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Newman Owiredu, M; Newman, L; Nzomo, T; Conombo Kafando, G; Sanni, S; Shaffer, N; Bucagu, M; Peeling, R; Mark, J; Diop Toure, I; (2015) Elimination of mother-to-child transmission of HIV and syphilis: A dual approach in the African Region to improve quality of antenatal care and integrated disease control. International journal of gynaecology and obstetrics, 130 Su. S27-31. ISSN 0020-7292  
DOI: <https://doi.org/10.1016/j.ijgo.2015.04.010>

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DOI: <https://doi.org/10.1016/j.ijgo.2015.04.010>

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Contents lists available at ScienceDirect

## International Journal of Gynecology and Obstetrics

journal homepage: www.elsevier.com/locate/ijgo



## POLICY AND PRACTICE

# Elimination of mother-to-child transmission of HIV and syphilis: A dual approach in the African Region to improve quality of antenatal care and integrated disease control



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## ARTICLE INFO

## Keywords:

Africa

Congenital syphilis

HIV

Integration

Mother-to-child transmission

## ABSTRACT

The World Health Organization's (WHO) Strategic Framework for the Elimination of New HIV Infections among Children in Africa by 2015 identifies important synergies for the elimination of mother-to-child transmission of HIV and syphilis in terms of prevention interventions, implementation logistics and service delivery, monitoring and evaluation systems, and need for sustained political commitment. The WHO advocates the use of an integrated, rights-based dual approach with partnerships and collaboration to make the best use of available resources. Through a consultative approach, six countries in the African Region committed to dual elimination and developed and implemented action plans for this purpose. Where interest and commitment are high, this may also be possible and effective in other African countries.

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## 1. Background

The median prevalence of HIV among pregnant women in the 46 countries in the World Health Organization (WHO) African Region was estimated as 3.5% (range, <1% in Mauritius, Eritrea, Senegal, Seychelles, and Sao Tome and Principe, to 41% in Swaziland) in 2012 [1], whilst the median prevalence of syphilis among pregnant women in 2013 was 1.9% (range, 0.0–10.3%) [2]. Without treatment, approximately one-third of pregnant women living with HIV will transmit the infection to their infants, and over 50% of these infected infants will die in the first two years of life [3]. Further, more than half of pregnant women infected with syphilis will have a related pregnancy complication, including stillbirth, neonatal death, preterm delivery, low birth weight, or congenital disease (Fig. 1) [4]. An estimated 214 000 children in the African Region were infected with HIV through mother-to-child transmission (MTCT) in 2013 [5], and an estimated 233 000 infants in Sub-Saharan Africa had an adverse outcome due to MTCT of syphilis in 2012 (unpublished data). It has also been shown that maternal syphilis can increase HIV transmission in utero or at delivery by two- to three-

fold [6]. Thus, elimination of MTCT (EMTCT) of HIV and syphilis in Africa would directly contribute to the attainment of Millennium Development Goals 4 (reduction in child mortality), 5 (improvement of maternal health), and 6 (reduction in HIV transmission).

Given the similarity in the mode of transmission and existing prevention interventions (e.g. condom promotion, counselling for safer sexual practices, early antenatal screening and treatment (if positive), and partner management), EMTCT of both HIV and syphilis is most likely to succeed through an integrated approach, provided that the underlying platform of antenatal care (ANC) services is strengthened to be comprehensive, high quality, and utilized by all pregnant women. Sexually transmitted infections can facilitate HIV transmission; thus, treatment of syphilis with one or more doses of benzathine penicillin is a primary HIV prevention intervention available to pregnant women. With this purpose, the Strategic Framework for the Elimination of New HIV Infections among Children in Africa by 2015 [7] proposed a vision of a generation alive and free of HIV and syphilis, consistent with the Global Plan Towards the Elimination of New HIV Infections among Children by 2015 and Keeping Their Mothers Alive [8], as well as the Global Strategy for the Elimination of Congenital Syphilis [9].

