



# Key considerations for fast-tracking the elimination of mother-to-child transmission of HIV in lower-prevalence settings

Lessons from validated countries



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# Acronyms and abbreviations

<b>AIDS</b>	acquired immunodeficiency syndrome
<b>ANC</b>	antenatal care
<b>ART</b>	antiretroviral therapy
<b>ARV</b>	antiretroviral
<b>CBO</b>	community-based organization
<b>CHW</b>	community health worker
<b>CSO</b>	civil society organization
<b>EMTCT</b>	elimination of mother-to-child transmission
<b>HBsAg</b>	hepatitis B surface antigen
<b>HBV</b>	hepatitis B virus
<b>HBV-BD</b>	hepatitis B (HepB) birth dose
<b>HIV</b>	human immunodeficiency virus
<b>ICTC</b>	integrated counselling and testing centre [India]
<b>MNCH</b>	maternal, neonatal and child health
<b>NGO</b>	nongovernmental organization
<b>PEPFAR</b>	United States President's Emergency Plan for AIDS Relief
<b>PHC</b>	primary health care
<b>PMTCT</b>	prevention of mother-to-child transmission
<b>PPP</b>	public–private partnership
<b>RMNCAH</b>	reproductive, maternal, newborn, child and adolescent health
<b>SDGs</b>	Sustainable Development Goals
<b>STDs</b>	sexually transmitted diseases
<b>STIs</b>	sexually transmitted infections
<b>UHC</b>	universal health coverage
<b>UNAIDS</b>	Joint United Nations Programme on HIV/AIDS
<b>UNFPA</b>	United Nations Population Fund
<b>UNICEF</b>	United Nations Children's Fund
<b>WHO</b>	World Health Organization

# Glossary

**Concentrated HIV epidemic**

The epidemic occurs in one or more vulnerable population groups, such as men who have sex with men, commercial sex workers and injecting drug users, with an HIV prevalence less than 1% in the general population but exceeding 5% in the affected vulnerable population groups.

**Generalized HIV epidemic**

The epidemic occurs and is sustained in the general population through heterosexual transmission with an HIV prevalence usually exceeding 1%.

**Lower-HIV-prevalence setting**

HIV prevalence is lower than in a generalized HIV epidemic setting. Within the lower-prevalence setting, however, the epidemic may be concentrated in key populations, locations or 'hot spots' and it may be generalized or not.



# Introduction

Over more than a decade, the world has made considerable progress in reaching women with services to reduce vertical transmission of HIV. Most countries have adopted lifelong ART to “treat all” pregnant women, regardless of their CD4 count, as part of a public health approach and one of the key objectives to achieve the elimination of mother-to-child transmission (EMTCT) of HIV. Yet, results of efforts to reduce the number of new paediatric HIV infections have fallen short against the 2020 Start Free target, among others; the goal of ending HIV and AIDS in children remains elusive.

In 2014, the World Health Organization (WHO) launched a dual initiative for EMTCT of HIV and syphilis and released global guidance on validation criteria and processes. As of August 2022, WHO had validated 16 countries and territories for having eliminated either HIV alone or HIV in combination with congenital syphilis. Most of these countries are lower-HIV-prevalence settings in the Americas, Asia and Europe. In 2021 WHO updated its global guidance for the elimination of vertical transmission of HIV and syphilis to include hepatitis B virus.

Unlike in high-prevalence countries, in which the HIV epidemic tends to be generalized and prevalence often exceeds 1%, the epidemics in lower-prevalence countries may be concentrated in key populations, locations or 'hot spots' and may be generalized or not. Lower-prevalence countries may have lower rates of prevention of vertical transmission coverage nationally than higher-prevalence countries. They may face particular challenges in HIV case finding among people (and their sexual partners) in key populations.

A review of validated countries' experiences sheds light on the primary drivers of EMTCT success in lower-prevalence countries. These include: health systems

with strong maternal, neonatal and child health (MNCH) platforms, with robust service delivery for children; a commitment to integration of HIV and syphilis interventions into MNCH services (antenatal and postnatal care, labour and delivery services, and child health care); and strong and sustained national leadership and commitment to health and EMTCT.

The characteristics that validated countries have in common suggest that EMTCT is possible in countries with lower maternal prevalence where HIV is prioritized as a public health issue, where there is strong political and financial commitment, and where access to MNCH services and HIV testing during pregnancy is universal. An analysis of the experiences of validated countries reveals significant additional insights.

In 2020 the United Nations Children's Fund (UNICEF), WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) issued operational guidance for countries in their EMTCT programmes. This “last mile to EMTCT” road map is based in a structured process, and it addresses the vital need to integrate EMTCT services into the health system. The “last mile” approach is universal and can be applied in settings of either high or low HIV prevalence.

This key considerations document expands on the 2020 “last mile” operational guidance, with specific considerations for countries with lower HIV prevalence. It builds on the experiences of countries that have been validated for EMTCT of HIV and syphilis and translates the valuable lessons and promising practices of these countries into an operational framework for national programmes, consisting of 12 strategies and enablers to guide efforts towards Fast-Tracking EMTCT in lower-prevalence countries.



# 1. Overview

The world has made huge strides in preventing mother-to-child transmission (PMTCT) of HIV, particularly in high-burden countries of Eastern and Southern Africa, the region most affected by the HIV/AIDS epidemic. National policies and programmes have made it possible to reach millions of pregnant and breastfeeding women living with HIV with life-saving antiretroviral therapy (ART), the best option for both mothers and their children.

Globally, ART coverage in pregnant women increased from 46% in 2010 to 81% in 2021. As a result, annual new HIV infections in children ages 0–9 years declined from 320 000 to 160 000 over the same period. This is a remarkable global health achievement. The United Nations Children’s Fund (UNICEF) has estimated that, as a direct result of the work of partners in the HIV response for children, an estimated 2.5 million children have avoided acquiring HIV through vertical transmission of the virus since 2010 (1,2).

The World Health Organization (WHO) has recommended the adoption of lifelong ART to “treat all” those living with HIV, including pregnant women regardless of their CD4 count, as part of a public health approach and one of the

key objectives to achieve elimination of mother-to-child transmission (EMTCT). Most countries have adopted this approach, including all 22 high-priority countries identified by the Global Plan Towards the Elimination of New HIV Infections among Children by 2015 and Keeping Their Mothers Alive and many countries with lower HIV prevalence and concentrated epidemics.

Yet, the road to EMTCT is long, and progress has slowed. Global targets – including the Start Free target of fewer than 20 000 new infections in children in 2020 – have been missed. And among the 22 high-priority countries, only Botswana has been certified by WHO as on the path to EMTCT.

In view of this, UNICEF, WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) launched a “last mile to EMTCT” road map in 2020. It offers operational guidance for national programmes that have adopted lifelong ART for all pregnant and breastfeeding women living with HIV. It recommends four steps (Box 1) and addresses the vital need to integrate EMTCT services into the health system (3).

The “last mile” approach is universal and can be applied in settings of either high or low HIV prevalence. However, the epidemiological characteristics and the specific challenges of delivering ART in lower-prevalence countries may be very different than in higher-prevalence countries. For example:

- Lower-prevalence countries may lack sufficient national commitment and leadership to prioritize HIV as a public health issue and address it in their national budgets.
- The epidemic in lower-prevalence countries may be concentrated in key populations, locations or 'hot spots' and may be generalized or not. Thus, there is no single blueprint for programmatic response in lower-prevalence countries.
- Lower-prevalence countries may have lower rates of PMTCT coverage nationally than higher-prevalence countries. Thus, their programme starting points may be earlier (and their “last mile” is longer).
- Lower-prevalence countries may face particular challenges in HIV case finding among key populations (men who have sex with men, intravenous drug users, sex workers, prisoners, migrants and transgender people) and their sexual partners. Women and men in these groups are at higher risk of HIV infection and their uptake of HIV services is low.

- Lower-prevalence countries may receive inadequate health care financing and support focused on EMTCT from international financing mechanisms, such as the United States President’s Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund).
- Integration of interventions addressing HIV and other infectious diseases into maternal and child health services in lower-prevalence countries is essential for achieving EMTCT. However, particularly in these countries, such integration tends to be suboptimal.

