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## HIV Care & PMTCT in Resource-Limited Settings

Monthly Intelligence Report

2006, Vol 2, Issue 1

[Available on line](#)

prepared by the Bordeaux Working Group

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**Number of citations selected for this issue: 17**

**Citation format** (by alphabetical order of the authors): Author(s). **Title**. Source. **Abstr.** (Authors' abstract) or **Notes** (prepared by the Bordeaux Working Group) **Author address**, if available, **Free full text**, if available

Bautista Arredondo S, Mane A, Bertozzi SA. **Economic impact of antiretroviral therapy prescription decisions in the context of rapid scaling-up of access to treatment: lessons from Mexico.** *AIDS* 2006;20(1):101-109.

**Abstr.** Background: Mexico started scaling-up access to antiretroviral treatment in the late 1990s. Even though the Mexican Health System enrolled patients at impressive speed, in the initial years important aspects of the quality of care were overlooked. Objective: To describe antiretroviral prescribing and adherence practices in Mexico during initial scaling-up of antiretroviral treatment in comparison to national treatment guidelines and to estimate the associated economic cost. Methods: Eleven public sector hospitals provided detailed patient chart data. Monthly observations formed the basis of scenarios aligned by calendar month and by month before and after initiation of triple therapy. The scenarios varied by extent of prescription refill, adherence levels, and compliance with national treatment guidelines. Results: Antiretroviral therapy prescription practices were largely inconsistent with published guidelines. Non-recommended combinations were prescribed to between 54 and 79% patients-months per year. Additionally, more than 50% of patients experienced four to 13 changes in treatment. Modeling of the economic impact of treatment practices showed that it would have been possible to effectively treat the same number of patients at the same or lower cost per patient. Conclusions: In addition to dispensing drugs, countries scaling-up antiretroviral therapy must find ways to ensure consistent drug supply, appropriate prescription practices and effective levels of adherence. Failing to do so will seriously reduce treatment effectiveness, greatly increasing the cost per unit of health benefit. With very low levels of effective adherence patients may even be harmed and the spread of multidrug resistant virus facilitated.

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Becquet R, Ekouevi DK, Viho I, Sakarovitch C, Toure H, Castetbon K, Coulibaly N, Timite Konan M, Bequet L, Dabis F, Leroy V. **Acceptability of exclusive breast-feeding with early cessation to prevent HIV transmission through breast milk, ANRS 1201/1202 Ditrane Plus, Abidjan, Cote d'Ivoire.** *Journal of Acquired Immune Deficiency Syndromes* 2005;40(5):600-608.

**Abstr.** Objective: We assessed the uptake of a nutritional intervention promoting exclusive breast-feeding with early cessation between 3 and 4 months of age to reduce postnatal transmission of HIV in Abidjan, Cote d'Ivoire. Design: Between March 2001 and March 2003, HIV-infected pregnant women who had received perinatal antiretroviral prophylaxis were systematically offered prenatally 2 infant feeding interventions: artificial feeding or exclusive breast-feeding during 3 months and then early cessation of breast-feeding. Mother-infant pairs were closely followed for a period of 2 years, with continuous nutritional Counseling and detailed collection of feeding practices. Results: Among the 557 mothers enrolled. 262 (47%) initiated breastfeeding. Of these women.. the probability of practicing exclusive breastfeeding from birth was 18% and 10% at 1 and 3 months of age, respectively. Complete cessation of breast-feeding was obtained in 45% and 63% by 4 and 6 months of age, respectively. Environmental factors such as living with a partner's family were associated with failure to initiate early cessation of breast-feeding. Conclusions: Acceptability of exclusive breast-feeding was low in this urban population. Shortening the duration of breast-feeding seemed to be feasible, however. Further investigations are ongoing to evaluate the safety and effectiveness of this intervention in reducing breast milk HIV transmission.