EMTCT of HIV and syphilis requires early access to quality ANC for all pregnant women. Quality ANC in the African Region, also known as focused ANC, emphasizes high-quality, safe, simple, and cost-effective

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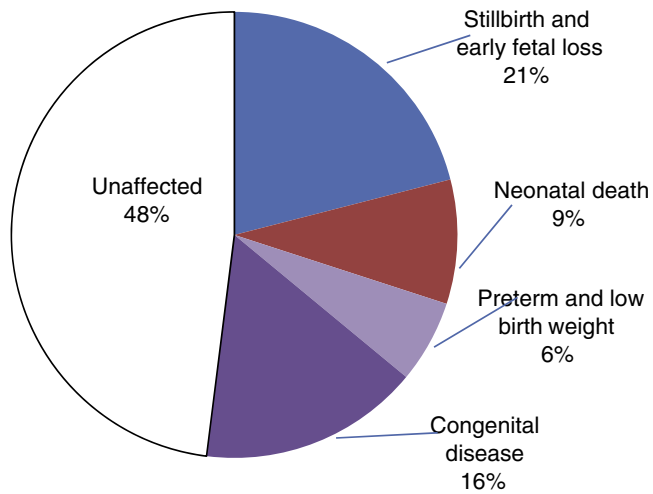


Fig. 1. Untreated active syphilis causes adverse outcomes in 52% of affected pregnancies. Source: Gomez et al. [4].

interventions, such as HIV and syphilis testing as well as early treatment if found positive, which are expected to help improve a broad range of maternal, neonatal, and child health (MNCH) outcomes [10]. Currently, approximately 74% of pregnant women in the African Region attend ANC at least once during pregnancy, but only 62.6% of ANC attendees initially seek care in the first six months [11]. While HIV and syphilis testing are recommended as routine components of ANC, in 2012, only an estimated 50% of ANC attendees in the African Region were tested for HIV and 60% for syphilis [1,2]; of note, however, reported syphilis testing coverage is generally felt to be overestimated.

Newer, simple point-of-care rapid tests for HIV have been successfully scaled up for ANC testing in the African Region and allow same-day testing and treatment even in lower-level health facilities without laboratories. Scaled-up use of similar, inexpensive rapid tests for syphilis is possible with the commitment from countries and donors. Treatment for syphilis in pregnancy with at least one dose of benzathine penicillin is widely available and costs less than US \$1 per dose. The 2013 WHO Consolidated Guidelines on the use of Antiretroviral Drugs for Treating and Preventing HIV Infection [12] provide the normative basis for significantly reducing the risk of MTCT in resource-limited settings through the recommendation, for example, of immediate, lifelong antiretroviral therapy for all pregnant, HIV-positive women (Option B+). In addition, treatment of the infant for either HIV or syphilis is critical to ensure its survival. However, wide-scale implementation of both the new guidelines and technologies is needed down to the lowest feasible level of healthcare delivery for these to be successful.

## 2. Workshop on joint HIV/syphilis action plans

A workshop, co-convened by WHO and partners, was held in June 2011 for six Sub-Saharan African countries with a strong interest in dual elimination (Central African Republic, Ghana, Madagascar, Mozambique, Tanzania, and Zambia) to support the development of action plans addressing the opportunities and urgency of joint program planning. The workshop's objectives were to assist countries with a strong interest in dual elimination in identifying how efforts can support existing national and regional strategic priorities; reviewing goals, targets, indicators, and systems for monitoring and evaluation of elimination efforts; developing immediate action plans for 2011 to 2015 to work toward dual EMTCT through strengthened ANC services; reviewing and strengthening country-level coordination mechanisms; and identifying how participating country experiences can inform development of a regional framework for EMTCT of HIV and syphilis, HIV, sexually transmitted infections, MNCH, and reproductive health

experts from the Ministries of Health, WHO, and other United Nations programs, as well as from implementing partner agencies, participated in the workshop.

## 3. Leveraging existing data

Responses from pre-workshop questionnaires administered to country representatives and their presentations during the workshop, summarized in Table 1, demonstrated that the six countries were collecting the three core indicators critical for successful monitoring of elimination of congenital syphilis, as well as the majority of the core HIV indicators prioritized by WHO, UNAIDS, and UNICEF [13]. From the pre-meeting survey, all but one country monitored vertical transmission rates for HIV and two countries had congenital syphilis case definitions.

## 4. Barriers and potential solutions for sustained country commitment

Participants confirmed that political commitment and cooperation with communities is critical for resource mobilization to support successful health programming. Currently, specific policies and financial resources, particularly for maternal syphilis screening and ANC strengthening, are insufficient to address the need. Table 2 delineates the barriers and opportunities suggested by participants regarding the improvement of ANC coverage and the increase of earlier access to ANC services, as well as the progress made in selected countries following the meeting.