This document addresses these issues as it expands the “last mile” operational guidance specifically for countries with lower HIV prevalence. It is based on a review of experiences, key lessons learned and promising practices in implementation of EMTCT interventions in lower-prevalence countries, including Sri Lanka and Thailand, which have been validated by WHO for having eliminated vertical transmission of HIV, and three countries with the potential to achieve EMTCT by 2030: Democratic Republic of the Congo, Ghana and India. This document proposes an operational framework, consisting of 12 strategies and enablers to guide efforts towards EMTCT in lower-prevalence countries.

### Box 1. Going the “last mile” to EMTCT: A road map for ending paediatric HIV worldwide



UNICEF, WHO and UNAIDS introduced the “last mile” roadmap in 2020 to help countries put their EMTCT efforts back on track. It is based on the recognition that the “last mile” to fully defeat vertical transmission of HIV has proved to be the most difficult one to travel and that a new structured and coordinated approach is needed. It outlines a flexible process that is highly local in practice, consisting of four steps:

- (1) establishing a consultative mechanism with a country team to lead the process;
- (2) assessing progress toward EMTCT targets and identifying remaining gaps;
- (3) planning and prioritizing context-specific solutions to close identified gaps; and
- (4) implementing, monitoring and evaluating progress towards EMTCT with timely course corrections as needed.

Source: Going the ‘Last Mile’ to EMTCT: A road map for ending the HIV epidemic in children, UNICEF 2020 (3)

# 2. About this key considerations document

In 2020 UNICEF, WHO and UNAIDS published a “last mile” to EMTCT road map (3), as operational guidance for national programmes implementing the “treat all” approach to address major sources of new HIV infections in children. The road map addresses the vital need to integrate EMTCT services within the larger health system in order to optimize effectiveness and sustainability — a concern relevant in both higher- and lower-HIV-prevalence countries.

This key considerations document for lower-prevalence settings supplements the 2020 “last mile to EMTCT” guidance by analysing and synthesizing lessons learned, strategies and good practices from lower-prevalence countries that are validated for EMTCT.

## 2.1. Purpose and intended audience

The purpose of this key considerations document is threefold:

- to share country experiences on elimination of vertical transmission of HIV and syphilis in validated lower-prevalence countries;
- to review and analyse success factors from policy to implementation in these countries;
- to define a framework for operationalizing lessons learned and innovations to inform national programmes in other lower-prevalence settings.

The document provides strategic and operational guidance to national policy-makers and health authorities responsible for setting health priorities and budget allocations as well as for implementers and health care managers responsible for delivering health and EMTCT services in lower-prevalence settings.

## 2.2. Guiding principles

This document reflects guiding principles based on the Sustainable Development Goals (SDGs) and fundamental human rights values. Guiding principles include the following:

- **Country-owned and driven:** The EMTCT agenda is primarily a national agenda that must be owned and managed by in-country stakeholders with the support of political leadership and accountability for results.
- **Leave no woman or child behind:** Because the EMTCT effort requires very high levels of intervention coverage, implementation strategies must seek to reach all women, with a focus on key populations and other vulnerable groups.
- **Integrated multisectoral response:** Key non-health stakeholders must be mobilized, and referral linkages strengthened, to optimize every opportunity for the delivery of EMTCT services integrated with reproductive, maternal, newborn, child and adolescent health (RMNCAH).
- **Meaningful involvement of the community:** EMTCT cannot succeed unless women living with HIV are engaged in all stages of the EMTCT agenda, from strategic decision-making through policy formulation to practical implementation.
- **Public-private partnerships:** Mechanisms must be established at the strategic and operational levels to facilitate the private sector’s active engagement as a key player in the EMTCT response.
- **Evidence and innovation:** To accelerate the achievement of ending new paediatric infections (HIV, syphilis and hepatitis B virus), it will be critical to identify, disseminate and promote proven interventions and innovative solutions.

# 3. Background

The world has made considerable progress in reaching women with services to reduce vertical transmission of HIV. However, with new infections at 160 000 annually in 2021, efforts still fall short of reducing the number of new paediatric HIV infections to fewer than 20 000 annually, the original 2020 Start Free target.

ARV coverage for PMTCT among pregnant women living with HIV varies across regions; it tends to be higher in regions and countries where HIV prevalence is high, and lower where HIV prevalence is low. Eastern and Southern Africa, the region with the highest HIV prevalence, has the highest coverage (89%), while regions in which countries have lower HIV prevalence generally lag behind (Fig. 1).

## 3.1. History of efforts to prevent vertical transmission of HIV

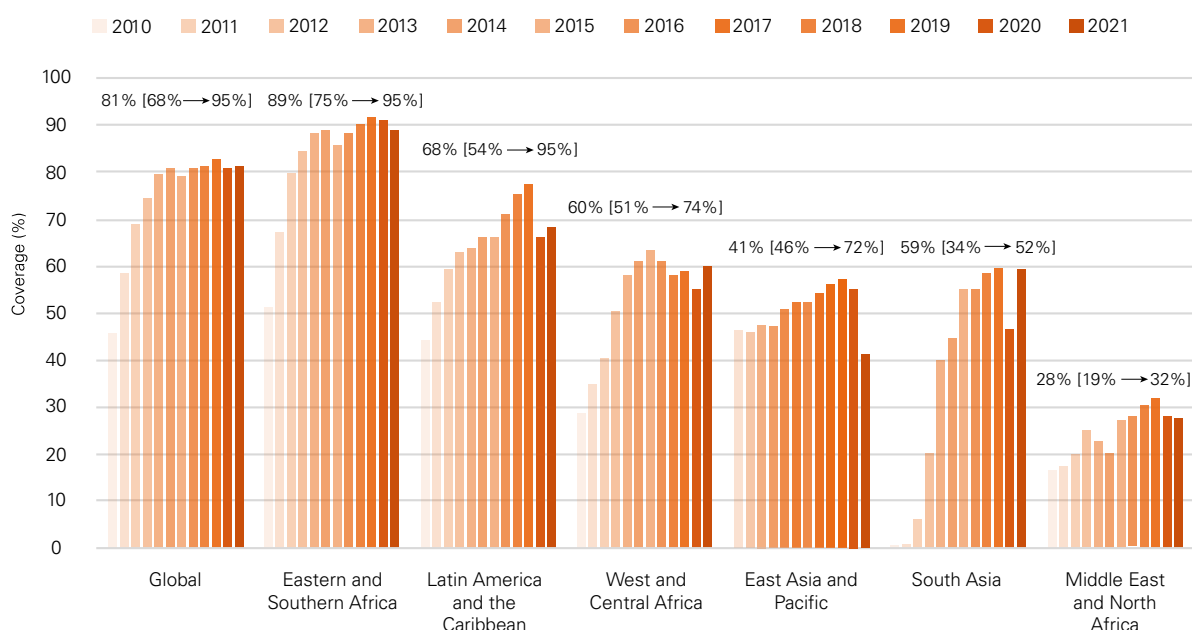
The first cases of HIV infections in children were reported in the early 1980s. By the mid-1990s paediatric HIV had emerged as a major public health issue in both developed

and developing countries. A 1994 study by the Paediatric AIDS Clinical Trial Group first demonstrated that giving pregnant women oral zidovudine, an antiretroviral, from 14 weeks of pregnancy could reduce infection in the infant by as much as two thirds in non-breastfeeding populations (4). Following this landmark study, several studies were conducted in Africa and elsewhere to test different regimens in both non-breastfeeding and breastfeeding populations.

Over several years, regimens ranging from single-dose nevirapine to triple-drug ARV therapy delivered orally were pilot-tested. The most efficacious combination therapies proved to reduce the risk of vertical transmission of HIV to less than 2% in non-breastfeeding populations and less than 5% in breastfeeding populations. These pilot-tests demonstrated a major breakthrough, given that the risk of vertical transmission is between 5% and 45% in the absence of any intervention.

In 2012, WHO recommended ART as a lifelong treatment for eligible women and adolescent girls living with HIV, and in 2016 it adopted a “treat all” approach for all populations, including pregnant women living with HIV, regardless of their

**Fig. 1.** Percentage of pregnant women living with HIV receiving effective ARVs for PMTCT, by region, 2010–2021



Source: UNAIDS 2022 (1).

Note: Data are not available for Eastern Europe and Central Asia, North America and Western Europe. “Effective ARVs” exclude single-dose nevirapine.



CD4 counts. WHO has translated its “treat all” approach (also called Option B+) into programme guidelines. Most countries, including lower-prevalence countries and those with concentrated epidemics, have adopted this approach.

