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## The HIV Epidemic in Southern Africa - Is an AIDS-Free Generation Possible?

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According to the President's Emergency Plan for AIDS Relief (PEPFAR), an AIDS-free generation entails that first, no one will be born with the virus; second, that as people get older, they will be at a far lower risk of becoming infected than they are today; and third, that if they do acquire HIV, they will get treatment that keeps them healthy and prevents them from transmitting the virus to others.

We argue that an AIDS-free generation is possible in Southern Africa, but not unless the high rates of incident infections in key populations are reduced.

For the last 20 years, Southern Africa has been the global region with the highest adult HIV prevalence (Fig. 1A). The seemingly stable time trend in national HIV prevalence for many of the countries in Southern Africa should not be interpreted, however, as an indicator of status quo. On the contrary, Southern Africa is arguably the region where most HIV-related burden of disease has been averted over recent years. The region has seen

a spectacular scale-up of combination antiretroviral therapy (cART) (Fig. 1B), and South Africa has the world's largest cART programme, resulting in substantial survival and prevention benefits (1-3). In South Africa alone, it is estimated that more than 2.1 million of the 6.1 million HIV-positive people were receiving ART by the end of 2012, and that this resulted in more than 2.7 million life-years saved, and hundreds of thousands of HIV infections averted. Yet, the number of new HIV infections remains exceedingly high. Despite being called a "generalized" epidemic, HIV infections in Southern Africa – predominantly due to sexual transmission – are highly clustered spatially and demographically. For instance, the HIV prevalence among 15 to 49 year old people in the South African province of KwaZulu-Natal (27.6%) is three times higher than that in the Western Cape province (9.2%) (4) and a recent national household survey in Swaziland revealed an HIV prevalence of 14.3% among 18–19 year old girls, compared to 0.8% among their male peers (5).

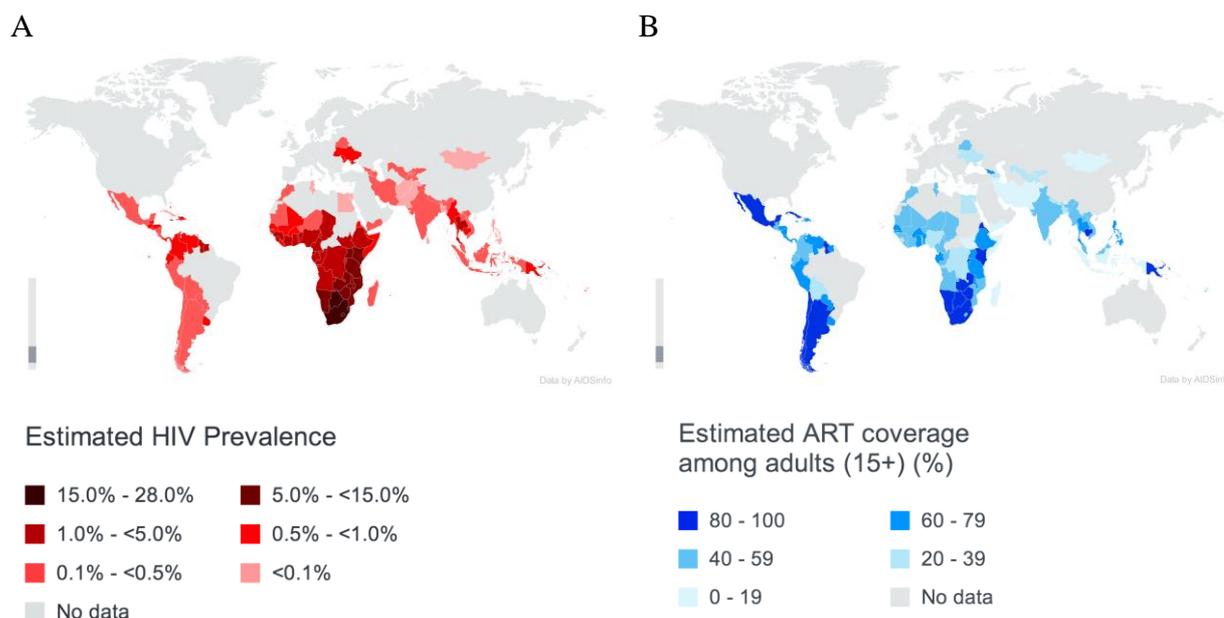


Figure 1. A. National HIV prevalence estimates among 15–49 year old adults in 2012. B. National ART coverage estimates among adults aged 15 and older in 2012. Source: UNAIDS AIDSinfo Database (6).

Young women are a large and highly vulnerable population group in Southern Africa, with limited prevention options (7, 8). In the past two years, very encouraging results have emerged from Southern African based evaluations of structural interventions that are not directly targeting safer sexual behaviours. In Malawi, a cluster randomised trial was conducted investigating the efficacy of a cash transfer programme to improve school attendance and thereby indirectly reduce the risk of HIV and other sexually transmitted infections (STIs) in young women of school-going age (13–22 years old). This study demonstrated that girls in the intervention groups were less likely to drop out of school, and were also less likely to have had a sexual partner aged 25 years or older, compared to their counterparts in the control group (9). In South Africa, a case–control study assessing the effects of state-provided, child-focused cash transfers to primary caregivers of adolescent boys and girls (10–18 years old) from poor households demonstrated that receipt of a cash transfer was associated with reduced incidence and prevalence of transactional and age-disparate sex among adolescent girls (10). Taken together, these results suggest that structural interventions that successfully modify the age-mixing pattern may result in fewer new HIV infections among adolescent and young adult women.

Furthermore, many combination prevention trials are ongoing in Southern Africa, which hold promise for reducing HIV incidence in young women and other key populations. Regrettably, adolescent women are excluded from participation in most of these trials. In 2010, the CAPRISA 004 trial demonstrated the efficacy and safety of coitally-linked 1% tenofovir microbicide gel; the gel was demonstrated to decrease HIV acquisition by 39%, and Herpes Simplex Virus (HSV)-2 acquisition by 51% (11). The CAPRISA 004 confirmatory study, FACTS 001 is well underway and could lead to licensure of tenofovir gel to prevent HIV and HSV-2 infection and for the first time enable women the opportunity to control their risk of HIV acquisition. Several other structural interventions targeting adolescents are underway, including CAPRISA 007 and the Choices for Adolescent Methods of Prevention in South Africa (CHAMPS) trial. Additional operational research is still required to assess and maximize not only feasibility and acceptability of combination prevention packages, but also their affordability, cost-effectiveness and sustainability, and ultimately to translate the recent scientific advances into an AIDS-free generation in Southern Africa.

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