

Introducing a framework for implementing triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B virus



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Introducing a framework for implementing triple elimination of mother-to-child transmission of HIV, syphilis and hepatitis B virus: policy brief

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Pillars and cross-cutting considerations

Achieving triple elimination of mother-to-child transmission (EMTCT) of HIV, syphilis and hepatitis B virus (HBV) requires that national programmes implement four pillars and address cross-cutting implementation considerations.

The four pillars are:



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.



Sexual and reproductive health (SRH) linkages and integration: appropriate counselling, care, support, and linkages for SRH services for women and girls living with HIV and / or HBV and / or sero-positive for syphilis to (i) assess fertility intentions and support pregnancy planning and prevention and (ii) prevent, diagnose and treat other sexually transmitted infections (STIs).



Essential maternal EMTCT services: appropriate maternal testing, prophylaxis and treatment for women and girls living with HIV and / or HBV and / 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 and / or HBV and / or sero-positive for syphilis.

The cross-cutting considerations are:

- 1) Health system strengthening to better provide effective person-centred care
- 2) Strategic information gathering and analysis
- 3) Leadership, community engagement, partnerships and cross-programmatic coordination
- 4) Identifying and addressing barriers to triple EMTCT of HIV, syphilis and HBV

The World Health Organization (WHO) is committed to the ‘triple elimination’ initiative – the elimination of mother-to-child transmission of HIV, syphilis and hepatitis B virus – and its global role in guiding a coordinated, person-centred service delivery approach through the life-course that meets the needs and supports the rights of women, newborns, children and families. The success of triple elimination depends on the combined efforts of advocates, policy-makers, health care providers and the community. Central to the success of this initiative are gender equality considerations and the involvement of women and girls in planning and delivery of non-coercive interventions in order to ensure that the human rights of women, children and families affected by HIV, syphilis and hepatitis B are protected.



Introduction

Feasible and effective interventions exist to prevent the mother-to-child, or vertical, transmission (see Box 1) of HIV, syphilis and HBV, making elimination of this mode of transmission attainable for all three infections. Achieving this would reduce pediatric infection and the associated morbidity and mortality, including infant, childhood and adult sequelae of infection such as congenital syphilis, neonatal and childhood AIDS as well as liver cirrhosis and liver cancer. However, coverage of these interventions remains low, with extensive global variation in policy updates, service delivery and impact. As a result, infants continue to be born with, and to acquire, these preventable infections, resulting in significant global morbidity and mortality.

The similarity of the critical interventions favours integrated service delivery.

The triple elimination initiative specifically focuses on leveraging existing service delivery platforms to achieve elimination milestones for the three infections. The similarity of the critical interventions necessary to prevent transmission adds to the feasibility and benefit of an integrated approach to EMTCT of all three infections (1). Elements common to these interventions are:

- primary infection prevention through prophylaxis and / or safe sex practices;
- family planning to assess fertility intentions and support pregnancy planning and prevention;

- testing in antenatal care (ANC) clinics;
- prompt and efficacious interventions to treat women who test positive and link them to care and to prevent transmission of infection(s) to their children;
- counselling for women and their partners on how to reduce transmission risk and ensure appropriate prophylaxis and treatment;
- safe childbirth with skilled health personnel;
- appropriate follow-up of exposed infants, including HBV vaccine birth dose;
- optimal infant feeding practice; and
- lifelong treatment and care for mothers living with HIV, or treatment of HBV or syphilis for eligible women.

Building on an integrated maternal and child health (MCH) platform, WHO has moved to operationalize universal health coverage (UHC) in the context of integrated communicable disease prevention. The UHC model facilitates bringing together the EMTCT efforts for HIV, syphilis and HBV as part of triple elimination.

The international public health community has committed to triple elimination as a priority. The World Health Assembly, in 2022, endorsed three interlinked global health sector strategies (GHSS) for the period 2022–2030 (2), which set ambitious targets for triple elimination. Currently, commitments are further guided by the Global Alliance to End AIDS in Children by 2030 (3).

1. <https://www.who.int/initiatives/triple-elimination-initiative-of-mother-to-child-transmission-of-hiv-syphilis-and-hepatitis-b>.