Participants recognized the possibilities and advantages of dual EMTCT of HIV and syphilis, touching on the importance of ensuring availability and accessibility to quality health services, including diagnostic tests and treatment. Discussants suggested specific funds could be identified through existing multilateral and in-country funding organizations such as the US President's Emergency Plan for AIDS Relief (PEPFAR), UNITAID, the Canadian International Development Agency (CIDA), H4+, and The Global Fund, which can, and have occasionally in the past, supported maternal syphilis screening in the context of HIV prevention and strengthening of MNCH services.

Newly available, dual rapid HIV and syphilis tests could make integrated services easier. The use of simple readers for rapid tests have the potential to remove the subjectivity of test interpretation, reduce transcription errors, allow re-checking for quality assurance, and automate transmission of data for surveillance. Other testing-related opportunities include the increased availability of point-of-care CD4+ and early infant HIV testing, integration of programs for sample transport, and improvement of test turn-around times. Opportunities regarding treatment include reduced treatment prices, more optimal drugs, and improved supply chain management, among others. Additional opportunities for service integration and program strengthening include the integration of prevention of MTCT (PMTCT) and reproductive health manuals, training, and registries to improve recording.

## 5. Next steps and actions taken

Draft national action plans for 2011 to 2015 for the dual EMTCT of HIV and syphilis were developed by each of the six country teams. These plans included actions to improve the access to and quality of ANC services; introduce or scale up rapid syphilis, HIV, and CD4+ testing; develop indicators and targets for monitoring and evaluation and improve monitoring systems quality; develop costed plans of action; increase advocacy with partners; and create a supportive national policy environment. For example, Madagascar organized advocacy meetings in high-burden districts to educate key stakeholders, support policy development, and identify resources for sustainable, quality ANC services. Madagascar also undertook activities to integrate syphilis screening into existing PMTCT health services and reported

**Table 1**  
Reported screening and treatment coverage of HIV and syphilis in pregnancy (up until 2010 from questionnaires completed before the workshop and for selected indicators for 2013/2014 from follow-up questionnaires in January 2015).

Data period	Central African Republic		Ghana		Madagascar		Mozambique		Tanzania		Zambia	
	Up until 2010 <sup>a</sup>	2013/2014 <sup>b</sup>	Up until 2010 <sup>a</sup>	2013/2014 <sup>b</sup>	Up until 2010 <sup>a</sup>	2013/2014 <sup>b</sup>	Up until 2010 <sup>a</sup>	2013/2014 <sup>b</sup>	Up until 2010 <sup>a</sup>	2013/2014 <sup>b</sup>	Up until 2010 <sup>a</sup>	2013/2014 <sup>b</sup>
>1 ANC visit	55% (2010)	32% (2013)	96% (2011)	90.1%	86% (2009)	100% (2014)	92% (2011)	NA	88% (2010)	98% (2010)	94% (2007)	96% (2013–2014)
Percentage of MCH facilities offering both syphilis and HIV screening	18%	46.7% (2013)	36%	44%	50%	65% (2014)	NA	NA	71%	97% (2013)	99%–100%	99%–100%
<i>Syphilis</i>												
ANC syphilis prevalence	10% (2010)	1.6% (2013) 3.3% (2013)	3.4% (2010)	2.3% (2013)	3.4% (2010)	5.6% (2013) 4.3% (2014)	6% (2010)	5.8% (2013)	4.2% (2008)	2.4% (Health Statistics, HMIS; 2014)	5.3% (2010)	4.4% (2013)
Percentage of ANC attendees screened for syphilis	72%	35% (2013)	NA	41.5% (2012)	48%	50.2% (2013) 26% (2014)	68%	11.1% (2013)	54%	NA	42%	36.3% (2013)
Percentage of syphilis + ANC attendees who received at least 1 dose IM penicillin	100%		98%		70%		85%		98%		51.1% (2009)	
Percentage of partners of syphilis + ANC attendees treated	NA		NA		NA		NA		91%		89.4%	
Duration of stockouts of test material (average days/quarter)	NA		NA		NA		NA		18 days/quarter		NA	
Availability of congenital syphilis case definitions	No		Yes		Yes		No		No		No	
Availability of stillbirth rate per 1000 live births	No		Yes		Yes		Yes		Yes		Yes	
<i>HIV</i>												
ANC HIV prevalence	6% (2006)	1.4% (2013)	2% (2010)	1.9%	0.09% (2010)	0.04% (2014)	10% (2009)		6.9% (2008)	5.6% (2011/2012 ANC Sentinel Surveillance Report)	16.6% (2008)	4.1% (2014)
Percentage of pregnant women screened for HIV	37%		54%		48%		71%		85%		95%	
Percentage of HIV + women who had their CD4 assessed	NA		NA		NA		NA		NA		NA	
Percentage of HIV + women receiving ARVs (any regimen) to prevent vertical transmission to the child	14%	43%	53%	81.3%	31%	63% (2014)	69%	NA	70%	77% (PMTCT Report, June 2014)	88%	97% (2013)
Percentage of HIV-exposed children tested for HIV	NA	NA	NA	NA	NA	NA	12%	NA	NA	30% (PCR at 2 months) (PMTCT Report, June 2014)	48% (2009)	NA
Percentage of HIV-exposed infants receiving ARVs	NA	95%	NA	NA	NA	NA	NA	NA	57%	27% (PMTCT Report, June 2014)	36% (2009)	55% (2013)
Availability of vertical transmission rate	Yes		Yes		No		Yes		Yes		Yes	

