Country guidance for planning triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B virus programmes

World Health Organization

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Abbreviations and acronyms

ANC	antenatal care
anti-HBs	hepatitis B surface antibody
APRI	aspartate aminotransferase-to-platelet ratio index
ART	antiretroviral therapy
ATL	adult T-cell leukaemia
AZT	zidovudine
EIA	enzyme immunoassay
EID	early infant diagnosis
EMTCT	elimination of mother-to-child transmission
EPI	Essential Programme on Immunization
FTA-Abs	fluorescent treponemal antibody absorbed
GHSS	global health sector strategies
HBeAg	hepatitis B envelope antigen
HBsAg	hepatitis B surface antigen
HBV	hepatitis B virus
MNCH	maternal and child health
HDV	hepatitis D virus
HMIS	health management information system
MNCH	maternal, newborn and child health
MTCT	mother-to-child transmission
NAAT	new nucleic acid amplification test
NAT	nucleic acid test
NVS	national validation secretariat
NVP	nevirapine
PCR	polymerase chain reaction
PEP	post-exposure prophylaxis
PHC	primary health care
PMTCT	prevention of mother-to-child transmission
PrEP	pre-exposure prophylaxis
RDT	rapid diagnostic test
RPR	rapid plasma reagin
SRH	sexual and reproductive health
STI(s)	sexually transmitted infection(s)
TAF	tenofovir alafenamide
TDF	tenofovir disoproxil fumarate
TPHA	Treponema pallidum haemagglutination assay
TPPA	Treponema pallidum particle agglutination assay
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
VDRL	Venereal Disease Research Laboratory
VL	viral load
VMMC	voluntary medical male circumcision
WHO	World Health Organization

Executive summary

This publication provides guidance for planning country-specific programming to achieve the triple elimination of vertical transmission of HIV, elimination of congenital syphilis and mother-to-child transmission of hepatitis B virus (HBV) infection. This guidance is based on the World Health Organization (WHO) Triple Elimination Framework, which promotes an integrated approach to preventing transmission of these infections from mothers to their infants and children. Despite medical advancements, global targets for elimination of vertical transmission, especially for syphilis and HBV, remain unmet due to limited resources, weak political will and fragmented health services, contributing to ongoing maternal and infant mortality. A harmonized, holistic approach that supports and strengthens maternal, newborn and child health (MNCH) services to simultaneously address mother-to-child transmission of relevant communicable diseases will improve the response for those diseases lagging behind the HIV EMTCT programme.

The rationale for triple elimination of mother-to-child transmission (MTCT) of HIV, syphilis and HBV includes overlapping populations and risk factors associated with each condition, the similar effective interventions to prevent MTCT of all three infections *(1)* and the feasibility and benefits of an integrated approach using existing service delivery platforms. Equipping maternal health services to deliver triple elimination services also strengthens the antenatal care (ANC) platform by making it more comprehensive and women-centred.

The Triple Elimination Framework integrates HIV, syphilis and HBV prevention, testing and treatment within maternal, newborn and child health (MNCH) programmes. It emphasizes access to comprehensive care for all women of reproductive age, particularly pregnant women, to manage these infections with a person-centred approach. It encourages countries to move away from siloed approaches and to adopt holistic health care strategies that improve efficiency and maximize resource use. Beyond the clinical rationale for integration, it is also important to recognize that offering pregnant and breastfeeding women an integrated, rights-based, person-centred programme of care is an essential requirement for sustained success. In today's political climate, funding for global health is precarious. Triple elimination offers an opportunity to optimize resource use by enhancing synergy.

The Triple Elimination Initiative promotes a holistic approach that improves efficiency and person-centred care.

The framework stands on four key programming pillars:

1. primary prevention to reduce new infections through testing, hepatitis B vaccination and preventive measures such as HIV pre-exposure prophylaxis (PrEP);
2. integrated sexual and reproductive health (SRH) services to ensure comprehensive care for women and girls living with HIV, HBV and/or seropositive for syphilis;
3. essential maternal health services to prevent transmission during pregnancy and breastfeeding; and
4. care for infants, children and families exposed to infections, ensuring prompt testing and treatment.

Success depends on strengthening health systems, leadership and data-driven decision-making. Increased health care capacity and improved access to diagnostics and treatment are vital for progress. Robust data collection and surveillance and regular programme evaluations are crucial for tracking progress and addressing gaps. Crucially, the approach that this guidance calls for is one that is centred on rights-based programming across all the pillars of the framework. Promoting the human rights of pregnant women has been critical to the success of HIV programmes. This planning document enshrines the notion that in order to achieve greatest impact, integration should encompass more than combined service delivery. It must also promote rights-based programming and strong community engagement.

This guidance outlines a comprehensive strategy for governments and health care providers to prevent transmission of these infections between generations. It emphasizes the need for creating awareness of the strategy, reducing stigma, promoting decriminalization of HIV and STI transmission and ensuring that services are accessible, especially in low-resource settings and for populations with higher risk of these infections. Country case studies are presented to illustrate some best practices and to offer a roadmap for eliminating vertical transmission by 2030. By integrating triple elimination efforts into MNCH programmes, countries can reduce maternal and infant mortality and achieve Universal Health Coverage (UHC) for mothers and children, in line with global health goals.

Part 1

Introduction

1.1 Background

The burden of HIV, syphilis and hepatitis B virus (HBV) infection continues to have profound implications for mother-to-child transmission (MTCT), also referred to as vertical transmission, with related implications for maternal and child health (MNCH) outcomes. Annually, over one million women and girls living with HIV become pregnant, leading to approximately 120 000 new cases of vertically transmitted infant HIV infections; approximately 1.1 million new maternal syphilis infections occur, leading to 700 000 congenital syphilis cases; and an estimated 1.2 million new HBV infections occur each year, leading to 100 000 infections in children *(2-4)*. Although these conditions do not always cause early mortality in newborns, paediatric HIV is an important cause of death in childhood in HIV high-burden countries, congenital syphilis accounts for a high proportion of stillbirths worldwide, and perinatal transmission of HBV is a major cause of liver cirrhosis and cancer. Despite the availability of effective prophylaxis and/or treatment, mother-to-child transmission rates for all three infections continue to fall short of the trajectory toward global targets *(3, 5)*. Primary prevention, diagnosis and effective treatment of HIV, syphilis and HBV in women are essential to prevent MTCT and the substantial maternal and infant morbidity and mortality caused by these three infections *(6-9)*.

Dr. Songmanolath educates a new mother on nutrition and newborn care, Lao People's Democratic Republic (the), 2022 © WHO / Enric Catala

1.1.1 Supportive global policy context

The international public health community, including United Nations (UN) partners and ministries of health, have committed to triple elimination as a feasible and achievable priority. In 2022 the World Health Assembly endorsed three interlinked global health sector strategies (GHSS) for the period 2022–2030 that set ambitious targets for triple elimination (Table 1.1) *(9)*. The GHSS goals for HIV, viral hepatitis and sexually transmitted infections (STIs), as well as the Joint United Nations Programme on HIV/AIDS (UNAIDS) 2030 goals, stipulate the coverage and impact of services that are required to eliminate vertical HIV transmission and to meet the HIV and sexual and reproductive health (SRH) needs of women and girls *(4)*. The UN Secretary General's Global Strategy for Women's, Children's and Adolescents' Health (2016–2030) *(10)* supports achieving the Sustainable Development Goals, three of which (3, 5 and 10), aim to ensure health and well-being for all, achieve gender equality, empowerment of women and girls and the reduction of inequalities in access to services and commodities *(11)*. These commitments are further endorsed by the Global Alliance to End AIDS in Children by 2030 *(12)*, which was formed in 2022 by the World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and UNAIDS in partnership with countries and community networks.

Triple elimination is a feasible and achievable priority.

Table 1.1. GHSS impact and coverage targets related to triple elimination of mother-to-child transmission

Disease area	Impact and coverage indicators	2020 baseline	2030 target
Shared	Reduced incidence: Number of new HIV and viral hepatitis cases per year	4.5 million	<500 000
	Number of countries validated for the elimination of vertical (mother-to-child) transmission of either HIV, hepatitis B or syphilis	15	100
	Percentage of people living with HIV and people at risk who are linked to integrated health services including STIs and viral hepatitis services		95%
HIV	Number of children 0-14 years old newly infected with HIV per year	150 000	15 000
	Percentage of people living with HIV who know their HIV status	84%	95%
	Percentage of people knowing their HIV-positive status who are accessing antiretroviral therapy (ART)	87%	95%
Syphilis	Number of congenital syphilis cases per 100 000 live births per year	425	<50
	Percentage of pregnant women attending antenatal care (ANC) who are screened for syphilis/percentage treated if positive	66%/78%	>95%/>95%
		2020 progress	**2030 target**
HBV	Hepatitis B surface antigen prevalence among children 0-4 years old	0.94%	0.1%
	Percentage of newborns who have benefitted from a timely dose of hepatitis B birth dose vaccine and from other interventions to prevent vertical (mother-to-child) transmission of hepatitis B virus	43%	90%
	Hepatitis B vaccine coverage among children (third dose)	85%	90%

The WHO's commitment, through its flagship "triple elimination initiative", is to support the global effort to prevent vertical transmission of HIV and eliminate congenital syphilis by supporting MNCH services to expand their capacity to address vertical transmission of these and other communicable diseases, including HBV *(13)*. Countries can commit to the simultaneous elimination of mother-to-child transmission (EMTCT) of HIV, syphilis and HBV, thus encouraging an integrated, harmonized service delivery approach to improve health outcomes for mothers and children. Achieving EMTCT of all three diseases by 2030 requires strengthening the MNCH care platform and promotion of a full range of person-centred, integrated services.

There is a clear rationale for triple elimination. Effective interventions exist to prevent the MTCT of HIV, syphilis and HBV, taking into consideration overlapping populations and risk factors such as heightened risk of MTCT among women coinfected with HIV and syphilis *(14)*. There is significant overlap in terms of epidemiology, risk and societal discrimination. For all three diseases, an integrated approach will not only strengthen PHC, but serve to advance the UHC agenda for mothers and children. Moreover, the similarity of the critical interventions necessary to prevent transmission adds to the feasibility and benefits of an integrated approach to triple EMTCT of all three infections *(1)*. In addition, existing platforms for service delivery have opportunities to integrate interventions and make elimination of vertical transmission attainable.

A clear rationale for triple elimination:

- Risk factors for the three diseases overlap, as do populations most at risk.
- Interventions to prevent MTCT of all three diseases are effective and similar.
- Existing service delivery platforms have opportunities to integrate EMTCT interventions.

Box 1.1. Terminology for triple elimination

The triple elimination strategy represents the integration of three disease areas and brings together diverse stakeholders to achieve its goals. In this context terminologies may differ from one area to the next. In this document we aim to use the terms used in WHO guidelines and accepted by the broader community.

Women living with HIV and their advocates have promoted use of the phrase "vertical transmission" as an alternative to "mother-to-child transmission" in an effort to avoid language that places mothers at the centre of HIV transmission. To reduce stigma felt by women living with HIV, "vertical transmission" is considered neutral and is consistent with other disease elimination language. There are ongoing consultations about mainstreaming the phrase "vertical transmission" in HIV programmes, while recognizing previous discussions on the topic and views from a broad network of civil society members and technical partners. In this document the two terms are used interchangeably for HIV.

The strict definition of the medical term "vertical transmission" does not include transmission through breastfeeding. However, the 2024 *UNAIDS terminology guidelines* do include breastfeeding *(15)*. For the purposes of this document, we use the term vertical transmission to include HIV transmission both during pregnancy and during the breastfeeding period.

We also recognize that within the technical fields of STIs and viral hepatitis, the term vertical transmission is not commonly used. Instead, the STI community uses the term "elimination of congenital syphilis" and the viral hepatitis community uses "elimination of mother-to-child transmission of HBV".

In addition, this guidance applies to women in all their diversity who may access and utilize services for the prevention of vertical transmission noting that trans and gender diverse persons can in some cases become pregnant, which could involve a risk of vertical transmission to their infants.

1.1.2 Challenges, strategies and progress identified

WHO commissioned a literature review (Web Annex A), while UNICEF, in close collaboration with WHO, commissioned a landscape assessment (Web Annex B), to review challenges, potential strategies and progress towards achieving EMTCT of HIV, syphilis and HBV (Box 1.2). The reviews found that triple EMTCT progress is variable, with EMTCT of syphilis and HBV lagging behind that of HIV, mostly due to siloed programming that receives comparatively less financial support, political will and technical support. However, in some settings, especially in the Asia-Pacific region, there is greater emphasis on elimination of mother-to-child transmission of HBV through routine timely HBV birth dose vaccination. The focus of programming is dependent on country epidemiological context and has implications for how to approach integrated triple elimination programming.

Although HIV testing has become well-established within ANC, antenatal testing for syphilis and HBV remains limited due to poor political support, selective funding and insufficient guidance, training and supplies to integrate these tests within MNCH. EMTCT of both syphilis and HBV is further impeded by delayed treatment initiation, gaps in linkage to care, lack of partner services, frequent stock-outs of essential drugs, out-of-pocket fees for some services and limited clinical capacity of staff to manage syphilis and HBV cases. Greater emphasis was found on women-centred care in HIV, whereas for HBV, the focus has been on infant vaccination which is known to be very effective, rather than on maternal testing and care.

Box 1.2. Literature review and landscape assessment of progress towards triple elimination

Literature review

Key findings

- Triple EMTCT progress has been variable. Progress in EMTCT of syphilis and HBV is lagging behind HIV due to siloed programming and comparatively less financial support, political will and technical support.
- Equitable and universal access to health care, strong political commitment and increased domestic funding for programmes; efficient and integrated service delivery models; and strong monitoring and evaluation system appear to have been important in countries validated for dual MTCT of HIV and syphilis.

Key implications

- Supportive policies and programmatic funding for syphilis and HBV are necessary to avoid fragmented EMTCT service delivery.
- Triple EMTCT strategies that mirror and/or leverage gains made towards EMTCT of HIV may have the highest potential for success.

Landscape assessment

The landscape assessment found that, to accelerate progress toward triple EMTCT:

- a “who, what when and where” building block approach, combined with a stepwise programme maturity model, provides a practical and meaningful way to evaluate programme progress and to design acceleration strategies;
- global and regional-level data are insufficient for strategic planning, while country surveys could be better used to measure and inform strategies for triple EMTCT;
- improved collaboration across the funding and organizational silos are needed between HIV, HBV, STIs and MNCH. Concrete mechanisms were identified that UNICEF and WHO could develop to promote shared advocacy.

The analysis also identified two specific areas of desired technical support to countries:

- national policy development
- situational analysis exercises to measure and accelerate progress toward targets.

1.2 Rationale for the guidance

As countries conceptualize triple elimination programmes with integration of services based on their epidemiological contexts, it is critical that national level planning assures quality of care aligned with both person-centred care and primary health care (PHC) approaches for achieving universal health coverage *(16)*. Notably, countries are already using the PHC approach in reforms, policies and financing to encourage integrated health services. This document guides the operationalization of the new triple elimination framework *(13)* with the view of shaping country efforts to achieve triple elimination according to global best practices.

1.3 Objectives and scope

This document aims to provide practical guidance on strategic planning, prioritizing and operationalizing an integrated approach to achieving triple elimination using existing in-country coordinating mechanisms, service delivery platforms and WHO guidance and policies. Its aim is to support national planning by equipping ministries of health and stakeholders with the necessary knowledge and tools to examine their data, set targets, define priority actions and approaches as well as develop a programme implementation plan to achieve triple elimination. The guidance must be "domesticated" by an in-country working group to best determine the right programme approaches for the country context. While not a clinical guidance manual, this document may help users to identify areas within health programmes where development of additional clinical guidance may be required to successfully deliver integrated triple elimination efforts.

1.4 Target audience

This guidance is designed for use by individuals responsible for planning, implementing and overseeing national health strategies and programmes for the elimination of vertical transmission of HIV and congenital syphilis and mother-to-child transmission of HBV. It is intended to be used by policymakers, national programme managers and public health officials in related programmes and departments within the ministry of health and other related ministries.

This document may also be useful for officials of multisectoral coordination bodies; civil society organizations and affected communities; bilateral and multilateral partners; donors; the private sector; and other relevant stakeholders in each country context. Although this guidance is primarily aimed at national planning, the principles and processes described can also be used for planning at subnational levels.

1.5 How to use this document

This document should be used to guide and inform national planning processes and decision-making for the implementation of triple elimination. The guide should be used in conjunction with the Triple Elimination Framework *(13)* and all related WHO and other guidance referenced in the document. It is presented in a format that allows countries to refer to, adapt and implement according to their specific needs and as relevant to their context and practice. Notably, the Framework's pillars are not mutually exclusive as there are overlaps of target population and services. For example, information, education and communication (IEC) and partner testing in pillar 2 also links to pillar 4. The chapters in this document focus on the following areas:

Chapter	Content
Chapter 2	How to strategically plan for integrated implementation of triple elimination
Chapter 3	The Triple Elimination Framework
Chapter 4	Testing and linkage to care for operationalizing triple elimination
Chapter 5	Cross-cutting implementation considerations
Chapter 6	Country case examples
Chapter 7	Considerations for integration

The guidance enables countries to include and integrate the core components of elimination of vertical transmission of HIV and congenital syphilis and mother-to-child transmission of HBV into immunization, maternal and child health, adolescent health and sexual and reproductive health strategic planning in the format best suited to the country's situation and practice. The planning and prioritization should be guided by the needed shift to promote people-centred responses, so that programmes and services are organized to meet people's needs in a comprehensive manner rather than siloed around individual diseases and reproductive life course programme areas.

Importantly, although interventions related to each pillar in the Framework, testing and crosscutting considerations are usually carried out in specific service delivery platforms, they are not meant to be carried out independently. They are intimately interrelated and affect and enable each other, depending on country context and the level and maturity of the health system.

The guidance uses figures, boxes and tables to help readers to navigate and apply the content. The annexes provide links to selected tools and resources that can provide additional guidance on the various aspects of strategic planning and prioritization for effective and efficient implementation.

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Part 2

How to strategically plan for integrated implementation of triple elimination

The relative "distance" to achieving from their experiences EMTCT varies by country, subregion and region, as well by level of progress in the national response to each disease. Therefore, national programme plans must aim to address local gaps and priority areas to lessen the differences and achieve EMTCT in an efficient, integrated and well-directed manner. Some countries have already embarked on part of this process, and lessons can be drawn, as illustrated in the country examples in chapter 6.

Table 2.1 presents a strategic planning approach for triple elimination. The process includes four major steps:

1. developing a consultative mechanism for strategic planning;
2. conducting a situational analysis (including data analysis) of progress and remaining gaps in EMTCT;
3. planning and prioritizing; and
4. implementing, monitoring and evaluating for EMTCT. It is important this process is cyclical rather than ad hoc, utilizing the established consultative mechanism in Step 1.

Table 2.1. Strategic planning for triple EMTCT

Steps	Activities
1. Establishing a consultative mechanism	• Identify a country team to drive assessment and planning processes. This comprehensive team should include experts from all areas of focus related to triple elimination, including community representatives. • Ensure cross-programme buy-in from relevant national health authorities.
2. Situational analysis of EMTCT targets and gaps	• Assess progress made to date toward targets and goals. • Assess status of programme integration and challenges therein. • Conduct a missed opportunity analysis. • Characterize and contextualize programmatic gaps at national and subnational levels using data from other sources. • Track the maturation of the programme.
3. Planning and prioritizing context-specific solutions to close identified gaps	• Establish targets. • Articulate the priority factors that are necessary for programmatic and service delivery improvement change. • Prioritize feasible interventions according to gaps and contextual factors. • Seek broader stakeholder engagement and finalize strategies, guidelines and/or policies. • Identify cross cutting synergies to optimize rollout, such as unified training approaches.
4. Coordinating and implementing	• Harmonize and disseminate planned strategies, guidelines and/or policies. • Coordinate and implement all relevant programmes across partners and stakeholders including coordinated community engagement for smooth implementation.
5. Monitoring and evaluating progress towards EMTCT	• Monitor and evaluate implemented interventions at national and subnational levels. • Make timely course corrections as needed.

Also important are optimal integration and alignment of the elimination plan with other related efforts. These include programmes and services designed to reduce maternal mortality and morbidity and infant mortality; to improve SRH, mental health, MNCH and adolescent health services; and to reduce viral hepatitis, human papillomavirus, tuberculosis and other infections such as malaria and Chagas disease.

