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Effect of antiretroviral therapy including lopinavir/ritonavir or efavirenz on etonogestrel-releasing implant pharmacokinetics in HIV-positive women.

Carolina Sales Vieira, Maria Valeria Bahamondes, Roberto Molina de Souza, Milena Bastos Brito ...+7 more authors

Institutions: Federal University of Technology - Paraná, State University of Campinas, Federal University of Bahia

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M&E WORKING GROUP OF THE INTERAGENCY TASK TEAM ON THE PREVENTION AND TREATMENT OF HIV INFECTION IN PREGNANT WOMEN, MOTHER, AND CHILDREN

GLOBAL MONITORING FRAMEWORK AND STRATEGY

for the Global Plan towards the elimination of new HIV infections among children by 2015 and keeping their mothers alive (EMTCT)

APRIL 2012

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CDC: Lorraine Alexander, Rachel Blacher
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UNAIDS: Mary Mahy, Tobias Alfven, Anne-Claire Guichard
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USAID: Karin Lane
WHO: *Main contributors* - Chika Hayashi, Nathan Shaffer, Yves Souteyrand
Other contributors - Lale Say (WHO), Doris Chou (WHO), Mie Inoue (WHO), Blerta Maliqi (WHO), Cynthia Pinto (WHO).

Principal author and overall coordinator: Chika Hayashi (Department of HIV/AIDS, WHO, Geneva)

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Comments can be sent to: pmtctmoneval@who.int

ABBREVIATIONS AND ACRONYMS

ANC	antenatal care
ART	antiretroviral therapy
ARV	antiretroviral drug
CHAI	Clinton Health Access Initiative
CMMB	Catholic Medical Mission Board
DSS	demographic surveillance site
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation
EID	early infant diagnosis
EMTCT	elimination of mother-to-child transmission (of HIV)
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GSG	Global Steering Group
HIV	human immunodeficiency virus
IATT	Interagency Task Team
ICAP	International Center for AIDS Care and Treatment Programs
ICW	International Community of Women with HIV/AIDS
M&E	monitoring and evaluation
MCH	maternal and child health
MDG	Millennium Development Goal
MMEIG	Maternal Mortality Estimation Interagency Group
MMR	maternal mortality rate
MPS	Making Pregnancy Safer
MTCT	mother-to-child transmission (of HIV)
OGAC	Office of the US Global AIDS Coordinator
OR	operational research
PEPFAR	US President's Emergency Plan for AIDS Relief
PMTCT	prevention of mother-to-child transmission (of HIV)
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
UNICEF	United Nations Children's Fund
WHO	World Health Organization

EXECUTIVE SUMMARY

The global community has committed itself to eliminating mother-to-child transmission of HIV by 2015. The strategy for reaching this ambitious goal is laid out in the *Global Plan Towards the Elimination of New HIV Infections Among Children by 2015 and Keeping Their Mothers Alive*, adopted in 2011. The initiative is referred to as "EMTCT"—Eliminating Mother-to-Child Transmission.

The *Global Plan* covers all low- and medium-income countries. It focuses, however, on 22 priority countries with high estimated numbers of pregnant women living with HIV: Angola, Botswana, Burundi, Cameroon, Chad, Côte d'Ivoire, Democratic Republic of the Congo, Ethiopia, Ghana, India, Kenya, Lesotho, Malawi, Mozambique, Namibia, Nigeria, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia and Zimbabwe.

The EMTCT initiative places new emphasis on improving health outcomes for mothers and children. This is a shift from the previous emphasis on expanding the coverage of services for preventing mother-to-child transmission (PMTCT). The new emphasis on outcomes requires a corresponding shift in the focus of monitoring and evaluation (M&E) of efforts for prevention of mother-to-child transmission of HIV (PMTCT).

This document outlines a common framework for tracking progress towards EMTCT as we move towards 2015, including explanation of the targets outlined in the *Global Plan*, essential M&E activities at the country level and plans for reporting. It is intended for policy-makers, programme managers, M&E officers, and staff of technical agencies and international partners involved in supporting EMTCT.

Targets and indicators

Clear targets for 2015 and a clear framework for monitoring and measuring progress are necessary to support one **M&E system for the initiative**, integrated into the national M&E system. The EMTCT initiative has 10 targets—2 overall targets, 2 child health targets, and 6 targets related to the four prongs of PMTCT.

The two overall global targets are:

1. Reduce the number of new HIV infections among children by 90% by 2015
2. Reduce the number of HIV-associated deaths to women during pregnancy, childbirth or puerperium by 50% by 2015.

Key M&E activities at the country level

The *Global Plan for EMTCT* calls on countries to "improve outcomes assessment, data quality and impact assessment". Routine monitoring and ongoing evaluation is a priority for EMTCT and is one point in the 10-point action plan outlined in the *Global Plan* as concrete steps for country-level implementation.

Monitoring and evaluation related to EMTCT can be planned, reviewed and strengthened in the following five areas:

1. Setting targets and baselines
2. Reviewing routine M&E systems, and improving and validating data quality
3. Measuring PMTCT programme impact and validating the elimination of mother-to-child transmission
4. Operational research
5. Programme review and evaluation.

Summary of EMTCT baseline and targets initiative for low- and middle-income countries

Areas to monitor	2009 Baseline	2010	2015 Target
Number of HIV+ women delivering[1]	1 490 000[2]	1 490 000	743 000[2]
Overall target: New paediatric HIV infections	430 000[2]	390 000	<43 000
Overall target: HIV-associated deaths of women during pregnancy, childbirth and puerperium	42 000[3]	N/A	21 000
Child target: Under-5 deaths due to HIV	162 000[4]	N/A	<81 000
Child target: ART coverage among children	21%[2]	23%[2]	100%
Prong 1 target: New HIV infections in women age 15–49	1 070 000[2]	1 050 000	535 000
Prong 2 target: Unmet need for family planning	11%[5]	N/A	0
Prong 3 target 3.1: Mother-to-child transmission	29%[2]	26%[2]	<5%
Prong 3 target 3.2: Maternal ARV coverage (prophylaxis and ART)	48%[2,6] (including sdNVP)	48%[6] (excluding sdNVP)	90%
Prong 3 target 3.3: Breastfeeding ARV coverage	N/A[7]	N/A	90%
Prong 4 target: ART coverage among pregnant women	N/A	34%[2]	90%

1 A 50% reduction in the number of deliveries among pregnant women living with HIV along with a reduction from 27% to 5% in mother-to-child transmission will result in a 90% reduction in the number of children newly infected. This is not an official target.
2 Current estimates for 2009 at the time the *Global Plan* was launched. Source: WHO, UNAIDS, UNICEF. *Global HIV/AIDS response: epidemic update and health sector progress towards universal access*. Geneva, WHO, 2011.
3 2008 value. Source: WHO, UNICEF, UNFPA, World Bank. *Trends in maternal mortality: 1990 to 2008: estimates developed by WHO, UNICEF, UNFPA and the World Bank*. Geneva, WHO, 2010.
4 Source: *World Health Statistics 2011*. Geneva, WHO, 2010.
5 2009 estimate for low- and middle-income countries. The baseline is 25% for sub-Saharan Africa. Sources: *World Contraceptive Use 2011*. New York, United Nations, Department of Economic and Social Affairs, Population Division, 2011;.World Contraceptive Use 2010. New York, United Nations, Department of Economic and Social Affairs, Population Division, 2010.
6 The 2009 coverage data include provision of single-dose nevirapine (sdNVP) by itself, which is no longer recommended. Source: WHO, UNAIDS, UNICEF. *Towards universal access: scaling up priority HIV/AIDS interventions in the health sector. Progress report 2010*. Geneva, WHO, 2010. The 2010 coverage data include only the most efficient regimens as recommended by WHO (excluding sdNVP).
7 Comprehensive data are not yet available because the provision of antiretroviral medicine during the breastfeeding period became an international recommendation in 2010.

Reporting progress

Global progress towards the elimination of new HIV infections among children and keeping their mothers alive will be reported annually through the UN. In addition, progress will be monitored through the policy and programme milestones set out in the *Global Plan*. For the 22 priority countries, ongoing process monitoring will be conducted, including indication of whether any technical assistance requests have been fulfilled.

Technical assistance and the IATT

Through the Interagency Task Team on Prevention and Treatment of HIV Infection in Pregnant Women, Mothers and Children (IATT), development partners will collectively support governments to review M&E plans, assess M&E systems and needs, establish baseline data, set national targets, and support monitoring systems and impact assessments that are robust and capable of tracking progress towards EMTCT.

1. BACKGROUND

The global community has committed itself to accelerate the prevention of mother-to-child transmission of HIV (PMTCT), with the goal of eliminating paediatric HIV infection by 2015 ***(1,2)***. The strategy for achieving this ambitious goal is set out in the *Global Plan Towards the Elimination of New HIV Infections Among Children by 2015 and Keeping Their Mothers Alive* ***(3)***, adopted in 2011. This plan covers all low- and middle-income countries but focuses on 22 high-priority countries, almost all in sub-Saharan Africa, with high estimated numbers of pregnant women living with HIV: Angola, Botswana, Burundi, Cameroon, Chad, Côte d'Ivoire, Democratic Republic of the Congo, Ethiopia, Ghana, India, Kenya, Lesotho, Malawi, Mozambique, Namibia, Nigeria, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia and Zimbabwe.

In low- and middle-income countries, HIV transmission from mother to child accounted for an estimated 430 000 new HIV infections in children in 2009 ***(4)***. Although the goal of the 2001 Political Declaration (UNGASS goal ***(5)***) of a 50% reduction in the proportion of infants infected with HIV by 2010 was not achieved, new child HIV infections have decreased from over 500 000 in 2001 to around 400 000 in 2010 ***(6)***. It is estimated that since 1995 more than 350 000 children have avoided HIV infection due to antiretroviral drugs (ARVs) provided to pregnant women living with HIV.

In recent years considerable progress has been made in scaling up national PMTCT programmes. The number of pregnant women receiving treatment for PMTCT has been growing steadily. In 2010 an estimated 48% of pregnant women living in low- and middle-income countries received the most effective antiretroviral (ARV) regimens for PMTCT ***(6)***. If the 11% of pregnant women who received only single-dose nevirapine are included, then an estimated 59% of pregnant women in these countries received some type of ARV for PMTCT in 2010. (Single-dose nevirapine by itself is no longer a recommended regimen.) Over previous years, when single-dose nevirapine was included in the statistic, the reported percentage receiving ARVs rose from 14% in 2005 to 23% in 2006, 33% in 2007, 43% in 2008 and 48% in 2009.

The *Global Plan* shifts the focus from programmes to impact—that is, from the scale-up of PMTCT programmes to the elimination of mother-to-child transmission (EMTCT) by 2015. The *Global Plan* aims to reduce new child HIV infections by 90% and reduce HIV-associated deaths of women during pregnancy, childbirth, and puerperium by 50% from the 2009 baseline; and to reduce mother-to-child-transmission to less than 5%, a level low enough that mother-to-child transmission of HIV *would no longer be considered a major public health problem*.

Moving the focus from scaling up to impact requires a shift in monitoring as well—from measuring PMTCT programme.

The Millennium Development Goals

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Create a global partnership for development with targets for aid, trade and debt relief

Moving the focus from scaling up programmes to increasing impact requires a shift in monitoring as well—from measuring PMTCT programme coverage to measuring programme impact. Improved reporting on programme coverage is critical, but there also needs to be a new focus on systematically estimating the number of new paediatric HIV infections. Measurement of health outcomes will be in line with the numerical targets of the Millennium Development Goals (MDGs), particularly MDG 6, halting and reversing the spread of HIV, malaria, and other diseases by 2015, but also MDGs 4 and 5, which call for reducing under-five mortality and maternal mortality by two-thirds by 2015. The shift in monitoring of MTCT should encourage countries to become more accountable for and focused on the desired result of their programmes.

The new focus on impact re-emphasizes the importance of linkages to and improvements in services for maternal and child health and survival. The *Global Plan* will build on the four prongs of PMTCT ***(7)***, while linking with other initiatives to improve maternal, reproductive and child health[1] to synergize efforts to achieve the MDGs.

In parallel with the *Global Plan*, regional commitments and strategies to eliminate mother-to-child transmission of HIV are also underway. The global initiative will work with these regional initiatives.

1.1 Purpose

This document describes the monitoring and evaluation (M&E) framework for the *Global Plan*. It reviews the targets, indicators, and baselines for this initiative. Also, it summarizes the M&E activities that are important to gauge progress towards the elimination of mother-to-child transmission (EMTCT). These activities include setting baselines and targets; reviewing routine M&E systems; validating and improving data quality; and measuring PMTCT programme impact. Existing country M&E systems and activities can be reviewed and strengthened as programmes scale up for EMTCT.

This document also describes reporting processes to track progress towards EMTCT and milestones set out in the *Global Plan* as well as coordination mechanisms.

1.2 Intended audience

This document is intended for use by policy-makers, programme managers, planners, EMTCT partners, and other stakeholders who want an overview of how the *Global Plan for EMTCT* will be monitored. It can also be useful for programme managers and planner at the sub-national level who seek to align their measurement efforts with national and international targets.

1.3 IATT EMTCT M&E Working Group

This document was developed with the M&E Working Group of the Interagency Task Team on Prevention and Treatment of HIV Infection in Pregnant Women, Mothers and Children (IATT).

The IATT is a consortium of 25 organizations committed to give technical support to countries to achieve the goals of the *Global Plan for EMTCT*. The IATT, co-chaired by UNICEF and WHO, was established in 1998 and has recently reconfigured itself to better support the *Global Plan*. The IATT has a threefold purpose:

1. to monitor and track the progress of implementation in priority countries
2. to coordinate the provision of technical support to countries for EMTCT and
3. to develop and update normative and operational guidance for EMTCT.

1 For example, the Commission on Information and Accountability for Women's and Children's Health, and H4+, an interagency mechanism aimed at harmonizing and accelerating actions to improve maternal and neonatal health.

The IATT works in coordination with the Global Steering Group (GSG) for the *Global Plan* and its support team.

The M&E Working Group is available to assist countries with the M&E components of their EMTCT plans (see section 5.1).

M&E guides for the elimination of mother-to-child transmission of HIV

- This document, ***Global monitoring framework and strategy for the elimination of new child HIV infections by 2015***, outlines the global targets for EMTCT and recommended related indicators for reporting progress towards the targets of the *Global Plan*. This document can be used by policy-makers and other stakeholders who want a quick overview of monitoring of the EMTCT initiative.
- ***Monitoring and evaluating the prevention of mother-to-child transmission of HIV: a guide for national programmes*** is a detailed guide listing descriptions of harmonized indicators recommended for national PMTCT programme monitoring, with details and examples of national and sub-national monitoring, data use, considerations when setting up registers and aggregating reporting forms, and recommendations for revising or implementing a functional PMTCT M&E system. This document can be used by PMTCT and M&E officers who require details of the indicators and operational issues related to PMTCT M&E systems.
- ***Guidance on measuring the impact of national PMTCT programmes*** briefly summarizes several key approaches to measuring PMTCT impact. For some approaches there are specific generic protocols that can be adapted at the country level. The short guide can be useful to all stakeholders who need a quick overview of the different ways that PMTCT impact can be assessed, including their budget requirements.
- These documents can be found online at: http://www.who.int/hiv/pub/me/en/index.html

2. *GLOBAL PLAN* GOAL, TARGETS, INDICATORS, BASELINES AND MILESTONES

2.1 Goal of EMTCT

The overall goal of the *Global Plan* is the elimination of new HIV infections among children and keeping their mothers alive.

The plan focuses on targeted interventions for women living with HIV and their children from pregnancy until the mother stops breastfeeding. Before pregnancy and after weaning, the HIV prevention and treatment needs of mothers and children are also critical and need to be met through comprehensive programmes to provide HIV prevention, treatment, care and support as well as sexual and reproductive health services for all who need them ***(3)***.

Success in eliminating new paediatric HIV infections and improving HIV-free survival is directly linked to the health of the mother and child. The Global Plan goal reflects the critical importance of intensifying linkages with maternal, other sexual nd reproductive health, and child health to achieve EMTCT as well as MDGs 4, 5 and 6.

Global reporting on the EMTCT initiative will monitor progress in all regions and will focus especially on the 22 priority countries, where additional indicators and selected child and maternal health MDG indicators will be part of the monitoring strategy.