Box 1. Terminology

In this document the terms ‘mother-to-child transmission’ and ‘vertical transmission’ are used interchangeably. Women living with HIV and their advocates have promoted the 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 (4).

The strict definition of the medical term ‘vertical transmission’ does not include transmission through breastfeeding, but, for the purposes of this document, we use the term to include transmission both during pregnancy and during the breastfeeding period. In addition, women in all their diversity may access and utilize services for the prevention of vertical transmission. Noting that trans and gender-diverse persons can become pregnant, and this involves risk for vertical transmission, this guidance also applies to this group.

Key populations also relevant to this document include sex workers, women who use drugs and women in prison.

Approach for achieving triple elimination

Triple elimination of mother-to-child transmission (MTCT) of HIV, syphilis and HBV requires a person-centred service delivery approach that meets the needs of and supports the rights of women, newborns, children and families and requires building cross-programmatic efficiencies that leverage and strengthen existing platforms for HIV, syphilis and HBV prevention, testing, treatment and care.

The Global Health Sector Strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022-2030 (GHSS) have been developed to guide the health sector in implementing strategically focused responses. Their goal is to end the epidemics of HIV, HBV and hepatitis C virus, and STIs by 2030 (2). They place people at the heart of an integrated response and provide an excellent foundation for triple elimination implementation. The GHSS are based on five cross-cutting strategic directions, as shown in Fig. 1.

The GHSS place people at the heart of an integrated response to triple elimination.

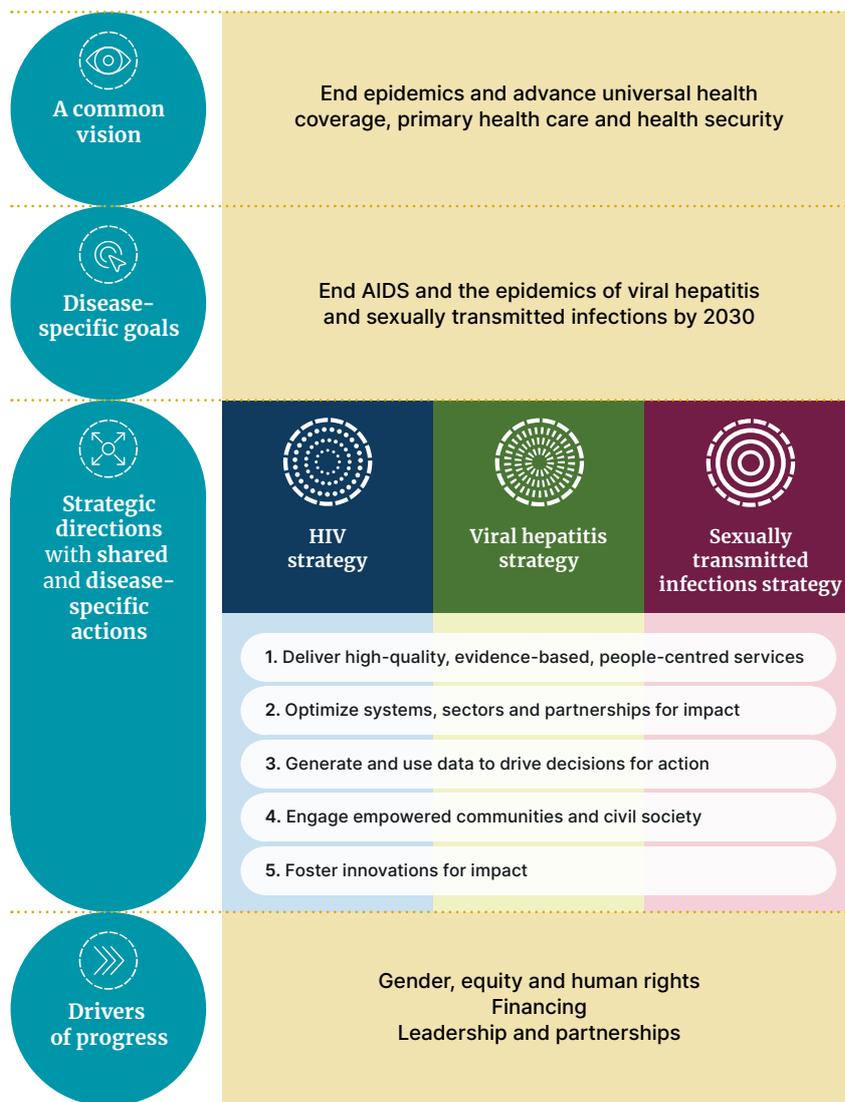


Fig. 1. Visions, goals and strategic directions of the GHSS on HIV, viral hepatitis and STIs for the period 2022–2030
Source: WHO 2022 (2)