Administering vaccines to babies at the PHC, Churchill, Porthacourt, Nigeria 2024 © UNICEF / UNI671676 / Adesegun

2.1 Consultation and coordination

The first step is to ensure buy-in from all the relevant stakeholders at all levels that have roles and responsibilities in the triple elimination agenda. It is important to develop a consultative process and coordinating body or mechanism, which must include all the health and other sector programmes involved in interventions for the elimination of vertical transmission of all three conditions. Within the health sector, these programmes and areas of focus may include but are not limited to:

- leadership, policy, planning and coordination
- maternal, neonatal and child health
- childhood immunization (Essential Programme on Immunization (EPI))
- sexual and reproductive health and rights (SRHR)
- adolescent health
- HIV, STI and viral hepatitis programmes
- laboratory (diagnostics)
- pharmacy (medicines)
- engagement of civil society groups representing women, girls or adolescents and people affected by the three conditions
- human rights and gender equity organizations
- engagement with the private sector.

This process should be led and coordinated by senior management in the ministry of health, utilizing, for example, a dedicated technical working group that brings together the relevant stakeholders, including leadership teams across disease control programs and implementation platforms. The process should incorporate, and ensure the meaningful engagement of additional stakeholders including representation from civil society (community), human rights and gender equality organizations.

2.2 Conducting a situational analysis for triple elimination

Before embarking on planning, it is important for a country to know exactly where it is on the triple elimination pathway and where it wants to go, in order to plan a feasible and sustainable way forward. There must be a high-quality data-informed analysis of the health and community context, including commitments, policy environment, drivers and determinants of infections, established targets, progress toward targets to date, barriers, missed opportunities, and challenges and gaps related to the health system to determine the current country setting. A robust situational analysis must be carried out for HIV, syphilis and hepatitis B virus epidemiology as well as for the existing interventions for all three diseases. The epidemiological analysis relevant to triple elimination should be undertaken at all health systems levels to identify the coverage and impact of programmes. Several methods of review should be used, based on feasibility; these include, but are not limited to:

- **Desk review:** This includes a review of existing policies, guidelines, plans, reports and surveys of the relevant programmes that can provide information related to the EMTCT programme: planning, implementation, epidemiological analysis or strategic information, existing support for integration and decentralization and identification of barriers to scaling up in all related programme areas. In particular, the review of immunization policies, multiyear country reports and national immunization strategies/plans to introduce (or not) HBV birth dose can provide relevant information about hepatitis B birth dose and infant hepatitis B three-dose vaccination coverage. Reports from civil society and results of gender assessments are also valuable for understanding the policies in practice.
    - The checklist tool for preliminary assessment of EMTCT *(17)* can be used to identify documents to be gathered for the desk review.
    - The WHO guide to conducting programme reviews for HIV, viral hepatitis and STIs *(18)* also provides a useful description of the specific purposes of a desk review:
        - to describe relevant programme outcomes and impact in relation to stated national, regional and global targets;
        - to analyse how services are delivered and resourced;
        - to highlight the policies, strategies and guidelines that drive implementation of relevant programmes;
        - to identify major information gaps; and
        - to propose preliminary conclusions about programme performance and make recommendations for increasing programme impact.
- **Programme data:** Routinely collected programmatic data can be used to assess:
    - the status of programme availability, uptake and outcomes for triple elimination activities
    - gaps in reporting practices and programme data on coverage or outcomes
    - missed opportunities for eliminating vertical transmission including details of gaps between planned and achieved milestones or targets
    - subnational and site performance differences and gaps.
- **EMTCT assessment tools:** Although designed to determine country readiness, and for preparation of the EMTCT validation assessment report, the WHO validation assessment tools can be used to provide a summary of country progress in prevention of MTCT of HIV, syphilis and HBV *(19)*. The tools, published in the 2021 global guidance for validation *(20)*, provide for a robust assessment of country EMTCT programmes and include:
    - Web Annex A. Checklist for country preliminary assessment of EMTCT
    - Web Annex B. Congenital syphilis estimation tool
    - Web Annex D. Data assessment and verification tool
    - Web Annex E. Laboratory assessment and verification tool
    - Web Annex F. Programme assessment and verification tool
    - Web Annex G. Human rights, gender equality and community engagement assessment and verification tool
    - Web Annex H. Analysis guidance for human rights, gender equality and community engagement in validation
    - Web Annex I. Sample case study form.
- **Missed opportunity analyses:** Following preliminary assessments, the next step would be a "missed opportunity analysis" *(21)*, This analysis is particularly important to generate evidence for planning interventions. Depending on the findings of the situational analysis and programme data analysis, a missed opportunity analysis provides clear information on gaps and challenges that need addressing to reach elimination.

In principle, these missed opportunity analyses look at opportunities for preventing incident HIV, syphilis and HBV in pregnancy, during the postnatal period, at treatment initiation, during treatment retention and at treatment completion where applicable. Box 2.1 shows an illustrative example of such an analysis, focusing on HIV vertical transmission, adapted from the "Last Mile" to EMTCT road map *(21)* and the *Key considerations for fast-tracking EMTCT in lower prevalence settings (22)* documents.

This analysis can also be applied to syphilis and HBV (see Chapter 7), where the intervention domains illustrated below would centre on prevention services, timely access to testing and treatment initiation, retention, completion and adherence support for management of syphilis and HBV infection. Timely engagement in ANC and services for exposed infants are necessary to prevent transmission of HIV, syphilis or HBV and to treat infants as well as partners and other family members where appropriate.

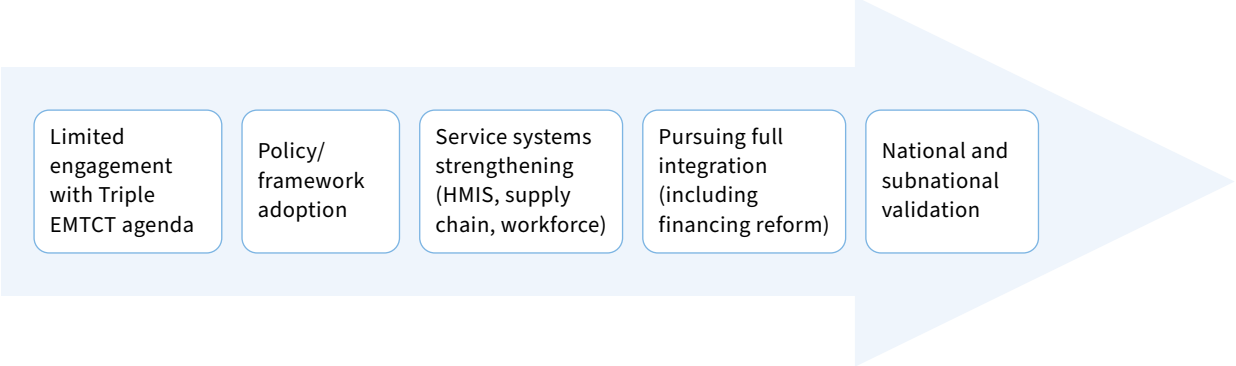
Box 2.1. Illustrative example of a missed opportunity analysis for EMTCT of HIV

Missed opportunities for EMTCT	Intervention domains
Mothers infected during pregnancy or breastfeeding A B F	A HIV prevention services for women
Mothers did not receive ART during pregnancy or breastfeeding B C E F	B Timely access to HIV testing
Mothers dropped off ART during pregnancy or breastfeeding D F	C Timely ART initiation
Mothers started ART late in pregnancy B C D E F	D Programme retention and adherence support
Mothers started ART during pregnancy B C D E	E Timely engagement in antenatal care
Mothers started ART before pregnancy D	F Services for infants at highest risk of HIV acquisition

Source: UNICEF 2020 *(21)*.

- **Assessment of programme maturity:** Once a situational analysis has been conducted, national programmes can use the information generated to identify their position in and track their progress along a "maturity model". The maturity model for triple EMTCT, as described in the landscape assessment for these guidelines (Fig. 2.1 and Web Annex B), allows a country to assess progress in establishing policies and implementing programmes for triple EMTCT. Countries are expected to move along the maturity model towards elimination and, ultimately, validation of elimination. Fig. 2.1 shows the five levels of triple elimination programme maturity.

Fig. 2.1. Maturity model: on the path to triple EMTCT



EMTCT = elimination of mother-to-child transmission; HMIS = health management information system.

2.3 Planning and prioritizing the triple elimination elements

After the situational analysis has been completed, a plan should be developed that applies the identified system strengths and opportunities to building health system capacity to address the gaps and challenges identified, based on global best practice. Planning and prioritization should aim at providing context-specific solutions to close identified gaps. The process described below is adapted from the WHO HIV, viral hepatitis and STIs guidance for national strategic planning *(23)*.

This detailed planning process should seek to strategically integrate both disease-specific and shared approaches for the three infections and other related programme areas as relevant, such as SRH, MNCH, communicable and noncommunicable diseases or others, for a more effective people-centred response. This implies the need for all the related programmes, including civil society and community representatives, to be at the table, to be fully involved in and to own the process of planning, organizing and implementing triple elimination.

Planning and prioritizing should use the Primary Health Care (PHC) operational framework *(24)*, which includes the WHO six building blocks of the health system and additional levers such as community and private sector engagement and digital technologies. Sections of the plan should address each of the following 14 core strategic levers of PHC (Table 2.2).

Table 2.2. 14 core strategic levers of PHC

Political commitment and leadership	Medicines and other health products
Governance and policy frameworks	Engagement with private sector providers
Funding and allocation of resources	Purchasing and payment systems
Engagement of community and other stakeholders	Digital technologies for health
Models of care	Systems for improving the quality of care
PHC workforce	PHC-oriented research
Physical infrastructure	Monitoring and evaluation

Source: WHO and UNICEF 2020 *(24)*.

For planning to be successful, there must be national policies in place to achieve the goal of triple elimination. Once these policies and guidelines have been identified and are in place, plan development can be guided by the principles of the WHO Triple Elimination Framework. The vision, objectives and priorities should be agreed upon; these will guide resource allocation and the implementation of activities to deliver the package of services for triple elimination. The plan should clearly articulate priority factors considered necessary for programmatic change. It should prioritize interventions according to gaps, challenges and contextual factors. The process should also seek broader stakeholder engagement to design, review and finalize strategies, guidelines and/or policies. Stakeholders include all those who are involved in, influence and are affected by the health sector response to HIV, syphilis and HBV infection.

The planning process requires leadership and management. A steering group or advisory group comprising of senior officials from the ministry of health and other national stakeholders will provide overall strategic direction, oversight and accountability for planning. There should also be a planning team, generally led by the national programme responsible for overall technical and operational guidance to planning. In addition, technical working groups with technical focal points, implementing partners and community representatives should be present to provide detailed inputs for specific technical components of the plan, such as the various programmatic areas and interventions, monitoring and evaluation, and costing and budgeting. The writing team, responsible for preparing the plan, as well as administrative and logistics support to the process, is usually provided by the ministry of health, with contributions from partners.

The process also requires resources, including a budget to cover the costs of the activities that need to be undertaken. Some of the cost elements include the costs of organizing and holding meetings, conducting data collection and analysis and organizing field visits or technical assistance if required.

2.3.1 Considerations for prioritizing key and vulnerable populations

Most countries face challenges with ensuring access and delivery of quality health care services to members of key and vulnerable populations. These populations are defined as groups at increased risk of acquiring HIV, syphilis or HBV infection due to specific higher risk behaviours and structural barriers, such as stigma, discrimination and criminalization. These behaviours and barriers limit access to health and other essential services and often are interlinked with other social and economic factors, including poverty, unemployment, housing instability, exposure to violence and other human rights abuses. Certain populations need specific emphasis if they are disproportionately affected in disease burden and transmission in the three epidemics. These populations must be identified during a country's situational analysis. They may include female sex workers, women in prisons, women who inject drugs, trans and gender-diverse people, migrant or displaced women and adolescent girls and young women.

Countries should be able to provide equitable EMTCT services to key and vulnerable populations.

These women and girls (and their partners) should also be given special care and consideration in a country's EMTCT programme planning, as they may be over-represented among pregnant women with late or no ANC. These women may face unique challenges that require targeted approaches to improve access to care. This would include follow-up in health facilities or in the community, including through contact tracing and partner services. Countries should consider key and vulnerable populations in their data reporting and other strategic information, tracking service coverage so that they can respond nimbly when gaps are detected. Countries should be able to provide equitable EMTCT services to key and vulnerable populations, including the mobile and the marginalized.

2.4 Coordinating, implementing, monitoring and evaluating progress towards EMTCT

Once the triple elimination plan has been completed, it is important to manage the coordination of all relevant programmes and plan implementation, with a clear approach for timely review, monitoring and evaluating of progress to ensure that challenges and bottlenecks are quickly identified and corrected as needed. The national leadership of the ministry of health should designate and task a department to lead and coordinate the implementation of triple elimination strategies and to foster integration and collaboration across programmes to achieve the overall goals. Potential for outreach to expand the range and nature of services around EMTCT, where the health care cadre exists, should be considered. Planned and existing policies, strategies, guidelines and/or expectations for all stakeholders should be disseminated in an organized and timely manner, and implementation of interventions should be monitored and evaluated. Community-led monitoring is encouraged as a mechanism to improve quality and accessibility of services.

Woman being counseled at antenatal care waiting room in India © PATH / Ruhani Kaur

Part 3

The Triple Elimination Framework

WHO and partners developed a framework for triple elimination of mother-to-child, or vertical, transmission in 2024 *(20)*. The framework structures a person-centred and integrated approach to interventions that country programmes can effectively introduce and scale-up. The framework reflects the changing epidemics of these three infections and their interrelation, as well as the responses to them.

Triple elimination requires a sustainable, country-owned and person-centred service delivery approach, applying existing norms and standards to meet the needs of and support the rights of women, newborns and children. It requires building cross-programmatic efficiencies that leverage and strengthen existing platforms for HIV, syphilis and HBV prevention, testing, treatment and care as well as reproductive, maternal, neonatal, child and adolescent health services.

Triple elimination requires building cross-programmatic efficiencies across existing platforms for HIV, syphilis and HBV services.

Dr. Songmanolath conducts a prenatal checkup at BanBor Community Hospital, Lao People's Democratic Republic (the), 2022 © WHO / Enric Catala

Three-month-old Joy and her mum Alaisa sit at the waiting room of Galoa Nursing Station, Fiji, 2023 © WHO / Faizza Tanggol

Underlying WHO's approach to triple elimination, the framework consists of four pillars, each focused on a distinct population and identifying a minimum package of essential services (Fig 3.1);

1. primary prevention of vertical transmission
2. SRH linkages and integration
3. essential maternal EMTCT services
4. infant, child and partner services.

Triple elimination targets can be achieved only when equitable access to high quality, integrated interventions and services in all four pillars is assured. Cross-cutting implementation considerations and enablers, necessary for successful implementation and impact, also are discussed and mapped to the GHSS strategic directions.

The four pillars framework lays out at a high level what is needed to plan and prioritize triple elimination approaches based on each country's epidemiological context and existing response. Planning and implementation of interventions for each pillar should also consider the important synergies between pillars and aim to avoid siloed interventions. A focus on services for women and girls of childbearing age through the lifecourse is fundamental, but beyond this population, infants, children, partners and household contacts need to be considered in the comprehensive approach to achieving elimination. Figure 3.2 shows service delivery access points and recommended services for women and girls at different stages of the lifecourse to achieve triple elimination. Services for HIV, hepatitis B, and syphilis are marked with corresponding colors. Services for partners and family appear in a purple ring on the outside, demonstrating that these should be offered during each stage of the lifecourse.

The cross-cutting implementation considerations address health system strengthening to better provide effective person-centred care, strategic information gathering and analysis, leadership, community engagement, partnerships and cross-programmatic coordination, as well as to identify and address barriers to triple EMTCT of HIV, syphilis and HBV at the individual, community, health services, policy and societal levels.

Fig. 3.1. WHO Triple Elimination Framework

Framework for the implementation of triple elimination of mother-to-child transmission of HIV, syphilis and HBV

	Pillar 1	Pillar 2
Pillar	 Primary prevention of infection and vertical transmission Testing, case finding, treatment and primary prevention for HIV, syphilis and HBV infection in non-pregnant, pregnant and breastfeeding women and girls of childbearing age.	 SRH linkages and integration Appropriate counselling, care and support and linkages for SRH services for women and girls living with HIV or HBV or sero-positive for syphilis to (i) assess fertility intentions and support pregnancy planning and prevention and (ii) prevent, diagnose and treat STIs.
Target populations	Non-pregnant, pregnant and breastfeeding women and girls of childbearing age.	Women and girls living with HIV or HBV or sero-positive for syphilis.
Essential services	• Routine offer of testing services for HIV, syphilis and HBV, including partner services • Care and treatment for HIV, syphilis and HBV or linkage to care and treatment • PrEP for HIV-negative women and girls at increased or continued risk of infection; PEP for exposure to HIV • HBV vaccination, as appropriate • Condoms • Linkage to or referral for SRH services	• Contraception, family planning and condoms • Prevention, testing and linkage to care for HIV, syphilis and HBV among people sero-positive for one condition • Prevention, screening and treatment for other STIs, with linkage to appropriate care • Counselling, education and support for healthy living and minimizing infection transmission
Crossing-cutting implementation considerations	Health system strengthening to better provide effective person-centred care	
	Strategic information gathering and analysis	
	Leadership, community engagement, partnerships and cross-programmatic coordination	
	Identifying and addressing barriers	

HBV = hepatitis B virus, **HIV** = human immunodeficiency virus, **PEP** = post-exposure prophylaxis, **PrEP** = pre-exposure prophylaxis, **SRH** = sexual and reproductive health, **STIs** = sexually transmitted infections

	Pillar 3	Pillar 4
Pillar	 Essential maternal EMTCT services Appropriate maternal testing, prophylaxis and treatment for pregnant and breastfeeding women and girls living with HIV or HBV or sero-positive for syphilis for prevention of transmission to infants.	 Infant, child and partner services Timely testing, prevention, treatment, care and support for exposed infants, infected children, household contacts and partners of women and girls living with HIV or HBV or sero-positive for syphilis.
Target populations	Pregnant and breastfeeding women and girls living with HIV or HBV or sero-positive for syphilis.	Exposed infants, infected infants and children, household contacts and partners of women and girls living with HIV or HBV or sero-positive for syphilis.
Essential services	• Early antenatal testing for HIV, syphilis and HBV; catch-up testing where needed • Third trimester and postnatal re-testing for HIV and linkage to care where indicated • Treatment initiation and linkage to appropriate prevention, care and other clinical and support services - Immediate lifelong treatment for HIV - Adequate treatment for syphilis - HBV prophylaxis or treatment where eligible • Routine antenatal, intrapartum and postnatal care and linkage to SRH services	• Testing services for neonates and infants exposed to HIV, syphilis and HBV • HIV testing services for children past exposure period • Universal birth dose of HBV vaccine • 3-dose infant HBV vaccination series • Postnatal HIV prophylaxis • Follow-up, treatment and care for infants with HIV and congenital syphilis • Routine postnatal pediatric care • Optimal infant feeding • Partner and household testing and prevention, including HBV vaccination, treatment where required and care for HIV, syphilis and HBV • Partner and household HBV vaccination
Crossing-cutting implementation considerations	Health system strengthening to better provide effective person-centred care Strategic information gathering and analysis Leadership, community engagement, partnerships and cross-programmatic coordination Identifying and addressing barriers	

