively reach former or hidden “key populations” unwilling to disclose their sexual orientation or risk behaviours or access key population services, as well as their partners or clients and other people whose risk of HIV is less apparent. People's identities are complex, and individuals may not identify themselves with a specific group or may hide their identity because of widespread stigma and discrimination. For example, because of social pressure or stigma, substantial proportions of MSM are married to women or have female partners, and people engaging in transactional sex may not think of themselves as a sex worker. Identity is also not the same as risk behaviour: MSM in stable partnerships or PWID who do not share needles may not be at increased risk of HIV acquisition.

To avoid problems associated with risk categorization based on identity, it is important to focus on risk behaviours. These, however, change over time and in some cases, past behaviours or actions may not be recognized or remembered. For example, a person may engage in transactional sex for limited periods only or stop sharing needles or injecting drugs. Emerging risk behaviours include the increasing use of amphetamine-like stimulant drugs in association with sex; finding transactional or casual sex partners online; and more people, including older people, engaging in casual sexual relationships. People are often not aware that their partner(s) are engaging in high-risk activities or have done so in the past and, therefore, may not be aware of their own risk.

Current data collection procedures that routinely collect detailed information on sexual orientation or other, sometimes illegal risk behaviours, raise concerns around confidentiality of personalized information and can be a barrier to service uptake. The term “key population” itself, although much used, risks being discriminatory and may deter people from accessing services.

All HIV testing services must be supported by accurate information, education and communication as well as efficient procurement and supply management systems and be delivered or supported by well-trained health-care workers or lay providers. Continued efforts are needed to address structural barriers, including stigma and discrimination and criminalization of behaviours.

This document was developed based on the outputs of a series of technical discussions and work conducted with HIV, community and health systems experts and partners in the Western Pacific Region in 2020. It builds on recommendations in the 2019 WHO *Consolidated guidelines on HIV*

*testing services*, but will not discuss existing key population-focused approaches that are already addressed in depth elsewhere (2).

## Target audience

This guidance is intended to assist government officials, partners and other stakeholders responsible for advising on, developing and implementing policy measures to eliminate HIV, focusing on systems for HIV testing<sup>1</sup> as the entry point to combination prevention and care and treatment services.

## Objectives

To support countries in the Western Pacific Region to develop systems for strategic HIV testing to maximize case-finding and reach the unreached towards achieving the last mile of HIV elimination.

## 2. Guiding principles

A systems approach to strategic HIV testing to reach the unreached and reduce the number of PLHIV who are undiagnosed may be guided by the following principles.

1. **People-centred service delivery.** A core principle of universal health coverage (UHC) is that services should respond to people's needs, ensure quality and equity, and promote trust in institutions. This means bringing HIV services to the people through increasing geographical coverage and operating hours, integrating them into other areas of health-care provision, and establishing services which respect people's specific needs.
2. **Non-discrimination.** Categorization by key population can exacerbate stigma and discrimination and limit uptake of services. It is essential to provide services in a non-judgmental manner based on need, engaging with clients in safe spaces, ensuring confidentiality and limiting questions to those which inform further, tailored management. Pay particular attention to reaching sexual partners and other hard-to-reach and hidden populations.
3. **Meaningful community engagement.** Actively involve community groups in developing HIV testing approaches which address people's HIV risk, their perception of risk and their need for seamless and equitable access to quality and non-discriminatory services.
4. **Innovation.** Expand the use of locally tailored, innovative and effective tools, technologies, service delivery models, linkage mechanisms, data collection methods and financing approaches. Include virtual platforms for messaging, training and telehealth, self-testing and other innovations that increase reach, empower individuals for self-care and link services across the cascade.
5. **Informed decision-making.** Review HIV testing strategies based on analysis of the best available information on the current situation and trends to identify and address gaps (Annex 1). Balance the need for granular data to improve understanding of local epidemics against collecting only information which directly benefits clients. Ensure efficient and effective linkage to ART and HIV combination prevention services for all HIV testing modalities. Review HIV testing services periodically in the context of HIV elimination, as the value of each approach may change over time.

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<sup>1</sup> In this document, HIV testing refers to all situations in which a person undergoes an HIV test. Note that a reactive self-test or test-for-triage result must be followed by further testing to confirm a reactive (positive) test result, according to national HIV testing algorithms.

### 3. A systems approach to refining HIV testing strategies

#### Is HIV testing reaching people who are hidden or unaware of their risk?

This question can guide a critical review of current testing approaches and inform a systems approach to reaching unreached people for HIV testing that builds upon existing WHO-recommended, differentiated HIV testing approaches.<sup>2,3</sup>

Key points to be considered for development of a system to reach unreached populations include the following.

