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COMMENTARY | PERINATAL HIV TRANSMISSION

Perinatal HIV Transmission Prevention: Challenges among Women Living with HIV in sub-Saharan Africa

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ABSTRACT

About 86 percent of the estimated 160,000 children newly-infected with the human immunodeficiency virus (HIV) live in sub-Saharan Africa. Despite global efforts to reduce perinatal HIV transmission, this phenomenon continues to be a public health problem in sub-Saharan Africa. This paper discusses challenges associated with perinatal HIV transmission prevention in sub-Saharan Africa and offers strategies for the way forward. These strategies include safe sex education and behavioral change, increased access to integrated antenatal care, training of unskilled traditional birth attendants into formal delivery systems, access to antiretroviral therapy, and investing in virologic testing.

Key words: • HIV • Perinatal • Antiretroviral Therapy • Mother to Child HIV Transmission • HIV Prevention • Sub-Saharan Africa

1. Introduction

Perinatal human immunodeficiency virus (HIV) transmission, also known as mother-to-child HIV transmission is the most common cause of pediatric HIV infection.[1] It occurs when a mother transmits HIV to her unborn child during pregnancy, childbirth, breastfeeding, or premastication. In 2016, an estimated 740 000 new HIV infections occurred among women of reproductive age (15–49 years) globally, with about 540 000 of those cases occurring in 23 HIV priority countries in sub-Saharan Africa (SSA) and Asia.[2] In 2018, about 1.3 million pregnant women were living with HIV and approximately 90 percent of that number were living in SSA. The SSA countries with the highest prevalence of pregnant women living with HIV were in southern Africa, specifically Botswana (27.4 percent), South Africa (21.6 percent), Lesotho (21.1 percent) and Namibia (16.4 percent).[3]

HIV prevention in pregnant women has become an important focus of HIV research due to its role in HIV infection among children.[4] Irrespective of worldwide progress due to the introduction of the *Global Plan Towards the Elimination of New HIV Infections among Children and Keeping their Mothers Alive* in 2011, a lot still needs to be done, especially in SSA in order to reach the Joint United Nations Program on HIV and AIDS (UNAIDS) 2020 targets of the

Super-Fast-Track Framework to End AIDS.[3] The targets of this framework include providing 95 percent of pregnant women living with HIV with lifelong HIV treatment by 2018, and eliminating new annual HIV infections among children between the ages of 0-14 years to less than 20,000 by 2020. Although the *Global Plan and Super-Fast-Track Framework* seeks to increase access to perinatal HIV-related services and to increase pregnant women's living with HIV access to antiretroviral therapy (ART), there are still challenges. Given the fact that HIV prevalence remains high among women in SSA, as well as the fact that pediatric HIV infections in these countries are overwhelmingly high, it is important to focus on prevention challenges and practical strategies to address the issue.[5] This paper discusses perinatal HIV transmission prevention challenges in SSA and offers strategies for the way forward.

2. Perinatal HIV Prevention Challenges

While access to perinatal HIV prevention services increased from three percent in 2003 to 73 percent in 2014 in SSA, there are still challenges. Pregnant women lack access to HIV testing, in utero HIV prevention options, and ART throughout pregnancy. They also have challenges associated with HIV-related stigma.

2.1. Access to HIV Testing

Access to antenatal care (ANC) provides opportunities for HIV screening, but in SSA, ANC uptake is sub-optimal.[6] This creates missed opportunities for HIV screening of pregnant women and their subsequent enrollment in available perinatal HIV prevention services.[7] Studies conducted in four SSA countries (Congo, Mozambique, Nigeria and Uganda) showed significant relationships ($p<0.001$) between education and uptake in HIV testing.[6] Women with a tertiary education had the greatest uptake of HIV testing compared with women with no education.[6] There was also a statistically significant relationship between living in a rural or urban area and HIV testing ($p<0.0001$), with more women who resided in urban areas (67.5%) receiving HIV testing during ANC visits than women living in rural communities (55.5%).[6]

