
Network-based testing toolkit training modules

Module 1: Introduction to Network-Based Testing Services

Learning objectives

By the end of this module, participants will be able to:

1. Define network-based testing services and describe how these differ from other testing modalities
2. Describe the importance of network-based testing as an effective strategy to find people in need of testing or other services
3. List the 10 steps for conducting network-based testing services

Knowledge check

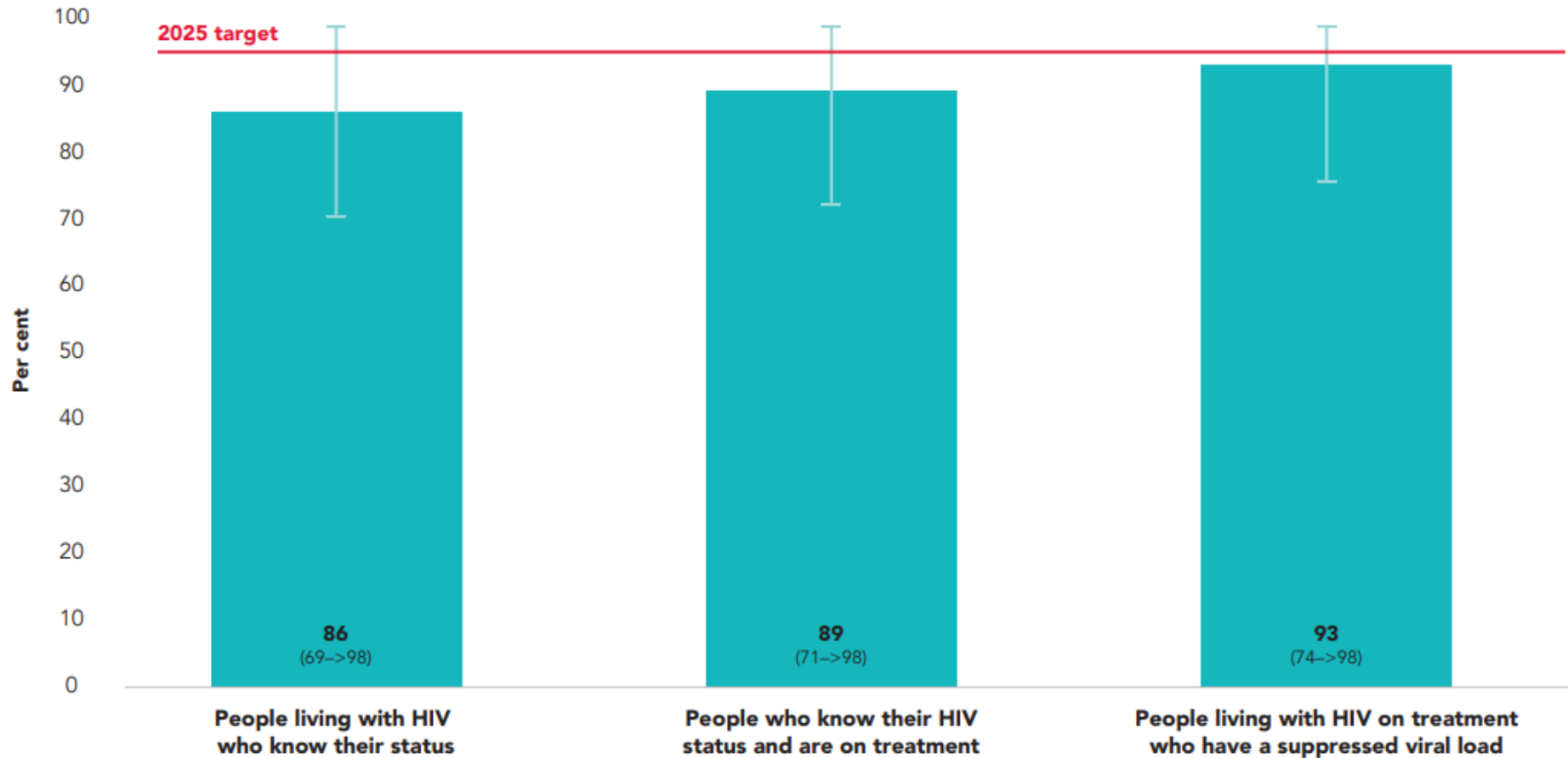


What is the **most important** aspect of network-based testing that **distinguishes** it from other case-finding approaches?

Select the best answer:

- it includes testing of children
- it allows for provider-initiated follow up
- it focuses on testing individuals who have a known exposure or risk
- it involves screening for intimate partner violence

The 1st 95 goal is hardest to reach (2024)



More testing ≠ More people with HIV identified

As we get closer (and exceed) the first 95, finding new PLHIV will become more difficult