Abbreviations: ANC, antenatal care; ARVs, antiretrovirals; HMIS, health management information system; MCH, mother and child health; NA, data not available; PMTCT, prevention of mother-to-child transmission; PCR, polymerase chain reaction.

<sup>a</sup> Column consists of data collected through questionnaires given to countries participating in the June 2011.

<sup>b</sup> 2013/2014 data were collected through follow-up questionnaires given to country WHO staff members in January 2015 for selected indicators, or available in the WHO Global Health Observatory Data Repository.

**Table 2**  
Elimination of MTCT of HIV and syphilis: perceived barriers, potential solutions, and examples of country progress since 2011.

Perceived barriers to elimination	Potential solutions from meeting	Examples of country progress since 2011
<p><i>Demand side – Client perspective</i></p> <p>Inadequate information about services available to the community</p> <p>Perception that ANC services were of limited quality or benefit</p>	<p>More community-based education of pregnant women about risks and need to access ANC early</p>	<p><i>Zambia:</i> Continued sensitization of community and pregnant women on early ANC and PMTCT through community-based volunteers: SMAGs and other groups specifically oriented on PMTCT and the Communication for Development strategy in a number of districts</p> <p><i>Tanzania:</i> Development and launch of national communication strategy for PMTCT/ECS and community awareness on PMTCT and syphilis</p>
<p>Long distances to health facilities</p> <p>Inability to pay</p>	<p>Improving access by making ANC services available at lower levels of the health care system</p> <p>Make tests more affordable through bulk procurement</p>	<p><i>Tanzania:</i> Decentralizing PMTCT and syphilis services to health centers and dispensaries</p> <p><i>Zambia:</i> MNCH services, including ANC free in public and mission institutions. Government constructing 650 health posts to increase MNCH services availability at lower levels and currently training a cadre, community health assistants, to manage the health posts</p> <p><i>Zambia:</i> SMAGs oriented on danger signs in pregnancy to encourage early referral from community and also promotion of early ANC booking</p>
<p>Late initiation of ANC: missing optimal window for prevention of syphilis or HIV transmission</p>		
<p><i>Supply side – Health system</i></p> <p>Lack of resources, human and infrastructure</p> <p>Poor attitudes of health workers</p> <p>Poor quality of healthcare workers</p>	<p>Broadening service provision through task-shifting for HIV and syphilis screening and treatment to improve availability</p>	<p><i>Zambia:</i> FANC training; Training of healthcare providers on Option B+ and Option B+ scaled up country wide. Direct entry midwives being trained to contribute rapidly to the output of skilled health providers</p>
<p>Poor quality of testing services (e.g. poorly done, delay in obtaining test results)</p> <p>Unavailability of same-day testing and treatment</p> <p>Prohibitive fees for syphilis tests</p>	<p>Improving quality of testing including expanding coverage using rapid diagnostics tests</p> <p>Establishing quality control and quality assurance systems</p>	<p><i>Tanzania:</i> Finalized the guidelines for rapid testing for syphilis and Option B+ and capacity building for introducing Rapid Test in ANC Clinics</p> <p><i>Tanzania:</i> Introduction of provincial Medical Stores hubs – five are in place to ensure commodity security at the lower levels</p>
<p>Lack of service integration, causing delays</p>	<p>Ensuring HIV and syphilis screening and treatment services are available at common point of service delivery</p> <p>Rapid tests provide opportunities for task shifting, but also for health systems strengthening, improving motivation of health workers, enhancing opportunities to screen partners</p>	<p><i>Madagascar:</i> Activities to integrate syphilis screening into existing PMTCT health services</p> <p><i>Zambia:</i> Undertaking research in dual test kits</p>
<p>Insufficient accountability between community and health care system</p>	<p>Ensuring availability of supplies (e.g. test kits and treatment) at the lower facilities</p>	<p><i>Tanzania:</i> Resource mobilization for test kits for PMTCT and syphilis</p> <p><i>Zambia:</i> Outreach posts for MNCH services including ANC have increased in collaboration with the community who has helped to construct community sites.</p>