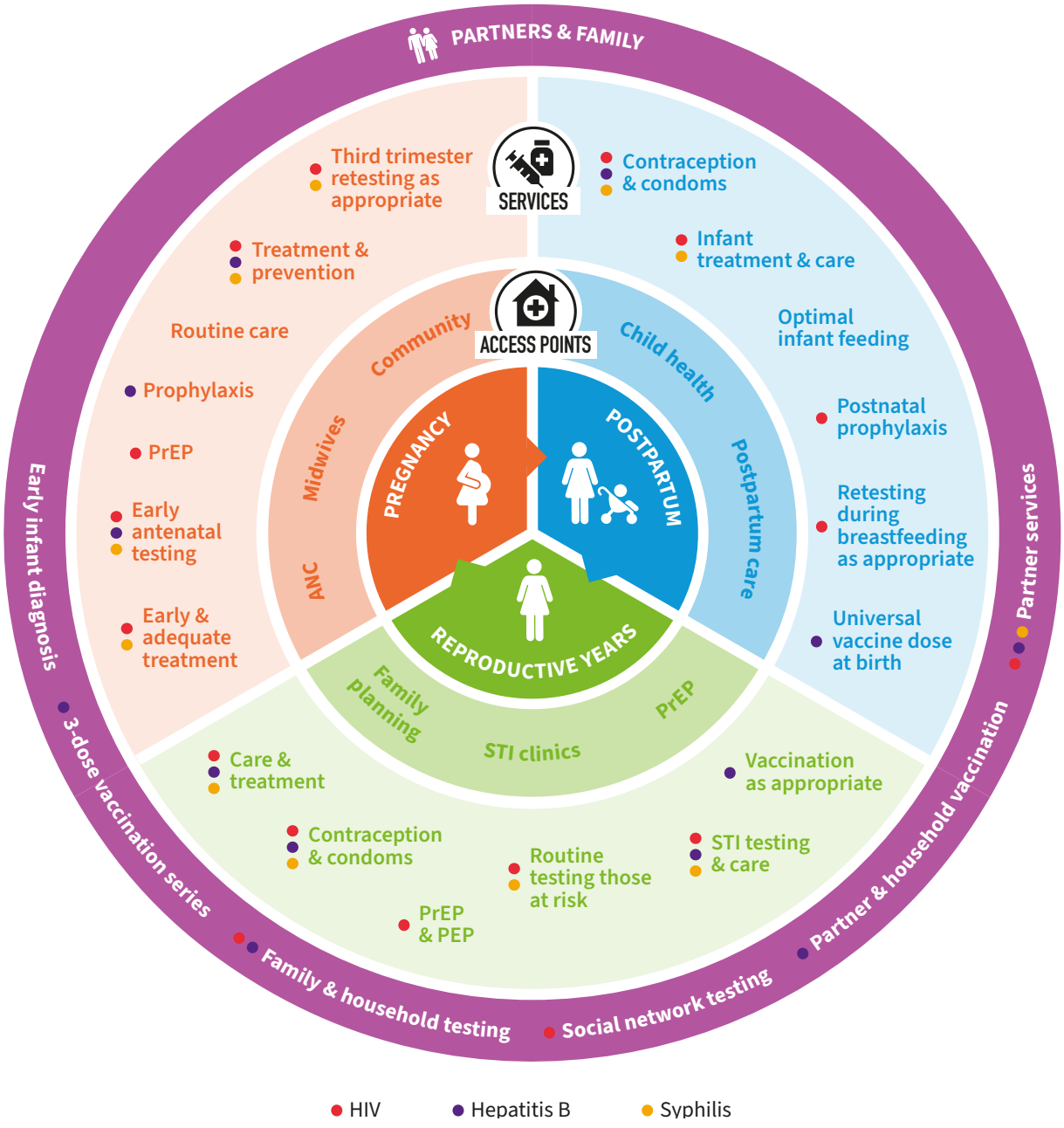
HBV = hepatitis B virus, **HIV** = human immunodeficiency virus, **PEP** = post-exposure prophylaxis, **PrEP** = pre-exposure prophylaxis, **SRH** = sexual and reproductive health, **STIs** = sexually transmitted infections

Guiding principles for planning

- **Meaningful engagement of women and girls:** Women and girls should be consulted and engaged when designing and evaluating guidelines and policies related to their health. This is critical for building a sense of trust and partnership and acceptability among affected communities and for delivering successful programmes and interventions that will reach women at risk for HIV, syphilis or HBV.
- **Focus on human rights and gender equality:** Central to the success of this initiative is ensuring that the human rights of women, girls and children affected by HIV, syphilis and HBV are protected. Addressing gender equality considerations in service access and involving women and girls in planning and delivery of non-coercive interventions are crucial.
- **A person-centred and integrated approach:** Health systems that are organized around the needs of people and communities perform more effectively, cost less, improve health literacy, increase patient engagement and are better prepared to respond to health crises *(9)*. Making health services more people-centred requires integrating service delivery elements in new ways, such that people can access a continuum of health services in a coordinated manner across the different levels and sites of care, within and beyond the health sector and according to their needs, throughout their lives.

Primary prevention of HIV for adolescents and young people, in Ngong, North Cameroon, 2021 © UNICEF / UN0428475 / Dejongh

Fig. 3.2. Triple elimination health services throughout the life course



3.1 Pillar 1: Primary prevention of infection and vertical transmission

Prevention of infection for all women and girls of childbearing age has clear individual and public health benefits. The objective of Pillar 1 is to prevent incident HIV, syphilis and HBV infections in women and girls for their own health and to prevent vertical transmission. Pillar 1 applies to all women and girls of childbearing age, irrespective of whether or not they are pregnant or breastfeeding.

Pillar 1 is achieved through the delivery of context-specific, well-designed and evidence-based "combination prevention" programmes* not only for HIV but also addressing syphilis and HBV. Programmes should focus resources on reaching high-prevalence regions and populations at greatest risk of infection with effective, acceptable prevention services that address both immediate risks and underlying vulnerability (Table 3.1).

* Combination prevention programmes are rights-based, evidence-informed, and community owned programmes that use a mix of biomedical, behavioural, and structural interventions, prioritized to meet the HIV prevention needs of individuals and communities, to have the greatest sustained impact on reducing new infections.

Table 3.1. Pillar 1 target population and essential services

Pillar 1 **Target population**	**Non-pregnant, pregnant and breastfeeding women and girls of childbearing age**
Pillar 1 Essential services	• routine offer of testing services where recommended for HIV, HBV and syphilis, including network-based testing services; • dual HIV/syphilis testing for pregnant women and key populations; • care and treatment for HIV, HBV and syphilis, or linkage to care and treatment, for those found to be positive and for their partners; • PrEP for HIV-negative women and girls at increased or continued risk of infection; • post-exposure prophylaxis PEP for HIV; • HBV vaccination in young adolescents, household and sexual contacts of persons who are living with HBV and people at risk of acquiring HBV infection, as appropriate; • condoms; • linkage to or referral for SRH services.

Testing services for sexually active individuals and their partners are fundamental to Pillar 1 services. This may include provision of self-testing for both HIV and syphilis where recommended by WHO guidance *(25)*, dual HIV/syphilis tests for pregnant women and key populations and provision of network-based testing services. It also includes prevention (PrEP, PEP, HBV vaccination and condoms) and care and treatment (for HIV, syphilis and HBV) when indicated, with linkage or referral for other SRH services and harm reduction services for women who inject drugs (including access to needle and syringe programmes, opioid agonist maintenance treatment and naloxone for overdose management). These services should be provided by trained health care providers or through self-care and at health facilities, pharmacies or within the community. Everyone who is potentially sexually active, including adolescents and members of key and vulnerable populations, should be informed about the three conditions and made aware of available prevention services. This awareness creation may require updating and expanding health promotion strategies and materials.

Table 3.2 lists WHO guidance and recommendations to support Pillar 1 service packages.

Table 3.2. WHO resources to support Pillar 1 service packages

Essential service	**Resources**
• HIV, syphilis and HBV testing • Partner services • Condoms • Care and treatment for HIV, syphilis and HBV, including linkage to care and treatment • Linkage to or referral for SRH services • PrEP • PEP	• WHO (2021). Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach *(26)*. • WHO (2022). Differentiated and simplified pre-exposure prophylaxis for HIV prevention: update to WHO implementation guidance: technical brief *(27)*. • WHO (2022). Guidelines on long-acting injectable cabotegravir for HIV prevention *(28)*. • WHO (2024). Guidelines for HIV post-exposure prophylaxis *(29)*.
• Care and treatment for syphilis	• WHO (2016). WHO guidelines for the treatment of Treponema pallidum (syphilis) *(30)*. • WHO (2021). Guidelines for the management of symptomatic sexually transmitted infections *(31)*.
• Care and treatment for HBV, • HBV vaccination • Linkage to or referral for SRH services	• WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*.
• Harm reduction for women who inject drugs	• UNODC (2021). Addressing the specific needs of women who use drugs. Prevention of mother-to-child transmission of HIV, hepatitis B and C and syphilis. Technical Brief *(33)*. • WHO (2022). Consolidated guidelines on HIV, viral hepatitis and STI prevention, diagnosis, treatment and care for key populations *(34)*.

3.2 Pillar 2: SRH linkages and integration

Pillar 2 is dedicated to providing holistic SRH counselling, care and support, as well as integration of and linkages to SRH services for women and girls living with HIV, HBV and/or seropositive for syphilis. SRH services can include *(35)*, but are not limited to:

- promotion of sexual health, fostering of a positive and respectful approach to sexuality and sexual relations and safer sexual practices;
- family planning and birth spacing services;
- prevention, screening and treatment of reproductive tract infections and STIs, including HIV, syphilis and HBV, during the pre-pregnancy, pregnancy and breastfeeding periods;
- early diagnosis and treatment of breast and cervical cancer;
- prevention services for discordant male partners and treatment for partners with HIV or sero-positive for syphilis;
- prevention and appropriate treatment of subfertility and infertility;
- active discouragement of harmful practices such as female genital cutting as well as harmful gender norms, values and stereotypes;
- adolescent sexual and reproductive health;
- prevention and management of gender-based violence and other violence against women;
- promotion and awareness of sexual and reproductive health rights and their implications.

The objective of Pillar 2 is to move beyond the specific treatment of conditions and address the wider SRH needs of women and girls living with HIV, HBV or seropositive for syphilis. These needs include preventing unintended pregnancies, appropriate pregnancy planning and prevention and management of other STIs. Preventing other STI co-infections in this population is crucial for improving individual health outcomes and reducing the risk of vertical transmission (Table 3.3).

Table 3.3. Pillar 2 target population and essential services

Pillar 2 **Target population**	**Women and girls living with HIV or HBV or seropositive for syphilis**
Pillar 2 Essential services	• contraception, family planning and condoms, including pregnancy planning support; • prevention, testing and linkage to care for HIV, HBV and syphilis and among people seropositive for one or more conditions; • prevention, screening and diagnosis and treatment for other STIs, with linkage to appropriate care; • counselling, education and support for healthy living and minimizing infection transmission; • partner services.

Pillar 2 services include contraception/family planning services and commodities, including condoms, pregnancy planning and support, in addition to prevention, testing and linkage to care for people seropositive for one or more conditions. Pillar 2 also includes prevention, screening and treatment for other STIs, with linkage to appropriate care, and counselling, education and support for healthy living and minimizing infection transmission. Services are recommended to provide choice for family planning methods, noting only condoms protect against HIV or STIs. Important to consider is the optimal timing and frequency of services, which should be regular and agreed on by national policy-makers, determined by national protocols and differentiated service delivery models. Assisted referral should be offered if required. These services should be provided by trained health care providers or through self-care. Services should be decentralized across PHC settings, including at health facilities, in pharmacies or within community care services, with assurance that testing and treatment commodities are always available.

Pillar 2 addresses the wider SRH needs of women and girls living with HIV, HBV or seropositive for syphilis.

Table 3.4 lists WHO guidance and recommendations to support Pillar 2 service packages.

Table 3.4. WHO resources to support Pillar 2 service packages

Essential service	Resources
• Prevention, testing and linkage to care for HIV, syphilis and HBV among people seropositive for one or more conditions • Prevention, screening and treatment for other STIs, with linkage to appropriate care • Contraception, family planning and condoms • Counselling, education and support for healthy living and minimizing infection transmission	• WHO (2021). Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach *(26)*. • WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*. • WHO (2024). Factsheet – condoms *(36)*. • WHO (2017). Consolidated guideline on sexual and reproductive health and rights of women living with HIV *(37)*. • Johns Hopkins Bloomberg School of Public Health, Center for Communication Programs and WHO (2022). Family planning: a global handbook for providers (2022 update) *(38)*. • WHO (2023). Factsheet – family planning/contraception methods *(39)*.

3.3 Pillar 3: Essential maternal EMTCT services

Pillar 3 focusses on the prevention of vertical-transmission of infection to infants of pregnant and breastfeeding women and girls living with HIV and/or HBV and/or seropositive for syphilis. It also considers the following essential EMTCT services *(35)*:

- ANC, skilled attendance at delivery and postnatal care
- management of obstetric and neonatal complications and emergencies
- prevention of abortion/miscarriage, promotion of safer abortion options and management of complications resulting from unsafe abortions
- counselling for women and girls living with HIV on infant feeding
- promotion of, education on and support for exclusive breastfeeding.

The objective of Pillar 3 is to ensure that pregnant women and girls receive early antenatal testing for HIV, HBV and syphilis and, for those found to be infected, appropriate care (antenatal, intrapartum and postnatal) and treatment to prevent mother-to-child-transmission.

Pillar 3 seeks to ensure that pregnant women and girls receive early antenatal testing and, if infected, care, as well as treatment to prevent MTCT.

This is achieved through offering maternal testing and, where appropriate, retesting, prophylaxis and adequate and timely treatment services for the three infections (Table 3.5).

Table 3.5. Pillar 3 target population and essential services

Pillar 3 Target population	Pregnant and breastfeeding women and girls living with HIV or HBV or seropositive for syphilis.

Pillar 3
Essential services
	• early antenatal testing for HIV, syphilis and HBV, including use of dual HIV/syphilis tests and use of self-testing modalities, where recommended;
	• catch-up testing where needed;
	• third trimester and postnatal retesting using appropriate approaches for HIV and syphilis testing services where applicable and including linkage to care;
	• immediate maternal treatment initiation and linkage to appropriate prevention, care and other clinical and support services:
	  ▫ lifelong treatment for HIV;
	  ▫ adequate treatment for syphilis*;
	  ▫ immediate linkage to assessment of eligibility for HBV prophylaxis or treatment;
	• routine antenatal, intrapartum and postnatal care and linkage to SRH services.

* Adequate maternal treatment is defined as at least one injection of 2.4 million units of intramuscular benzathine penicillin G at least 30 days prior to delivery *(41)*.

Pillar 3 services include the offer of testing for HIV, syphilis and HBV (using dual HIV/syphilis test where possible) at a first, early antenatal visit; catch-up testing where needed; third trimester and postnatal retesting for HIV, with linkage to care where indicated; immediate treatment initiation and linkage to appropriate prevention, care and other clinical and support services including immediate lifelong treatment for HIV, adequate treatment for syphilis and HBV prophylaxis or treatment where eligible.

In addition, Pillar 3 services include routine antenatal, intrapartum and postnatal care and linkage to SRH services, with routine and follow-up care as per national protocol and available differentiated service delivery models. These services should be provided by trained health care providers or through self-care and at health facilities (primary care clinics, HIV clinics or hospitals) or within community or home care services.

Table 3.6 lists WHO guidance and recommendations to support Pillar 3 service packages.

Table 3.6. WHO resources to support Pillar 3 service packages

Essential service	Resources

• early antenatal testing for HIV, syphilis and HBV; catch-up testing when needed;
• third trimester and postnatal retesting for HIV and linkage to care where indicated;
• treatment initiation and linkage to appropriate prevention, care and other clinical and support services
  ▫ immediate initiation of lifelong treatment for HIV
  ▫ adequate treatment for syphilis
  ▫ HBV prophylaxis or treatment where eligible;
• routine antenatal, intrapartum and postnatal care and linkage to SRH services
	• WHO (2019). Dual HIV/syphilis rapid diagnostic tests can be used as the first test in antenatal care: policy brief *(2)*.
	• WHO (2016). WHO recommendations on antenatal care for a positive pregnancy experience *(16)*.
	• WHO (2021). Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach *(26)*.
	• WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*.
	• WHO (2023). Laboratory and point-of-care diagnostic testing for sexually transmitted infections, including HIV *(40)*.
	• WHO (2017). WHO guideline on syphilis screening and treatment for pregnant women *(41)*.
	• WHO (2015), Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice, 3rd edition *(42)*.
	• WHO (2018). WHO recommendations on adolescent sexual and reproductive health and rights *(43)*.

3.4 Pillar 4: Infant, child, partner and network-based services

Pillar 4 focuses on testing, treatment, follow-up care including immunization and well-child care (routine medical visits provided to children to support healthy development), repeat testing (where indicated) and support for exposed infants, infected children, household contacts and partners of women and girls living with HIV and/or HBV and/or seropositive for syphilis.

Pillar 4 has a twofold focus:

1) The focus on interventions for exposed infants and infected children ensures a comprehensive approach to preventing paediatric infections and their sequelae, early identification of transmission and rapid treatment initiation where indicated. Exposed infants need following with repeat testing at recommended intervals for each of the infections. Annex 1 summarizes management of the exposed infant for all three conditions.

2) The focus on interventions for household contacts and partners is essential to identify and treat infections beyond those of women and girls and their newborns, thus preventing transmission and reinfection within families and among partners and so ensuring healthy outcomes for the whole family.

Pillar 4 focuses on (1) follow-up and care for exposed children and (2) prevention of retransmission by infected household contacts and partners.

Routine newborn and infant hepatitis B vaccination – consisting of a birth dose and an infant vaccination series of at least three doses – reduces vertical transmission and also helps to prevent horizontal HBV transmission in early childhood.

WHO recognizes the importance of hepatocellular carcinoma and other HBV-related diseases as global public health problems and reiterates its recommendation that hepatitis B vaccines be included in national immunization programmes. A comprehensive approach to eliminating HBV transmission must address not only prevention of infections acquired perinatally and during childhood but also prevention of infections acquired by adolescents and adults. Hepatitis B vaccination is recommended for all children worldwide. Reaching all children with at least three doses of hepatitis B vaccine should be the standard for all national immunization programmes.

All national programmes should include a monovalent hepatitis B vaccine birth dose, to be given within 24 hours, since perinatal or early postnatal transmission is the most important source of chronic disease. National strategies to prevent perinatal transmission should ensure high and timely coverage of the birth dose through a combination of strengthened maternal and infant care at birth by health workers skilled to administer the vaccine and innovative outreach strategies to provide the vaccine to infants born at home. WHO recommends hepatitis B vaccination of persons at high risk of HBV infection in older age groups and catch-up vaccination of unvaccinated cohorts if the required resources are available (Table 3.7).

Table 3.7. Pillar 4 target populations and essential services

Pillar 4 **Target population**	**Exposed infants, infected infants and children, household contacts and partners of women and girls living with HIV or HBV or seropositive for syphilis**
Pillar 4 Essential services	• testing services for neonates and infants exposed to HIV, syphilis and/or HBV; • HIV testing services for children past the exposure period; • universal timely administration of birth dose of HBV vaccine; • complete infant hepatitis B vaccination series according to the national schedule; • postnatal prophylaxis for HIV-exposed infants; • follow-up, treatment and care for infants with HIV, congenital syphilis or HBV; • routine postnatal paediatric care, including immunizations, growth monitoring and vitamin A supplementation; • optimal infant feeding; • partner and household testing and prevention, including treatment and care where required, for HIV, syphilis and HBV; • partner and household hepatitis B vaccination; • male partner services, including prevention for discordant partners and treatment for infected partners, and interventions for male engagement.

Pillar 4 services include testing services for neonates and infants exposed to HIV and syphilis, and HIV testing services for children past the exposure period. These are best incorporated into routine contacts with the health system, such as in immunization visits. In addition, these services include universal timely administration of the birth dose of hepatitis B vaccine and the 3-dose infant hepatitis B vaccination series, postnatal HIV prophylaxis and follow-up, and treatment and care for infants with HIV and congenital syphilis. Also essential are routine postnatal paediatric care, support for optimal infant feeding and partner and household testing and prevention, including hepatitis B vaccination, and, where required, treatment and care for HIV, syphilis and HBV. Partner and household prevention also includes hepatitis B vaccination. These services should be provided by trained health care providers or through self-care and at health facilities, pharmacies or within community care services.

Table 3.8 lists WHO guidance and recommendations to support Pillar 4 service packages.

Table 3.8. WHO resources to support Pillar 4 service packages

Essential service	Resources
• prevention of HBV infection	• WHO (2017). Hepatitis B vaccines: WHO position paper – July 2017 *(44)*.
• post-exposure services for neonates and infants • post-exposure services for neonates and infants exposed to HIV	• WHO (2021). Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach *(26)*.
• post-exposure services for neonates and infants exposed to syphilis	• WHO (2024). Updated recommendations for the treatment of Neisseria gonorrhoeae, Chlamydia trachomatis, and Treponema pallidum (syphilis) and new recommendations on syphilis testing and partner services *(48)*.
• post-exposure services for neonates and infants exposed to HBV	• WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32).*
• male involvement in HIV services	• WHO (2023). Men and HIV: evidence-based approaches and interventions a framework for person-centred health services *(45)*. • WHO (2020). Preventing HIV through safe voluntary medical male circumcision for adolescent boys and men in generalized HIV epidemics *(46)*.

