HIV Care & PMTCT in Resource-Limited Settings

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Back Issues on Line

prepared by the Bordeaux Working Group

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Citation format (by alphabetical order of the authors): Author(s). Title. Source. Abstr. (Authors' text) or Introduction (Authors' text) or Selection (Selected sections of the paper) or Notes or Abstr. Edited (Written by the Bordeaux Working Group). Author Address, if available, Free Full Text, if available.
Agnarson AM, Masanja H, Ekstrom AM, Eriksen J, Tomson G, Thorson A. **Challenges to ART scale-up in a rural district in Tanzania: stigma and distrust among Tanzanian health care workers, people living with HIV and community members.** Tropical Medicine & International Health 2010;15(9):1000-1007.

**Abstr.** Objective To explore attitudes, perceptions and practices among health care workers, antiretroviral treatment (ART) patients and community members regarding ART care and the social consequences of ART roll-out in rural Tanzania. Methods We performed focus group discussions and in-depth interviews with health care workers, community members, ART patients, religious leaders, as well as social workers. Field observations and ethnographic assessments were conducted in parallel. Results We found widespread negative attitudes and perceptions of ART care HIV testing and the ART programme, a lack of trust in its sustainability, as well as lack of community and health worker involvement in the programme planning and treatment. HIV-positive individuals on ART reported risky behaviours with the aim of revenge and were feared by community members. We also found that the ART availability was seen as an incentive to engage in HIV testing among some community members. Conclusion Our findings underline the importance of involving health workers and the community at a high level and their important role in promoting trust in the ART programme. There is an immense need to adjust interventions focusing on stigma reduction in the direction of ART scale-up and to build awareness among ART patients so they understand how risky behaviours affect their personal well-being and the community at large.

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**Abstr.** Objective To investigate deaths and losses to follow-up in a programme designed to scale up antiretroviral therapy (ART) for HIV-infected children in Cote d’Ivoire. Methods Between 2004 and 2007, HIV-exposed children at 19 centres were offered free HIV serum tests (polymerase chain reaction tests in those aged <18 months) and ART. Computerized monitoring was used to determine: (i) the number of confirmed HIV infections, (ii) losses to the programme (i.e. death or loss to follow-up) before ART, (iii) mortality and loss-to-programme rates during 12 months of ART, and (iv) determinants of mortality and losses to the programme. Findings The analysis included 3876 ART-nave children. Of the 1766 with HIV-1 infections (17% aged <18 months), 124 (7.0%) died, 52 (2.9%) left the programme, 354 (20%) were lost to follow-up before ART, 259 (15%) remained in care without ART, and 977 (55%) started ART (median age: 63 months). The overall mortality rate during ART was significantly higher in the first 3 months than in months 4-12: 32.8 and 6.9 per 100 child-years of follow-up, respectively. Loss-to-programme rates were roughly double mortality rates and followed the same trend with duration of ART. Independent predictors of 12-month mortality on ART were pre-ART weight-for-age z-score <-2, percentage of CD4+ T lymphocytes <10, World Health Organization HIV/AIDS clinical stage 3 or 4, and blood haemoglobin <8 g/dl. Conclusion The large-scale programme to scale up paediatric ART in Cote d’Ivoire was effective. However, ART in/as often given too late, and early mortality and losses to programme before and just after ART initiation were major problems.

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**Abstr.** Objectives: Acute febrile illnesses consistent with malaria are the most common presentation at health clinics in sub-Saharan Africa, accounting for 30-50% of outpatient visits. The symptoms of acute HIV infection can mimic acute malaria. We investigated whether acute HIV infections could be identified among adults with suspected malaria at rural health centers in Uganda. Design: A cross-sectional study of 1000 consecutive patients referred for malaria blood smears at each of seven government health centers, of which 2893 (41%) were 13 years or older and tested for HIV. Methods: HIV enzyme immunoassay antibody testing was performed on dried
blood spots and confirmed by western blot. Enzyme immunoassay-nonreactive and enzyme immunoassay-reactive, western blot-unconfirmed samples were pooled (10/pool) and tested for HIV RNA by nucleic acid amplification testing. We defined acute HIV infection as HIV-1 RNA positive with a negative or indeterminate HIV-1 western blot pattern and early HIV infection as HIV-1 RNA positive with a positive western blot pattern, but with a BED-corrected optical density of below 0.8. Results: Of 2893 patients evaluated, 324 (11%) had test results indicating HIV infection. Overall, 30 patients (1.0%) had acute HIV infection, 56 (1.8%) had early HIV infection, and 238 (8%) had established HIV infection. Acute HIV infections were more prevalent at sites with higher HIV prevalence and lower malaria endemicity. Conclusion: At multiple sites in Uganda, 1-3% of adults with suspected malaria had acute or early HIV infection. These findings highlight a major opportunity for expanding recognition of acute and early HIV infection in Africa. (C) 2010 Wolters Kluwer Health vertical bar Lippincott Williams & Wilkins.

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**Abstr.** We aimed in this study to describe lamivudine concentration-time courses in treatment-naive children after once-daily administration, to study the effects of body weight and age on lamivudine pharmacokinetics, and to simulate an optimized administration scheme. For this purpose, lamivudine concentrations were measured in 49 children after at least 2 weeks of didanosine-lamivudine-efavirenz treatment. A total of 148 plasma lamivudine concentrations were measured, and a population pharmacokinetic model was developed with NONMEM. The influence of individual characteristics was tested using a likelihood ratio test. Children were divided into two groups, according to their pharmacokinetic parameters, thanks to tree regression analysis. For each patient, the area under the curve was derived from estimated individual pharmacokinetic parameters. Different once-daily doses were simulated in each group, to obtain the same exposure in children as the mean effective exposure in adults (8.9 mg/liter . h). A two-compartment model in which the slope of distribution is assumed to be equal to the absorption rate constant adequately described the data. Parameter estimates were standardized for a mean standard body weight using an allometric model. Children were then divided into 2 groups according to body weight: CL/F was significantly higher in children weighing less than 17 kg (1.12 liters/h/kg) than in children over 17 kg (0.95 liters/h/kg; P = 0.01). The target mean AUC of 8.9 mg/liters . h was obtained with a 10-mg/kg once-daily lamivudine (3TC) dose for children below 17 kg; the recommended dose of 8 mg/kg seems to be sufficient in children weighing more than 17 kg. These assumptions should be prospectively confirmed.