This simpler ART treatment regimen was found feasible and affordable within the health systems and fiscal realities of developing countries, where most paediatric HIV infections occur (5). Together with making HIV testing available to pregnant and breastfeeding women, it forms the basis for the scale-up of national PMTCT programmes.

Integration of EMTCT services and RMNCAH services within the broader health system is a pillar of HIV programming in all epidemiological settings. UNAIDS, the United Nations Population Fund (UNFPA) and UNICEF have also promoted the integration of HIV prevention and family planning among women of reproductive age as part of PMTCT efforts.

The United Nations partners have further promoted and supported integration of services to prevent vertical transmission of HIV, syphilis and hepatitis B as a good investment for both mother and child in most epidemic settings, especially in lower-prevalence countries. This integrated approach has shaped programmes in Asia, Latin America and the Caribbean.

### 3.2. Progress to date and remaining bottlenecks

The Abuja Call to Action, launched at the first High-Level Global Partners Forum on PMTCT in December 2005, called for the elimination of HIV vertical transmission.

It was followed by the Global Plan Towards the Elimination of New HIV Infections among Children by 2015 and Keeping Their Mothers Alive, launched by PEPFAR, UNAIDS and partners in 2011, and the “three frees” – Start Free, Stay Free, AIDS Free – Super-Fast-Track Framework for ending AIDS in children, adolescents and young women by 2020, launched by the partners in 2016. The Start Free targets were to reduce new paediatric HIV infections to fewer than 40 000 by 2018 and fewer than 20 000 by 2020 and to start 95% of pregnant women and children living with HIV on lifelong ART by 2018, in line with EMTCT targets.

Numerous bottlenecks have been documented that explain why the 2020 Start Free targets were missed. In lower-prevalence countries, bottlenecks include the lack of political commitment to eliminating vertical transmission of HIV; inadequate domestic funding in the context of low external aid (as most low-prevalence countries are not so-called donor-darling countries); inadequate integration of EMTCT programmes and services into RMNCAH; low HIV testing coverage among pregnant women (testing is limited to only a few health facilities); HIV-related stigma and discrimination against people living with HIV, including in health institutions; and limited community engagement and private-sector involvement in EMTCT.

### 3.3. Global EMTCT validation

WHO launched a dual initiative for EMTCT of HIV and syphilis and released global guidance on validation criteria and processes in 2014. In 2015 WHO established a Global Validation Advisory Committee. HIV and syphilis are both sexually transmitted infections and require similar interventions to reduce morbidity and mortality. These interventions include the prevention of incident infections, identification of infection through early prenatal testing and adequate treatment of seropositive pregnant women (6).

In 2021 WHO updated its global guidance for the elimination of vertical transmission of HIV and syphilis to include hepatitis B virus (7). In the Americas commitments to dual elimination were expanded through the Plan of Action for the Control of HIV and Sexually Transmitted Diseases (2016–2021), which added the elimination of hepatitis B and Chagas disease in areas where these are endemic (8). In Asia and the

Pacific, there is a regional framework for the triple elimination of mother-to-child transmission of HIV, hepatitis B and syphilis (2018–2030).

As of August 2022, 16 countries and territories have been validated for elimination of either HIV alone or HIV in combination with congenital syphilis. Most of these countries are lower-HIV-prevalence settings in the Americas, Asia and Europe (Table 1). (A high-burden country, Botswana, was the first country in Africa to be validated as on the Path to Elimination of HIV, in December 2021).

In all countries and territories that have been validated for EMTCT to date, the rate of HIV prevalence among women ages 15–49 years is below 1%; that is, they are lower-prevalence countries/territories in which the epidemic either is concentrated in key populations, locations or 'hot spots' or occurs in the general population through heterosexual transmission but has spread more slowly than in higher-prevalence countries, where HIV prevalence usually exceeds 1%.

**Table 1.** Countries validated for EMTCT or path to elimination of HIV and/or syphilis, as of August 2022

YEAR	COUNTRY/TERRITORY	VALIDATION STATUS
2015	Cuba	HIV and syphilis
2016	Armenia	HIV
	Belarus	HIV and syphilis
	Moldova	Syphilis
	Thailand	HIV and syphilis
2017	Anguilla	HIV and syphilis
	Antigua and Barbuda	HIV and syphilis
	Bermuda	HIV and syphilis
	Cayman Islands	HIV and syphilis
	Montserrat	HIV and syphilis
	St. Kitts and Nevis	HIV and syphilis
2018	Malaysia	HIV and syphilis
2019	Maldives	HIV and syphilis
	Sri Lanka	HIV and syphilis
2020	Dominica	HIV and syphilis
2021	Botswana	Path to elimination for HIV
2022	Oman	HIV and syphilis

Source: WHO 2022 (9).

# 4. EMTCT goals and targets

The goal of elimination of vertical transmission of HIV, syphilis and hepatitis B is to reduce associated maternal and child morbidity and mortality to a level at which it is no longer a public health concern. The goal lies within the broader SDG targets on neonatal and child mortality (target 3.2) and ending the AIDS epidemic (target 3.3). For all settings, and particularly in lower-prevalence settings, the goal is also to ensure an integrated approach – including

political commitment, financing, integrated service delivery and monitoring systems – to addressing maternal infections for more impact and efficiency.

WHO guidance describes the key milestones needed to achieve validation of eliminating vertical transmission of HIV, syphilis and the hepatitis B virus. These milestones need to be achieved for at least one or two years (Table 2).

**Table 2.** EMTCT of HIV, syphilis and hepatitis B virus: impact and process/programmatic targets

	EMTCT IMPACT TARGETS	EMTCT PROCESS/PROGRAMMATIC TARGETS
HIV	Rate of vertical transmission of HIV: <5% in breastfeeding populations OR <2% in non-breastfeeding populations	Population-level antenatal care (ANC) coverage [at least one visit (ANC-1)]: ≥95%
	Population case rate of new paediatric HIV infections due to vertical transmission: ≤50 per 100 000 live births	Coverage of HIV testing among pregnant women: ≥95% (population-based data)
		ART coverage among pregnant women living with HIV: ≥95%
Syphilis	Case rate of congenital syphilis: ≤50 per 100 000 live births	Population-level ANC coverage (ANC-1): ≥95%
		Coverage of syphilis testing among pregnant women in ANC: ≥95%
		Adequate treatment coverage of syphilis-seropositive pregnant women: ≥95%
Hepatitis B virus (HBV)	Countries that provide universal timely hepB birth dose (BD) to all neonates: prevalence of hepatitis B surface antigen (HBsAg) in children ages <5 years: <0.1%  (Childhood prevalence is a proxy for HBV incidence.)	Countries that provide universal timely hepB-BD to all neonates: <ul style="list-style-type: none"> <li>• hepB3 vaccine coverage: &gt;90%</li> <li>• hepB-BD coverage: &gt;90%</li> </ul>
	Countries that provide targeted timely hepB-BD or without universal timely hepB-BD: <ul style="list-style-type: none"> <li>• prevalence of HBsAg in children ages &lt;5 years: &lt;0.1%</li> <li>• HBV vertical transmission rate: &lt;2%</li> </ul>	Countries that provide targeted timely hepB-BD or without universal timely hepB-BD: <ul style="list-style-type: none"> <li>• hepB3 vaccine coverage: &gt;90%</li> <li>• hepB-BD coverage: &gt;90%</li> <li>• coverage of maternal HBsAg testing: &gt;90%</li> <li>• coverage with antivirals for eligible HBsAg-positive</li> </ul>

Source: WHO 2021 (7).



# 5. Characteristics of validated countries

## 5.1. Common characteristics of all validated countries

A review of validated countries' experiences sheds light on the primary drivers of success in lower-prevalence countries. These include:

- health systems with strong maternal, neonatal and child health (MNCH) platforms, with robust service delivery for children;
- a commitment to integration of HIV and syphilis interventions into MNCH services (antenatal and postnatal care, labour and delivery services and child health care); and
- strong and sustained national leadership and commitment to health and EMTCT.

Table 3 lists common characteristics of selected countries validated for EMTCT:

- HIV prevalence among women ages 15–49 years in the general population is below 1%, ranging from <0.1% in Sri Lanka to 1.0% in Thailand.

- MNCH systems in these countries have achieved universal access to ANC and to skilled attendance at delivery. Coverage ranges from 97% to 100% for ANC, one visit (ANC-1), and 99% to 100% for skilled attendance at delivery.
- HIV testing throughout pregnancy is universal in these countries.
- These countries have substantial total health expenditures that reflect their political leadership's commitment to health, ranging from US\$ 162 in health expenditures per capita in Sri Lanka to US\$ 866 in Cuba in the years the countries were validated.