1. Include HIV testing to reach people who are aware of their own risks but do not use current services, people with hidden risk or who are unaware of their risk and vulnerable and marginalized groups, including those whose behaviours are criminalized, by implementing multiple, locally-tailored, people-centred HIV testing modalities and service delivery models.
2. Integrate packages of services that include but are not limited to HIV testing. Promote positive messaging around wellness and well-being, rebranding and good marketing. Recognize that people may have complex needs and multiple vulnerabilities, including mental health issues, violence, neglect, and abuse. HIV may not be a priority for many people.
3. Expand innovative entry points for HIV testing to address more people's needs, taking advantage of virtual platforms to increase access and efficiency, and promoting HIV testing outside the health sector.
4. Include systematic "opt-out" and/or "no questions asked" models of HIV testing that normalize or demystify HIV testing and bypass barriers resulting from punitive laws, cultural norms, fear of judgement, stigma and discrimination.
5. Facilitate access to HIV testing for young people by integrating HIV testing in packages of youth-friendly and accessible reproductive health services. Young people in general and young "key populations" in particular, are vulnerable to HIV acquisition through lack of accurate information, engagement in risky behaviours and poor access to prevention services. Health services may fail to respond to the needs of young people and there may be additional legal barriers to service access.

#### HIV testing settings or approaches to consider, review and/or strengthen

1. **Differentiated HIV testing services.** These must respect different groups and their contexts, including services designed and delivered by "key populations" or community organizations. Expand task-shifting, lay-provider HIV testing and the use of point-of-care HIV rapid tests or HIV self-testing (HIVST) to increase coverage of services tailored to specific needs (for example, holistic services for transgender people). Support and empower community organizations to be fully involved and ensure that technical, mentoring, and financial resources are available. Integrate HIV testing in needle syringe and opioid substitution programmes (13,15) and in health services in prisons and other closed settings.
2. **Assisted partner notification services (index testing).** Partners of PLHIV are at increased risk of HIV. Assisted partner notification (aPN), can improve testing uptake (7,8) and HIV case-finding. WHO recommends that aPN should be offered to PLHIV as part of a comprehensive package of

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<sup>2</sup> Community-based, lay provider, HIV self-testing and partner testing, provided in a variety of settings: clinical and non-clinical, fixed and mobile, organized and informal.

<sup>3</sup> See Annexes 1 and 2 for further details.

testing and care (2), including patient or provider-assisted referral and secondary distribution of HIVST kits by index cases to their partners. Extend partner notification services to all partners, including multiple casual and intimate partners, female partners of MSM and partners of people who engage in transactional sex. Train health-care workers to ensure respect for human rights, non-coercion and maintain confidentiality. Carefully evaluate and manage intimate partner violence.

3. **Social network-based HIV testing approaches (9).** Social network-based HIV testing involves a trained provider asking PLHIV or those who are HIV-negative and at ongoing risk of HIV to encourage individuals in their sexual, drug injecting or social networks to undergo voluntary HIV testing. This approach can improve the acceptability of partner services among “key populations”, address confidentiality concerns and reach people who may not otherwise access HIV testing.
4. **HIV self-testing (HIVST) (10).** HIVST can reach hidden populations and first-time testers and overcome fear of judgement, stigma and discrimination associated with other HIV testing approaches by offering more autonomy to the user. HIVST may be assisted or unassisted, use blood-based or oral fluid-based test kits,<sup>4</sup> and be delivered in communities, health-facilities or through other distribution networks (online, in pharmacies and workplaces), through secondary distribution to partners or in sexual networks, and linked to or included in pre-exposure prophylaxis (PrEP) services.
5. **HIV testing in sexually transmitted infection (STI) clinics and other settings where people with STI symptoms present.** People with STIs are more likely to have engaged in high-risk behaviours and having an STI other than HIV also increases the risk of HIV acquisition (11). Anyone with STI symptoms should be offered HIV testing. People may present in a wide range of settings (both public and private), including STI, dermatology, obstetrics/gynaecology and urology clinics as well as primary care facilities or pharmacies. People may also seek remedies online or from traditional medicine practitioners. Raise awareness and train health-care workers and other contact persons, such as pharmacists, to offer HIV testing of people with STI symptoms in all these settings.
6. **Antenatal care (ANC) delivery and postnatal services.** ANC testing is an example of systematic, no-questions-asked HIV testing that can reach female partners or ex-partners of MSM, female partners of PWID and other women who are hidden or unaware of their risk. Testing for HIV, syphilis and hepatitis B as part of elimination of mother-to-child transmission (EMTCT).
7. EMTCT serves as an entry point into care and treatment for pregnant women, their partners and other household members, and is an opportunity to integrate services under the principles of UHC. HIV testing can be offered to couples planning to start a family.
8. **HIV testing in other clinical settings<sup>5</sup>.** Implementation of provider-initiated testing and counselling (PITC) in both public and private settings is often suboptimal. HIV testing integrated into routine health services can increase case-finding, normalize HIV testing, reduce the need for self-referral and reach sexual partners and others who are not aware of their exposure. Implement PITC in all settings of care where people with HIV may present, including STI, tuberculosis (TB), hepatitis, family planning, medical and surgical services, cervical cancer and noncommunicable disease (NCD) screening services, specialist services such as dermatology, neurology, respiratory and infectious diseases, internal medicine, urology and obstetrics/gynaecology, as well as pharmacies and traditional medicine services. Screen-in tools may be useful in low-risk settings to identify people who should receive HIV testing, based on