2.2 Targets

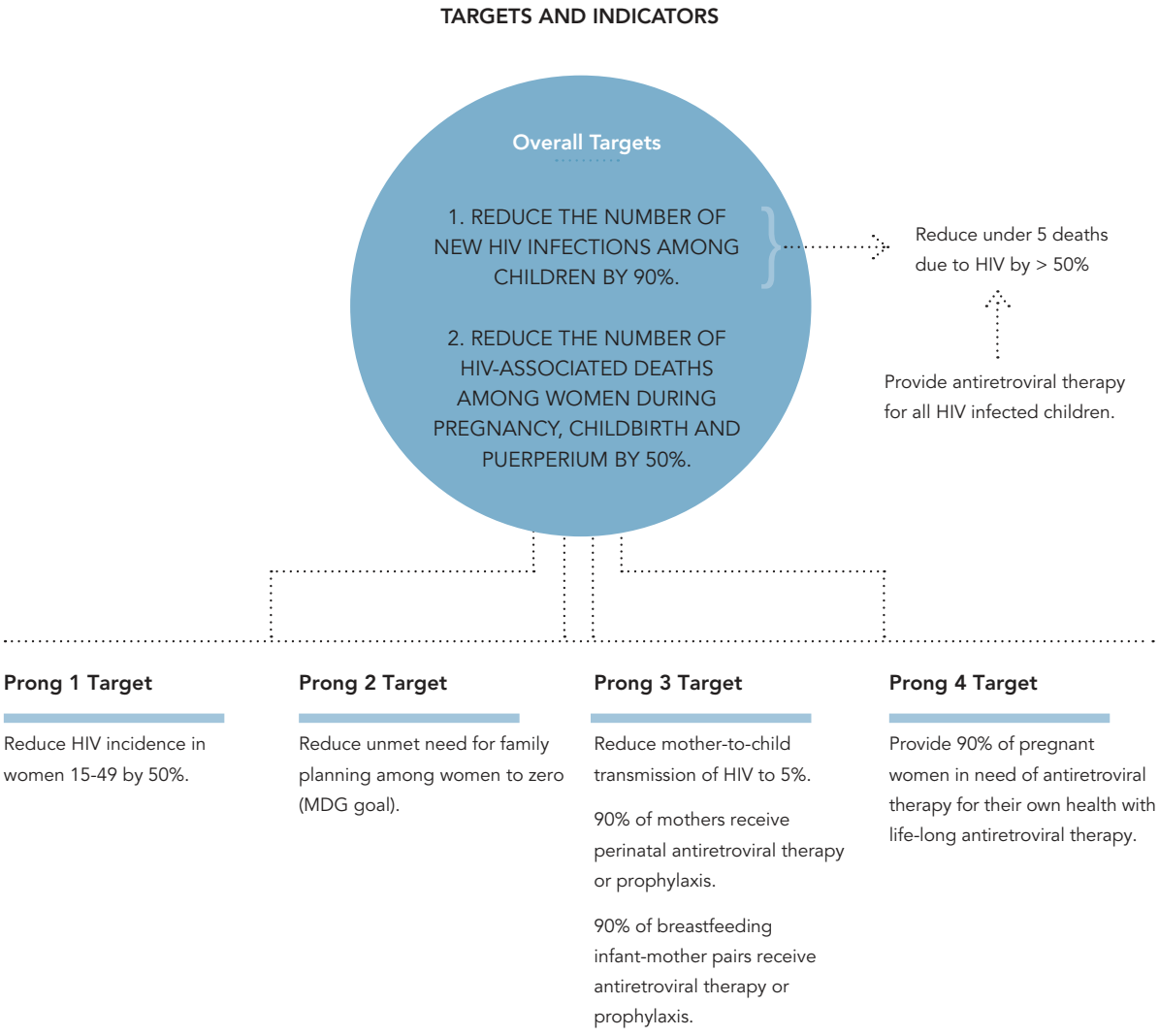
The *Global Plan* sets 10 targets that need to be met in order to achieve the overall goal of eliminating mother-to-child transmission of HIV[1] (Figure 1). Two targets are overall targets, two are child health targets, and six are related to the four prongs of PMTCT.

These targets, definitions and methodology are outlined below and in Annex 4. Other indicators for monitoring progress towards these targets and indicators for maternal and child health that can be monitored alongside the EMTCT targets are reviewed in sections 2.2.3 and 2.4 and Annex 5.

Table 1 summarizes the key areas that will be monitored, with baselines and targets, for EMTCT.

1 The monitoring framework is presented on page 39 of the *Global Plan towards the elimination of new HIV infections among children by 2015 and keeping their mothers alive (3).*

Figure 1. *Global Plan* for EMTCT targets and indicators • Baseline: 2009 • Target: 2015



Source: Monitoring framework presented in p. 39 of the *Global Plan Towards the Elimination of New HIV Infections Among Children by 2015 and Keeping their Mothers Alive.*

Table 1. Summary of EMTCT baseline and targets initiative for low- and middle-income countries

Areas to monitor	2009 Baseline	2010	2015 Target
Number of HIV+ women delivering[1]	1 490 000[2]	1 490 000	743 000[2]
Overall target: New paediatric HIV infections	430 000[2]	390 000	<43 000
Overall target: HIV-associated deaths of women during pregnancy, childbirth and puerperium	42 000[3]	N/A	21 000
Child target: Under-5 deaths due to HIV	162 000[4]	N/A	<81 000
Child target: ART coverage among children	21%[2]	23%[2]	100%
Prong 1 target: New HIV infections in women age 15–49	1 070 000[2]	1 050 000	535 000
Prong 2 target: Unmet need for family planning	11%[5]	N/A	0
Prong 3 target 3.1: Mother-to-child transmission	29%[2]	26%[2]	<5%
Prong 3 target 3.2: Maternal ARV coverage (prophylaxis and ART)	48%[2,6] (including sdNVP)	48%[6] (excluding sdNVP)	90%
Prong 3 target 3.3: Breastfeeding ARV coverage	N/A[7]	N/A	90%
Prong 4 target: ART coverage among pregnant women	N/A	34%[2]	90%

1 A 50% reduction in the number of deliveries among pregnant women living with HIV along with a reduction from 27% to 5% in mother-to-child transmission will result in a 90% reduction in the number of children newly infected. This is not an official target.
2 Current estimates for 2009 at the time the *Global Plan* was launched. Source: WHO, UNAIDS, UNICEF. *Global HIV/AIDS response: epidemic update and health sector progress towards universal access*. Geneva, WHO, 2011.
3 2008 value. Source: WHO, UNICEF, UNFPA, World Bank. *Trends in maternal mortality: 1990 to 2008: estimates developed by WHO, UNICEF, UNFPA and the World Bank*. Geneva, WHO, 2010.
4 Source: *World Health Statistics 2011*. Geneva, WHO, 2010.
5 2009 estimate for low- and middle-income countries. The baseline is 25% for sub-Saharan Africa. Sources: *World Contraceptive Use 2011*. New York, United Nations, Department of Economic and Social Affairs, Population Division, 2011;.World Contraceptive Use 2010. New York, United Nations, Department of Economic and Social Affairs, Population Division, 2010.
6 The 2009 coverage data include provision of single-dose nevirapine (sdNVP) by itself, which is no longer recommended. Source: WHO, UNAIDS, UNICEF. *Towards universal access: scaling up priority HIV/AIDS interventions in the health sector. Progress report 2010*. Geneva, WHO, 2010. The 2010 coverage data include only the most efficient regimens as recommended by WHO (excluding sdNVP).
7 Comprehensive data are not yet available because the provision of antiretroviral medicine during the breastfeeding period became an international recommendation in 2010.

Annex 7 summarizes the data for the 22 priority countries.

2.2.1 Overall targets

Overall Target 1: **Reduce the number of new HIV infections among children by 90% by 2015**

The target of reducing new paediatric HIV infections by 90% reflects the impact of the four-prong strategy for PMTCT (see box). It represents not only the effects of the reduction of vertical transmission from a mother with HIV to her child (Prong 3) but also the effects of the reduction of HIV incidence in women of reproductive age (Prong 1) and the effects of the reduction of unintended pregnancies among women with HIV (Prong 2)—all contributing to reduce the number of new paediatric HIV infections. Thus, this metric captures the progress of comprehensive PMTCT initiatives.

> Successful implementation of all four prongs of PMTCT is required to achieve a 90% reduction in new HIV infections in children.

In the top 25 high-burden countries,[1] which accounted for 91% of the 1.5 million women with HIV delivering in low- and middle-income countries in 2009, achieving 90% coverage with appropriate ARV regimens for MTCT (the Prong 3 target) would reduce new paediatric infections by 60% in 2015. In addition, if HIV incidence among women of reproductive age is reduced by 50% (the Prong 1 target),

1 Nigeria, South Africa, Mozambique, Uganda, Tanzania, Kenya, Zambia, Malawi, Zimbabwe, Democratic Republic of Congo, Cameroon, India, Ethiopia, Côte d'Ivoire, Angola, Chad, Burundi, Lesotho, Ghana, Botswana, Sudan, Rwanda, Swaziland, Namibia, Burkina Faso.

The four prongs of PMTCT

Prong 1: Primary prevention of HIV among women of reproductive age within services related to reproductive health such as antenatal care, postpartum/natal care and other health and HIV service delivery points, including working with community structures.

Prong 2: Providing appropriate counselling and support to women living with HIV to enable them make an informed decision about their future reproductive life, with special attention to preventing unintended pregnancies.

Prong 3: For pregnant women living with HIV, ensure HIV testing and access to the antiretroviral drugs that will help mothers' own health and prevent infection being passed on to their babies during pregnancy, delivery and breastfeeding.

Prong 4: Better integration of HIV care, treatment and support for women found to be positive and their families.

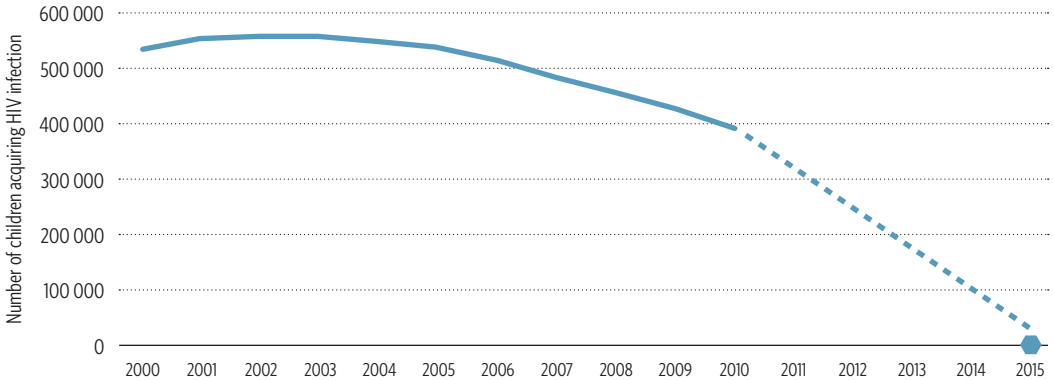
Source: Adapted from *Strategic Approaches to the Prevention of HIV Infection in Infants. Report of a WHO meeting, Morges, Switzerland, 20–22 March 2002*. Geneva, World Health Organization, 2003.

and family planning needs are met (the Prong 2 target), a reduction in new paediatric infections of close to 80% can be achieved by 2015 ***(8)***. Additional gains, to reach a 90% reduction in new HIV infections among children, could be achieved if HIV prevention strategies focused on the prime reproductive ages, demand for and access to family planning was increased, and full adherence to the more efficacious antiretroviral regimens was achieved.

Even momentous achievement in one of the prongs is not enough on its own to reach this target. Successful implementation of all prongs of PMTCT is required to achieve a 90% reduction in new HIV infections in children.

Figure 2 shows the number of estimated new paediatric HIV infections due to mother-to-child transmission from 2000 to 2009 and the 2015 target. Translated into numbers, the global overall target is to reduce the 2009 baseline global estimate[1] of approximately 430 000 new paediatric infections due to MTCT to less than 43 000 annual new infections in 2015.

Figure 2. New child HIV infections in low- and middle-income countries, 2000–2009, and 2015 target



1 Latest estimates currently available at the time the *Global Plan* was launched.

Measurement methods for Overall target 1:
Reduction in number of new HIV infections among children

At the global level estimates of the number of new paediatric HIV infections due to mother-to-child transmission will gauge progress towards Overall Target 1.

United Nations (UN) agencies use the Spectrum projection software *(9)* to make HIV estimates and projections. The same process will be used annually to model progress toward the mother-to-child transmission target under Prong 3 (described in section 2.2.2). See Annex 1 for a description of using Spectrum to produce estimates of the two targets, new paediatric infections and MTCT *(9)*.

Every two years UNAIDS, WHO and partners conduct workshops to help country teams develop country models in Spectrum. There are advantages to estimating the EMTCT targets using Spectrum. The process is consistently supported by the UN in over 100 countries. Thus, estimates for multiple countries are produced using a relatively easy, standardized approach, facilitating comparison across countries.

Still, some caveats apply to relying on modelling. Models are influenced by data input and assumptions. For example, most national data on the number of women receiving ARVs for PMTCT are based on drugs dispensed and not on actual uptake. Thus, using this information as an input, current global models of new paediatric HIV infections and mother-to-child transmission assume individuals provided with ARVs have the same level of adherence and transmission outcomes as those participating in research studies. This assumption may result in overestimates of impact. As we try to measure progress towards EMTCT, more emphasis must be placed on improving and validating routinely collected data, as well as on tracking adherence, to improve the input into models.

In addition, it is critical to try to measure outcomes directly among women and children. This can be challenging because HIV-exposed infants are often lost to follow-up. Also, mother-baby pairs receive a range of interventions, sometimes at multiple service delivery points, making it difficult to compile accurate and complete longitudinal data. However, other methods to assess new paediatric HIV infections and mother-to-child transmission have been demonstrated in country settings, such as a nationally representative immunization clinic survey testing all infants; assessment of programmatic and cohort data where there is good follow-up of mother-child pairs; and household surveys and interpretation of early infant diagnosis (EID) and HIV testing data where coverage is high.

See Annex 2 for methods to measure this indicator.

Measuring overall EMTCT targets: Proposal for countries

1. Model every year, with careful validation of input data.
2. Use other methods to assess targets periodically in-country.
3. Validate estimates with information from different sources and methods.

Overall Target 2: Reduce the number of HIV-associated deaths of women during pregnancy, childbirth and puerperium by 50% by 2015

The target of reducing HIV-associated deaths of women during pregnancy, childbirth and puerperium[1] by 50% reflects the principle that achieving the EMTCT goal should lead not only to improved HIV care but also to better maternal health. This reflects the initiative's aim not only to reduce paediatric HIV infections due to mother-to-child transmission (MTCT) but also to improve maternal survival and contribute to MDG 5.

Globally, 89% of maternal deaths attributed to HIV worldwide are in sub-Saharan Africa. For countries with high HIV prevalence, HIV has become a leading cause of death during pregnancy and the postpartum period. In the 22 EMTCT priority countries, the proportion of maternal deaths estimated to be due to HIV is significant (Table 2).

The goal is to reduce deaths of pregnant women with HIV whether the underlying cause is obstetric (direct maternal) or associated with HIV (HIV-related) or due to an interaction between pregnancy and HIV (indirect maternal death aggravated by HIV).

The global overall target is to reduce by half the baseline global estimate of 42 000 HIV-associated deaths of women during pregnancy, childbirth or puerperium[2] ***(10)***, to fewer than 21 000, by 2015.

Monitoring the number of HIV-associated deaths of women during pregnancy, childbirth, or puerperium will assess whether there was an impact reducing deaths to women with HIV around the time of pregnancy. In addition, in countries where HIV-associated deaths are a significant proportion of maternal deaths, this would affect a country's overall maternal mortality rate (MMR) as well.

Estimates of HIV-associated deaths of women during pregnancy, childbirth or puerperium are currently generated every other year by the Maternal Mortality Estimation Interagency Group (MMEIG).

Annex 3 provides further explanation of terminology and methods.

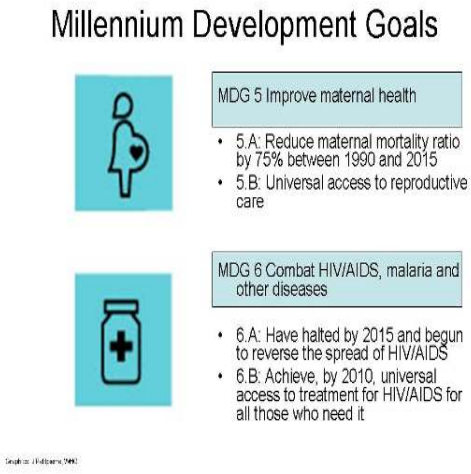


Table 2. Proportion of maternal deaths due to HIV, available data for the 22 EMTCT focus countries, 2010

Country	Percentage of maternal deaths due to HIV
Angola	NA
Botswana	56.4
Burundi	6.7
Cameroon	10.1
Chad	NA
Côte d'Ivoire	17.4
Democratic Republic of Congo	NA
Ethiopia	NA
Ghana	NA
India	NA
Kenya	20.2
Lesotho	41.5
Malawi	29.3
Mozambique	26.8
Namibia	59.4
Nigeria	NA
South Africa	59.9
Swaziland	67.3
Uganda	25.0
United Republic of Tanzania	18
Zambia	30.7
Zimbabwe	38.8

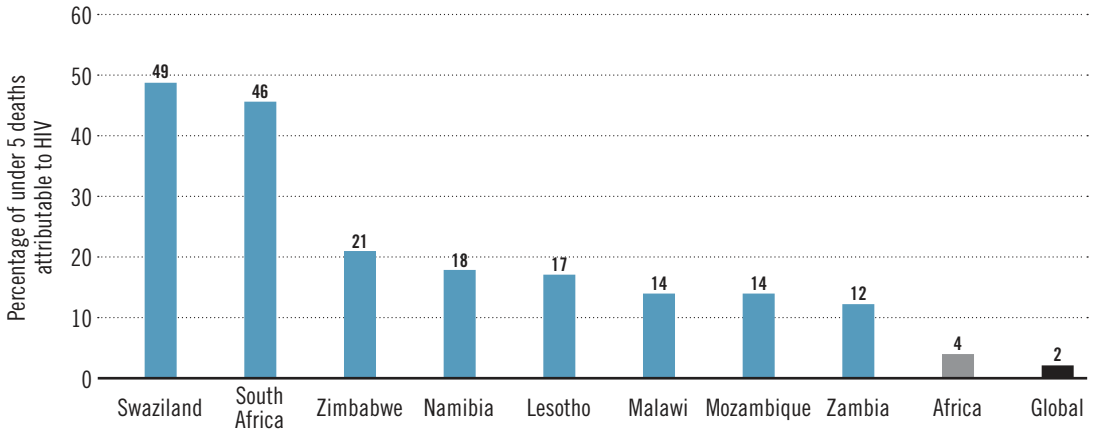
1 Puerperium refers to the period of about six weeks after childbirth.
2 Latest estimate is for 2008.