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Bunnell R, Ekwaru JP, Solberg P, Wamai N, Bikaako Kajura W, Were W, Coutinho A, Liechty C, Madraa E, Rutherford G, Mermin J. **Changes in sexual behavior and risk of HIV transmission after antiretroviral therapy and prevention interventions in rural Uganda.** *AIDS* 2006;20(1):85-92.

**Abstr.** Background: The impact of antiretroviral therapy (ART) on sexual risk behavior and HIV transmission among HIV-infected persons in Africa is unknown. Objective: To assess changes in risky sexual behavior and estimated HIV transmission from HIV-infected adults after 6 months of ART. Design and methods: A prospective cohort study was performed in rural Uganda. Between May 2003 and December 2004 a total of 926 HIV-infected adults were enrolled and followed in a home-based ART program that included prevention counselling, voluntary counseling and testing (VCT) for cohabitating partners and condom provision. At baseline and follow-up, participants' HIV plasma viral load and partner-specific sexual behaviors were assessed. Risky sex was defined as inconsistent or no condom use with partners of HIV-negative or unknown serostatus in the previous 3 months. The rates of risky sex were compared using a Poisson regression model and transmission risk per partner was estimated, based on established viral load-specific transmission rates. Results: Six months after initiating ART, risky sexual behavior reduced by 70% [adjusted risk ratio, 0.3; 95% confidence interval (CI), 0.2-0.7; P=0.0017]. Over 85% of risky sexual acts occurred within married couples. At baseline, median viral load among those reporting risky sex was 122 500 copies/ml, and at follow-up, < 50 copies/ml. Estimated risk of HIV transmission from cohort members declined by 98%, from 45.7 to 0.9 per 1000 person years. Conclusions: Providing ART, prevention counseling, and partner VCT was associated with reduced sexual risk behavior and

estimated risk of HIV transmission among HIV-infected Ugandan adults during the first 6 months of therapy. integrated ART and prevention programs may reduce HIV transmission in Africa

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Campos DP, Ribeiro SR, Grinsztejn B, Veloso VG, Valente JG, Bastos FI, Morgado MG, Gadelha AJ. **Survival of AIDS patients using two case definitions, Rio de Janeiro, Brazil, 1986-2003.** AIDS 2005;19 Suppl. 4:S22-S26.

**Abstr.** Background: Recent studies have shown substantial increases in the survival of AIDS patients in developed countries and in Brazil as a result of antiretroviral therapy (ART) and prophylaxis for opportunistic infections. This study compares survival rates using the Brazilian Ministry of Health 2004 and Centers for Disease Control and Prevention (CDC) 1993 case definitions in a large HIV/AIDS referral centre in Rio de Janeiro. Methods: Survival after AIDS diagnosis was assessed in a clinic-based cohort of 1415 individuals using the Kaplan-Meier method and Cox proportional hazards models. Results: There were 393 (88%) deaths from AIDS-related causes and 52 (12%) from unrelated or unknown causes. A total of 205 patients (14%) were lost to follow-up and 765 patients (55%) remained alive until the end of the study. Three-quarters of patients (75%) were still alive 22 months [95% confidence interval (CI) 19-26] after the AIDS diagnosis according to the CDC case definition and 31 months (95% CI 26-36) according to the Ministry of Health case definition. Independent predictors of survival included AIDS defined by CD4 cell count and any use of highly active antiretroviral therapy, with either case definition, and initial stage of the case, with the Ministry of Health case definition. Conclusion: Survival observed in this reference centre is comparable or longer than other international studies, although the choice of case definition criterion influenced findings. Adoption of the Ministry of Health case definition may enhance the ability to track the use of and outcomes from ART among AIDS patients

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Fischer A, Karasi JC, Kibibi D, Omes C, Lambert C, Uwayitu A, Hemmer R, Van Den Ende J, Schmit JC, Arendt V. **Antiviral efficacy and resistance in patients on antiretroviral therapy in Kigali, Rwanda: the real-life situation in 2002.** HIV Medicine 2006;7(1):64-66.

