

Editorial

Programmatic Evaluation of HIV Prevention and Treatment in Nigeria

The unprecedented success of the international mobilization for HIV prevention and treatment has made a major impact on the course of the epidemic in Africa. However, despite these gains, with 3.3 million people living with HIV globally, Nigeria bears the second highest AIDS burden. Nigeria is the most populous country in sub-Saharan Africa with nearly 178 million inhabitants. In 2013, the UNAIDS estimated that there were approximately 3.2 million people in Nigeria living with HIV, with an estimated 430,000 being children. Globally, Nigeria is home to more HIV-infected children than any other country [1,2]. As the country continues its efforts to scale up HIV services, it is critical to evaluate the outcome and impact of the programs that they have already initiated.



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In this special issue of *Current HIV Research*, we report on some of the key programmatic evaluations that have taken place in HIV treatment and prevention programs in Nigeria. The Harvard/AIDS Prevention Initiative in Nigeria (APIN) HIV prevention, care and treatment program began in 2004 with funding from the President's Emergency Plan for AIDS Relief (PEPFAR). Collaborators included 10 major university teaching hospitals or federal treatment centers across Nigeria. In addition to the capacity building for clinical laboratory and research capabilities, the program has provided treatment for over 115,000 HIV patients to date. The program developed an extensive electronic medical record system that provided real time access to clinical, laboratory and pharmacy data for patients on antiretroviral treatment; this system promoted better clinical care and also facilitated program evaluations to answer operational research questions dealing with the efficacy of antiretroviral therapy (ART) and prevention of mother to child transmission (PMTCT) interventions along with modulators of these outcomes.

In 2015, more than a decade after the scale-up of ART programming in resource limited settings (RLS), program evaluations must consider the longevity of viral suppression, patient adherence and retention, and optimization of regimens, particularly after first-line failure. In this special issue, we present evaluations covering a variety of important topics. From Lagos, Nigeria, Professor Akanmu and colleagues provide an early evaluation of second-line patients that switched to atazanavir boosted with low dose ritonavir (ATV/r) compared to those maintained on boosted lopinavir. The patients included in the analyses were those placed on ATV/r following the 2010 IAS revision of ART guidelines recommending the use of ATV/r as the preferred second-line treatment regimen for adults. While there were no differences in virologic suppression between protease inhibitors at 24 months, improved immunologic responses on ATV/r were observed. In Jos, North-Central Nigeria, Dr Agbaji and colleagues conducted a retrospective study with over 49,000 person-years of observation to measure the incidence of ART discontinuation and associated risk factors. Both of these studies highlight some of the programmatic realities of maturing ART programs in RLS and shed light on areas for continued improvement.

Elimination of pediatric HIV infection is the international community's goal, but is heavily dependent on rapid and complete adoption of newly revised recommendations for PMTCT [5-7]. Clinical trials of various PMTCT regimens have shown that the risk of transmission can be reduced to less than 2% when triple antiretroviral (ARV) regimens are ideally utilized [3,4]. Despite the promising clinical trial data and adoption of WHO PMTCT recommendations, Nigeria bears one of the highest burdens of HIV mother-to-child transmission (MTCT) in the world, is among the top ten countries with the worst maternal and child health indices, and also has the world's largest number of pregnant women in need of PMTCT services [1,2]; more specifically, Nigeria's national PMTCT coverage is at 29% and contributes nearly 30% of the global gap in PMTCT coverage [2]. In this special issue, Professor Atiene Sagay from the University of Jos provides the first evaluation of mother-to-child transmission rates following the adoption of the WHO "Option B", where triple ARV prophylaxis is provided to all HIV-infected pregnant women. At the 18-month timepoint, 0.4% (3/700) of infants of women initiated on prophylaxis prior to pregnancy were HIV-positive, which was significantly lower than the 2.0% (3/150) rate in infants of women initiating prophylaxis during pregnancy/delivery. It is noted that the Jos program experienced 14% loss to follow-up in the 996 exposed infants. Dr. Rawizza's larger analysis of PMTCT programs at 31 hospitals demonstrates that only 66% of the 31,504 pregnant women entering PMTCT care completed the full cascade of services. The greatest losses occurred prior to delivery (21%) and DNA PCR test results were available for 53% of exposed infants. As one of the largest evaluations of loss to follow-up in the PMTCT cascade and despite slightly lower rates of loss compared to the current literature, Dr. Rawizza's paper highlights the clear and urgent need to implement retention strategies throughout the cascade in order to maximize the benefits of the Option B/B+ recommendations and further diminish pediatric infections. In this 10 year-long evaluation, it is noteworthy that retention rates improved over time, reaching 73% in 2012.

As ART program has matured in RLS, the number of pediatric and adolescent patients on ART has increased and long-term retention and adherence represent significant challenges. Dr. Seema Meloni's retrospective evaluation of 3,513 pediatric patients on ART observed over 50% loss to follow-up over the 24-month study period. The very young (<2 yrs) and older children (>13 yrs) were at highest risk for being lost, and overall rates increased with time. The evaluation of adherence rates also indicated poor adherence in the older children, suggesting the need for age-specific interventions to address this particularly vulnerable population.

Over the past decade, Nigeria has made great strides in treating hundreds of thousands of HIV-infected patients. While the burden of disease remains high, it is critical to evaluate the progress of the ART and PMTCT programs implemented thus far.

The contributions of this special issue serve to highlight some of the challenges faced in HIV treatment and prevention programs in settings like Nigeria, perhaps useful to other RLS, and hopefully guide further research efforts in the design of successful interventions aimed at improving patient outcomes. We wish to acknowledge the patients that contributed their data to this research and to the hospital staff that provided their care.

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