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Five-year Survival of Patients with AIDS Receiving Antiretroviral Therapy in Haiti

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We previously reported antiretroviral therapy (ART) outcomes of adults with AIDS in Haiti with 87% survival at one year. ¹ We now report the 5-year outcomes of these 910 consecutive patients—13 years of age who initiated ART according to World Health Organization (WHO) guidelines between March 2003 and April 2004 and who were followed at the GHESKIO clinic in Port au Prince, Haiti through May 2008. ²

Of the 910 patients, 73 (8%) were lost to follow-up, and 198 (22%) died. For 738 patients in care at 6 months, 587 (80%) had an adherence level ≥ 90%. By Kaplan Meyer analysis, 89% of patients were alive at 6 months, 87% at 12 months, and 78% at 60 months. The mortality in the first six months (25 deaths/100 person-years) was seven times greater than the mortality after six months (3.6 deaths/100 person-years) ($p < .0001$). Death in the first six months of therapy was associated with having an AIDS defining illness ($p < .0001$), weight in the lowest quartile ($p < .0001$), and a CD4 T cell count < 50 cells/ml ($p < .0001$). Death after 6 months was associated with adherence $< 90\%$, ($p < .0001$), age > 50 years ($p = .0009$), and a diagnosis of tuberculosis during the first six months of ART ($p = .0189$).

Two hundred and eleven patients met WHO clinical and/or immunologic criteria for “ART failure” as of January 2007, and 113 (53.5%) had plasma HIV-1 RNA greater than 50 copies/ml. The positive predictive value of clinical criteria (WHO stage III or IV HIV related symptoms) for detectable HIV-1 RNA was only 48%. The positive predictive value of immunologic criteria (decrease in CD4 T cell count by 50% or return to baseline value) was 77%. HIV-1 reverse transcriptase genotyping was performed for 91 patients who had plasma HIV RNA levels greater than 1,000 copies/ml, (Table).

This report documents the long-term sustainability of ART programs in resource-poor countries with excellent retention, adherence, and 78% survival at five years. Programs should strive to identify and treat patients before advanced AIDS develops. Clinical criteria are poor predictors of virologic failure; CD4 T cell criteria are better. However, waiting to meet the CD4 T cell criteria may delay the recognition of virologic failure and result in the accumulation of HIV-1 drug resistance mutations. Virologic monitoring should be made available in resource poor settings, and access should be secured to second line agents, which are effective against HIV-1 with multiple drug resistance mutations.

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Table

HIV-1 resistance mutations in 91 patients with plasma HIV-1 RNA level > 1,000 copies/ml while receiving antiretroviral therapy^{*}

HIV-1 mutation	Number of patients (%)
Any drug resistance mutation	80 (88)
Mutation conferring resistance to non- nucleoside reverse transcriptase inhibitors (NNRTI) [†]	76 (84)
Reverse transcriptase M184V mutation conferring resistance to lamivudine	62 (68)
Mutations to both NNRTI and lamivudine	56 (62)
Mutations other than M184V conferring resistance to nucleoside reverse transcriptase inhibitors	46 (51)
Any thymidine analogue mutation (TAM) [‡]	42 (46)
Two or more TAMs	30 (33)
Mutations conferring resistance to lamivudine, other NRTIs, and NNRTIs	37 (41)

^{*} The HIV-1 polymerase gene was amplified by PCR and then sequenced on an automated system (Applied Biosystems). The resistance profiles to antiretroviral drugs were defined according to the Stanford University algorithms.³ Mutations at positions in the polymerase gene associated with antiretroviral resistance by the International AIDS Society-USA Drug Resistance Mutations Group were noted.⁴

[†] NNRTI mutations included K103N (43 patients), G190A (12 patients), Y181C/I (13 patients). Two patients had 3NNRTI mutations.

[‡] TAMs included M41L ((20 patients), D67N (8 patients), K70R (16 patients), L210W (2 patients), T215Y/F (29 patients), K219Q/E (12 patients).