Collecting dried blood spot samples for HIV testing at a health facility in Haut-Katanga, Democratic Republic of the Congo © PATH / Georgina Goodwin

Part 4

Testing and linkage to care for operationalizing triple elimination

4.1 General principles for providing testing services

Testing should be performed for the purposes of both case-finding and prevention of onward transmission. Testing for case-detection aims to find individuals who are living with HIV or HBV or are seropositive for syphilis in order to initiate treatment and prevent onward transmission to children or other adults. Testing for prevention aims to find individuals who test negative for HIV, syphilis or HBV in order to initiate efforts to keep women, their children and their partners negative. Prevention includes PrEP for HIV, condoms for HIV and syphilis, and hepatitis B vaccination and, for women who inject drugs, harm reduction *(33, 34)*. General principles governing testing services should be applied to testing for HIV, syphilis and HBV. These include informed consent, confidentiality, appropriate counselling and reliable results with linkage to prevention, care and treatment services. Testing should never be mandatory or coerced, and individuals should always have the right to opt out of testing if they choose.

4.2 Selection of testing approaches for triple elimination: knowing your epidemic(s)

HIV, syphilis and hepatitis B can have vastly different epidemics in different countries and populations. Therefore, it is important to plan testing approaches and services according to local epidemiology, using data from the situation analysis that informs service delivery. Data analysis and surveillance should be dynamic and ongoing, and should be informed by routinely reported testing data. The terms “high” and “low” prevalence should be defined by each country or programme designing service delivery for triple elimination, with testing approaches selected for both high- and low-prevalence contexts.

Once the baseline situational analysis has been completed, countries and programmes can consider which testing delivery strategy may be most effective for different disease epidemiology, including geographies, settings and populations. A combination of testing delivery packages can be developed that specify testing approaches for HIV, syphilis and HBV based on analysis of data for each infection drawn from the situational analysis. The dual HIV/syphilis test may be considered for use as the first screening test in pregnancy, along with testing for HBV, and can be used for members of key populations. More information can be found in the 2024 WHO publication, *Consolidated guidelines on differentiated HIV testing services (25)*.

For all settings: Programmes should aim to test all pregnant women for HIV, syphilis and HBV at least once and as early as possible during pregnancy – and also test their partners when appropriate. For HIV-exposed newborns and children, early infant diagnosis is the primary testing strategy. Syphilis testing approaches should include testing all syphilis-exposed infants and all women who have delivered stillborn infants. HBV testing approaches should include testing all sexual and injection partners, children and other family and household members of individuals with HBV.

Programmes should aim to test all pregnant women for HIV, syphilis and HBV at least once and as early as possible during pregnancy.

For high HIV prevalence settings: Approaches include testing all male partners of pregnant women for HIV, targeted case finding, and routine HIV testing of sick

children at critical care entry points. Other testing approaches for these settings are maternal HIV retesting in the third trimester as well as catch-up testing at the next visit if the first test or retest is missed or delayed, network-based HIV testing and testing of all women presenting to facilities, such as family planning and other SRH services, including services for adolescent girls and young women, and broader self-testing implementation and availability. In addition, consideration of linkage to prevention among those at risk of incident infection during breastfeeding.

For low HIV prevalence settings: Approaches should be to encourage male partner testing in high prevalence groups/sub geographies; targeted HIV case finding in children through family and household testing and catch-up testing especially where ANC coverage is low and presentation is late. Self-testing approaches as part of PrEP and network-based testing focused on provider-assisted partner services and social network testing are useful approaches.

Routine offer of hepatitis B testing is recommended for countries and populations with a prevalence of 2% of greater. While other specific approaches for high- and low- syphilis and HBV prevalence settings have yet to be defined, strategies should be developed to meet the context and epidemiologic need.

4.3 Specific testing considerations for HIV, syphilis and HBV

Different requirements exist for testing for HIV, syphilis and HBV. Table 4.1 describes the testing services for the three conditions. For details refer to the WHO (2017). *Guidelines on syphilis screening syphilis in pregnancy (41)* and the WHO (2023) *Laboratory and point-of-care diagnostic testing for STIs, including HIV (40)*, as well as referenced source documents *(32)*.

Table 4.1. Testing services for HIV, syphilis and HBV

HIV	Syphilis	Hepatitis B
Types of tests		
Rapid diagnostic tests (RDTs) and enzyme immunoassays (EIAs) used according to WHO guidance CD4 count for assessing advanced HIV disease Viral load testing recommended to monitor treatment success	Serologic tests (treponemal and non-treponemal) **Treponemal** serologic tests measure treponemal antibodies (IgM/IgG): TPHA, TPPA, FTA-Abs, EIA, and rapid tests*. These may remain positive for life,** and so laboratory-based quantitative non-treponemal tests are also required. **Non-treponemal** serologic tests are indirect markers measuring host immune response to infections (lipoidal antigen): RPR, VDRL test.	A serological assay (either RDT or laboratory-based immunoassay) is recommended to detect HBV surface antigen (HBsAg). Among those HBsAg positive, this should be followed by HBV DNA or hepatitis B envelope antigen (HBeAg) testing to assess eligibility for peripartum antiviral prophylaxis and long-term treatment.*** In settings where neither HBV DNA nor HBeAg testing is available, antiviral prophylaxis for all HBsAg-positive pregnant women may be considered.
Requirements for diagnosis		
Complete national testing algorithm to provide positive diagnosis	Presumptive diagnosis of syphilis requires a positive result** from either a treponemal or non-treponemal test. A confirmed diagnosis requires, but it is not limited to, positive results from both types of serologic tests.	A single quality-assured serological test (laboratory-based immunoassays or RDT to detect HBsAg) Additional testing with HBV DNA or HBeAg is recommended where available and preferable to assess eligibility for antiviral prophylaxis and long-term treatment.

Testing for newborns/infants		
Nucleic acid test (NAT) technologies at birth and at four to six weeks for perinatal testing and at nine months Serological testing to determine exposure among infants younger than four months and after 18 months for final diagnosis	Infant syphilis diagnosis is based on review of maternal serology and treatment history to determine 1) if the mother has reactive nontreponemal and/or treponemal serologic tests for syphilis during pregnancy, and 2)whether the mother received adequate and timely treatment with BPG for syphilis during pregnancy.	Can be considered in infants born to HBsAg-positive mothers. Should be carried out 1–2 months after the last dose of the complete HBV vaccine series. Infants should be tested for HBsAg and anti-HBs (hepatitis B surface antibody) to confirm they are successfully protected and are not infected *(44)*.
Self-testing		
Recommended and available for a variety of uses	Recommended but not yet commercially available	Not yet recommended or available
Linkage to combination prevention		
Condoms PrEP may be an option for those who test negative. Harm reduction interventions for women who inject drugs	Condoms	Condoms Offer hepatitis B vaccination to pregnant women not immune or not previously vaccinated. Harm reduction for women who inject drugs
Linkage to care		
Immediate offer of treatment when HIV positive and ongoing support to stay in care	Immediate offer of treatment to those seropositive, in addition to further confirmatory testing where available.	All who are HBsAg-positive should be assessed first for eligibility for long-term treatment for their own health and then, if pregnant, for antiviral prophylaxis to prevent mother-to-child transmission *(32)*. In settings where neither HBV DNA nor HBeAg testing is available, antiviral prophylaxis for all HBsAg-positive pregnant women may be considered.
Network-based testing services		
Assisted partner services Social network testing Testing of all male partners of pregnant women	Assisted partner services Social network testing Partner treatment recommended	Family members and household contacts of HBsAg-positive women

Abbreviations: **anti-HBs** = hepatitis B surface antibody; **EIA** = enzyme immunoassay; **FTA-Abs** = fluorescent treponemal antibody absorbed; **HBeAg** = hepatitis B envelope antigen; **HBsAg** = HBV surface antigen; **NAT** = nucleic acid test; **PrEP** = pre-exposure prophylaxis; **RDT** = rapid diagnostic test; **RPR** = rapid plasma reagin; **TPHA** = Treponema pallidum haemagglutination assay; **TPPA** = Treponema pallidum particle agglutination assay; **VDRL** = Venereal Disease Research Laboratory.

*Rapid tests available include treponemal tests (single or dual HIV/syphilis tests) that aid in screening for but do not confirm diagnosis of syphilis without additional testing. Given the possible consequences of the missed opportunity for preventing congenital syphilis, treatment can be initiated based on positive RDT only.

** A positive treponemal test does not distinguish between active infection and infection that has been previously treated since, in most cases, it will remain positive for life. Non-treponemal tests titres are critical to support diagnosis and monitor treatment success.

*** In 2024 WHO recommended that, in settings where neither HBV DNA nor HBeAg testing is available, prophylaxis with tenofovir disoproxil fumarate (TDF) for all HBV-positive (HBsAg-positive) pregnant women may be considered (preferably from the second trimester of pregnancy until at least delivery or completion of the infant HBV vaccination series). Antiviral prophylaxis should be given in addition to at least three doses of hepatitis B vaccination for all infants, including a timely birth dose. For more information refer to WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*.

4.4 Testing through the life course

Opportunities to implement testing for triple elimination occur at the various times when women interact with health services throughout their lives (Fig. 4.1). These times arise during the reproductive years before a woman first becomes pregnant, during pregnancy and at points between pregnancies. When women are not pregnant or postpartum during the reproductive years, women, including adolescents, may interact with primary care providers, SRH services including for family planning, and other health care services in facilities or in their communities. Testing for triple elimination can take place at all these times and in all these settings. During pregnancies, women primarily interact with ANC providers in facilities or in communities and with delivery care providers in health facilities at labour for childbirth. During the postpartum period, mothers with their newborns may have contacts primarily with child-health providers. Partners and children may be linked to immunization through partner services or network-based testing services.

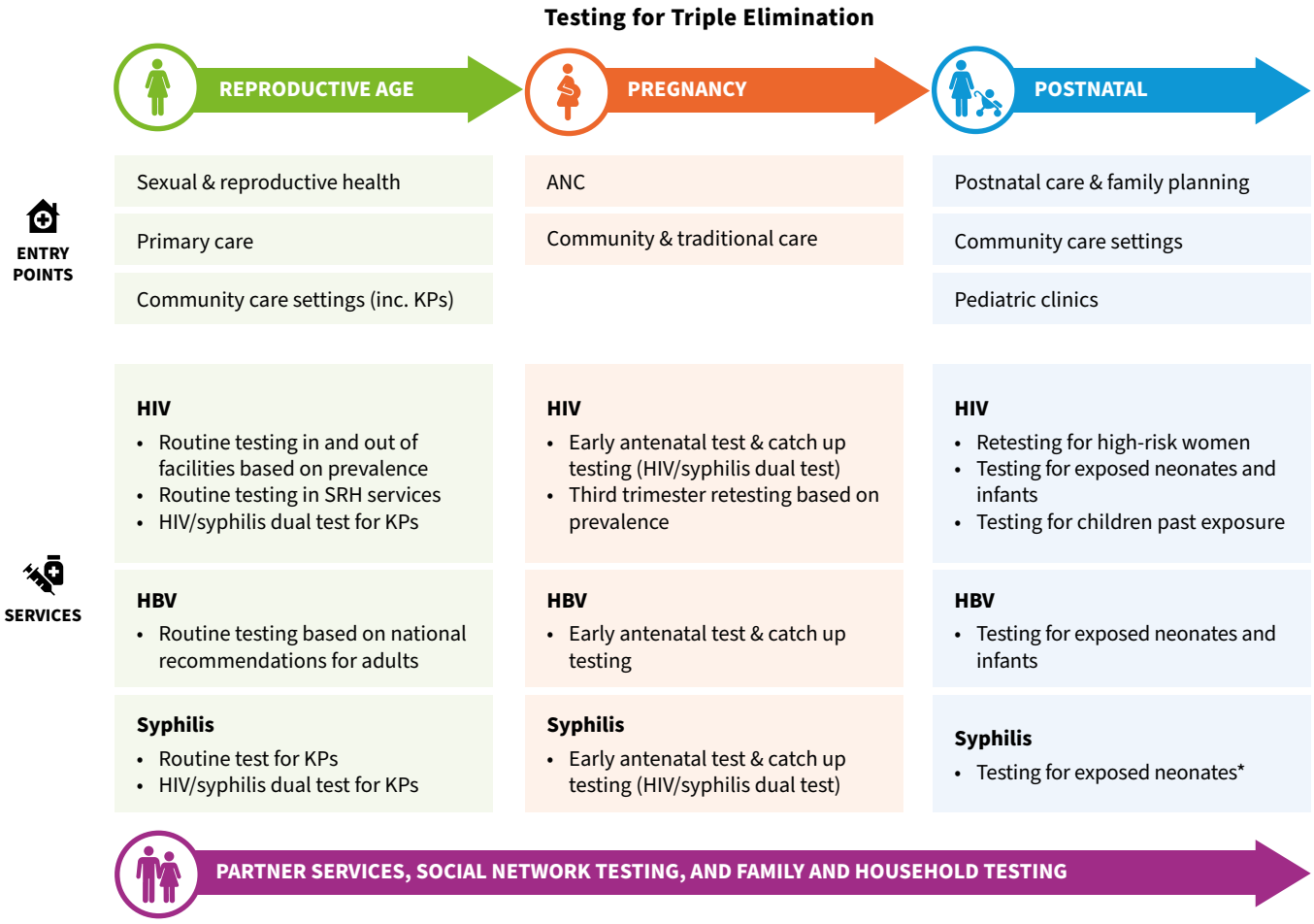
As women progress through their lives, the risk of different infections is likely to change. For example, maximum risk for acquiring HIV may occur during adolescence and pregnancies. Barriers that can hinder women from seeking care, including stigma and violence, may lead to delays in diagnosis and treatment. Testing programmes should be designed to support safe testing for girls and women both in routine care settings and through targeted outreach for periods of heightened risk.

Testing recommendations also vary for different epidemiological settings and populations, as described in Tables 4.2 to 4.4.

4.4.1 Testing services for non-pregnant periods within the reproductive years

When women are not pregnant during the reproductive years, including pre-pregnancy and between pregnancies, testing may take place in primary care settings, SRH centres and within other facility- and community-based health care delivery systems (Table 4.2).

Fig. 4.1. Women's interactions with testing services throughout their life course



* Quantitative non-treponemal tests are indicated and titres compared with that of the mother to support diagnosis and follow-up. Quantitative non-treponemal tests should be used as part of the management of the exposed infant during follow-up.

Table 4.2. Testing services for nonpregnant women in the reproductive years by epidemiological context

Recommendation	Guideline document
HIV	
High HIV burden settings: HIV testing should be offered to all populations and in services (for example, services for STIs, hepatitis, tuberculosis, children under five, immunization, sick newborn units, malnutrition, antenatal and postnatal care and all services for members of key populations) as an efficient and effective way to identify people with HIV.	WHO (2024). Consolidated guidelines on differentiated HIV testing services *(25)*.
Low HIV burden settings: HIV testing should be offered for adults, adolescents or children who present in clinical settings with signs and symptoms or medical conditions that could indicate HIV infection, including TB, viral hepatitis and STIs.	WHO (2024). Consolidated guidelines on differentiated HIV testing services *(25).*
All settings: HIV self-testing should be offered as an approach to HIV testing services.	WHO (2024). Consolidated guidelines on differentiated HIV testing services *(25)*.
High HIV burden settings: All sexually active individuals should be offered annual retesting.	WHO (2024). Consolidated guidelines on differentiated HIV testing services *(25)*.
All settings: Individuals taking PrEP should retest for HIV regularly (such as every three months). HIV self-testing can be an option.	WHO (2022). Differentiated and simplified pre-exposure prophylaxis for HIV prevention: update to WHO implementation guidance: technical brief *(27)*.
All settings: Biological children of a parent with HIV and orphaned children should be routinely offered HIV testing services.	WHO (2019) Consolidated guidelines on HIV testing services *(47)*.
Syphilis	
WHO suggests offering periodic screening for asymptomatic sexually transmitted infections, including syphilis, to sex workers.	WHO (2022) Consolidated guidelines on HIV, viral hepatitis and STI prevention, diagnosis, treatment and care for key populations *(34)*.
Hepatitis B virus	
In settings with a ≥2% seroprevalence of HBsAg, it is recommended that all adults have routine access to and be offered HBsAg serological testing.*	WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*.
In all settings offer testing to adults and adolescents from populations most affected by HBV infection or who have a history of exposure to or high-risk for HBV infection.**	WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*.
Testing PrEP users for HBV surface antigen (HBsAg) once, at or within one to three months of PrEP initiation, is strongly encouraged where feasible, particularly in highly endemic countries.	WHO (2022). Differentiated and simplified pre-exposure prophylaxis for HIV prevention: update to WHO implementation guidance: technical brief *(27)*.
In all settings it is recommended that HBsAg serological testing and linkage to care and treatment services be offered to sexual partners, children and other family members and close household contacts of those with HBV infection.	WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*.

*In 2024 WHO recommended, additionally, universal hepatitis delta (HDV) testing among all people with chronic hepatitis B as the preferred approach to scale up access to HDV diagnosis and linkage to care (that is, testing for anti-HDV antibodies in all individuals who are HBsAg positive). In settings in which a universal anti-HDV antibody testing approach is not feasible because laboratory capacity or other resources are limited, testing for anti-HDV may be given priority in specific populations of HBsAg-positive individuals. For more information refer to WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*.

**Includes adults, adolescents and children with a clinical suspicion of chronic viral hepatitis (symptoms, signs, laboratory markers); sexual partners, children and other family members and close household contacts of those with HBV infection; health care workers; mobile and migrant populations from high and intermediate endemic countries and certain indigenous populations as well as people who inject drugs, people in prisons and other closed settings, men who have sex with men, sex workers, people living with HIV and the partners, family members and the children of people with hepatitis B.

4.4.2 Specific testing services during pregnancy

Testing during pregnancy includes early antenatal testing, catch-up testing, third trimester testing and testing at delivery in ANC in both facility and community settings. Catch-up testing refers to provision of testing following a missed testing window, for example, offered to a woman presenting for the first time for ANC during the second trimester (Table 4.3).

Table 4.3. Testing services during pregnancy by epidemiological context

Recommendation	Guideline document
HIV, syphilis and hepatitis B	
All pregnant women should be tested for HIV, syphilis and hepatitis B surface antigen (HBsAg) at least once and as early as possible, ideally at the first antenatal care visit.	WHO (2024). Consolidated guidelines on differentiated HIV testing services *(25)*. WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*. WHO (2016). WHO recommendations on antenatal care for a positive pregnancy experience *(16)*.
Dual HIV/syphilis RDTs can be the first test in HIV testing strategies and algorithms in all ANC (not to be used in women who are known to be living with HIV or known to have a history of treated syphilis).	
HIV	
High HIV burden settings: Following initial test in pregnancy at first ANC visit, retesting is advised in the third trimester.	WHO (2024). Consolidated guidelines on differentiated HIV testing services *(25)*.
Low HIV burden settings: Retesting all pregnant women is not warranted unless focused on women from key populations or at high ongoing risk, such as those who inject drugs, sex workers, transgender people, people in prisons and other closed settings, and their sexual and injecting partners or with partners with HIV who are not virally suppressed.	
All settings: If first test and/or retesting in late pregnancy is missed, catch-up testing is needed.	

4.4.3 Postpartum testing and care of the mother–infant pair

Recommendations for post-pregnancy testing cover HIV testing and care services for breastfeeding women and testing and care services for newborns, infants and children exposed to HIV, syphilis or HBV. Interventions for comprehensive care for exposed infants are a component of triple elimination and include early testing to identify infected infants and timely management of paediatric disease. Testing can be made available through maternal and child health services, immunization clinics, under-5 clinics, malnutrition services, well-child services, services for hospitalized and all other sick children, and services for orphans and vulnerable children (Table 4.4).