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<sup>4</sup> Four HIV self-test kits have been pre-qualified by WHO, including one oral fluid and three blood-based tests.

<sup>5</sup> Testing in clinical settings also includes systematic screening of donated blood and routine pre-operative screening.

their clinical condition, behavioural risks or previous history of HIV testing. Routine screening of donated blood must be linked to provision of HIV care and treatment for donors found to have HIV infection.

9. **Sexual and reproductive health (SRH) services.** Integrated, holistic SRH services which include HIV testing can promote positive sexual health and well-being. Services may be rebranded, and settings tailored to general or specific populations such as youth or transgender people. One-stop-shop models can include information and education and a range of other services, including family planning, cervical cancer screening, abortion, psychosocial support, mental health, access to gender-affirming hormones, as well as HIV and other STI-related services, based on the needs of the target population.
10. **HIV testing offered to older people.** HIV testing offered in chronic care settings such as diabetes or hypertension clinics or as part of NCD screening has potential to reach older, sexually active people at risk of HIV or living with undiagnosed HIV. Locally adapted and validated risk screening tools can be used to identify people for HIV testing, based on symptoms, risk behaviours or demographic characteristics.
11. **Workplace HIV testing.** HIV testing offered in workplaces and other non-health settings<sup>6</sup> can reach a different demographic, including for example, men, young people and hidden “key populations”. HIV education and testing may be provided as part of packages of wellness services or based on risk assessment of sociobehavioural and socioeconomic demography in industries that are uniquely predisposed to HIV risk factors, such as mining or construction industries. HIV testing must always be voluntary. Confidentiality must be maintained, and employment protection ensured. HIVST can be a useful approach in these settings to mitigate concerns surrounding privacy and confidentiality (16).

## Supportive actions

### **Strategic communication: health promotion, comprehensive sexuality education and demand generation (17)**

- Include targeted peer-led campaigns, public messaging and comprehensive sexuality education for young “key populations”, out-of-school youth as well as young people in school.
- Involve communities in developing, implementing and monitoring the impact of messaging.
- Develop positive and empowering messages that include good sexual health and well-being, the benefits of knowing one’s status, self-risk assessment, condoms and PrEP, antiretroviral therapy and undetectable = untransmittable (U=U).<sup>7</sup> Optimize the use of virtual platforms to reach large numbers of people, targeting preferred dating applications and hotspots for HIV transmission. Recognize that Internet connectivity is not universal and include mechanisms to reach people without Internet access.

### **Data systems**

- Integrate or interlink health information systems for collection, analysis and use of HIV and related programme data to optimize monitoring and evaluation.
- Adapt data systems to capture HIV testing information from all testing locations and modalities, including from private providers, and new initiatives such as from STI clients and HIVST.

### **Procurement and supply management systems**

<sup>6</sup> Saunas, karaoke bars and massage parlours, sports clubs, gyms, community events and campaigns, or during agricultural or other outreach activities.

<sup>7</sup> U=U: undetectable = untransmittable. People living with HIV who are taking ART correctly and whose viral load is suppressed, do not transmit HIV infection to their sexual or drug-injecting partners.

- Ensure reliable access to quality-assured HIV drugs, test kits and other commodities through optimization of procurement and supply management systems.

**Health-care workforce**

- Train, supervise and mentor health and lay providers to implement high-quality, people-centred HIV testing.
- Ensure providers are culturally competent, with the communication and technical skills to ask questions in a non-judgemental manner and provide care without stigma or discrimination.
- Use digital platforms to conduct outreach, provide telemedicine/telehealth services, training and mentoring.

**Structural barriers and the enabling environment**

- Build partnerships, promote multisectoral collaboration, and bridge intersectoral gaps.
- Explore different financing systems as part of UHC to minimize financial barriers to service access.
- Review processes for regulatory approval of new treatments and diagnostics.
- Advocate for legal reform that decriminalizes HIV and risk behaviours.
- Address stigma and discrimination in government, communities and health-care settings.



