Challenges towards an AIDS-free generation in Africa and Asia

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Purpose of review
To review the latest data on prevention of HIV vertical transmission in Asia and Africa and discuss strategic directions to achieve an AIDS free generation by 2030.

Recent findings
Progress in vertical transmission elimination efforts in Africa and Asia have stalled in the last decade, with 130 000 new infections in 2022. Main causes of vertical transmissions vary; in Asia-Pacific due to its low-burden, thus low testing coverage, but high overall vertical transmission rates, in South and East Africa due to new HIV infections during pregnancy and breast/chestfeeding, whereas in Western and Central Africa due to low antiretroviral therapy (ART) coverage. Long-acting injectable ART and neutralizing antibodies for treatment and prevention show promise in supporting efforts to further reduce vertical transmissions. Integrated and more accessible pre- and postnatal care is needed to achieve an AIDS-free generation.

Summary
Much can be implemented to address existing HIV service gaps; including strengthening of HIV prevention services for youth and women of childbearing age and pregnant people, early detection and treatment, and the delivery of integrated services that can reach and retain pregnant and postpartum people living with HIV in care.

Keywords
ending AIDS, HIV in Africa and Asia, HIV prevention, HIV treatment, vertical transmission

INTRODUCTION

In 2022, 130 000 new vertical HIV infections in children occurred and 220 000 pregnant or breast/chestfeeding women were not receiving antiretroviral therapy (ART) globally with Africa and Asia seeing the highest burdens [1]. Remarkable progress has been made in both regions in the last three decades since the beginning of the HIV/AIDS epidemic. However, the recent progress in the decline of new HIV infections has stalled in the last decade, with children facing the greatest inequities in terms of access to care and treatment [2,3].

The purpose of this article is to review the latest epidemiological data on maternal and pediatric HIV/AIDS in Africa and Asia, the achievements in both regions, with emphasis on HIV testing, treatment, and prevention; current challenges, and discuss potential strategic directions to achieve an AIDS free generation by 2030 in line with UNAIDS global targets.

AN AIDS-FREE GENERATION

An AIDS-free generation refers to a generation in which all children are born free of HIV and remain so for the first two decades of life, from birth through adolescence. This encompasses children living with and affected by HIV having access to the treatment, care and support they need to remain alive and well [4]. As transmissions in youth are discussed elsewhere in this issue, this review will focus on perinatal HIV transmissions in infants. An AIDS-free generation begins in the first decade of life with elimination of vertical transmission of HIV, treatment of children living with HIV and mitigation of the social and economic impact of HIV and

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KEY POINTS

- Progress in vertical transmission elimination efforts in Africa and Asia have stalled in the last decade.
- Main causes of vertical transmissions in both regions are due to new HIV infections during pregnancy and breast/chestfeeding in South and East Africa, low antiretroviral therapy (ART) coverage in Western and Central Africa, and low testing coverage in Asia Pacific.
- Biomedical research on new technologies such as long-acting injectable ART for treatment or preexposure prophylaxis and broadly neutralizing monoclonal antibodies for prevention are ongoing, aiming to reduce vertical transmissions.
- Political commitment and effective implementation of the WHO 4 pillars and cross cutting considerations are required to see an AIDS-free generation in Africa and Asia Pacific in the future.

AIDS on children [4]. Known critical barriers to achieving these include: systematic challenges with service decentralization and integrating HIV services into broader maternal, child and reproductive services, the complexity of current approaches of testing and treating HIV in children, and lack of age-appropriate antiretroviral therapy (ART) formulations [5].

THE CURRENT SITUATION OF HIV VERTICAL TRANSMISSION IN AFRICA AND ASIA

There were 130 000 new infections among children globally in 2022, although the lowest number since the 1980s, still far above WHO targets for 2025 of <20 000 new infections in children aged 0–14 years, and rates of decline have stalled [1,6]. As of 2022 across both regions, vertical transmission rates were highest in the Asia-Pacific and Western and Central Africa (21–23%), and lowest in Eastern and Southern Africa at 7% [1,7].