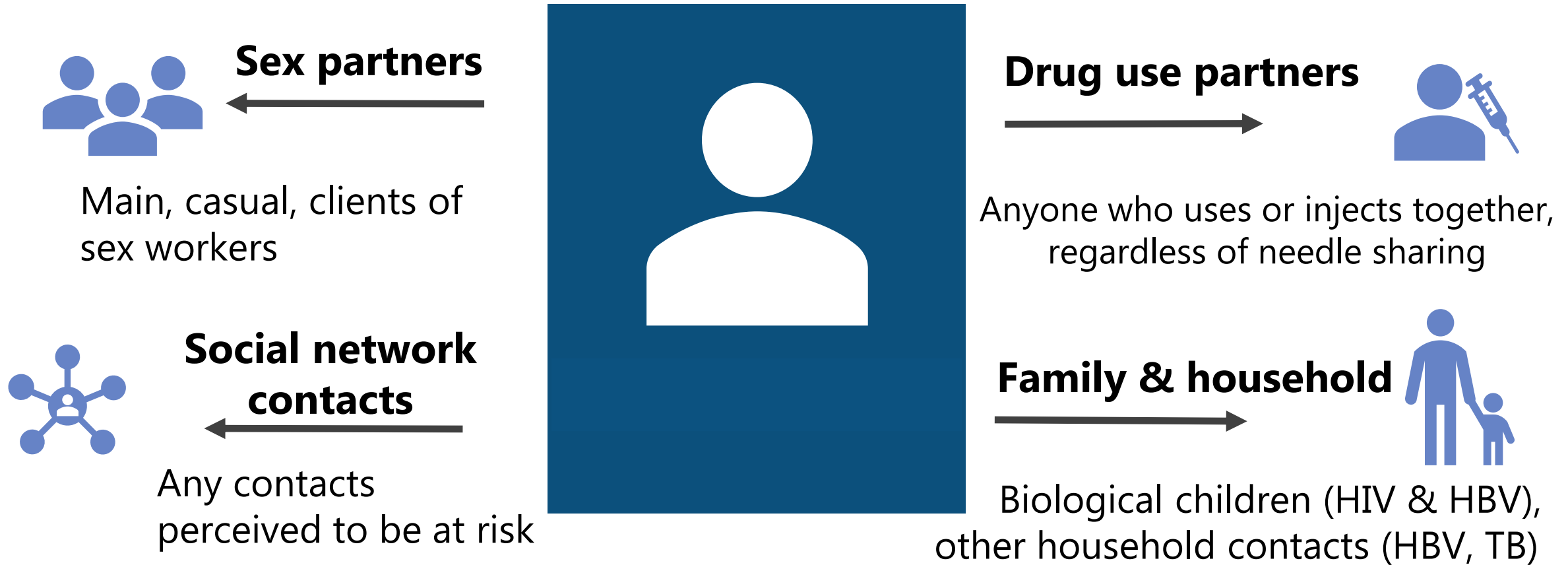
Network-based testing = effective strategy for identifying new cases of HIV infection

Source: Further analysis of UNAIDS epidemiological estimates, 2024.

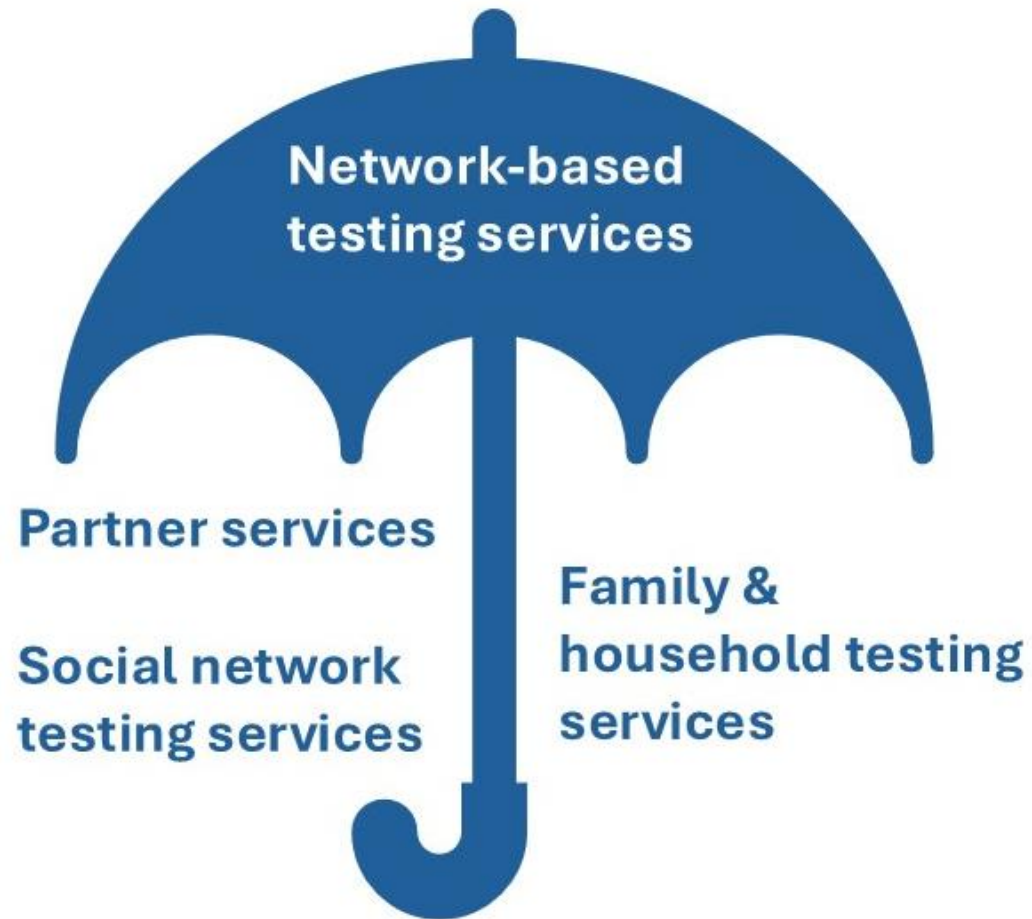
What is network-based testing?

What is network-based testing?

