cART prescription trends in a prospective HIV cohort in rural Tanzania from 2007 to 2011

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Comprehensive information on combined antiretroviral therapy (cART) regimens in rural Sub-Saharan Africa over time is scarce, particularly on the use of stavudine (d4T) and second-line regimens. Since 2010, World Health Organization (WHO) guidelines discourage using stavudine in first-line regimens due to frequent and severe side-effects. This study examined the practical adaption of this phasing-out and described trends in use of various cART combinations in a rural Tanzanian setting. We analyzed longitudinal, prospectively collected data of HIV-1-infected adults initiating cART within the Kilombero Ulanga Antiretroviral Cohort (KIULARCO) in Ifakara, Tanzania from 2007—2011. This analysis included data of 3068 patients over a 5-year period. Of these subjects, 1997 (66.9%) were female, median age was 37 (interquartile range [IQR] 31–44) years and median CD4 cell count at enrollment was 178 cells/µl (IQR 88–291). The percentage of prescriptions containing stavudine in initial regimens (Table 1) fell from a peak of 75% in 2008 to 12.2% in 2011 (p for trend < 0.001). TDF/FTC/EFV became available in 2009 and was

Table 1. Initial cART combinations prescribed by year.

|        | 2007      | 2008      | 2009      | 2010      | 2011      |
|--------|-----------|-----------|-----------|-----------|-----------|
| d4T/3TC/NVP | 426 (66.6%) | 536       | 362 (46.8%) | 93 (19.4%) | 52 (12.2%) |
| d4T/3TC/EFV | 25 (3.9%)  | 29 (3.8%)  | 25 (3.2%)  | 6 (1.2%)   | 0 (0%)    |
| AZT/3TC/EFV | 177 (27.7%)| 174 (23.1%)| 324 (41.9%)| 160 (33.4%)| 138 (32.4%)|
| AZT/3TC/NVP | 7 (1.1%)   | 10 (1.3%)  | 5 (0.6%)   | 21 (4.4%)  | 54 (12.7%)|
| TDF/FTC/EFV | 2 (0.3%)   | 2 (0.2%)   | 57 (7.3%)  | 199 (41.5%)| 177 (41.6%)|
| Total     | 639       | 752       | 773       | 479       | 425       |

Figure 1. Overall on-treatment count of patients on cART combinations by year.

Published 11 November 2012

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used in 117 (41.6%) patients initiating cART in 2011. An overall on-treatment analysis (Figure 1) revealed that d4T/3TC/NVP and AZT/3TC/EFV were the most prescribed combinations in each year, including 2011 (684 [32.5%] and 642 [30.5%] patients respectively). Of those on d4T/3TC/NVP in 2011, 632 (92.4%) were initiated in earlier years. The ratio of second-line to total regimens remained stable over time (p for trend = 0.19) with a maximum of 34 (1.2%) patients in 2011, whereof 32 (94.1%) received a combination of ABC/ddI/LPVr.

Initial cART with stavudine declined to low levels according to recommendations but the overall use of stavudine remains substantial. The usage of second-line treatment is unusually low in view of expected therapeutic failure rates, indicating potential difficulties in management of suspected treatment failure cases. Monitoring of prescription trends is a simple and feasible approach to identify deficits in the implementation of treatment guidelines for optimal outcomes.

Abbreviations: lamivudine, 3TC; abacavir, ABC; zidovudine, AZT; stavudine, d4T; didanosine, ddI; efavirenz, EFV; lopinavir/ritonavir, LPVr; nevirapine, NVP; saquinavir/ritonavir, SQVr; tenofovir, TDF