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**Abstr.** BACKGROUND To describe incidence rates (IR) and risk factors for loss-to-follow-up (LTFU) among HIV-infected and HIV-exposed children in a large HIV treatment programme in Western Kenya. METHODS The USAID-AMPATH Partnership has enrolled >100 000 patients (20% children) at 23 clinic sites throughout western Kenya. LTFU is defined as being absent from the clinic for >3 months if on combination antiretroviral treatment (cART) and >6 months if not. Included in this analysis were children aged <14 years, HIV exposed or infected at enrolment, and enrolled between April 2002 and March 2009. The IR for LTFU are presented per 100 child-years (CY) of follow-up. Proportional hazards models with time-independent and time-dependent covariates were used to model factors associated with LTFU. Weight for height Z-scores were calculated using EpiInfo, with severe malnutrition being defined as a Z-score <=-3.0. Immune suppression was defined as per WHO age-specific categories. RESULTS There were 13 510 children eligible for analysis, comprising 3106 children who at enrolment were HIV infected and 10 404 children who were HIV exposed. The overall IR of LTFU was 18.4 (17.8-18.9) per 100 CY. Among HIV-infected children, 15.2 (13.8-16.7) and 14.1 (13.1-15.8) per 100 CY became LTFU, pre- and post-cART initiation, respectively. The only independent risk factor for becoming LTFU among the HIV-infected children was severe immune suppression (AHR: 2.17, 95% CI: 1.51-3.12). Among the HIV-
exposed children, 20.1 per 100 (19.4-20.7) became LTFU. Independent risk factors for LTFU among them were being severely low weight for height (AHR: 1.69, 95% CI: 1.25-2.28), being orphaned at enrolment (AHR: 1.57, 95% CI: 1.23-1.94), being CDC Class B or C (AHR: 1.41, 95% CI: 1.14-1.74), and having received cART (AHR: 1.56, 95% CI: 1.23-1.99). Protective against becoming LTFU among the HIV exposed were testing HIV positive (AHR: 0.26, 95% CI: 0.21-0.32), older age (AHR: 0.90, 95% CI: 0.85-0.96), enrolling in later time periods, and receiving food supplementation (AHR: 0.58, 95% CI: 0.32-0.45). CONCLUSIONS There is a high rate of LTFU among these highly vulnerable children, particularly among the HIV exposed. These data suggest that HIV-infected and HIV-exposed children are at especially high risk for LTFU if they are sick or malnourished.

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Abstr. Objectives To assess long-term virological efficacy and the emergence of drug resistance in children who receive antiretroviral treatment (ART) in rural Tanzania. Patients and methods Haydom Lutheran Hospital has provided ART to HIV-infected individuals since 2003. From February through May 2009, a cross-sectional virological efficacy survey was conducted among children (<15 years) who had completed ≥6 months of first-line non-nucleoside reverse transcriptase inhibitor (NNRTI)-based ART. Genotypic resistance was determined in those with a viral load of >200 copies/mL. Results Virological response was measured in 19 of 23 eligible children; 8 of 19 were girls and median age at ART initiation was 5 years (range 2-14 years). Median duration of ART at the time of the survey was 40 months (range 11-61 months). Only 8 children were virologically suppressed (<40 copies/mL), whereas 11 children had clinically relevant resistance mutations in the reverse transcriptase gene. The most frequent mutations were M184V (n = 11), conferring resistance to lamivudine and emtricitabine, and Y181C (n = 4), G190A/S (n = 4) and K103N (n = 4), conferring resistance to NNRTIs. Of concern, three children had thymidine analogue mutations, associated with cross-resistance to all nucleoside reverse transcriptase inhibitors. Despite widespread resistance, however, only one child experienced a new WHO stage 4 event and none had a CD4 cell count of <200 cells/mm3. Conclusions Among children on long-term ART in rural Tanzania, >50% harboured drug resistance. Results for children were markedly poorer than for adults attending the same programme, underscoring the need for improved treatment strategies for children in resource-limited settings.

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Abstr. OBJECTIVE Prior exposure to intrapartum/neonatal nevirapine (NVP) is associated with compromised virologic treatment outcomes once non-nucleoside reverse transcriptase inhibitor (NNRTI)-based antiretroviral therapy (ART) is initiated. We examined the longer-term clinical outcomes in a programmatic setting. METHODS We compared post-12 month mortality and clinical treatment failure (defined by WHO clinical and immunologic criteria) among women with and without prior NVP exposure in Lusaka, Zambia. RESULTS Between April 2004 and July 2006, 6740 women initiated an NNRTI-containing regimen. At 12 months, 5172 (78%) remained active and were included in this analysis. Of these, 596(12%) reported prior NVP exposure, whose time from exposure to ART initiation was: <6 months for 11%, 6-12 months for 13%, >12 months for 37%, unknown for 39%. Overall, women with prior NVP exposure trended towards increased survival (adjusted hazard ratio [AHR]: 0.53; 95% confidence interval [CI]: 0.27-1.06, P = 0.07) and towards increased hazard of clinical treatment failure (AHR: 1.18; 95% CI: 0.95-1.47, P = 0.14), particularly those with exposure for <6 months (AHR: 1.52; 95% CI: 0.94-2.45, P = 0.09). CONCLUSIONS Prior NVP exposure appeared to increase risk for clinical treatment failure after 12 months of follow-up, but this finding did not reach statistical significance. With growing evidence linking recent NVP exposure to virologic failure, optimized monitoring algorithms should be considered for women with starting NNRTI-based ART. The association between prior NVP exposure and improved survival has not been previously shown and may be a result of residual confounding around health-seeking behaviours.

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Abstr. Objective: To assess the effectiveness and safety of antiretrovirals (ARVs) used for treatment or prophylaxis in a breastfeeding population of HIV-1-infected women (Burkina-Faso, Kenya, South Africa). Methods: HIV-1-infected pregnant women with <200 CD4 cells per cubic millimeter or with World Health Organization stage 4 disease (cohort A) and asymptomatic women with >500 CD4 cells per cubic millimeter (cohort B) were enrolled into 2 prospective cohorts. Women with 200-500 CD4 cells per cubic millimeter were enrolled in a parallel randomized trial. Women in cohort A initiated antiretroviral therapy. Women in cohort B received zidovudine from 34 to 36 weeks gestation until delivery, with single-dose nevirapine in labor (cohort B). All children received single-dose nevirapine. Results: Of 248 women enrolled, 111 (cohort A) and 125 (cohort B) infants alive at 24 hours after birth were analyzed. Sixty-nine percent and 42% of women had undetectable viral load at delivery, respectively. Ten children in each cohort died. The 18-month cumulative incidences of HIV-1 infection were 7.5% (95% confidence interval: 3.8% to 14.5%) (cohort A) and 5.8% (2.8% to 11.8%) (cohort B). Sixty-one percent (cohort A) and 78% (cohort B) were breastfed for a median duration of 20 weeks. Four children in cohort A and only 1 in cohort B became HIV-1 infected after 6 weeks of age. Conclusions: Antiretroviral therapy initiated a median of 7 weeks before delivery in women with advanced HIV-1 disease was associated with a significant residual risk of HIV-1 transmission due to insufficient decrease in viral load by the time of delivery. Among women with >500 CD4 cells per cubic millimeter, the risk of breast-milk transmission was very low despite lack of postnatal prophylaxis.