2.2.2 Child targets

Child Heath Target 1: Reduce under-five deaths due to HIV by at least 50% by 2015

A reduction in under-five deaths due to HIV contributes to improved child survival rates and helps achieve both MDGs 4 and 6. An estimated 3.4 million children younger than 15 years of age were living with HIV in 2010, more than 90% of them in sub-Saharan Africa. An estimated 430 000 children were newly infected with HIV in 2009, the vast majority through mother-to-child transmission. HIV infection follows a more aggressive course among infants and children than among adults. Without access to cotrimoxazole prophylaxis and antiretroviral therapy, as many as 50% of children with HIV die by age two years and about 30% by age one year *(11)*. As a result HIV has significantly affected child survival rates in certain parts of the world; under-five mortality attributed to HIV exceeds 40% in some of the most severely affected countries. Worldwide in 2009 an estimated 260 000 children younger than age 15 years—the vast majority in sub-Saharan Africa—died of HIV-related causes.

Figure 3. Percentage of deaths among children age less than five years attributable to HIV in selected countries, 2008



Source: WHO/Child Health Epidemiology Reference Group (CHERG), *World Health Statistics, 2010*.

The global target is to reduce by half the baseline global estimate of 162 000 under-five deaths due to HIV to fewer than 81 000 by 2015.

The estimate of the number of child deaths associated with HIV is generated through country Spectrum models[1]. At the global level cause-specific under-five deaths, including under-five deaths due to HIV, are estimated every other year. There is a two-year time delay in the estimates. For example, in 2012 estimates of under-five deaths associated with HIV will be available for the year 2010.

Child Heath Target 2: Provide antiretroviral therapy for all children with HIV who need it by 2015

HIV-positive children can live into adulthood if they can obtain treatment early. Such treatment contributes to child survival and achievement of both MDGs 4 and 6. While PMTCT interventions can greatly reduce the prevalence of HIV infection in children, nonetheless some will acquire HIV

Of the estimated 2 020 000 children in need of ART in 2010, only 23% had access to treatment.

1 Detailed methodology is available at: http://www.childmortality.org/stock/documents/Methods%20for%20Estimating%20Child%20Mortality_2010.pdf

infection and require treatment. Paediatric antiretroviral treatment has been shown to reduce morbidity and mortality. To improve the survival and well-being of children living with HIV, WHO released updated treatment guidelines in 2010 that markedly changed the recommended criteria for initiation of ART in children *(12)* and updated guidance on infant feeding *(13)*.

Although HIV care and treatment services for HIV-exposed and HIV-positive children are rapidly expanding in resource-limited settings, they are still inadequate and even less available than those for adults. Of the estimated 2 020 000 [1 800 000–2 300 000] children in need of ART in 2010, only 23% [20–25%] had access to treatment, compared with 51% of adults [48–54%] *(14)*. About 80% of children under age 15 needing ART live in the 22 priority countries. Better integration of PMTCT and paediatric HIV care and treatment services into maternal, newborn and child health care is critical for improved child health and survival.

The global target is to increase global paediatric ART coverage from the baseline of 21% in 2009 to more than 95% by 2015.

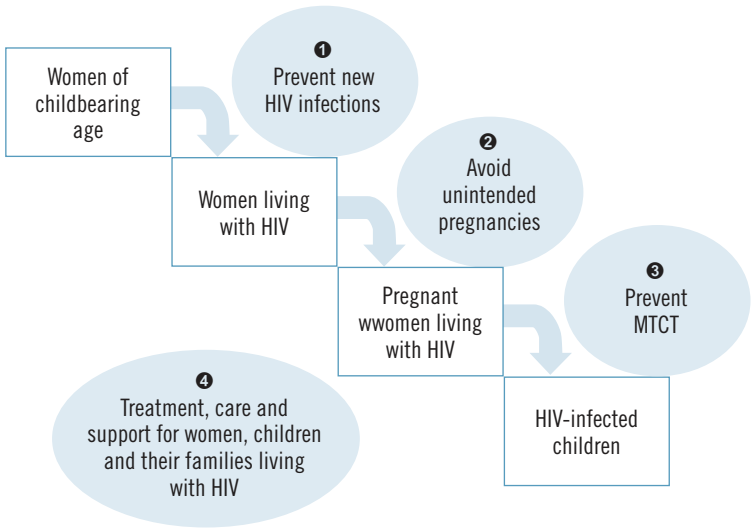
At the global level progress towards providing ART to all children with HIV who need it will be measured annually as a rate, using national programme service data from health facilities as the numerator and the estimated number of children in need of ART as the denominator.

The numerator (the number of children receiving ART) is reported annually by national governments, and the denominator (the number of children with HIV infection who are in need of ART) is generated on the basis of estimates of the number of pregnant women with HIV, the number of live births expected, the coverage of PMTCT interventions, and the effectiveness of the interventions. Need or eligibility for ART should be assessed in accordance with WHO's recommended criteria for starting children on ART. Methods for estimating the denominator, which use the Spectrum software, are recommended by the UNAIDS/WHO Reference Group on Estimates, Modelling and Projections[1]. A short description can be found in Annex 1.

2.2.3 Targets and indicators for monitoring the four PMTCT prongs

Elimination of mother-to-child transmission requires a comprehensive approach addressing all four prongs of the PMTCT strategy. Thus, in addition to the two overall targets and the two child health targets, ambitious targets have been established for each of the four prongs of PMTCT.

Figure 4. Four prongs to prevent mother-to-child transmission of HIV



1 http://www.epidem.org/

Each of the prong targets is described briefly below. Further references can be found in Annex 4, "Methods to measure target indicators for the four prongs". As with the other targets, the baseline year is 2009 and the target year is 2015. The target values reflect all low- and middle-income countries combined unless otherwise specified.

Prong 1: Primary prevention

Prong 1 Target: Reduce HIV incidence in reproductive-age women by 50% by 2015

Prevention of HIV infection in women of reproductive age (ages 15–49) reduces the number of women living with HIV who may become pregnant and pass the virus to the child. A reduction in primary infections among the younger reproductive age groups would have the most impact on the rate of paediatric infections because these women have more children than older women. In the 21 priority countries in sub-Saharan Africa (that is, all but India), reducing HIV incidence by 50% in all women ages 15-49 and eliminating unmet need (see Prong 2 target) would result in there being about 40% fewer pregnant women with HIV between 2009 and 2015[1].

Baseline: HIV incidence among women ages 15–49 in 2009: <0.10%[2]

Target: <0.05% by 2015

Measurement methodology: The reduction in incidence of HIV infection among women of reproductive age will be modelled using the Spectrum software, described in Annex 1.

Prong 2: Prevention of unintended pregnancies

Prong 2 Target: Reduce unmet need for family planning to zero among all women (regardless of HIV status) by 2015 (also MDG 5B)

This target seeks to assure that all women who want to avoid pregnancy are using contraception. It aims to reduce unmet need for family planning to zero. Unmet need is defined as the proportion of women of reproductive age (15–49 years) who want no more children or want to delay pregnancy by at least two years but are not using contraception. Eliminating unmet need for family planning would greatly reduce the number of unplanned pregnancies among women with HIV, thus reducing potential paediatric HIV infections as well as HIV-associated deaths in women during pregnancy, delivery and the puerperium.

Baseline: 11% in the low- and middle-income countries in 2008; 25% in sub-Saharan Africa in 2009

Target: 0 by 2015

Measurement methodology: Data to measure this indicator are collected in household surveys, including the Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS), Fertility and Family Surveys (FFS), Multiple Indicator Cluster Surveys (MICS)[3] and other national surveys incorporating the DHS methodology for gathering data on unmet need. These data are collected through the MDG monitoring process.

Progress towards targets for Prongs 1 and 2 will reduce the estimated number of pregnant women with HIV delivering. In 2009 an estimated 1.5 million women with HIV gave birth.

1 Based on 2011 Spectrum country files.

2 Source: UNAIDS, Spectrum 3.52. Numerator for incidence rate is number of new HIV infections among women 15–49 in 2009; denominator is number of women ages 15–49 in 2008 minus the female HIV-infected population ages 15–49 in 2008.

3 The Multiple Indicator Cluster Surveys (MICS) began including the set of questions for measuring unmet need only recently, in the fourth round.

Prong 3: ***Prevention of vertical transmission***

Prong 3 Target 3.1: Reduce mother-to-child transmission of HIV to <5% by 2015

This global target is to reduce MTCT to less than 5%. If MTCT is assessed at around six weeks of age, an MTCT rate of <2% at that point can be targeted. In breastfeeding settings final infection status must also be assessed after cessation of breastfeeding, with a target of <5% at that point. In non-breastfeeding settings MTCT should be targeted at <2%.

Baseline: 29% in 2009

Target: <5% by 2015

Measurement methodology: MTCT can be modelled every year, but it should be validated against other assessment methods. See box in section 2.2.1, *Measurement methods for Overall Target 1.*

Reduce the population-level mother-to-child transmission rate to <5%

Reaching the Prong 3 target of reducing MTCT to less than 5% depends directly on how well interventions are being provided to prevent infections in infants born to women infected with HIV. For the rate of MTCT, the denominator is the total estimated number of pregnant women with HIV who have given birth (population-level); it is not limited to the number of women diagnosed as infected with HIV. In breastfeeding populations the numerator—the number of HIV-positive children born—should be assessed after cessation of breastfeeding.

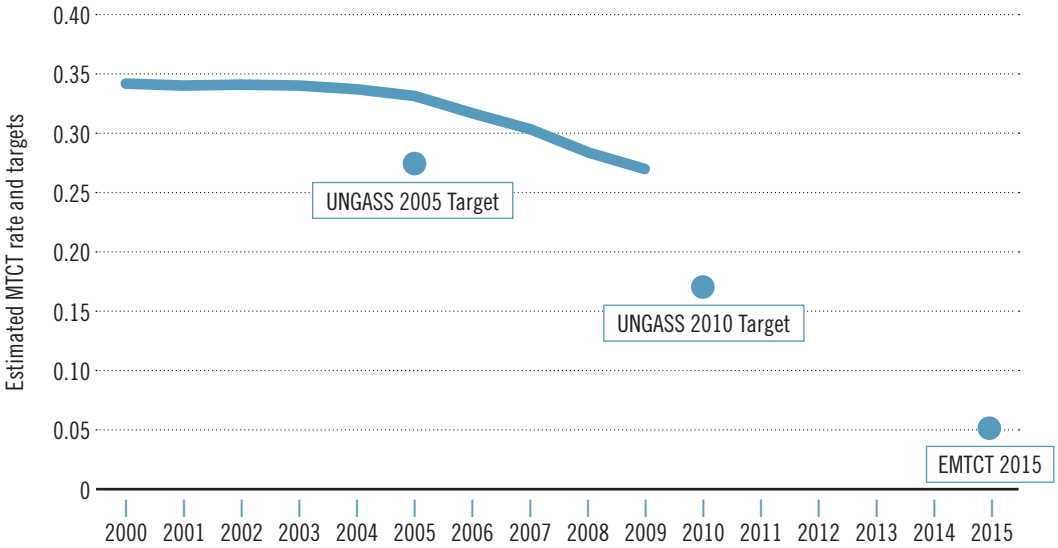
Scaling up coverage and providing more efficacious ARV regimens along with safer infant feeding practices, based on the most recent (2010) WHO guidelines on ARVs to reduce mother-to-child transmission *(12)* and on infant feeding in the context of HIV *(13)* can reduce the number of children born to HIV-positive mothers (e.g. HIV-exposed infants) who become infected with HIV to around 5% in low- and middle-income countries.

Reducing mother-to-child transmission is feasible. Effective interventions exist that could make it the norm for HIV-positive mothers to have HIV-free and healthy children. Achieving the target requires making the interventions to prevent MTCT readily available and accessible to and used by all in need. If that can be done, mother-to-child transmission will become a controllable condition rather than a missed opportunity to apply an identified solution to a public health problem.

The 2009 baseline global estimate for mother-to-child transmission is 29%. The estimated risk of transmission without any interventions is around 35% (around 20–25% without breastfeeding). **The global target is to reduce mother-to-child transmission to less than 5%, with a sub-target of <2% transmission in non-breastfeeding settings**.

Figure 6 shows estimated annual mother-to-child transmission rates from 2000 through 2009. The UNGASS MTCT targets for 2005 and 2010 and the Elimination target for 2015 of less than 5% are shown as well.

Figure 5. Estimated MTCT rates and targets in low- and middle-income countries, 2000–2015



Prong 3 Target 3.2: Provide antiretrovirals (ARV prophylaxis or ART) to 90% of women with HIV by 2015 to reduce mother-to-child transmission during pregnancy and delivery

The target is to increase ARV coverage for PMTCT during pregnancy and delivery to 90%. Achievement of this target would require identifying all pregnant women with HIV and providing them with ARVs to reduce the risk of mother-to-child transmission. Its achievement is also linked to strengthened antenatal care and to adequate access and linkages to HIV care and treatment for pregnant women. Until 2009 any antiretroviral regimen provided to HIV-positive pregnant women counted towards the coverage rate; starting in 2010, however, single-dose nevirapine alone, which is no longer recommended as a regimen, is excluded from the coverage rate *(14)*.

Baseline: 48% [43–54%] (including all ARVs) in 2009 (in 2010, 48% [44–54%] excluding single-dose nevirapine)

Target: 90% by 2015

Measurement methodology: PMTCT ARV coverage is measured through programme records and estimates of the number of HIV-positive pregnant women needing ARVs for PMTCT. Data on the number of HIV-positive pregnant women provided with ARVs is collected from health facility records and compared with the denominator of the estimated number of HIV-positive pregnant women needing ARVs for PMTCT, often estimated with the Spectrum software.

Prong 3 Target 3.3: By 2015 provide antiretrovirals to 90% of breastfeeding infants born to HIV-positive women to reduce the risk of HIV transmission during the breastfeeding period

This target specifically addresses mother-to-child transmission through breastfeeding. Without any intervention, approximately 5–20% of infants born to mothers living with HIV will become infected through breastfeeding *(15)*. In 2010 WHO first recommended ARVs (for mother or child) in low- and middle-income countries for prevention of HIV transmission during breastfeeding *(16)*.

This is a new indicator. Countries are strongly encouraged to set up systems to monitor ARV coverage throughout the breastfeeding period if they have policies to provide ARVs during the breastfeeding period.

Baseline: Not available[1]

Target: 90% by 2015

Measurement methodology: ARV coverage during breastfeeding is measured through programme records on the number of infants born to HIV-positive women who are breastfeeding and provided with an antiretroviral intervention (either maternal or infant ARVs). The denominator for this rate is the estimated number of infants born to HIV-positive women who are breastfeeding.

Prong 4: Treatment, care and support to women, children and their families living with HIV

Prong 4 Target: Provide 90% of HIV-positive pregnant women in need of antiretroviral therapy for their own health with lifelong antiretroviral therapy by 2015

This target addresses the need to ensure that HIV-positive pregnant women who need antiretroviral therapy (ART) are started on lifelong ART. This treatment will not only provide the best care for the HIV-positive woman but also reduce the risk of mother-to-child transmission as much as possible. Under current (2010) WHO guidelines, women should have CD4 cell count testing to assess their eligibility[2] for lifelong ART. With a new, streamlined and expanded treatment option now under consideration (known as Option B+), all HIV-positive pregnant women would start lifelong ART, regardless of CD4 testing ***(17)***.[3]

EMTCT also has a target to provide all HIV-positive children with ART, as described above in section 2.2.2, *Child targets*.

Baseline: (2009: Not available) 2010: 34%[4]

Target: 90% by 2015

Measurement methodology: ART coverage among pregnant women is measured through programme records on the number of HIV-positive pregnant women on ART. The denominator is the estimated number of pregnant women living with HIV in need of lifelong ART, which now can be estimated through the Spectrum software. A review of the mechanism for collecting data on the number of pregnant women on ART can help to ensure accurate reporting of coverage.

Annex 4 provides more information on each target indicator and references for detailed measurement methods.

2.2.4 Other indicators for monitoring the four PMTCT prongs

There are several other indicators that can help monitor progress towards the four PMTCT prong targets. Most of them are recommended as part of the indicator set for routine monitoring of national PMTCT programmes ***(18)***, but they also can track progress towards the EMTCT targets and goals.

Selected additional recommended indicators for each of the PMTCT prongs

Prong 1: Primary prevention of HIV infection among women of reproductive age

1. Percentage of pregnant women who know their HIV status
2. Percentage of pregnant women whose male partner was tested for HIV

1 Comprehensive data do not yet exist because provision of ARVs during the breastfeeding period became an international recommendation in 2010, and it was not a standard policy in most low- and middle-income countries in 2009.

2 Under the 2010 WHO PMTCT ARV guidelines, pregnant women living with HIV are eligible for lifelong ART if CD4 < 350.

3 This would increase the total number of HIV-positive pregnant women eligible for ART to equal the total estimated number of HIV-positive pregnant women.

