


# Sexually Transmitted Infections: An Evidence-Based Online Course

## Module 6
## STI programmes and service delivery (including M&E, surveillance, design, and implementation)

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# Module outline and objectives

## By the end of this module, the learner should be able to:

- Explain why STIs remain a major public health threat and identify key challenges to STI control
- Describe the key programmatic shifts needed to end STIs as a public health threat
- Compare syndromic and etiologic STI management approaches and apply national case management guidelines
- Outline strategies for screening and managing asymptomatic STIs
- Identify available and emerging diagnostic tools for STIs, including molecular assays and point-of-care tests
- Discuss the role of surveillance and monitoring in achieving global STI targets
- Describe service delivery models for STIs, including decentralization, integration, and task sharing
- Explain how STI services can be integrated with HIV, PHC, and SRH programmes
- Identify key actions for programme optimization to strengthen national STI responses

# Key shifts to end STIs as a public health threat

**A** Create an environment that encourages people to discuss STIs, adopt safer sexual practices, and seek treatment

**B** Vastly scale up primary prevention

**C** Increase integration of STI services with PHC, SRH, HIV services to increase access to care

**D** Increase accessibility of people-centred services through public and private sectors

**E** Close gaps in international and national funding

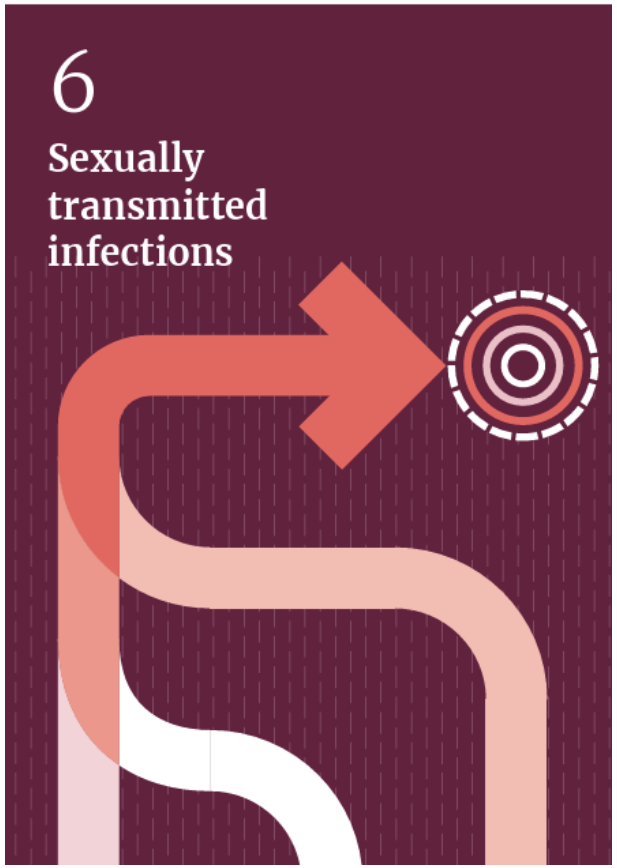
**F** Facilitate adoption of POC diagnostics and other new cost-effective technologies

**G** Invest in and facilitate research




Source: adapted from WHO, 2022, Box 6.1 (1).

# Progress towards targets



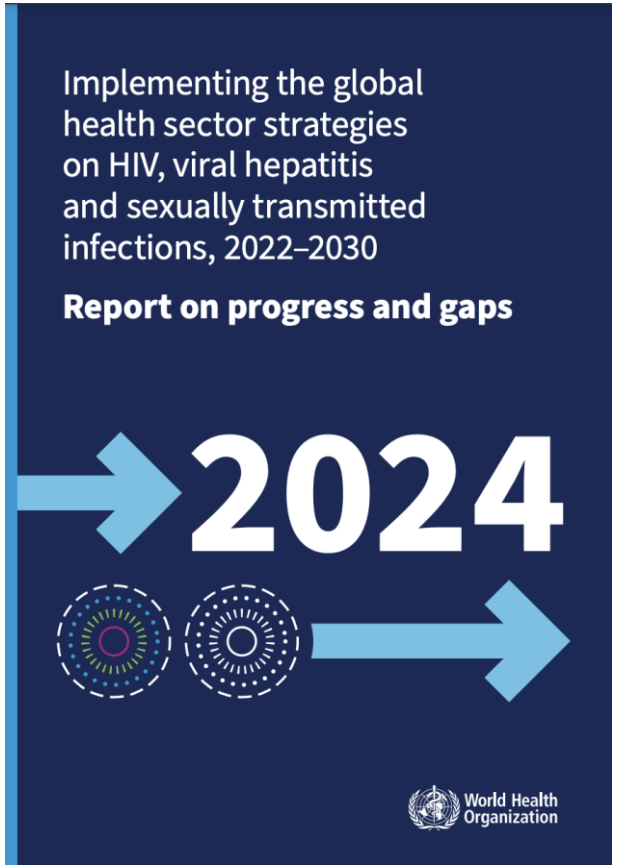




Table 6.1 Progress towards global STIs targets

| Indicator | 2020 baseline | 2022 progress | 2025 target | 2030 target |
|---|---|---|---|---|
| New cases of syphilis, gonorrhoea, chlamydia and trichomoniasis among people aged 15–49 years per year | 374 million | No data | <300 million | <150 million |
| New cases of syphilis among people aged 15–49 years per year | 7.1 million | 8.0 million | 5.7 million | 0.71 million |
| New cases of gonorrhoea among people aged 15–49 years per year | 82.3 million | No data | 65.8 million | 8.23 million |
| Congenital syphilis cases per 100 000 live births per year | 425[a] | 523 | <200 | <50 |
| Girls fully vaccinated with human papillomavirus vaccine by 15 years of age (%) | 14% | 17% | 50% | 90% |
| Pregnant women attending antenatal care who were screened for syphilis (%) /treated if positive (%) | 66% / 78%[a] | 62%/ 80% | >85% / >90% | >95% / >95% |
| Priority populations[b] screened for syphilis (%) / treated if positive (%) | No data/ No data | No data/ No data | >80% / >90% | >90% / >95% |
| Priority populations[b] screened for gonorrhoea (%) / treated if positive (%) | No data/ No data | No data/ No data | >20% / >90% | >90% / >95% |
| Women screened for cervical cancer using a high-performance test, by age 35 and again by age 45 (%) /screened and identified as having pre-cancer treated or invasive cancer managed (%) | No data/ No data | No data/ No data | >40% / > 40% | >70% / >90% |
| Percentage of countries[c] reporting antimicrobial resistance in *Neisseria gonorrhoeae* to the WHO Gonococcal Antimicrobial Surveillance Programme | 36%[d] | 38%[d] | >60% | >70% |
| Percentage of countries[c] with national STI plans updated within the past five years | 44%[e] | 81%[e] | >70% | >90% |
| Percentage of countries[c] with national STI case management guidelines updated within the past three years | 62%[f] | 67%[f] | >70% | >90% |
| Percentage of countries[c] with strong STI surveillance systems | No data | No data | >50% | >90% |

Sources: WHO, 2022 (1); WHO, 2024, Table 6.1 (2).

# Why are STIs important?



Supporting **sexual health and well-being** for all, including young people



Reducing the **burden of infertility** caused by gonorrhoea and chlamydia



Preventing **adverse pregnancy and neonatal** outcomes caused by syphilis



Eliminating **cervical cancer** caused by HPV infection



Reducing **HIV transmission** associated with herpes and other STIs



Tackling **antimicrobial resistance** in *N. gonorrhoeae*

**Source:** adapted from *WHO global research priorities for sexually transmitted infections* (7).



Sources: WHO global research priorities for STIs, 2024 (3); WHO, 2026 (5).