These characteristics common to validated countries suggest that EMTCT is possible in countries with lower maternal prevalence where there is strong political and financial commitment and universal access to MNCH services and HIV testing during pregnancy. An analysis of the experiences of Thailand (validated in 2016) and Sri Lanka (validated in 2019) reveals significant additional insights.



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**Table 3.** Common characteristics of selected EMTCT validated countries,<sup>a</sup> 2015–2019

INDICATORS	CUBA (2015)	ARMENIA (2016)	BELARUS (2016)	THAILAND (2016)	MALAYSIA (2018)	SRI LANKA (2019)
<b>HIV epidemic (2021)</b>						
Total number of people living with HIV	36 000	–	28 000	520 000	82 000	3600
HIV prevalence (%): adults 15–49 years	0.5	–	0.5	1.0	0.3	<0.1
HIV prevalence (%): women 15–49 years	0.2	–	0.4	0.9	0.1	<0.1
<b>MNCH services (in year in which the country was validated)</b>						
Antenatal care, one visit (ANC-1) (%)	99	99	100	98	97	99
Antenatal care, four visits (ANC-4) (%)	98	93	100	93	–	93
Skilled attendant at delivery (%)	99	100	100	100	99	99
DTP3 (%)	96	93	97	99	99	99
<b>HIV EMTCT response (in year in which the country was validated)</b>						
Facilities offering ANC HIV testing (%)	100	–	100	100	100	100
HIV testing during ANC (%)	>95	–	>95	>95	>95	96
Pregnant women with HIV on ART (%)	>95	–	>95	>95	>95	100
Early infant diagnosis (%)	>95	–	>95	98	95	100
Final vertical transmission rate, including during breastfeeding	4.28	–	7.13	1.65	1.64	1.95
<b>Health financing (in year in which the country was validated)</b>						
Total health expenditure per capita (US\$)	866	365	363	214	380	162
Government health expenditure per capita (US\$)	782	58	220	162	219	74

**Source:** HIV epidemic (2021): UNAIDS 2022 (10). MNCH services: UNICEF 2016 (11) (for Cuba, Armenia, Belarus and Thailand), UNICEF 2019 (12) (for Malaysia), and UNICEF 2019 and National Validation Report 2019 (for Sri Lanka). HIV EMTCT response: UNAIDS 2022 (10) (for Cuba, Armenia, Belarus, Thailand and Malaysia), and UNAIDS 2022 and National Validation Report 2019 (for Sri Lanka). Health financing: World Bank 2022 (13).

<sup>a</sup> Selected countries have a general population of at least 1 million and were validated for elimination of mother-to-child transmission of HIV from 2015 to 2019. Moldova was validated for the elimination of congenital syphilis and, therefore, is not one of the selected countries.

## 5.2. Dual (HIV and syphilis) EMTCT certified country: Thailand

In 2016 Thailand became the first country in the Asia-Pacific region to achieve dual elimination of vertical transmission of HIV and syphilis and to be validated. The country's success built on an already high-performing MNCH system, a commitment to universal health coverage and the full integration of EMTCT services into the public health system.

Thailand is a lower-prevalence country with a generalized HIV epidemic. HIV prevalence in the adult population ages 15–49 years is estimated at 1.0% in 2020, but it is much higher among key populations, such as injecting drug users (20.5%), men who have sex with men (11.9%), transgender people (11.0%) and commercial sex workers (2.8%).

Thailand introduced its national PMTCT programme in 2000. The national programme integrated HIV and syphilis testing, ARV prophylaxis and infant formula into routine MNCH in all public hospitals across the country. It was championed by Her Royal Highness Princess Soamsawali Krom Muen Suddhanarintha (14). By integrating HIV into the MNCH system, Thailand was able to leverage general health services for mothers and children.

By 2002 Thailand had achieved universal coverage of ANC and PMTCT services, following the expansion of health centres and hospitals throughout the country and the offer of free health services for all, including key populations, migrants and other vulnerable groups. Major insurance schemes covered the entire population, and financial protection schemes were implemented for vulnerable populations (15).

The national programme:

- integrated PMTCT services into ANC and made HIV and syphilis testing services available in all 9892 public and private clinics, with no parental consent required for children under the age of 18;
- made ART freely available for women attending ANC in over 1000 designated HIV clinics across the country;
- provided family planning services for women living with HIV in all public and private health facilities, including HIV clinics;

- provided services for the prevention of HIV and sexually transmitted infections (STIs) for women of reproductive age through a combination of strategies, including HIV and sexuality education, youth-friendly health services, the promotion of condom use for targeted populations, one-stop crisis centres and HIV and syphilis prevention activities for key populations.

Thailand met EMTCT requirements – process and impact targets – for both HIV and syphilis less than five years after the programme was introduced. Annual coverage of HIV and syphilis testing in pregnancy, as well as ART coverage for women living with HIV and syphilis and treatment coverage for those living with syphilis, exceeded the 95% target. Testing and treatment coverage targets would not have been met without universal access to ANC. Consequently, the rate of vertical transmission of HIV dropped to below 2%, and the numbers of paediatric HIV and congenital syphilis cases both decreased to fewer than 50 per 100 000 live births.

Thailand's success can be attributed to several factors (16–20):

- political will to fully integrate the EMTCT programme and services into its high-performing MNCH system, which had achieved universal coverage in 2002. A combination of strong, sustained political leadership and allocations of national budgets has worked.
- effective delivery of EMTCT and other health services at no charge in all public and private facilities across the country.
- universal access to HIV and syphilis testing for all pregnant women in over 9000 facilities across the country. Testing is offered at the point of care as part of the minimum ANC package, with referral links to HIV treatment centres for those requiring treatment (hub-and-spoke service model) (21).
- enhanced efforts to achieve universal coverage (at least 95%) of ANC and HIV and syphilis testing during pregnancy across the country. Testing services adhere to WHO guidelines and standards; quality is assured at laboratories networked across the country.
- well-functioning disease surveillance and health information systems that have facilitated the tracking of HIV trends in different settings and population groups. In Thailand, estimations and projections based on national infection monitoring systems and social and behavioural survey data are integrated with HIV

epidemic modelling to predict outcomes, identify need for ART and PMTCT, and inform policy-making (20).

- strong political commitment promoting multisectoral collaboration among health and non-health sectors, and among public and private organizations, including organizations of key populations and people living with HIV.
- close monitoring of the EMTCT programme by an integrated team at national level, supported by teams at district level, to identify gaps and make improvements as needed.

Thailand's experience shows that it is possible in a lower-prevalence country to reach all pregnant women throughout the entire population, regardless of citizenship, race, ethnicity, language, religion or any other status. Its EMTCT efforts have been reinforced by protective policies that comply with human rights principles, gender equity in service provision and an extensive operational research agenda seeking to identify the most effective interventions and adopt innovative strategies for reaching marginalized, vulnerable and key populations.

### **5.3. Dual (HIV and syphilis) EMTCT certified country: Sri Lanka**

In 2019 Sri Lanka became the fourth country in the Asia-Pacific region (after Thailand, Malaysia and the Maldives) to achieve the dual elimination of mother-to-child transmission of HIV and congenital syphilis and to be validated by WHO. Sri Lanka's achievement can be attributed to high-level political commitment and the successful integration of the two PMTCT programmes – syphilis and HIV – along with other changes introduced since 2013.

Sri Lanka is a lower-prevalence country with a concentrated HIV epidemic. HIV prevalence in 2021 is estimated at below 0.1% in the adult population ages 15–49 years but slightly higher among key populations

(commercial sex workers: 0.3%; men who have sex with men: 0.2%; transgender people: 0.5%). The country launched a national programme to prevent vertical transmission of HIV in 2002, just two years after the first case of vertical transmission of HIV was reported. The programme has strong links with the country's MNCH programme and sexually transmitted diseases (STD) services. In 2013 the HIV PMTCT and syphilis PMTCT programmes were combined into one programme, under one national coordinator overseeing the implementation of dual EMTCT of HIV and congenital syphilis.

The Ministry of Health established a national policy of universal testing of pregnant women for both HIV and syphilis, part of a four-pronged approach to elimination. The other prongs are HIV prevention for key populations through HIV and STD education, sexual health services and a pre-conception package for newly married couples, and family planning services for women living with HIV.