4 The estimation of the number of HIV-infected pregnant women who are eligible for lifelong ART was not possible before the Spectrum version released in 2011. A global baseline for this target indicator was generated for 2010.

3. Percentage of males and females ages 15-49 years who had more than one sexual partner in the past 12 months reporting the use of a condom during their last sexual intercourse.

Prong 2: ***Prevention of unintended pregnancies in women with HIV***

1. Percentage of reproductive age women attending HIV care and treatment services who have unmet need for family planning

Prong 3: ***Prevention of HIV transmission during pregnancy, delivery and breastfeeding***

1. Percentage of HIV-positive pregnant women who were assessed for eligibility for ART (by CD4 cell count or clinical staging)
2. Percentage of infants born to HIV-positive women who are provided with ARV prophylaxis to reduce the risk of mother-to-child transmission in the first 6 weeks of life.

Prong 4: ***Care, treatment and support for HIV-positive women and their children, partners and families***

1. Percentage of infants born to HIV-positive women who received a virological test for HIV within the first two months of life
2. Percentage of infants born to HIV-positive women who start cotrimoxazole prophylaxis within the first two months of life
3. Percentages of HIV-exposed infants who are exclusively breastfeeding, replacement feeding or mixed feeding at time of DPT3 immunization visit.

Annex 5 also lists these additional indicators.

2.3 Linking and strengthening maternal and child health routine programme monitoring

Improving maternal and child health services is key to the success of the EMTCT initiative. Strengthening of monitoring and evaluation systems as part of EMTCT should include efforts to improve the routine monitoring of maternal and child health services and outcomes and the broader health information system. In addition, documenting the contribution of PMTCT programmes to improving maternal and child health services and health system strengthening in a few settings can be useful so that lessons learned can be shared broadly.

Especially for the 22 EMTCT priority countries, data on select maternal and child health indicators can be reviewed in addition to the standard set of indicators focused on the 10 key targets previously described. These additional indicators can be monitored to ensure that maternal and child health and HIV services are integrated where appropriate and that desired improvements in maternal and child health are occurring.

WHO selected the following indicators, which are aligned with other international indicators, including the MDGs and the indicators of the United Nations Commission on Information and Accountability for Women's and Children's Health ***(19)***.

Selected key maternal and child health indicators

- Antenatal care coverage with at least one visit and with at least four visits (MDG indicator 5.5, Accountability Commission)
- Syphilis testing coverage among first ANC visits (WHO universal access indicator)
- Proportion of births attended by skilled birth attendants (MDG indicator 5.2, Accountability Commission)
- Percentage of deliveries taking place in health facilities (institutional deliveries) (Making Pregnancy Safer (MPS) indicator)

- Proportion of women attending postnatal care within two days of childbirth (Accountability Commission)
- Maternal mortality ratio and maternal deaths (MDG Countdown, Accountability Commission)
- Under-five mortality rate (MDG indicator 4.1) with the proportion of deaths that occur during the neonatal period (Accountability Commission)
- Infant mortality rate (MDG indicator 4.2).

In addition, the availability of HIV services in facilities providing antenatal care (ANC) services can be assessed to monitor the integration of HIV and MCH services. Specifically, these indicators would gauge the percentage of facilities providing ANC services that also provide:

- HIV testing and counselling
- HIV testing and counselling and ARVs for PMTCT
- CD4 testing on site, or a system for collecting and transporting blood samples for CD4 testing for HIV-positive pregnant women.

3. MONITORING AND EVALUATION OF EMTCT AT THE COUNTRY LEVEL

Monitoring and evaluation are a key component of the EMTCT initiative, essential to track programme scale-up and performance. Improving outcomes assessment, data quality and impact assessment is one point in the10-point action plan outlined in the *Global Plan* as concrete steps for country-level implementation. PMTCT interventions are provided across various service delivery points and across a time span of pregnancy and infant follow-up after delivery. This adds to the complexity of monitoring PMTCT programmes, on top of the usual challenges of M&E systems. Target-setting, programme planning and data collected at local and sub-national levels contribute to national statistics, and the compilation of information on country efforts and national data contribute, in turn, to global monitoring. Thus, high-quality M&E and continued improvement in and use of M&E data at the all levels are critical to the success of EMTCT monitoring.

Key M&E activities for EMTCT include:

1. Setting baselines and targets
2. Reviewing routine M&E systems, validating and improving data quality
3. Measuring PMTCT programme impact and validating elimination of MTCT
4. Conducting operational research
5. Reviewing and evaluating programmes.

3.1 Set baselines and targets

Establishing baselines and thinking through the setting of ambitious but achievable targets can help programmes to assess what gaps exist, to gauge how much progress needs to be made and to explore programme strategies and scenarios that can achieve the targets. Global baselines and targets have been set (see Table 1 in section 2.2). Now overall targets for 2015, as well as annual targets for the intervening years, should be set at the national level. Countries also should work with sub-national jurisdictions to set sub-national targets (regional, district, zone, etc.), especially for districts with the highest levels of unmet need for PMTCT, where efforts should be concentrated.

Now overall targets for 2015, as well as annual targets for the intervening years, should be set at the national and sub-national levels.

Targets are meaningful and useful when they are ambitious and yet reasonable and in line with current implementation efforts. Depending on the level of current PMTCT scale-up in the country, some countries' targets may be very similar to the global targets, while other countries may have targets that are more modest, reflecting a realistic assessment of what can be achieved.

Annual review of progress towards the targets is important so that necessary adjustments in strategies and programmes can be made.

Basic steps to set targets are the following:

1. **Baseline assessment.** Review the current value of the indicator(s), and identify the population that needs to be reached to maintain and increase current levels in pursuit of the target.
2. **Programmatic performance and capacity.** Review data on programmatic factors that influence scale-up, including human resource capacity, available finances, intervention and lab availability and coverage, etc. Explore trends in expansion of sites and services. Assess historical performance and future capacity. Determine realistic levels of increase in the key components that will influence the speed of scaling up coverage. Examine several scenarios in order to account for uncertainties.

3. **Set targets.** Based on the various assessments, estimate possible targets. Some targets reflect the cumulative effect of other targets; these preceding targets must be set first. For example, the reduction in the number of new child HIV infections is the product of the reductions in HIV incidence and in unmet need for family planning among women with HIV and the effect of PMTCT ARV coverage. Similarly, to establish the target for PMTCT ARV coverage, it is necessary to set a realistic target for ANC coverage and capacity to provide ARVs in the most resource-limited settings in a country.
4. **Revisit targets.** Periodically review progress and adjust programmes to improve; also, adjust targets as necessary.

3.2 Review routine M&E systems, validate and improve data quality

Although the quality of data collected from PMTCT programmes is generally acceptable for monitoring HIV-related service coverage and trends in the process of scaling up, most national-level health information systems remain weak, and data quality could be improved. For example, information on pregnant women who obtain health services through the private sector and on those delivering at home often is not captured. In addition, because PMTCT interventions are provided over a time span and often at multiple service delivery points, data generated from monitoring systems must be well-coordinated to make sense at the national level, with mechanisms in place to systematically avoid double-counting.

Countries can review and revise current monitoring systems to collect more complete and accurate data on maternal and child health and HIV, as well as to establish mechanisms that improve and validate the quality of routine programme data. In particular, data on adherence to ARV regimens and retention in care, including during the breastfeeding period, may be important to monitor.

Data quality issues need to be identified and addressed. It is advisable to review programme data annually at the national level, employing mechanisms for sharing, validating, and analysing annual EMTCT progress reports with key stakeholders before publishing them. Reviews should focus on identifying M&E strengths and weaknesses and designing corrective actions where appropriate (see box on Data Life Cycle).

Countries should establish an M&E plan to monitor the progress of national EMTCT efforts through 2015, and the plan should include activities to improve sub-national monitoring and data use as well . The priority countries should monitor, at a minimum, the 10 global EMTCT indicators being monitored under the *Global Plan* so that their contribution to global goals can be clearly tracked. Some indicators, however, may be difficult to measure directly at the country level. These are modelled with available data through interagency working groups. Table 3 presents the target indicators and how the data are expected to be collected.

Countries should establish an M&E plan to monitor the progress of national EMTCT efforts through 2015.

Within the *Global Plan* specific milestones to monitor progress towards EMTCT have also been set for the 22 priority countries. These country-level milestones are summarized in section 4, "Progress reporting".

Table 3. The 10 EMTCT target indicators and sources

Areas to monitor	Source
Number of HIV-positive women delivering	Modelled – Spectrum output. Global and country levels have the country Spectrum models.
Overall Target indicator: New paediatric HIV infections	Modelled – Spectrum output. Global and country levels have the country Spectrum models.
Overall Target indicator: HIV-associated deaths of women in pregnancy, childbirth and puerperium	Modelled – by the Maternal Mortality International Epidemiology Working Group. Estimates produced at the global level are verified with countries.
Prong I Target indicator: HIV incidence in women 15-49 years old	Modelled – Spectrum output. Global and country levels have the country Spectrum models.
Prong 2 Target indicator: Unmet family planning need	Population-based survey. Part of MDG Countdown data collection efforts.
Prong 3 Target 3.1 indicator: Mother-to-child transmission	Modelled – Spectrum output. Global and country levels have the country Spectrum models.
Prong 3 Target 3.2 indicator: Maternal ARV (prophylaxis and ART) coverage	Numerator: Facility-based records are aggregated at the country level and reported to the global level through an annual reporting process. Denominator: Modelled – Spectrum output
Prong 3 Target 3.3 indicator: Breastfeeding ARV coverage	Numerator: Facility-based records are aggregated at the country level and reported to the global level through an annual reporting process. Denominator: Modelled – Spectrum output
Prong 4 Target indicator: ART coverage among HIV-positive pregnant women	Numerator: Facility-based records are aggregated at the country level and reported to the global level through an annual reporting process. Denominator: Modelled – Spectrum output
Child Target Indicator: Under-5 deaths due to HIV	Modelled - Estimated by the Child Health Epidemiology Reference Group. Estimates produced at the global level are verified with countries.
Child Target Indicator: ART coverage among children	Numerator: Facility-based records are aggregated at the country level and reported to the global level through an annual reporting process. Denominator: Modelled – Spectrum output

Standards of good practice in the data life cycle

Strengthening country M&E systems is a priority for the EMTCT initiative. A strong M&E system should be built on standard best practices.

The data life cycle consists of four stages. Applying best practices can strengthen each stage. The four stages are:

1. Data collection
2. Data quality assurance and assessment
3. Analysis and use
4. Aggregation and reporting.

At each level of reporting—facility, sub-national, national and global—data go through some iteration of these four stages.

Facility-level best practices

The facility level is the foundation on which all other stages of the data life cycle are built. The facility level must have the ability, tools and staffing to ensure that data collection is routine, that data quality is high, that aggregation is done appropriately, and that data analysis and use are ongoing.

1. Data collection

- Use standardized tools to ensure data quality and accuracy
- Train and support staff to collect required data.
- Fill out all forms clearly and review systematically as part of supervision.
- Make sure data are transposed accurately—for example, from a patient card to a register. Build in systematic review.
- Routinely seek input from data collection staff to improve tools and procedures.
- Follow a documented plan for data access, back-up and archiving that ensures data security, integrity and patient confidentiality.

All national and global data are derived from the facility level. If data are flawed at the facility level, they will be flawed at the national and even the global level.

Ensure that staff members understand the importance of their work. Facility data have financial and global implications.

2. Data quality assurance (with data validation)

- Develop and adhere to routine data quality assessment and assurance procedures.
- Review a sample of forms for accuracy and completeness.

3. Analysis and use

- Correct errors and retrain staff as needed.
- Create periodic (daily, weekly, monthly) indicator reports for review and reporting.
- Create graphs and charts of trends in key indicators.
- Review data periodically (weekly, monthly) with clinicians and programme managers to describe achievements, challenges, and opportunities for improvement.

4. Aggregating and reporting

- Prepare reports for transmission to authorities and stakeholders.
- Validate reports for accuracy and completeness, and correct any errors.
- Transmit reports on a timely basis.
- Use feedback from the sub-national level to improve the programme.

Sub-national-level best practices

The sub-national level plays an important role in the review and approval of data as it comes up from facilities. It also is responsible for supportive supervision, dissemination and guidance to the facility level. Staffs at the sub-national staff level need the resources to review programme data as it is submitted, ensure their quality and use them to check programme performance.

1. *Data collection*
   - Ensure that definitions of variable are correct and consistent.
   - Provide supportive feedback on data quality to the facility level.

2. *Data quality assurance and assessment (with validation)*
   - Perform data quality assessment and assurance periodically.
   - De-duplicate data as indicated.
   - Validate data before reporting to the national level.

3. *Analysis and use*
   - Confirm use of standardized and appropriate analysis methods.
   - Use correct, standardized denominators.
   - Use data to describe programmatic trends and inform strategic planning.

4. *Aggregating and reporting*
   - Forward reports on time as directed by the national level.
   - Use information from the national level to improve the programme.

At all levels—
- use standardized tools
- ensure sufficient staff adequately trained for M&E
- ensure data are archived in a confidential, secure system with back-up.

National-level best practices

The national level has similar functions as the sub-national level but is responsible for ensuring timely receipt of data and that, pulled together, the data can tell a story of programme performance nationally. At this level data should inform strategic planning and decision-making. The staff at the national level is also responsible for providing supportive supervision and disseminating findings and guidance to the sub-national level.

3.3 Measure PMTCT programme impact and validate elimination of MTCT

Countries will need to plan, budget and implement activities to directly measure the impact of national PMTCT programmes. Some impact measures of interest include the mother-to-child transmission rate (MTCT rate), the estimated number of new child HIV infections, HIV-free survival among HIV-exposed infants, and maternal and child survival.

Loss to follow-up of mother-baby pairs and lack of complete longitudinal data on mother-baby pairs make it difficult to collect accurate and complete data on MTCT and maternal and child survival through routine monitoring. While there are advantages to estimating progress toward the EMTCT target of eliminating new child HIV infections and the MTCT rate using statistical models, such estimates are influenced by the quality of data inputs and by underlying assumptions. Thus, other methods,

Assessing PMTCT impact and effectiveness is one step toward validating EMTCT.

which more directly measure outcomes and impact, should be employed as well. Results from these assessments can be compared with results from modelling and can be used to improve modelling methods.

Countries should use standardized approaches that have been developed to assess the impact of PMTCT interventions. A guidance document, *Measuring the impact of national PMTCT programmes: a short guide on methods*, describes five general approaches to assessing PMTCT impact ***(20)***. Generic guidance to implement these approaches has been drafted. The five approaches include:

1. Modelling
2. Immunization clinic survey (and follow-up)
3. Cohort/follow-up data
4. Population-based household surveys
5. Analysis of EID and HIV testing data.

Each approach has its strengths and weaknesses, and not all methods are suitable for all settings. Countries should decide on suitable methods and triangulate the results. The use of these methods has been demonstrated in such country settings as South Africa, Kenya, Kazakhstan, Vietnam, and Rwanda. This experience can inform their use in other countries.

Countries are scaling up programmes towards elimination of mother-to-child transmission of HIV, and an increasing number of countries are reaching high levels of ARV coverage (e.g. greater than 80–90%). Over the next few years, more countries will achieve the elimination of mother-to-child transmission of HIV. An internationally standardized process and criteria are needed to validate that EMTCT of HIV has been achieved.

A Global Consultation to propose a set of criteria and processes for global and regional validation of elimination of MTCT of HIV and syphilis will be held in June 2012 at WHO headquarters in Geneva. Results of the consultation will be posted on the WHO web site and guidance will be developed. Once final, the criteria would facilitate validation via a credible, systematic approach and would allow monitoring to assure that MTCT remains eliminated as well as sustained, thus making possible recognition of countries that have eliminated and sustained the elimination of MTCT of HIV or syphilis.

3.4 Conduct operational research

Operational research (OR) is research designed to improve the performance of programmes and policies ***(21)***.

At the country level, national PMTCT programmes are being scaled up in areas with limited resources and infrastructure during a difficult economic period. More than ever, resources must be used effectively and efficiently. OR can play a critical role in providing the evidence base to enhance programme reach and impact cost-effectively. OR needs to be incorporated into national HIV/AIDS programmes by identifying priority topics for OR and then budgeting and planning to assure that OR takes place in a timely manner and results can be applied to improve programmes. Successful OR studies are those with results that change policy and practice and/or improve programme and health system performance and delivery.

Successful OR studies are those with results that change policy and practice.

Examples of OR topics/questions that countries may want to consider are:

- The effective strategies for provision and monitoring of CD4 testing;
- The feasibility and impact of providing ART for eligible pregnant women in ANC settings;

- The effect and impact of task-shifting in PMTCT services in various settings, at various levels of the health care system and among different cadres of health workers;
- The interventions at the programme, facility, community and household levels that have greatest impact on retention in care, especially in the first 12 months of the child's life?
- Operational research related to PMTCT prongs 1 and 2[1].

3.5 Review and evaluate programmes

Annual programme reviews[2] are critical to ascertain that programme implementation is on track according to the national plan, to reflect on progress, to identify potential improvements, and to make adjustments to programmes. Programme reviews should be conducted with key stakeholders and scheduled far enough in advance that background materials and analyses can be prepared in advance.

Annual programme reviews should address, at the minimum, national indicators related to inputs, processes and outputs, but they also can include assessment of a small number of priority areas for which more information is required to inform upcoming programme decisions. Every few years, when desirable and feasible, a more in-depth review can be undertaken—for example, a mid-term review in a five-year strategic plan or a specific evaluation of programme outcome or impact included in an annual review.