In Western and Central Africa, coverage of prevention of vertical HIV transmission programs increased from 29% in 2010 to 53% in 2022. However, progress has been stagnant in recent years, with coverage remaining in the range 53–61% since 2016. The region is home to 20% of pregnant people living with HIV globally, but it accounts for 52% of all pregnant people living with HIV who are not on treatment [1]. Coverage of pregnant people receiving ART for prevention of vertical transmission in Asia Pacific was similarly poor at only 57% compared to 93% coverage in East and Southern Africa [7].

In both Western and Central Africa, and Asia Pacific, in 2022, >65% of new infections were due to mothers not receiving ART during pregnancy or breast/chestfeeding, whilst in Eastern and Southern Africa, more transmissions were attributable to new maternal infections during pregnancy or breast/chestfeeding or ART access/adherence issues (Fig. 1) [1]. Botswana is the first high HIV burden country and first African country currently on the path to achieving vertical transmission elimination [8]. Large regional differences exist in Asia Pacific, with Thailand, Malaysia and Sri Lanka having achieved elimination of vertical transmission, but Afghanistan, Bangladesh and the Philippines having transmission rates exceeding 40%, attributable to stigma and discrimination, inadequate testing, insufficient access to treatment for mothers and babies as well as lack of prioritization of health agencies to tackle this issue [9].

Key areas identified by the newly formed Global Alliance to end AIDS in children has identified four pillars to address these challenges, which include optimizing the following in pregnant people living with HIV and their babies: testing and treatment of HIV; continuity of treatment; prevention and detection of new infections; addressing of social and structural barriers, which includes improved funding, affordable ART and specific interventions to address systematic stigma and discrimination towards people living with HIV [9,10]. Applications of these pillars have been seen in the use of dual HIV/Syphilis point-of-care (POC) testing in low and middle income countries (LMICs) to increase test accessibility, reduction of manpower needed for testing, cost-effectiveness and reduce HIV stigma by co-testing simultaneously [11▪,12].

THE PREVENTION CASCADE

A critical component of achieving an AIDS-free generation is HIV prevention in both pregnant people and children, components addressed in Table 1.

The risk of HIV acquisition is increased significantly during pregnancy and breast/chestfeeding and can be reduced by HIV prevention programs including easier to access preexposure prophylaxis (PrEP) and male partner testing [2,13▪,14▪▪]. Every week, 4000 adolescent girls and young women in sub-Saharan Africa (SSA) acquire HIV and account for 63% of all new HIV infections in the region. In 2023, analyses by the Global HIV Prevention Coalition revealed that in SSA, only 41% of areas with moderate and high HIV incidence were covered with dedicated prevention programmes for adolescent girls and young women [15].

In Asia Pacific, identification of high-risk pregnant people is much more challenging due to an overall lower HIV burden (prevalence 0.2%) [1].