The integration policy, together with programme leadership at national and district levels, proved to be a significant shift. The Family Health Bureau and the National STD/AIDS Control Programme collaborated to expand dual testing for pregnant women at all ANC facilities across the country. Women were given dual HIV and syphilis rapid tests during the first ANC visit, at no charge. Health managers at national and district levels were committed to ensuring the effective implementation of the policy, and district health teams helped focus attention on the goal by advocating with authorities and engaging communities. By 2018 nearly all pregnant women in Sri Lanka were being tested for HIV and syphilis, and those who tested positive for HIV were immediately referred to start treatment.

Sri Lanka exceeded 95% of targets for ANC, early HIV testing and treatment and syphilis treatment in 2017 and maintained these results in 2018. As of 2020, the country has reported no cases of paediatric HIV infection, and congenital syphilis cases have remained below 2 per 100 000 live births, far below the threshold for validation of 50 cases of HIV or congenital syphilis per 100 000 live births (22).

Sri Lanka's success is attributable to several factors:

- combining HIV and syphilis EMTCT programmes into one programme, with a national coordinator to oversee implementation;
- a policy-driven approach resulting in universal testing for HIV and syphilis of women during pregnancy (through provider-initiated testing and counselling) and at delivery, for women missed during pregnancy;
- introduction of dual HIV and syphilis testing, which facilitated service integration and improved testing quality and efficiency;
- a nationwide network of STD clinics that provide STI and sexual health education, as well as HIV and syphilis testing and treatment, and are linked to MNCH services at national, district and field levels;
- establishment of a national reference laboratory, overseen by a microbiologist, as well as enhancements of specialized laboratories in STD clinics;
- strengthening of the surveillance and health information system to facilitate the tracking of HIV trends across settings and population groups, as well as the long-term follow-up of HIV-seropositive mothers and their HIV-exposed infants. In Sri Lanka this involved the analysis of reproductive health information collected by the Family Health Bureau, STD clinical data and case reports of pregnant women living with HIV and/or syphilis;
- continued advocacy with district teams, promoting the added value of PMTCT programmes to sustain the momentum toward EMTCT until the country was validated.

One of the main takeaways from the Sri Lanka experience is that an integrated approach to EMTCT is possible when built upon the foundations of primary health care (PHC). Success requires a strong political commitment, with resource allocation and accountability for results, and strong programmatic leadership at national and district levels. Services must be free of stigma and discrimination, particularly for women living with HIV and key populations.

# 6. Lessons learned and recommended strategies for lower-HIV-prevalence countries

This key considerations document builds on the experiences of countries that are validated for EMTCT of HIV and syphilis and translates the valuable lessons and promising practices of these countries into an operational framework for national programmes.

The framework includes 12 key strategies and enablers presented as a menu for consideration in the contexts of lower-prevalence countries (Fig. 2). Eight of these

are related to the national leadership commitment (three strategies/enablers), community engagement and respect for human rights and equity of access (two strategies/enablers) and universal access to quality PHC services (three strategies/enablers); they are applicable in all contexts. Two strategies are specific to service delivery in countries with concentrated epidemics, and two strategies are specific to service delivery in countries with generalized epidemics.



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**Fig. 2.** EMTCT operational framework for lower-HIV-prevalence countries

POLICY AND PROGRAMME STRATEGIES/ENABLERS FOR CONSIDERATION IN ALL LOWER-PREVALENCE COUNTRIES		
National leadership commitment to EMTCT	1. Political leadership commitment and allocation of domestic resources for EMTCT	
	2. A policy environment that enables closing MNCH/EMTCT gaps and fosters inclusiveness and non-discrimination of people living with HIV, including key populations	
	3. Oversight and monitoring by integrated teams that reflect the incorporation of EMTCT into MNCH structures	
Universal access to quality PHC services for all women, including the poor, vulnerable and hard to reach	4. Universal access to ANC services through expanded networks of health facilities, mobile clinics and/or outreach activities, and increasing the number of community health workers	
	5. Universal HIV and syphilis testing policies, with integration and routine delivery of EMTCT services at all MNCH contacts in every facility and referral linkages to HIV care, support and treatment centres	
	6. Financial protection of the poor, vulnerable and key populations through integration of EMTCT into health insurance and universal health coverage schemes to make EMTCT services affordable to all	
Community engagement, respect for human rights and equity of access	7. Continued civil society engagement in EMTCT advocacy, education and service delivery as a national priority	
	8. Stigma reduction and anti-discrimination programmes, including programmes at facility and community levels addressing health care providers and the general population	
	<b>Service delivery strategies</b>	
Special targeting of individuals most at risk for vertical transmission	<b>For consideration in lower-prevalence countries with concentrated epidemics</b>	<b>For consideration in lower-prevalence countries with generalized epidemics</b>
	9. Community-based HIV services for key populations through nongovernmental organizations (NGOs) and community-based organizations (CBOs) and peer support, with periodic HIV testing for early identification, timely referral and treatment adherence support	11. Community-based HIV services for most-at-risk adolescent girls and young women through NGOs/CBOs and peer support, with prevention education and periodic HIV testing for early identification, timely referral and treatment adherence support
	10. Outreach services for hard-to-reach key populations to provide integrated MNCH services, including HIV testing and ART	12. Universal family planning services postpartum for all women living with HIV

Source: UNICEF and WHO, 2023.

## 6.1. Policy and programme strategies/enablers for consideration in lower-prevalence countries

### National leadership commitment to EMTCT

The achievement of EMTCT is an ambitious goal that requires sustained commitment at the highest level of political leadership. All validated countries have demonstrated effective leadership that provided clarity about the goal of the programme, allocated domestic resources and motivated stakeholders at different levels to realize the goal. In countries and settings where leadership is weak, the following could be considered:

- 1. Political leadership commitment and allocation of domestic resources for EMTCT:** An important factor determining EMTCT success is a clear government commitment reflected in key national priorities and instruments, such as the national budget and health and HIV plans, and strategies and timelines for the achievement of the goal. Leaders in lower-HIV-prevalence countries may see no reason to keep EMTCT high on the list of national priorities because of the small numbers of HIV cases, with no impact on overall child morbidity and mortality, or due to concerns about the cost-effectiveness of programmes. But good HIV surveillance data, used to track and predict the future course of the epidemic, may indicate that such reasons are short-sighted. Instead of waiting until the health system is overwhelmed with a large number of cases, lower HIV prevalence provides an opportunity

#### Box 2. India: A Fast-Track approach focusing on districts and states where gaps are biggest

India's HIV prevalence in adults ages 15–49 years is estimated at 0.2%, and its epidemic is concentrated in key populations. But, because of the country's large population (around 1.4 billion), that lower prevalence translates to huge numbers of people living with HIV. India contributes significantly to the global burden of paediatric HIV infections; some 5000 new paediatric infections occurred in 2021, and an estimated 70 000 children 0–14 years were living with HIV.

India's National AIDS Control Organization launched its PMTCT programme in 2002, with free HIV testing services delivered through integrated counselling and testing centres (ICTC) attached to government health facilities and single-dose nevirapine provided to mothers during pregnancy and to newborns. As of 2021, India has established more than 21 000 ICTCs and shifted to a "treat all" ART regimen (option B+) (23). Progress has been encouraging. An estimated 64% of pregnant women living with HIV receive ARVs for PMTCT as of 2021. Still, the rate of vertical transmission, at 24%, remains too high, reflecting an often inadequate quality of PMTCT services.

The achievement of EMTCT targets in a large country such as India has many challenges, including those stemming from the diversity of the epidemic and the very different realities faced by different districts and states. Under such circumstances, EMTCT is best addressed through subnational rather than national approaches. India's subnational approach, launched in 2020, prioritizes the 15 states and 473 districts that account for 90% of all HIV infections. It includes a Fast-Tracking strategy to accelerate progress, with increased accountability of health managers at subnational levels for achievement of EMTCT goals.

Programming is evidence-based, beginning with a bottleneck analysis to identify good practices, lessons learned, gaps and weaknesses and followed by development of an action plan to reduce the identified gaps. A mechanism is established to routinely track progress locally and at the national level. Preliminary results indicate that this strategy has helped the priority states and districts to preserve gains in the face of the COVID-19 epidemic and stay the course towards EMTCT goals. For instance, Gujarat State in 2021 maintained its 95% coverage of ANC, HIV testing and ART in pregnant women (24).