> Annual programme reviews are essential and an opportunity to discuss, adjust and improve PMTCT-related data and programmes.

As part of annual programme reviews, "bottleneck analysis" can be particularly important in the priority countries. Such analyses identify specific problems that are holding back the overall progress of scale-up, both at national and sub-national levels, and then develop strategies to alleviate these bottlenecks. Strategies should set performance targets and provide for periodic monitoring and adjustment if necessary. Annex 6 presents a template for bottleneck monitoring.

The annual national programme review meeting with stakeholders also serves as a forum to determine technical assistance needs for the coming year and to develop technical assistance plans, including what assistance is requested of the IATT.

Countries, development partners and UN agencies will work together to review targets, strengthen the quality of data and national monitoring systems, conduct PMTCT impact studies, support annual programme reviews and improve HIV and AIDS-related estimates to monitor progress towards the EMTCT targets.

Table 4 summarizes key M&E actions to be undertaken at the country, regional and global levels.

1 More information can be found in the "Operational research" section of *Preventing HIV and Unintended Pregnancies: Strategic Framework 2011–2015*.

2 More information can be found in the "Evaluation and quality" section of *Monitoring and evaluating the prevention of mother-to-child transmission of HIV: a guide for national programmes*. Geneva, World Health Organization. (forthcoming in 2012).

Table 4. Country, regional and global actions for monitoring and tracking progress towards reducing new HIV infections among children by 2015 and keeping their mothers alive

Country level	Regional level	Global level
1. Adapt global targets and indicators for EMTCT and set national and sub-national targets, indicators and baselines, including annual incremental targets towards 2015. 2. Develop national and sub-national M&E work plans, and establish accountability mechanisms that foster ownership and effective monitoring and tracking of progress, including timelines for data collection, national and sub-national progress reports and review meetings. 3. Implement PMTCT data collection and validation mechanisms, including strengthening sub-national M&E mechanisms and developing tools for district-level assessment of performance and equity of access to services; identify districts or key populations that require innovative or additional support for M&E. 4. Conduct annual or more frequent PMTCT data validation workshops with stakeholders at national and sub-national levels. 5. Plan, budget and implement PMTCT impact studies, in addition to statistical modelling of impact to assess progress toward established targets. 6. Identify topics for further data collection through surveys, special studies and operational research. 7. Publish annual national EMTCT progress reports. 8. Plan, budget and conduct national mid-term and end-of-period programme progress reviews to assess achievements, strengths and weaknesses; share good practices, identify areas for improvement and take corrective measures.	1. Provide technical oversight and support for developing country EMTCT M&E frameworks and plans, including setting targets, indicators and baselines. 2. Support data collection and validation workshops. 3. Support national PMTCT impact studies and data quality improvement workshops. 4. Publish regional EMTCT progress reports. 5. Conduct regional EMTCT progress review meetings.	1. Develop the global EMTCT M&E framework, including targets, indicators and baselines. 2. Develop tools for global-level data collection and statistical modeling. 3. Develop regional HIV/AIDS estimates and EMTCT M&E workshops and generate HIV- and AIDS-related estimates; support M&E improvement in collaboration with governments. 4. Provide technical support to implement PMTCT impact studies and conduct data quality improvement workshops. 5. Publish annual global EMTCT progress reports. 6. Conduct mid-term and end-of-period high-level global progress review meetings.

3.6 Work plan and resource allocation for EMTCT M&E

For the national HIV M&E plan to be operationalized, an annual costed national M&E work plan needs to be developed. The M&E work plan describes the top-priority M&E activities for the coming year. Also, it specifies responsibilities for implementation, costs for each activity, identified sources of funding and a clear timeline for delivery of outputs.

This work plan enables the Ministry of Health and national programme managers and M&E staff to ensure that financial and human resources are mobilized. The costed national M&E work plan is a joint work plan that integrates HIV M&E activities into a single, cohesive national HIV M&E system. To accomplish this, the plan must be developed with input from and with the agreement of all key stakeholders. The annual M&E work planning cycle should link closely with the overall budgeting cycle for HIV to ensure that funding can be secured. The sub-national and facility levels may also develop M&E work plans to guide M&E implementation linked to the national HIV M&E system.

The costed national M&E work plan should address the financial and technical resource needs for M&E explicitly and in detail. The Global Fund to Fight AIDS, Tuberculosis and Malaria recommends allocating 5–10% of a grant budget to M&E. This rule of thumb can be applied to the entire programme regardless of funding source.

While programmes will need more funding to monitor and evaluate progress toward EMTCT, the lack of human resources appears to be an even greater challenge. Every PMTCT programme needs to maintain staffs with defined skills at national, sub-national and facility levels. Human resource capacity building should address all levels, have a plan with clearly defined outputs, have measurable performance objectives, and should track progress. M&E human capacity building requires a wide range of activities, including formal training, in-service training, refresher trainings, mentorship, coaching and internships. It should address not only the technical aspects of M&E but also skills in leadership, financial management, facilitation, supervision, advocacy and communication.

4. REPORTING PROGRESS

Progress reporting summarizes data collected and provides an opportunity to review progress made towards EMTCT at the global, regional and country or sub-national levels. Organizations in the United Nations system will work together to produce an annual EMTCT progress report tracking the 10 targets.[1] In addition, progress will be monitored through monitoring of the milestones set out in the *Global Plan*. For the 22 priority countries, ongoing process monitoring will be conducted and will include whether any technical assistance requests have been fulfilled.

4.1 Annual report

WHO, UNICEF and UNAIDS, with partners, will track and report on progress towards EMTCT targets as part of the global reporting mechanism for HIV/AIDS. Indicators to monitor the HIV/AIDS response, including the EMTCT initiative, are already collected every year or estimated through international processes. National governments report data by 31 March of each year. These data are validated with countries and partners, including PEPFAR and the Global Fund, and used to produce a progress report in the third or fourth quarter of the year.

Monitoring of the suggested maternal, newborn and child health indicators will be linked with the MDG process and the work of the Commission on Information and Accountability for Women's and Children's Health. Regional and global meetings will be held to review interim milestones with country governments and partners.

Reporting Schedule

2011: Report on EMTCT baseline and plan[a]
2012: Report on indicators and progress made towards elimination targets
2013: Annual progress report. Regional progress review meetings*
2014: Mid-term review of EMTCT. Global progress review
2015: Annual progress report. Regional progress review meetings*
2016: Final report on achieved target. Global meeting

a WHO, UNAIDS, UNICEF. *Global HIV/AIDS response: epidemic update and health sector progress towards universal access*. Geneva, WHO, 2011.
* Some regions may have a different schedule

1 The EMTCT initiative will assess progress towards most global targets every year. Estimates for a few indicators (HIV-associated deaths to women in pregnancy, childbirth and puerperium; under-five deaths due to HIV; unmet need for family planning) may only be estimated or updated through international processes every two years.

PEPFAR and Global Fund progress reporting

PEPFAR

The US government collects semi-annual and annual progress reports from PEPFAR-supported countries using a reporting timeframe of 1 October-31 March and 1 October-30 September. PEPFAR's Next Generation Indicators (NGI) are harmonized with internationally recommended and reported indicators on PMTCT. Data collection of these harmonized indicators is validated at the global level with the data reported to the UN system. To support the EMTCT initiative, PEPFAR will continue to work closely with the UN organizations at the global level and with ministries of health and implementing partners at the national and sub-national levels to ensure that all efforts are coordinated, with the same goals and objectives in mind.

Global Fund

The Global Fund promotes the use of globally harmonized indicators, which are published regularly in its M&E Toolkit. Over time, Global Fund investments in national M&E systems and data quality will strengthen reporting systems for key indicators in the EMTCT monitoring framework.

4.2 Regional monitoring framework and strategies

Regional monitoring frameworks for the EMTCT initiative also have been developed to monitor the strategies prioritized for each region to achieve EMTCT. The regional monitoring frameworks are harmonized with the global framework where appropriate (i.e. all work towards the same overall target). At the same time, they also reflect the specific characteristics of the region. For example, the Americas region and the Asia region have a dual EMTCT initiative for both mother-to-child-transmission of HIV and for congenital syphilis. In some regions and countries, HIV-associated deaths are a small fraction of all child and maternal deaths; a reduction in HIV-related child deaths may be difficult to measure and therefore would not be an appropriate target.

Details of regional monitoring frameworks are available in the references below:

Region	Overall targets	Reference
Americas region	≤2% MTCT rate; <0.3 new infant HIV infections/1000 live births	http://www.paho.org/Regional-Monitoring-Strategy
Asia region	90% reduction in new child HIV infection; <5% MTCT rate	http://www.aidsdatahub.org/dmdocuments/cs-framework.pdf
Africa region	<90% reduction in new child HIV infections; <5% MTCT rate	http://www.afro.who.int/en/clusters-a-programmes/frh/cluster/frh-publications.html
European region	<2% MTCT rate in the non-breastfeeding population and <5% MTCT rate in the breastfeeding population	http://www.euro.who.int/en/what-we-do/health-topics/communicable-diseases/hivaids/publications/2011/european-action-plan-for-hivaids-20122015

4.3 Process monitoring

Process monitoring at global, regional and country levels will supplement annual progress monitoring to provide a better understanding of the processes underway or actions being taken to achieve the *Global Plan* goals at all levels. Specifically, process monitoring will help determine whether key actions are being carried out as planned, will help to spot problems or challenges as they arise and can inform annual work plans through a realistic assessment of incremental progress. EMTCT process monitoring of country progress will be limited to the 22 priority countries. It will consist of two components:

1. reporting against *Global Plan* milestones
2. reporting the response to and outcome of technical support requests.

4.3.1 Reporting against *Global Plan* milestones

The *Global Plan* highlights key targets and milestones at global, regional and country levels to be reached by specific dates from October 2011 through May 2015.[1]

The status of each milestone will be reported using the following scale: "complete", "in process", "behind schedule", "insufficient information", "do not intend to complete". The first three status possibilities on the scale ("complete", "in process" and "behind schedule") are assigned definitions specific to each milestone. Milestone progress will be reported according to the target dates shown in the tables that follow. For 2011 and 2012 progress is being reported twice per year. From 2013 through 2015 it will be reported annually.

Table 4. Global milestones

Global milestones	Suggested progress definition	Target date
A Global Steering Group (GSG) has been established to oversee global progress and hold key stakeholders accountable.	Complete: A global steering group with clearly identified members is in place and convenes regularly	June 2011
The GSG has supported countries in conducting rapid assessment of their status vis-à-vis achieving elimination of new HIV infections among children and keeping their mothers alive.	Complete: IATT tools for rapidly reviewing national plans and conducting bottleneck assessments have been developed and disseminated to all 22 priority countries. ✓In process: IATT tools for rapidly reviewing national plans and conducting bottleneck assessments have been developed, but dissemination to all 22 priority countries is still in process. Behind schedule: Tools have not been developed.	October 2011
The GSG has developed and activated mechanism for rapid-response technical assistance to meet country-defined needs.	✓Complete: A strategy for providing technical assistance (TA) to priority countries is in place and is accepting and responding to TA requests. In process: A TA strategy has been developed but is not yet operational. Behind schedule: A TA strategy has yet to be developed.	October 2011
The IATT on the Prevention and Treatment of HIV Infection in Pregnant Women, Mothers and their Children has provided requested support to countries in reviewing and revising national guidelines on treatment of pregnant women living with HIV, prevention of mother-to-child transmission of HIV and infant feeding and HIV.	✓Complete: The IATT has responded to technical support requests concerning WHO guideline adoption. In process: The IATT has plans to respond to requests concerning WHO guideline adoption. Behind schedule: The IATT has not yet made plans to respond to technical support requests concerning WHO guideline adoption.	January 2012

1 See *Global Plan (3)*, pages 34–36.

The IATT on the Prevention and Treatment of HIV Infection in Pregnant Women, Mothers and Children has provided requested support to countries in conducting policy reviews to decentralize and task-shift essential HIV activities to the primary care level and the community level.	**Complete:** IATT tools for conducting policy reviews for task-shifting essential HIV activities to the primary level and community levels have been developed and disseminated to all 22 priority countries, and IATT is responding to TA requests on this issue. ✓**In process:** IATT tools for conducting policy reviews for task-shifting essential HIV activities to the primary level and community levels have been developed, but dissemination to all 22 priority countries is still in process. **Behind schedule:** Tools have not been developed.	January 2012
Development partners will have aligned their financial and technical assistance with revised national action plans for elimination of new HIV infections among children and keeping their mothers alive.	**Complete:** A majority of GSG partners have reviewed the *Global Plan* and the national EMTCT plans in the countries where they have presence and have aligned their strategies and plans accordingly. ✓**In process:** Some GSG partners have reviewed the *Global Plan* and the national EMTCT plans in the countries where they have presence and has aligned their strategies and plans accordingly. **In process:** The estimated number of new HIV infections in children is reduced by at least 25% from the 2009 level. **Behind schedule:** The estimated number of new HIV infections in children is reduced by less than 25% from the 2009 level.	January 2012
The estimated number of HIV-associated deaths to women during pregnancy, childbirth and puerperium deaths is reduced by 25%.	**Complete:**The estimated number of HIV-associated deaths is reduced by 25% from the 2009 level in low- and middle-income countries. **In process:** The estimated number of HIV-associated deaths is reduced by 10% from the 2009 level. **Behind schedule:** The estimated number of HIV-associated deaths is reduced by less than 10% from the 2009 level.	December 2013*
New global guidelines for antiretroviral prophylaxis and antiretroviral therapy have been issued, recommending simpler and more effective drug regimens and approaches.	**Complete:** Global guidelines finalized and available. **In process:** Draft global guidelines exist. **Behind schedule:** Recommendations for guidelines notdeveloped yet.	July 2013
The estimated number of new HIV infections in children is reduced by two-thirds from the 2009 level.	**Complete:** The estimated number of new HIV infections in children is reduced by 66% from the 2009 level. **In process:** The estimated number of new HIV infections in children is reduced by at least 50% from the 2009 level. **Behind schedule:** The estimated number of new HIV infections in children is reduced by less than 50% from the 2009 level.	December 2014*
The estimated number of HIV-associated deaths to women during pregnancy, childbirth and puerperium is reduced by one-third from the 2009 level.	**Complete:** The estimated number of HIV-associated deaths is reduced by 33% from the 2009 level. **In process:** The estimated number of HIV-associated deaths is reduced by 25% from the 2009 level. **Behind schedule:** The estimated number of HIV-associated maternal deaths is reduced by less than 25% from the 2009 level.	December 2014*
Fifteen of the 22 priority countries will have met the two overall *Global Plan* targets.	**Complete:** 15 of 22 priority countries have reached the two overall *Global Plan* targets. **In process:** At least 10 of 22 priority countries have reached the two high level *Global Plan* targets. **Behind schedule:** Fewer than 10 of 22 priority countries have reached the two high level *Global Plan* targets.	December 2014*
All countries will have met the two overall *Global Plan* targets for elimination of new HIV infections among children and keeping their mothers alive.	**Complete:** All 22 priority countries have reached the two overall *Global Plan* targets. **In process:** 15 of 22 priority countries have reached the two high-level *Global Plan* targets. **Behind schedule:** Fewer than 15 of 22 priority countries have reached the two high-level *Global Plan* targets.	End 2015*

Note: For milestone dates already reached, a check mark (✓) shows the progress status as of that date.
*Milestones with target dates followed by an asterisk will not be reported until 1 year after the target date for completion due to reporting cycles.