Table 4.4. Postpartum testing services and care of the mother–infant pair

Recommendation	Guideline document
HIV	
Countries can consider one additional maternal retest in the postpartum period, such as at 14 weeks, six months or nine months, in high HIV burden or incidence districts or provinces, key populations or women with partners with HIV who are not virally suppressed. **HIV-exposed infants and children** • Early diagnosis and treatment. This has been demonstrated to improve survival and clinical outcomes, as infected infants are more likely to start timely treatment. • NAT at birth or within two days of birth, as recommended by WHO, complemented by additional future NAT according to the national algorithm. • Six-week early infant diagnosis (EID) testing. This should be prioritized over adding NAT at birth, depending on national coverage, transmission risk, uptake and retention in the testing cascade, available resources and funding priorities. • Infant diagnosis throughout the exposure period to identify infants and children living with HIV who need treatment.	WHO (2024). Consolidated guidelines on differentiated HIV testing services *(25)*.
• Scale-up of family and household testing services. This may include offering testing for all children of people with HIV, as well as nonbiological children in the household, due to high HIV risk among orphans under 19 years of age.	WHO (2024). Consolidated guidelines on differentiated HIV testing services *(25)*.
Syphilis	
• All women who have delivered a stillborn infant should be tested for syphilis. • Diagnosis in newborns is complex, and, currently, there is no WHO testing guidance for diagnosis. • A reactive serological test in a neonate may be the result of passive transfer of maternal antibody across the placenta during pregnancy and, therefore, cannot be considered diagnostic per se. A titre of 4 fold of the mother is a sign of active infection. • When skin and mucous membrane lesions are present, examine sample by darkfield microscopy, direct fluorescence antibody (DFA) or new nucleic acid amplification testing (NAAT) for direct evidence of infection with *T. pallidum*.	PAHO (2014). Field guide for implementation of the strategy and plan of action for elimination of mother-to-child transmission of HIV and congenital syphilis in the Americas *(35)*. WHO (2022). Global guidance on criteria and processes for validation: elimination of mother-to-child transmission of HIV, syphilis and hepatitis B virus *(20)*.
Hepatitis B virus	
HBV-exposed infants • Testing of exposed infants is problematic within the first six months of life, as detection of HBsAg and HBV DNA may be inconsistent in infected infants. Chronic hepatitis B is diagnosed only if there is persistence of HBsAg for six months or more. • Newborn or infant testing for HBV is not mandatory but can be considered for infants of HBsAg-positive mothers 1–2 months after administration of the last dose of the complete HBV infant vaccine series. • Infant testing for HBsAg and anti-HBs (hepatitis B surface antibody) can be considered to confirm whether the infant has been successfully protected and is not infected. Anti-HBc (hepatitis B core antibody) should not be used.	WHO (2017). Hepatitis B vaccines: WHO position paper – July 2017 *(44)*.
It is recommended that in all settings HBsAg serological testing and linkage to care and treatment services be offered to other children and other family members and close household contacts of mothers with chronic HBV infection.	WHO (2024). Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection *(32)*.

4.5 Post-test services and linkage to care

Testing for HIV, syphilis and HBV should be provided as part of a package of services that includes demand creation, pre-test messaging, post-test counselling and linkage to further care. Messages and information in post-test counselling need to be tailored to the test result, the client and the setting. Health care providers must be trained to deliver post-test counselling and linkage to care for HIV, HBV and syphilis, sometimes for more than one infection at the same time. Specific counseling messages regarding co-infections and further clinical care should be tailored to the client, setting, and existing referral pathways.

The core package of post-test services needs to include:

- clear and concise counselling messages tailored to identified needs and context
- offer of or referral for additional testing, where appropriate
- offer of or referral for treatment or prophylaxis initiation
- linkages to prevention services for those testing negative, including HIV PEP or PrEP, voluntary medical male circumcision (VMMC) for male partners in priority settings and HBV vaccination
- additional care, support and other relevant services.

Modalities for linkage to care vary. The following interventions have improved linkage to care following an HIV diagnosis and can be used for syphilis and HBV as well:

- streamlined interventions or point-of-care services to reduce time between diagnosis and engagement in care
- peer support (including peer counselling) and navigation approaches
- data-driven quality improvement approaches improve linkages.

4.6 Service delivery and implementation considerations for triple elimination testing

4.6.1 Differentiated testing services

Differentiated testing services should be client-centred and focus both on linking those diagnosed with an infection to treatment services and linking those testing negative to effective combination prevention services. When planning the delivery of services for testing to support triple elimination, it is important to consider the building blocks of differentiated testing services – the "who, what, when and where" of offering testing services – to achieve maximum impact. These can be thought of in terms of the three main activities in testing for HIV, syphilis and HBV – demand creation (that is, pre-testing), test implementation and linkage to care (that is, post-test) (Fig. 4.2).

Fig. 4.2. Considerations for the building blocks of differentiated testing services

	MOBILIZING	TESTING		LINKING
WHEN	Timing and frequency	Timing and frequency		Timing of linkage activities and timing and frequency of follow-up
WHERE	Location of mobilization activities	Location of testing		Location of linkage activities
WHO	Who does the mobilization	Who does the testing		Who supports the linkage activities
WHAT	The mobilization approach(es) used	The package of services:		The interventions to link to treatment services
		Testing	and related activities	The interventions to link to appropriate, prioritized and effective prevention services

Counseling on screening services at a health care clinic in Viet Nam © PATH / Phan Thanh Tuyen

Decentralized testing services can expand access to and uptake of testing services and can be offered for HIV, syphilis and HBV. Integrating service delivery wherever possible will achieve maximum impact, improve cost-effectiveness and facilitate easier monitoring.

Decentralized and integrated testing services can expand access to and uptake of testing.

4.6.2 Network-based testing services

For every individual diagnosed with HIV, syphilis, or HBV, there is at least one other person with the infection who may or may not know their status, and there may be other partners or family members who may have been exposed and/or network contacts in need of testing. Health care providers conducting post-test counselling must consider an individual's social network, family and household contacts and sexual and/or injection partners and, together with the client, decide on a plan to inform partners and contacts of their possible risk so that they can be tested and/or linked to care.

Primary modalities for providing network-based testing services include **partner services, social network testing services and family and household testing services** offered on a voluntary basis and based on the type of infection. Family and household testing may not fully apply to syphilis testing. For more information, refer to Chapter 5 in the WHO (2024) *Consolidated guidelines on differentiated HIV testing services (25)*, the WHO (2024) *STI guidelines (48)* and the WHO (2024) *Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection (32)*. Table 4.5 presents relevant WHO guidelines on network-based testing.

4.6.3 Self-testing

Self-testing is recommended as an additional testing modality for HIV and syphilis. (There is as yet no self-test for syphilis or HBV). Self-testing can take place in homes or other private settings or in health care facilities and is recommended for use for HIV PrEP initiation, continuation and re-initiation *(25)*. Service delivery models include web- and app-based delivery methods, distribution from facilities, distribution from pharmacies and vending machines, distribution by peers, secondary test kit distribution from clients to their partners or peers, community-based distribution and others. For more information about self-testing and self-care, see the WHO (2022) *Guideline on self-care interventions for health and well-being (50)*.

4.6.4 Integrated testing for HIV, syphilis and hepatitis B virus

Integrated testing services are the backbone of testing service delivery for triple elimination and should be considered when planning testing programmes. Integration can mean integrating testing for multiple infections within one service or integrating testing into other, existing service delivery modalities. Dual HIV/syphilis rapid diagnostic testing ("dual testing") is recommended for pregnant women at the first ANC visit and can also be used for third trimester retesting in populations at high risk as well as in key populations. Some integrated testing models may use multiplex diagnostic tools to streamline the collection and screening of biological specimens. Rapid point-of-care single and multiplex tests for HIV, syphilis and HBV are in development. Other integrated testing models may require multiple specimens but organize service delivery in ways that facilitate the uptake of multiple tests in the same clinic visit.

Table 4.5. WHO guidelines on network-based testing

Recommendation	Guideline document
HIV	
Voluntary assisted partner notification services should be offered as part of a comprehensive package of testing and care offered to people with HIV.	WHO (2020). Consolidated guidelines on HIV testing services, 2019 *(47)*.
Couples and partner testing services are recommended in antenatal care settings, particularly high HIV-burden settings, facilitating interventions including prevention in serodiscordant couples in all settings *(strong recommendation, very low-quality evidence).*	WHO (2020). Consolidated guidelines on HIV testing services, 2019 *(47)*.
In all settings biological children of a parent with HIV and orphaned children should be routinely offered HIV testing services.	WHO (2020). Consolidated guidelines on HIV testing services, 2019 *(47)*.
Social network testing approaches may be offered as an additional HIV testing approach as part of a comprehensive package of care and prevention.	WHO (2020). Consolidated guidelines on HIV testing services, 2019 *(47)*.
Syphilis	
WHO recommends STI partner services to be offered to people with STIs as a range of options based on their needs and preferences within a voluntary comprehensive package of STI testing, care and prevention.	WHO (2024). Updated recommendations for the treatment of Neisseria gonorrhoeae, Chlamydia trachomatis, and Treponema pallidum (syphilis) and new recommendations on syphilis testing and partner services *(48)*.
Hepatitis B	
In all settings it is recommended that HBsAg serological testing and linkage to care and treatment services be offered to sexual partners, children and other family members and close household contacts of those with HBV infection.	WHO (2017). WHO guidelines on hepatitis B and C testing *(49)*.

Part 5

Cross-cutting implementation considerations

Successful implementation and sustained impact of the four-pillars approach to triple elimination requires also attending to cross-cutting considerations and enablers. Cross-cutting implementation considerations go beyond the population-specific pillars for triple elimination efforts, encompassing the broader context in which implementation can be comprehensive and at a scale adequate to achieve and maintain elimination targets.

Implementation considerations comprise:

1. health system strengthening to better provide effective person-centred care, including ensuring that health systems are well financed, that the health workforce is sufficient and capacitated to deliver triple elimination efforts and that there is sufficient diagnostic capacity and regulatory frameworks to deliver key services;
2. strategic information gathering and analysis;
3. leadership, community engagement, partnerships, cross-programmatic coordination, and a commitment to human rights and gender equality; and
4. identifying and addressing barriers to triple EMTCT of HIV, syphilis and HBV at the individual, community, health service, policy and societal levels.

These considerations should complement top-level planning for integration of all components of triple elimination. Below we define each of these considerations and recommend activities to ensure their realization.

5.1 Health system strengthening

Health system strengthening is essential for delivering triple elimination efforts on an adequate scale to achieve and maintain elimination targets. Health systems strengthening seeks to provide effective person-centred care. In addition, the health system should be capable of expanding coverage, improving quality and enhancing access, follow-up, continuity of care, service integration and linkages. This involves laboratory capacity, diagnostic integration of HIV, syphilis and HBV testing, laboratory systems, human resources, procurement, data management and quality assurance. Strengthening the private and other nongovernmental health sectors must be addressed. Health systems also need the capacity to implement innovative service delivery models, including differentiated service delivery.

Health system strengthening requires health systems to be well-financed, with a health workforce that is competent and capacitated and sufficient diagnostic capacity and regulatory frameworks to support diagnostic roll-out in country.

Health systems also need the capacity to implement innovative service delivery models, including differentiated service delivery.

5.1.1 Sufficient financing for triple elimination efforts

Implementation efforts will be successful only if adequately resourced. A good health financing system ensures that there are adequate funds to assure all intended service users access to these services and protection from financial catastrophe or impoverishment caused by medical expenses. It details levels of resource allocation required to meet national needs, informing procurement decisions for infrastructure and health care logistics including consumables and other supplies and laying out the rationale for investment in services in terms of health impact and cost effectiveness. In addition, boxes 5.1, 5.2, 5.3 and 5.4 in this chapter provide recommendations proposed for consideration by countries from the technical working group and steering committee discussions.

5.1.2 A competent and capacitated workforce

A well-performing health workforce is one that is competent and that works in ways that are responsive, fair and efficient to achieve the best health outcomes possible given available resources and circumstances. Such a workforce requires sufficient training and mentoring. This should include specific clinical training on testing and treatment, as well as

Box 5.1. Recommendations on health system strengthening

Financing

- Develop robust investment cases for triple elimination efforts/models to mobilize domestic and international funding.
- Conduct a comprehensive analysis to determine the financial resources needed for triple elimination efforts.
- Explore innovative financing mechanisms, such as public-private partnerships, to mobilize additional resources.
- Develop and implement a transparent and accountable budgeting process for triple elimination programmes.
- Regularly review and adjust funding allocations based on evolving needs and priorities.

Workforce capacitation

- Provide ongoing training and mentorship programs using integrated modules covering all three infections to enhance health workers' skills and knowledge in delivering triple elimination services.
- Incorporate gender and human rights training into the training curriculum for health professionals.
- Implement strategies to reduce stigma and discrimination in health care settings.
- Ensure the supervision to health workers to improve service delivery and patient care.

Logistics and supply chain management

- Integrate procurement and supply chain management systems for HIV, syphilis, and HBV testing and treatment into existing systems, to streamline processes, and improve efficiency.
- Prioritize procurement and supply management of benzathine penicillin as the only recommended treatment to prevent congenital syphilis.
- Establish a national reference laboratory system to provide high-quality services and support to lower-level laboratories.
- Ensure that tests are available at the most appropriate levels of service and that high-quality testing is assured, regardless of the level.
- Improve availability of new treatment for preventing congenital syphilis and point of care technology including for detection of paediatric HIV infection.

Quality Assurance

- Establish a national reference laboratory and network system to provide high-quality services, quality-oversight and support to lower level laboratories.
- Ensure that tests are available at the most appropriate levels of service and that high-quality testing is assured, regardless of the level.

Regulatory

- Strengthen regulatory pathways to ensure timely access to essential medical products, vaccines and technologies of assured quality.

prevention interventions for HIV, syphilis and HBV. Further, health workers will be better able to engage women, infants and their partners in triple elimination services when they are trained in gender and human rights and committed to consistently applying human rights principles, including confidentiality, informed consent, autonomy and appropriate disclosure, and to reducing stigma and discrimination in health care settings *(51)*.

5.1.3 Laboratory logistics and supply chain management

Laboratory systems can be strengthened through the integration of HIV, syphilis and HBV diagnostics procurement and supply chain mechanisms that streamline processes. A national reference laboratory system that ensures high-quality services and provides support to lower-level laboratories is critical

for implementation of the elimination strategy. In addition to routine antenatal laboratory services, essential laboratory elements include syphilis, HIV and HBV testing for adults and infants, CD4 and VL testing, testing for other infections that might eventually be included in the elimination programme, such as hepatitis C and HTLV-1, and internal and external quality assurance. The objective is to ensure reliable availability of quality laboratory services and avoid stock-outs of commodities.

A national reference laboratory system that ensures high-quality services and supports lower-level laboratories is critical.

Beyond the management of logistics and supply chain for the laboratory, triple elimination implementation also depends on reliable procurement and supply management of medicines and medical products for managing HIV, syphilis and HBV. Examples of common challenges to be addressed, are unreliable supply and shortages of antiretroviral and antiviral medicines and benzathine penicillin, as described by WHO's Global Sexually Transmitted Infections Programme *(52)*.

5.1.4 Regulatory pathways

Strengthening regulatory pathways is essential to ensure timely, equitable access to quality, safe, effective, and cost-efficient medical products, vaccines, and technologies. The World Health Organization (WHO) uses the Global Benchmarking Tool (GBT), as mandated by WHA Resolution 67.20, to objectively assess regulatory systems, identify strengths and gaps, and guide improvements through institutional development plans while monitoring progress. Additionally, WHO prequalification expedites product approvals in view of varying regulatory practices worldwide.

5.2 Strategic information gathering and analysis

A well-functioning health information system ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health system performance and health status. Integrated surveillance systems for HIV, syphilis and HBV are crucial for monitoring key triple elimination indicators and informing planning, implementation, resource mobilization and allocation. In addition to the critical importance of reliable evidence to inform strategic planning and ongoing performance improvement, the availability of reliable national data is necessary for assessing and validating achievement of the elimination targets.

Monitoring of EMTCT services needs to follow the cascade across multiple service delivery points, and over a prolonged period, for both mother and child, from primary prevention and access to comprehensive SRH services to diagnosis, treatment and retention of mothers and infants in care *(53)*. Monitoring frameworks for HIV *(53)*, STIs *(54)* and viral hepatitis *(55)* all have core indicators that provide an overview of national response. Both impact and process/outcome indicators allow for following prevention and care cascades across multiple service delivery points and over prolonged periods. The backbone for monitoring HIV syphilis and HBV in pregnant and breastfeeding women is the ANC and postnatal care platform. In addition, case investigation and case finding are critical to improve programmes, and information can be used to build the cascade of care for pregnant women and exposed infants.

Countries must have a functional monitoring and surveillance system, one that can accurately assess intervention coverage (maternal and infant testing, treatment of all those eligible, determination of infant outcomes for infants exposed to HIV and syphilis, and infant HBV vaccination) and detection of cases of MTCT of HIV, syphilis and HBV in a timely manner. It should be able to capture service delivery and outcome data as well as community-level data, where available, from both the public and non-public health sectors and minimize error. WHO guidelines on person-centred HIV strategic information include recommendations on strengthening national surveillance systems, including use of a minimum dataset for HIV, STIs and viral hepatitis *(53)*. Data quality standards should build on existing protocols and tools used in countries and regions for EMTCT within the MNCH platform and those used to strengthen health reporting systems and improve overall data quality. WHO guidance is available for impact measurement of EMTCT on all three diseases *(20)*.

The backbone for monitoring HIV, syphilis and hepatitis B in pregnant and breastfeeding women is the ANC and postnatal care platform.

Indicators to monitor successful testing programmes are outlined in the 2022 WHO policy brief on integrating related infections into HIV surveillance systems *(56)* and the associated publication, *Consolidated guidelines on person-centred HIV strategic information: strengthening routine data for impact (53)*.

Box 5.2. Recommendations on strategic information

- Functional monitoring and surveillance system. Establish a functional monitoring and surveillance system that can capture service delivery and outcome data from both public and non-public health sectors and minimize sources of error. This should be in close association with the strengthening of national vital registration systems.
- Integrated surveillance. Develop and monitor key triple elimination indicators (for example, policy, service integration, testing, diagnosis, treatment, care and impact indicators) through integrated surveillance of HIV, syphilis and HBV in ANC and for other target populations (including mother-infant pairs and male partners) *(54)*. Invest in digital health solutions to enhance data collection and analysis, including for community data where available.
- Data quality improvement. Review and enhance data collection systems to ensure high-quality, person-centred and ethically managed data. Address underreporting of paediatric HIV and HBV infections and congenital syphilis. Ensure that the monitoring and surveillance system can accurately assess intervention coverage and identify most cases of mother-to-child transmission in a timely manner.
- Standardization and privacy. Apply standardized case definitions and implement standards for data privacy and confidentiality. Ensure data availability at national and subnational levels, with disaggregation for relevant subpopulations (for example, adolescents, migrants, indigenous populations) *(20)*.
- Implementation research for accelerating triple elimination eg to support integration and scale up.

5.3 Leadership, community engagement, partnerships and cross-programmatic coordination

The leadership necessary to drive the triple elimination agenda includes political support and ownership, national/subnational policy frameworks, oversight, coalition-building, regulation and accountability. It also includes development of supportive health sector policies, their harmonization and alignment (Box 5.3).

Meaningful engagement and involvement of communities affected by HIV, syphilis and HBV, particularly women and girls, is essential. Clear monitoring and accountability processes for the level of engagement, using existing tools, can help to ensure sustainable community outcomes. Mechanisms such as community meetings, focus groups, participatory workshops and client feedback foster meaningful dialogue and collaboration between communities and health programmes.

Partnerships and cross-programmatic coordination are fundamental for efficient and effective operational planning, evaluation, resource mobilization and financing of triple elimination as well as for communication, service delivery and advocacy. National focal points or multidisciplinary coordination teams should bring together representatives of critical programmatic areas including MNCH, HIV, STI and viral hepatitis prevention, treatment and care, adolescent health, and surveillance and monitoring. The main functions of such a team would be facilitation of the development, periodic review and updating of the national plan; oversight for its implementation; and coordination of internal and external reporting.

5.4 Addressing barriers to triple EMTCT

A large proportion of new infections result from lack of access to interventions for triple EMTCT. A wide-ranging variety of barrier, many of them context-specific, are responsible, working at the individual, community, societal, health services, policy and programme management levels. These must be investigated and addressed in the planning and prioritization of the response. Identification of barriers is a critical part of the situational analysis. Examples include lack of political leadership and commitment, gender inequality, gender-based violence, criminalization, stigma and discrimination and inequitable or uneven access to resources, health services and health commodities for certain groups, including vulnerable and key populations and adolescent girls and young women.

