Paediatric HIV treatment failure: a silent epidemic

Jonathan M Bernheimer, Gem Patten, Thembisa Makeleni, Nompumelelo Mantangana, Nombasa Dumile, Eric Goemaere and Vivian Cox

Abstract

Paediatric antiretroviral treatment (ART) failure is an under-recognized issue that receives inadequate attention in the field of paediatrics and within HIV treatment programmes. With paediatric ART failure rates ranging from 19.3% to over 32% in resource limited settings, a comprehensive evaluation of the causes of failure along with approaches to address barriers to treatment adherence are urgently needed.

In partnership with the local Department of Health, a pilot programme has been established by Medecins Sans Frontieres (MSF) in Khayelitsha, South Africa, to identify and support paediatric HIV patients with high viral loads and potential treatment failure. Through detailed clinical and psychosocial evaluations and adherence support with an innovative counselling model, treatment barriers are identified and addressed.

Demographic and clinical characteristics from the cohort show a delayed median start date for ART, prolonged viraemia including a large number of patients who have never achieved viral load (VL) suppression, a low rate of regimen changes despite failure, and a high percentage of pre-adolescent and adolescent patients who have not gone through the disclosure process.

Stemming this epidemic of paediatric treatment failure requires programmatic responses to high viral loads in children, starting with improved “case finding” of previously undiagnosed HIV-infected children and adolescents. Viral load testing needs to be prioritized over CD4 count monitoring, and flagging systems to identify high VL results should be developed in clinics. Clinicians must understand that successful treatment begins with good adherence, and that simple adherence support strategies can often dramatically improve adherence. Moreover, appropriate adherence counselling should begin not when the child fails to respond to treatment. Establishing good adherence from the beginning of treatment, and supporting ongoing adherence during the milestones in these children’s lives is key to sustaining treatment success in this vulnerable HIV-infected patient population.

Keywords: HIV; treatment failure; Khayelitsha; paediatrics; viral load; primary care.
0–19 years are eligible for enrolment if their previous VL is >1000 RNA copies/ml or their previous two VLs are >400 RNA copies/ml. Patients come for a series of visits (mostly once a month) and attend group and individual support sessions at each visit. Table 1 shows routine data on gender, age, treatment history, virologic history, and HIV disclosure status obtained upon enrolment.

High rates of paediatric virologic failure were observed in a well-established primary care HIV setting, in line with data obtained in previous studies [1,2]. The median age of starting ART in this predominantly vertically infected cohort was 3.4 years, indicating a need for earlier identification of HIV-infected children and possible missed opportunities for diagnosis. Furthermore, one third of patients had never achieved virologic suppression since starting treatment. This prolonged viraemia could be explained by inadequate systems in clinics to locate failing children or a lack of knowledge or comfort by clinicians to address high VLs; this is also mirrored in the percentage of children (80%) that were not switched despite prolonged failure. Twenty percent of patients aged 10–15 years had not been fully disclosed to upon enrolment, known to be a risk factor for failure.

To stem this epidemic of paediatric treatment failure, programmatic responses to high VLs in children need to be strengthened. First and foremost, improved “case finding” of previously undiagnosed HIV-infected children is urgently needed to prevent the long-term sequelae of untreated HIV infection in young children. Second, VL testing of children should be prioritized over CD4 count monitoring in settings with limited resources; VL monitoring reduces the time failing treatment, increases appropriate switching to second-line ART, and minimizes immunologic decline. To this end, simple flagging systems for high VLs can assist clinics to identify those patients with high VL results and can be instituted with minimal resources in every HIV clinic that treats children. Third, clinicians need to understand that the most important factor in good paediatric HIV care begins with achieving good adherence. Often it is simple adherence support strategies that clinicians can use in busy clinics that greatly improve the quality of patient support that children and their caregivers receive. Lastly, adherence support should not start when the child has a high VL. Appropriate counselling should begin during the process of ART initiation and continue to be reassessed as the child reaches developmental milestones. Too often, proper basic adherence counselling is only provided once the child has begun failing treatment. Periodic ongoing counselling is essential with paediatric patients since their psychosocial situations frequently changes and new adherence barriers often arise.

In summary, one third of children aged 0–19 years were failing antiretroviral therapy in two longstanding primary care HIV clinics, with 33% never achieving viral suppression after initiation of ART. Only by addressing the core deficiencies in paediatric HIV care—insufficient early diagnosis of HIV-infected children, lack of VL monitoring and clinician comfort in how to respond to high VLs, and unstructured and inadequate adherence counselling—will we begin to achieve durable VL suppression in the paediatric HIV population and curb this silent epidemic.

**Authors’ affiliation**

Medecins Sans Frontieres, Khayelitsha, South Africa

**Competing interests**

The authors have no competing interests to declare.

**Authors’ contributions**

JMB was the principal author of the manuscript. All authors have read and approved the final manuscript.

**Funding**

The pilot project was funded by Medecins Sans Frontieres (MSF).

**References**

1. Davies MA, Moultrie H, Eley B, Rabe H, Van Cutsem G, Giddy J, et al. Virologic failure and second-line antiretroviral therapy in children in South Africa—The IeDEA Southern Africa Collaboration. J Acquir Immune Defic Syndr. 2011;56(3):270–8.
2. Bunupuradah T, Pathanakit T, Kosalaraksa P, Kerr S, Boonrak P, Prasitsuebsai W, et al. Immunologic and virologic failure after first-line NNRTI-based antiretroviral therapy in Thai HIV-infected children. AIDS Res Ther. 2011; 8:40.
3. Provincial Government of the Western Cape DoH. Western Cape antenatal HIV survey 2011. Western Cape, South Africa: Western Cape Provincial Government; 2011.
4. Boulle A, Van Cutsem G, Hilderbrand K, Cragg C, Abrahams M, Mathee S, et al. Seven-year experience of a primary care antiretroviral treatment programme in Khayelitsha, South Africa. AIDS. 2010;24(4):563-72.
5. Coetzee D, Hildebrand K, Boulle A, Maartens G, Louis F, Labatala V, et al. Outcomes after two years of providing antiretroviral treatment in Khayelitsha, South Africa. AIDS. 2004;18(6):887-95.
6. Van Cutsem G, Ford N, Hildebrand K, Goemaere E, Mathee S, Abrahams M, et al. Correcting for mortality among patients lost to follow up on antiretroviral therapy in South Africa: a cohort analysis. PLoS One. 2011;6(2):e14684.
7. Médecins Sans Frontières. Khayelitsha 2001–2011. Activity report: 10 years of HIV/TB care at primary health care level. Khayelitsha, South Africa: MSF; 2012.