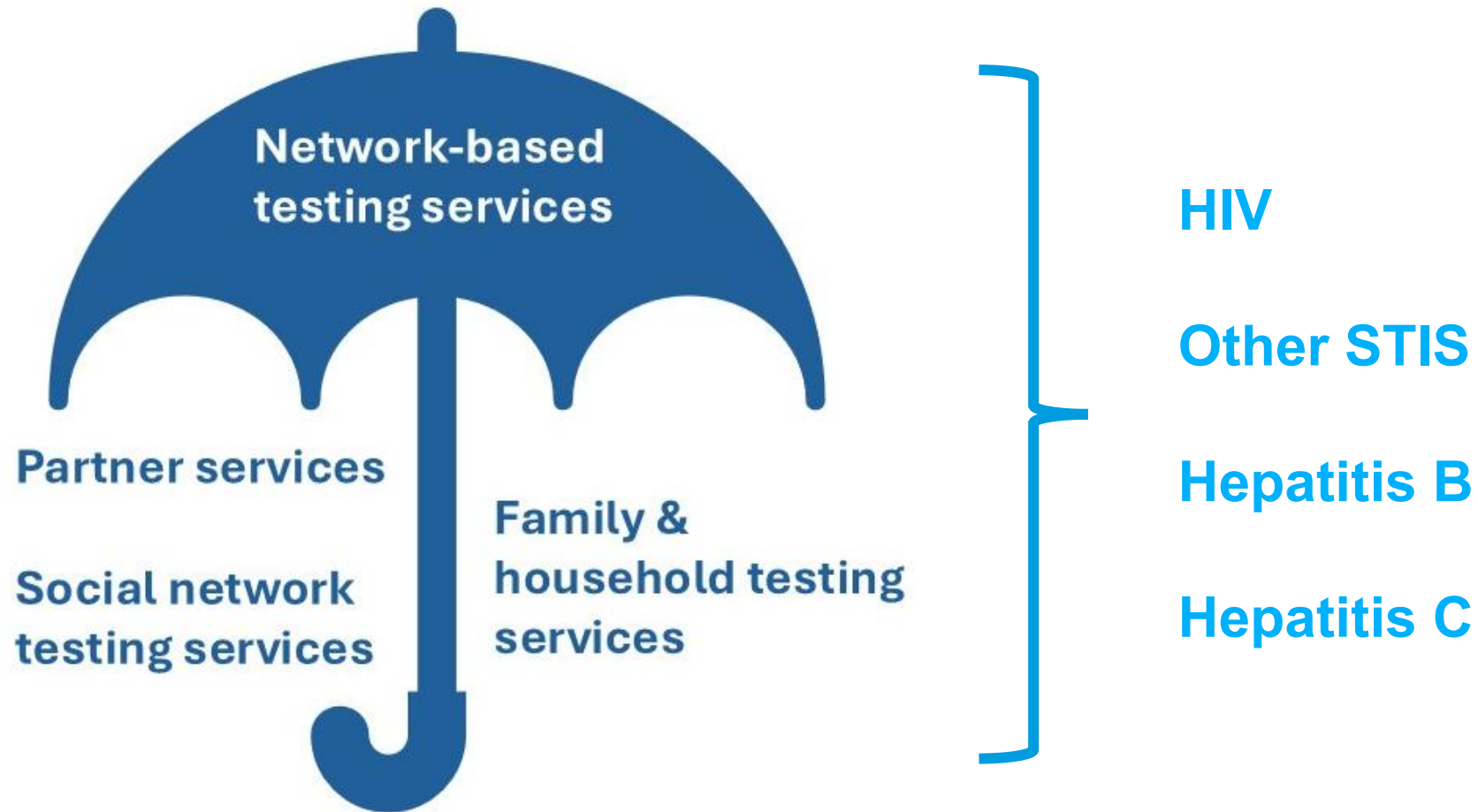
Testing based on social connections



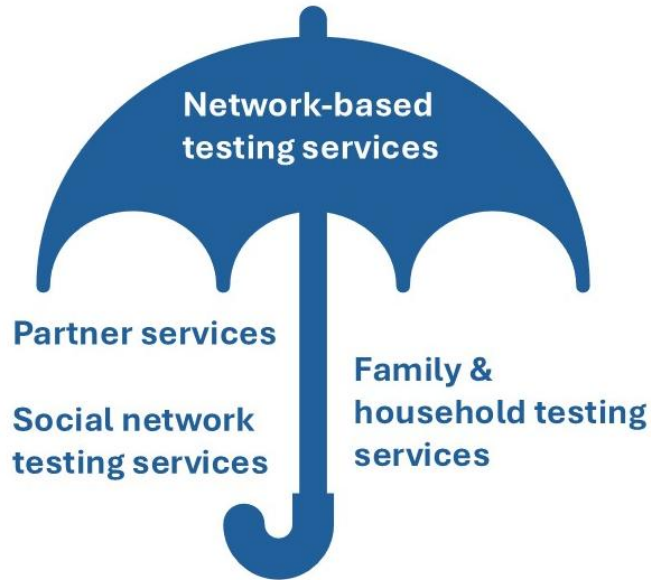
What is “network-based testing?”



What is “network-based testing?”