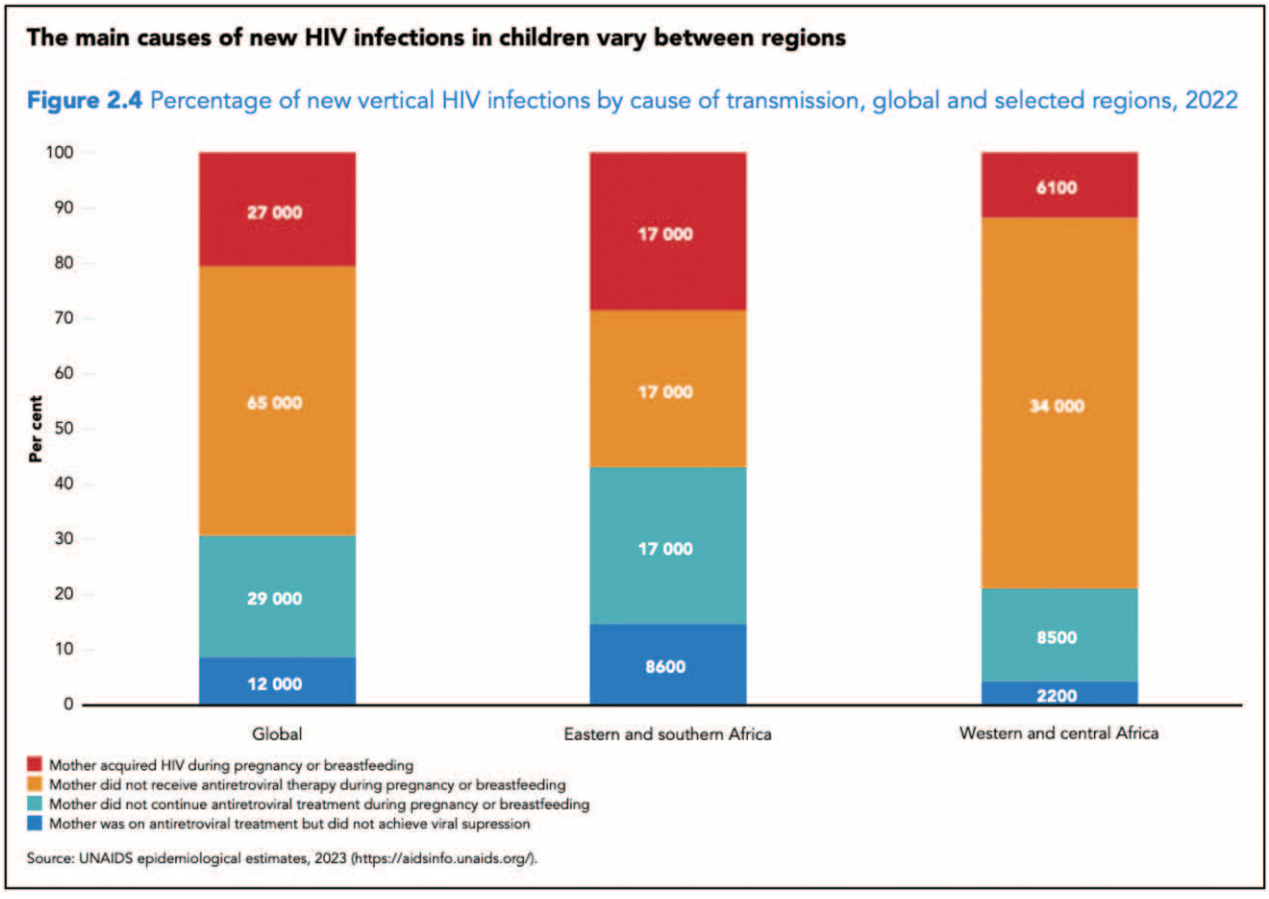

FIGURE 1. Main causes of new HIV infections in children, African and Global Data (previously published) [1].

There is low political commitment to address vertical HIV transmission in the face of perceived higher-priority health agendas. Universal HIV testing for pregnant people is needed to replace opt-in systems of HIV testing, for example, in the Philippines, testing is only available in select testing centers whose testing coverage for pregnant people was only 6% in 2022 [7].

In a study conducted in South Africa, barriers found to taking oral PrEP during pregnancy and breast/chestfeeding included poor adherence, medication adverse effects, anticipated stigma and limited disclosure of PrEP use. Facility-related barriers included logistics around PrEP collection especially when not in antenatal care, as well as transport and financial barriers [16]. The PrEP for Pregnant and Breastfeeding People (PBFP) Package by the CHOICE collaboration of the Meeting Targets and Maintaining Epidemic Control (EpiC) and Reaching Impact, Saturation and Epidemic Control (RISE) programs with support from the US President's Emergency Plan for AIDS Relief (PEPFAR) recommend that HIV testing schedules and duration of

Table 1. Prevention cascade components of HIV in pregnancy (original) [37]

Focus population	Women/people of childbearing age and pregnant people at risk of HIV
Reach/coverage	Testing and continued monitoring of focus populations and their sexual partners Coverage of antenatal care among pregnant people
Uptake/use	HIV testing from early antenatal care and use of preexposure prophylaxis in at-risk populations
Correct/consistent use	Retention in ANC, repeat HIV testing in the third trimester Adherence to preexposure prophylaxis

ANC, antenatal care.