India's EMTCT Fast-Tracking strategy provides for monitoring of progress towards elimination targets district-by-district and then state-by-state, until the country can seek validation for EMTCT nationally. This strategy suggests a new, data-driven programme pathway towards EMTCT in large, lower-prevalence countries.



to intervene early. Early intervention can, with minimal investment, prevent more serious epidemics that would risk reversing hard-won health gains. Therefore, securing the commitment of political and health leaders at national and subnational levels is an important first step. Strategic information, based in good data and evidence, can bolster advocacy arguments for investing in EMTCT as a priority now. India offers an example of a subnational approach (Box 2).

- 2. A policy environment that enables closing MNCH/EMTCT gaps and fosters inclusiveness and non-discrimination of people living with HIV, including key populations:** Policies must be put in place that close gaps between MNCH and EMTCT services and create an environment free from stigma and discrimination, conducive to greater acceptability of and utilization of MNCH and EMTCT services. In addition, countries must implement policies on the full integration of MNCH and EMTCT services by offering services as a package: Every pregnant woman receiving ANC must be offered HIV and syphilis dual testing (or trio testing for HIV, syphilis and hepatitis B), with effective linkages to treatment, and health care providers must be held to account for delivering the package. Likewise, women receiving ART after delivery must also receive contraceptive services to prevent unwanted pregnancies. Thus, EMTCT efforts will contribute significantly to improving overall maternal and child health outcomes.
- 3. Oversight and monitoring by integrated teams that reflect the incorporation of EMTCT into MNCH structures:** The effective implementation of EMTCT strategies and activities will require technical oversight at national and subnational levels from within MNCH structures and systems. Integrated teams will monitor progress towards EMTCT indicators and facilitate regular performance reviews to identify strengths, good practices and innovations that will accelerate progress as well as address remaining bottlenecks. The composition of the teams should reflect the multidisciplinary and multisectoral nature of the EMTCT response. Teams should include not only government representatives but also representatives of major partners, civil society organizations (CSOs) and networks of people living with HIV. Where possible, for efficiency these responsibilities should be folded into existing oversight structures, including community-led monitoring.

## Universal access to quality PHC services as an opportunity for all women to obtain PMTCT services, including the poor, vulnerable and hard to reach

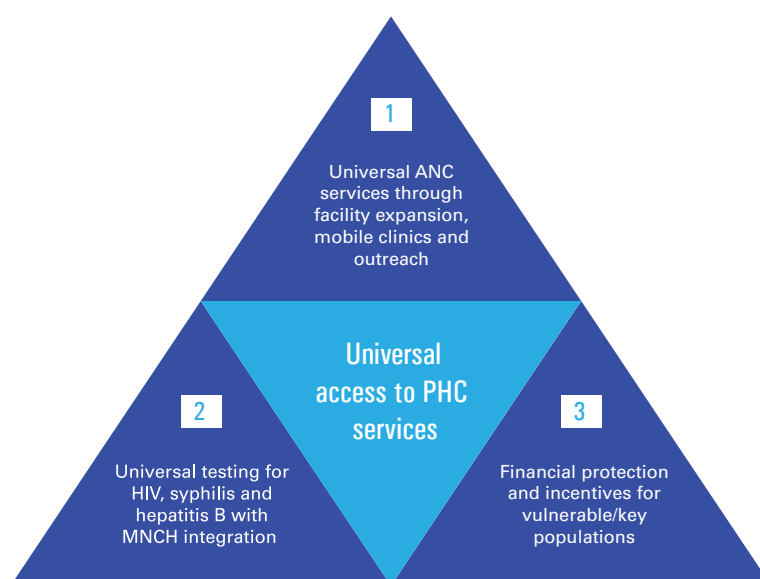
The first and most important milestone on the road to EMTCT is building a strong primary health system that can reach all pregnant women – including the poor and hard to reach; in all geographies and populations, including key populations – with universal access to quality PHC services. EMTCT process indicators include universal coverage targets for ANC and for HIV and syphilis testing and treatment. All the countries validated to have eliminated vertical transmission of HIV and syphilis first achieved universal ANC coverage as a prerequisite for EMTCT. In other words, without universal ANC access and coverage, countries will not be able to achieve EMTCT.

The second most important milestone is ensuring that HIV and syphilis testing and screening for hepatitis B is inextricably linked to MNCH and made available in all public and private health facilities across the country as an integral part of MNCH services. This will ensure that all pregnant women have access to HIV and syphilis testing, which is the primary entry point into EMTCT. Without universal testing of pregnant women for HIV, syphilis and hepatitis B, countries will not achieve EMTCT.

The third milestone is providing financial protection (such as the removal of user fees) and incentives (such as cash) for vulnerable and key populations. This will ensure that services are accessible to all women, particularly those living in poverty, for whom cost is a barrier to access, those who identify or whose partners identify among key populations, and those who are vulnerable for any other reason, such as humanitarian emergency.

Fig. 3 presents the three milestones.

**Fig. 3.** Strategies to achieve universal ANC and EMTCT



**Source:** UNICEF and WHO, 2023.

In countries and settings that have not yet achieved universal ANC and HIV testing, the following strategies could be considered:

**4. Universal access to ANC services through expanded networks of health facilities, mobile clinics and/or outreach activities and increasing the number of CHWs:** As noted, without exception, all countries that have achieved EMTCT have done so after achieving universal ANC coverage. This was accomplished by expanding the geographical reach of PHC facilities in both the public and private sectors to deliver services to all pregnant women across the country. In resource-constrained settings, where costs prohibit building new facilities, countries should consider other approaches, such as regular outreach, mobile and/or community-based services and public private partnerships. These approaches not only overcome geographical access barriers but also can reduce stigma and discrimination associated with visiting facility-based HIV service centres. In countries with concentrated epidemics, differentiated peer-driven strategies will be needed to bring MNCH and HIV services closer to key populations. Such strategies include focused outreach and community-based HIV testing, care and support by people living with HIV – an approach associated with increased utilization of ANC services, including in remote and

conflict-affected areas. Additional investments should be made to engage CSOs who target key populations and more vulnerable groups in PMTCT programming. In addition, countries must assure that national essential service packages for PHC and essential commodity lists include HIV services and commodities (dual or trio test kits and ARVs).

**5. Universal HIV and syphilis testing policy, with integration and routine delivery of EMTCT services at all MNCH contacts in every facility and referral linkages to HIV care, support and treatment centres:** Evidence shows that universal HIV and syphilis testing in pregnancy is both cost-saving and cost-effective and that it results in considerable improvements in maternal and child health outcomes (25,26). Yet, numerous countries have testing policies that limit HIV testing services to just a few health facilities, primarily in the public sector. A major shift towards universal HIV and syphilis testing in pregnancy is required, with considerable implications for budget and for supplies that need to be carefully planned and managed. Additionally, there is evidence of seroconversion among pregnant women who previously tested negative for HIV; vertical transmission rates are much higher in this group than among women who are not pregnant (27). Thus, in accordance with the “retest and treat”

policy for lower-HIV-prevalence countries, high-risk HIV seronegative pregnant women – for example, women in serodiscordant couples or members of key populations – must be retested three months after the initial test or in the third trimester, whichever comes first, for early access to ART if needed (28).

As ANC and HIV and syphilis testing become universally available, greater attention must be paid to fully integrating HIV and syphilis testing into MNCH through provider-initiated counselling and testing. Ghana offers an example (Box 3). This counselling and testing can start in ANC, with the goal of universal access to ANC, HIV and syphilis testing coverage and ending inequalities. In addition, strong linkages are

needed between ANC settings and HIV/STI centres to ensure that all pregnant women who test positive for HIV have access to ART. In lower-HIV-prevalence countries, ART must at least be provided in selected HIV/STI clinics in health facility clusters.

Leveraging such MNCH and STI platforms to include hepatitis B PMTCT services provides an integrated, person-centred approach, furthering universal access to PHC services. WHO recommends maternal HBV screening and antiviral treatment during the third trimester of pregnancy, where there is high risk of vertical transmission, as well as HBV–BD and hep B3 vaccines as part of the basic childhood immunization package.

### Box 3. Ghana: Integrated services reaching women with ARVs, saving lives

Ghana is a lower-prevalence country, with an HIV prevalence of 1.7% among adults ages 15–49 years in 2021. Prevalence is higher among women (2.4%) than among men (1.0%) and higher in key populations than in the general population.