# Challenges to STI control

1. **Asymptomatic infections**
   Most STIs are silent — patients don't seek care, transmission continues
2. **Limited diagnostics**
   Scarce lab infrastructure forces reliance on syndromic management
3. **Stigma & discrimination**
   Discourages care-seeking, especially among key populations
4. **Weak health systems**
   Staff shortages, drug stock-outs, fragmented supply chains
5. **Antimicrobial resistance**
   N. gonorrhoeae resistant to nearly every treatment class
6. **Inadequate surveillance**
   True burden underestimated; policy based on incomplete data
7. **Partner notification barriers**
   Contact tracing difficult, reinfection cycles persist
8. **Competing health priorities**
   STIs receive less funding than HIV, TB, or malaria
9. **Gender inequities**
   Women bear disproportionate burden with less autonomy
10. **Limited prevention tools**
    Inconsistent condoms, slow HPV vaccine rollout, no new vaccines

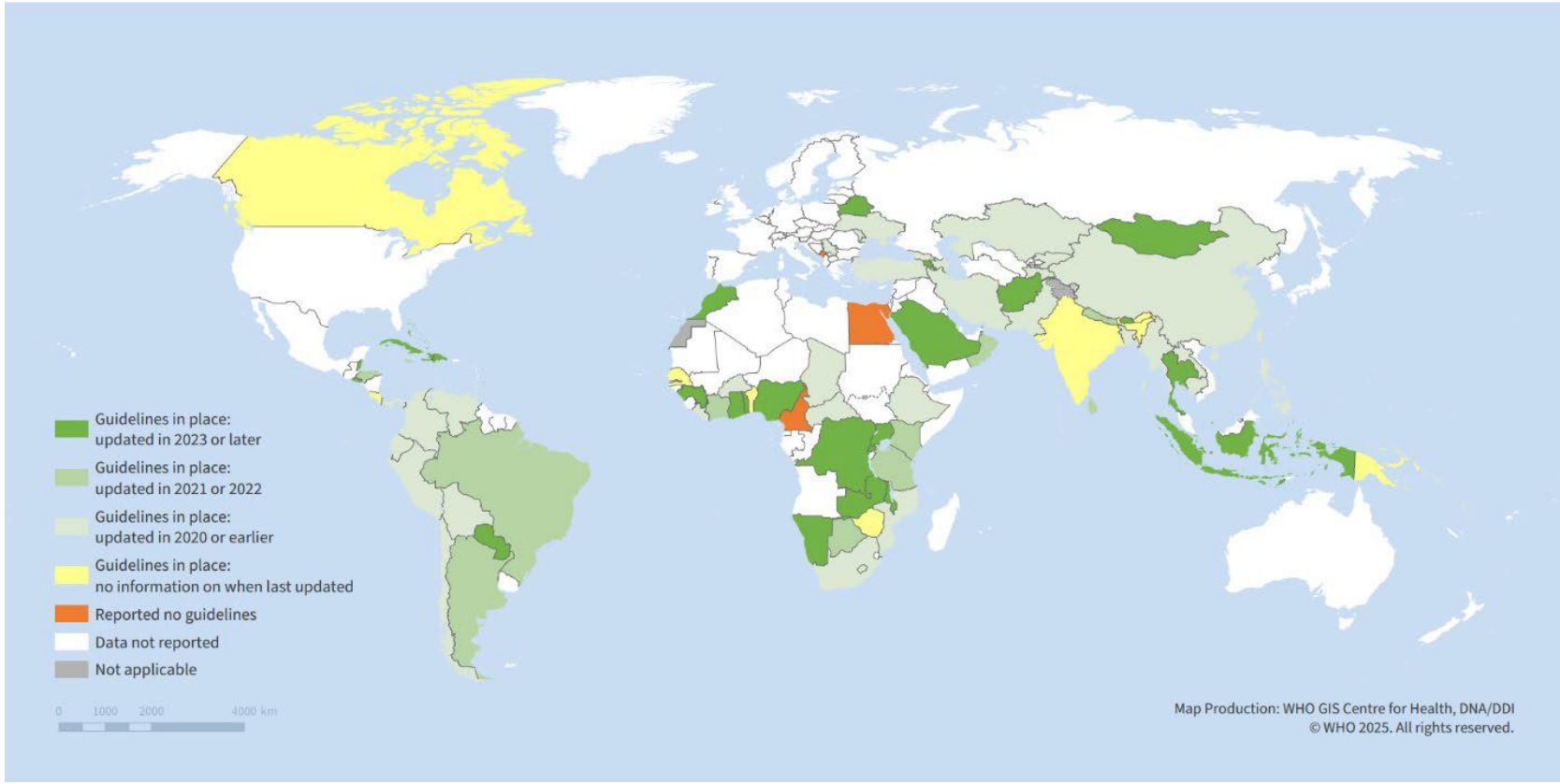
Based on WHO, 2022 (1) and WHO, 2024 (2).

# National case management guidelines for STIs, January 2025

## Implementation?

Among the countries reporting to Global AIDS Monitoring for 2023 or 2024, **97%** (92 of 95) reported having national case management guidelines.

- 33% (27/82) updated in 2023 or later
- 17% (14/82) updated in 2021 or 2022
- 50% (41/82) updated in 2020 or earlier.




Source: WHO STI policy adoption and implementation status, 2025, using Global AIDS Monitoring data (UNAIDS/WHO/UNICEF) (4).

# STIs management approaches

Medical and sexual history

Physical and genital examination

Diagnosis

Etiologic management

NAAT
POCT
Culture/AST

Syndromic management

Partner management

Same-day treatment

Appropriate treatment/ compliance to treatment

Health education and Counselling

Promote and provide prevention services

- HIV and syphilis testing
- Condoms
- PrEP
- Vaccination (Hep)
- Circumcision (men)

# STIs management approaches



1984




2003




2021

Sources: WHO, 1985 (6); WHO, 2003 (7); WHO, 2021 (8).

# STIs management approaches

Source: **[source to confirm]**



| Community (home/mobile) (L0) | Health post (primary) (L1) | District Hospital (L2) | Regional/Provincial hospital (L3) | Reference center (L4) |
|---|---|---|---|---|
| | 50% of symptomatic cases are assumed to seek care | 30% of symptomatic cases are assumed to seek care | 10% of symptomatic cases are assumed to seek care | 10% of symptomatic cases are assumed to seek care |