Abbreviations: ANC, antenatal care; ECS, elimination of congenital syphilis; FANC, focused antenatal care; MNCH, maternal, neonatal, and child health; PMTCT, prevention of mother-to-child transmission; SMAGs, Safe Motherhood Action Groups.

improved attendance by pregnant women in health facilities (increased early first ANC visits in the first four months of pregnancy for syphilis and HIV screening). The non-availability of commodities for syphilis and HIV screening, as well as of antiretroviral drugs and drugs for syphilis treatment, remained as barriers.

After the workshop, Tanzania and Zambia held meetings to engage a significant number of stakeholders and reviewed and updated their vision, guidelines, and dual elimination plans for the integration of syphilis into PMTCT services. Major improvements in Zambia included a common understanding of the importance of a dual elimination approach as well as increased coverage of PMTCT and elimination of congenital syphilis services. A study is currently underway in Zambia to test a dual HIV and syphilis test kit.

In Tanzania, increased syphilis screening was observed in sites where dual testing is implemented, while barriers included inadequate resources to ensure commodity security, inadequate human resources, and the shortage of dual test availability for health workers.

The Central African Republic initiated the development of a plan for the EMTCT of congenital syphilis, to be integrated to their existing national EMTCT of HIV plan. However, the process was delayed because of the political crisis in the country and discussions around integration did not help overcome this challenge.

Since the meeting, global processes for the validation of EMTCT of HIV and syphilis have been established [14]. It is hoped that this integrated process may serve as motivation for governments to set targets,

identify dedicated resources, and strengthen systems for monitoring and maintaining EMTCT of HIV and syphilis once achieved.

## 6. Conclusions

The experiences and input from this consultation suggest that countries in the African Region, similar to those in the Americas and Asia, are interested in and committed to the EMTCT of HIV and syphilis in an integrated manner, and recognize that this is feasible through strengthening of the MNCH platform. The experiences of these six countries can be used to assist regional and global efforts for the dual EMTCT of HIV and syphilis as well as the strengthening of ANC services to help attain Millennium Development Goals 4, 5, and 6 by 2015 or beyond.

## Acknowledgments

The authors are grateful to the following experts for providing updates on country progress: Sarai Bvulani-Malumo, Aimé Théodore Dodane, Roseline Dansowaa Doe, Theopista John Kabuteni, Paul Kalinda, Jackson Lija, Rhoda Manu, Adèle Ramiliarijaona Masy, Kebby Musokotwane, Jonas Mwale, Prosper Faustine Njau, Felicia Owusu-Antwi, Verohanitriñiala Raholiarintsoa, Awa Koheleth Winani, and Marie Christine Sepou Yanza. We are also grateful to our colleagues who contributed to the 2011 pre-meeting preparations and meeting contributions: Patrick Aboagye, Luc Barriere-Constantin, Jema Bisimba,

Edward Bitarakwate, Armando Buacuane, Alicia Carbonell, John Changalucha, Namwinga Towela Chintu, Bernard Dornoo, Charles Fleischer-Djoleto, Nazir Amade Ibrahim, Helen Kelly, David Mabey, Fredrick Macha, Abuu Maghimbi, Julius John Mboya, Elizabeth McCarthy, Jacklin Moshia, Michael Mwasekaga, Christine Mwelwa, Mary Namubiru, Azzah Amin Nofly, Jean de Dieu Marie Rakotomanga, Adeline Florence Ranaivo, Edwige Ravaomanana, Gina Razafimanantsoa, Patrice Rweikiza Rwehumbiza, Nyambe Sinyange, Kimberly Sollis, Aye Delphine Souma, Susan Strasser, Sedona Sweeney, Susan Zimba Tembo, Arlette Tete, Koheleth Winani, and Awa Sepou Yanza.

### Conflict of interest

The authors declare that they have no conflicts of interest.

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