**Abstr.** Our study aimed to complete the published data on ARV therapy in Africa by describing the baseline situation in Rwanda before the launch of a large ARV programme (ESTHER). Prescription habits, frequency and reasons for treatment interruptions but also antiviral efficacy, resistance to ARVs and genotypic variability of the viruses present in Rwanda were analysed. Among the 233 patients included in the study, it appeared that a vast majority (91%) were under triple therapy and that half of them had experienced at least one treatment interruption caused mainly by drug shortage or financial difficulties. Among 60 blood samples analysed, 26 were in virological failure with a viral load above 1000 RNA copies/ml and 11 presented major drug resistance mutations. Finally, virological failure could mainly be explained by the high frequency of treatment interruptions but also by the emergence of drug resistance mutations. Consequently the major objective for the ESTHER programme to improve the situation in Rwanda will be to reduce the drug shortage and facilitate the financial accessibility of the treatments.

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Girardi E, Sabin CA, d'Arminio Monforte A, Bob Hogg B, Phillips AN, Gill MJ, Dabis F, Reiss P, Kirk O, Bernasconi E, Grabar S, Justice A, Staszewski S, Fätkenheuer G, Sterne J, The Antiretroviral Therapy Cohort Collaboration. **Incidence of tuberculosis among HIV-infected patients receiving highly active antiretroviral therapy in Europe and North America.** Clinical Infectious Diseases 2005;41(12):1772-1782.

**Abstr.** Background. We obtained estimates of the incidence of tuberculosis (TB) among patients receiving HAART and identified determinants of the incidence. Methods. We analyzed the incidence of TB during the first 3 years after initiation of HAART among 17,142 treatment-naïve, AIDS-free persons starting HAART who were enrolled in 12 cohorts from Europe and North America. We used univariable and multivariable Poisson regression models to identify factors associated with the incidence. Results. During the first 3 years (36,906 person-years), 173 patients developed TB (incidence, 4.69 cases per 1000 person-years). In multivariable analysis, the incidence rate was lower for men who have sex with men, compared with injection drug users (relative rate, 2.46; 95% confidence interval [CI], 1.51-4.01), heterosexuals (relative rate, 2.42; 95% CI, 1.64-3.59), those with other suspected modes of transmission (relative rate, 1.66; 95% CI, 0.91-3.06), and those with a higher CD4(+) count at the time of HAART initiation (relative rate per log(2) cells/mL, 0.87; 95% CI, 0.84-0.91). During 28,846 person-years of follow-up after the first 6 months of HAART, 88 patients developed TB (incidence, 3.1 cases per 1000 person-years of follow-up). In multivariable analyses, a low baseline CD4(+) count (relative rate per log(2) cells/mL, 0.89; 95% CI, 0.83-0.96), 6-month CD4(+) count (relative rate per log(2) cells/mL, 0.90; 95% CI, 0.81-0.99), and a 6-month HIV RNA level 1400 copies/mL (relative rate, 2.21; 95% CI, 1.33-3.67) were significantly associated with the risk of acquiring TB after 6 months of HAART. Conclusion.

The level of immunodeficiency at which HAART is initiated and the response to HAART are important determinants of the risk of TB. However, this risk remains appreciable even among those with a good response to HAART, suggesting that other interventions may be needed to control the TB epidemic in the HIV-infected population.

**See below the editorial commentary by Lawn and Wood**

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Joao EC, Calvet GA, Menezes JA, MM DI, Cruz MLS, Salgado LAT, Matos HJ. **Nevirapine toxicity in a cohort of HIV-1-infected pregnant women.** American Journal of Obstetrics and Gynecology 2006;194(1):199-202.