A significant benefit of this integrated approach to triple elimination is that it can leverage cross-cutting opportunities for health systems investments such as for data and surveillance, health worker capacity building, service delivery, procurement and supply management, and financing.

Achieving and maintaining triple elimination requires strong political and public health commitment to developing and sustaining resilient health systems that (i) provide continued and unhindered access to services that deliver quality primary prevention, diagnosis and treatment for women and girls and their newborns (or young children) through the life-course; (ii) deliver

services respecting and protecting human rights and ensuring gender equality and community engagement; and (iii) have functional surveillance systems with the ability to comprehensively identify and monitor those at risk of infection and outcomes.

WHO has established global guidance on criteria and processes for validation of elimination of MTCT of HIV, syphilis and HBV. Since 2015, 17 countries have reached one and/or two of the targets for elimination of mother-to-child transmission of syphilis and/or HIV, and one high HIV burden country has been certified on the path to elimination for HIV (5). Table 1 summarizes the WHO targets for EMTCT of HIV, syphilis and HBV.

Elimination targets	HIV EMTCT	Syphilis EMTCT	HBV EMTCT
2030 WHO GHSS and UNGA political declaration (13) aspirational targets	Zero new infections among infants and young children and achievement of the 95-95-95 targets	≤50 cases of CS per 100,000 live births in 80% of countries	95% reduction in incidence of chronic HBV infections
EMTCT Impact targets	A population case rate of new paediatric HIV infections due to MTCT of ≤50 cases per 100,000 live births MTCT rate of HIV of <2% in non-breastfeeding populations OR <5% in breastfeeding populations	A case rate of CS of ≤50 per 100,000 live births	≤0.1% prevalence HBsAG in children ≤5 years old ^{a,b} Additional target ≤2% MTCT rate (for countries using targeted timely HepB-BD)
EMTCT process/ programmatic targets	ANC coverage (at least one visit (ANC-1)) of ≥ 95% Coverage of HIV testing of pregnant women of ≥95% ART coverage of pregnant women living with HIV of ≥95%	ANC coverage (at least one visit (ANC-1)) of ≥95% Coverage of syphilis testing of pregnant women of ≥95% among those who attended at least one ANC visit Adequate syphilis treatment of syphilis-sero-positive pregnant women of ≥95%	Countries with universal timely HepB-BD ≥90% HepB3 vaccine coverage ≥90% Hep-BD coverage ^c Countries with targeted timely HepB-BD or without universal timely HepB-BD ≥90% HepB3 vaccine coverage ≥90% HepB-BD coverage ≥90% coverage of maternal HBsAG testing ≥90% coverage with antivirals for eligible HBsAg-positive pregnant women ^d

HBV = Hepatitis B virus; GHSS = global health sector strategy; CS = congenital syphilis; EMTCT = elimination of mother-to-child transmission; MTCT = mother-to-child transmission; ANC = antenatal care; ART = antiretroviral therapy; HepB3 = three doses of hepatitis B vaccine (infant vaccination); HepB-BD = Hepatitis B birth dose vaccine; HBsAG = hepatitis B surface antigen; UNGA = United Nations General Assembly

a. Childhood prevalence is a proxy for HBV incidence.

b. The ≤0.1% HBsAG prevalence can be measured among either 5 year olds, 1 year olds or those aged 1-5 years, according to existing country surveillance and data collection activities. For those regions and countries with a long history of high hepatitis B vaccination coverage (for example WHO Region of the Americas), and that already conduct school-based serosurveys, there could be flexibility to conduct serosurveys in older children >5 years.

c. Timely birth dose (HepB-BD) is defined as within 24 hours of birth.

d. In accordance with national policies or WHO 2020 guidelines on use of antiviral prophylaxis on PMTCT of HBV.