Terms associated with network-based testing



Partner Testing

Partner Notification Services

Index Testing

Risk Network Referral

Family Testing

Couples Counseling and Testing

Contact Tracing

Household Testing

Voluntary Partner Referral

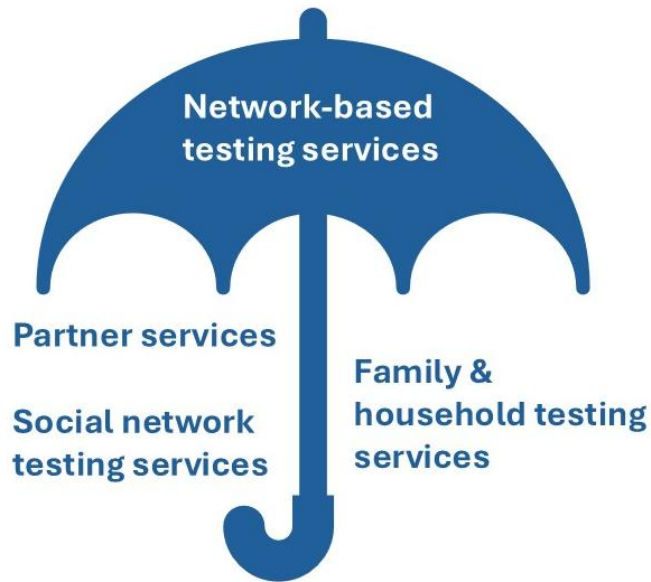
Disclosure Counseling and Support

Social Network Strategy

Partner Management

Expedited Partner Treatment

Types of network-based testing



Partner Services	NBT approaches in which sexual and/or injection partners of clients who have been diagnosed with an infection are contacted, notified of potential exposure, and offered testing and other services
Social network testing services	NBT approaches in which individuals living with or at risk of infections encourage and support social contacts to seek testing and other services, or distribute self-testing kits to social contacts
Family & household testing services	NBT approaches in which family members (including biological children for HIV or HBV) and other household members (for HBV) are contacted, notified of potential exposure, and offered testing and other services
Secondary Distribution of Self-Test Kits	NBT approaches in which individuals are given self-testing kits to distribute to partners or other social contacts

Types of network-based testing

	HIV	HBV	HCV	STIs
Partner Services	WHO recommended(1)	WHO recommended(2)	Some evidence	WHO recommended(3)
Social network testing services	WHO recommended			Some evidence
Family & household testing services	WHO recommended (biological children)(1)	WHO recommended (family & household)(2)		
Secondary distribution of self-testing kits	WHO recommended(1)		Some evidence	WHO recommended (syphilis)(3)*

1. Consolidated Guidelines on Differentiated HIV Testing Services, 2024: <https://www.who.int/publications/i/item/9789240096394>

2. Guidelines on HBV and HCV Testing, 2017: <https://www.who.int/publications/i/item/9789241549981>

3. Updated recommendations for the treatment of *Neisseria gonorrhoeae*, Chlamydia trachomatis, and *Treponema pallidum* (syphilis) and new recommendations on syphilis testing and partner services, 2024: <https://www.who.int/publications/i/item/9789240090767>

*Not widely available

WHO Recommendations on NBT services for HIV

Provider-assisted partner services should be offered for all people with HIV as part of a voluntary comprehensive package of testing, care and prevention (*strong recommendation, moderate-quality evidence*).

NEW recommendation: Social network testing services may be offered as an additional HIV testing approach as part of a comprehensive package of care and prevention (*conditional recommendation, low-certainty evidence*).

In all settings **biological children** of a parent with HIV should be routinely offered HTS and, if found to have HIV or to be at high risk for infection through breastfeeding, should be linked to services for treatment or prevention within a broader package of voluntary provider-assisted partner services.

Consolidated guidelines on differentiated HIV testing services



WHO Recommendations on NBT services for HBV & HCV

In all settings (and regardless of whether delivered through facility- or community-based testing), it is recommended that HBsAg serological testing and linkage to care and treatment services be offered to the following individuals:

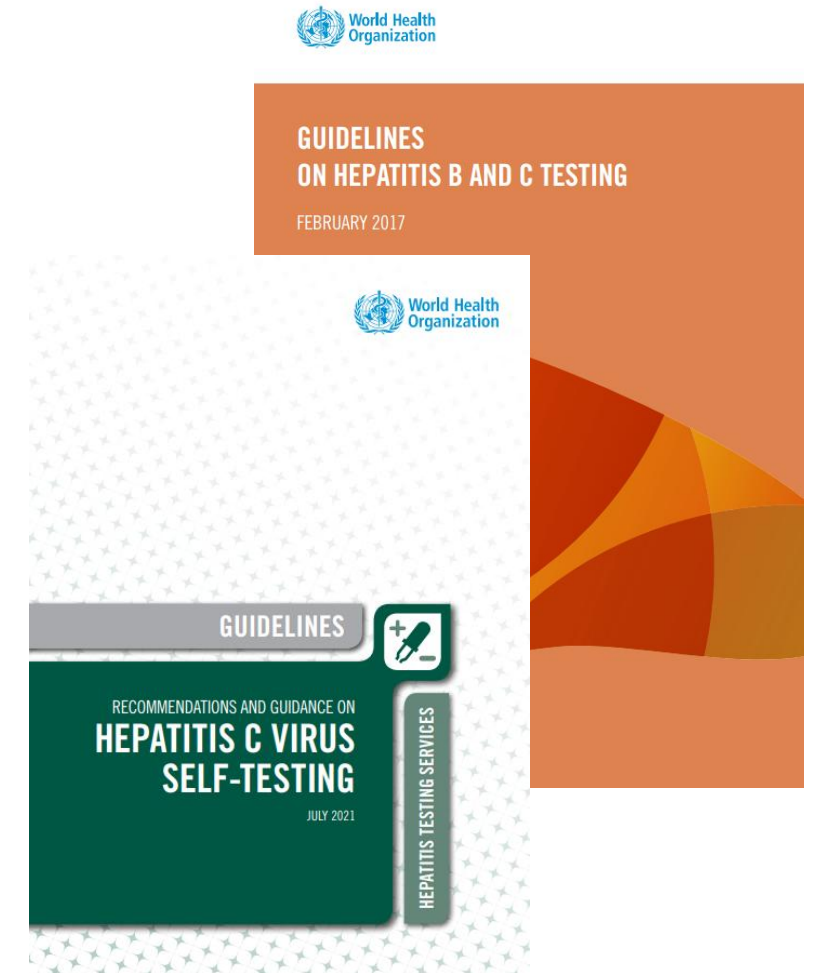
- **Adults and adolescents from populations most affected by HBV infection³** (i.e. who are either part of a population with high HBV seroprevalence or who have a history of exposure and/or high-risk behaviours for HBV infection);
- **Adults, adolescents and children with a clinical suspicion of chronic viral hepatitis⁴** (i.e. symptoms, signs, laboratory markers);
- **Sexual partners, children and other family members, and close household contacts** of those with HBV infection⁵;
- **Health-care workers:** in all settings, it is recommended that HBsAg serological testing be offered and hepatitis B vaccination given to all health-care workers who have not been vaccinated previously (*adapted from existing guidance on hepatitis B vaccination⁶*)