**Diagnosis and technologies**

**Syndromic approach**

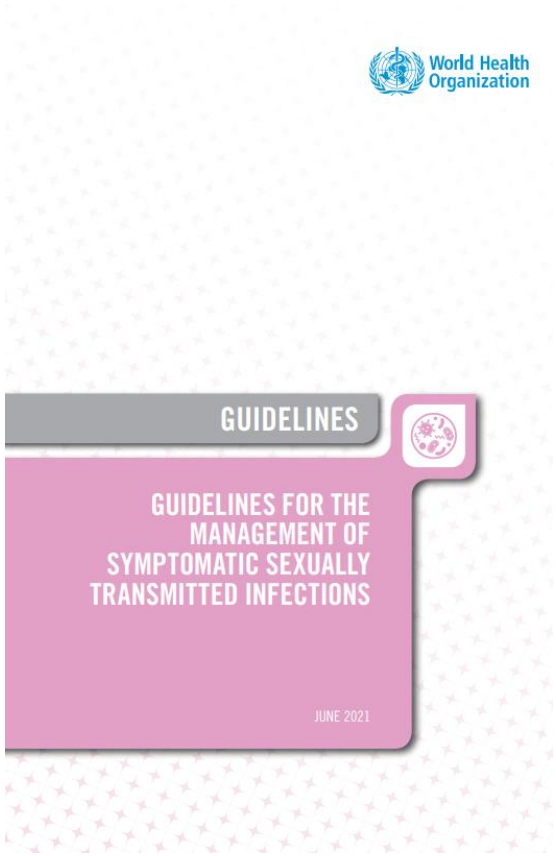
**Gram Stain/wet mount**

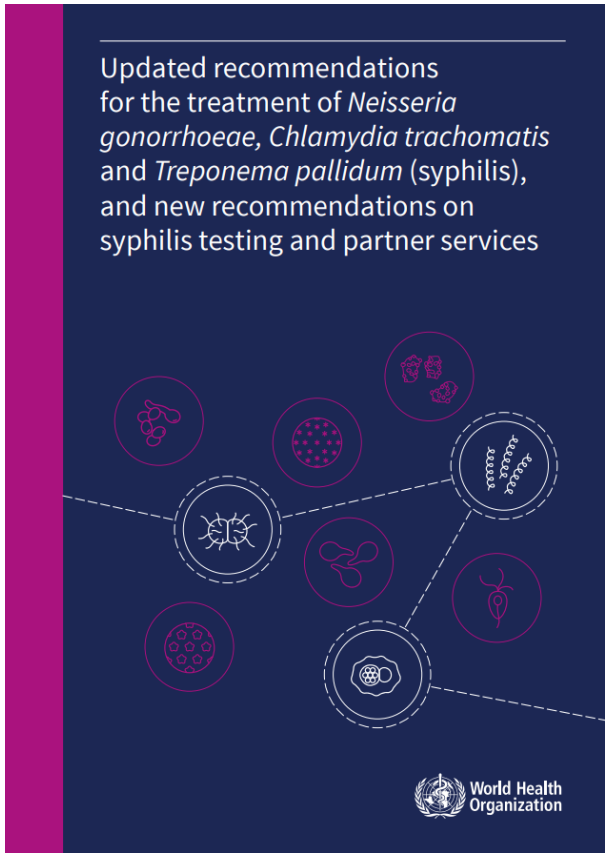
**Molecular assay CT/NG**

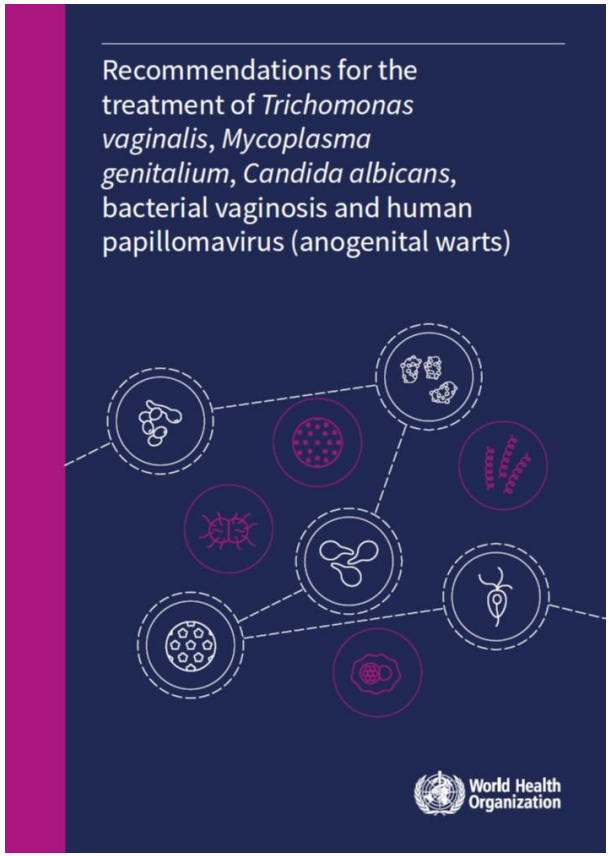
**Culture**

**Current diagnostic tools to diagnose and screen gonorrhoea and chlamydial infection and susceptibility testing for NG are either non-existent, suboptimal, expensive or unavailable where most of patients seek care**

# Clinical guidelines



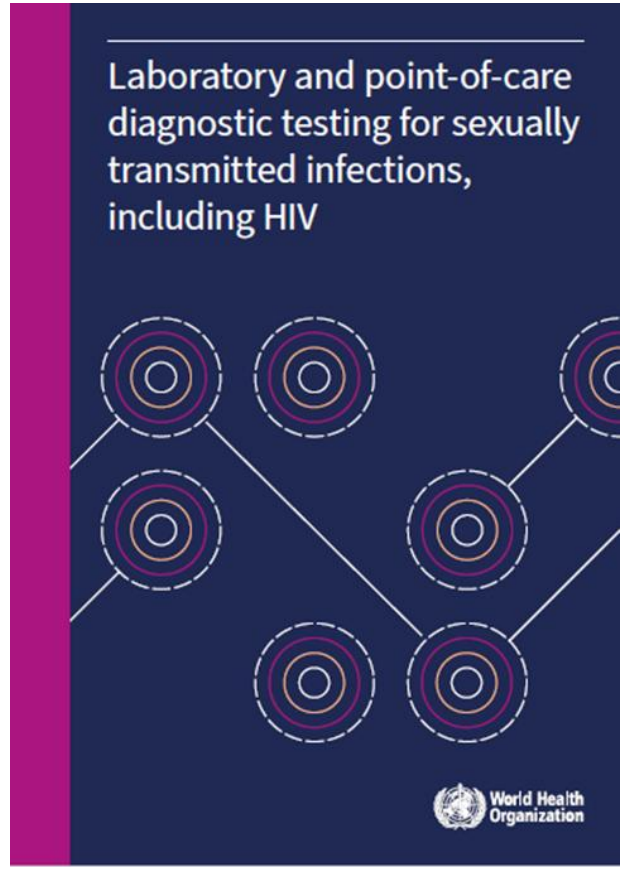

Sources: WHO, 2021 (8); WHO, 2024 (9); WHO, 2024 (10).