Table 1. Summary of WHO targets for EMTCT of HIV, syphilis and HBV

Source: WHO 2021 (5)

The wider context for triple elimination

Strengthening health systems to address vertical transmission of HIV, syphilis and HBV in a coordinated and integrated way will serve to improve a broad range of MCH and SRH outcomes. This strengthening process will facilitate country-level progress towards the GHSS goals on HIV, viral hepatitis and STIs and the UNAIDS 2030 goals of 95% coverage of services required for eliminating vertical HIV transmission and 95% of women and girls having their HIV and SRH needs met (6). It will also directly contribute to implementation of the UN Secretary General's Global Strategy for Women's, Children's and Adolescents' Health (2016–2030) (7) and achieving the Sustainable Development Goals, three of which (3, 5 and 10) aspire to ensure health and well-being for all, achieve gender equality, empower women and girls and reduce inequalities in access to services and commodities (8).

The four pillars framework for triple elimination implementation

With the recent release of guidance for validation of triple elimination (5) and the 2023 guidance on country validation of viral hepatitis elimination and the path to elimination (9), WHO and partners have developed an accompanying framework to guide operationalization of a person-centred and integrated approach to interventions that country programmes can use to effectively scale-up triple elimination efforts and reach targets.

The new framework will guide efforts to expand the focus of service delivery from elimination of MTCT of HIV to triple elimination of HIV, syphilis and HBV.

To achieve this, WHO has developed a novel Four Pillars Framework for Triple Elimination Implementation to guide country-led planning and implementation (Fig. 2). The framework is aligned with the GHSS on HIV, viral hepatitis and sexually transmitted infections 2022–2030 (2). The overarching goal of the framework is to support countries in operationalizing the move from single (HIV) and dual elimination (HIV and syphilis) to triple elimination of HIV, syphilis and HBV. This represents a major revision and modification of the 2002 UN “four-pronged strategy” for the elimination of new HIV

infections among children and keeping their mother alive (10) to include two additional conditions – syphilis and HBV – and reflects the significant updates that have been made to WHO's technical recommendations and guidelines in the past decade.

Development of the four pillars framework

The WHO Global HIV, Hepatitis and STIs (HHS) Department developed the Four Pillars Framework. The process involved review of existing WHO guidelines, human rights frameworks and implementation tools for prevention, testing, treatment and care for women, girls, infants, children, partners and families affected by or at risk of acquiring HIV, viral hepatitis and STIs, as well as the existing WHO reporting, monitoring and evaluation guidance for triple elimination. A landscape analysis was conducted to build a shared understanding of triple elimination, drawing on experiences and resources from the global, regional and country levels (Yale University, unpublished report, October 2023). A systematic review of scientific literature identified potential strategies for and progress towards achieving triple elimination (University of Washington, unpublished report, October 2023). A technical working group (TWG) was convened, comprising a WHO steering committee, multiple WHO headquarters departments and units within the UCN (universal access communicable and non-communicable) and UCL (universal access life-course) clusters and a wide range of external stakeholders. The TWG also included advisers from the six WHO regions, EMTCT Global Validation Advisory Committee (GVAC) members and observers, community representatives and experts in HIV, viral hepatitis, STIs, SRH, immunization, laboratory sciences, data, human rights, community engagement and gender equity. The TWG met on four occasions to develop and agree on pillars, cross-cutting implementation considerations and essential service packages for the framework, guided by the GHSS (2) and the Global Guidance on criteria and processes for the validation of elimination of MTCT of HIV, syphilis and HBV (5).

Introducing the four pillars framework

Four pillars for triple elimination implementation, focusing on distinct target populations and comprising a minimum package of essential services for each pillar, support WHO's approach to triple elimination (Fig. 2). These pillars are:

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

Framework for the Implementation of Triple Elimination of mother to child transmission of HIV, syphilis and HBV

<p>Pillar</p>	<p>01</p>  <p>Primary Prevention of Infection and Vertical Transmission</p> <p>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.</p>	<p>02</p>  <p>SRH Linkages and Integration</p> <p>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.</p>
	<p>Target populations</p>	<p>Non-pregnant, pregnant and breastfeeding women and girls of childbearing age.</p>
<p>Essential services</p>	<ul style="list-style-type: none"> · 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 	<ul style="list-style-type: none"> · 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
<p>Crossing-cutting implementation considerations</p>	<p>Health system strengthening to better provide effective person-centred care</p>	
	<p>Strategic information gathering and analysis</p>	
	<p>Leadership, community engagement, partnerships and cross-programmatic coordination</p>	
	<p>Identifying and addressing barriers</p>	

03



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.

