Clinical outcomes and CD4 cell response in children receiving antiretroviral therapy at primary health care facilities in Zambia.

CONTEXT: The Zambian Ministry of Health provides pediatric antiretroviral therapy (ART) at primary care clinics in Lusaka, where, despite scale-up of perinatal prevention efforts, many children are already infected with the human immunodeficiency virus (HIV).

OBJECTIVE: To report early clinical and immunologic outcomes of children enrolled in the pediatric treatment program.

DESIGN, SETTING, AND PATIENTS: Open cohort assessment using routinely collected clinical and outcome data from an electronic medical record system in use at 18 government primary health facilities in Lusaka, Zambia. Care was provided primarily by nurses and clinical officers ("physician extenders" akin to physician assistants in the United States). Patients were children (<16 years of age) presenting for HIV care between May 1, 2004, and June 29, 2007.

INTERVENTION: Three-drug ART (zidovudine or stavudine plus lamivudine plus nevirapine or efavirenz) for children who met national treatment criteria.

MAIN OUTCOME MEASURES: Survival, weight gain, CD4 cell count, and hemoglobin response.
RESULTS: After enrollment of 4975 children into HIV care, 2938 (59.1%) started ART. Of those initiating ART, the median age was 81 months (interquartile range, 36-125), 1531 (52.1%) were female, and 2087 (72.4%) with World Health Organization stage information were in stage III or IV. At the time of analysis, 158 children (5.4%) had withdrawn from care and 382 (13.0%) were at least 30 days late for follow-up. Of the remaining 2398 children receiving ART, 198 (8.3%) died over 3018 child-years of follow-up (mortality rate, 6.6 deaths per 100 child-years; 95% confidence interval [CI], 5.7-7.5); of these deaths, 112 (56.6%) occurred within 90 days of therapy initiation (early mortality rate, 17.4/100 child-years; post-90-day mortality rate, 2.9/100 child-years). Mortality was associated with CD4 cell depletion, lower weight-for-age, younger age, and anemia in multivariate analysis. The mean CD4 cell percentage at ART initiation among the 1561 children who had at least 1 repeat measurement was 12.9% (95% CI, 12.5%-13.3%) and increased to 23.7% (95% CI, 23.1%-24.3%) at 6 months, 27.0% (95% CI, 26.3%-27.6%) at 12 months, 28.0% (95% CI, 27.2%-28.8%) at 18 months, and 28.4% (95% CI, 27.4%-29.4%) at 24 months.

CONCLUSIONS: Care provided by clinicians such as nurses and clinical officers can result in good outcomes for HIV-infected children in primary health care settings in sub-Saharan Africa. Mortality during the first 90 days of therapy is high, pointing to a need for earlier intervention.

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