

## 5

## Treatment outcomes among adolescents on antiretroviral therapy in Machakos, Kenya

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**Introduction:** It is estimated that globally there were 36.9 million people living with HIV/AIDS (PLHIV) at end of 2017 of who about 1.8 million were adolescents. Of the estimated 1.5 million PLHIV in Kenya in 2017, about 105,000 were adolescents with about 8,200 new infections and 2,100 deaths annually. Adolescents have poorer antiretroviral therapy (ART) outcomes compared to adults. This study was to determine the treatment outcomes of adolescents on ART in Machakos County.

**Methodology:** This was a cross-sectional study carried out between June and October 2018. Adolescents enrolled in care between 2014 and 2016 and on ART for at least two years were randomly selected from nine facilities. Data were abstracted from patient files using standardized forms to capture routinely collected information including treatment regime, baseline and follow-up clinical information, laboratory monitoring and treatment outcomes. Primary outcomes were retention, viral suppression and mortality while secondary outcomes were loss-to-follow-up; defaulting; transfer-out, treatment interruption and treatment failure. Descriptive analysis were used for central tendency while univariate and multivariate analysis were performed using SPSS version 16.

**Results:** A total of 182 adolescents participated in the study of whom 102 (56%) were females while 80 (44%) were males. There were 54 (29.7%) young adolescents aged 12-15 years and 128 (70.3%) older adolescents (over 15 years). A total of 119 (65.4%, 95% CI: 58.4 - 72.4) adolescents were retained after a mean follow-up period of 34.5 (95% CI: 32.5-36.5) months and median of 34.7 months of ART. Almost all, 180 (98.9%) of the adolescent had their weight and height documented on every visit, 143 (78.6%) had at least one viral load test, 140 (76.9%) at least one CD4 test and 164 (90.1%) had TB screening at the last visit. A total of 181 (99.5%) and 136 (74.7%) were on Cotrimoxazole and Isoniazid prophylaxis

respectively. At the last viral load test, 105 of 144 (73%, 95% CI: 64.6 - 79.5) adolescents were virally suppressed while 9 (4.9%, 95% CI: 1.8 - 8.1) had died after a mean follow-up period of 26.2 (95% CI: 13.6-38.8) months and median of 19.1 months. On the secondary outcomes, 30 (16.5%, 95% CI: 11.0 - 21.9) adolescents were lost-to-follow-up; 19 (10.4%, 95% CI: 6.0 - 14.9) were transferred out, five (2.7%, 95% CI: 0.3 - 5.1) were defaulters, 37 (20.3% 95% CI: 14.4 - 26.2) had a treatment interruption and 12 (6.6%) had been switched to second-line due to treatment failure.

Older adolescents had worse treatment outcomes compared to younger adolescents. They had lower retention rates: 60.2% (95% CI: 51.6 - 68.7) compared to 77.8% (95% CI: 66.6 - 89.0); lower viral suppression: 70.4% (95% CI: 61.3 - 79.6) compared to 75.6% (95% CI: 62.8 - 88.3) and higher mortality: 6.3% (95% CI: 2.0 - 10.5) compared to 1.9% (95% CI: 0.0 - 5.5).

**Conclusions:** We documented suboptimal treatment outcomes despite good clinical follow-up, which were worse in the older adolescents. There is an opportunity to improve adolescent HIV care and treatment to meet national and global goals.