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Do NT, Phiri K, Bussmann H, Gaolathe T, Marlink RG, Wester CW. Psychosocial Factors Affecting Medication Adherence Among HIV-1 Infected Adults Receiving Combination Antiretroviral Therapy (cART) in Botswana. Aids Research and Human Retroviruses 2010;26(6):685-691.

Abstr. As increasing numbers of persons are placed on potentially life-saving combination antiretroviral therapy (cART) in sub-Saharan Africa, it is imperative to identify the psychosocial and social factors that may influence antiretroviral (ARV) medication adherence. Using an 87 question survey, the following data were collected from patients on cART in Botswana: demographics, performance (Karnofsky) score, perceived stigma and level of HIV disclosure, attitudes and beliefs concerning HIV/AIDS, substance and/or drug use, depression, and pharmacy and healthcare provider-related factors. Overall adherence rates were determined by patient self-report, institutional adherence, and a culturally modified Morisky scale. Three hundred adult patients were recruited between April and May 2005. The overall cART adherence rate was 81.3% based on 4 day and 1 month patient recall and on clinic attendance for ARV medication refills during the previous 3 months. Adults receiving cART for 1-6 months were the least adherent (77%) followed by those receiving cART for greater than 12 months (79%). Alcohol use, depression, and nondisclosure of positive HIV status to their partner were predictive of poor adherence rates (p value <0.02). A significant proportion (81.3%) of cART-treated adults were adherent to their prescribed treatment, with rates superior to those reported in resource-rich settings. Adherence rates were poorest among those just starting cART, most likely due to the presence of ARV-related toxicity. Adherence was lower among those who have been treated for longer periods of time (greater than 1 year), suggesting complacency, which may become a significant problem, especially among those long-term cART-treated patients who return to improved physical and mental functioning and may be less motivated to adhere to their ARV medications. Healthcare providers should encourage HIV disclosure to “at-risk” partners and provide ongoing counseling and education to help patients recognize and overcome HIV-associated stigma, alcohol abuse, and depression.

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Abstr. Background: Many HIV care and treatment programs in resource-limited settings rely on clinical and immunologic monitoring of antiretroviral therapy (ART), but accuracy of this strategy to
detect virologic failure (VF) among children has not been evaluated. Methods: A cross-sectional sample of HIV-infected children aged 1-16 years on ART >= 6 months receiving care at a Tanzanian referral center underwent clinical staging, CD4 lymphocyte measurement, plasma HIV-1 RNA level, and complete blood count. Associations with VF (HIV-1 RNA >= 400 copies/mL) were determined utilizing bivariable and multivariate analyses; accuracy of current clinical and immunologic guidelines in identifying children with VF was assessed. Findings: Of 206 children (median age 8.7 years, ART duration 2.4 years), 65 (31.6%) demonstrated VF at enrollment. Clinical and immunological criteria identified 2 (3.5%) of 57 children with VF on first-line therapy, exhibiting 3.5% sensitivity and 100% specificity. VF was associated with younger age, receipt of nevirapine vs. efavirenz-based regimen, CD4% < 25%, and physician documentation of maladherence (P < 0.05 on bivariable analysis); the latter 2 factors remained significant on multivariable logistic regression. Interpretation: This study demonstrates poor performance of clinical and immunologic criteria in identifying children with virologic failure. Affordable techniques for measuring HIV-1 RNA level applicable in resource-limited settings are urgently needed.

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Abstr. Sub-Saharan Africa is the epicentre of the HIV pandemic but there are few reports of HIV-related kidney diseases in children in this region. This study aimed to determine the prevalence of proteinuria in HIV-infected children at the Lagos University Teaching Hospital. Proteinuria was determined using urine protein creatinine ratio. CD4+ cell count was determined for all the HIV-infected children. The mean age of the HIV-infected children was 74.4 +/- 35.6 months with a male: female ratio of 3:2. Compared with 6% of the 50 controls 20.5% of the 88 HIV-infected children had proteinuria (p = 0.026). Of 20 children with advanced clinical stage 40% had proteinuria compared with 14.7% of 68 children with milder stage (p = 0.004). Similarly, proteinuria was commoner among those with severe immunosuppression (p = 0.014). HAART use was not associated with significant difference in proteinuria prevalence (p = 0.491). Proteinuria was frequent among HIV-infected children, especially among those with advanced disease.

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Abstr. Background: Many HIV-infected children in Southern Africa have been started on antiretroviral therapy ( ART), but loss to follow up (LTFU) can be substantial. We analyzed mortality in children retained in care and in all children starting ART, taking LTFU into account. Patients and Methods: Children who started ART before the age of 16 years in 10 ART programs in South Africa, Malawi, Mozambique, and Zimbabwe were included. Risk factors for death in the first year of ART were identified in Weibull models. A meta-analytic approach was used to estimate cumulative mortality at 1 year. Results: Eight thousand two hundred twenty-five children (median age 49 months, median CD4 cell percent 11.6%) were included; 391 (4.8%) died and 523 (7.0%) were LTFU in the first year. Mortality at 1 year was 4.5% [95% confidence interval (CI): 2.8% to 7.4%] in children remaining in care, but 8.7% (5.4% to 12.1%) at the program level, after taking mortality in children and LTFU into account. Factors associated with mortality in children remaining in care included age [ adjusted hazard ratio (HR) 0.37; 95% CI: 0.25 to 0.54 comparing >= 120 months with <18 months], CD4 cell percent (HR: 0.56; 95% CI: 0.39 to 0.78 comparing >20% with <10%), and clinical stage (HR: 0.12; 95% CI: 0.03 to 0.45 comparing World Health Organization stage I with III/IV). Conclusions: In children starting ART and remaining in care in Southern Africa mortality at 1 year is <5% but almost twice as high at the program level, when taking LTFU into account. Age, CD4 percentage, and clinical stage are important predictors of mortality at the individual level.

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**Abstr.** Background: For patients in all health-care settings HIV screening is recommended after the patient is notified that testing will be performed unless the patient declines. The nation's physicians and other health care providers should assume a much more active role in promoting HIV testing. The aim of this study was to investigate the extent to which missed opportunities for earlier HIV testing and diagnosis occur in the health facilities of north east Ethiopia. Methods: A confidential client exit interview and medical record review was made on 427 clients who attended health facilities of Dessie town between November-December 2008. Data collection was done by counselors trained on Provider Initiated Counseling and Testing (PICT) and data collection tool included demographics, reason for visit to health facilities, HIV test initiation by service providers, clients self risk perception, clients willingness and acceptance of HIV test, HIV test result and review of client medical records. Results: Among 427 clients, missed opportunities for HIV testing were found in 76.1% (325) of clients. HIV test initiation was made by data collecting counselors during interview period and 80.0% (260) of clients not initiated by service providers were found to be willing to have HIV test. Large number, 43.0% (112), of the willing clients actually tested for HIV. Of the tested clients, 13.4% (15) were found to be HIV positive. Most, 60% (9), of HIV positive clients who lost the opportunities of diagnosis felt themselves as having no risk for HIV infection. Missed opportunities for HIV diagnosis of 51.7% (15), overall HIV test acceptance rate of 36.5% (154) and positivity rate of 6.9% (29) were found. Conclusions: The missed opportunities for earlier HIV test and diagnosis of patients attending health facilities were found to be high and frequent. Testing only clients with HIV risk misses large number of HIV positive patients. Asking clients' willingness for HIV testing should be conducted by all service providers irrespective of the clients' risk behaviors for HIV infection or the type of services they need.