# Other guidelines





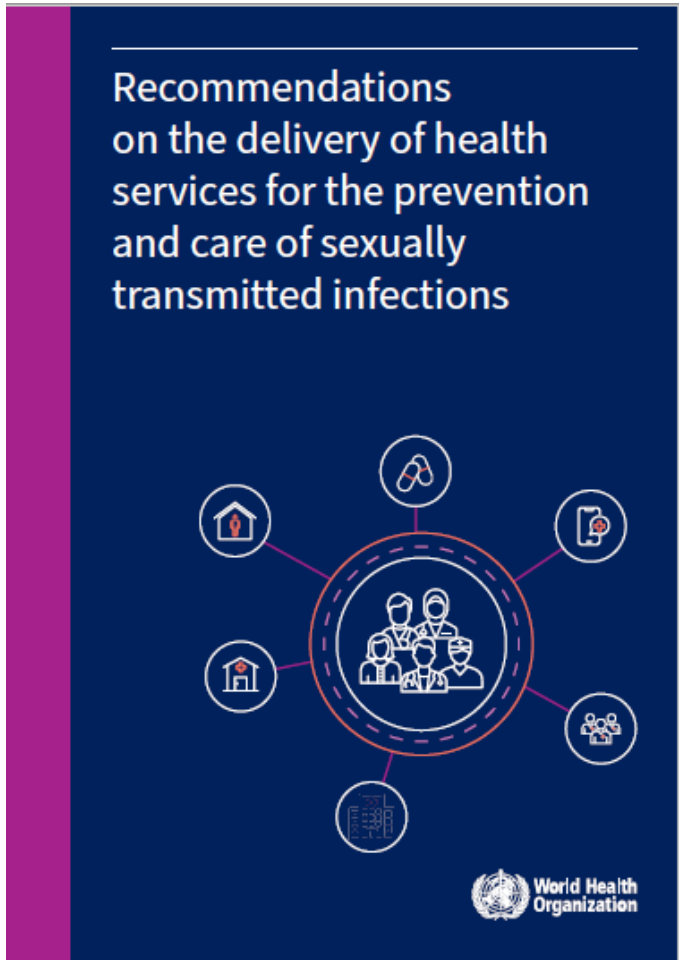


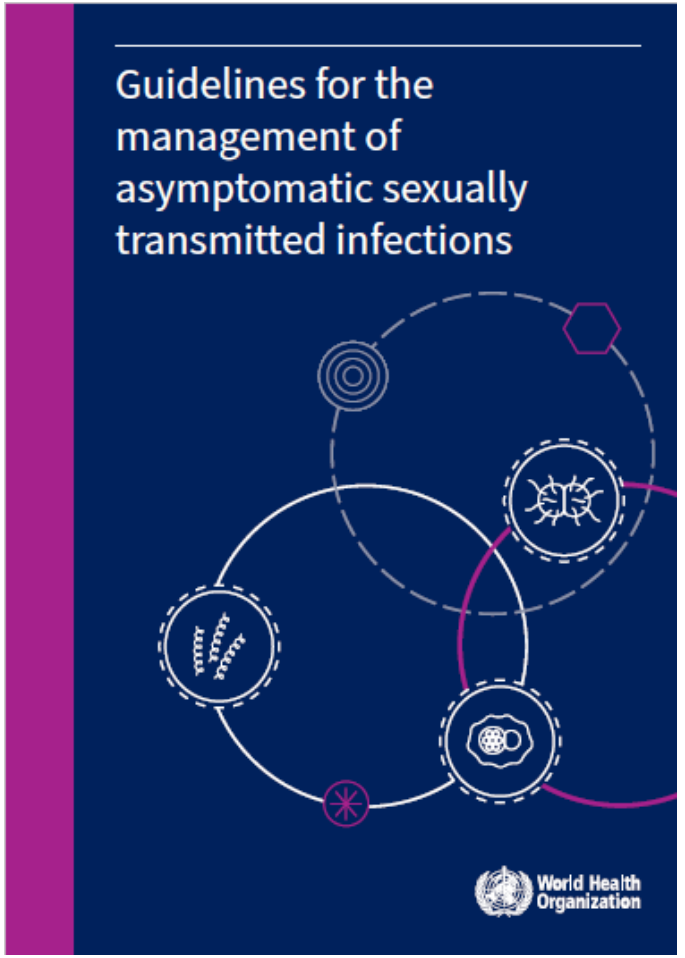



Sources: WHO, 2023 (11); WHO/Unitaid, 2023 (12); WHO, 2023 (13).

# Programmatic guidelines



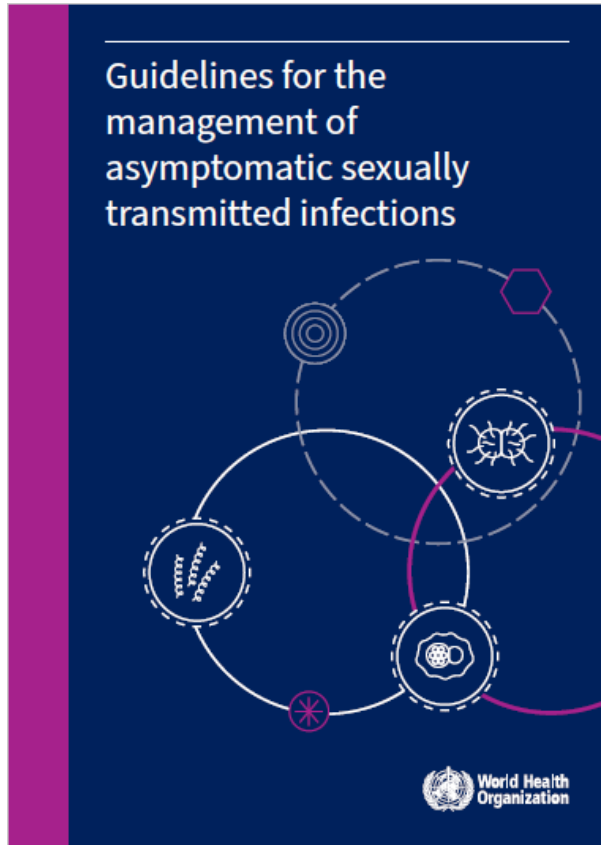




Sources: WHO, 2024 (14); WHO, 2025 (15); WHO, 2025 (16).

# Management of asymptomatic STIs

In settings where prevalence is high, and resources and capacity are available, WHO suggests to screen for *N. gonorrhoeae* and/or *C. trachomatis:*

- **Pregnant women** accessing health care services for antenatal visits.
- **Sexually active adolescents and young people (10–24 years)** accessing health care services (when balancing resources and benefits of screening, **female adolescents** may be prioritized).
- **Sex workers** accessing health care services.
- **Men who have sex with men** accessing health care services.




Source: WHO guidelines for the management of asymptomatic STIs, 2025 (16).

# Management of asymptomatic STIs

Before a screening programme is introduced, there should be common agreement on:

| Key factor | |
|---|---|
| Objectives of screening | Why? |
| Screening tests | Validity<br>Performance characteristics (specificity; reliability; acceptability and accessibility; linkage to treatment and follow-up) |
| **Target population(s)** | **High prevalence of N. gonorrhoeae and C. trachomatis** |
| Pathogens to be screened for | Prevalence, the value placed on the outcomes of not screening, cost of the test |
| Frequency of screening | **Frequency should be balanced against the cost and the number of cases detected and the consequences of not screening.**<br>Based on the evidence for frequency of screening among MSM, fewer people test positive when screened every 2–3 months than 4–6 months, confounded between populations. However, more frequent screening costs more. Sex workers and men who have sex with men should be screened at least annually or every six months |

Source: WHO guidelines for the management of asymptomatic STIs, 2025 (16).

# Management of asymptomatic STIs

| Combined prevalence of N. gonorrhoeae and C. trachomatis defined as high if | | |
|---|---|---|
| Pregnant women | > 10% | |
| Sexually active adolescents and young people (10–24 years) | 15–20% | when balancing resources and benefits of screening, female adolescents may be prioritized |
| Sex workers | No threshold | Screening suggested regardless of prevalence (at least annually or every 6 months) |
| Men who have sex with men | No threshold | Screening suggested regardless of prevalence (at least annually or every 6 months) |

- Screening with either a quality-assured molecular assay (such as NAAT), or a rapid test with a minimum sensitivity of 80% and specificity of 90%, where treatment is available.
- The anatomical site depends on sexual behavior, and pooling samples can reduce cost and increase yield, depending on the resources available.
- Screening should be voluntary with informed consent.
- Treat for N. gonorrhoeae and/or C. trachomatis based on the results of the quality-assured test using the national guidelines.
- Sexual partners of people testing positive should also be tested and treated, if positive.



Source: WHO guidelines for the management of asymptomatic STIs, 2025 (16).

# Diagnostics

**Gonorrhoea and chlamydia infection**

**Low-cost point of care test (LFA / molecular assays)**

**Low-cost AMR / AST for gonorrhoea**

## REASSURED criteria

WHO pre-qualification process is currently underway:

- Molecular test for CT/NG/TV
- Antigen test for NG
- Antigen test for CT

## Tests available or in development:

- Molecular assays (NAAT) and lateral flow assays (antigen)
- Performance data published
- Few molecular tests have FDA clearance

## Regulatory environment & quality assurance:

- STI home test kits commercially available but performance data lack

## Key references:

- The diagnostics landscape for STIs (WHO)
- Laboratory and POC diagnostic testing for STIs, including HIV (WHO)



Sources: Land KJ, et al., 2019 (17); WHO, 2023 (11–13).

# Diagnostics

## 1) Non-treponemal test (VDRL and RPR test):

False positives may occur in dusty environments and due to cross reactivity with acute and chronic conditions

False negatives can occur due to the prozone effect

**Very expensive tool, sometimes**
**Long time for results**

## 2) Treponemal test (TPHA):

Cannot distinguish between new and prior, previously treated syphilis

## 3) Rapid tests:

3.1. **Treponemal rapid test:** Cannot distinguish between new and prior, previously treated syphilis

3.2. **Treponemal/non-treponemal rapid test:** not yet available

3.3. **Dual HIV/Syphilis test:** Cannot distinguish between new and prior, previously treated syphilis

3.4. **Syphilis self-testing:** an additional syphilis testing approach (conditional recommendation, low certainty in evidence of effects)

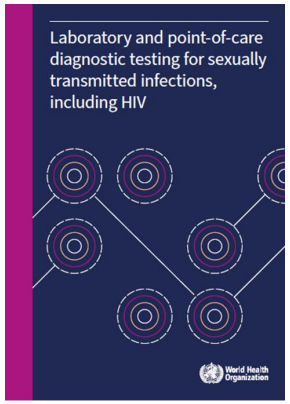
Review

OPEN ACCESS

Improved rapid diagnostic tests to detect syphilis and yaws: a systematic review and meta-analysis

Ying Zhang [1], Su Mei Goh [2], Maeve B Mello [3], Rachel C Baggaley [3], Teodora Wi [3], Cheryl C Johnson [3], Kingsley B Asiedu [3], Michael Marks [4,5,6], Minh D Pham [7,8], Christopher K Fairley [2,9], Eric P F Chow [2,9,10], Oriol Mitjà [11], Igor Toskin [12], Ronald C Ballard [12], Jason J Ong [2,4,9]

https://sti.bmj.com/content/98/8/608










Sources: Zhang Y, et al., 2022 (18); WHO, 2024 (9); WHO, 2023 (13).