**Abstr.** Objective: The purpose of this study was to complete an evaluation of nevirapine (NVP) toxicity in a cohort of HIV+ pregnant women. Study design: This was a retrospective study of 611 women followed from January 1996 to December 2003. All women who used NVP for >7 days were included. Multivariate logistic regression was used to test independent association of CD4 and hepatitis C virus (HCV) infection related to the outcome of toxic effects of NVP. Results: One hundred ninety-seven women were exposed to NVP for > 7 days, and toxicity occurred in 11 (5.6%), leading to drug discontinuation in 7 patients. One case of Stevens-Johnson syndrome Occurred. NO Serious liver toxicity occurred except for I grade 4 cholestasis. Median CD4 was 344 in women without toxicities and 298 in women with toxicities. HCV was the only significant factor associated to toxicity by logistic regression (odds ratio [OR] 15.61, P =.001). Conclusion: NVP toxicities occurred in a very small fraction of patients and were not associated with fatalities

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Kouliniska IN, Villamor E, Chaplin B, Msamanga G, Fawzi W, Renjifo B, Essex M. **Transmission of cell-free and cell-associated HIV-1 through breast-feeding.** Journal of Acquired Immune Deficiency Syndromes 2006;41(1):93-99.

**Abstr.** Background: Transmission through breast-feeding is an important cause of infant HIV-1 infections in developing countries; however, its mechanism remains largely unknown. We have explored the association between cell-free virus (CFV) and cell-associated virus (CAV) levels in breast milk (BM), as reflected by viral RNA and proviral DNA, respectively, and the risk of infant HIV-1 infection after 6 weeks postpartum. Methods: Sixty-one HIV-positive mothers who transmitted HIV-1 by BM were matched to 61 HIV-positive nontransmitting mothers based on their infant's age at sample collection. CFV and CAV were quantified in a single milk specimen per mother preceding the infant's first HIV-positive result. Results: After adjusting for maternal CD4(+) cell Counts and disease stage, each 10-fold increase in CFV or CAV load was associated with an almost 3-fold increase in BM transmission. Whereas CAV load was predictive of transmission before and after 9 months postpartum, CFV was a significant predictor of transmission Occurring only after 9 months. Phylogenetic analyses of the C2 to C5 env region showed that 85% of infants (11 of 13 infants) harboring viruses that Clustered with CFV in their mother's milk were infected after 9 months postpartum. Conclusion: A reduction in milk CAV and CFV loads might significantly decrease HIV-1 transmission by breast-feeding.

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Kumarasamy N, Vallabhaneni S, Cecelia AJ, Yepthomi T, Balakrishnan L, Saghayam S, Flanigan TP, Carpenter CCJ, Solomon S, Mayer KH. **Reasons for modification of generic highly active antiretroviral therapeutic regimens among patients in southern India** Journal of Acquired Immune Deficiency Syndromes 2006;41(1):53-58.

**Abstr.** To describe reasons for modification and discontinuation of antiretroviral regimens in association with adverse events (AEs), treatment failure, and cost among patients in Southern India. Methods: Secular trends of patients initiating highly active antiretroviral therapy (HAART) between January 1996 and October 2004 at a tertiary HIV referral center in India were analyzed using a previously validated natural history database. Results: All previously antiretroviral therapy-naive patients who initiated HAART (N = 1443) and had at least 1 follow-up visit were evaluated. The median CD4 Count at the time of initiating HAART was 108 cells/mm<sup>3</sup>. The most common first-line regimens were stavudine (d4T) Plus lamivudine (3TC) plus nevirapine (NVP) (63%), zidovudine (AZT) plus 3TC plus NVP (19%), d4T plus 3TC plus efavirenz (EFV) (9%), and AZT Plus 3TC Plus EFV (4%). Twenty percent of patients modified their first-line regimen. The most common reason for modifying therapy was the development of all AE (64%), followed by cost (19%) and treatment failure (14%), with median times to modify therapy being 40, 151, and 406 (days, respectively). Common AEs were itching and/or skin rash (66%), hepatotoxicity (27%), and anemia (23%). Nine percent of patients discontinued therapy entirely after a

median duration of 124 days, primarily because of cost (64%). Conclusion: The most common reason for modifying therapy was the occurrence of AEs, whereas cost was the most common reason for discontinuing therapy. Despite increasing access to lower cost generic HAART in India, even less expensive and more tolerable first-line regimens and cost-effective treatment monitoring tools need to be introduced to achieve better treatment outcomes and access in resource-constrained settings.

