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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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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[5], and an estimated 233,000 infants in Sub-Saharan Africa had an adverse outcome due to MTCT of syphilis in 2012 (unpublished data).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 threefold [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 G 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 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
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. Discusants 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).

<table>
<thead>
<tr>
<th>Data period</th>
<th>Central African Republic</th>
<th>Ghana</th>
<th>Madagascar</th>
<th>Mozambique</th>
<th>Tanzania</th>
<th>Zambia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2013/2014(^a)</td>
<td>2013/2014(^b)</td>
<td>2013/2014(^a)</td>
<td>2013/2014(^b)</td>
<td>2013/2014(^a)</td>
<td>2013/2014(^b)</td>
</tr>
<tr>
<td>Percentage of MCH facilities offering both syphilis and HIV screening</td>
<td>18%</td>
<td>46.7% (2013)</td>
<td>36%</td>
<td>44%</td>
<td>50%</td>
<td>65% (2014)</td>
</tr>
<tr>
<td>Syphilis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of ANC attendees screened for syphilis</td>
<td>72%</td>
<td>42% (2013)</td>
<td>41.5% (2012)</td>
<td>48%</td>
<td>50.2% (2013)</td>
<td>68%</td>
</tr>
<tr>
<td>Percentage of syphilis + ANC attendees who received at least 1 dose IM penicillin</td>
<td>100%</td>
<td>98%</td>
<td>70%</td>
<td>85%</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Percentage of partners of syphilis + ANC attendees treated</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Duration of stockouts of test material (average days/quarter)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Availability of congenital syphilis case definitions</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Availability of stillbirth rate per 1000 live births</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>HIV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of pregnant women screened for HIV</td>
<td>37%</td>
<td>54%</td>
<td>48</td>
<td>71%</td>
<td>85%</td>
<td>51% (2009)</td>
</tr>
<tr>
<td>Percentage of HIV + women who had their CD4 assessed</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Percentage of HIV + women receiving ARVs (any regimen) to prevent vertical transmission to the child</td>
<td>14%</td>
<td>43%</td>
<td>53%</td>
<td>81.3%</td>
<td>31%</td>
<td>63% (2014)</td>
</tr>
<tr>
<td>Percentage of HIV-exposed children tested for HIV</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Percentage of HIV-exposed infants receiving ARVs</td>
<td>NA</td>
<td>95%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Availability of vertical transmission rate</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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.

\(^a\) Column consists of data collected through questionnaires given to countries participating in the June 2011.

\(^b\) 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.
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 Tanzania 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.

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Conflict of interest

The authors declare that they have no conflicts of interest.

References