Pregnant and breastfeeding women and girls living with HIV or HBV or sero-positive for syphilis.

- 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

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

04



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.

Exposed infants, infected infants and children, household contacts and partners of women and girls living with HIV or HBV or sero-positive for syphilis.

- 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

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

The pillars, populations and essential services

Pillar 1: Primary prevention of infection and vertical transmission

The first pillar focusses on all women and girls of childbearing age, whether not pregnant, pregnant or breastfeeding. The objective of this pillar is to prevent incident HIV, syphilis and HBV infections in women and girls for their own health and to prevent vertical transmission. This will be achieved through delivery of testing services, infection prevention interventions and linkage to appropriate SRH services.

This pillar also includes HIV, syphilis and HBV testing in the target population in order to identify those who may have any of these three infections and would be at risk of vertical transmission to their infants and children. It also identifies those who test negative for some or all of these infections but are at risk of acquiring HIV, syphilis or HBV and would benefit from targeted prevention. Those found to be negative but at risk are linked to services to prevent incident infection, including pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) for HIV where indicated, condoms and other SRH and prevention interventions. It also includes linkage to care and treatment for women and girls who are found to be positive. Finally, it includes 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.

Pillar 2: SRH linkages and integration

This pillar focusses on counselling, care, support and linkages to, or provision of SRH care for women and girls living with HIV and / or HBV and / or sero-positive for syphilis. Its purpose is to enable appropriate pregnancy planning and prevention of unintended pregnancy and to prevent, diagnose and treat other STIs.

The objective of this pillar is to ensure that women and girls who are living with HIV and / or HBV and / or sero-positive for syphilis receive, in addition to appropriate treatment for these infections, other SRH care. Essential SRH care includes family planning and contraception and pregnancy planning services, diagnosis and treatment

of other STIs and services that specifically support adolescent SRH and rights.

Pillar 3: Essential maternal EMTCT services

This pillar focusses on the prevention of MTCT to infants of pregnant and breastfeeding women and girls living with HIV and / or HBV and / or sero-positive for syphilis.

The objective of this pillar is to ensure that people in this target population receive early antenatal testing, for these infections appropriate (antenatal, intrapartum and postnatal) care and treatment to prevent MTCT. This will be achieved through maternal testing and, where appropriate, retesting, prophylaxis and treatment services for the three infections.

Pillar 4: Infant, child and partner services

This pillar focusses on testing, treatment, care (including immunization and well-child care) and support for exposed infants, infected children, household contacts and partners of women and girls living with HIV and / or HBV and / or sero-positive for syphilis.

The objectives of this pillar are twofold: 1) The focus on interventions for exposed infants and infected children ensures a comprehensive approach to preventing paediatric infections and their sequelae through prevention and early identification of transmission with rapid treatment initiation where indicated. All newborns should receive their first dose of hepatitis B vaccine as soon as possible after birth, ideally within 24 hours. 2) The focus on interventions for household contacts and partners is essential to identify and treat infections beyond women and girls and their newborns, thus preventing transmission and reinfection and ensuring healthy outcomes for the whole family.

Cross-cutting implementation considerations

Triple elimination targets can be achieved only when equitable access to high quality interventions and services for MCH and SRH is assured. To maximize the likelihood of successful implementation and impact of the four-pillar approach to triple elimination, cross-cutting

implementation considerations and enablers, mapped to the GHSS strategic directions, must be taken into account. Central to the success of this initiative is ensuring that the human rights of women, children and families affected by HIV, syphilis and HBV are protected. In this regard, addressing gender equality considerations in service access and involving women and girls in planning and delivery of non-coercive interventions are crucial.