Strong recommendation, low quality of evidence

HCV self-testing should be offered as an additional approach to HCV testing services (*strong recommendation, moderate-certainty evidence*).



Guidelines on HBV and HCV Testing, 2017: <https://www.who.int/publications/i/item/9789241549981>
Recommendations and Guidance on Hepatitis C Virus Self-Testing, 2021:
<https://www.who.int/publications/i/item/9789240031128>



WHO recommendations on NBT services for STIs

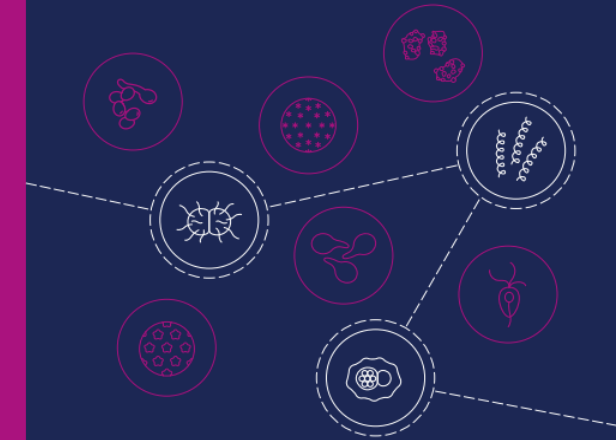
WHO suggests offering syphilis self-testing as an additional syphilis testing approach.

Conditional recommendation, low certainty in evidence of effects

WHO recommends that STI partner services should be offered to people with STIs as part of a range of options based on their needs and preferences and within a comprehensive package of voluntary STI testing, care and prevention.

Strong recommendation, low certainty in evidence of effects

Updated recommendations
for the treatment of *Neisseria gonorrhoeae*, *Chlamydia trachomatis*
and *Treponema pallidum* (syphilis),
and new recommendations on
syphilis testing and partner services






3. Updated recommendations for the treatment of *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, and *Treponema pallidum* (syphilis) and new recommendations on syphilis testing and partner services, 2024: <https://www.who.int/publications/i/item/9789240090767>

*Not widely available

Importance of network-based testing

Why offer network-based testing?

Client 	Partners, Children, Social Contacts, Household 	Community 
<ul style="list-style-type: none">• Provide support to people with infections to assist them in getting their partner(s), network contacts, and/or child(ren) tested• Takes the onus off the index client as the sole person responsible for the notification	<ul style="list-style-type: none">• Maximizes the proportion of exposed people who are notified of their exposure• Allows people at risk to get tested and access:<ul style="list-style-type: none">• Treatment services (if positive)• Prevention services (if negative)	<ul style="list-style-type: none">• An effective case finding strategy• Reduces future rates of transmission by aiding in early diagnosis, prevention, and treatment

Partner services are highly effective

- Studies (mainly for HIV) have shown that partner services can:
 - (1) Increase uptake of HTS
 - (2) Identify PLHIV who were previously undiagnosed, including men and biological children
 - (3) Effectively link to care

[J Int AIDS Soc. 2019 Jul;22 Suppl 3\(Suppl Suppl 3\):e25301. doi: 10.1002/jia2.25301.](#)

Community-led HIV testing services including HIV self-testing and assisted partner notification services in Vietnam: lessons from a pilot study in a concentrated epidemic setting

Van Thi Thuy Nguyen¹, Huong Tt Phan², Masaya Kato¹, Quang-Thong Nguyen³, Kim A Le Ai⁴, Son H Vo², Duong C Thanh⁵, Rachel C Baggaley⁶, Cheryl C Johnson^{6 7}

Affiliations [+ expand](#)

PMID: 31321903 PMCID: PMC6639698 DOI: 10.1002/jia2.25301

[Clinical Trial](#) [PLOS One. 2019 Mar 27;14\(3\):e0212762. doi: 10.1371/journal.pone.0212762.](#)
eCollection 2019.