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Lawn SD, Wood R. **Incidence of tuberculosis during highly active antiretroviral therapy in high-income and low-income countries.** [Editorial commentary]. *Clinical Infectious Diseases* 2005;41(12):1783-1786.

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Murray J, Sonnenberg P, Nelson G, Shearer S, Bester A, Begley A, Glynn JR. **Effect of HIV on work-related injury rates in South African gold miners.** *AIDS* 2005;19(17):2019-2024.

**Abstr.** Objective: Work-related injuries have severe, well-documented economic and social impacts, and injury is a leading cause of death in working adults. As adults of working age are one of the groups most affected by the HIV epidemic, the interaction between work-related injuries and HIV is important. The objective was to calculate the effect of HIV on the rate and severity of work-related injuries by duration of infection. Design and methods: A large, retrospective seroincident cohort of South African gold miners was studied. Data routinely collected by the mines, and assurance company injury data were analysed. HIV-positive and negative miners were compared, allowing the calculation of injury rates and rate ratios. Severity of injuries was measured by the number of days away from work, percentage of permanent disability, and fatalities. Results: Results were available for 1661 HIV-positive and 6166 HIV-negative miners over 10 years. HIV infection increased the rate of work-related injuries overall (adjusted rate ratio, 1.3; 95% confidence interval, 1.1-1.4), but had less effect on severe injuries. Injury rates in HIV-positive men prior to the first positive test were similar to those in HIV-negative men. The injury rate rose soon after the first HIV positive test. After seroconversion there was only weak evidence of an increase in injury rates by duration of infection. Conclusion: This is the first study to demonstrate an increase in injury rates in HIV-positive individuals. The increase may reflect direct effects of HIV infection as well as behaviour change once HIV is diagnosed

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Ntsekhe M, Hakim J. **Impact of human immunodeficiency virus infection on cardiovascular disease in Africa.** *Circulation* 2005;112(23):3602-3607.

**Abstr.** Background - Human immunodeficiency virus (HIV) infection is the single greatest health challenge facing Africa today. However, the impact of the HIV epidemic on the cardiovascular system in Africans has received scant attention in the world literature. Methods and Results - We searched MEDLINE (January 1, 1980, to December 31, 2004) and reference lists of literature on HIV and the heart in Africa and contacted experts in the field. The search for this review yielded 22 articles involving HIV and the cardiovascular system from 8 countries in Africa. Conclusions - The available information suggests that there are unique features in the etiology, presentation, and spectrum of HIV-associated cardiovascular disorders in people living in Africa. First, pericardial disease may be the initial manifestation of HIV infection in the early stages of the illness. Second, the etiology of cardiac disease tends to reflect the prevalent infectious diseases, such as tuberculosis. Third, unique cardiovascular disorders such as aneurysm of large vessels have been reported in association with HIV infection in several parts of Africa. Finally, the HIV/AIDS pandemic has put pressure on the meager healthcare resources and fragile infrastructure in many African countries, making the diagnosis and treatment of heart disease unrelated to HIV even more difficult.

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Schneider MF, Gange SJ, Williams CM, Anastos K, Greenblatt RM, Kingsley L, Detels R, Munoz A. **Patterns of the hazard of death after AIDS through the evolution of antiretroviral therapy: 1984-2004.** *AIDS* 2005;19(17):2009-2018.