## HIV testing settings or approaches to consider, review and/or strengthen.

WHO HIV testing app: <https://www.who.int/hiv/mediacentre/news/hts-info-app/en/>

HIV testing approach	Interventions	Considerations for implementation	Evidence	WHO guidance and recommendations
<p><b>1. Differentiated HIV testing that includes targeted and community-led approaches</b></p>	<ul style="list-style-type: none"> <li>• Facility, virtual, community and venue-based approaches designed to reach people at increased risk of HIV acquisition.</li> <li>• Key population led services, differentiated for specific populations.</li> <li>• HIV self-testing, including secondary distribution to partner and social networks to help target active at-risk networks (see also 3. Social network-based HIV testing).</li> </ul>	<ul style="list-style-type: none"> <li>• Examine local data to identify gaps in HIV testing coverage of “key populations” at higher risk of HIV acquisition.</li> <li>• Consider subpopulations with different risk profiles or transmission settings.</li> <li>• Engage with local communities, community-based organizations and other key sectors.</li> </ul>	<ul style="list-style-type: none"> <li>• In the Philippines, only 43% of men and transgender women who have sex with men had ever tested for HIV and 31% reported having sex with a female partner in the past 12 months (ranging from 16–65% in different cities); 72% reported anal sex with a man in the past 12 months (range across cities surveyed 53–93%), (Integrated HIV Behavioural and Serologic Surveillance 2018).</li> <li>• Across the Asia Pacific Region, the proportion of MSM who reported having sex with female partners in the last year (data from 2009–2018) ranged from 30% in the Philippines and Cambodia, 49% in Viet Nam, to 81% in Papua New Guinea (18).</li> <li>• In Viet Nam, among 3978 people from “key populations” tested through community-led HIV testing services 2653 (66.7%) were first-time testers, 3086 (77.6%) received HIV testing from a lay provider and 892 (22.4%) self-tested in the presence of a lay provider. In total, 245 (6.2%) had reactive results, 231 (94.3%) were confirmed to be HIV positive; and 215/231 (93.1%) initiated ART (8).</li> </ul>	<ul style="list-style-type: none"> <li>• Recommend engagement with local community, key population organizations and other key sectors to develop testing strategies and targeted services.</li> </ul>



HIV testing approach	Interventions	Considerations for implementation	Evidence	WHO guidance and recommendations
<p><b>2. Assisted partner notification services (aPN, index testing)</b></p>	<ul style="list-style-type: none"> <li>Models include partner notification, contact tracing, index testing and family-based index case testing, patient referral and provider-assisted referral.</li> <li>Secondary distribution of HIVST kits by index cases to their partners.</li> </ul>	<ul style="list-style-type: none"> <li>Partners of PLHIV are at increased risk of HIV and test positivity in these groups can be high.</li> <li>Follow the WHO 5C's principles. Non-coercion, confidentiality and evaluation of the risk of intimate partner violence are very important.</li> <li>Include all partners, male, female, casual (including multiple partners) and intimate.</li> <li>Sensitize and train health-care providers on different models.</li> <li>Manage risk or reports of intimate partner violence.</li> </ul>	<ul style="list-style-type: none"> <li>Provider-assisted referral or assisted partner notification (aPN), has been shown in various settings to improve testing uptake (7).</li> <li>In Viet Nam, 186/231 (81%) PLHIV agreed to partner referral and 105/186 (56.4%) partners of PLHIV were reached by HIV testing, with 44/105 (41.9%) reactive for HIV (8).</li> </ul>	<ul style="list-style-type: none"> <li>Voluntary provider-assisted referral (assisted partner notification) should be offered to people with HIV as part of a comprehensive package of testing and care (2).</li> <li>HIV testing services for couples and partners, with support for mutual disclosure, should be offered to individuals with known HIV status and their partners (2).</li> </ul>
<p><b>3. Social network-based HIV testing approaches</b></p>	<ul style="list-style-type: none"> <li>Social/sexual network testing involves a trained provider asking people with HIV or who are HIV-negative and at ongoing risk of HIV, to encourage individuals in their sexual, drug injecting or social networks to undergo voluntary HIV testing.</li> <li>Models include peer navigators and educators, outreach workers and clients, using referral coupons and online, social media and mobile app-based platforms.</li> </ul>	<ul style="list-style-type: none"> <li>A social network is a group of individuals linked by a common set of relationships or behaviours and includes sexual and drug-injecting partners as well as social contacts.</li> <li>Social network testing can increase acceptability of partner services, reach more people with HIV testing and identify hotspots of transmission.</li> </ul>	<ul style="list-style-type: none"> <li>A systematic review on social network-based testing among “key populations” showed that, among partners and contacts, social network-based HIV testing approaches: <ul style="list-style-type: none"> <li>may increase HIV diagnoses and identify additional people with HIV;</li> <li>increase the acceptability of HIV partner services;</li> <li>are feasible to implement;</li> <li>seldom result in social harm or adverse events; and</li> <li>can be an efficient use of resources when they focus on people with high ongoing HIV risk (19).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>WHO recommends social network-based HIV testing approaches for “key populations” as part of partner services package (9).</li> </ul>

