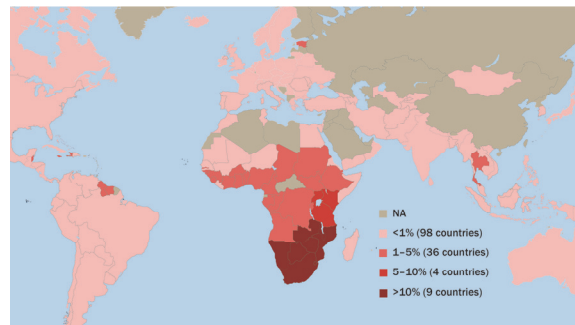


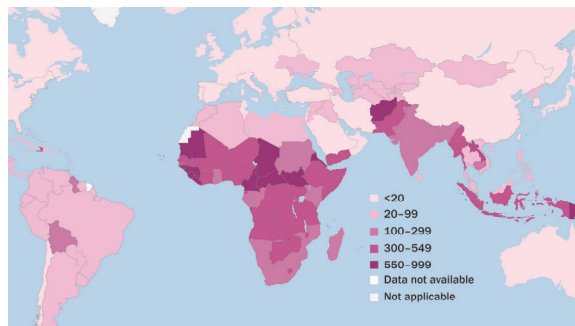
Maternal Mortality and HIV: An Overview

Contextual factors such as local policies and cultural norms, as well as socioeconomic factors, play a role in women’s ability to access care and receive appropriate treatment during pregnancy, childbirth, and postpartum.¹ This is true for all women, and particularly so for the 17 million women living with HIV globally, the vast majority of whom live in sub-Saharan Africa (SSA) and are of reproductive age.²

In 2013, HIV was responsible for 1.5% of all maternal deaths in SSA and 0.4% worldwide.³ Pregnant women living with HIV have between a two to 10 times increased risk of death than uninfected pregnant women.^{4,5,6,7,8} While maternal deaths have decreased overall in the past decade, countries with high HIV burdens have had slower declines compared to countries less affected by the HIV pandemic. For example, South Africa—an upper middle-income country with an HIV infection rate among pregnant women aged 15-49 years of 29.5%⁹—experienced a decrease of only 0.4% in its maternal mortality ratio (MMR) between 1990 and 2013, despite a global MMR decrease of 45% in the same timeframe¹⁰.



Adult HIV prevalence rates, 2012 data from *Global Report: UNAIDS Report on the Global AIDS Epidemic 2013*.



Data on maternal mortality ratio (per 100,000 live births) from World Health Organization 2012.

CAUSES OF MATERNAL MORBIDITY AND MORTALITY AMONG WOMEN LIVING WITH HIV

The World Health Organization (WHO) defines maternal death as “the death of a woman during pregnancy 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 pregnancy or its management but not from accidental or incidental causes.”¹¹ Maternal deaths are classified as either direct (those directly caused by the pregnancy or its management) or indirect (those in which the pregnancy contributed to a death from another condition).¹²

HIV, especially in more advanced stages of disease or with HIV/malaria co-infection, is correlated to higher rates of anemia.¹³ Although data specifically related to hemorrhage risk are limited, because anemia decreases women’s ability to tolerate even modest blood loss before or after childbirth, providers should be particularly vigilant when monitoring these clients. A recent meta-analysis on the association between HIV and other direct causes of maternal mortality found no increased risk of placenta previa, placental abruption, postpartum hemorrhage, retained placenta, pre-eclampsia, or eclampsia for women living with HIV. However, it did find an association between HIV and an increased risk of antepartum hemorrhage, uterine rupture, and prolonged labor.¹⁴

On the other hand, there is strong evidence to demonstrate that postpartum women living with HIV experience higher risks of developing puerperal sepsis, and possibly abortion-related sepsis.^{8,15,16,17} HIV infection has been shown to be a major risk factor for mortality due to puerperal sepsis; in SSA, HIV-infected pregnant women are approximately six times more likely to develop puerperal sepsis than those who are uninfected, and they have a three-fold increased risk of death from sepsis after delivery.^{8,10,11,12}

Maternal Health, HIV, and Tuberculosis

Tuberculosis (TB) is a leading cause of maternal morbidity and mortality in settings with a high HIV burden, and several studies have demonstrated high HIV prevalence among maternal deaths attributed to TB.^{18,19} Co-infection with TB and HIV raises particular concerns in that HIV increases reactivation of TB and increases TB mortality, and TB disease can cause a decrease in CD4 count and an increase in viral replication.²⁰ Antiretroviral therapy (ART) for pregnant women living with HIV, and proper identification and treatment of TB, will decrease the risk of dying of both HIV and TB. Routine symptom screening during antenatal and postpartum care, in addition to prompt diagnosis and treatment for TB, can contribute to decreasing TB-related maternal mortality.