Addressing these barriers needs to be contextual, recognizing that globally, nationally and sub

Box 5.3. Recommendations on leadership

Leadership and governance

- Establish strong leadership and governance structures specific to the triple elimination agenda.
- Ensure leadership commitment at all levels, from national to local, to move the agenda forward.
- Integrate the triple elimination agenda into existing national health strategies and structures.

Capacity building

- Provide leadership training and resources to key stakeholders to enhance their understanding of the triple elimination agenda and their ability to lead and manage related programmes.
- Empower leaders to engage with communities, partners and stakeholders.

Partnerships and networking

- Foster partnerships with relevant stakeholders, including governments, nongovernmental organizations and community-based organizations, to strengthen leadership and coordination.
- Engage with international partners and organizations to leverage expertise and resources.
- Facilitate cross-programmatic coordination.
- Coordinate with other health programmes (for example, HIV, SRH, MNCH, STI, viral hepatitis and EPI) to align efforts, share resources and avoid duplication of services.
- Establish mechanisms for collaboration and information sharing among different programmes to improve operational planning, resource mobilization and service delivery.

Advocacy and communication

- Advocate increased political support and further resources to advance the triple elimination agenda.
- Develop and implement communication strategies (advocacy, social mobilization, and behaviour change communication) to raise awareness, engage and support individuals, communities and health professionals to address the agenda *(35)*.

Sustainability

- Develop sustainable leadership and financing strategies that ensure continuity and long-term commitment to the triple elimination agenda.
- Plan leadership succession to maintain momentum and commitment over time. In addition, to accelerate progress, tabulate each of the key stakeholders involved in triple elimination response alongside their key actions.

nationally, programming across the three diseases is at different stages. Syphilis programmes are often neglected, and HBV programmes are often at a much more nascent stage compared with HIV programmes and not well integrated with other programmes. There is limited advocacy for prioritizing syphilis and HBV or for establishing or strengthening existing health programmes to incorporate a response to these two conditions.

Existing comprehensive syphilis and HBV programmes are often less advanced or supported, even though some aspects of prevention, identification, treatment and care (including immunization, reproductive health and MNCH programmes) have existed for many years. In addition, these programmes may lack the needed resources, as many ministries of health are not able to provide similar levels of resources to advance the response to syphilis and HBV as they have for HIV. Typical examples are the multiple barriers to treatment of syphilis with benzathine penicillin and challenges with capacity for management of HBV infection at PHC levels. A specific case is the timely hepatitis birth dose, whose implementation is especially challenging for weak national health systems and for babies born outside of health facilities.

SRH services and systems have often left men behind or on the sidelines of key HIV and related health services. As a result, men globally are less likely than women to know their HIV status, be on antiretroviral treatment and achieve viral suppression, and they are at increased risk of treatment interruption, often repeatedly, and have long durations out of care *(45, 57)*.

People's sexual and reproductive health and rights are often influenced by their partner's, communities' and social norms. Many studies have shown the negative effects of men's lack of involvement in SRH services including MNCH, and there is now clear evidence indicating the many benefits that may accrue to the overall reproductive health of families when men are involved and engaged positively and meaningfully. WHO has developed a framework that presents evidence-based strategies to engage men and models of good practices that apply these strategies *(45, 57)*.

The concepts of "no one left behind" and health equity are central to the triple elimination initiative and the broader WHO mission. Implementation of triple elimination must be carried out in a manner that meets international human rights standards, promotes gender equality and ensures meaningful community engagement. The community refers to women who currently use or may in the future use these services, including women living with HIV or HBV or affected by syphilis and those from key and marginalized populations. In all cases crucial principles of planning and implementation are (i) do no harm, (ii) meaningful inclusion and (iii) transparency and equality.

Local situation analyses can help identify specific barriers within each context. Addressing barriers will require a multisectoral approach that engages communities, promotes human rights and gender equality, delivers person-centred care and advocates policy and political leadership (Box 5.4). Addressing these barriers can create a more equitable and inclusive health system that ensures no one is left behind on the journey towards triple EMTCT of HIV, syphilis and HBV.

Box 5.4. Recommendations on addressing barriers

- **Advocacy for nascent programmes.** Provide adequate funding, advocacy and ongoing support for countries and programmes that are in nascent stages of triple elimination planning, with particular emphasis on supporting and funding HBV and syphilis elimination programmes where these are not as developed as HIV programming.
- **Human rights and gender equality.** Ensure that laws, policies and programmes are developed and implemented with a human rights-based approach, engagement of the community and promotion of gender equality. This includes addressing underlying societal norms and practices that perpetuate discrimination and inequality, particularly for women and girls.
- **Person-centred, integrated care.** Provide care that is respectful of and responsive to individual preferences, needs and values, ensuring that the health system is organized around the health needs of people rather than diseases. This includes integrating services for HIV, syphilis and HBV into existing health systems to provide holistic care and providing services outside of facilities, such as community-based HBV birth dose.
- **Health equity.** Address inequities in access to health services and commodities by implementing targeted interventions for vulnerable populations. This includes ensuring that all individuals, regardless of their background or circumstances, have access to the same level of care and treatment.
- **Stigma and discrimination.** Implement strategies to reduce stigma and discrimination related to HIV, syphilis and HBV and intersecting stigma related to key and marginalized populations, including particularly adolescents. These strategies include raising awareness, providing education and promoting understanding and acceptance within communities as well as removing discriminatory policies.
- **Male involvement.** Develop and implement strategies to involve and engage men as part of a comprehensive, integrated, and holistic approach that respects and prioritizes the autonomy and safety of women. Targeted efforts should focus on engaging men to improve their health outcomes and contribute to reducing new infections among men, women, and girls.

Part 6

Country case examples

Some countries in the African Region have taken the lead in integration to deliver triple elimination services in maternal neonatal and child health settings. This concept is fairly new and driven by health care policy makers and provider recognition of the need for person-centered services that focus on the mother-infant pair. As this approach of integration is more recent, there is limited scientific evidence of benefit.

6.1 Kenya: integrating triple elimination services in MNCH settings

Triple elimination performance (2022)

Final HIV MTCT rate 8,6 %

HIV testing ANC 77%

ANC Syphlis testing 82%

Hep B3 infant vaccination 85% (2023); 89.2% (2022 KDHS)

Triple elimination targets (2027)

HIV EMTCT of <5%

New paediatric and congenital syphilis case rates of ≤750/100 000 live births (bronze tier) by 2027

Policy/governance. Kenya's journey towards triple elimination began with the designation of a focal team in 2018 leading to the development of a framework for the EMTCT of HIV, syphilis and HBV in 2022–2023 and establishment of a dedicated Triple Elimination Technical Working Group in 2024. Triple elimination oversight and operationalization are decentralized to county and subcounty levels to support capacity-building and supportive supervision. Representatives of people living with HIV are actively involved in community-level activities such as advocacy, community sensitization and demand creation, also including participation in the development and validation of their triple elimination framework 2022–2027.

Essential EMTCT Services for MNCH clients, partners and children. Routine rapid testing for HIV/syphilis and lab testing for HBV (offered routinely in private facilities and in some public facilities) is provided to all ANC clients in MNCH including repeat HIV testing aligned with WHO guidance. While HIV and syphilis treatment is initiated in MNCH, treatment for HBV is only offered in comprehensive care centres. Partner testing within MNCH, HIV self-testing, community outreach HIV testing and STI screening services are also provided to partners of MNCH clients as a routine standard of care. EID is conducted starting at six weeks and syphilis and HBV testing for exposed babies is managed on a case-by-case basis. Birth testing for HIV was recently added in the 2022 national guidelines on prevention and treatment. Universal HBV birth dose is not yet integrated into Kenyan EMTCT guidance. Follow-up and care of HIV-infected infants is done in MNCH settings through coordinated mother-baby pair visits (mother and baby are seen on the same appointment visit). Best practices to support retention and client education for triple elimination including engagement of mentor mothers as well as peer support groups, for example, "binti to binti"[1] support groups targeting young mothers have been introduced. Referrals to other service delivery points, for example, specialized services, are documented in referral notes and clients are accompanied physically by mentor mothers as needed to support continuity of care. A mother–baby booklet is used to capture data on maternal testing of HIV, syphilis and HBV. An MNCH electronic medical records module is used to document MNCH services provided until discharge of the mother–baby pair for HIV treatment, however, the tools must integrate syphilis and HBV.

[1] "Sister to Sister" in Swahili is a peer-to-peer learning group designed to ensure that young mothers embrace good nutrition practices in their communities for the long haul ."Binti to Binti" in Kenya helps mothers ensure the health of their children. Kenya | ReliefWeb

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At Migori county referral hospital, various SRH services are offered five days a week, including family planning and VMMC. PEP, PrEP and STI services including HBV testing and treatment are available throughout the week, and ART is also available on Saturday. People living with HIV attending the HIV services are provided with family planning guidance and assessed for pregnancy intention. Clients desiring contraception are offered short- or long-acting methods on site. “Operation Triple Zero” is an important initiative that provides peer support and sharing of best practices for adhering to treatment among adolescents living with HIV. The Binti Shapavu initiative also links young women to empowerment programmes, condoms, male partner-friendly services and partner VMMC. Community health promoters and mentor mothers attached to MCH and prevention of mother-to-child transmission (PMTCT) clinics offer services using community outreach.

Migori Hospital, Kenya

SRH linkages and integration. Emergency, short- and long-term contraceptive methods are offered to clients attending health facilities where family planning delivery points have integrated HIV and STI services. Mentor mothers, peer workers and professional staff provide adherence support, counselling, education (for example, daily group health talks) and support for healthy living.

Need for health system strengthening to provide effective person-centred care. While point-of-care EID and viral load testing have been introduced, the impact on turnaround times is limited due to commodity shortages and other challenges. There is variability in turnaround time for EID depending on the distance from referral laboratories for specimen processing (for example, 24 hours to 7–14 days). Financing has been a major challenge resulting in limited attention to HBV. Kenya has facilitated integrated testing of HIV/syphilis through procurement of HIV/syphilis dual tests to support case identification and linkage to relevant services. Limitations in guidance to integrate household HBV vaccination has limited progress. Furthermore, supply chain management gaps resulting in frequent commodity shortages and stock-outs remain a limiting factor. Staff shortages, high staff turnover, limited task shifting and triple elimination training gaps have been a significant barrier to effective integration of triple elimination efforts. While HIV services are free of charge at the Thika level 5 government hospital, there are service charges for ANC consultations plus rapid and lab tests at KES 1000 (US$ 7.63), family planning at KES 500 (US$ 3.82) for a consultation, KES 20 (US$ 0.15) for oral contraceptives, KES 50 (US$ .38) for implants and KES 100 (US$ .76) for an intrauterine contraceptive device. An HBV vaccine costs KES 500 (US$ 3.82), while a post-natal consultation costs KES 200 (US$ 1.52). However, there is a public funded health scheme “Linda mama” to ensure that pregnant women and infants have access to quality and affordable health services contributing to the country’s progress towards universal health coverage.

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Mandera county referral hospital, located in the Mandera triangle where Ethiopia, Kenya and Somalia meet, is a region characterized by nomadic pastoralists and where the terrain can limit access health services. Triple elimination services are provided free of charge and under one roof to cater to the nomadic lifestyle, including multi-month dispensing (up to six months’ supply for clients established on ART) and fast-track appointments. ANC services offered during community outreach include HIV/syphilis dual testing, blood group testing and malaria screening. Health education and referrals to the county hospital for testing are also offered. The hospital targets remote areas for outreach, mainly at water points, and complements this by conducting mentor-mother home visits and telephonic and physical tracking of lost mother–baby pairs.

Mandera Hospital, Kenya

6.2 Namibia: integrating triple elimination services in MNCH settings

Triple elimination performance (2022)

Final HIV MTCT rate 4.14%

HIV testing ANC 97%

Syphilis testing coverage 97%

Hep B birth dose coverage 94%

Hep B3 infant vaccination 84%

MTCT case rate per 100 000—520

Triple elimination targets

HIV EMTCT of <2%

New paediatric and congenital syphilis case rates of ≤250/100 000 by 2028

Policy/governance. Namibia expanded its 2020 dual HIV/syphilis elimination strategy to incorporate HBV into a triple elimination strategy in 2023. A situational analysis and stakeholder consultation informed the multistakeholder-funded 2020–2024 triple elimination roadmap and implementation plan. Operationalization of the triple elimination strategy has included development and implementation of an operational plan, guideline updates and triple elimination service integration using existing integrated service delivery models and data systems to include syphilis and HBV data. Triple elimination oversight and accountability has been integrated in management structures across all levels of the health system (from national to community) and integrated into the functions of other programmes such as STI programmes, EPI, community-based health care programmes and the health information system. Representatives of people living with HIV including women living with HIV are engaged in national prevalidation assessments and development of national EMTCT validation reports to be submitted to WHO regional validation committees

Essential EMTCT services for MNCH clients, partners and children. Namibia has adopted the WHO-recommended standard eight ANC visits and triple elimination services are provided under one roof. Testing is provided as part of routine MNCH services at ANC, delivery, postnatal care settings and community levels including HIV rapid testing, use of HIV self-test kits for three-monthly maternal retesting and partner testing in some sites. Blood samples are drawn for lab-based syphilis (RPR and confirmatory TPHA test for positive clients) and HBV testing for pregnant and breastfeeding women. Clients and their partners are linked to treatment and prevention services within MNCH settings with telephonic and house to house follow up by community health workers for defaulters. Prevention services include maternal PrEP and condoms, and STI services are offered for both partners. Partners of clients diagnosed with syphilis are treated without testing and in some cases are referred elsewhere for treatment. As part of a comprehensive package of care for triple elimination services, Namibia has introduced HIV birth testing and enhanced prophylaxis (zidovudine (AZT) plus nevirapine (NVP)) for high-risk infants, as well as HBV birth vaccination within the MNCH settings. The high rates of facility delivery is key to the achievement of Hep B birth dose coverage 94%. The Ministry of Health has implemented an electronic patient-level monitoring system based on an open medical record system and an open data kit which include data on syphilis and HBV and support audits of all HIV-infected infants. An electronic dispensing tool is used to update patient ART initiation and refills as well as adherence.

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> Katutura Health Centre in Windhoek Khomas offers point-of-care EID, VL testing and CD4 count. EID, VL and CD4 are collected at the clinic but not processed at clinic (near point of care). Services such as HIV EID and rapid testing have been task-shifted to lay workers, who are, community health care workers trained to capture HIV data including tracking of HIV-exposed infants. Partner testing is offered including client distributed HIV self-test kits for partners who are unable to reach the health facility. While there is no dedicated paediatric ART clinic, families can be seen together as part of differentiated patient-centred care.
>
> **Katutura Health Centre, Namibia**

SRH linkages and integration. Family planning education as well as short- and long-acting contraceptives are available in MNCH settings with some smaller facilities reporting referral for long-acting methods. Dedicated STI clinics as well as integrated STI services are available for clients and their partners. In most facilities, family planning is available within MNCH consultation rooms and are dispensed by nursing staff. This includes for example, condoms, oral contraceptives and injectables (medroxyprogesterone (Petogen)). Cervical cancer screening is also performed at most MNCH settings. Community health workers have been trained to provide health education including family planning and alcohol abuse amongst other services towards minimizing infection transmission.

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> At Poly Clinic Grootfontein during the initial ANC visit, clients receive registration and triage during reception. Clients are escorted to an area for assessment of vital signs and nutritional status. They are then taken to a separate consultation room where they receive HIV testing services by a health assistant and then a consultation room for HBV and syphilis testing and ANC services provided by a nurse. Nurses who provide services have been trained on PMTCT, ANC and nurse-initiated management of ART. HIV PrEP, ART and syphilis treatment are provided onsite; however, HBV-positive clients are referred to the hospital for further management. HIV positive pregnant and breastfeeding clients have three-monthly VL monitoring and can access client-centred models of care such as multi-month dispensing and community adherence groups. In addition, maternal clients with high VL receive home visits through the support of a community partner. Post delivery, clients are reviewed at three days, seven days and six weeks postpartum and linked to appropriate family planning options. Mother and baby appointments are aligned and a PMTCT electronic monitoring and evaluation system called Ptracker is used for longitudinal follow up and documentation of final mother–baby pair outcomes for women living with HIV. MCH records are reviewed at least twice a month, and community health workers proactively track clients who miss appointments. Similarly, clients on syphilis treatment who miss appointments for example, for weekly Benzathine penicillin are also tracked to ensure completion of their treatment course.
>
> **Poly Clinic Grootfontein, Namibia**

Health system strengthening to better provide effective person-centred care. New testing technologies, for example, GeneXpert and Panther platforms are being adopted to ensure decentralization of EID and VL testing and plans are underway to introduce an alert system to shorten turnaround time of test results. Outreach health services include PMTCT services, mother–baby follow up and linkage to care between facilities and community-based settings. To address access barriers, innovations such as Pelebox, an automatic teller machine designed to dispense chronic medicines, including antiretrovirals) during after-hours or weekends have been introduced at pilot sites in 2023 as a way to mitigate treatment interruption. Funding, human resource shortages and socioeconomic determinants remain the main barriers to provision and sustainability of quality triple elimination services in Namibia.

Part 7

Considerations for integration of interventions for elimination of MTCT

This chapter provides guidance and detailed information for country-level action to integrate efforts for elimination of MTCT of HIV, HBV, syphilis and other new and emerging conditions that affect the health of mothers and their children.

7.1 Hepatitis B: updates and considerations for integration of HBV PMTCT into triple elimination

7.1.1 Background

WHO has received requests from countries and regions for guidance on how to implement an integrated ANC pathway that includes PMTCT of HBV and monitoring progress toward validation of elimination. This integration is a step towards the broader goal of triple elimination of HIV, hepatitis B and syphilis. The global burden of chronic hepatitis B (CHB) is mostly due to mother-to-child transmission (MTCT) or early childhood transmission from infected adults or children. Among children infected at birth, 90% develop chronic infections, which can lead to premature death from liver cancer and cirrhosis in early adulthood. This section is highlighted here to emphasize PMTCT of hepatitis B.

WHO recommends universal vaccination of infants, with at least 3 doses of the hepatitis B vaccines (HepB3), and timely hepatitis B Birth dose (Hep B -BD) vaccination as soon as possible after birth, ideally within 24 hours *(7)*. The GHSS on viral hepatitis sets 2030 targets of ≥90% hepatitis B infant vaccination coverage and ≥90% hepatitis B birth-dose vaccination coverage. Ensuring high coverage of a timely hepatitis B birth dose and completion of the vaccine series are crucial for reducing MTCT and early childhood transmission, providing a foundation for further interventions.

Additionally, there remains a residual risk of MTCT among highly viraemic (≥200 000 IU/mL) pregnant women even when a timely birth dose is administered. This situation highlights the rationale for the use of antiviral prophylaxis for pregnant women with HBV infection as an additional measure to prevent MTCT of HBV.

Since 2020 WHO has recommended universal HBsAg screening of pregnant women, alongside HIV and syphilis testing.

Since 2020 WHO recommended universal HBsAg screening of pregnant women, alongside HIV and syphilis testing, as well as the use of antiviral prophylaxis to prevent HBV MTCT in those with high HBV DNA levels (≥200 000 IU/mL) or positive HBeAg test results *(3, 10)*. For PMTCT of HBV, the programme coverage targets for screening at least 90% of pregnant women and providing antiviral prophylaxis to at least 90% of those eligible, especially in countries using targeted timely hepatitis birth dose. This key recommendation has not been effectively implemented due to the considerable challenges, particularly in sub-Saharan Africa, in accessing HBV DNA and/or HBeAg serology testing to determine eligibility for antiviral prophylaxis. WHO's 2024 HBV guidelines offer context-specific approaches to maternal HBV prophylaxis and treatment *(32)*.

7.1.2 Implementation arrangements for PMTCT of HBV in the framework of triple elimination

As shown in Chapter 2, a strategic planning approach to triple elimination highlights the needed process for HBV PMTCT, including its integration with HIV and syphilis PMTCT. The process consists of four major steps:

(1) developing a consultative mechanism for strategic planning
(2) situational analysis of progress and remaining gaps in EMTCT
(3) planning and prioritizing
(4) implementing, monitoring and evaluating for EMTCT.

It is important that this process be cyclical (utilizing the established consultative mechanism in Step 1) rather than one-off. Box 7.1 presents an adaptation of the HIV missed opportunity analysis in Chapter 2, here applied to HBV PMTCT.