In 2019 Ghana developed the Roadmap for Achieving Universal Health Coverage, with the goal of improving access to high-quality essential health care and population-based services for all by 2030. The country has already achieved universal access to ANC – 91% of pregnant women attend at least one ANC visit – and has the potential to reach all pregnant women with EMTCT services by 2030.

The country's PMTCT programme began in 2006, with service delivery integrated into MNCH services at public, private and faith-based facilities across the country. Ghana committed to dual elimination of syphilis and HIV in 2015 and adopted an HIV "treat all" policy in 2016. MNCH services, including HIV testing and counselling, are free of charge for women during their pregnancies and for three months after their children are born, per the national maternal health policy (2008).

Under Ghana's integrated approach, pregnant women are offered dual HIV and syphilis rapid testing at their first ANC visit and retesting at 34 weeks. Testing is also available during delivery and postpartum care for women missed during ANC. Those testing positive are started on ART and/or syphilis treatment on the same day, also at the ANC clinic. They receive community-based support during and after pregnancy from their case managers and from other women living with HIV, through peer support programmes such as mentor mothers and the "Models of Hope."

As a result of these efforts, 87% of pregnant women with HIV were reached with ARVs for PMTCT through the ANC platform in 2021, and the number of new paediatric HIV infections was reduced by half, from 4700 to 2900, between 2013 and 2021. The peer support has helped to increase women's adherence to treatment and reduce disparities in access to services.

## 6. Financial protection of poor, vulnerable and key populations through integration of EMTCT into health insurance and UHC schemes to make EMTCT services affordable to all:

All validated countries provide ANC and EMTCT services free of charge at the point of care for all, including key populations and migrant populations. Other countries on the path to EMTCT, such as China, are also moving away from fee-for-service payment systems toward services free of charge at the point of care (29,30). Countries have used various coverage arrangements, such as universal health insurance, private insurance and other financial protection schemes, in a shift towards third-party payment through contributory and non-contributory risk-pooling mechanisms (31). Some countries have addressed the access barriers of key populations through the conditional economic incentives that have proven to work with poor and marginalized populations (32).

## Community engagement, respect for human rights and equity of access

EMTCT services must be offered with full respect for the dignity of the beneficiaries in an environment free from stigma and discrimination. In countries and settings where EMTCT is not yet community-driven or there are weaknesses with regard to respect for human rights and equity, the following could be considered:

### 7. Continued civil society engagement in EMTCT advocacy, education and service delivery as a national priority:

Civil society has an important role in ensuring that women living with HIV can access services to prevent vertical transmission and be retained in care for their own health. Government and implementing partners must fully engage CSOs for these purposes. Particularly where such organizations work at the grassroots level, they can extend the reach of programmes by identifying all pregnant women, including those who are marginalized or who do not seek facility-based care for other reasons, and linking them to integrated MNCH/EMTCT services. Mapping CSOs and networks of people and women living with HIV is a first step in identifying community groups to

engage in the response. Regular engagement with them will bring in beneficiaries' perspectives on the quality of services, respect for human rights and equity of access. These groups can also help identify ways to overcome barriers to universal access.

### 8. Stigma reduction and anti-discrimination programmes, including programmes at facility and community levels addressing health care providers and the general population:

Countries seeking to eliminate vertical transmission of HIV must assess the level of human rights violations and gender inequality in health services provision, particularly where violations occur in health facilities, and devise appropriate interventions at policy, environmental and individual levels to combat them (33). Several approaches have been developed for the assessment, intervention and evaluation of stigma and discrimination in health facilities. The Southeast Asia Stigma Reduction Quality Improvement Learning Network is one example. It is a regional initiative launched with ministries of health of Cambodia, the Lao People's Democratic Republic, Thailand and Viet Nam to help countries design and implement strategies to reduce stigma and discrimination (34). PEPFAR's "total facility approach to reducing stigma and discrimination" is another innovative approach, implemented in Ghana and the United Republic of Tanzania. These approaches include an initial assessment of the situation, the training of health professionals, the education of communities through mass media and implementation of context-specific solutions to address identified causes of stigma and discrimination. The goal is an overall culture shift in health facilities, with more staff willing to care for people living with HIV, including members of key populations (35).

### 6.2. Service delivery strategies for consideration in countries with concentrated epidemics

In lower-prevalence countries with concentrated HIV epidemics, the levels of HIV infection – and the risks of vertical transmission of HIV – are higher in key populations than in the general population. Yet, access to health services tends to be more limited. Differentiated service delivery models are needed to overcome the specific

access barriers of key populations, including low coverage of HIV services, high levels of stigma and discrimination, and negative attitudes of health care providers in health facilities. Community-based services working with key populations have succeeded in increasing access to HIV testing, providing treatment support and improving retention in care.

**9. Community-based HIV services for key populations through NGOs/CBOs and peer support, with periodic HIV testing for early identification, timely referral and treatment adherence support:**

Community-based EMTCT programmes serving key populations should be prioritized in lower-prevalence countries with concentrated HIV epidemics. Approaches that engage key population communities in tailoring services to meet their needs offer the best chances of reaching the most people. Such approaches have been shown to increase access to and acceptance of HIV testing with periodic retesting among key populations, facilitating early identification of new infections among pregnant women. Community-based approaches also have improved referral and adherence to HIV care, support and treatment of those testing positive for HIV, including in the context of EMTCT. Such services through NGOs, CBOs and networks of people living with HIV must be provided in friendly environments that are free from stigma and discrimination and ensure the confidentiality of those using the services.

**10. Outreach services for hard-to-reach key populations to provide integrated MNCH/EMTCT services, including HIV screening and ART:** Where MNCH and EMTCT services are not readily available, out-of-facility services can be brought nearer to key population communities as a way to reach those marginalized and left behind (36). Outreach services offering friendly environments have successfully delivered MNCH services such as ANC, postnatal care and immunization services to hard-to-reach communities (37). In the context of HIV, outreach services can include HIV prevention and health education, HIV testing and counselling and ART refill and adherence counselling (38). The involvement of

key populations in outreach programmes that serve their communities offers the potential to eliminate stigma and discrimination as a barrier to access to services.

**6.3. Service delivery strategies for consideration in countries with generalized epidemics**

In lower-prevalence countries with generalized epidemics, recent data show that most new HIV infections now occur in adolescent girls and young women; should they eventually become pregnant, they might require EMTCT services. Therefore, EMTCT programmes must include strategies for the prevention of HIV in girls and women of childbearing age, both pregnant and not pregnant, and for prevention of unintended pregnancies among women living with HIV. Two EMTCT strategies are applicable:

**11. Community-based HIV services for most-at-risk adolescent girls and young women through NGOs/CBOs and peer support, with prevention education and periodic HIV testing for early identification, timely referral and treatment adherence support:** Undiagnosed new HIV infections in adolescent girls and young women present the highest risk of vertical transmission when such infections occur during pregnancy. HIV prevention, care and support interventions must be provided to reduce the rate of HIV incidence among women and girls. Evidence has shown that community-based HIV prevention interventions specifically for adolescent girls and young women can improve their HIV knowledge and reduce key risk behaviours, including unprotected sex, oral sex and alcohol consumption before sex (39). Community-based HIV and other health testing conducted by community health workers has yielded high rates of HIV testing and referral to HIV care, support and treatment (40). Programmes must identify adolescent girls and young women who are most at risk of HIV acquisition and develop differentiated approaches to HIV prevention, HIV testing and counselling for this group.

## 12. Universal access to family planning postpartum

**for all women living with HIV:** The effort for EMTCT will benefit from universal access to family planning services, particularly in settings with generalized HIV epidemics. All women living with HIV must be routinely offered family planning counselling during ANC and family planning services as well as counselling soon after delivery. Women living with HIV are more likely than uninfected women to want fewer children and postpone next births. When family planning is offered in the context of PMTCT, women living with HIV are more likely to adopt it (41,42). However, reports from countries in Africa, the Americas and Asia indicate that family planning and PMTCT services are not often integrated within

the MNCH system (43). As a result, contraceptive coverage and condom use among women in PMTCT programmes are generally low (44).

Countries urgently need to integrate family planning services into PMTCT and HIV prevention, care, treatment and support services in both MNCH and STI/HIV clinics as appropriate. Successful models of integration can be adapted to the local context (45). These models include community-based family planning postpartum through home visits, facility-based family planning through ANC and post-natal care and post-delivery counselling. Strategies such as male involvement in family planning will increase acceptance (46–48). Universal access to family planning also requires overcoming geographical and financial barriers, particularly for most-at-risk populations.