Table 4. Regional-level milestones

Regional-level milestones	Progress definition	Target date
Regional frameworks for eliminating new HIV infections among children and keeping their mothers alive have been finalized or revised.	**Complete:** All regions have finalized or revised regional EMTCT frameworks. **In process:** All regions have completed or are working towards the development of regional EMTCT frameworks. **Behind schedule:** Some regions have not yet begun to develop or revise regional EMTCT frameworks.	January 2012
Regional strategies for the provision of South–South technical assistance and support for capacity-building towards eliminating new HIV infections among children and keeping their mothers alive have been developed and rolled out.	**Complete:** Sub-Saharan Africa region has developed South-South technical assistance strategy for EMTCT. **In process:** Sub-Saharan Africa region is working towards the development of a South-South technical assistance strategy for EMTCT. **Behind schedule:** Sub-Saharan Africa region has not begun to develop a South-South technical assistance strategy for EMTCT.	January 2012
At least three regions declare that they have reached the regional initiative targets.	**Complete:** Three regions have verifiably reached their regional initiative targets. **In process:** One region has verifiably reached their regional initiative targets. **Behind schedule:** No regions have met targets.	May 2013
All regions declare that they have reached the regional initiative targets.	**Complete:** All regions have declared that they have reached their regional initiative targets. **In process:** Four regions have declared that they have reached their regional initiative targets. **Behind schedule:** Fewer than four regions have met targets.	End 2015

Table 4. Country milestones

Country milestones	Progress definition	Target date
Countries have conducted a rapid assessment of where they stand on the road towards elimination of new HIV infections among children and keeping their mothers alive, including identifying key policy and programmatic barriers to scale-up including demand-side barriers, and the targeted technical assistance and capacity-building needed for accelerating progress.	**Complete:** Assessment complete and available. **In process:** Assessment ongoing or dates set. Behind schedule: Intend to conduct assessment but not yet planned.	October 2011
Baselines and targets have been established for elimination of new HIV infections among children and keeping mothers alive.	**Complete:** 2009 baseline established for key indicators, and 2015 and incremental annual targets in place and available (in EMTCT dashboard or national plan). **In process:** Baselines and/or targets (2015 and annual) in the process of being defined. **Behind schedule:** Intend to complete but have not started.	October 2011
Country leaders will have fully included the elimination of new HIV infections among children and reduction by half of HIV-associated deaths to women during pregnancy, childbirth and puerperium into their national development frameworks and health plans.	**Complete:** Linkages have been made between EMTCT plan and national development frameworks and national health plans (and are documented). **In process:** Country leaders have committed to ensuring that EMTCT is a part of the national development frameworks and health plans and indicated date for completion in line with development planning cycle. **Behind schedule:** Country leaders have not indicated that EMTCT will be a priority for the national development plans.	January 2012
Countries have developed or revised decentralized country-level action plans for eliminating new HIV infections among children and keeping their mothers alive that reaches every district. These plans include clear goals and targets towards elimination, a tracking mechanism for measuring stepwise progress, and a thorough costing of essential programmatic interventions and a plan to track survival of mothers living with HIV and their retention in care and on treatment for their own health and well-being.	**Complete:** New national EMTCT plan (or revised PMTCT plan) is complete and costed. **In process:** New national EMTCT plan (or revised PMTCT plan) is being developed or is planned. **Behind schedule:** Intend to complete a plan, but the process has not started.	January 2012

Countries have conducted an expenditure analysis, harmonized expenditure categories as needed, identified financing gaps in their action plans, and have developed and begun to implement a strategy increasing financial assistance from domestic and international sources to support the *Global Plan*.	**Complete:** Financial shortfall has been identified and strategy is in place to increase financial assistance. **In process:** Financial shortfall has been identified and strategy for increasing financial assistance is under development. **Behind schedule:** Intend to develop a strategy for increasing financial assistance based on shortfall but have not yet started.	January 2012
National guidelines on ARVs for PMTCT and infant feeding and HIV have been reviewed and revised as appropriate. National guidelines have been updated throughout the life of the *Global Plan* in accordance with any revisions to WHO global guidelines.	**Complete:** Guidelines in line with WHO 2010 recommendations have been adopted. Partial adoption: Country has reviewed and revised guidelines, but they are not in total agreement with the WHO 2010 recommendations. **In process:** Discussions to update guidelines are underway or planned. **Behind schedule:** Intend to adopt 2010 guidelines, but process has not started yet.	January 2012
In the 22 priority countries, a policy review has been conducted to decentralize and task-shift essential HIV activities to the primary care and community levels.	**Complete:** A policy review has been conducted to determine how best to task-shift in the context of EMTCT. **In process:** Plans are underway to conduct a review to determine how best to task-shift in the context of EMTCT. **Behind schedule:** No action has been taken to conduct a review on task-shifting for EMTCT.	December 2012
Country has reported on the estimated number of new HIV infections among children averted and the number of their mothers kept alive in the first year of the *Global Plan*.	**Complete:** The Spectrum file containing this information has been produced and validated for this estimate. **In process:** The Spectrum file containing this information has run but has not yet been validated for this estimate. **Behind schedule:** The Spectrum file has not yet been completed.	December 2012
Community charters have been enacted in at least 50% of provinces or districts. [Community Engagement Working Group is redefining this indicator.]	Forthcoming.	May 2012
All countries have established baselines regarding essential commodity needs for elimination of child infection and keeping mothers alive by 2015, including rapid HIV tests, CD4 counts, antiretroviral drugs and early infant diagnosis.	**Complete:** Baseline is in place establishing drug and commodity needs for all required items (see list to left as minimum). **In process:** Baseline is in place for some but not all required items (see list to left as minimum). **Behind schedule:** Intend to establish baseline, but it has not yet been done.	May 2012
Relevant support and management capacity of joint country teams and development partners in priority countries have been increased.	**Complete:** UN organizations and country partners report presence of one or more dedicated focal points for EMTCT on the country team, and the name of the person is available. **In process:** UN organizations and country partners report plans to hire and/or mobilize resources for recruitment of a dedicated focal point for EMTCT. **Behind schedule:** No hiring process or resource mobilization is underway.	May 2012
The estimated number of new HIV infections in children is reduced by 50% from 2009 levels in at least 10 priority countries.	**Complete:** At least 50% reduction of new HIV infections in children over 2009 baseline has been achieved. **In process:** At least 30% reduction of new HIV infections in children over 2009 baseline has been achieved. **Behind schedule:** Less that 30% reduction in new HIV infections in children over 2009 baseline has been achieved.	December 2013*
Relevant targets are met in at least half of the districts or provinces in the country.	**Complete:** At least 50% of districts have achieved targets for the coverage of maternal ARVs for PMTCT. **In process:** At least 30% of districts have achieved targets for the coverage of maternal ARVs for PMTCT. **Behind schedule:** Fewer than 30% of districts have achieved targets for the coverage of maternal ARVs for PMTCT.	December 2013*
Every district reports regular supplies of drugs and commodities, without stock-outs.	**Complete:** 100% of facilities have achieved targets of zero stock-outs (for no more than five days in the last three months or by locally relevant definition of stock-outs). **In process:** At least 75% of facilities have achieved target of zero stock-outs (for no more than three days in the last six months or by locally relevant definition of stock-outs). **Behind schedule:** Fewer than 75% of facilities have achieved target of zero stockouts (for no more than three days in the last six months, or locally relevant definition of stock outs).	May 2013

The estimated number of new HIV infections in children is reduced by at least two-thirds in at least 15 priority countries.	**Complete:** At least 66% reduction of new HIV infections in children over 2009 baseline has been achieved. **In process:** At least 50% reduction of new HIV infections in children over 2009 baseline has been achieved. **Behind schedule:** Less than 50% reduction in new HIV infections in children over 2009 baseline has been achieved.	December 2014*
Targets are met in at least two-thirds of the provinces or districts of the country.	**Complete:** At least 66% of districts have achieved targets for coverage of maternal ARVs for PMTCT. **In process:** At least 50% of districts have achieved targets for coverage of maternal ARVs for PMTCT. **Behind schedule:** Fewer than 50% of districts have achieved targets for coverage of maternal ARVs for PMTCT.	December 2014*
The estimated number of new HIV infections in children is reduced by at least 85% in each of the 22 priority countries.	**Complete:** At least 85% reduction of new HIV infections in children over 2009 baseline has been achieved. **In process:** At least 66% reduction of new HIV infections in children over 2009 baseline has been achieved. **Behind schedule:** Less than 66% reduction in new HIV infections in children over 2009 baseline has been achieved.	December 2015*
The estimated number of HIV-associated deaths to women during pregnancy, childbirth and puerperium is reduced by 50%.	**Complete:** At least 50% reduction in the number of HIV-associated deaths over the 2009 baseline. **In process:** At least 30% reduction in the number of HIV-associated deaths over the 2009 baseline. **Behind schedule:** Less than 30% reduction in the number of HIV-associated deaths over the 2009 baseline.	December 2015*

*Milestones with target dates followed by an asterisk will not be reported until 1 year after the target date for completion due to reporting cycles.

4.3.2 Reporting progress towards requests and provision of country-level technical support

The IATT has committed to coordinating and facilitating technical assistance to the 22 priority countries. It will do this by leveraging the capacities of IATT member organizations that work at country, global and regional levels and of the IATT Working Groups and by mobilizing external resources when necessary.

Every six months the IATT will report the following concerning the provision of technical support (TS):

TS requests received in the preceding six months

- Total number of requests received
- Percentage of requests according to priority status—urgent, high, mid or low
- Percentage of requests according to TS category (i.e. M&E, economic analysis, supply chain management, etc.)
- Percentage of requests from each priority country
- Percentage of requests for which a response is in progress or complete (by country-level, regional-level and global-level responses and also by priority status).

Total requests received to date

- Total number of requests received to date
- Percentage of requests according to TS category (i.e. M&E, economic analysis, supply chain management, etc.)
- Percentage of requests from each priority country
- Percentage of requests for which a response is in progress or complete (by country-level, regional-level and global-level responses and also by priority status).
- Outcome status of TS requests that have been complete at least three months ago.

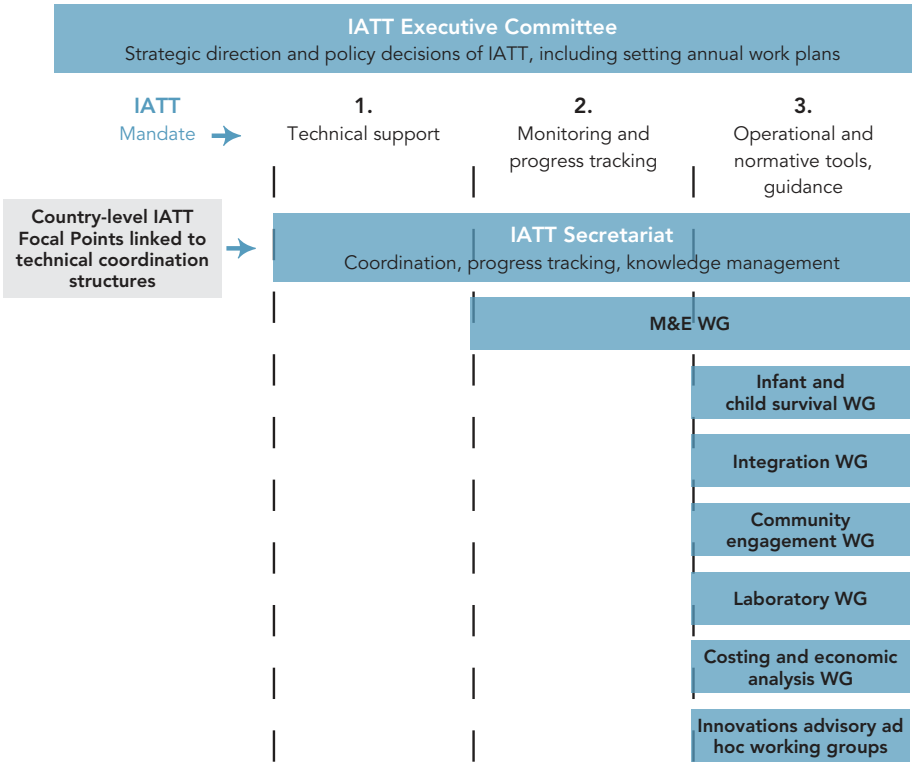
5. TECHNICAL SUPPORT FOR EMTCT M&E AND THE IATT

Tracking progress towards EMTCT is a joint effort of national governments and international development partners (including the UN, non-governmental organizations and donors) at the country, regional and headquarters levels. All countries and development partners need to work together to review targets, strengthen the quality of information systems, conduct impact assessments and improve estimates to monitor progress towards the EMTCT targets.

5.1 The IATT coordination mechanism

The Interagency Task Team on Prevention and Treatment of HIV Infection in Pregnant Women, Mothers and Children (IATT) is a consortium of 25 organizations committed to technical support of countries to achieve the goals outlined in the *Global Plan* (see section 1.3). To deliver on its mandate, the IATT has set up an Executive Committee to oversee the IATT's work, a secretariat to coordinate and manage the work and six working groups focused on specific thematic areas: M&E, child survival, laboratory, finance and economic analysis, integration with maternal, newborn, and child health, sexual and reproductive health and HIV treatment, and community engagement (Figure 7).

Figure 6. IATT structure in relation to its mandates



The IATT Secretariat will have a total of three positions related to progress tracking, based at the regional level (in East and Southern Africa and West and Central Africa) and global level. These progress tracking focal points will link with the M&E working group and also with IATT focal points in each of the 22 priority countries to coordinate progress monitoring.

5.2 Technical Support for M&E

To achieve the goals and objectives of EMTCT, it is crucial to support a strong and highly functional M&E system. Ensuring that each country can assess their needs for technical support and receive timely technical support is a priority for the IATT and particularly for the M&E working group of the IATT.

The M&E working group will develop guidelines and tools for M&E of EMTCT, review M&E plans, support M&E system and need assessments, support capacity building, and work together with countries to find a solution for M&E technical support needs.

Coordination mechanism for the 22 priority countries and interface with the IATT

Most of the 22 priority countries have technical coordinating bodies, such as technical working groups, on PMTCT or M&E. The IATT will link directly with these technical structures through IATT focal points that sit on the coordination bodies. These focal points will play both a communication role and a coordination role in responding to government requests for technical support.

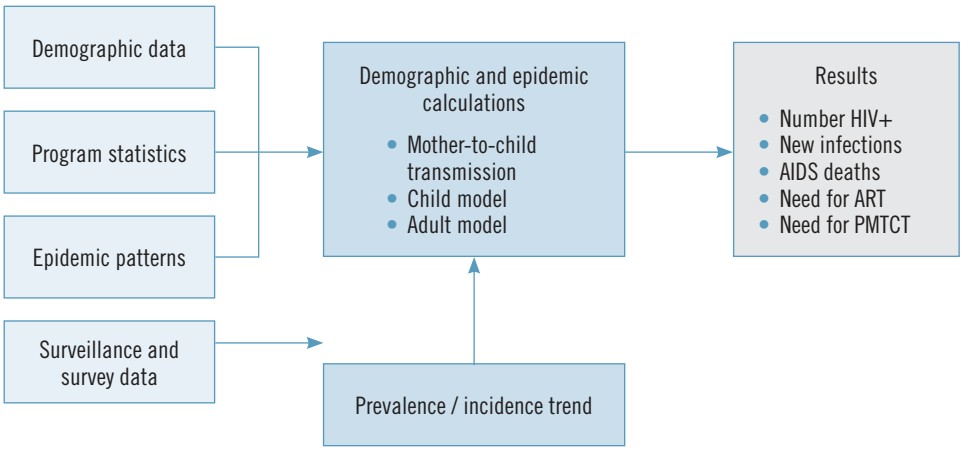
These technical coordinating groups, with government representation, should stay abreast of national progress toward EMTCT targets that are established at the country level and linked to indicators described in this document. They should also track country progress against *Global Plan* milestones and other metrics needed for country monitoring of EMTCT efforts at the national and sub-national levels. The IATT Secretariat will develop and provide generic tools that the technical coordinating bodies can adapted and use.

In addition to regularly monitoring progress through the coordinating group, the IATT country focal point will liaise with the national PMTCT programme manager and the Global Steering Group focal point to ensure that national progress reviews are convened annually with a broad group of stakeholders. These annual reviews will assess progress, reassess gaps and barriers, decide whether new strategies are required and determine technical assistance needs for the coming year.

ANNEX 1. ESTIMATING NEW CHILD HIV INFECTIONS AND MTCT USING SPECTRUM

The Spectrum software combines a range of existing demographic and epidemiological parameters (e.g. population, fertility and mortality rates) with various country data and programme inputs and assumptions (e.g. HIV prevalence from sentinel surveillance surveys, intervention coverage and its effect on numbers of HIV infections, progression from HIV incidence to mortality). Based on these data, it projects various key HIV estimates (e.g. HIV incidence, number of total and new adult and child HIV infections, PMTCT ARV needs). UNAIDS, WHO and partners train and assist countries to produce country Spectrum files to model and estimate their HIV epidemic every two years.

Figure 7. Structure of the Spectrum software



Source: Spectrum 2011 presentation, UNAIDS.

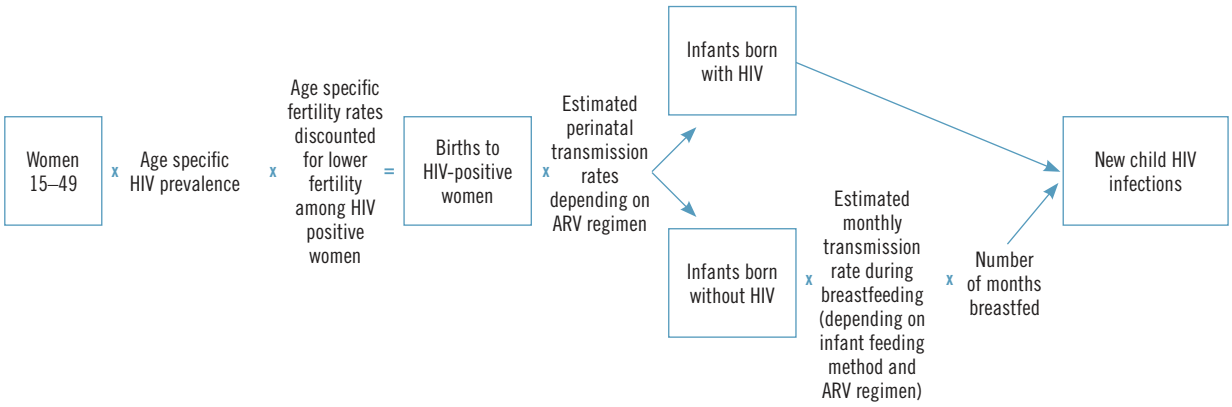
National HIV incidence curves are generated based on HIV surveillance data from antenatal clinics, surveys of key populations, and nationally representative household surveys. Incidence is estimated from prevalence over time and ART coverage, and HIV epidemic curves are fitted for various geographical sub-regions, using a maximum-likelihood approach, and aggregated to produce national adult incidence curves. Estimates of adult HIV incidence by year are then used to generate estimates of adult HIV prevalence. The resulting demographic and programmatic needs are then projected based on the demographic model.

Figure 8 describes the calculation of the number of new child infections in Spectrum.