HIV index testing to improve HIV positivity rate and linkage to care and treatment of sexual partners, adolescents and children of PLHIV in Lesotho

Makhahliso Jubilee¹, Faith Jiyeong Park², Knowledge Chipango¹, Kenoakae Pule¹, Albert Machinda¹, Noah Tarubekera²

Affiliations [+ expand](#)

PMID: 30917167 PMCID: PMC6436679 DOI: 10.1371/journal.pone.0212762

[J Int AIDS Soc. 2020 Jun;23 Suppl 2\(Suppl 2\):e25520. doi: 10.1002/jia2.25520.](#)

Index and targeted community-based testing to optimize HIV case finding and ART linkage among men in Zambia

Linah K Mwango¹, Kristen A Stafford^{2 3 4}, Natalia C Blanco^{2 3}, Marie-Claude Lavoie^{2 3}, Morley Mujansi¹, Nasho Nyirongo¹, Kalima Tembo¹, Henry Sakala¹, Julian Chipukuma¹, Beauty Phiri¹, Carol Nzangwa¹, Susan Mwandila¹, Kennedy C Nkwemu⁵, Ahmed Saadani⁵, Annie Mwila⁵, Michael E Herce^{6 7}, Cassidy W Claassen^{1 2 3}

Affiliations [+ expand](#)

PMID: 32589360 PMCID: PMC7319128 DOI: 10.1002/jia2.25520

[J Int AIDS Soc. 2019 Jul;22 Suppl 3\(Suppl Suppl 3\):e25321. doi: 10.1002/jia2.25321.](#)

Sustained high HIV case-finding through index testing and partner notification services: experiences from three provinces in Zimbabwe

Nyikadzino Mahachi¹, Auxilia Muchedzi¹, Taurayi A Tafuma¹, Peter Mawora¹, Liz Kariuki², Bazghina-Werq Semo³, Moses H Bateganya⁴, Tendai Nyagura⁵, Getrude Ncube⁶, Mike B Merrigan³, Otto N Chabikuli⁴, Mulamuli Mpofu²

Affiliations [+ expand](#)

PMID: 31321918 PMCID: PMC6639671 DOI: 10.1002/jia2.25321

[J Acquir Immune Defic Syndr. 2020 Dec 15;85\(5\):535-542. doi: 10.1097/QAI.0000000000002500.](#)

Home- and Clinic-Based Pediatric HIV Index Case Testing in Kenya: Uptake, HIV Prevalence, Linkage to Care, and Missed Opportunities

Cyrus Mugo^{1 2}, Jiayu Wang², Emily R Begnel², Irene N Njuguna^{1 2}, Elizabeth Maleche-Obimbo³, Irene Inwani⁴, Jennifer A Slyker², Grace John-Stewart^{5 6}, Dalton C Wamalwa³, Anjuli D Wagner²

Affiliations [+ expand](#)

PMID: 32932411 PMCID: PMC9383697 DOI: 10.1097/QAI.0000000000002500

[Review](#) [AIDS. 2017 Aug 24;31\(13\):1867-1876. doi: 10.1097/QAD.0000000000001555.](#)

Improving HIV test uptake and case finding with assisted partner notification services

Shona Dalal¹, Cheryl Johnson, Virginia Fonner, Caitlin E Kennedy, Nandi Siegfried, Carmen Figueroa, Rachel Baggaley

Affiliations [+ expand](#)

PMID: 28590326 PMCID: PMC5538304 DOI: 10.1097/QAD.0000000000001555

[Free PMC article](#)

Social network testing is highly effective

- Studies (mainly for HIV) have shown that social network testing can:
 - (1) Increase uptake of HTS
 - (2) Identify PLHIV who were previously undiagnosed
 - (3) Effectively link to care

Randomized Controlled Trial > AIDS. 2024 Nov 1;38(13):1861–1865.
doi: 10.1097/QAD.0000000000003976. Epub 2024 Jul 2.

Comparison of a novel expanded social network recruitment intervention with risk network recruitment to HIV testing: locating undiagnosed cases in South Africa

Leslie D Williams¹, Alastair van Heerden^{2,3}, Samuel R Friedman⁴, Buyisile Chibi², Phumlani Memela², Wendy Avila Rodriguez¹, Phillip Joseph²

Affiliations + expand
PMID: 38959096 DOI: 10.1097/QAD.0000000000003976

> Int J Environ Res Public Health. 2023 Dec 30;21(1):54. doi: 10.3390/ijerph21010054.

Pilot Testing Two Versions of a Social Network Intervention to Increase HIV Testing and Case-finding among Men in South Africa's Generalized HIV Epidemic

Leslie D Williams¹, Alastair van Heerden², Xolani Ntinga², Georgios K Nikolopoulos³, Dimitrios Paraskevis⁴, Samuel R Friedman⁵

Affiliations + expand
PMID: 38248519 PMCID: PMC10815189 DOI: 10.3390/ijerph21010054

> medRxiv [Preprint]. 2023 Nov 6;2023.11.05.23298135. doi: 10.1101/2023.11.05.23298135.

Social Network Strategies to Distribute HIV Self-testing Kits: A Global Systematic Review and Network Meta-analysis

Siyue Hu^{1,2,3}, Fengshi Jing⁴, Chengxin Fan^{3,5}, Yifan Dai^{1,2,3}, Yewei Xie⁶, Yi Zhou⁷, Hang Lv⁷, Xi He⁸, Dan Wu^{3,5,9}, Joseph D Tucker^{3,9}, Weiming Tang^{1,3}

Affiliations + expand
PMID: 37986939 PMCID: PMC10659482 DOI: 10.1101/2023.11.05.23298135

Review > J Int AIDS Soc. 2024 Jul;27(7):e26342. doi: 10.1002/jia2.26342.