Antibody-only and antigen/antibody combination assays used for HIV testing in adults and older children are unreliable when used in infants because of the persistence of transplacentally-acquired maternal antibody. Thus, HIV virologic testing using assays that detect HIV DNA or RNA is the recommended method for diagnosing HIV infection in infants. Through virologic tests, in utero HIV infection, HIV DNA or RNA, can be detected within 48 hours of birth, and in infants with peripartum acquisition within one to two weeks.[8,9] Unfortunately, virologic testing for infants is widely unavailable in SSA.[10-12] Only a few countries like Botswana and South Africa are able to provide this service.[13] Early confirmation of HIV diagnosis is crucial to identifying infants in need of immediate ART.[8] Recent studies have confirmed increased survival rates for early HIV diagnosis among HIV positive infants put on ART.[8] In their study on children receiving early ART in South Africa, Violari et al., found that early HIV diagnosis and early antiretroviral therapy reduced early infant mortality by 76 percent and HIV progression by 75 percent.[10]

2.2. In Utero HIV Prevention

Preventing perinatal HIV transmission is a challenge in most SSA countries. This is attributable to the fact that many women have limited access to elective caesarean section (CS) (due to high cost) and lack access to health facilities at birth.[14] A study from Tanzania showed significant variations in access to CS services among socio-demographic groups.[15] Increased user fees, coupled with the closure of the operation theatre at the regional public hospital in 2010, resulted in less access to CS by poor women.[15] Another study conducted in Burkina Faso showed that only 27.8% of health facilities continuously offered CS services to pregnant women.[16] Scheduled CS reduce the risk of perinatal HIV transmission during vaginal delivery when the baby passes through the birth canal and is exposed to HIV in the mother's blood, and when the baby comes into contact with cervical and vaginal secretions.

2.3. Access to ART

The use of ART during pregnancy helps to reduce maternal HIV viral load and the subsequent

transmission of the virus to unborn babies. In 2019, several countries in SSA began to make ART available to pregnant women. By adopting the World Health Organization (WHO) Option B+ guidelines, which recommends that pregnant women living with HIV be immediately put on lifelong ART, all but two of the 23 priority HIV countries in SSA and Asia increased the number of women of reproductive age receiving ART regardless of pregnancy status.[17] Although ART coverage has increased in SSA, pregnant women in urban areas have more access to ART than women who live in rural areas. By region, ART coverage for pregnant women living with HIV is lower in West and Central Africa (48%) compared to East and Southern Africa. Thus, in 2017, one in five children born to mothers living with HIV in the region was HIV positive.[5] Among women who have access to ART in SSA, some have adherence issues arising from side-effects such as dizziness, nausea, and the lack of access to food to be able to take the medication.[18] For example, in Cote d'Ivoire and Malawi, pregnant women complained of side effects from ART.[19] Without access to ART, it is estimated that 25 to 50% of HIV-positive women will likely transmit the virus to their unborn babies.[19]

In 2016, 2.1 million children were living with HIV and 919,000 of that number between the ages of 0–14 years were receiving ART. This number increased to 974, 000 in June 2017.[5] Regardless of this increase in coverage, the number of children reached fell short of the AIDS Free target of 1.6 million to be attained by the end of 2018 adopted in the 2016 United Nations Political Declaration on Ending AIDS.[20] Of the 23 HIV priority countries, only Botswana, Kenya, Namibia, and Swaziland reported ART coverage of 60% or greater.[5] Coverage among children in the West and Central Africa regions remained low, with six out of eight countries reporting ART coverage equal to or less than 25%.[5] According to the WHO, infants with confirmed HIV should be started on ART, irrespective of the clinical or immunological stage. [21] In the absence of virologic testing, infants less than 12 months of age should be put on ART as soon as possible.[21] Without access to ART, about a third of infants will not reach their first birthday, and over half of them will not reach their second birthday.[22,23]