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**Free Full Text:** [http://www.biomedcentral.com/content/pdf/1471-2458-10-362.pdf](http://www.biomedcentral.com/content/pdf/1471-2458-10-362.pdf)


**Abstract edited.** This study aimed to describe the frequency and severity of hepatotoxicity in HIV-infected children during anti-retroviral therapy (ART) and the impact of concomitant use of isoniazid preventive therapy. It is a retrospective cohort analysis of HIV-infected children who commenced ART or were followed up between September 1998 and November 2005. Alanine transferase levels were measured at baseline, at 1, 3 and 6 months and then 6 monthly thereafter. A mixed-effects logistic regression model of toxicity grade coded as a binary outcome (normal: grade 0, abnormal: grade 1–4) on the risk factors time, ARV treatment status, CD4%, INH status, gender, baseline weight and age was fitted with patients as a random-effect. Of the 598 children included in the study, 425 were taking ART alone, 73 ART and isoniazid, 39 isoniazid alone and 61 neither isoniazid nor ART. The median interquartile range (IQR) age of children was 22 (10–53) months. There was no increased risk of hepatotoxicity with ART with or without isoniazid compared to the control group over a 2-year period. Grade 3 or 4 ALT elevations occurred in 19 (3.4%) children, with no cases of fulminant hepatic failure. Severe hepatic events are uncommon in children on ART or isoniazid. There is no increased risk of hepatotoxicity with ART and concurrent isoniazid preventive therapy.

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Hoffmann CJ, Fielding KL, Charalambous S, Innes C, Chaisson RE, Grant AD, Churchyard GJ. 
Reducing mortality with cotrimoxazole preventive therapy at initiation of antiretroviral 

Abstr. Objective: To assess the effectiveness of cotrimoxazole preventive therapy (CPT) among 
individuals with CD4 cell count above 200 cells/µl and varying WHO clinical stages in reducing 
proportional hazards modeling, we compared mortality during the first 12 months after cART 
initiation among patients receiving CPT with patients not receiving CPT. We adjusted for clinic level 
confounding throughout. Results: We included 14,097 patients starting cART between January 
2003 and January 2008, 62% of whom were men, the median CD4 cell count was 132 cells/µl, 
and 1289 died (11%). The baseline median CD4 cell count was lower (118 vs. 153 cells/µl) 
among the 7508 patients who received CPT compared with the 6589 patients who did not. In 
adjusted multivariate modeling, stratifying for baseline CD4 cell count and WHO stage, CPT 
reduced mortality overall (hazard ratio 0.64, P < 0.001) and for all individuals with CD4 cell count 
below 200 cells/µl or WHO clinical stage 3 or 4 conditions but did not reduce mortality for 
patients with both CD4 cell count above 200 cells/µl and WHO clinical stage 1 or 2. Conclusion: We 
demonstrated a 36% reduction in mortality extending to patients associated with CPT when 
used with cART that extended to patients with CD4 cell count above 350 cells/µl in a setting with 
minimal malaria and high rates of cotrimoxazole-resistant bacteria. This provides important 
additional data toward efforts to increase CPT provision among all cART initiators in resource 
limited settings. (C) 2010 Wolters Kluwer Health | Lippincott Williams & Wilkins. 
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Hurissa Z, Gebre-Silassie S, Hailu W, Tefera T, Laloo DG, Cuevas LE, Hailu A. Clinical 
characteristics and treatment outcome of patients with visceral leishmaniasis and HIV co-infection in northwest Ethiopia. Tropical Medicine & International Health 2010;15(7):848-855.

Abstr. OBJECTIVES To describe the clinical presentation of patients with visceral leishmaniasis (VL) 
with and without human immunodeficiency virus (HIV) co-infection and factors associated with 
poor outcome in northwest Ethiopia. METHOD Retrospective review of 241 patients with VL (92 
with and 149 without HIV co-infection). RESULTS HIV co-infection was present in 92 (38%) of the 
patients. Clinical presentation of VL was indistinguishable between patients with and without HIV 
co-infection. Co-infected patients had a poorer outcome i.e. either death or treatment failure 
(31.5% vs. 5.6%, P < 0.001). The presence of tuberculosis or sepsis syndrome among patients 
with VL and HIV co-infected independently predicted death or treatment failure [odds ratio 4.5 
(95% CI 1.47-13.92, P = 0.009) and 9.1 (95% CI 2.16-37.97, P = 0.003), respectively]. Despite 
having similar clinical presentation at the time of diagnosis, VL and HIV co-infected patients had a 
higher mortality and treatment failure than immunocompetent patients. CONCLUSION The 
frequency of HIV co-infection among patients with VL is high in the study area, and this co-
infected was associated with death or treatment failure. The clinical management of VL in HIV co-
infected patients is a major challenge that requires new treatment approaches to improve its 
outcome. 
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C, Ba-Gomis FO, Minga A, Allou G, Eholie SP, Bissagnene E, Sasco AJ, Dabis F. Alcohol use and 
non-adherence to antiretroviral therapy in HIV-infected patients in West Africa. Addiction 
2010;105(8):1416-1421.

Abstr. Aim To investigate the association between alcohol use and adherence to highly active 
antiretroviral treatment (HAART) among human immunodeficiency virus (HIV)-infected patients in 
sub-Saharan Africa. Design and setting Cross-sectional survey conducted in eight adult HIV 
treatment centres from Benin, Cote d’Ivoire and Mali. Participants and measurements During a 4-
week period, health workers administered the Alcohol Use Disorders Identification Test to HAART-
treated patients and assessed treatment adherence using the AIDS Clinical Trials Group follow-up 
questionnaire. Findings A total of 2920 patients were enrolled with a median age of 38 years 
[interquartile range (IQR) 32-45 years] and a median duration on HAART of 3 years (IQR 1-4 
years). Overall, 91.8% of patients were identified as adherent to HAART. Non-adherence was 
associated with current drinking [odds ratio (OR) 1.4; 95% confidence interval (CI) 1.1-2.0], 
hazardous drinking (OR 4.7; 95% CI 2.6-8.6) and was associated inversely with a history of
counselling on adherence (OR 0.7; 95% CI 0.5–0.9). Conclusions Alcohol consumption and hazardous drinking is associated with non-adherence to HAART among HIV-infected patients from West Africa. Adult HIV care programmes should integrate programmes to reduce hazardous and harmful drinking.