Box 7.1. Illustrative example of a missed opportunity analysis for hepatitis B PMTCT

Missed opportunities for hepatitis PMTCT	Intervention domains
Mothers infected during pregnancy or breastfeeding A B E	A Hepatitis B prevention services
Mother did not receive HBV testing during pregnancy B E F	B Timely access to HBV testing
Mother did not receive anti-viral prophylaxis where needed B C E F	C Timely antiviral prophylaxis or treatment
Mother started antiviral prophylaxis/treatment during pregnancy B C D E F	D Programme retention and adherence support
All mothers (irrespective of HBV status) received information about HBV (including neonatal prophylaxis) B C D E	E Services for all infants, including immunization services for universal hepatitis B birth dose (within 24 hours of birth) as well as completion of childhood HBV vaccination series
Reporting of data on maternal–child intervention B C D E F	F Strategic information, reporting, monitoring and evaluation of mother–baby pair

Source: Adapted for hepatitis B from UNICEF 2020 *(21)*.

Assessment of programme maturity

National programmes can use the information generated from a situational analysis to identify their position in and track their progress along a maturity model. The maturity model for triple EMTCT (including HBV EMTCT), as described in the landscape assessment (Fig. 2.1 and Web Annex B) allows a country to assess progress in establishing policies and implementing programmes.

Countries are expected to move through the maturity model towards elimination and, ultimately, validation of triple elimination efforts. This model can also be adopted to assess country progress in HBV PMTCT. Chapter 2 presents details.

The triple elimination framework applied to hepatitis B

Underlying WHO's approach to triple elimination, the framework consists of four pillars, each of which focuses on a distinct population across the reproductive life course and consists of a minimum package of essential services for HIV, hepatitis B and STIs (see Chapter 3 and Fig. 3.1). For hepatitis B, Pillar 1, Primary prevention of vertical transmission, and Pillar 2, SRH linkages and integration, the essential services are context-specific, well-designed and evidence-based combination prevention programmes that reflect local epidemiology. Core services under Pillar 3, Essential maternal EMTCT services, include a comprehensive package of interventions designed for PMTCT of hepatitis B. This package comprises HBsAg testing, treatment or prophylaxis for mothers who test positive and administration of the hepatitis B birth dose to the infant within 24 hours of birth. Pillar 4, Infant, child and partner services, expands on these efforts by providing follow-up care for exposed infants, testing of partners and household members, linking those who test positive to care and vaccinating non-immune partners and close contacts.

Successful implementation of these services requires the development of multisectoral policies; integrated care pathways and cross-programmatic efficiencies that leverage and strengthen existing platforms for HIV, syphilis and HBV prevention, testing, treatment and care as well as reproductive, maternal, neonatal, child and adolescent health care; robust procurement systems; comprehensive data management; and quality assurance measures to support a holistic approach to elimination.

WHO guidelines provide specific guidance for maternal prophylaxis and care. Their implementation is described below (Fig. 7.1).

Universal immunization of infants with hepatitis B vaccine, including a timely birth dose, is the foundation of hepatitis B PMTCT programmes.

Universal immunization of infants with hepatitis B vaccine, including a timely birth dose, is the foundation of hepatitis B PMTCT programmes (including within the context of triple elimination). Where coverage of the timely birth dose and/or routine childhood immunization remains low, increasing coverage should be the priority in both facility and non-facility births.

Strategies for incorporating and implementing HBV testing in ANC

WHO recommends HBsAg testing for all pregnant women. This is often done as early as possible during pregnancy and in tandem with HIV and syphilis testing *(25)*. Testing of pregnant women needs to take place under circumstances that prevent stigma and discrimination. Integral parts of these services are providing pre-test information and post-test counselling and education on measures to reduce the risk of transmitting HBV to the infant (including the need for hepatitis B birth dose within 24 hours of delivery), encouraging partner testing and ensuring linkage to care of HBsAg-positive women. Among those who are HBsAg negative at ANC, target groups for catch-up vaccination and other prevention strategies include younger adolescents, household and sexual contacts of people who are HBsAg-positive and others at risk of acquiring HBV infection.

Access to quality-assured HBsAg rapid test kits can optimize service delivery and facilitate efficient inclusion of HB PMTCT in the triple elimination effort. Factors that impede scale-up of HBV antenatal testing include policy, structural, health systems and patient barriers. Chapter 3 provides more guidance on testing.

Strategy for prophylaxis for PMTCT of HBV – antiviral regimen

For those who test positive for HBsAg, countries can consider either of two approaches to eligibility for antiviral HBV prophylaxis, depending on health systems capacity. In all settings antiviral prophylaxes is a important strategy to reduce the risk of MTCT of HBV infection, alongside birth-dose immunization and the full infant vaccination series.

In settings where HBV-DNA or HBeAg testing is available: In countries or settings with strong diagnostic capacity, where there is ready access to HBV DNA or HBeAg assays, WHO recommends using TDF prophylaxis for HBsAg-positive pregnant women with HBV DNA levels ≥200 000 IU/mL or a positive HBeAg test result. This is a strong recommendation, based on evidence of moderate-certainty. POC diagnostic testing and reflex HBV DNA testing for those testing positive for HBsAg may be used to optimize linkage to care and antiviral prophylaxis.

In settings where neither HBV DNA nor HBeAg testing is available. In such settings prophylaxis with TDF for all HBsAg-positive pregnant women may be considered. This WHO recommendation is conditional, with the goal of enhancing equity in settings with limited diagnostic capacity.

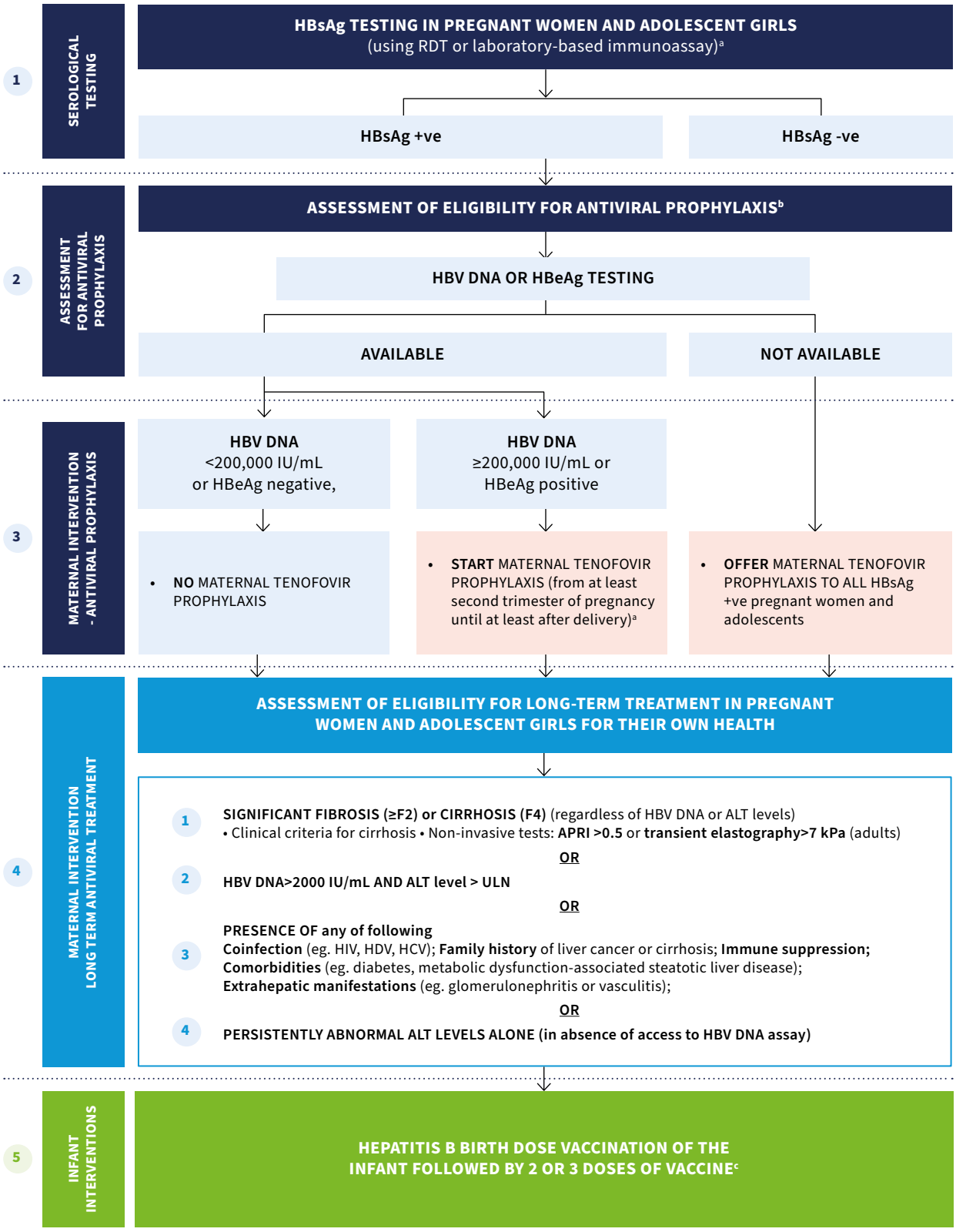
Initial assessment for antiviral prophylaxis

All HBsAg-positive pregnant women should be assessed for eligibility for antiviral prophylaxis to prevent MTCT as well as for long-term treatment for their own health. This assessment should not delay initiation of prophylaxis, however.

Evidence of liver fibrosis; co-infection with HIV, HCV or HDV; or any of the four eligibility criteria for hepatitis treatment should prompt referral to appropriate services and care (see WHO recommendations) *(32)*. Biochemical markers, including the aspartate aminotransferase-to-platelet ratio index (APRI), may not be accurate during pregnancy; re-assessment may be required after delivery. Challenges related to reduced adherence and loss to follow-up after pregnancy have been commonly reported.

Given that countries have widely different context and programme capacity, there are lessons to be learned from countries that conduct detailed maternal assessment prior to commencement of prophylaxis as well as countries that commence antiviral prophylaxis but delay detailed assessment until after maternal delivery. Fig. 7.1 presents WHO's algorithm for use of ARV prophylaxis in pregnant women with chronic HBV infection.

Fig. 7.1. Algorithm on use of antiviral prophylaxis in pregnant women with chronic hepatitis B for PMTCT and for their own health



Abbreviations: **ALT** = alanine aminotransferase, **HBsAg** = hepatitis B surface antigen, **HBeAg** = hepatitis B e antigen, **HBIG** = hepatitis B immune globulin

[a] At least once and as early as possible in the pregnancy. HBsAg testing should be undertaken as part of triple testing for HIV, syphilis and HBsAg toward triple elimination initiative.

[b] It is advised that all pregnant women and adolescent girls should be assessed first for eligibility for long-term treatment for their own health. However, this assessment should not delay the initiation of antiviral prophylaxis.

[c] Hepatitis B timely (within 24 hours) birth dose vaccination of the infant followed by 2 or 3 doses of hepatitis B vaccine should be given regardless of HBsAg status of the pregnant mother. HBIG (if available) is also offered mainly in high income settings for infants born to HBsAg positive mothers, especially with high HBV DNA.

When to start and stop antiviral HBV prophylaxis

In both universal and VL-guided approaches, prophylaxis with TDF for HBsAg pregnant women may be considered, preferably from the second trimester of pregnancy and continue at least until delivery OR completion of the infant HBV vaccination series (as guided by country policies and implementation capability). For pregnant women co-infected with HIV and HBV, it is crucial to initiate ART that includes TDF or TAF as this regimen provides anti-HBV activity and lowers the risk of HBV transmission to the infant.

What prophylaxis to use

TDF is the recommended antiviral for pregnant women from the second trimester of pregnancy. Dual therapy with TDF + lamivudine (3TC) or TDF + emtricibine (FTC) can be used where TDF monotherapy is unavailable and especially where there is ready access to the dual regimens at low cost (as components of HIV ARV or pre-exposure prophylaxis regimens) through existing ARV drug procurement. The use of tenofovir alafenamide (TAF) is reserved for those with existing, or at risk of, renal impairment or osteoporosis *(32)*.

Counselling

Before initiating antiviral therapy for prophylaxis or treatment, people with chronic hepatitis B should be counselled about indications for treatment, including likely benefits and side-effects; the need for, and willingness to commit to, prophylaxis or long-term treatment and follow-up; the importance of full adherence; and cost implications.

Monitoring and follow-up

Regardless of the criteria used for initiation of prophylaxis or treatment, everyone initiating treatment should be monitored and provided ongoing support for adherence and retention in care. Although uncommon, some women are diagnosed with advanced liver disease in pregnancy and require long-term or lifelong therapy. For long-term therapy, annual monitoring with HBV DNA, ALT and APRI score is recommended. More frequent monitoring may be required for those with more advanced liver disease.

HBsAg-positive pregnant women should be reassessed again after delivery. For women and adolescent girls of childbearing age planning additional pregnancies, TDF prophylaxis can be continued after delivery or resumed during subsequent pregnancies, according to the woman's choice. For women on prophylaxis or treatment (for maternal health), referral and linkage to appropriate care, psychosocial support and adherence counselling are required. Discontinuation of long-term therapy may be associated with potential risk of reactivation flare and so should be carefully monitored *(32)*.

Promoting the integration of HBV PMTCT within the Triple Elimination Framework

Childhood hepatitis B (HBV) infection is largely preventable through timely birth-dose vaccination, infant immunization, and antiviral prophylaxis (especially for highly viraemic mothers). In many settings, missed opportunities for hepatitis B PMTCT stem from limited awareness, a lack of test kits, out-of-pocket costs, and referrals that require pregnant women to visit external facilities for blood collection and HBsAg testing. These factors contribute to loss to follow-up. Additional barriers to HBV PMTCT and integration include weak hepatitis surveillance, poor data systems, and limited coordination.

There are several approaches to address missed opportunities and facilitate integration.

At the health system management level

- Advocate for HBV PMTCT as part of the triple elimination framework.
- Promote joint policies, plans, coordination, and funding across relevant services for integrated triple elimination.
- Establish HBV testing and treatment protocols, as well as follow-up frameworks.
- Ensure reliable procurement and supply chain systems for hepatitis B commodities.
- Standardize data collection and integrate hepatitis indicators within ANC-related surveillance systems.

At the health facility level

- Embed hepatitis B care and treatment within MNCH services and primary health care.
- Ensure access to diagnostics and test kits, and promote the use of multi-disease diagnostic platforms.
- Establish integrated care pathways for HIV, syphilis, and HBV.
- Train health workers and expand capacity for HBV testing, prophylaxis, and treatment.
- Foster private sector partnerships.
- Monitor and evaluate program outcomes using quality data.

At the community level

- Engage communities to boost awareness and reduce stigma.
- Use targeted communication to improve adherence and service uptake.
- Strong policy leadership and coordinated implementation are essential to realizing the full potential of HBV PMTCT within the triple elimination agenda.

7.2 Syphilis: updates and considerations for integration of elimination of congenital syphilis into triple elimination

7.2.1 Background

Syphilis is one of the most common curable sexually transmitted infections globally. Mother-to-child transmission of syphilis, or congenital syphilis, is usually devastating to the fetus if maternal infection is not detected and treated sufficiently early in the pregnancy; most untreated primary and secondary syphilis infections in pregnancy result in severe adverse pregnancy outcomes. Congenital syphilis is the second most common cause of preventable stillbirth globally, preceded only by malaria. Thus, integrating syphilis into the triple elimination efforts is crucial. Among adverse birth outcomes associated with syphilis in 2016, 21% occurred in pregnant women who did not attend ANC; 53%, in women who attended ANC but were not screened for syphilis; 16%, in women who tested positive for syphilis but were not treated or received inadequate treatment; and 9%, in women who tested positive and were treated according to protocol *(58)*.

Congenital syphilis is the second most common cause of preventable stillbirth globally.

The main challenges to integrating syphilis into the triple elimination package stem from persistent barriers to syphilis response noted ever since the initiative to eliminate congenital syphilis began in 2007. The key barriers include: (1) limitations to diagnosis and surveillance such as inconsistent screening, limited access to rapid diagnostic tests and variability in surveillance systems across different settings; (2) lack of a vaccine (unlike hepatitis B); and (3) limited treatment options for PMTCT. Benzathine penicillin G remains the only effective treatment for preventing MTCT, as it crosses the placental barrier. Reliance on a single drug, coupled with global supply shortages, poses a major challenge to effective interventions. Challenges with management of syphilis in newborns, procurement of benzathine penicillin at the country level and access to reliable diagnostic tools further weaken the syphilis response.

An adaptation of the HIV missed opportunity analysis in Chapter 2 (Box 7.2) provides a strategic planning approach applied to the syphilis component of triple elimination, highlighting the need for its integration with HIV and hepatitis B virus EMTCT.

Box 7.2. Illustrative example of a missed opportunity analysis for syphilis PMTCT

Missed opportunities for syphilis PMTCT	Intervention domains
Mothers infected during pregnancy A B E	A Syphilis prevention services for women
Mother did not receive syphilis testing or treatment during pregnancy B E F	B Timely access to syphilis testing
Mother did not receive confirmation of active syphilis diagnosis where needed B C E F	C Timely treatment (BPG)
Mother started treatment during pregnancy 30 days before delivery B C D E F	D Services for partner (partner management)
All mothers received information about maternal and congenital syphilis B C D E	E Services for all infants with respect to the mother–baby pair
Reporting of data on maternal–child intervention B C D E F	F Strategic information, reporting, monitoring and evaluation of mother–baby pair

Source: Adapted for syphilis PMTCT from UNICEF 2020 *(21)*.

Given this situation, integration of syphilis elimination into the overall EMTCT package should first focus mainly on ensuring that surveillance and diagnosis and reporting are systematically included in the triple elimination response. In the medium term, challenges and possible solutions, discussed below, need to be efficiently addressed for full integration of elimination of congenital syphilis into triple elimination.

Integration of syphilis elimination into the overall EMTCT package should first focus on ensuring that surveillance and diagnosis and reporting are systematically included.

7.2.2 Key challenges in diagnosis, management and surveillance of maternal and congenital syphilis

Congenital syphilis remains a significant global public health concern. Whilst early screening and adequate treatment of maternal syphilis reduces the incidence of congenital syphilis, not all pregnant women attend ANC and are tested and treated for syphilis.

Syphilis infection in pregnancy can lead to adverse birth outcomes including low birth weight, premature delivery, prenatal deaths and stillbirths as well as clinical manifestations in the infant of bone deformities, and neurological impairment. The main source of data on syphilis in pregnant women is the national ANC data collection system. ANC registers include data on number of women tested, number treated and test positivity. Data on CS cases is more complicated and reflects differences in case definitions, gaps in clinical registries and overall weakness in ANC-related surveillance systems.

Challenges with the diagnosis of syphilis infection in pregnant women

Maternal testing (Framework Pillar 3)

- Missed screening opportunities: Although syphilis screening is integrated into routine ANC and recommended to be performed early in pregnancy, in most countries insufficient awareness of providers, unavailability of test kits, out-of-pocket cost for testing and loss to follow-up when pregnant women are referred to other facilities for blood collection increase the likelihood of infections remaining undiagnosed and untreated.
- Direct detection tests for syphilis, such as darkfield microscopy or molecular tests, are rarely available and can only be performed when lesions are present.
- Serological testing: In most cases, syphilis diagnosis is based on indirect methods and includes clinical and sexual history, physical examination, serological testing and sometimes radiology, as symptoms are not common or noticeable. Serological tests for syphilis are divided into two categories based on whether they measure antibodies (non-treponemal tests such as RPR or VDRL) or antigens (treponemal tests such as rapid tests, or lab-based FTA-Abs and TPPH). Treponemal tests cannot distinguish between new and prior, previously treated infection. Non-treponemal tests are performed manually and results are dependent on the stage of infection, which cause considerable false positive or negative tests. To address some of these problems, reactive serologic tests should be confirmed with a second unrelated test (i.e. a combination of treponemal and quantitative non-treponemal tests).
- Stigma and cultural barriers at facility and community levels associated with syphilis infection can lead to mothers avoiding testing or disclosing their status which further complicates identification of infected women and their sexual partners.

Diagnostic limitations of congenital syphilis and syphilitic stillbirth cases (Framework Pillar 4)

- To make a diagnosis, health care providers must rely on a combination of treatment history, maternal and infant tests and clinical findings. However, early symptoms are often subtle or mimic other neonatal conditions which, combined with inadequate infrastructure (e.g., X-ray machines, lab tests, among others), makes clinical diagnosis challenging.
- Congenital infections that result in spontaneous abortion or stillbirth may not be recognized or reported. Stillbirths are often not delivered in health facilities, and care providers may not realize that stillbirths are the most common adverse. pregnancy outcome caused by maternal syphilis.
- Lack of integrated care pathways to link syphilis follow-up with routine newborn care, including immunization/well baby visits, impedes the continuity of assessment. Lack of follow-up mechanisms further increases loss to follow-up.