# Monitoring

## Strengthen STI Strategic Information: Support STI data collection, analysis and use

### Data Collection

1. Strengthen routine STI health information
2. STI Prevalence surveys in different populations
3. Etiology of STI syndromes to inform clinical management
4. Monitoring of antimicrobial resistance

Capacity building




### Data Analysis

New and feasible study designs and methodologies to better quantify the health impacts of STIs on women and infants, key populations, and the general population: STI sequelae.

### Data Use

Improve on-going population-level STI prevalence monitoring.



Source: WHO framework for monitoring STIs and strengthening surveillance, 2024 (14).

# Monitoring




Source: WHO, 2024 (14); figure as reproduced in WHO, 2026, Fig. 4 (5).

**Fig. 4.** National monitoring framework for STIs and the 11 core indicators.

| Health system determinants | Service delivery | Health system objectives |
|---|---|---|
| **Inputs and Processes** → | **Outputs and Outcomes** → | **Impact** |
| *Plans and policies*<br>1. Up-to-date STI plans and guidelines | *Prevention*<br>6. Condom distribution<br>7. Eliminating vertical transmission of syphilis | *Prevalence*<br>10. STI test positivity in services offering STI testing |
| *Financing*<br>2. Annual budget for STIs | *Clinical services*<br>2. Annual budget for STIs | *Incidence*<br>11. Congenital syphilis case rate |
| *Surveillance*<br>3. Routine surveillance for STIs<br>4. Surveillance for gonococcal antimicrobial resistance | *Surveillance*<br>8. Reported STI cases by infection or STI related syndrome | |
| *Supply of medicines and other products*<br>5. Stock-outs of key STI commodities | *Testing services*<br>9. STI testing coverage in key populations, priority populations or in specific services | |

**Source:** *Framework for monitoring sexually transmitted infections and strengthening surveillance* (8).

# Monitoring

- 11 core indicators
- Feasible to collect at least annually
- Aligned with global reporting requirements and targets

**Challenges**

- Individuals may self treat or do nothing
- Number of STI service providers (e.g., STI, youth, FPC, ANC, PHC)
- Public or private sector
- Individuals treated based on symptoms or test results

**Data to inform programming**
*Representative, accurate, consistent, complete, timely*

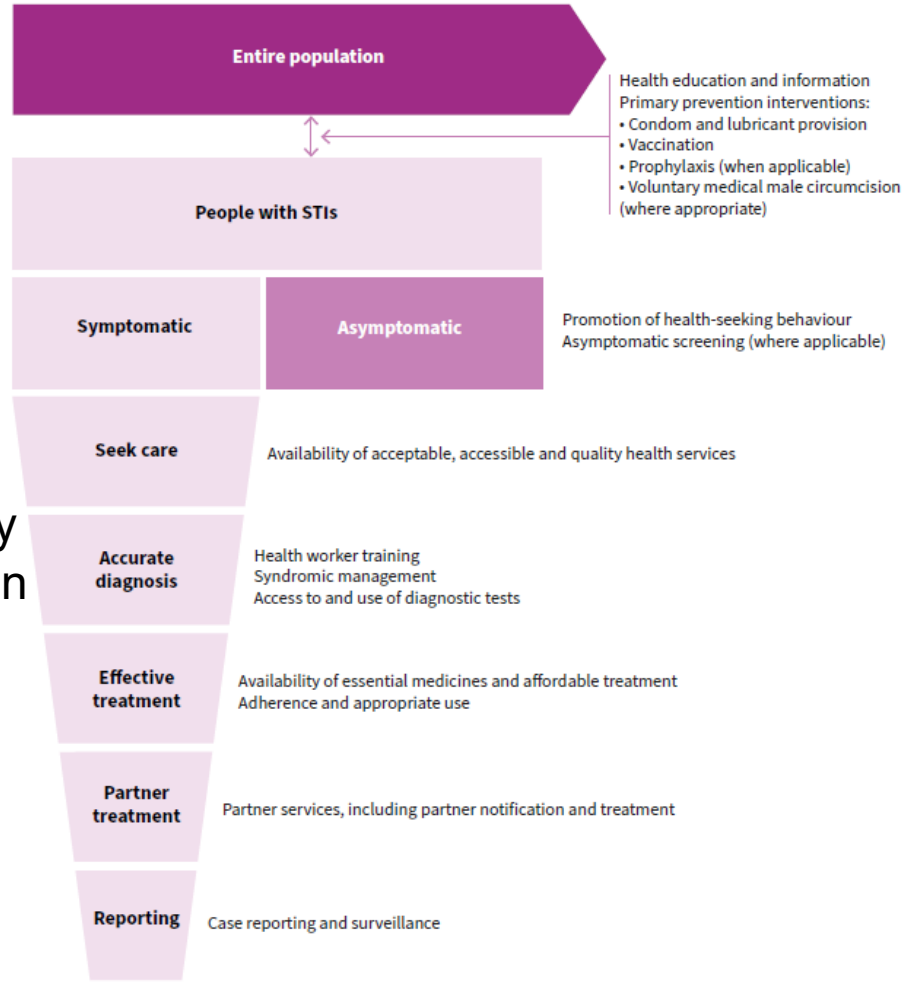
1. Strengthen collection of routine STI health information (inputs to impact)
2. Facilitate use of STI data and national STI epidemiology reviews
3. Identify opportunities and expand collection of private sector data
4. Strengthen linkages in HIV/ STI data collection
5. Support/ advocate STI prevalence surveys in particular populations
6. Support studies on the etiology of STI syndromes if not done recently (last 3/5 years)
7. Support AMR resistance monitoring in subset of countries
8. Develop mathematical models to inform use of new technologies



Source: WHO framework for monitoring STIs and strengthening surveillance, 2024 (14).

# Service delivery

- Decentralization of services to improve access to prevention, screening, diagnosis and management of STIs.
- Integration of services for prevention, screening, diagnosis and management of STIs into other health services, where relevant and feasible.
- Task sharing (trained health practitioners can provide and community health workers can assist with providing sexually transmitted infection services).
- Use of digital health interventions to complement in-person health care services for STIs (Ensuring data security and confidentiality).




**Availability – Accessibility – Acceptability – Quality**



Source: WHO recommendations on the delivery of health services for STIs, 2025, Fig. 5.1 (15).

# Service delivery

**Most important in the provision of STI services**

## Accessible

- Time
- Infrastructure
- Patient flow

## Acceptable

- Welcoming
- Privacy and confidentiality

## Affordable

## Appropriate

## Attitude

- Non-judgmental
- Non-moralizing
- Considerate
- Empathic
- Approachable
- Adaptable
- Efficient




Inage source: ChatGPT

# Service delivery

**Box 4.1. Existing WHO recommendations on self-care interventions for STIs**

**Self-collection of samples for STI testing** *(41)*

- Self-collection of samples for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* should be made available as an additional approach to deliver STI testing services *(strong recommendation, moderate-certainty evidence)*.
- Self-collection of samples for *Treponema pallidum* (syphilis) and *Trichomonas vaginalis* may be considered as an additional approach to deliver STI testing services *(conditional recommendation, low-certainty evidence)*.