HIV testing approach	Interventions	Considerations for implementation	Evidence	WHO guidance and recommendations
<p><b>4. HIV self-testing</b></p>	<ul style="list-style-type: none"> <li>• Multiple modalities: assisted, unassisted, facility-based, community outreach, online, in pharmacies, as part of PrEP services, partner testing services, secondary distribution in ANC and other settings.</li> <li>• Oral fluid or blood-based test kits. Four test kits have been pre-qualified by WHO.</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible and adaptable approach to offering HIV testing in an accessible way.</li> <li>• Potential to reach first-time testers and hidden and hard-to-reach populations.</li> <li>• Empowering, discrete, cost-effective (fewer human resources needed).</li> <li>• Can bypass fears of judgement, stigma and discrimination associated with other HIV testing approaches.</li> </ul>	<ul style="list-style-type: none"> <li>• HIVST has been shown to be feasible and effective in a variety of settings in reaching people who might otherwise not undergo HIV testing (20).</li> <li>• A systematic review showed that, compared with standard facility-based HIV testing: HIVST increases the uptake of HIV testing and the proportion of people diagnosed and linked to care with HIVST are comparable to those with facility-based testing; misuse of HIVST and social harms associated with HIVST are rare; and HIVST does not increase sexual risk behaviour among MSM (10).</li> <li>• Among a cohort of 1219 MSM who had not previously tested for HIV in China followed for one year who completed at least one follow-up survey 593 (49.3%) underwent HIVST and 89 (15.0%) men reported positive HIV testing results. Of these, 43 (48.3%) reported confirming their testing results at facility-based sites within three months. All were confirmed to be living with HIV infection (21).</li> </ul>	<ul style="list-style-type: none"> <li>• HIV self-testing should be offered as an approach to HIV testing services (10,16). <ul style="list-style-type: none"> <li>○ Providing HIVST service delivery and support options is desirable.</li> <li>○ Communities need to be engaged in developing and adapting HIVST models.</li> <li>○ HIVST does not provide a definitive HIV-positive diagnosis. Individuals with a reactive test result must receive further testing from a trained tester using the national testing algorithm.</li> <li>○ Nonreactive results should be considered negative. However, people who have had potential HIV exposure within the preceding 6–12 weeks may be in the “window period”, when the test may be nonreactive. They should perform another self-test in 14 days or seek retesting at a facility.</li> <li>○ WHO recommends those at high ongoing risk retest at least every year.</li> </ul> </li> </ul>

HIV testing approach	Interventions	Considerations for implementation	Evidence	WHO guidance and recommendations
<p><b>5. STI clinics and other settings where people with STI symptoms present</b></p>	<ul style="list-style-type: none"> <li>• Locations: public and private sector locations, STI clinics, dermatology, obstetrics and gynaecology clinics (women), urology (men), primary care, pharmacies (men), traditional medicine, online (linked to STI self-sampling initiatives).</li> <li>• Pharmacy-based initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• STIs are associated with increased risk of HIV acquisition (as a result of behavioural and biological risks) (11). STIs are stigmatized which may lead to delays in seeking care.</li> <li>• Identify different locations where people with STIs present and design HIV testing approaches suitable for those locations within and outside the health sector.</li> <li>• HIV testing offered to people with STIs has potential to reach a wide range of people, including those who are unaware of their HIV risk.</li> <li>• Raise awareness among health-care providers to include HIV testing.</li> <li>• Adapt data systems to capture HIV testing information from STI clients.</li> </ul>	<ul style="list-style-type: none"> <li>• A total of 4 105 698 HIV tests were conducted among STI clinic attendees in China in 2019, with 7984 new HIV diagnoses made (0.2% test positivity rate), accounting for 5.3% of all new HIV diagnoses (NCAIDS, China CDC 2019).</li> <li>• Prevalence of acute HIV infection and HIV viral load was substantially higher in STI clinics than in HIV testing and counselling clinics in Lilongwe, Malawi. The high viral load results and concomitant genital scores demonstrate the potential for transmission (22).</li> <li>• Among men visiting a sexually transmitted infection (STI) clinic in Lilongwe, Malawi, 2–5% of HIV-seronegative patients had acute HIV infection, compared with 0.2% of HIV-seronegative patients at a nearby dermatology clinic (22).</li> <li>• Cambodia has piloted training of pharmacists to offer HIV testing to all people presenting with STIs.</li> </ul>	<ul style="list-style-type: none"> <li>• STI clinics provide an important entry point for HIV testing services (HTS) that should be prioritized. WHO recommends routinely offering HTS to all people with STIs (2).</li> </ul> <p>From the HIV technical discussions held in September 2020:</p> <ul style="list-style-type: none"> <li>• Train health-care providers and raise-awareness to ensure patients with STIs receive HIV testing in facility settings.</li> <li>• Ensure data systems capture HIV testing data from STI clients.</li> <li>• Develop pharmacy-based HIV testing initiatives.</li> </ul>

