HIGH PREVALENCE OF HIV DRUG RESISTANCE AMONG NEWLY DIAGNOSED CHILDREN 0 - 18 MONTHS

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BACKGROUND

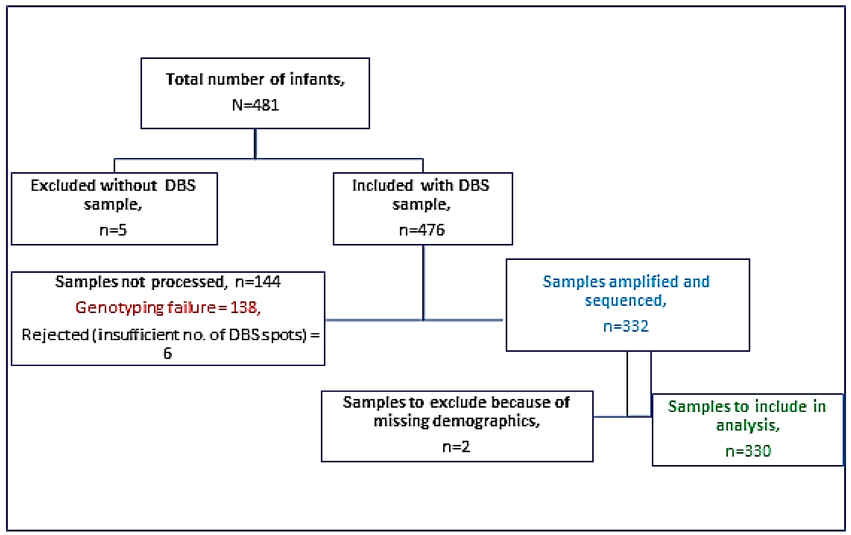
Exposure to maternal antiretroviral treatment (ART) and infant postnatal antiretroviral (ARV) prophylaxis risks emergence of pre-treatment drug resistance (DR) in children who get breakthrough HIV infection through mother to child transmission.

We estimated the national prevalence of pre-treatment HIV DR among newly diagnosed HIV-infected infants 0 to 18 months in Kenya.

METHODS

- Nationally representative cross-sectional survey of prevalence of pre-treatment HIV DR
- Conducted from June to December 2018 among newly diagnosed HIV infected children <=18 months by polymerase chain reaction.
- Dried blood spot (DBS) samples were used for nucleic acid extraction using EasyMag system and Sanger sequencing to assess for the presence of DR
- Prevalence of single DR mutations (SDRMs) was expressed as a weighted percentage
- Multivariate age-adjusted logistic regression was done to obtain odds ratios (OR) and 95% confidence intervals (CI) for risk factors for SDRM.
- All analyses were weighted per survey design..

Figure 1. Flowchart for sample inclusion/exclusion in the surveillance drug-resistance mutations (SDRMs) analysis dataset



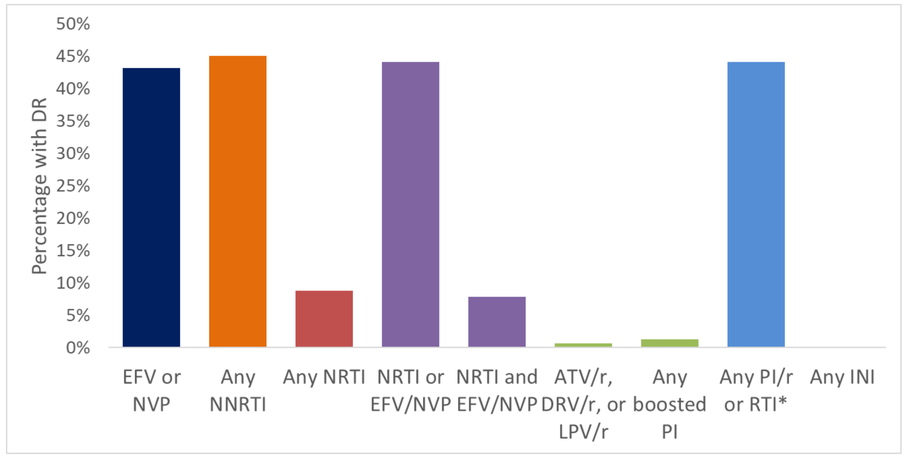


Figure 2. Prevalence of pre-treatment HIV drug resistance by drug class among ART-naïve children less than 18 months of age newly diagnosed with HIV in Kenya, 2018

NRTI = nucleoside reverse transcriptase inhibitor; NNRTI = non-nucleoside reverse transcriptase; PI = protease inhibitor; INI = integrase inhibitor; ATV/ritonavir-boosted atazanavir; DRV/r = ritonavir-boosted darunavir; LPV/r = ritonavir-boosted lopinavir

RESULTS

- The median age at diagnosis was 20.5 weeks (interquartile range (IQR): 7.5 - 41.9).
- Exposure to maternal ART, infant ARV postnatal prophylaxis or both was observed in 80.2%, 60.4 %, and 53.0%, respectively.
- Samples from 330 (69.3%) of the children were amplified and sequenced, of which 147 (43.6%) showed SDRMs:
- 144 (42.1%), 27(7.8%), and 6 (1.8%) to NNRTIs, NRTIs, and PIs, respectively.
- SDRMs were associated with the use of maternal ART and infant prophylaxis compared to those who were unexposed (adjusted OR: 2.9; 95 % CI: 1.3-6.6) [after adjusting for infant age].
- Odds of SDRM in infants exposed to PI-based maternal ART was 10.5 (95% CI: 1.9-57.0), compared to 4.6 (95% CI: 1.3-16.2), and 2.0 (95% CI: 1.0-3.9) in nevirapine and efavirenz-based

CONCLUSIONS

Half of newly diagnosed, pre-treated HIV infected children in Kenya had one or more HIV DR mutations. Infants born to women on PI based regimens had a higher risk of SDRMs.

Results support the 2021 WHO ART guidelines for children and women of reproductive age:

- Optimal post-natal infant prophylaxis; and
- Routine DR surveillance among pre-treated HIV infected children.