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Abstr. Background Prognostic models have been developed for patients infected with HIV-1 who start combination antiretroviral therapy (ART) in high-income countries, but not for patients in sub-Saharan Africa. We developed two prognostic models to estimate the probability of death in patients starting ART in sub-Saharan Africa. Methods We analysed data for adult patients who started ART in four scale-up programmes in Cote d’Ivoire, South Africa, and Malawi from 2004 to 2007. Patients lost to follow-up in the first year were excluded. We used Weibull survival models to construct two prognostic models: one with CD4 cell count, clinical stage, bodyweight, age, and sex (CD4 count model); and one that replaced CD4 cell count with total lymphocyte count and severity of anaemia (total lymphocyte and haemoglobin model), because CD4 cell count is not routinely measured in many African ART programmes. Death from all causes in the first year of ART was the primary outcome. Findings 912 (8.2%) of 11 153 patients died in the first year of ART. 822 patients were lost to follow-up and not included in the main analysis; 10331 patients were analysed. Mortality was strongly associated with high baseline CD4 cell count (>= 200 cells per μL vs <25; adjusted hazard ratio 0.21, 95% CI 0.17–0.27), WHO clinical stage (stages III-IV vs I-II; 3.45, 2.43–4.90), bodyweight (60 kg vs <45 kg; 0.23, 0.18–0.30), and anaemia status (none vs severe: 0.27, 0.20–0.36). Other independent risk factors for mortality were low total lymphocyte count, advanced age, and male sex. Probability of death at 1 year ranged from 0.9% (95% CI 0.6-1.4) to 52.5% (43.8-61.7) with the CD4 model, and from 0.9% (0.5-1.4) to 59.6% (48.2-71.4) with the total lymphocyte and haemoglobin model. Both models accurately predict early mortality in patients starting ART in sub-Saharan Africa compared with observed data. Interpretation Prognostic models should be used to counsel patients, plan health services, and predict outcomes for patients with HIV-1 infection in sub-Saharan Africa.

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Abstr. Background: There are limited reports of public sector scale-up of antiretroviral treatment (ART) for HIV-infected children. We describe patient outcomes for HIV-infected children initiating ART in Thailand from 2000 to 2005. Methods: ART-naive patients,15 years old initiating ART from January 2000 to December 2005 were included; follow-up was through March 2007. Survival probabilities were estimated with Kaplan-Meier and hazard ratios for death and loss to follow-up (LTFU) with Cox proportional hazards models. Results: Analysis included 3409 children. Median follow-up time was 1.7 years (interquartile range = 1.0–2.5). Median age at ART initiation was 7.3 years, weight-for-age z score was -2.0, CD4% was 5.0%. ART was initiated in 1428 (41.9%) children at regional/university hospitals and in 689 (20.2%) at district/community hospitals. At last visit, 346 (10.1%) were LTFU and 305 (9.0%) had died. Age <1 (P = 0.008), weight-for-age z score <-2.0 (P < 0.001), CD4% <5% (P < 0.001), and clinical stage C (P < 0.001) were associated with death; district/community hospital patients had a lower hazard of death (P = 0.011). Clinical stage C (P = 0.052) and regional/university hospital (P < 0.001) were associated with increased LTFU. Conclusions: Pediatric ART has been successfully scaled-up in Thailand, including to district/community hospitals. Late entry to care is associated with poorer outcomes, and earlier ART initiation should be prioritized.

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Abstr. Background. Cryptococcal meningitis (CM) remains a common AIDS-defining illness in Africa and Asia. Subclinical cryptococcal antigenemia is frequently unmasked with antiretroviral therapy (ART). We sought to define the cost-effectiveness of serum cryptococcal antigen (CRAG) screening to identify persons with subclinical cryptococcosis and the efficacy of preemptive fluconazole therapy. Methods. There were 609 ART-naive adults with AIDS who started ART in Kampala, Uganda, and who had a serum CRAG prospectively measured during 2004-2006. The number needed to test and treat with a positive CRAG was assessed for >= 30-month outcomes. Results. In the overall cohort, 50 persons (8.2%) were serum CRAG positive when starting ART. Of 295 people with a CD4(+) cell count <= 100 cells/mu L and without prior CM, 26 (8.8%; 95% confidence interval [CI], 5.8%-12.6%) were CRAG positive, of whom 21 were promptly treated with fluconazole (200-400 mg) for 2-4 weeks. Clinical CM developed in 3 fluconazole-treated persons, and 30-month survival was 71% (95% CI, 48%-89%). In the 5 CRAG-positive persons with a CD4(+) cell count <= 100 cells/mu L treated with ART but not fluconazole, all died within 2 months of ART initiation. The number needed to test and treat with CRAG screening and fluconazole to prevent 1 CM case is 11.3 (95% CI, 7.9-17.1) at costs of $190 (95% CI, $132-$287). The number needed to test and treat to save 1 life is 15.9 (95% CI, 11.1-24.0) at costs of $266 (95% CI, $185-$402). The cost per disability-adjusted life year saved was $21 (95% CI, $15-$32). Conclusions. Integrating CRAG screening into HIV care, specifically targeting people with severe immunosuppression (CD4(+) cell count similar to 100 cells/mL) should be implemented in treatment programs in resource-limited settings. ART alone is insufficient treatment for CRAG-positive persons.

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Abstr. Objective To describe the scale-up of a decentralized HIV treatment programme delivered through the primary health care system in rural KwaZulu-Natal, South Africa, and to assess trends in baseline characteristics and outcomes in the study population. Methods The programme started delivery of antiretroviral therapy (ART) in October 2004. Information on all patients initiated on ART was captured in the programme database and follow-up status was updated monthly. All adult patients (>= 16 years) who initiated ART between October 2004 and September 2008 were included and stratified into 6-month groups. Clinical and sociodemographic characteristics were compared between the groups. Retention in care, mortality, loss to follow-up and virological outcomes were assessed at 1.2 months post-ART initiation. Findings A total of 5719 adults initiated on ART were included (67.9% female). Median baseline CD4+ lymphocyte count was 116 cells/mu L (interquartile range, IQR: 53-173). There was an increase in the proportion of women who initiated ART while pregnant but no change in other baseline characteristics over time. Overall retention in care at 12 months was 84.0% (95% confidence interval, CI: 82.6-85.3); 10.9% died (95% CI: 9.8-12.0); 3.7% were lost to follow-up (95% CI: 3.0-4.4). Mortality was highest in the first 3 months after ART initiation: 30.1 deaths per 100 person years (95% CI: 26.3-34.5). At 12 months 23.0% had a detectable viral load (>25 copies/ml) (95% CI: 19.5-25.5). Conclusion Outcomes were not affected by rapid expansion of this decentralized HIV treatment programme. The relatively high rates of detectable viral load highlight the need for further efforts to improve the quality of services.