Social network strategies to distribute HIV self-testing kits: a global systematic review and network meta-analysis

Siyue Hu^{1,2,3}, Fengshi Jing⁴, Chengxin Fan^{3,5}, Yifan Dai^{1,2,3}, Yewei Xie⁶, Yi Zhou⁷, Hang Lv⁷, Xi He⁸, Dan Wu^{3,5,9}, Joseph D Tucker^{3,9}, Weiming Tang^{1,3}

Affiliations + expand
PMID: 39048927 PMCID: PMC11269052 DOI: 10.1002/jia2.26342

Randomized Controlled Trial > Harm Reduct J. 2023 Nov 8;20(1):165.
doi: 10.1186/s12954-023-00899-3.

Effects of a social network intervention on HIV seroconversion among people who inject drugs in Ukraine: moderation by network gender composition

John Mark Wiginton^{1,2}, Robert Booth³, Laramie R Smith¹, Sajina Shakya¹, Cristina Espinosa da Silva^{4,5}, Thomas L Patterson⁶, Eileen V Pitpitan^{7,8}

Affiliations + expand
PMID: 37940947 PMCID: PMC10631017 DOI: 10.1186/s12954-023-00899-3

> J Med Internet Res. 2023 Apr 26;25:e46514. doi: 10.2196/46514.

Implementation Cascade of a Social Network-Based HIV Self-testing Approach for Men Who Have Sex With Men: Cross-sectional Study

Tsz Ho Kwan^{1,2}, Denise Pui Chung Chan¹, Samuel Yeung-Shan Wong², Shui Shan Lee¹

Affiliations + expand
PMID: 37099364 PMCID: PMC10173037 DOI: 10.2196/46514

Family/Household testing is highly effective

- Studies have shown that family and household testing can:
 - (1) Identifying healthy children living with HIV (before they develop symptoms)
 - (2) Identify children, siblings, spouses, and parents living with HBV
 - (3) Effectively link to care

Review > [J Acquir Immune Defic Syndr](#). 2018 Aug 15;78 Suppl 2(Suppl 2):S88-S97.
doi: 10.1097/QAI.0000000000001731.

Family Testing: An Index Case Finding Strategy to Close the Gaps in Pediatric HIV Diagnosis

Katherine R Simon ^{1 2}, Robert J Flick ¹, Maria H Kim ^{1 2}, Rachael A Sabelli ¹, Tapiwa Tembo ¹, Benjamin Ryan Phelps ³, Nora E Rosenberg ⁴, Saeed Ahmed ^{1 2}

Affiliations + expand

PMID: 29994830 PMID: PMC6047763 DOI: 10.1097/QAI.0000000000001731

> [Trop Med Int Health](#). 2009 Feb;14(2):204-12. doi: 10.1111/j.1365-3156.2008.02182.x.

Implementing family-focused HIV care and treatment: the first 2 years' experience of the mother-to-child transmission-plus program in Abidjan, Côte d'Ivoire

B Tonwe-Gold ¹, D K Ekouevi, C A Bosse, S Toure, M Koné, R Becquet, V Leroy, P Toro, F Dabis, W M El Sadr, E J Abrams

Affiliations + expand

PMID: 19236666 PMID: PMC2793410 DOI: 10.1111/j.1365-3156.2008.02182.x

> [Trop Med Int Health](#). 2017 Aug;22(8):1021-1029. doi: 10.1111/tmi.12900. Epub 2017 Jun 20.

Index case finding facilitates identification and linkage to care of children and young persons living with HIV/AIDS in Malawi

Saeed Ahmed ^{1 2}, Rachael A Sabelli ¹, Katie Simon ^{1 2}, Nora E Rosenberg ³, Elijah Kavuta ¹, Mwelura Harawa ¹, Spencer Dick ¹, Frank Linzie ⁴, Peter N Kazembe ^{1 2}, Maria H Kim ^{1 2}

Affiliations + expand

PMID: 28544728 PMID: PMC5575466 DOI: 10.1111/tmi.12900

> [J Acquir Immune Defic Syndr](#). 2016 Dec 15;73(5):e83-e89. doi: 10.1097/QAI.0000000000001184.

Implementation and Operational Research: Active Referral of Children of HIV-Positive Adults Reveals High Prevalence of Undiagnosed HIV

Anjuli D Wagner ¹, Cyrus Mugo, Irene N Njuguna, Elizabeth Maleche-Obimbo, Kenneth Sherr, Irene W Inwani, James P Hughes, Dalton C Wamalwa, Grace C John-Stewart, Jennifer A Slyker

Affiliations + expand

PMID: 27846074 PMID: PMC5175406 DOI: 10.1097/QAI.0000000000001184

> [J Int AIDS Soc](#). 2012 Feb 22;15(1):8. doi: 10.1186/1758-2652-15-8.

Family model of HIV care and treatment: a retrospective study in Kenya

Jayne Lewis Kulzer ^{# 1 2 3}, Jeremy A Penner ^{# 1 4}, Reson Marima ¹, Patrick Oyaro ¹, Arbogast O Oyanga ¹, Starley B Shade ^{1 5}, Cinthia C Blat ^{1 2}, Lennah Nyabiage ⁶, Christina W Mwachari ^{1 7}, Hellen C Muttai ⁸, Elizabeth A Bukusi ¹, Craig R Cohen ^{1 2}

Affiliations + expand

PMID: 22353553 PMID: PMC3298805 DOI: 10.1186/1758-2652-15-8

> [AIDS Behav](#). 2021 Feb;25(2):554-561. doi: 10.1007/s10461-020-03002-0.