PrEP use in PBFP PrEP users should follow local national guidelines for other PrEP users [17▪].

HIV DIAGNOSIS FOR PREGNANT AND BREAST/CHESTFEEDING PEOPLE

Coverage of women presenting at antenatal care (ANC) who receive HIV testing or already know their HIV status was less than 95% in three quarters of countries reporting data globally between 2015 and 2022 (Fig. 2) [18].

Rapid linkage to treatment is critical in these new diagnoses in preventing transmission for newly diagnosed pregnant people, with use of ART that produces rapid viral suppression and a high barrier to resistance such as dolutegravir (DTG). The latest WHO and the US Department of Health and Human Services (DHHS) ART guidelines support the use of DTG-based regimens as a preferred first-line regimen for pregnant and breast/chestfeeding people in order to reduce risk of vertical transmission [19,20].

EARLY INFANT DIAGNOSIS

WHO recommends that all infants exposed to HIV receive a virological HIV test within 2 months of birth. Early infant diagnosis (EID) coverage has risen in Eastern and Southern Africa to 83%, but remains very low in Western and Central Africa at 23% [1]. A study conducted in Uganda among HIV exposed infants showed sub-optimal testing due to very high loss to follow up rates [21▪]. In another study conducted in Nigeria, barriers against the use of EID services included denial of HIV status by the mother and health systems challenges such as unavailability of EID services, either at the facility, or referral to centralized laboratories [22▪]. Asia Pacific struggles similarly with regional figures ranging between 25–61% coverage, with some countries citing EID below 20%, including Indonesia, Fiji, Afghanistan, Bangladesh, Papua New Guinea, and the Philippines. EID within the first two months of life should be improved; wider adoption of point-of-care early infant diagnosis for high prevalence settings; or centralized dried blood spot HIV DNA PCR testing for lower prevalence settings will help to close these gaps. An example of the latter is the active case management network in Thailand which increased EID uptake from 64% to >95% in 4 years [23]. For infants, WHO 2021 guidelines suggest HIV antibody testing at 18 months of age or 3 months after breast/chestfeeding cessation, whichever is later [24].