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**Abstr.** Background: In Tanzania, less than a third of HIV infected children estimated to be in need of antiretroviral therapy (ART) are receiving it. In this setting where other infections and malnutrition mimic signs and symptoms of AIDS, early diagnosis of HIV among HIV-exposed infants without specialized virologic testing can be a complex process. We aimed to introduce an Early Infant Diagnosis (EID) pilot program using HIV DNA Polymerase Chain Reaction (PCR) testing with the intent of making EID nationally available based on lessons learned in the first 6 months of implementation. Methods: In September 2006, a molecular biology laboratory at Bugando Medical Center was established in order to perform HIV DNA PCR testing using Dried Blood Spots (DBS). Ninety-six health workers from 4 health facilities were trained in the identification and care of HIV-exposed infants, HIV testing algorithms and collection of DBS samples. Paper-based tracking systems for monitoring the program that fed into a simple electronic database were introduced at the sites and in the laboratory. Time from birth to first HIV DNA PCR testing and to receipt of test results were assessed using Kaplan-Meier curves. Results: From October 2006 to March 2007, 510 HIV-exposed infants were identified from the 4 health facilities. Of these, 441(87%) infants had an HIV DNA PCR test at a median age of 4 months (IQR 1 to 8 months) and 75(17%) were PCR positive. Parents/guardians for a total of 242(55%) HIV-exposed infants returned to receive PCR test results, including 51/75 (68%) of those PCR positive, 187/361 (52%) of the PCR negative, and 4/5 (80%) of those with indeterminate PCR results. The median time between blood draw for PCR testing and receipt of test results by the parent or guardian was 5 weeks (range < 1 week to 14 weeks) among children who tested PCR positive and 10 weeks (range < 1 week to 21 weeks) for those that tested PCR negative. Conclusions: The EID pilot program successfully introduced systems for identification of HIV-exposed infants. There was a high response as hundreds of HIV-exposed infants were registered and tested in a 6 month period. Challenges included the large proportion of parents not returning for PCR test results. Experience from the pilot phase has informed the national roll-out of the EID program currently underway in Tanzania.

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**Free Full Text:** http://www.biomedcentral.com/content/pdf/1471-2431-10-44.pdf


**Abstr.** Objective: To determine clinical pattern, prevalence, and factors associated with pediatric immune reconstitution inflammatory syndrome (IRIS) in Uganda. Design: A prospective, multicenter cross-sectional study. Methods: We enrolled HIV-infected children receiving antiretroviral therapy (ART) between 0.5 and 6 months duration from December 2006 to October 2007 at three pediatric clinics in Uganda. Children were evaluated for IRIS at a one-time study visit by a standardized pediatric case definition. Results: The IRIS prevalence was 38% [95% confidence interval (CI) 31-46] among 162 children (57% female) with a median age of 6 years (interquartile range 2.5-11 years). Of the IRIS events, 77% were unmasking of a new opportunistic infection and 23% were probable paradoxical IRIS events toward prior opportunistic infections. The majority of IRIS events (55%) occurred in the first month of ART. The clinical events were diverse, with tuberculosis-IRIS (29%) being the most frequent presentation. Independent risk factors for IRIS were pre-ART CD4(+) cell percentage below 15% (odds ratio = 3.1, 95% CI 1.2-8.4, P = 0.027), current CD8(+) cell absolute count below 1000 cells/μl (odds ratio = 4.3, 95% CI 1.8-10.4, P = 0.001), male sex (odds ratio = 2.6, 95% CI 1.06-8.4, P = 0.01), and a cough of more than 1 week duration at the current clinic visit (odds ratio 4.3, 95% CI 1.7-10.7, P = 0.002). A more than 25 CD4(+) T-cells increase at current study visit from the pre-ART baseline was associated with IRIS by univariate (P = 0.005) but not multivariate analysis. Conclusion: IRIS events commonly occur early after ART initiation in children with advanced immunosuppression, as commonly seen in resource-limited areas. Both healthcare providers and caregivers of the children need awareness of IRIS to minimize ART nonadherence.

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Abstr. Context Long-term antiretroviral therapy (ART) use in resource-limited countries leads to increasing numbers of patients with HIV taking second-line therapy. Limited access to further therapeutic options makes evaluation of second-line regimen efficacy in these settings important. Objectives To investigate failure rates in patients receiving second-line therapy and factors associated with failure and death. Design, Setting, and Participants Multicohort study of 632 patients >14 years old receiving second-line therapy for more than 6 months in 27 ART programs in Africa and Asia between January 2001 and October 2008. Main Outcome Measures Clinical, immunological, virological, and immunovirological failure (first diagnosed episode of immunological or virological failure) rates, and mortality after 6 months of second-line therapy use. Sensitivity analyses were performed using alternative CD4 cell count thresholds for immunological and immunovirological definitions of failure and for cohort attrition instead of death. Results The 632 patients provided 740.7 person-years of follow-up; 119 (18.8%) met World Health Organization failure criteria after a median 11.9 months following the start of second-line therapy (interquartile range [IQR], 8.7-17.0 months), and 34 (5.4%) died after a median 15.1 months (IQR, 11.9-25.7 months). Failure rates were lower in those who changed 2 nucleoside reverse transcriptase inhibitors (NRTIs) instead of 1 (179.2 vs 251.6 per 1000 person-years; incidence rate ratio [IRR], 0.64; 95% confidence interval [CI], 0.42-0.96), and higher in those with lowest adherence index (383.5 vs 176.0 per 1000 person-years; IRR, 3.14; 95% CI, 1.67-5.90 for <80% vs >= 95% [percentage adherent, as represented by percentage of appointments attended with no delay]). Failure rates increased with lower CD4 cell counts when second-line therapy was started, from 156.3 vs 96.2 per 1000 person-years; IRR, 1.59 (95% CI, 0.78-3.25) for 100 to 199/μL to 336.8 per 1000 person-years; IRR, 3.32 (95% CI, 1.81-6.08) for less than 50/μL vs 200/μL or higher; and decreased with time using second-line therapy, from 250.0 vs 123.2 per 1000 person-years; IRR, 1.90 (95% CI, 1.19-3.02) for 6 to 11 months to 212.0 per 1000 person-years; 1.71 (95% CI, 1.01-2.88) for 12 to 17 months vs 18 or more months. Mortality for those taking second-line therapy was lower in women (91.9 vs 28.1 per 1000 person-years; HR, 0.45; 95% CI, 0.23-0.91); and higher in patients with treatment failure of any type (91.9 vs 28.1 per 1000 person-years; HR, 2.83; 95% CI, 1.38-5.80). Sensitivity analyses showed similar results. Conclusions Among patients in Africa and Asia receiving second-line therapy for HIV, treatment failure was associated with low CD4 cell counts at second-line therapy start, use of suboptimal second-line regimens, and poor adherence. Mortality was associated with diagnosed treatment failure.