The mother-to-child transmission rate is calculated by dividing the number of new child infections by the number of births to women living with HIV.[1]

1 The mother-to-child transmission rate, both the MTCT rate at 6 weeks and MTCT rate including breastfeeding, is an output of Spectrum, found in the Children 0–14 Summary Table.

Figure 8. Spectrum calculation of mother-to-child transmission rate



Late postpartum transmission (after 6 weeks) is calculated based on the duration of breastfeeding. Most countries do not collect these data among the HIV-positive population. If the data are available, country teams can modify Spectrum to take these values into account. If the data are not available, Spectrum uses data from the most recent general population survey to identify how many infants are still breastfeeding at different ages.

Countries can find the number of new child infections and the mother-to-child transmission rate in the Spectrum outputs on the summary page for children 0–14. In Spectrum all child infections are assumed to result from mother-to-child transmission.

ANNEX 2. SUMMARY OF METHODOLOGIES TO MEASURE THE IMPACT OF PMTCT PROGRAMMES

Method	How it is done	What it can measure	Pros and cons	Sustainability, cost
Modelling				
1. Models	• Use HIV sentinel and population-based surveillance data and programme data in a demographic model to estimate results.	**National-level estimates** • Mother-to-child transmission rate • Number of children living with HIV • Number of new HIV infections in children • HIV-related adult and child deaths Sub-national models can be developed, as well.	• Relatively easily implemented • To obtain good results, many data are required. Results are only as valid as the data and assumptions that go into the models. • Does not help the child or mother get services or know their HIV status.	• Spectrum modelling software is available free of charge to everyone. Country teams are trained on its use every two years.
Surveys and surveillance				
2. Immunization Clinic Survey	• Test all children attending clinics for DPT 1 immunization to assess HIV exposure (antibody test) and early (around 6 weeks) infection/ transmission (PCR test). • Questionnaire can collect information on intervention uptake to allow for further analysis, interpretation. • Later follow-up of identified HIV-exposed children can provide data on later or final infection/ transmission status.	• National or sub-national population-level • Early transmission rate • Number of HIV-exposed and HIV-positive children • Later or final transmission rate and survival can be assessed, but validity will depend on percentage of all children who can be tracked at later scheduled immunization visits or followed up from the initial entry point of the study.	• In settings with high immunization coverage, can capture real data on population-level transmission and early infant HIV infection. DPT 1 coverage is usually quite high. • Relatively quick to undertake and can be repeated to provide trend data, especially if a modest amount of additional data is collected at same time. • Also provides results for children whose mothers did not attend antenatal clinic or receive PMTCT care. • Misses children who have died before immunization. • Effort needed to minimize loss to follow-up when assessing later/final transmission.	• Can be expensive, depending on scope and whether many extra staff must be employed.
3. Household surveys (nationally representative)	• Test children in nationally representative household surveys • Survey can ask questions about PMTCT-related service uptake (Currently, DHS do not permit questions related to ARVs; however, other population-based surveys have covered them.)	**National-level** • Estimated MTCT rate (if mother also tested) • Number and percentage of children who are HIV-positive, by age and sex • HIV-free survival, if mother's HIV status also ascertained Data can be further interpreted if additional questions are included.	• Can be conducted as part of periodic population-based surveys usually conducted every 3–5 years (e.g. DHS, MICS) • Adult HIV prevalence must be high (2% or more) or sample size must be large. • Surveys every 3–5 years are not frequent enough to suffice but can provide valuable information to triangulate other assessments in high-prevalence countries. • Need to address ethics and means of providing test results to people who want to know their status and of linking to care and treatment services.	• Expensive to undertake surveys large enough to estimate HIV prevalence among children. Practical only in high prevalence countries.

Method	How it is done	What it can measure	Pros and cons	Sustainability, cost
4. Demographic surveillance site (DSS)	• Household survey asking behavioural and other questions of interest • Test children born to HIV-positive women when conducting routine periodic interviews (e.g. every 6 months or 1 year). • Can also collect data on uptake of PMTCT interventions	• Sub-regional, smaller populations (limited geographical coverage) • Transmission rate • Number of HIV-positive children • Estimation of new HIV infections in DSS population.	• Some DSS already exist.	• Not necessarily sustainable over time • Inexpensive if added to existing surveillance sites. • More appropriate for research than for routine periodic assessment of national impact
Programme data				
5. Analysis of EID data	• Analyse routinely collected early infant diagnosis (EID) data. Postnatal transmission can then be estimated to predict final transmission rate. • Questions can be added in lab requisition forms to collect additional data.	• National EID-positive rate in settings with almost universal EID coverage. • In settings with suboptimal EID coverage, combine with estimates of population lost to follow-up and their outcomes to get a more nationally representative estimate.	• EID lab registers usually consolidate these data from patient-specific registers. • Where EID coverage is low, results should be interpreted cautiously.	• Should be systematically analysed as part of EID database.
6. Collection of cohort data	• Retrospective or prospective construction of cohort data, e.g. identify women from ANC files, follow up and try to link with child records; test children as necessary • Routine linking and reporting of PMTCT intervention data and outcomes by ANC or birth cohort • Prospective cohort data collected at selected facilities or from a representative sample • Effort needed to minimize loss to follow-up and to trace those lost to follow-up.	National or sub-national: • Transmission rate • Number of HIV-positive children by age • survival of mother and child • HIV-free survival of child	• Collection of outcome data should be part of routine programme monitoring • Requires names and addresses of all clinic attendees; may need mobile staff to locate women. • Loss to follow-up can be large especially if >3 years. • When various PMTCT interventions (for mother and child) are provided in multiple service delivery points, linking records can be time-consuming, especially without unique patient ID numbers that can be linked.	• Can be expensive to find all women and children lost to follow-up. • Special technology can be used, but may be costly—e.g. an electronic system storing all patient histories and test results.
7. Case reporting	• Confirmed cases of HIV infection are reported – both prevalence and incidence cases.	National: • Number of new HIV infections by age and sex and location of residence	• Numbers will be underreported if testing coverage is poor. • Currently, no HIV case reporting system in sub-Saharan Africa.	• Sustainable and inexpensive if built into routine monitoring system.
Other useful assessment: Triangulation of existing data				
8. Triangulation of various data sources	• Trend data on PMTCT/HIV interventions (e.g. PMTCT ARV coverage, EID coverage, ART coverage) and other health statistics (maternal and child health programme indicators, vital registration statistics, hospital admissions data, other major health events) are reviewed together to hypothesize trends and impact of various HIV services on other health outcomes and mortality.	• Review of trends in HIV intervention coverage vis-à-vis other health intervention coverage and outcome. For example, child mortality rates can be reviewed alongside PMTCT ARV coverage trend.	• Good way to use various data collected from multiple data sources and make inferences • Data quality not always ideal	• Cost to extract data if not readily available. Once a foundation is established, similar exercise can be repeated periodically.

ANNEX 3. MATERNAL DEATHS AND HIV DEATHS: TERMINOLOGY AND METHODS

The clinical condition that is generally understood as the "cause of death" in statistical tabulations is the "underlying cause of death" as defined by the *International statistical classification of diseases and related health problems* ***(22)***. It is the disease or condition that initiated the chain of events leading to death or the circumstances of the accident or violence that produced a fatal injury.

Maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. Maternal deaths are further divided into "direct maternal deaths" and "indirect maternal deaths".

When classifying the death of a pregnant woman with HIV, it is important to understand what deaths are considered to be "maternal" deaths among all deaths that occur during pregnancy. Pregnant women with HIV may die from:

- Obstetric causes. These are direct maternal deaths, represented by area A in Figure 9.
- Non-obstetric causes, which result from previously existing disease or disease that developed during pregnancy and which, although not due to direct obstetric causes, was aggravated by physiologic effects of pregnancy; these are indirect maternal deaths, as represented by area B in Figure 9. The interaction between pregnancy and HIV is considered the underlying cause of death and is coded O98.7 in the International Classification of Diseases (ICD) or
- An HIV-related cause (e.g. one of the fatal complications of AIDS) that was not aggravated by pregnancy (area C in Figure 9) (ICD 10 Classifications for HIV, B20-24) . The pregnancy is incidental to HIV infection. These deaths are not considered maternal deaths.

The EMTCT initiative is concerned with preventing all three of these types of causes of death. The term **"HIV/AIDS-associated deaths to women during pregnancy, childbirth or puerperium"** includes all three of these groups.

The remaining fraction—all other deaths in pregnancy, childbirth and the puerperium—are designated as deaths of women with HIV due to accidental or incidental causes occurring contemporaneous with pregnancy.

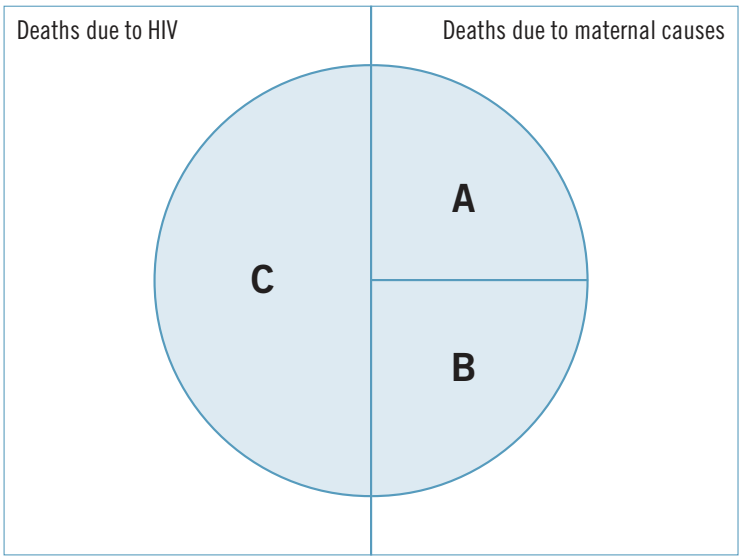


Figure 9. HIV-associated deaths of women during pregnancy, childbirth or puerperium
Conceptual diagram: underlying cause of death is HIV or maternal

Note: Diagram illustrates the terminology, and not the magnitude of the condition.

The Maternal Mortality Estimation Interagency Group (MMEIG) publishes estimates of maternal mortality every two to five years. The 2008 estimates are the first to present separate estimates for indirect maternal deaths related to HIV. It will continue to include estimates of HIV-related indirect maternal mortality. The methodology for separate estimation of HIV-related indirect maternal deaths will continue to evolve with the growth of the knowledge base and/or empirical evidence on the risks of HIV-related death for a pregnant versus a non-pregnant woman and the proportion of HIV-associated deaths that are truly maternal deaths.

Details of the methodology for estimating maternal deaths due to HIV can be found in Appendix 5 of the Interagency report *Trends in Maternal Mortality 1980 to 2010* ***(10).***

ANNEX 4. METHODS TO MEASURE TARGET INDICATORS FOR THE FOUR PRONGS OF PMTCT

More detailed information on the various indicators can be found in one of the following references:

1. Monitoring and evaluating the prevention of mother-to-child transmission of HIV: a guide for national programmes *(17)*[1]
2. Spectrum model[2]
3. MDG indicators[3]

1 http://www.who.int/hiv/pub/me/en/index.html
2 http://www.unaids.org/en/dataanalysis/tools/spectrumepp2011/
3 http://unstats.un.org/unsd/mdg/Metadata.aspx?IndicatorId=0&SeriesId=778

	Definition	Measurement method	Reference
Prong 1			
Indicator: HIV incidence in reproductive age women (15–49 years) **Target:** 50% reduction	**Numerator:** number of new HIV infections among women 15–49 **Denominator:** number of women ages 15–49 excluding the female population ages 15–49 with HIV	Modelling using the Spectrum software (Incidence assays may become more available in the future and serve as another measurement source)	Spectrum
Prong 2			
Indicator: Unmet need for family planning **Target:** Reduction to zero among all women (regardless of HIV status)	**Numerator:** Women (married or in consensual union) who are pregnant or amenorrheic and whose pregnancies were unwanted and also fecund women who want to stop childbearing or delay childbearing by at least two years and who are not using a contraceptive method **Denominator:** Total number of women of reproductive age (15–49) who are married or in consensual union.	Data gathered in special surveys such as the Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS) and national surveys based on similar methodologies	MDG indicator GHO
Prong 3			
Indicator: Mother-to-child (MTCT) transmission rate **Target 3.1:** Reduce the overall MTCT rate to <5% (<2% in non-breastfeeding settings or if assessed at around six weeks of age (in which case the final infection status must also be assessed after cessation of breastfeeding in breastfeeding settings)	Estimated percentage of child infections from HIV-infected women delivering in the previous 12 months **Numerator:** Estimated number of children born in the previous 12 months who are infected with HIV due to MTCT **Denominator:** Estimated number of women with HIV who delivered in the previous 12 months	The MTCT rate differs with the ARV regimen received and infant feeding practices. The Spectrum model can calculate the rate using information on: • The distribution of HIV-positive pregnant women receiving various ARV regimens prior to and during delivery, by mother's CD4 count category • The distribution of women and children receiving ARVs after delivery (postpartum), by mother's CD4 count category • The percentage of infants in PMTCT programmes who are not breastfeeding, by age of the child • MTCT transmission rates for various categories of ARV regimen and infant feeding practices. The transmission rate is reported in the Children 0–14 summary display in Spectrum. This variable can also be calculated using the variables in Spectrum on "new HIV infections" for children 0–14 years and dividing this by the variable "women in need of PMTCT".	PMTCT M&E Guide – Indicator 12 *(17)*

	Definition	Measurement method	Reference
Indicator: Maternal ARV coverage **Target 3.2:** 90% maternal ARV coverage (ARV prophylaxis or ART)	**Numerator:** Number of HIV-positive pregnant women who received ARVs during the past 12 months to reduce MTCT. Should be disaggregated by the PMTCT ARV regimen. **Denominator:** Estimated number of women with HIV pregnant within the past 12 months	The numerator is calculated from national programme records, aggregated from facility registers. Two methods can be used to estimate the denominator: • A projection model, such as that provided by Spectrum software; use the output "number of pregnant woman needing PMTCT"; or • If Spectrum projections are unavailable, multiply the number of women who gave birth in the past 12 months (which can be obtained from estimates of the central statistics office, the United Nations Population Division or pregnancy registration systems with complete data) by the most recent national estimate of HIV prevalence in pregnant women (which can be derived from HIV sentinel surveillance in antenatal care clinics).	PMTCT M&E Guide – Indicator 5
Target 3.3: 90% breastfeeding ARV coverage(ARV prophylaxis or ART)	**Numerator:** Number of breastfeeding infants born to HIV-positive women who, during the past 12 months, provided an ARV intervention (maternal or infant) to reduce MTCT through breastfeeding. **Denominator:** Estimated number of infants born to HIV-positive women (HIV-exposed infants) who were breastfeeding during the past 12 months	The numerator is calculated from national programme records, aggregated from facility registers. Three methods can be used to measure the denominator: • Counting at the time of labour and delivery • Counting at postnatal or child health sites • Combining data from labour and delivery facilities and from post-natal/child health services sites.	PMTCT M&E Guide – Indicator 7
Prong 4			
Target: 90% of pregnant women with HIV who need ART for their own health are started on lifelong ART	Percentage of eligible pregnant women with HIV who received antiretroviral therapy **Numerator:** Number of HIV-positive pregnant women attending services for PMTCT in the past 12 months who are on lifelong ART **Denominator:** Estimated number of HIV positive pregnant women in the past 12 months who were eligible for ART	The numerator is calculated from national programme records, aggregated from facility registers. The denominator is an estimate that can be generated with the Spectrum software.	PMTCT M&E Guide – Indicator 5 for the numerator Spectrum estimates of ART need among pregnant women for the denominator

ANNEX 5. ADDITIONAL RECOMMENDED INDICATORS FOR EACH OF THE PMTCT PRONGS

Prong 1: Primary prevention of HIV infection among women of reproductive age

4. Percentage of pregnant women who know their HIV status
5. Percentage of pregnant women whose male partner was tested for HIV
6. *Percentage of males and females ages 15-49 years who had more than one sexual partner in the past 12 months reporting the use of a condom during their last sexual intercourse.*

Prong 2: Prevention of unintended pregnancies in women with HIV

2. Percentage of reproductive age women attending HIV care and treatment services who have unmet need for family planning

Prong 3: Prevention of HIV transmission during pregnancy, delivery and breastfeeding

3. Percentage of HIV-positive pregnant women who were assessed for eligibility for ART (by CD4 cell count or clinical staging)
4. Percentage of infants born to HIV-positive women who are provided with ARV prophylaxis to reduce the risk of mother-to-child transmission in the first 6 weeks of life.

Prong 4: Care, treatment and support for HIV-positive women and their children, partners and families

4. Percentage of infants born to HIV-positive women who received a virological test for HIV within the first two months of life
5. Percentage of infants born to HIV-positive women who start cotrimoxazole prophylaxis within the first two months of life
6. Percentages of HIV-exposed infants who are exclusively breastfeeding, replacement feeding or mixed feeding at time of DPT3 immunization visit.

All these indicators are from *Monitoring and Evaluating the Prevention of Mother-to-Child Transmission of HIV: A guide for national programmes, 2011* (http://www.who.int/hiv/pub/me/en/index.html), except for that highlighted in italics, which is an UNGASS indicator. The guide provides detailed indicator descriptions and other recommendations related to monitoring PMTCT programmes.