The cross-cutting considerations are:

- **Health system strengthening to better provide effective person-centred care** by expanding coverage and improving the quality of essential and routine services. This will be achieved by enhancing access, follow-up, continuity of care, service integration and linkages; by implementing innovative service delivery models such as differentiated service delivery for prevention, testing, treatment and self-care interventions, and by supporting expansion and strengthening of testing services including laboratory capacity. Diagnostic integration of HIV, syphilis, and HBV testing and laboratory systems will help streamline testing services, human resources, procurement, data management, and quality assurance. (GHSS Strategic Direction 1. Delivering high-quality, evidence-based, people-centred services; GHSS Strategic Direction 2. Optimizing systems, sectors and partnerships; GHSS Strategic Direction 5. Fostering innovation for impact)
- **Strategic information gathering and analysis** Through integrated surveillance of HIV, syphilis and HBV in target populations. This will include development and monitoring of key triple elimination indicators (for example, policy, service integration, testing, diagnosis, treatment, care and impact indicators, and comprehensive mother-infant pair tracking), and investment in digital health solutions across all three infections. High quality, person-centred, ethically collected and managed strategic information will inform planning, implementation, resource mobilization and allocation, research prioritization and advocacy efforts. (GHSS Strategic Direction 2. Optimizing systems, sectors and partnerships; GHSS Strategic Direction 3. Generating and using data to drive decisions and actions)
- **Leadership, community engagement, partnerships and cross-programmatic coordination** (across HIV, SRH, MCH, STI, viral hepatitis, expanded programme on immunization and other country-level health programmes) is required for efficient and effective operational planning, evaluation, resource mobilization, communication, service delivery and advocacy. In particular, the meaningful engagement and involvement of communities of people affected by HIV, syphilis and HBV, particularly women and girls, to bolster advocacy efforts, strengthen programme design and delivery and promote accountability is essential. (GHSS Strategic Direction 2. Optimizing systems, sectors and partnerships; GHSS Strategic Direction 4. Engaging empowered communities and civil society)
- **Identifying and addressing barriers** to triple EMTCT of HIV, syphilis and HBV at the individual, community, health services, policy and societal levels. Barriers to be addressed may be wide-ranging, and some will be context-specific. Examples include lack of political leadership and commitment, gender inequality, stigma, discrimination, 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, and gender-based violence. The concepts of “no one left behind” and health equity are central to the triple elimination initiative and the broader WHO mission. (GHSS Strategic Direction 1. Delivering high-quality, evidence-based, people-centred services; GHSS Strategic Direction 2. Optimizing systems, sectors and partnerships; GHSS Strategic Direction 4. Engaging empowered communities and civil society).

Conclusion

Triple elimination of mother-to-child transmission of HIV, syphilis and HBV is feasible but requires the sustainable scale-up of the implementation of evidence-based and proven interventions with an integrated approach in order to reach global targets and ensure health for women, newborns, children and families as enshrined in the UN Secretary General's Global Strategy on Women's, Children's and Adolescents' Health (2016–2030) and

in the Joint GHSS for HIV, Viral Hepatitis and STIs. The Four Pillars Framework for Triple Elimination Implementation outlined here provides an approach for effective planning and implementation of interventions to achieve the targets and outlines critical cross-cutting implementation considerations. A comprehensive guide for the Four Pillars Framework for Triple Elimination Implementation will be published in 2024.

Triple elimination can be achieved if proven interventions are integrated and scaled up. The Four Pillars Framework provides an approach and roadmap for intergrated programme implementation which will lead to reduced transmission of HIV, syphilis and HBV, healthier babies, children, women, girls and families and ultimately a generation free from these infections.



Additional WHO resources

Consolidated guidelines on person-centred HIV strategic information: strengthening routine data for impact (2022). <https://www.who.int/publications/i/item/9789240055315>

Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach (2021). <https://www.who.int/publications/i/item/9789240031593>

Consolidated guidelines on HIV testing services (2019). <https://www.who.int/publications/i/item/978-92-4-155058-1>

Consolidated guidelines on HIV, viral hepatitis and STI prevention, diagnosis, treatment and care for key populations (2022). <https://www.who.int/publications/i/item/9789240052390>

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World Health Organization
20, Avenue Appia
1211 Geneva 27
Switzerland
www.who.int