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Abstr. The HIV epidemic continues to place a great burden on children, from loss of parents and income to severe disruptions of their homes and families. Underpinned by the understanding that a healthy family constitutes the foundation for a child's wellbeing, the importance of family-centred care and services for children is increasingly recognized. It is not enough to merely provide antiretrovirals: it is of pivotal importance that treatment and care for children are integrated into the broader context of family-support schemes. However, despite growing evidence of the benefits of family-centred services, reforms in favour of family oriented HIV interventions have been slow to emerge. Treatment, prevention and care interventions often target individuals, and not families and communities. For the first time, this supplement to the Journal of the International AIDS Society brings together in one place the rationale for family-centred services for children affected by HIV and AIDS and some of the available evidence for the effectiveness of doing so. We hope this constitutes a beginning of what could be a groundswell of interest in family-centred services for children affected by HIV and AIDS.

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Abstr. Background: Expanded access to combination antiretroviral therapy (ART) in resource-poor settings is dependent on task shifting from doctors to other health-care providers. We compared outcomes of nurse versus doctor management of ART care for HIV-infected patients. Methods: This randomised non-inferiority trial was undertaken at two South African primary-care clinics. HIV-positive individuals with a CD4 cell count of less than 350 cells per μL or WHO stage 3 or 4 disease were randomly assigned to nurse-monitored or doctor-monitored ART care. Patients were randomly assigned by stratified permuted block randomisation, and neither the patients nor those analysing the data were masked to assignment. The primary objective was a composite endpoint of treatment-limiting events, incorporating mortality, viral failure, treatment-limiting toxic effects, and adherence to visit schedule. Analysis was by intention to treat. Non-inferiority of the nurse versus doctor group for cumulative treatment failure was prespecified as an upper 95% CI for the hazard ratio that was less than 1.40. This study is registered with ClinicalTrials.gov, number NCT00255840. Findings: 408 patients were assigned to doctor-monitored ART care and 404 to nurse-monitored ART care; all participants were analysed. 371 (46%) patients reached an endpoint of treatment failure: 192 (48%) in the nurse group and 179 (44%) in the doctor group. The hazard ratio for composite failure was 1.09 (95% CI 0.89-1.33), which was within the limits for non-inferiority. After a median follow-up of 120 weeks (IQR 60-144), deaths (ten vs 11), virological failures (44 vs 39), toxicity failures (68 vs 66), and programme losses (70 vs 63) were similar in nurse and doctor groups, respectively. Interpretation: Nurse-monitored ART is non-inferior to doctor-monitored therapy. Findings from this study lend support to task shifting to appropriately trained nurses for monitoring of ART.

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Abstr. Background: For adults with human immunodeficiency virus (HIV) infection who have CD4+ T-cell counts that are greater than 200 and less than 350 per cubic millimeter and who live in areas with limited resources, the optimal time to initiate antiretroviral therapy remains uncertain. Methods: We conducted a randomized, open-label trial of early initiation of antiretroviral therapy, as compared with the standard timing for initiation of therapy, among HIV-infected adults in Haiti who had a confirmed CD4+ T-cell count that was greater than 200 and less than 350 per cubic millimeter at baseline and no history of an acquired immunodeficiency syndrome (AIDS) illness. The primary study end point was survival. The early-treatment group began taking zidovudine, lamivudine, and efavirenz therapy within 2 weeks after enrollment. The standard-treatment group started the same regimen of antiretroviral therapy when their CD4+ T-cell count fell to 200 per cubic millimeter or less or when clinical AIDS developed. Participants in both groups underwent monthly follow-up assessments and received isoniazid and trimethoprim-sulfamethoxazole prophylaxis with nutritional support. Results: Between 2005 and 2008, a total of 816 participants -- 408 per group -- were enrolled and were followed for a median of 21 months. The CD4+ T-cell count at enrollment was approximately 280 per cubic millimeter in both groups. There were 23 deaths in the standard-treatment group, as compared with 6 in the early-treatment group (hazard ratio with standard treatment, 4.0; 95% confidence interval [CI], 1.6 to 9.8; P=0.001). There were 36 incident cases of tuberculosis in the standard-treatment group, as compared with 18 in the early-treatment group (hazard ratio, 2.0; 95% CI, 1.2 to 3.6; P=0.01). Conclusions: Early initiation of antiretroviral therapy decreased the rates of death and incident tuberculosis. Access to antiretroviral therapy should be expanded to include all HIV-infected adults who have CD4+ T-cell counts of less than 350 per cubic millimeter, including those who live in areas with limited resources. (ClinicalTrials.gov number, NCT00120510.).

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**Abstr.** OBJECTIVE To investigate highly active antiretroviral therapy (HAART) initiation among pregnant women and the optimum model of service delivery for integrating HAART services into antenatal care. METHODS We analysed clinic records to reconstruct a cohort of all HIV-infected pregnant women eligible for HAART at four antenatal clinics representing three service delivery models in Cape Town, South Africa. To assess HAART coverage, records of women determined to be eligible for HAART in pregnancy were reviewed at corresponding HIV treatment services. RESULTS Of 13 208 pregnant women tested for HIV, 26% were HIV-infected and 15% were HAART-eligible based on a CD4 cell count of <= 200 cells/μl. Among eligible women, 51% initiated HAART before delivery, 27% received another prevention of mother-to-child transmission (PMTCT) intervention and 22% did not receive any antiretroviral intervention before delivery. The proportions of women initiating HAART between the different service delivery models were comparable. The median gestational age at first presentation was 26 weeks, and early gestational age at first presentation was the strongest predictor of being on HAART by delivery. Of the women who did not initiate HAART in pregnancy, 24% started treatment within 2 years postpartum. CONCLUSIONS In this setting with clear PMTCT and HAART protocols, services failed to prioritize and initiate a high proportion of eligible pregnant women on HAART. The initiation of HAART in pregnancy requires strengthened antenatal and HIV services that target women with advanced stage disease.

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**Abstr.** Context Few studies have objectively evaluated the coverage of services to prevent transmission of human immunodeficiency virus (HIV) from mother to child. Objective To measure the coverage of services to prevent mother-to-child HIV transmission in 4 African countries. Design, Setting, and Patients Cross-sectional surveillance study of mother-infant pairs using umbilical cord blood samples collected between June 10, 2007, and October 30, 2008, from 43 randomly selected facilities (grouped as 25 service clusters) providing delivery services in Cameroon, Cote d’Ivoire, South Africa, and Zambia. All sites used at least single-dose nevirapine to prevent mother-to-child HIV transmission and some sites used additional prophylaxis drugs. Main Outcome Measurement nevirapine coverage, defined as the proportion of HIV-exposed infants in the sample with both maternal nevirapine ingestion (confirmed by cord blood chromatography) and infant nevirapine ingestion (confirmed by direct observation). Results A total of 27 893 cord blood specimens were tested, of which 3324 were HIV seropositive (12%). Complete data for cord blood nevirapine results were available on 3196 HIV-seropositive mother-infant pairs. Nevirapine coverage varied significantly by site (range: 0%-82%). Adjusted for country, the overall coverage estimate was 51% (95% confidence interval [CI], 49%-53%). In multivariable analysis, failed coverage of nevirapine-based services was significantly associated with maternal age younger than 20 years (adjusted odds ratio [AOR], 1.44; 95% CI, 1.18-1.76) and maternal age between 20 and 25 years (AOR, 1.28; 95% CI, 1.07-1.54) vs maternal age of older than 30 years; 1 or fewer antenatal care visits (AOR, 2.91; 95% CI, 2.40-3.54), 2 or 3 antenatal care visits (AOR, 1.93; 95% CI, 1.60-2.33), and 4 or 5 antenatal care visits (AOR, 1.56; 95% CI, 1.34-1.80) vs 6 or more antenatal care visits; vaginal delivery (AOR, 1.22; 95% CI, 1.03-1.44) vs cesarean delivery; and infant birth weight of less than 2500 g (AOR, 1.34; 95% CI, 1.11-1.62) vs birth weight of 3500 g or greater. Conclusion In this random sampling of sites with services to prevent mother-to-child HIV transmission, only 51% of HIV-exposed infants received the minimal regimen of single-dose nevirapine.