2.4. HIV-related Stigma

HIV-related stigma serves as a barrier to HIV prevention efforts. In a study conducted in Malawi, most pregnant women reported that stigma was one of the reasons why they did not return to the perinatal HIV clinics after testing HIV positive.[24] The pregnant women who sought treatment traveled to distant health care centers where they were unknown. The fear of stigma also prevents pregnant women from taking their HIV medications at home as prescribed. In Kenya, pregnant women indicated that the fear of stigma made it difficult for them to attend HIV clinical appointments and to adhere to their medication regimens.[25] Eliminating stigma will allow pregnant women to freely disclose their HIV status, participate in prevention efforts, and take precautions to prevent future transmission without the fear of discrimination, violence, or economic loss.[26]

3. The Way Forward

To address the burden of perinatal HIV transmission in SSA, efficacious strategies that significantly reduce the rate of vertical transmission such as safe sex education and behavioral change, increased access to integrated ANC, training of unskilled traditional birth attendants into formal delivery systems, access to ART, and investing in virologic testing need to be employed.

3.1. Safe Sex Education and Behavioral Change

Educating women and girls using a mix of communication dissemination channels (e.g., radio, television, posters, newspapers) with clear and simple messages about the importance of abstinence, delayed first sexual intercourse and using contraceptives, is a crucial first step to reducing the acquisition and subsequent transmission of HIV among this population.[27] Interventions that seek to empower and improve upon women and girl's safer sex negotiation skills (e.g., condom use) need to be promoted. SSA governments and policy makers need to educate local community leaders and men about the effects of gender inequality, violence and negative cultural practices on HIV risk among women and girls and put in place mechanisms to punish perpetrators of such acts.

3.2. Access to Integrated Care

HIV testing needs to be integrated into routine ANC services in SSA countries in order to increase the chances for perinatal HIV transmission prevention services to reach HIV positive pregnant women. This will require SSA governments to pay attention to the expansion of outreach services to pregnant women in rural settings and to educate pregnant women and their communities about HIV in order to reduce HIV-related stigma. It will also require coordinated efforts by SSA countries across primary care, HIV, obstetric and gynecologic, and pediatric health care settings supported by an effective public health infrastructure.[28]

3.3. Train Traditional Birth Attendants

To overcome geographical and economic barriers to access to ANC, the governments of SSA countries need to identify unskilled traditional birth attendants who provide ANC services to pregnant women in their jurisdiction, train, regularly supervise and integrate them into their formal ANC delivery systems.[29] The integration is crucial because, traditional birth attendants play and will continue to play an important role in maternal and child health in SSA.

3.4. Prioritize Access to ART

SSA governments need to prioritize access to ART for all expectant mothers during pregnancy and delivery as well as for infants after birth. These governments also need to ensure that ART is accessible to mothers after delivery, so they can remain on the medication and administer it to their infants depending on their HIV status. Discontinuing ART could increase viral load, cause disease progression, a decline in immune status, and an increased risk of perinatal HIV transmission during pregnancy or breastfeeding.[30] ART initiation within hours after birth and for four to six weeks after birth, has been shown to translate into great health benefits for infants.[31]

3.5. Invest in Virologic Testing

Reducing HIV viral load is paramount to maternal health and the prevention of perinatal HIV transmission. Thus, SSA governments and health systems need to invest in virologic testing, so mothers and infants can be diagnosed early. Generally, HIV antibody testing is what is used to determine adult and infant HIV status. However, these tests have been found to be inaccurate in infants, as the HIV antibodies detected in their bodies are those transferred to them from their mothers, hence resulting in an erroneous positive HIV antibody test.[32] To address this issue and to obtain accurate results, additional virologic diagnostic testing is recommended for infants at birth and at 2 to 6 weeks after termination of ART. This is especially important among infants at increased risk of perinatal HIV transmission. Early diagnosis of HIV has implications for the discontinuation of neonatal ART prophylaxis and the shift to ART initiation.[33]

4. Conclusion

Perinatal HIV transmission is a challenge in SSA; however with careful implementation of efficacious strategies by women and girls, governments, policy makers, and community members, the incidence rate and the overall burden can be reduced.

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