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# 7. Context matters

It is recognized that strategies and approaches work differently in different country contexts, for example: background epidemiology, strong versus weak health systems, urban versus rural settings, low versus high socioeconomic status, and poor versus good governance. Many of the lower-HIV-prevalence countries face different realities in terms of their epidemic characteristics, health system capacity, level of financing and the existence of conflict and fragility. Therefore, the strategies recommended in this key considerations document will apply variably in different countries, based on the context.

## 7.1 Adapting to the type of health care delivery system

There is evidence that PMTCT initiatives enhance health systems by increasing the availability, accessibility, utilization and quality of MNCH services (49). Likewise, strong health systems facilitate the rapid scale-up of EMTCT services. In many countries, PHC systems are weak as a result of many years of underfunding, a situation exacerbated by the COVID-19 pandemic (50). As of 2022, only countries with strong health systems and universal ANC have achieved validation for EMTCT (51). Therefore, EMTCT interventions must be anchored in a PHC system-strengthening approach, which will yield a double dividend of ending HIV in children and accelerating improvements in MNCH outcomes.

All validated countries provide MNCH and EMTCT services through PHC using a mix of public- and private-sector service provision. But private-sector EMTCT services do not exist or are inaccessible in some areas, often are not well mapped and may be unregulated (52). Where the private sector is a major contributor to health care delivery, reaching all women and all geographies with basic MNCH and EMTCT services may require building public–private partnerships (PPP), especially in underserved urban poor and rural settings. This paradigm shift will help reposition the private sector, as a key partner in efforts towards EMTCT, for the broader health agenda. Countries should explore the most appropriate models of PPP adapted to their context, based

on such criteria as the degree of current public–private collaboration and the level and sources of funding and essential commodities that each can contribute (53).

## 7.2 Adapting to health care financing and coverage arrangements

Achieving EMTCT process indicator goals – universal access to ANC, HIV and syphilis testing, and ART provision – requires that services are accessible and affordable to all, including the most vulnerable and key populations. This means removing geographical and financial barriers. Many studies have found that user fees reduce service utilization and increase disparities in access between those who can and cannot afford the service (54). In most of the validated countries, the largest share of health expenditures comes from domestic resources, and ANC and HIV services are free of charge at the point of care.

In low-income countries where out-of-pocket payments account for a sizable proportion of health expenditures, it will not be possible to achieve 95% coverage for ANC and HIV testing in pregnancy without addressing user fees. These countries must analyse the financial capacities of women, especially those in key populations, and devise local solutions to ensure that user fees are not a heavy burden on pregnant women and a barrier to EMTCT. Removal of user fees for MNCH and EMTCT services, at least for the most vulnerable groups (such as key populations, migrants and the poor), can be achieved through different financing arrangements, including public and private insurance schemes and partner contributions through the Global Fund, PEPFAR and other funders and funding opportunities. In countries such as India where financial schemes cover most HIV EMTCT services, it is necessary to create awareness among both providers and clients that services should be provided without charge.

Advocacy will be needed to ensure that MNCH and EMTCT services are integral to UHC benefit packages being developed and are made central to national UHC agendas, to ensure the long-term sustainability of EMTCT even after countries have been validated.

### 7.3 Adapting to the context of conflicts and fragility

Many lower-HIV-prevalence countries that have yet to achieve EMTCT are confronted with various emergencies related to disease outbreaks, armed conflicts and natural disasters, and/or they are considered fragile states. These countries must pursue the dual objective of controlling emergencies while accelerating progress toward EMTCT. Principles of UHC necessitate policies that maintain EMTCT on the agenda so as to leave no one behind in both development and humanitarian settings.

Studies have found that MNCH and EMTCT programmes can be implemented in humanitarian settings and countries can achieve high uptake and coverage of key interventions, in some cases performing even better than the national programmes (55,56). For example, community-based approaches have delivered RMNCAH services in humanitarian settings, particularly when health facility operations are disrupted. Such approaches include

the use of mobile clinics, the deployment of community health workers, household HIV testing and home-based support for treatment adherence, women's support groups and peer counselling (57–59).

Often, however, EMTCT programmes are neglected and underfunded in humanitarian actions (60,61). Efforts are needed to ensure that HIV prevention and care interventions are included in the package of essential services provided in emergency situations. Key stakeholders – including governments, CBOs, networks of people living with HIV and development partners – must work together to ensure the continuation of essential EMTCT and related services (in particular ANC, HIV and syphilis testing, ART provision, skilled attendance at delivery and postnatal care of mother–baby pairs) in emergency contexts. The Democratic Republic of the Congo offers an example of the challenges of implementing EMTCT programmes in a fragile developmental setting (Box 4).

#### Box 4. Democratic Republic of the Congo: Potential for EMTCT achievement is not without challenges

The Democratic Republic of the Congo has one of the lowest HIV prevalence rates in sub-Saharan Africa, estimated at 0.7% for adults aged 15–49 years (0.9% among women and 0.6% among men) in 2021. The epidemic is concentrated in key populations, and most cases come from 10 of the 26 provinces (62). The country faces additional challenges due to conflict, insecurity, scarcity of resources and health system weaknesses.

ANC coverage nationally is high, at 82%, and ANC coverage exceeds 90% in at least five provinces – North Kivu (97.5%), South Ubangi (94.8%), Kinshasa (94.1%), Kongo Central (93.9%) and South Kivu (93.5%) (62). This combination of lower HIV prevalence and high ANC coverage makes the Democratic Republic of the Congo a country with the potential to achieve EMTCT by 2030.

A comprehensive package of PMTCT services is offered in the country that includes provider-initiated testing and counselling (dual HIV and syphilis testing is recommended); ART for all women who test positive for HIV (the “treat all” approach); treatment adherence support through a mentor mother programme; family planning for women living with HIV; and primary prevention focusing on key populations, serodiscordant couples, young people and women of reproductive age.

As of 2022, PMTCT services have been scaled up in the ten provinces with the highest numbers of pregnant women living with HIV. However, services in these districts have been limited to health facilities with 30 or more births each month. Only 61% of pregnant women living with HIV received ART for PMTCT in 2021, and the rate of vertical transmission, at 22%, remains one of the highest in Africa. Without a change of strategy, achieving EMTCT of HIV and syphilis in the Democratic Republic of the Congo will remain elusive.

As in all countries, progress will require universal access to ANC and HIV testing and linkage to treatment. In the Democratic Republic of the Congo this will require making PMTCT services available in every facility offering MNCH care (ANC, delivery and postnatal care). The national EMTCT ambition must be matched with appropriate policies and dedicated resources. Given the particular challenges in this fragile developmental setting, a phased approach to EMTCT – building on those provinces in which ANC coverage has already exceeded the 95% process target for EMTCT – may be most appropriate to the country context.



# 8. Conclusion

Eliminating MTCT of HIV is a global goal. It is ambitious but necessary in that it addresses the most vulnerable members of society – women and children. But the experience of the 16 countries that have been validated since 2015 for achieving EMTCT suggests that the goal is attainable. This key considerations document, along with the “last mile to EMTCT” road map and numerous other documents based on similar experiences, has made a clear case for commitment to and investment in EMTCT, and it offers lower-HIV-prevalence countries a menu of potential efforts in its pursuit. The recommended strategies and lessons can be adapted and adjusted to fit varying local realities.

As this document has argued, strong health systems and universal ANC are prerequisites for EMTCT in lower-prevalence countries. Beyond that, the most important determinants of success are the high-level political commitment and technical leadership at all levels; affordable and fully integrated MNCH and EMTCT programmes and services; public and private sectors working together; full

engagement of stakeholder communities and respect for human rights and equity. Also, strong national and subnational EMTCT oversight teams are needed to monitor progress closely, strengthen the accountability of key actors and guide the response towards national validation.

We now need the international community to mobilize advocacy that convinces political leaders in lower-HIV-prevalence countries that EMTCT is worth the effort and investment, as it yields high returns as a preventive intervention and strengthens PHC and MNCH particularly.

Bold action in several lower-prevalence countries is urgently needed. Public and private sectors, CSOs, communities and networks of people living with HIV must work together under government leadership if validation is to be achieved by the SDG deadline of 2030. It is reassuring to know that countries have already walked this road and arrived at the end of the “last mile” and that other countries can learn from their experiences along the way.



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