**HPV self-sampling** *(41)*

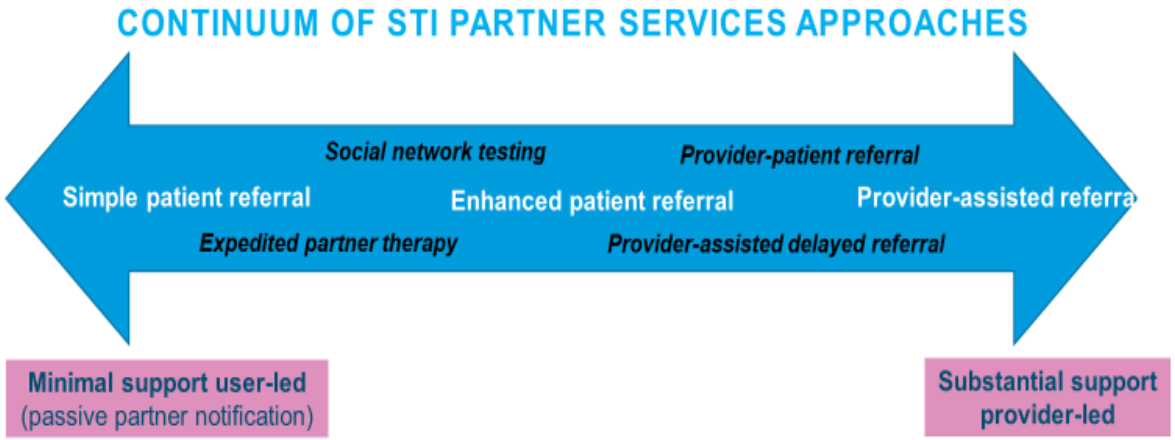
- HPV self-sampling should be made available as an additional approach to sampling in cervical cancer screening services for individuals aged 30–60 years *(strong recommendation, moderate-certainty evidence)*.

**Syphilis self-testing** *(42)*

- Syphilis self-testing may be offered as an additional approach to syphilis testing services *(conditional recommendation, low certainty in evidence of effects)*.

Source: WHO, 2025, Box 4.1 (15); original recommendations in WHO, 2019 (19) and WHO, 2024 (9).

# Service delivery (to partners)




**DO NO HARM**

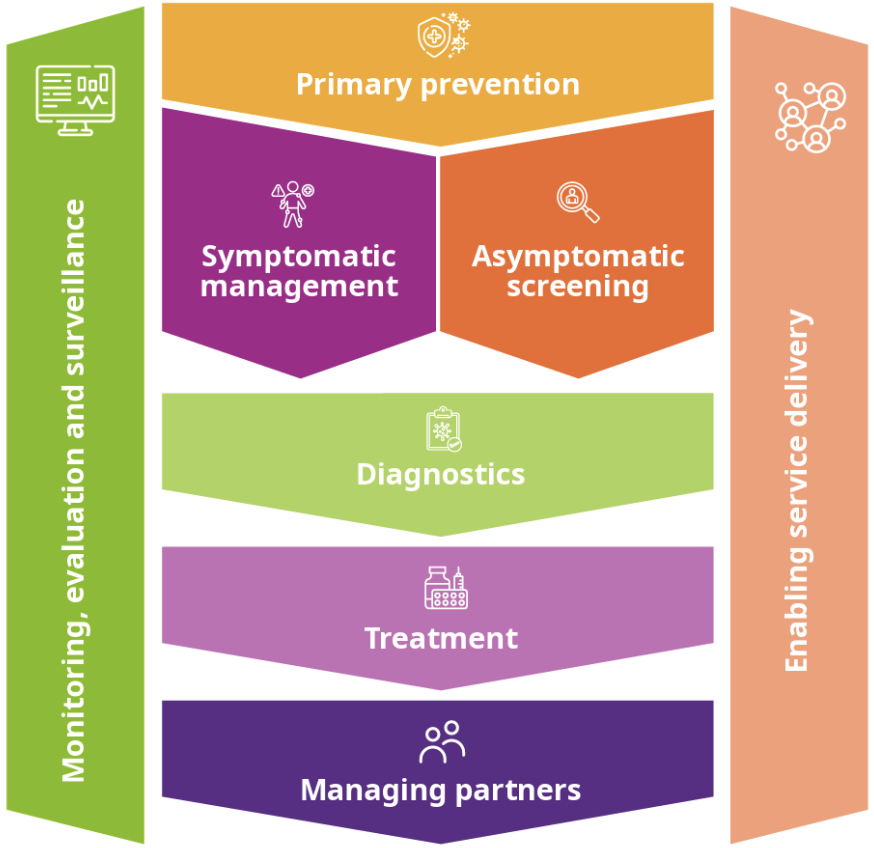
**WHO recommends that STI partner services should be offered to people with STIs as a range of options that are based on their needs and preferences and are within a voluntary comprehensive package of STI testing, care and prevention.**
*(strong recommendation, low certainty evidence)*

- **Human rights:** STI partner services must always be voluntary and never mandatory. Coercive or forced testing is never warranted. All consenting clients should have their privacy protected and personal information should be kept confidential.
- **Important to offer options:** There are a range of STI partner services which should be offered based on client preferences, feasibility and resources available.
- **Linkage:** Linkage to STI management services for sexual partners is an essential component of STI services.
- **Integration:** STI partner services should be based within a broader programme and package of services.

Recommendation: WHO, 2024 (9). Figure (24)

# Comprehensive STI prevention & care

**Fig. 2.** The STI prevention and care cascade.



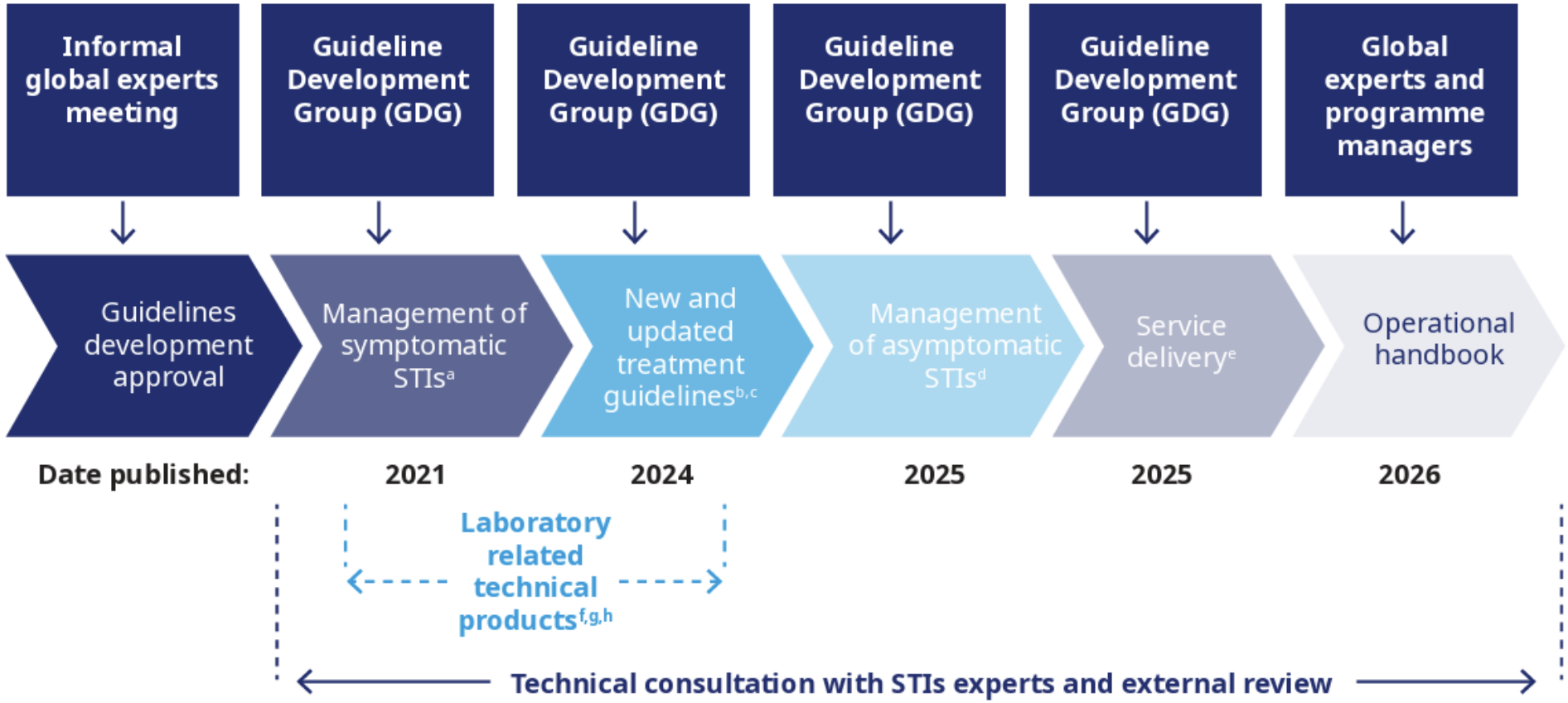

WHO consolidated **operational handbook** on sexually transmitted infections




Source: WHO consolidated operational handbook on STIs, 2026, Fig. 2 (5).

