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Southern Africa: The highest priority region for HIV prevention and care interventions

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Abstract

The global HIV pandemic began to expand rapidly in southern Africa a decade later than was noted in central Africa, Europe, the Caribbean, and North America. Multiple factors played a role in this rapid expansion which led Southern Africa to become the most heavily afflicted region for HIV/AIDS globally. In this issue of *Current HIV/AIDS Reports*, investigators with active research interests in the region have reviewed key elements of the causes of and responses to the epidemic. Putative causes of the high HIV prevalence in the region are discussed, including host and viral biology, human behavior, politics and policy, structural factors, health services, health workforce, migration, traditional healers' role, and other issues. Regional epidemiological trends are described and forecasted. Issues related to the continuum of HIV care and treatment are highlighted. We hope that the reviews will prove useful to those policymakers, health care workers, and scientists who are striving to reduce the burden of HIV in the southern African region, as well as prove insightful for key issues of broader global relevance.

Keywords

HIV; southern Africa; prevention; care; antiretroviral therapy; prevention of mother to child transmission of HIV; health systems strengthening; traditional healers; program scale-up; transmission; sexually transmitted diseases; inflammation

Work from Kwazulu-Natal published in 2011 described age-stratified trends in HIV prevalence for pregnant women in antenatal care [1]. The numbers rose with time such that nearly two-thirds of the women ages 25-29 in 2004 were infected with HIV [Table]. Tuberculosis was similarly on the rise largely due to the concurrent HIV epidemic. Hence, the World Health Organization (WHO), the Joint United Nations Programme on HIV/AIDS (UNAIDS), the President's Emergency Plan for AIDS Relief (PEPFAR), and the Global Fund to Fight AIDS, Tuberculosis and Malaria all highlight southern Africa as the region with highest priority for interventions. (For the purpose of discussion, southern Africa

includes: Angola, Botswana, Lesotho, Malawi, Namibia, Mozambique, South Africa, Swaziland, Zambia, Zimbabwe. However, Angola is not emphasized given its more modest, though now growing, epidemic to date.) While incidence rates in the past decade are trending downwards for women attending antenatal care (a valuable sentinel population for assessing both risk for adults and children), these incidence rates remain the highest in the world.

Williams et al take available data for key southern African nations, projecting future trends in incidence, prevalence, mortality, coverage of antiretroviral therapy (ART), and tuberculosis (TB) notification rates based on plausible assumptions and mathematical models [•2]. Simelela et al present a historical view of the policy and political response to the epidemic in South Africa, including the community activism that turned the tide of inaction to among Africa's largest and most aggressive HIV programs [Figure] [•3]. While progress is being made in strengthening health systems to take on HIV services, some nations in the region are much better capacitated than others, creating uncertainty in the sustainability of interventions and hence long-lasting success in the epidemic response [4]. Bolton-Moore and Ciaraldi tackle the health systems issues that underscore these health disparities and highlight areas of ongoing need and improvement [•5]. Bhardwaj et al do the same with the focus on issues specifically related to mothers, neonates, and children, an area of considerable progress in South Africa, for example [Figure], but less so in Mozambique [•6,7,8].

Why the southern African epidemic is severe

Several articles in this issue of *Current HIV/AIDS Reports* address the putative causes for the high HIV incidence and prevalence in the southern African region. Kaul et al highlight the role of genital and systemic inflammation in increasing risk of sexual acquisition of HIV [9]. His immunological focus presents numerous opportunities for intervention in the vaginal microbiome and systemic immune system. To review virologic factors that may be relevant in the subtype C dominant southern African context, we refer readers to data and debates elsewhere [10-13].

Both Harrison et al and Williams et al highlight the impact of labor migration on the epidemic, including the documented spread in infection from increased number of sexual partners, likely due to men leaving home for extended periods to work in South African mines [•2,•14]. Harrison et al also review key behaviors and structural factors that either facilitate or impede HIV transmission, focusing on young women whose incidence rates are the highest of any age-sex subgroup [•14].

The continuum of care

Many of the authors of this issue address the need to expand testing, linkage to care, retention issues, and adherence to ART. Audet et al explain that while successful program expansion requires a radical expansion in the health workforce, this has not happened accordingly with the need [•15,16,17]. Continual nursing and physician “brain drain” from Africa to high income nations such as the U.S. and the U.K. has not been addressed successfully [18-20]. In addition, internal “brain drain” from urban to rural areas, and from