ANNEX 6. BOTTLENECK REDUCTION MONITORING TEMPLATE

		Current coverage		Performance objective (desired coverage)		Timeline (months)												% achievement	
		%	Date	%	Date	1	2	3	4	5	6	7	8	9	10	11	12	%	Date
Target intervention #1:	Example: ARVs for PMTCT	40	January 2012	50	January 2013														
Identified bottleneck A	Frequent stock-outs of ARV drugs in 10 districts																		
Bottleneck milestone	Proportion of ANC services offering PMTCT services (HIV testing and ARVs) with no stock outs of ARVs for more than five days in the last three months	50	January 2012	70	January 2013														
Activities to reach milestone	1. Activity X																		
	2. Activity Y																		
	3. Activity Z																		
Identified bottleneck B																			
Bottleneck milestone																			
Activities to reach milestone	1.																		
	2.																		
Target Intervention #2:																			
Identified bottleneck A																			
Bottleneck milestone																			
Activities to reach milestone	1.																		
Identified bottleneck B																			
Bottleneck milestone																			
Activities to reach milestone	1.																		
	2.																		

ANNEX 7. PROGRESS IN 22 PRIORITY COUNTRIES ON KEY INDICATORS FOR THE *GLOBAL PLAN* FOR ELIMINATING MOTHER-TO-CHILD TRANSMISSION

Data may change as new estimates become available

	Overall target		Overall target		Prong 1 target		Prong 2 target	
	Number of women living with HIV delivering		New child infections due to mother-to-child transmission		HIV-associated deaths to women during pregnancy, childbirth and puerperium		HIV incidence in women 15–49 years old (%)		Percentage of women 15-49 with unmet need for family planning	
Countries	2009	2010	2009	2010	2005	2010	2009	2010	2009	Year
Angola	15 000 [11 000-20 000]	16 000 [11 000-21 000]	5 200 [3 600-7 200]	5 200 [3 500-7 100]	480	380	0.25% [0.17-0.36%]	0.24% [0.15-0.34%]	...	
Botswana	13 000 [12 000-15 000]	13 000 [12 000-15 000]	<1 000 [<500-1 100]	<500 [<500-<1 000]	220	80	1.46% [1.22-1.78%]	1.31% [1.09-1.59%]	...	
Burundi	7 500 [5 900-8 400]	7 300 [5 400-8 200]	2 500 [1 800-2 800]	2 000 [1 400-2 400]	380	300	0.21% [0.08-0.22%]	0.19% [0.08-0.21%]	29.0%	2002
Cameroon	30 000 [25 000-37 000]	30 000 [24 000-37 000]	8 800 [6 900-11 000]	6 800 [4 900-9 200]	1,100	980	0.45% [0.34-0.68%]	0.43% [0.32-0.61%]	20.2%	2004
Chad	14 000 [11 000-18 000]	14 000 [11 000-19 000]	4 800 [3 700-6 200]	4 700 [3 500-6 200]	460	380	0.32% [0.21-0.54%]	0.30% [0.19-0.52%]	20.7%	2004
Côte d'Ivoire	19 000 [16 000-23 000]	18 000 [15 000-21 000]	5 600 [4 400-7 100]	4 800 [3 700-6 200]	1,400	940	0.20% [0.15-0.27%]	0.19% [0.15-0.25%]	...	
Democratic Republic of the Congo	50 000 [41 000-61 000]	50 000 [41 000-61 000]	19 000 [15 000-23 000]	18 000 [15 000-23 000]	1,140	1,100	0.23% [0.15-0.34%]	0.23% [0.15-0.34%]	24.4%	2007
Ethiopia	...[b]	...[b]	...[b]	...[b]	1,740	760	...[b]	...[b]	33.8%	2005
Ghana	13 000 [11 000-15 000]	12 000 [10 000-15 000]	4 200 [3 500-5 100]	3 700 [3 000-4 600]	520	400	0.12% [0.09-0.15%]	0.11% [0.08-0.15%]	35.3%	2008
India	...[b] [23 000-65 000]	...[b] [22 000-61 000]	...[b] [7 900-23 000]	...[b] [7 300-21 000]	2,000	1,700	...[b] [0.01-0.02%]	...[b] [0.01-0.02%]	12.8%	2006
Kenya	87 000 [75 000-100 000]	87 000 [75 000-100 000]	23 000 [18 000-27 000]	19 000 [15 000-23 000]	3,400	2,200	0.67% [0.58-0.79%]	0.62% [0.53-0.75%]	25.6%	2009
Lesotho	14 000 [12 000-16 000]	14 000 [12 000-16 000]	3 900 [3 400-4 600]	3 700 [3 100-4 400]	420	320	3.15% [2.68-3.79%]	2.80% [2.41-3.42%]	31.0%	2005
Malawi	...[b] [59 000-79 000]	...[b] [57 000-76 000]	...[b] [19 000-26 000]	...[b] [16 000-24 000]	2,600	1,780	...[b] [0.57-0.81%]	...[b] [0.50-0.71%]	27.6%	2004
Mozambique	99 000 [84 000-120 000]	100 000 [85 000-120 000]	30 000 [24 000-36 000]	32 000 [26 000-38 000]	2,200	2,400	1.33% [1.10-1.54%]	1.28% [1.06-1.50%]	18.4%	2004
Namibia	8 200 [6 100-10 000]	8 000 [6 000-9 900]	1 500 [1 000-2 100]	1 100 [<1 000-1 600]	220	140	0.98% [0.58 -1.52%]	0.94% [0.55-1.48%]	20.6%	2007
Nigeria	220 000 [190 000-250 000]	230 000 [200 000-260 000]	72 000 [63 000-84 000]	75 000 [65 000-86 000]	7,400	6,600	0.53% [0.44-0.61%]	0.53% [0.43-0.62%]	20.2%	2008
South Africa	270 000 [240 000-300 000]	260 000 [230 000-290 000]	61 000 [52 000-72 000]	48 000 [42 000-58 000]	3,600	3,800	1.77% [1.64-1.96%]	1.70% [1.58-1.88%]	13.8%	2004
Swaziland	9 300 [8 300-11 000]	9 100 [8 100-10 000]	1 700 [1 400-2 200]	1 300 [1 100-1 700]	220	150	3.29% [2.77-4.00%]	3.13% [2.59-3.81%]	24.0%	2007
Uganda	89 000 [75 000-110 000]	94 000 [77 000-110 000]	28 000 [22 000-33 000]	28 000 [22 000-34 000]	3,000	2,400	0.97% [0.70-1.26%]	0.88% [0.64-1.12%]	40.6%	2006
United Republic of Tanzania	97 000 [85 000-110 000]	98 000 [85 000-110 000]	29 000 [24 000-34 000]	24 000 [20 000-29 000]	4,000	3,000	0.70% [0.62-0.78%]	0.68% [0.59-0.76%]	21.8%	2005
Zambia	79 000 [70 000-87 000]	79 000 [70 000-88 000]	20 000 [17 000-23 000]	16 000 [13 000-19 000]	2,200	1,620	1.07% [0.80-1.30%]	0.97% [0.71-1.19%]	26.5%	2007
Zimbabwe	49 000 [43 000-56 000]	46 000 [41 000-53 000]	15 000 [12 000-17 000]	11 000 [9 500-14 000]	2,800	1,680	1.27% [0.95-1.64%]	1.12% [0.83-1.46%]	12.8%	2006
Sources:	Spectrum		Spectrum		Trends in Maternal Mortality 1990 to 2008. Estimates developed by WHO, UNICEF, UNFPA, and The World Bank		Spectrum		UNStats MDG database	

... Data not available or not applicable.

a Distribution of HIV-related deaths based on 2008 estimates (published in World health statistics 2011); envelope of deaths among children younger than five years, 2010 estimates (published by the United Nations Inter-agency Group for Child Mortality Estimation in 2011: http://www.childmortality.org).

b At the request of the country, no value can be presented, or only a range, as the estimates are currently being reviewed and will be adjusted, as appropriate, based on ongoing data collection and analysis.

	Prong 3 target 3.1		Prong 3 target 3.2	Prong 3 target 3.3	Prong 4 target		Child target			
	Mother-to-child transmission rate (%)		Coverage of maternal antiretroviral medicine (prophylaxis and therapy) (%)	Percentage of infants born to HIV-infected women provided with antiretrovirals (either mother of infant) to reduce the risk of HIV transmission during the breastfeeding period	Percentage of eligible pregnant women provided with antiretroviral therapy		Percentage of under-five deaths due to HIV[a]		Coverage of antiretroviral therapy among children younger than 15 years old (%)	
Countries	2009	2010	Coverage excluding single-dose nevirapine 2010	2009/2010	2009	2010	2009	2010	2009	2010
Angola	34% [18-64%]	33% [17-63%]	20% [15-28%]	...	...	...	1.9%	...	11% [8-14%]	10% [7-14%]
Botswana	5% [3-9%]	3% [2-6%]	>95% [>95->95%]	...	...	67% [63-71%]	16.6%	...	87% [77->95%]	88% [79->95%]
Burundi	33% [22-48%]	28% [17-44%]	36% [32-49%]	...	...	...	5.5%	...	13% [12-16%]	13% [11-16%]
Cameroon	29% [19-44%]	23% [13-38%]	53% [43-65%]	...	...	21% [19-23%]	5.0%	...	10% [9-12%]	11% [9-13%]
Chad	34% [21-56%]	33% [19-57%]	7% [5-9%]	...	...	9% [7-12%]	2.7%	...	5% [4-6%]	5% [4-6%]
Côte d'Ivoire	30% [19-44%]	27% [17-42%]	66% [54-79%]	...	...	27% [23-32%]	4.4%	...	14% [12-17%]	12% [11-15%]
Democratic Republic of the Congo	37% [25-56%]	37% [25-56%]	1% [<1-1%]	...	...	...	1.1%	...	7% [7-8%]	8% [8-8%]
Ethiopia	...[b]	...[b]	...[b]	...	...	...	2.1%	...	...[b]	...[b]
Ghana	33% [23-48%]	30% [20-44%]	48% [40-57%]	...	...	...	4.1%	...	10% [8-12%]	13% [11-16%]
India	...[b] [12-100%]	...[b] [12-97%]	...	...	...	...	0.5%	...	...[b] [24-59%]	...[b] [24-59%]
Kenya	26% [19-36%]	21% [15-31%]	43% [37-49%]	...	...	47% [43-51%]	8.9%	...	18% [16-21%]	21% [18-25%]
Lesotho	28% [21-37%]	26% [19-35%]	89% [77->95%]	...	...	47% [43-51%]	30.7%	...	19% [17-22%]	22% [20-25%]
Malawi	...[b] [24-45%]	...[b] [22-42%]	...[b] [23-31%]	...	...	...b [23-29%]	13.3%	...	...[b] [18-23%]	...[b] [19-24%]
Mozambique	29% [20-43%]	31% [22-44%]	52% [44-62%]	...	...	17% [15-20%]	10.5%	...	11% [10-14%]	19% [16-23%]
Namibia	18% [10-34%]	14% [8-27%]	>95% [85->95%]	...	...	54% [46-62%]	19.5%	...	85% [70->95%]	87% [74->95%]
Nigeria	33% [25-43%]	33% [25-43%]	9% [7-10%]	...	...	8% [7-9%]	4.1%	...	8% [7-10%]	7% [6-8%]
South Africa	23% [18-31%]	18% [14-25%]	>95% [85->95%]	...	...	>95% [84->95%]	34.8%	...	36% [32-40%]	36% [32-40%]
Swaziland	19% [13-26%]	14% [11-21%]	>95% [88->95%]	...	...	53% [50-56%]	29.5%	...	56% [49-63%]	55% [48-61%]
Uganda	31% [21-44%]	30% [20-44%]	42% [36-51%]	...	...	32% [27-37%]	6.2%	...	14% [12-16%]	16% [14-19%]
United Republic of Tanzania	30% [22-40%]	25% [17-34%]	59% [52-68%]	...	...	30% [27-33%]	5.6%	...	11% [10-13%]	18% [16-21%]
Zambia	25% [19-33%]	20% [15-27%]	75% [67-85%]	...	...	44% [40-47%]	11.7%	...	27% [24-30%]	26% [23-30%]
Zimbabwe	30% [22-40%]	25% [18-34%]	46% [40-52%]	...	...	23% [21-26%]	24.7%	...	25% [22-29%]	32% [28-35%]
Sources:	Spectrum		UA reports, Spectrum	UA (N/A this yr)	UA reports, Spectrum		CEIWG (2008 estimates)		UA reports, Spectrum	

REFERENCES

1 Sidibe M, Tedstrom J. The business of eliminating mother-to-child HIV transmission. *The Huffington Post*, 5 March 2010. http://www.huffingtonpost.com/michel-sidib/the-business-of-eliminati_b_487733.html

2 *Towards the elimination of mother-to-child transmission of HIV. Report of a WHO technical consultation (9–11 November 2010, Switzerland)*. Geneva, World Health Organization, 2010. http http://www.who.int/hiv/pub/mtct/elimination_report/en/index.html

3 *Countdown to zero. Global plan towards the elimination of new HIV infections among children by 2015 and keeping their mothers alive*. Geneva, Joint United Nations Programme on HIV/AIDS, 2011. http://www.unaids.org/en/media/unaids/contentassets/documents/unaidspublication/2011/20110609_JC2137_Global-Plan-Elimination-HIV-Children_en.pdf

4 *Global report: UNAIDS report on the global AIDS epidemic 2010*. Geneva, Joint United Nations Programme on HIV/AIDS, 2010, http://www.unaids.org/documents/20101123_globalreport_em.pdf

5 *The 2001 Declaration of Commitment on HIV/AIDS at the UN General Assembly Special Session on HIV/AIDS (UNGASS)*. New York, United Nations, 2001. http://data.unaids.org/publications/irc-pub03/aidsdeclaration_en.pdf

6 World Health Organization (WHO), Joint United Nations Programme on HIV/AIDS, United Nations Children's Fund. *Global HIV/AIDS response: epidemic update and health sector progress towards universal access. Progress report 2011*. Geneva, WHO, 2011. http://www.who.int/hiv/pub/2009progressreport/en/

7 *Strategic approaches to the prevention of HIV infection in infants. Report of a WHO meeting, Morges, Switzerland, 20–22 March 2002*. Geneva, World Health Organization, 2003. http://www.who.int/hiv/mtct/StrategicApproaches.pdf

8 Mahy M et al. What will it take to achieve virtual elimination of mother-to-child transmission of HIV? An assessment of current progress and future needs. *Sexually Transmitted Infections*, 2010, 86:ii48-ii55 doi:10.1136/sti.2010.045989.

9 Stover J et al. The Spectrum projection package: improvements in estimating incidence by age and sex, mother-to-child transmission, HIV progression in children and double orphans. *Sexually Transmitted Infections* (supplement 2010), 86(suppl 2):ii16–21.

10 World Health Organization (WHO), United Nations Children's Fund, United Nations Population Fund, and the World Bank. *Trends in maternal mortality: 1990 to 2010*. Geneva, WHO, 2012.

11 Newell M-L et al. Mortality of infected and uninfected infants born to HIV-infected mothers in Africa: a pooled analysis. *The Lancet*, 2004, 364:1236–1243.

12 *Antiretroviral therapy for HIV infection in infants and children: towards universal access. Recommendations for a public health approach, 2010 revision*. Geneva, World Health Organization, 2010. http://whqlibdoc.who.int/publications/2010/9789241599801_eng.pdf, accessed on 24 August 2011

13 HIV and infant feeding 2010. *Principles and recommendations for infant feeding in the context of HIV and a summary of evidence*. Geneva, World Health Organization, 2010. http://www.who.int/maternal_child_adolescent/documents/9789241599535/en/

14 World Health Organization (WHO), Joint United Nations Programme on HIV/AIDS, United Nations Children's Fund. *Global HIV/AIDS response: epidemic update and health sector progress towards universal access. Geneva, WHO, 2011*. Geneva, WHO, 2011.

15 De Cock KM et al. Prevention of mother-to-child HIV transmission in resource-poor counties : translating research into policy and practice. *Journal of the American Medical Association*, 2000, 283:1175–1182.

16 *Antiretroviral drugs for treating pregnant women and prevention HIV infection in infants. Recommendations for a public health approach, 2010 version*. Geneva, World Health Organization, 2010.

17 *Programmatic update: Use of antiretroviral drugs for treating pregnant women and preventing HIV infection in infants*. Geneva, World Health Organization, April 2012. http://www.who.int/hiv/pub/mtct/programmatic_update2012/en/index.html

18 *Monitoring and evaluating the prevention of mother-to-child transmission of HIV. A guide for national programmes: towards elimination*. Geneva, World Health Organization, 2011. http://www.who.int/hiv/pub/me/en/index.html

19 World Health Assembly 2011. *Commission on Information and Accountability for Women's and Children's Health. Keeping promises, measuring results*. (advance copy).

20 *Measuring the impact of national PMTCT programmes: a short guide on methods*. Geneva, World Health Organization, 2011. http://www.who.int/hiv/pub/me/en/index.html. Developed as a product of the IATT EMTCT M&E Working Group.

21 World Health Organization (WHO) and Population Council. *HIV testing, treatment and prevention. Generic tools for operational research*. Geneva, WHO, 2009. http://www.who.int/hiv/pub/operational/or_generic_tools.pdf

22 *International statistical classification of diseases and related health problems. Tenth revision*. Geneva, World Health Organization, 1992.

For more information, contact:

World Health Organization
Department of HIV/AIDS
20, avenue Appia
1211 Geneva 27
Switzerland

E-mail: hiv-aids@who.int

http://www.who.int/hiv/en/

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