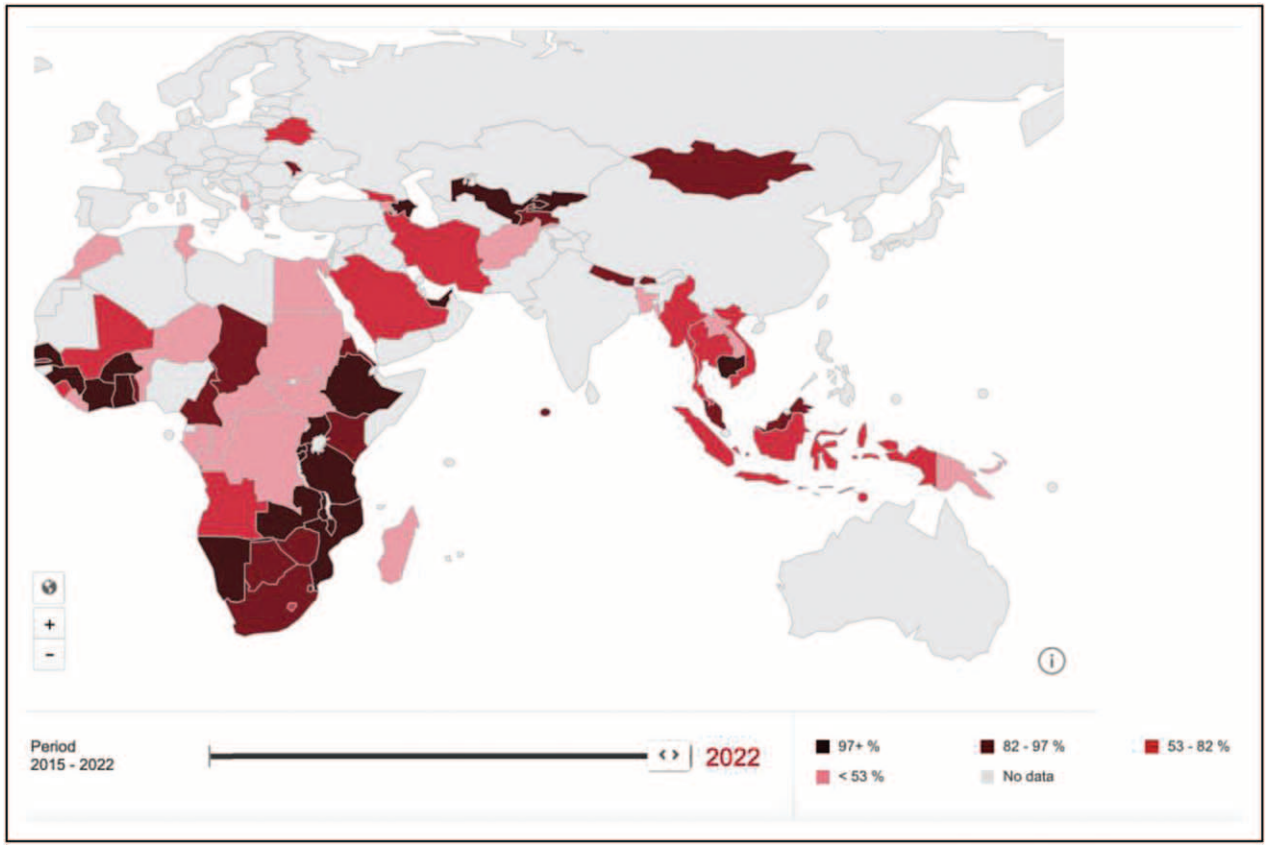

FIGURE 2. HIV testing among pregnant people in Africa and Asia, 2022 (previously published) [7].

HIV TREATMENT FOR CHILDREN

In 2022, HIV still claimed the lives of approximately 84 000 children [1]. Treatment coverage for children was 64% in Eastern and Southern Africa but only 37% in Western and Central Africa [7]. The Asia Pacific has large national variations in treatment coverage, from >95% in Malaysia to 56% in Cambodia and 25% in Indonesia [25▪]. A report from an Asian cohort found a median age of ART start of 6.7 years between 2017–2020, with clear signs of the need to diagnose and treat HIV earlier [25▪].

Availability of highly efficacious, palatable, and easy to use pediatric formulations in preventing and treating HIV in infants and children are crucial in achieving an AIDS-free generation. Currently, generic pediatric DTG dispersible tablets are widely available for children from 4 weeks of age. The upcoming availability of pediatric abacavir/lamivudine/dolutegravir (pALD) fixed-dose combination provides hope in increasing viral suppression rates in children [26].

TRIPLE ELIMINATION INITIATIVE FOR HIV, SYPHILIS AND HEPATITIS B

The WHO triple elimination initiative aims to eliminate the vertical transmission of HIV, Syphilis and Hepatitis B, simultaneously addressing program sustainability, effective financing, reducing stigma barriers to service access and management of other infectious diseases [14▪▪]. The 2023 WHO Policy Brief on pillars and cross-cutting considerations for implementing triple elimination emphasizes four pillars to focus on: primary prevention; sexual and reproductive health linkages and integration; essential maternal prevention of vertical transmission services; infant, child and partner services [14▪▪]. Progress has generally been slow in SSA. Namibia has become the first country in Africa – and the first high-burden country in the world – to reach a significant milestone on the path towards eliminating vertical transmission of both HIV and viral hepatitis B [27].