the public to private sector, is another phenomenon that has not merited enough attention. These are contributing factors to the scarcity of the health workforce in highest need areas in southern Africa [21]. To overcome the lack of qualified workforce, many countries implemented task-shifting programs and adopted training of other type of cadres, such as community health care workers with increasing responsibilities [22]. Hence, more effective partnerships between close to community health care workers (community health workers, traditional birth attendants, etc.) and traditional healers must be considered to facilitate referrals and establish a strong system of support for treatment adherence and other HIV care related issues [15,23,24]. As providers and governments move toward expanded service and scale, retention in care proves to be one of the most important components. Audet et al states that while there have been successful efforts to increase referrals from traditional practitioners to allopathic care, buy-in from the health care workers themselves, who are deeply skeptical of traditional healers, is critical for fruitful collaboration. Structural changes in clinical settings, training needs for healers, clinician attitude changes, patient buy-in (of healer/TBA/clinician collaboration), and recruitment of effective traditional partners are all cited as important recommendations [15]. While political and social awareness regarding HIV/AIDS increases, effective and well-sustained implementation remains a looming challenge for both prevention and treatment. Bhardwaj et al, Williams et al, and Shanaube and Bock all reference implementation challenges, explaining significant roadblocks in the deploy of effective Option B+ programs and early infant diagnosis (EID), patient monitoring and data collection, and implementation of combination prevention strategies, respectively [2,6,25]. Bolton-Moore and Ciaraldi focus their presentation on the challenges and lessons learned from program expansion and scale-up, emphasizing the need for a sustainable chronic disease care management system for HIV [5]. This would ideally be in an integrated care system approach, which would also serve to expand care for a myriad of neglected non-communicable diseases [26-27].

Need for more successful HIV prevention

Treatment as Prevention (TasP) is a concept that has captured the global imagination, eliminating the gulf between treatment and prevention in HIV control. Observations of transmission risk correlating with plasma and genital viral load have translated into HPTN 052 clinical trial evidence of efficacy of ART in the infected partner preventing transmission to the HIV-uninfected partner [9,25,28-31]. Shanaube and Bock highlight how TasP has increased focus on the need to provide access to medications in a timely manner without treatment interruption due to drug stockouts, services to enhance access to testing and retention in care, and attention to highly vulnerable key populations, including adolescent and young women, persons in serodiscordant relationships, men who have sex with men (MSM), sex workers, and people who inject drugs (PWID) [23].

From varying perspectives, biological, policy, and epidemiologic, Kaul et al, Simelela et al, and Shanaube and Bock all discuss the role that HIV counseling and testing (HCT) and voluntary medical male circumcision (VMMC) play in prevention [3,9,25]. Kaul et al provides insight into the decreased likelihood of transmission for HIV seropositive persons on ART and the increased likelihood of infection for HIV seronegative persons with specific intravaginal practices or presence of genital co-infections [9]. While the control of sexually

transmitted infections (STI) alone may not be a robust HIV control strategy when implemented in isolation of other efforts, no one can dispute the co-factor role that Kaul et al highlight, and the importance of STI control as a good unto itself, and an adjunct to the overall HIV control efforts [•9].

Harrison et al describe the introduction, successes, and challenges of both oral and topical Pre-Exposure Prophylaxis (PrEP), which provides medication to high-risk individuals to decrease likelihood of infection [•14]. These authors put PrEP into a broader behavioral science context and highlight both its opportunities and obstacles to wider deployment [•14]. However, little is known about PrEP availability and use within routine HIV care and treatment in southern Africa. Both Bolton-Moore and Ciaraldi and Simelela et al highlight the health services challenges in prevention, as with care and treatment [•3,•5].

While the situation in southern Africa can appear bleak, Williams et al uses time trend analysis to review the current state of affairs and the likelihood of achieving the 90-90-90 targets for 2020 set by UNAIDS --90% of HIV-infected people should know their status, 90% of HIV-infected persons should be taking ART, and 90% of those taking ART should have fully uppressed viral loads [•2]. Williams et al provide insight on a country-by-country basis on the substantial progress to date, but also the daunting needs of what will be necessary to meet target goals. In aggregate, the articles in this issue provide a valuable snapshot as to the urgency of staying-the-course in HIV control and prevention, and expansion of ART access, and expanded tuberculosis control efforts. Only 1/3 of the global HIV treatment need has been met, and gigantic challenges persist such as imperfect implementation of the care cascade, with often low retention and adherence to treatment leading to inadequate viral suppression with all subsequent consequences at the individual patient level, as well as at the broader public health level, including efforts for prevention and control of HIV. “Donor fatigue” that seems to be emerging and affecting needed expansion of interventions and resources, including from PEPFAR and the Global Fund, may result in a reversal of gains and an uptick in incidence after a decade of considerable successful progress [32-33]. Concerted efforts and high commitment from all, including funding partners, policymakers, researchers and implementers, is required to maintain or even enhance the inspiring gains made to date [34-38].

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Figure 1. Number of mother to child transmissions at 6 weeks of age in South Africa, 2000-2013, projected to 2016. Figure courtesy of Dr. Yogan Pillay, National Department of Health, South Africa.

Overall age-specific HIV prevalence in pregnant women attending antenatal care clinics in Vulindlela, KwaZulu-Natal from 2001-2007. Data courtesy of Dr Quarraisha Abdool Karim, CAPRISA.

Table 1

Age in years	Year of HIV test in antenatal care clinic						
	2001	2002	2003	2004	2005	2006	2007
<20	14.6	25.8	19.4	26.7	22.0	17.2	13.7
20-24	44.4	45.6	44.6	54.7	37.5	48.0	37.5
25-29	31.3	42.9	66.0	66.3	50.0	52.1	61.4
30-34	14.3	22.2	42.9	53.8	56.8	51.4	55.6
35	15.8	26.1	36.4	9.8	34.3	33.3	42.1
Total	32.4	34.1	40.9	42.6	37.3	37.8	35.0