Challenges with the treatment of syphilis infection in pregnant women

- Timely follow-up of women who did not initiate immediate treatment after receiving positive test result and/or syphilis diagnosis.

- Shortages or stock-outs of benzathine penicillin G (BPG) at the national or facility level limit pregnant women's access to the only treatment option for prevention of congenital syphilis.
- Out-of-pocket costs for treatment of pregnant women with syphilis and for her sexual partner(s) can limit access to BPG.
- Misconceptions of health workers of the high frequency of severe adverse outcomes of BPG treatment – which is rare – or that newer generation antibiotics are more effective.

Challenges with surveillance of syphilis infection

- Unclear or nonexistent surveillance case definition, lack of mandatory notification and underreporting due to challenges with the diagnosis of maternal and congenital syphilis cases as well as stillbirth are common challenges.
- Inefficient monitoring and data analysis of maternal, congenital and stillbirth syphilis cases associated with poor integration between MNCH and disease control data systems adds to the problem.

7.2.3 Recommendations for addressing challenges to improve diagnosis, surveillance and management of congenital syphilis

At the health system management level

- Commitment: Engage in advocacy, obtain political commitment and prioritize national syphilis response planning, implementation and monitoring to improve the availability of quality MNCH services and reliable data.
- Health workforce: Capacitate the workforce to ensure efficient delivery of quality services and enhance cross-programmatic coordination for a client-centred approach.
- Integration: Integrate EMTCT into MNCH programmes (mother–infant pair approach) at the primary health care level, with clear follow-up systems for exposed infants, during routine MNCH care. This includes establishing linkages to preventive methods (for example, condoms), access to treatment and partner services.
- Testing of pregnant women: Review and update syphilis testing practices for adults and infants, along with guidelines, standard operating procedures (SOPs) and diagnostic algorithms, in line with current global guidance, aiming for simplification and decentralization. Introduce dual HIV/syphilis testing where feasible and appropriate.
- Quality assurance: Ensure accuracy of test results through establishment of effective oversight measures, including enrolling in proficiency testing and other quality control measures, at all levels of the laboratory network and at point of care (nonlaboratory settings).
- Procurement: Strengthen procurement systems to ensure uninterrupted availability of testing supplies and BPG.
- Context: Treating and preventing infections in other populations will help limit the prevalence of syphilis in pregnant women.
- Surveillance:
  - Ensure data systems are in place for timely collection and analysis, and that these data are used and disseminated to inform local-, regional-, and national planning.
  - Review and harmonize surveillance case definitions for stillbirths and congenital syphilis with international definitions.
  - Introduce or strengthen national systems for monitoring of fetal death, ensuring that all deaths occurring at 20 or more weeks of gestation or at a fetal weight of 500 grams or more are included, and that the syphilis status of the mother is noted.
  - Establish systems to ensure that syphilis infected pregnant women are adequately treated and that their infants are followed up post-delivery; and develop mechanisms for the investigation of maternal and congenital syphilis cases to improve preventive actions.
  - Foster partnerships with private-sector organizations to facilitate data reporting from private sector and relevant organized civil society.

At the health facility level

- Provide periodic refresher courses for health care providers on quality integrated antenatal services, including routine syphilis testing coupled with prompt prophylaxis or treatment.
- Promote early enrolment in antenatal care, in the first trimester of pregnancy.
- Introduce same-visit syphilis testing where feasible, with same-day provision of results and prompt initiation of treatment. Where same-visit syphilis tests using laboratory services are not feasible, consider introducing dual rapid HIV/syphilis testing, with results and treatment provided at the clinic visit.
- Actively perform sexual partners notification of women who test positive for syphilis to ensure testing and treatment when needed and foster the involvement of male sexual partners in MNCH and EMTCT service.
- Implement strategies such as active follow-up (e.g., home visits), tracking of mother-infant pairs, and

- early diagnosis of infants to reduce the number of syphilis- exposed infants lost to follow-up.
- Ensure consistent monitoring of the supplies for the testing and treatment of syphilis to avoid any on-site shortage.

At the community level

- Promote meaningful community engagement and advocacy to combat stigma and, thus, increase access to and uptake of screening/testing and care, especially among adolescents and marginalized populations.

7.2.4 Recommendations for addressing challenges to improve integration

At the health system management level

- Engage in advocacy, obtain political commitment and prioritize national syphilis response planning, implementation and monitoring to improve the availability of services and reliable data.
- Establish frameworks to guide optimal testing approaches (for example, treponemal versus non-treponemal serologies, self-testing, dual HIV/syphilis testing) that are evidence-based and specific to the country based on available data, feasibility, acceptability and preferences.
- Develop follow-up policies and ensure accountability in tracking and managing syphilis-exposed infants.
- Strengthen procurement and supply chain management for diagnostics and treatment, including securing consistent national monitoring and supply of benzathine penicillin G.
- Standardize case definitions and the reporting system to improve the quality of strategic information, including the accuracy of surveillance.
- Integrate syphilis indicators into the core triple elimination framework and the cascade of care to facilitate tracking of exposed infants in a timely manner.

At the health facility level

- Integrate MNCH programmes (mother–infant pair approach) into primary health care, with clear follow-up systems for exposed infants, during routine MNCH care.
- Deploy sensitive, non-invasive diagnostic tools for stillbirth testing and maternal confirmation in resource-limited settings.
- Ensure consistent monitoring of the supply of benzathine penicillin G to avoid any on-site shortage.
- Enhance follow-up for syphilis-exposed infants, through:
  - standardized follow-up protocols for systematic monitoring, testing and treatment of all syphilis-exposed newborns;
  - integrated care pathways to link syphilis follow-up with routine newborn care and immunization visits;
  - improved case tracking and data systems (whether electronic health records or paper-based registers) to track exposed infants and ensure that they receive follow-up testing and treatment as needed;
  - strengthened coordination between MNCH and STI control programmes or other services to ensure that exposed infants are not lost to follow-up;
  - training of health care providers, including midwives and paediatricians, on the importance of long-term follow-up and correct management of congenital syphilis;
  - counselling and education for caregivers about the necessity of follow-up visits, symptoms to monitor and adherence to treatment plans.
- Strengthen partnerships with the private sector.
- Capacitate the workforce to ensure efficient delivery of quality services and enhance cross-programmatic coordination for a patient-centred approach. This includes establishing linkages to preventive measures (for example, condoms), access to treatment services, partner management and network-based testing within the facility.

At the community level

- Promote meaningful community engagement and advocacy to combat stigma and, thus, increase access to and uptake of screening/testing and care, especially among marginalized populations and adolescents.
- Develop communication strategies that educate families and communities on the importance of syphilis testing and ensure that they feel supported when accessing care.

Providing ART to youth at Rivers State University Teaching Hospital, Nigeria, 2024 © UNICEF / UNI671823 / Adesegun

7.3 Other infections to consider for PMTCT

Two infections that can be transmitted from an infected mother during pregnancy and breastfeeding to her infant – Chagas disease and human T-lymphotropic virus type 1 (HTLV-1) – are becoming increasingly important to the elimination agenda and WHO's public health approach to prevention and control of disease. Epidemiologic and other evidence concerning these diseases is limited, and both are common only in certain regions including South America (the Caribbean, Latin America), the Western Pacific region (some parts of Japan) and sub Saharan Africa for HTLV-1, while Chagas disease is endemic in rural areas of Mexico and Central and South America. Where they are most common, these conditions are being addressed. The framework for triple elimination provides a foundation for planning and integration of responses to reduce mother-to-child transmission of these and other infections.

7.3.1 Chagas disease

Chagas disease, also called American trypanosomiasis, is the most prevalent communicable tropical disease in Latin America. It can be transmitted as a vector-borne disease and orally (food borne) and can also be transmitted from mother to child during pregnancy and breastfeeding (congenital). Chagas is one of the 30 conditions that the PAHO Elimination Initiative has proposed to eliminate in the Region of the Americas by the year 2030. The Region has developed a plan of action that expands the EMTCT initiative ("EMTCT Plus") to include the elimination of other preventable communicable diseases in the Americas beyond the global Triple Elimination Initiative.

Chagas disease is a parasitic, systemic and chronic neglected tropical disease caused by the protozoan *Trypanosoma cruzi*, which is endemic in 21 countries in the Americas. An estimated 70 million people in the Americas live in areas of exposure. With increased population mobility, most infected people now live in urban settings. Infections have been detected in 44 countries, including Canada, the United States of America and many European and some Western Pacific, African and Eastern Mediterranean countries. In the Americas the disease affects approximately six million people, with an average annual incidence of 30 000 new cases, causing 12 000 deaths. Approximately 9000 newborns are infected during gestation each year.

In the Americas Chagas disease affects some six million people and causes 12 000 deaths annually.

T. cruzi parasites are transmitted to humans mainly through the infected faeces of the blood-sucking triatomine bug, known as the "kissing bug". A person becomes exposed when the infected insect deposits its faeces in the person's skin while he or she is sleeping during the night. The person will scratch the infected area, unintentionally introducing the insect's faeces into the wounds of the skin, the eyes or the mouth. Although less commonly, *T. cruzi* can also be transmitted through blood transfusions (20% of cases) and organ transplants, vertically from an infected mother to her child during pregnancy or childbirth (1% of cases) and by the ingestion of food contaminated with *T. cruzi (59)*.

The suggested strategy for a definitive diagnosis of chronic *T. cruzi* infection is use of a combination of two serological tests with antigens that detect different antibodies against *T. cruzi* plus a third test if results of the first two tests conflict. In patients with suspected acute *T. cruzi* infection, direct parasitological tests and subsequent serological follow-up are recommended *(60)*.

Chagas disease can be cured with medications that are almost 100% effective if given soon after infection, at the onset of the acute phase. Although mortality has significantly declined, the disease can cause irreversible and chronic consequences for the heart, digestive system and nervous system.

Currently, there is no vaccine for the disease; integrated vector control is the most effective method of prevention in Latin America. **Chagas screening in pregnant women during prenatal care is needed to provide early diagnosis and treatment to newborns and other children of infected mothers.**

7.3.2 HTLV-1

HTLV-1 is a retrovirus that causes a chronic, lifelong infection in humans. It is transmitted primarily through breastfeeding, sexual contact, needle sharing and unsafe blood transfusion. Most recent estimates of the total number of people living with HTLV-1 infection ranged from 5 million to 10 million in 2012. There is currently no effective treatment for HTLV-1 and no vaccine, although development of a vaccine is considered feasible. Currently, emphasis is placed on detection and on prevention of transmission *(61)*.

The diagnosis of HTLV infection is usually made by using enzyme-linked immunoassay to test for HTLV antibodies in blood samples. No single test can provide a definitive HTLV diagnosis; a combined approach is important to confirm HTLV-1 infection.

HTLV-1 can cause a form of blood cancer called adult T-cell leukaemia or lymphoma (ATL) as well as progressive diseases of the nervous system, either HTLV-1-associated myelopathy (HAM) or tropical spastic paraparesis (TSP). The lifetime risk among people with HTLV-1 infection of developing ATL is estimated at 5% and of HAM or TSP, at 2%.

The prevention of HTLV-1 transmission involves a number of public health strategies and interventions, the first two of which are most relevant to elimination guidance:

- formula feeding instead of breastfeeding to prevent mother-to-child transmission in women living with HTLV-1
- breast milk freeze–thaw method and leukoreduction, in some settings
- condom use to reduce the risk of sexual transmission
- needle/syringe exchange programmes and
- screening blood donations for HTLV.

It is important to increase public awareness to support interventions and to ensure diagnostic capacity is available in recognised high-prevalence settings to screen and diagnose people living with HTLV-1. Further testing and analysis will yield data to better define the risk of mother-to-child HTLV-1 transmission and the effectiveness of prevention strategies.

In collaboration with Member States and partners, WHO is working to develop guidance on HTLV-1 surveillance methods, including methods to determine prevalence and monitor interventions. WHO also is developing guidance on testing approaches and strategies for HTLV-1 detection for low-resource settings.

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Annex 1. Management of the infant exposed to HIV, syphilis or HBV

	Identification of exposure	Infant diagnosis	Management: prophylaxis and follow-up of uninfected or unknown status	Management of probable paediatric infections or known infected infants
HIV	• maternal HIV RDT and EIA , CD4, VL testing. • serological testing among infants younger than four months to determine exposure and after 18 months for final diagnosis.	• NAT at birth or within two days of birth, as recommended by WHO, complemented by additional later NAT according to the national algorithm. • infant diagnosis throughout the exposure period to identify infants and children living with HIV who need treatment.	• ARVs: Postnatal prophylaxis (PNP) a) low risk: NVP once daily or AZT twice daily (if replacement fed) for 4-6 weeks b) high risk: NVP once daily and AZT twice daily for six weeks, then for breastfed infants continue NVP alone or with AZT for another six weeks. • Increasing coverage of EID test at four to six weeks should be prioritized over adding NAT at birth, depending on national coverage, transmission risk, uptake and retention in testing cascade, available resources, funding priorities. • testing at nine months, 18 months and after cessation of breastfeeding to determine final status.	• Early diagnosis and treatment has demonstrated improved survival and clinical outcomes, as infected infants are more likely to start timely treatment. • children ▫ preferred first line: ABC+3TC+DTG ▫ alternative first line: (i) ABC+3TC+LPV/r; (ii) ABC+3TC+RAL ¸ (iii) TAF+3TC (or FTC)+DTG • neonates ▫ preferred first line: AZT (or ABC)+3TC+RAL ▫ alternative first line: AZT+3TC+NVP • For preferred and alternative second line ART, see ‘update of recommendations for first and second line regimens’ *(26)*.

	Identification of exposure	Infant diagnosis	Management: prophylaxis and follow-up of uninfected or unknown status	Management of probable paediatric infections or known infected infants
Syphilis	• maternal serologic tests (treponemal and non-treponemal) and rapid tests.	• There is no diagnostic test for congenital syphilis. • infant diagnosis is based primarily on a history of adequate/ completed treatment in the mother. • Physical examination and laboratory testing of the exposed infant also contributes to the diagnosis. • Presumptive diagnosis of syphilis requires a positive result from either a treponemal or non-treponemal test. • A confirmed diagnosis requires, but it is not limited to, positive results from both types of serologic tests.	• In infants who are clinically normal and whose mothers had syphilis that was adequately treated, with no signs of reinfection, the WHO STI guideline suggests close monitoring of the infants. • The risk of transmission of syphilis to the fetus depends on a number of factors, including high maternal titres seen in non-treponemal tests (for example, RPR), timing of maternal treatment and stage of maternal infection. Therefore, this recommendation is conditional. If treatment is provided, benzathine penicillin G 50 000 U/kg/day single dose intramuscularly is an option.	• In infants with confirmed congenital syphilis or infants who are clinically normal but whose mothers had untreated syphilis, inadequately treated syphilis (including treatment within 30 days before delivery) or syphilis that was treated with non-penicillin regimens, the WHO STI guideline suggests aqueous benzyl penicillin or procaine penicillin. • dosages 1. aqueous benzyl penicillin 100 000–150 000 U/kg/day intravenously for 10–15 days 2. procaine penicillin 50 000 U/kg/day single dose intramuscularly for 10–15 days.
HBV	• maternal quality-assured serological assay (either RDT or laboratory-based immunoassay) to detect HBsAg. • Among those HBsAg positive, assessment of eligibility for peripartum antiviral prophylaxis and long-term treatment is required. This may include HBV DNA or HBeAg testing as well as relevant biochemical tests to assess AST to platelet ratio index (APRI) score.	• Testing of exposed infants is problematic within the first six months of life, as HBsAg and HBV DNA may be inconsistently detectable in infected infants. Chronic HBV is diagnosed only if HBsAg persists for six months or more.	• The most effective intervention for PMTCT of HBV is timely neonatal hepB birth dose (within 24 hours of birth) and three-dose infant hepB series. • Newborn or infant testing for HBV is not mandatory but can be considered in infants born to HBsAg-positive mothers. It should be carried out one to two months after the last dose of the complete HBV vaccine series. Infants should be tested for HBsAg and anti-HBs (hepatitis B surface antibody) to confirm if successfully protected and not infected *(40)*.	• Treatment recommendations are available only for children (two years or older) for whom ART is indicated.

Annex 2. Approach to development of the guidance

The information in this country guidance document was derived from evidence and policy reviews, expert consultation with a technical working group (TWG) and scoping activities conducted in coordination and consultation with departments at WHO and UNICEF headquarters, regional and country offices. This source material was used to develop a framework of minimum services for implementation of triple elimination. A WHO steering group, in consultation with the TWG and other experts, then expanded the framework into country planning guidance. This guidance is essentially aligned with documents previously published by the WHO departments of HIV, Hepatitis and STI Programmes (HHS); Sexual and Reproductive Health and Research; Maternal, Newborn, Child and Adolescent Health and Ageing; and Immunization, Vaccines and Biologicals.

Development of the guidance began with evidence and policy reviews, including a desk review of all relevant existing WHO guidelines, human rights frameworks, implementation tools (for prevention, testing, treatment and care), WHO reporting tools, and monitoring and evaluation guidance for triple elimination. In collaboration with UNICEF, the WHO HHS department commissioned a landscape analysis to foster a shared understanding of triple elimination, drawing on selected country experiences in triple elimination and available resources for implementation (Yale University, unpublished report, October 2023). At the same time, a systematic review of scientific literature identified potential strategies for and progress towards achieving triple elimination (University of Washington, unpublished report, October 2023).

The TWG convened in the fourth quarter of 2023, led by a WHO steering committee comprising representatives of multiple WHO departments and units, advisers from the six WHO regions and representatives of UNICEF and UNAIDS. Other TWG members included experts at global, regional and country levels in HIV, viral hepatitis, STIs, SRH, immunization, lab sciences, data analysis, human rights, community engagement and gender equity as well as community representatives. The HHS department selected TWG members on the basis of their expertise in triple elimination as well as their representation of specific organizations intrinsically involved in the triple elimination initiative. Potential conflicts of interests were assessed by requesting prospective TWG members to complete declaration of interest and conflict of interest forms, which HHS staff on the steering committee then reviewed. No conflicts were identified that precluded participation in decision-making.

The TWG met virtually on four occasions to develop and agree on pillars and cross-cutting implementation considerations and finalized an agreed-on minimum essential services package. The TWG's work was informed by, among other guidance, the WHO Global Health Sector Strategies 2022–2030 and the *Global guidance on criteria and processes for validation: elimination of mother-to-child transmission of HIV, syphilis and hepatitis B virus* (2021). The framework for the implementation of triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B virus was published in March 2024 (https://www.who.int/publications/i/item/9789240086784).

Based on the framework, the WHO steering group and external contributors developed the first draft of the guidance document for the planning of programmes for triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B virus. Global and country focal points from the Elizabeth Glaser Pediatric AIDS Foundation contributed country case studies in collaboration with the Ministries of Health of Namibia and Kenya. UNICEF at global, regional and country levels provided significant input to development of the document.

Reviews of the document sought to ensure readability, accuracy, user-friendliness and clarity. The document was first reviewed internally by the relevant focal points in WHO and UNICEF headquarters and regional-level departments involved in triple elimination.

It was next reviewed by members of the WHO Global Validation Advisory Committee, a 30-member committee with a wide range of expertise, and its secretariat, housed at WHO.

External reviewers were sought from global, regional and national levels. They included experts from the Botswana Sexual and Reproductive Health Initiative (Botswana), the Caribbean Med Labs Foundation (Trinidad and Tobago), the Clinton Health Access Initiative (USA and South Africa), the Elizabeth Glaser Pediatric AIDS Foundation (USA and India), the Federal Ministry of Health (Nigeria), the Fundación Mundo Sano (Argentina), the International Community of Women Living with HIV (USA), PATH (USA, India and Viet Nam), the Peter Doherty Institute for Infection and Immunity (Australia), Positive Women (Ukraine), the Solina Centre for International Development and Research (Nigeria), UNITAID (Switzerland), the World Hepatitis Alliance (United Kingdom) and independent consultants working in triple elimination.

Reviews were collected, collated and used for revision of the draft by four technical officers at WHO. The final document was shared with members of the WHO steering group and UNICEF focal points for final review before publication.

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