# Comprehensive STI prevention & care

**Fig. A2.1.** STI guidelines and consolidated operational handbook development process.




Source: WHO consolidated operational handbook on STIs, 2026, Annex 2, Fig. A2.1 (5).

# Comprehensive STI prevention & care

- Complete medical and sexual history.
- Symptomatic individuals receive an accurate diagnosis (syndromic or diagnostic tests).
- Asymptomatic individuals offered screening with diagnostic tests (population-specific guidance).
- Effective treatment provided.
- Health education and counselling + Guidance on adhering to treatment.
- Condoms and lubricants provided.
- HIV PrEP and PEP provided when applicable.
- Additional preventive interventions (HA/BV and HPV vaccines, VMMC (where appropriate) or suppressive therapy for genital herpes).
- Partner notification (as part of broader network-based testing strategies).
- Clinical follow-up when needed to monitor treatment success.
- Referral to specialized services provided when necessary.
- Non-judgemental and non-stigmatizing environment.



Source: WHO consolidated operational handbook on STIs, 2026 (5).

# EMTCT as an example

## Increase syphilis screening in ANC

- Scale-up rapid dual HIV/syphilis testing and testing for hepatitis B
- Access to low-cost quality assured syphilis test
- Diagnostics – active syphilis and congenital syphilis

## Increase syphilis treatment coverage

- Availability of quality penicillin (BPG) -assess shortage, TWG
- Decrease providers misconceptions
- Identify alternative treatments for maternal syphilis - PWG

## Promote partner services

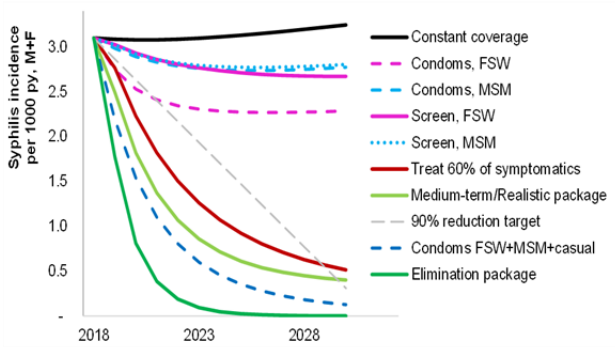
- For pregnant women screened positive for both HIV and syphilis

## Improve data for action

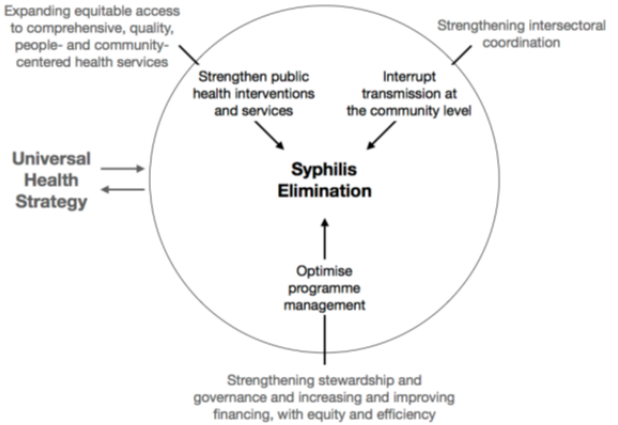
- Subnational generation and use of data for planning and prioritizing
- Adoption of WHO congenital syphilis tool, BPG forecasting*

*https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/stis/strategic-information

Papua New Guinea




Source: Machekera et al (2021) Infectious Disease Modeling




Global roadmap for syphilis control

Graph: Machekera S, et al., 2021 (22). *WHO congenital syphilis estimation tool (23).

# Mobilize for action for STIs

## Critical Accelerator for STI control

## Key recommendations: Mobilize for STI Meetings, 2023 – 2024




Source: WHO, 2024 (20).

### Political commitment

- Strengthen coordination and leadership
- ABCDE: Awareness, Budget, Cost of Inaction, Data & Election
- Collaborate with networks and diversify advocates
- Data-driven advocacy and investment case
- Integration with broader health agenda

### Innovation

- Increase investment and collaborations
- Community centered innovation
- Accessible and real-world integration
- Comprehensive approach and global coordination
- Leveraging existing forums
- Engage partners and key stakeholders

### Community engagement

- Empower and broaden partnership
- Developed tailored, community- driven approaches
- Foster continuous engagement and meaningful partnerships
- Leverage community expertise and converge advocacy efforts
- Diverse advocacy strategies for political change
- Community-focused communication strategies

# Toward integration of services

**HIV Prevention and Link to Care and Treatment**

**STI Services for key population**
- Syndromic Case Mgt.
- Routine STI screening including
- Syphilis, MPX Screening
- Presumptive treatment for STIs

**STI and PrEP**

**Condom promotion**

**STI services for PLHIV**

**Link to treatment and care**
- HIV testing
- ART
- PEP/PREP

**HIV care support groups**

**Primary Health Care**
1. STI prevention – condoms
2. **Risk assessment (Sexual History)**
3. **STI management – syndromic**
4. **Referral**

**Integrated STI Services (Sexual health)**
- **Prevention**
- **Testing**
- **Case management**
- **Partner management**

**Community Services**
- Health care seeking behaviors
- Coordination with outreach
- Community engagement

**Sexual and Reproductive Health Services**

**Pregnancy Test**

**Family Planning services**
- FP counseling
- **Sexual history**
- Menstrual hygiene
- Promote FP methods
- Assess need and counsel on
- basket of FP choices

**Adolescent services – sexuality education**

**Maternal and child health / EMTCT**

**Reproductive tract cancer screening** (cervical, breast, ano-rectal and prostatic)

**Care for unintended pregnancy** (post abortion care)

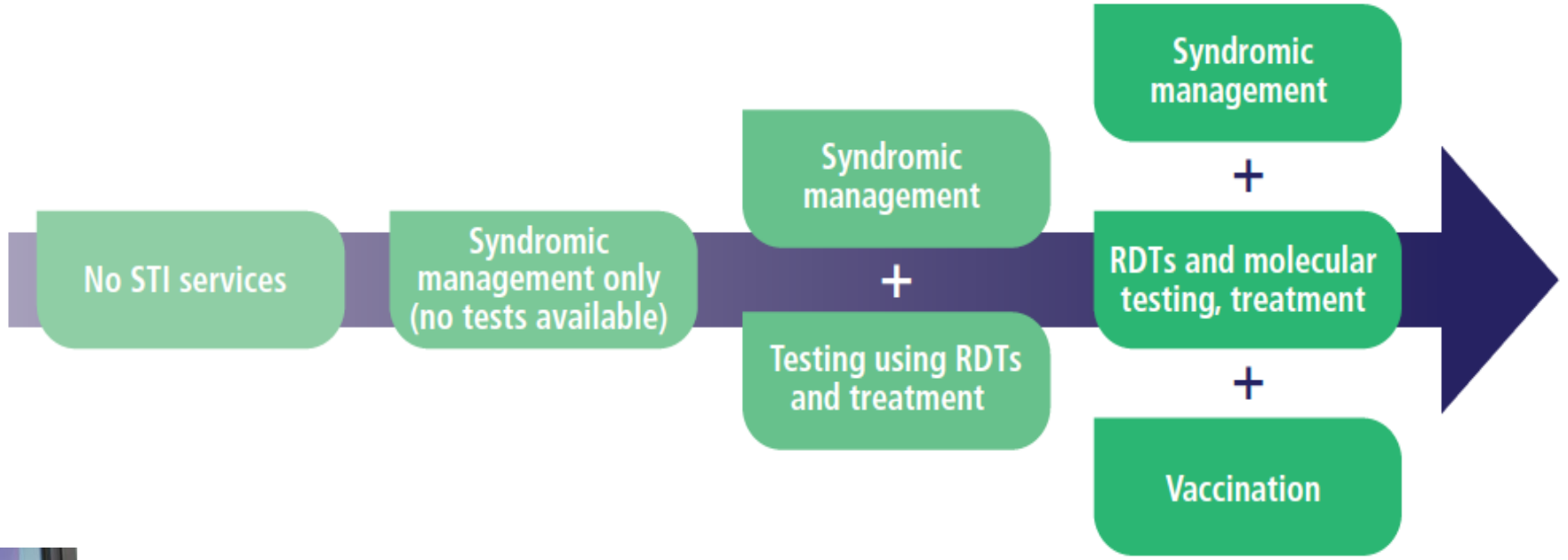
**Services for gender-based violence**

**Men sexual health**

Source: adapted from WHO consolidated operational handbook on STIs, 2026, Fig. 5 (5).