Barriers to triple elimination in SSA include a lack of policies, strategies, and resources to support the uptake of well established preventive and treatment interventions. However, stronger political support, expansion of evidence-based interventions and better use of funding streams are needed to improve efficiency and build on the successes in prevention of HIV vertical transmission [28].

Significant challenges remain in many Asian countries with lack of political commitment to vertical transmission of HIV and even less commitment with HBV and syphilis, financial and infrastructural barriers to triple testing and fragmented data registries [11▪,29]. Countries such as China and Cambodia have systems of governance, service delivery and data monitoring for triple elimination efforts and are on track to achieve global elimination goals while significant systems gaps remain in countries such as Afghanistan, Nepal and the Philippines where additional and accelerated efforts are needed to reach targets [29].

INTEGRATION OF PREVENTION OF VERTICAL TRANSMISSION SERVICES

The integration of HIV testing and treatment with maternal and childcare in antenatal care and expanded program on immunization programs (EPI) is essential for HIV elimination as it increases accessibility and reduces stigma barriers. Surveillance suggests HIV care and ART initiation are fully integrated in about 80% of maternal and child health services in Southern Africa and 76% in Eastern Africa, but much less common in Western and Central Africa (30–40%) and Asia-Pacific (30–48%) [30▪].

INTERVENTIONS GOING FORWARD

The UNAIDS Global AIDS strategy 2021–2026 emphasizes the reduction of inequities in implementation strategies and people-centered service planning and delivery of health systems. It emphasizes that equal importance needs to be given to biomedical interventions, enabling environments, community-led responses, and the strengthening and resilience of health systems. Key partners identified in the strategy in the HIV response are community- and youth-led initiatives. Of note, the strategy prioritizes 10 results areas to focus, of which the third is tailored, integrated and differentiated vertical transmission and pediatric service delivery for women and children [31].

ONGOING BIOMEDICAL RESEARCH

Medical technologies are needed to help predict mother-infant dyads that require closer monitoring or support to prevent vertical transmissions via EPI programs, such as provision of long-acting injectable cabotegravir or oral PrEP for those at HIV risk [32▪].

Broadly neutralizing monoclonal antibodies (bNAbs) are a novel HIV immunological intervention that prevent HIV binding and have potential applications for both treatment and prevention [33▪]. They have been heralded as an intervention with the potential to overcome multiple barriers to prevent vertical HIV transmissions due to their long-

acting half-life of approximately 12 weeks. bNAbs have potential for administration to infants at multiple healthcare settings through subcutaneous delivery for pre and post exposure prophylaxis postpartum as well as periodically during breast/chestfeeding. However, additional research is required to document the additional benefit of bNAbs when compared to effective maternal ART, particularly during breast/chestfeeding. Many sociobehavioral implementation challenges likely are ahead, and will be investigated by the CELEBRATE study being conducted by the International AIDS Vaccine Initiative in multiple African countries [34].

The use of long acting injectables may be instrumental in addressing ART adherence challenges and help prevent maternal incidence cases resulting in vertical transmission. In 2022, the WHO released guidelines for use of the long acting injectable cabotegravir (CAB-LA) as preexposure prophylaxis (PrEP) for HIV for people at substantial risk of HIV acquisition [35]. Safety and efficacy during pregnancy and breast/chestfeeding are yet to be established, currently being studied in the Tsireletso Study in Botswana [36]. It is not yet widely available outside study settings in Africa and Asia.

CONCLUSION

Significant progress has been made in scaling up prevention and treatment of children and adolescents living with HIV, but multiple gaps remain in Africa and Asia. Increased primary prevention in the form of coverage for HIV testing, treatment, adherence support, early infant diagnosis, and linkage to care as well as integrated health systems are critical. Essential vertical transmission services for pregnant people must be strengthened alongside infant, child and partner services. Continued political and financial commitment and monitoring is needed in vertical transmission programs, with integration into existing health delivery systems and rapid incorporation of newly emerging health interventions including long-acting injectable antiretroviral therapy and bNAbs for PrEP and treatment may ensure a future AIDS-free generation.

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Conflicts of interest

There are no conflicts of interest.

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