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Abstr. Objectives: To document regional and global trends for patients retained on antiretroviral therapy (ART) 12-48 months after treatment initiation, in low-income and middle-income countries. Methods: Data reported by national programs to WHO/UNICEF/UNAIDS in 2008 were aggregated to produce regional and global estimates. The proportion of patients on ART at 12, 24, 36, and 48 months is derived from cohort monitoring systems in ART dispensing facilities. Results: Of 149 countries, 70 (47%) reported on retention at 12 months, 54 (36%) at 24 months, 38 (26%) at 36 months, and 30 (20%) at 48 months. Regional and global trends showed that the majority of attrition from ART programs occurred within the first year and declined thereafter. Among countries in sub-Saharan Africa, retention on ART was estimated at 75.2% at 12 months, 66.8% at 24 months, and remained at a similar level up to 48 months. Conclusions: After high attrition in the first year, retention on ART tends to stabilize. In the literature, attrition in the first year was related to early mortality. Earlier presentation for diagnosis of HIV infection, timely screening, and access to ART are fundamental to reduce it. Countries need support in reporting on outcomes on ART.

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Abstr. Context Recent data regarding the consequences of untreated human immunodeficiency virus (HIV) infection and the expansion of treatment choices for antiretroviral-naive and antiretroviral-experienced patients warrant an update of the International AIDS Society-USA guidelines for the use of antiretroviral therapy in adults with HIV infection. Objectives To provide updated recommendations for management of HIV-infected adults, using antiretroviral drugs and laboratory monitoring tools available in the international, developed-world setting. This report provides guidelines for when to initiate antiretroviral therapy, selection of appropriate initial regimens, patient monitoring, when to change therapy, and what regimens to use when changing. Data Sources and Study Selection A panel with expertise in HIV research and clinical care reviewed relevant data published or presented at selected scientific conferences since the last panel report through April 2010. Data were identified through a PubMed search, review of scientific conference abstracts, and requests to antiretroviral drug manufacturers for updated clinical trials and adverse event data. Data Extraction and Synthesis New evidence was reviewed by the panel. Recommendations were drafted by section writing committees and reviewed and edited by the entire panel. The quality and strength of the evidence were rated and recommendations were made by full panel consensus. Conclusions Patient readiness for treatment should be confirmed before initiation of antiretroviral treatment. Therapy is recommended for asymptomatic patients with a CD4 cell count <= 500/mu L, for all symptomatic patients, and those with specific conditions and comorbidities. Therapy should be considered for asymptomatic patients with CD4 cell count >500/mu L. Components of the initial and subsequent regimens must be individualized, particularly in the context of concurrent conditions. Patients receiving antiretroviral treatment should be monitored regularly; treatment failure should be detected and managed early, with the goal of therapy, even in heavily pretreated patients, being HIV-1 RNA suppression below commercially available assay quantification limits.

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**Abstr.** Background: Among children, early mortality following highly active antiretroviral therapy (HAART) remains high. It is important to define correlates of mortality in order to improve outcome. Methods: HIV-1-infected children aged 18 months-12 years were followed up at Kenyatta National Hospital, Nairobi after initiating NNRTI-based HAART. Cofactors for mortality were determined using multivariate Cox regression models. Results: Between August 2004 and November 2008, 149 children were initiated on HAART of whom 135 were followed for a total of 238 child-years (median 21 months) after HAART initiation. Baseline median CD4% was 6.8% and median HIV-1-RNA was 5.98-log(10) copies/ml. Twenty children (13.4%) died at a median of 35 days post-HAART initiation. Mortality during the entire follow-up period was 8.4 deaths per 100 child-years (46 deaths/100 child-years in first 4 months and 1.0 deaths/100 child-years after 4 months post-HAART initiation). On univariate Cox regression, baseline hemoglobin (Hb) < 9 g/dl, weight-for-height z-score (WHZ) < -2, and WHO clinical stage 4 were associated with increased risk of death (Hb < 9 g/dl HR 3.00 [95% C.I. 1.21-7.39], p = 0.02, WHZ < -2 HR 3.41 [95% C.I. 1.28-9.08], p = 0.01, and WHO clinical stage 4, HR 3.08 [1.17-8.12], p = 0.02). On multivariate analysis Hb < 9 g/dl remained predictive of mortality after controlling for age, baseline CD4%, WHO clinical stage and weight-for-height z-score (HR 2.95 [95% C. I. 1.04-8.35] p = 0.04). Conclusion: High early mortality was observed in this cohort of Kenyan children receiving HAART, and low baseline hemoglobin was an independent risk factor for death.

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**Abstr.** Background: The prevalence and clinical course of pulmonary cryptococcosis in Sub-Saharan Africa are not well described. Methods: Consecutive HIV-infected adults hospitalized at Mulago Hospital (Kampala, Uganda) between September 2007 and July 2008 with cough >= 2 weeks were enrolled. Patients with negative sputum smears for acid-fast bacilli were referred for bronchoscopy with bronchoalveolar lavage (BAL). BAL fluid was examined for mycobacteria, Pneumocystis jirovecii, and fungi. Patients were followed 2 and 6 months after hospital discharge. Results: Of 407 patients enrolled, 132 (32%) underwent bronchoscopy. Of 132 BAL fungal cultures, 15 (11%) grew Cryptococcus neoformans. None of the patients were suspected to have pulmonary cryptococcosis on admission. The median CD4 count among those with pulmonary cryptococcosis was 23 cells per microliter (interquartile range = 7-51). Of 13 patients who completed 6-month follow-up, 4 died and 9 were improved, including 5 who had started antiretroviral therapy but had not received antifungal medication. Conclusions: Pulmonary cryptococcosis is common in HIV-infected tuberculosis suspects in Uganda. Early initiation of antiretroviral therapy in those with isolated pulmonary infection may improve outcomes, even without antifungal therapy. This finding suggests that some HIV-infected patients with C. neoformans isolated from respiratory samples may have colonization or localized infection.

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