HIV testing approach	Interventions	Considerations for implementation	Evidence	WHO guidance and recommendations
<p><b>6. Antenatal care (ANC) and postnatal services</b></p>	<ul style="list-style-type: none"> <li>• Antenatal testing for HIV, hepatitis B and syphilis with linkage to further evaluation, care and ART for women living with HIV, treatment for syphilis with benzathine penicillin G and linkage to care or antiviral prophylaxis for hepatitis B for eligible pregnant women with chronic hepatitis B infection.</li> </ul>	<ul style="list-style-type: none"> <li>• Antenatal testing is an integral component of elimination of mother-to-child transmission services.</li> <li>• ANC testing is an entry point into care and treatment for infected pregnant women, their partners and other household members and an opportunity to integrate services under the principles of UHC.</li> </ul>	<ul style="list-style-type: none"> <li>• In Cebu, Philippines, 58/72 (80%) pregnant women diagnosed with HIV between 2010-2019 were partners of PWID and an estimated 13% of HIV cases were attributed to transmission between MSM and their female partners (Cebu City Health Department Data).</li> <li>• In Malaysia antenatal testing rates for HIV and syphilis of <math>\geq 95\%</math>, linked to <math>\geq 95\%</math> treatment coverage of pregnant women found to be infected with HIV or syphilis, have led to a progressive reduction in mother-to-child transmission rate of HIV from 1.98% in 2017 to 1.6% in 2019 (1).</li> </ul>	<ul style="list-style-type: none"> <li>• All pregnant women should be tested for HIV, syphilis and hepatitis B surface antigen (HBsAg) at least once and as early as possible during their pregnancy (2,12).</li> </ul>

HIV testing approach	Interventions	Considerations for implementation	Evidence	WHO guidance and recommendations
<p><b>7. Other clinical settings: expanded provider-initiated testing and counselling (PITC)</b></p>	<ul style="list-style-type: none"> <li>• The focus of HIV testing has shifted from dedicated HIV testing sites (voluntary counselling and testing models) to integrating HIV testing into routine health services, where it can either be offered to all clients attending services or focused on those in facilities that see a high number of people at risk of HIV.</li> <li>• There are many clinical settings in both the public and private sectors in which people at increased risk of HIV may present, including TB clinics, hepatitis, dermatology, emergency rooms, malnutrition clinics (children) and where HIV testing should be offered.</li> <li>• HIV testing is also offered systematically as part of pre-surgery, blood donations, labour or delivery testing.</li> </ul>	<ul style="list-style-type: none"> <li>• PITC has long been recommended by WHO but implementation is often suboptimal and may represent significant missed opportunities.</li> <li>• HIV testing should be offered to people with HIV indicator conditions or symptoms which can be associated with HIV infection.</li> <li>• PITC has the potential to increase coverage, test earlier, normalize HIV testing, reduce the need for self-referral, and reach sexual partners and others who are not aware of their exposure to HIV.</li> <li>• The decision where and in which facilities to routinely offer HTS should be guided by the local epidemiology and HTS coverage gaps.</li> <li>• Consider the use of screen-in tools (such as dermatology, during NCD screening) to identify people who should receive HIV testing, based on clinical conditions associated with higher HIV prevalence, behavioural risk assessment and HIV testing history.</li> </ul>	<ul style="list-style-type: none"> <li>• Evidence indicates that provider-initiated HIV testing and counselling can ensure that HIV is more systematically diagnosed in health-care facilities and facilitate patient access to HIV prevention, treatment, care and support services (25).</li> <li>• Use of validated screening tools tailored to the local context to inform decisions about who receives HIV testing can increase the efficiency of PITC (26).</li> <li>• Data from China indicates that 87 983 out of a total of 151 250 new HIV diagnoses (58%) made in 2019 were among people attending medical services (NCAIDS, China CDC 2019).</li> </ul>	<ul style="list-style-type: none"> <li>• In low HIV burden settings, HIV testing should be offered in clinical settings to clients who present with symptoms or medical conditions that could indicate HIV infection, including presumed and confirmed TB cases (2).</li> <li>• In all settings routine HIV testing should be considered for STI, viral hepatitis, TB, ANC, malnutrition clinics and other health services for “key populations” (2).</li> </ul>