# Toward integration of services

**Services that offer PrEP for HIV infection are a major opportunity and gateway for improved STI management and response and people-centred care.**





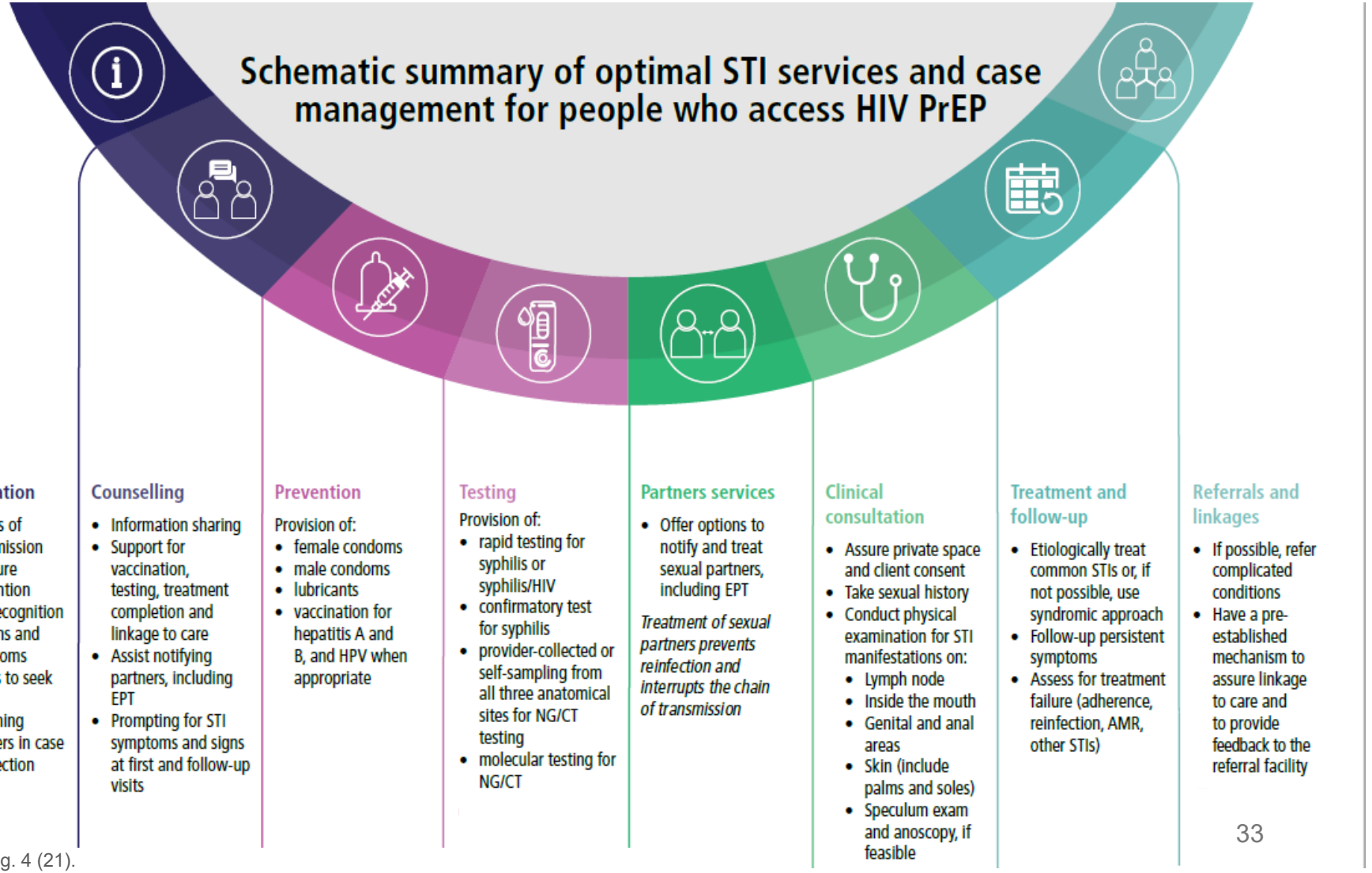





Source: WHO PrEP implementation tool, Module 13, 2022, Fig. 2 (21).

# Toward integration of services

Inability to offer STI services should never be a barrier to offering PrEP.




Source: WHO PrEP implementation tool, Module 13, 2022, Fig. 4 (21).

# Actions for programme optimization

## Programme level

- Updating National STI case management guidelines
- Updating training tools
- Availability of essential STI medications and diagnostics.
- Strengthening STI **surveillance tools** including prevalence surveys and gonococcal AMR surveillance

## Service level

### Who? Priority populations

Key populations
Pregnant women
Youth and adolescents

### Where? Already established services

**Integration of essential STIs services in the already established channels:**
Community-based services
Drop-in services
Outreach services
PrEP or other HIV services
Key pops clinics
ANC
PHC
Other antenatal services, etc.

### What? Essential packages

Management of symptomatic STIs
Regular screening or check up including syphilis screening (RDTs)
Prevention and educational packages
Promotion of condoms
Partner management
Digital technologies for capacity building of healthcare workforce

Based on WHO, 2022 (1) and WHO, 2026 (5).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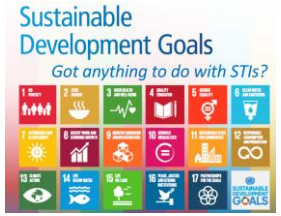
# Final thoughts

## Take home messages



## SDGs 2, 3, 4, 7 & 8




Human and financial resources

- Primary healthcare services
- Sexual and reproductive health services
- HIV services

**Prevention tools**

- HPV vaccination for girls part of the national vaccines programme
- STIs educational material for counselling and outreach
- Condoms: available, easily accessible, free-of-charge for at-risk groups

**STIs case management**

- Management of symptomatic STIs (syndromic approach)
- Appropriate STIs treatment in place for specific STIs
- Partner services

**Testing/Screening of STIs**

- Pregnant women/Key populations, individuals presenting for PrEP services:
  - screened and treated for syphilis (RDT, dual tests HIV/syphilis)
  - screened and treated for gonorrhoea and chlamydial infection (NAAT)
- Partner services

**Surveillance tools**

- *Neisseria gonorrhoeae* surveillance for AMR in place
- STIs data at national level is collected and in place for syndromic management

# Key messages

- National STI case management guidelines are essential; 97% of reporting countries have them, but only one third have been updated since 2023. Implementation remains weak.
- Both syndromic and etiologic management approaches have a role; the choice depends on available diagnostics and local capacity
- Most STIs are asymptomatic; screening strategies and point-of-care diagnostics (molecular assays, LFAs) are critical for early detection
- Service delivery must be decentralized, integrated with HIV/PHC/SRH services, and leverage task sharing and digital health interventions
- Strengthened surveillance, including gonococcal AMR monitoring and prevalence surveys, is critical to inform treatment guidelines and track progress
- Comprehensive STI prevention and care requires people-centred approaches, programme optimization, and closing gaps in funding and resources

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# Thank you!