Outcome of HIV Testing Among Family Members of Index Cases Across 36 Facilities in Abidjan, Côte d'Ivoire

Arielle Lasry ¹, Nathalie K Danho ², Erin N Hullah ³, Annie D Diokouri ², Marie-Huguette Kingbo ², Nicole I L Doumatey ⁴, Alexandre K Ekra ⁴, Laurence G Ebah ², Hoba Kouamé ⁵, Judith Hedje ⁴, Anne-Eudes Jean-Baptiste ^{3 6}

Affiliations + expand

PMID: 32875461 PMID: PMC7855395 DOI: 10.1007/s10461-020-03002-0

The 5 Cs

Network-based testing must follow the 5 Cs

1. Ensure **Consent**

2. Remain **Confidential**

3. Include Appropriate **Counseling**

4. Provide **Correct Test Results**

5. **Connect** Contacts Tested to Appropriate Services

Network-based testing services should always be voluntary

- Network-based testing is a completely **voluntary service** offered to people to support them in getting their partner(s), children, and other contacts tested for HIV, hepatitis B & C, and/or STIs.
- Network-based testing testing should be **person-centered and focused on the needs and safety** of clients and their partner(s), network contacts, and children.
- All testing clients should be **provided with all available prevention, care, and treatment services**, regardless of whether they provide details about their partners.
 - Services may **NEVER** be withheld under any circumstances.
 - Clients may **NEVER** be pressured into sharing the names of their partner(s), family, or other contacts
 - Clients should be informed of their right to decline participation in network-based testing services throughout the process, not just during the elicitation interview.
- Clients may opt-out of network-based testing services **FOR ANY OR NO REASON.**
- Clients do not need to provide a reason for not participating in network-based testing services.

Network-Based Testing Should Always Be Confidential

- **Confidentiality** = protection of personal information.
- You need to give your client an assurance that what is said will be in confidence because, unless you are able to do that, the client is unlikely to be open with you.
- It is our duty to never reveal the information that clients tell us.
- Both the confidentiality of the index client and all named partners, network contacts, and children should be maintained at all times.

The partner's status should not be revealed to the index client



Index Client

**Unless Explicit
Consent Is
Obtained from
All Parties**



Partner or
contact

The identity of the index client should never be revealed to the partner unless agreed to by the index

What Personal Information Should Be Kept Confidential*?

- Information that would allow others to identify the index client
 - Their name, date of birth, address, phone number, etc.
- Any medical diagnosis, including diagnosis and treatment plan
- Anything they talked about during their interview and/or clinical exam



Scenarios

Check your understanding by considering the following situations

Scenario 1

You call John, a named sexual partner that you are contacting as part of provider-assisted partner services for STIs. You explain to John that he may have been exposed to chlamydia and you are calling to offer him a test and/or presumptive treatment. During the session, John asks which of his partners gave you his name.

How can you respond?

Scenario 1

There are several different ways to respond to John's question, but the most important thing is that you do not share any information about the identity of the index client who named him. Possible ways to respond include:

"By law, I am not able to give you that information."

"I cannot give you any more information."

Or, simply:

"I do not have any more information about how we got your contact information"

Scenario 2

You are seeing Mary, a 32 year-old woman who is in her first trimester of pregnancy. As per the guidelines in your country, you test her for HIV, syphilis, and hepatitis B at the first visit. Her rapid hepatitis B surface antigen (HBsAg) test is positive.

When you discuss network-based testing services with her, which of the people in her life would you recommend contacting and testing?

Scenario 2

For hepatitis B, WHO recommends that all sexual and injecting partners, all biological children, and any other household contacts be tested. In this case you can offer assisted partner services and family and household testing services to Mary, and discuss her preferences for how to conduct testing for each contact.

Scenario 3

Aneal was recently diagnosed HIV-positive, and you are conducting the elicitation interview. He names 2 sex partners and 3 injecting partners. Aneal chooses to distribute self-testing kits to all his partners.

What other services can you offer to Aneal and his partners as part of network-based testing?

Scenario 3

Aneal and his partners may have several additional needs. People who inject drugs are at increased risk of HCV, so both Aneal and his partners should be offered HCV testing. He can be given HCV self-testing kits to offer to partners, along with the HIV self-testing kits. Additionally, both Aneal and his partners should be offered linkage to care. Aneal needs linkage to ART, and should also be offered harm reduction services. Aneal's partners may benefit from PrEP if they test negative for HIV. Aneal and his partners should also be offered condoms and lubricant.

The 10 Steps

What are the 10 steps of network-based testing?

1 Introduce concept of network-based testing at any visit, and determine readiness and timing

2 Offer network-based testing as a voluntary service to all clients with HIV, hepatitis B or C, or an STI, and obtain consent

3 Obtain a list of sex and injecting partners, social network contacts, biological children < 19 years old, and other household members (for HBV)

4 Conduct an intimate partner violence (IPV) risk assessment

5 Determine the preferred method (partner services, social network testing, or family/household testing) for each contact

6 Determine which infections each contact should be offered testing for, based on risk and epidemiology (HIV, other STIs, hepatitis)

7 Contact and offer integrated testing to partners and contacts using preferred approach, including self-test distribution

8 Record outcomes of network-based testing services

9 Link partners, contacts, children and household members to appropriate treatment and/or prevention services

10 Follow-up with client to assess for any adverse events associated with network-based testing services