HIV testing approach	Interventions	Considerations for implementation	Evidence	WHO guidance and recommendations
<p><b>8. Sexual and reproductive health (SRH) services</b></p>	<ul style="list-style-type: none"> <li>Settings: family planning/contraceptive services, obstetrics and gynaecology clinics, cervical cancer screening services, abortion services, transgender health services, adolescent-friendly health services, community-based one-stop-shops.</li> <li>HIV self-testing models, including offered together with self-sampling for STIs.</li> </ul>	<ul style="list-style-type: none"> <li>Opportunity to increase and integrate awareness-raising and access to services in a holistic manner. Rebranding, positive sexual health and well-being, integrated services, tailored to such groups as youth and transgender.</li> <li>Integration of HTS and HIV prevention with sexual and reproductive health services can help address the diverse needs of sexually active adolescents and others who may not actively seek HIV testing.</li> </ul>	<ul style="list-style-type: none"> <li>There is a limited evidence base for integrating STI services into HIV care and treatment services, but existing studies indicate that integration is feasible and has the potential for positive outcomes (27).</li> </ul>	<ul style="list-style-type: none"> <li>Global health sector strategy on Sexually Transmitted Infections, 2016-2021 (28).</li> <li>Consolidated guideline on sexual and reproductive health and rights of women living with HIV (29).</li> <li>WHO Consolidated Guideline on Self-Care Interventions for Health Sexual and Reproductive Health and Rights (30).</li> </ul>
<p><b>9. HIV testing integrated into chronic care services</b></p>	<ul style="list-style-type: none"> <li>Settings to consider: NCD screening, general health checks.</li> </ul>	<ul style="list-style-type: none"> <li>Particularly relevant in settings with older people at risk of and living with HIV.</li> <li>Integrate with hepatitis B virus (HBV) and hepatitis C virus (HCV) testing (depending on local epidemiology).</li> </ul>	<ul style="list-style-type: none"> <li>In China, the number of new HIV diagnoses reported in people over 60 years of age increased from 4800 in 2010 to 19 800 in 2017 (31). The proportion of older adult heterosexual males among all annual new HIV diagnoses increased from 7.4% in 2010 to 14.7% in 2017 (NCAIDS 2018 data).</li> <li>HIV testing among older people has been piloted in several provinces in China and guideline development is planned.</li> </ul>	

HIV testing approach	Interventions	Considerations for implementation	Evidence	WHO guidance and recommendations
<p><b>10. Workplace HIV testing</b></p>	<ul style="list-style-type: none"> <li>• HIV education included in health and wellness information.</li> <li>• Provision of counselling and testing, including HIV self-testing.</li> <li>• Customized education and service delivery for industries or workplaces with higher predisposition to HIV-related risks.</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunity to reach a different demographic, including men, young people, migrant workers and hidden “key populations” who may not otherwise have access to HIV testing.</li> <li>• Important in settings of increased risk of STIs including HIV, such as the military, mining, construction, security, petroleum, agriculture, fishing, long-distance driving and many other industries.</li> <li>• Need to maintain rigorous confidentiality and ensure employment protection policy is in place.</li> </ul>	<ul style="list-style-type: none"> <li>• The International Labour Organization (ILO) Voluntary Confidential Counselling and HIV Testing for Workers – VCT@WORK Initiative – reached over 6 million workers with HIV information, tested over 5 million workers and referred over 110 000 workers living with HIV to antiretroviral treatment between July 2013 and December 2019 (39).</li> <li>• The ILO has situated the VCT@WORK Initiative within a multi-disease screening exercise which facilitates screening for TB, blood pressure, cholesterol levels, body mass index and diabetes, among others.</li> <li>• Integrating HIV into a health and wellness package has reduced the stigma associated with stand-alone HIV testing and increased the general appeal of HIV testing to workers, their families and surrounding communities.</li> </ul>	<ul style="list-style-type: none"> <li>• WHO Policy Brief: HIV self-testing at the workplace (16).</li> </ul>



## Annex 1.

### Assessing the HIV epidemic and response to identify people missed for HIV testing.

Countries collect a wide range of HIV-related data on PLHIV, new HIV infections, HIV-related mortality and service provision, disaggregated by factors including age, gender, risk behaviours, population groups and geography.

The data can be examined periodically to estimate the number and proportion of undiagnosed HIV infections, and gain insights into trends in sociodemographic characteristics and geolocalization of unreached and undiagnosed PLHIV, as well as unrecognized barriers for HIV testing. An analysis may involve a range of data sources, including quantitative and qualitative data; retrospective and prospective data; population surveys; and a range of methodologies, including case profiling, population-based and geospatial epidemiology, molecular epidemiology and phylogenetic analysis (3,4,5).