Maternal Health, HIV, and Malaria

Pregnant women living with HIV may also have other concurrent infections, depending on the local context. Co-infection with malaria is common in areas of high prevalence of both diseases. For women living with HIV, there is increased prevalence and severity of malaria, as well as an impaired response to malaria treatment.¹³ Pregnant women living with HIV have a three-fold higher risk of severe anemia and five-fold higher risk for maternal death due to malaria than their HIV-negative counterparts.^{21,22} It is therefore essential that women living with HIV in malaria-endemic regions be protected against malaria. Daily co-trimoxazole preventive therapy should be offered to all pregnant women living with HIV with immunosuppression (WHO clinical stage 2, 3, or 4 or CD4 <350). Alternatively, intermittent preventive therapy with sulfadoxine-pyrimethamine is recommended.^{19,23} Pregnant women should not take both medications simultaneously; doing so reduces drug efficacy and can increase adverse drug reactions.²⁴

Maternal Health, HIV, and Other Infections

Although data related to maternal mortality among women living with HIV are limited, confidential enquiries made between 2008 and 2010 in South Africa suggest that most deaths in HIV-infected pregnant and postpartum women are due to pneumonia and meningitis, in addition to TB.¹⁴ *Pneumocystis carinii* pneumonia is a common opportunistic infection in people living with HIV, and pregnant and postpartum women with CD4 counts below 200 are especially vulnerable to this life-threatening illness. However, it is worth noting that pneumonia is also a significant indirect cause of maternal mortality regardless of HIV status. An autopsy-based 2008 study in Mozambique found that pyogenic pneumonia accounted for 12.2% of maternal mortality—the second leading indirect cause of maternal mortality after HIV/AIDS among the 179 cases studied.²⁵ Such findings highlight the critical importance of knowing women's HIV status in order to guide management, as well as the need to prevent, identify, and treat these specific types of infectious diseases.

MATERNAL HEALTH AND ANTIRETROVIRAL TREATMENT

All pregnant women should have access to and undergo voluntary, confidential HIV testing and counseling, and women without documented HIV testing during pregnancy should be tested and counseled at the first appropriate opportunity in labor or shortly thereafter. Women who are pregnant and infected with HIV should be offered ART when required for their own health. The 2013 WHO guidelines recommend that women with CD4 counts of 500 or higher remain on ART through cessation of breastfeeding, and women with CD4 counts below 500 continue ART for life.²⁶ It stands to reason that ART substantially reduces HIV-related maternal mortality as it has so significantly reduced HIV/AIDS mortality generally. However, we do not have sufficient data yet on how much maternal mortality could be reduced by increasing the number of women on ART.^{7,27,28}

Women who start on ART during pregnancy should be provided adequate clinical and social support to help them stay on ART to maintain their own health as well as the health of their families. Routine follow-up is important to monitor for potential drug toxicity. Further, women who initiate ART at very low CD4 counts should be followed closely as they may be at risk for immune reconstitution inflammatory syndrome (IRIS).²⁹ IRIS, which may be confused with worsening HIV disease progression, occurs when a reactivated immune system mounts an overwhelming and potentially fatal response to a previously acquired opportunistic infection.³⁰

RECOMMENDATIONS AND NEXT STEPS

Globally, HIV accounted for 2,070 maternal deaths in 2013.³ Many of these deaths can be prevented with the implementation of high-quality antenatal, obstetric, and postpartum care, including prompt diagnosis of HIV and associated opportunistic infections, prevention and treatment of common co-infections, and provision of ART. It is important to remember that ART initiation in antenatal care (ANC) is only one step along the continuum of care. Postpartum women living with HIV should remain on ART at least through cessation of breastfeeding, many for the rest of their lives. It is therefore critical that they be supported to remain in care and adherent to their medications beyond the postpartum period, with concrete linkages to other routine, preventive health care services, including family planning for healthy timing and spacing of future pregnancies.

Every woman has a right to safe, respectful, and effective ANC, and integrating comprehensive HIV services with ANC is fundamental to reducing maternal morbidity and mortality. Access to early ANC, integration of screening, prevention, and treatment of HIV and other infectious diseases into the maternal health care platform, empowerment of nurses and midwives to prescribe ART, and initiation of ART according to established country guidelines will increase the availability of high-quality pregnancy care. Further, provision of comprehensive, evidence-based care during the labor, delivery (especially vigilance for prolonged labor and prolonged rupture of membranes), and postpartum periods, as well as observance of best surgical and infection prevention practices, can reduce the direct obstetric complications caused by sepsis.

To address remaining questions, it is important that the maternal health and HIV communities converge to identify gaps in the collective understanding of the intersection of maternal health and HIV infection. If the application of established obstetric, HIV, and infectious disease guidelines is prioritized and research gaps are identified and addressed, the reduction in HIV-related maternal morbidity and mortality will be profound.

Emerging priority research questions

- How can countries better capture specific maternal morbidity and mortality data including cause of death and ART status?
- What are the particular challenges, and potential best practices, in addressing the needs of women experiencing co-morbidities?
- What are the optimal models for delivering comprehensive maternal health care services, including prevention and treatment of common and serious communicable diseases?
- What are the optimal models for delivering integrated maternal and infectious disease services?
- How can countries best address issues of equality and access in delivering these integrated services?

Reference: Maternal Health, HIV and AIDS: Examining Research through a Programmatic Lens. Meeting Report, June 10-11, 2013; http://maternalhealthtaskforce.org/dmdocuments/MHHIV_meeting_report.pdf (PDF pp. 6-7).

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