#### Key data

1. Baseline key population size estimates and mapping.
2. Number and proportion of new HIV infections disaggregated by age, gender, in different populations, locations and through different modes of transmission.
3. Number and proportion of new HIV diagnoses (new cases identified) disaggregated by factors including age, gender, stage/duration of HIV infection, current and past risk behaviours, likely mode of transmission.
4. Number, setting and costs of HIV tests conducted, HIV positivity rates and absolute numbers of HIV cases identified.

#### Approaches to reaching unreached and undiagnosed PLHIV

1. **Case-profiling of newly diagnosed cases.** Characteristics of newly diagnosed cases can be documented and followed by univariate and multivariate statistical analysis to identify factors associated with HIV positivity.
2. **Identification of acute,<sup>8</sup> recent or established HIV infection.** This is based on: the use of fourth generation HIV antigen/antibody assays; HIV RNA testing of samples discordant or negative on HIV antibody testing in high-risk settings or populations (6); and HIV recency testing or CD4 count at the time of diagnosis.
3. **Intensified assisted partner notification (index testing).** Partners of PLHIV are more likely to have HIV themselves. Partner testing is particularly important among cases with acute or recent HIV infection.

Based on these approaches, testing strategies can be reorientated to target people with specific characteristics identified through case-profiling and to find additional acute or recent cases of HIV infection, as well as social networks and/or locations with on-going active HIV transmission. Data systems may need to be adapted to capture information from new testing initiatives to ensure that data is included in national monitoring and evaluation.

#### Examples of other information that can be used to inform HIV testing strategies

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<sup>8</sup> Acute HIV infection plays a disproportionate role in HIV transmission events because of extremely high viral load levels and high-risk behaviours responsible for recent HIV transmission, accounting for 10% to 50% of all HIV transmissions (29). This proportion is likely to increase as progress is made towards HIV elimination and ART coverage and viral suppression among PLHIV improves (30).

4. **Qualitative studies** to identify previously unknown or unexpected barriers to HIV testing, using online surveys, focus group discussions or other methods.
5. **Effectiveness, cost, linkage to prevention and treatment services** and ability to overcome access barriers for each HIV testing setting (in both the public and private sectors) and modality, among different population groups and in different geographical locations.

## Annex 2.

### Evaluating HIV testing approaches

Decisions on the optimal balance and deployment of HIV testing approaches can be guided by taking into consideration such factors as follows.

1. **Effectiveness.** Use data to estimate the absolute and relative effectiveness of each HIV testing approach. Effectiveness may include the ability of a testing approach:
  - a. to reach unreached populations for HIV testing, including people who do not seek HIV testing because they do not know they are or have been at risk;
  - b. to link people who have undergone HIV testing to prevention or treatment services; and
  - c. to diagnose HIV infection early. Acute HIV infection is associated with high HIV viral load and increased risk of transmission. Late diagnosis, when HIV-associated disease is already advanced, may be more complicated to manage and associated with poorer health outcomes.
2. **Cost.** The total cost and cost per HIV diagnosis of each HIV testing approach, taking into consideration opportunity costs as well as direct costs of commodities and human resources to conduct testing. As a country progresses towards elimination, the number of cases remaining to be diagnosed decreases and the cost per case identified may increase. Investment in less cost-effective approaches may still be needed to address specific testing gaps to reach unreached people and maintain buy-in for testing and should be balanced against the cost of inaction.
3. **Overcoming access barriers.** Consider the ability of an HIV testing modality or approach to overcome barriers, for example:
  - a. reaching people who are unaware of their risk and other hidden populations;
  - b. increasing acceptability for vulnerable and marginalized populations through no-questions-asked approaches;<sup>9</sup>
  - c. reviewing the practice of implementing HIV testing as a special intervention, with lengthy pre- and post-test counselling and consent requirements;
  - d. minimizing the risk of inadvertently increasing stigma and discrimination towards people living with HIV or engaging in risk behaviours;
  - e. maximizing service access and convenience (location and opening hours of services); and
  - f. empowering individuals to take charge of their own health.
4. **Ensuring that HIV testing** is followed by linkage to treatment and prevention services.

**Integration with other services.** Integrating HIV testing supports provision of people-centred care and may increase efficiencies. Data systems must be adapted to ensure that all testing data is captured.

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<sup>9</sup> People may prefer not to be asked questions about themselves and their sexual practices and receive HIV testing in a similar way to tests for diabetes or hypertension. No questions asked and/or anonymous approaches to HIV testing can reduce barriers imposed through fear of judgement, stigma and discrimination. Approaches such as universal HIV testing in antenatal care can serve to “normalize” HIV testing.

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