**Abstr.** Objective: To characterize changing survival patterns after development of clinical AIDS from 1984 to 2004, when different antiretroviral therapies were being introduced. Design: Cohort of homosexual men since 1984 and cohort of women since 1994. Methods: A total of 1504 men and 461 women were followed for all-cause mortality after an incident AIDS diagnosis. Relative hazards of death and relative times to death were determined in five therapy eras: no/monotherapy (July 1984-December 1989), monotherapy/combotherapy

(January 1990-December 1994), HAART introduction (January 1995-June 1998), short-term stable HAART use (July 1998-June 2001), and moderate-term stable HAART use (July 2001 -December 2003). Results: A total of 1057 (54%) study participants died. The time at which 25% of individuals died after an AIDS diagnosis increased significantly from 0.56 years [95% confidence interval (CI), 0.50-0.64] in the no/monotherapy era to 0.74 (95% CI, 0.67-0.82), 1.78 (95% CI, 1.29-2.44), 4.22 (95% CI, 2.94-6.05) and 5.08 years (95% CI, 2.39-10.79) in the four subsequent therapy eras, respectively. Inferences on the beneficial effects of HAART were confirmed after adjustment by age, sex, type of AIDS diagnosis and CD4 cell count at diagnosis. The pattern of the hazard of death after AIDS changed from increasing in the pre-HAART era to being lower and non-increasing in the eras of HAART. Conclusions: The sustained beneficial effect of HAART, even in individuals with clinical AIDS and extensive treatment histories, attenuates concerns about emergence of resistance but augurs that a substantial number of HIV-infected individuals may require care for very long periods

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Spacek LA, Shihab HM, Kanya MR, Mwesigire D, Ronald A, Mayanja H, Moore RD, Bates M, Quinn TC. **Response to antiretroviral therapy in HIV-infected patients attending a public, urban clinic in Kampala, Uganda.** *Clinical Infectious Diseases* 2006;42(2):252-259.

**Abstr.** Background. Access to antiretroviral therapy and human immunodeficiency virus (HIV) care is increasing in resource-limited settings. We evaluated clinical, behavioral, and demographic risk factors associated with virologic suppression in a public, urban clinic in Kampala, Uganda. Methods. We conducted a cross-sectional, observational study of 137 HIV-infected patients who were receiving antiretroviral therapy at the infectious diseases clinic at Mulago Hospital (Kampala). We measured the prevalence of viral suppression, evaluated risk factors associated with virologic failure, and documented phenotypic resistance patterns and genotypic mutations. Results. A total of 91 (66%) of 137 participants had an undetectable viral load (< 400 copies/mL) after a median duration of 38 weeks (interquartile range, 24-62 weeks) of antiretroviral therapy. Median CD4 cell count was 163 cells/mm<sup>3</sup> (interquartile range, 95-260 cells/mm<sup>3</sup>). The majority of the patients (91%) were treated with nonnucleoside reverse-transcriptase inhibitor-based 3-drug regimens. In multivariate analysis, treatment with the first antiretroviral regimen was associated with viral suppression (odds ratio, 2.6; 95% confidence interval, 1.1-6.1). In contrast, a history of unplanned treatment interruption was associated with virologic treatment failure (odds ratio, 0.2; 95% confidence interval, 0.1-0.6). Of 124 participants treated with nonnucleoside reverse-transcriptase inhibitors, 27 (22%) were documented to have experienced virologic treatment failure. The most common mutation detected was K103N (found in 14 of 27 patients with virologic treatment failure). Conclusions. Although many HIV-infected people treated in Kampala, Uganda, have advanced HIV disease, the majority of patients who received antiretroviral therapy experienced viral suppression and clinical benefit. Because of the frequent use of nonnucleoside reverse-transcriptase inhibitor-based therapy, the majority of resistance was against this drug class. In resource-limited settings, initiation of therapy with a potent, durable regimen, accompanied by stable drug supplies, will optimize the likelihood of viral suppression.

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Suy A, Martinez E, Coll Q, Lonca M, Palacio M, de Lazzari E, Larrousse M, Milinkovic A, Hernandez S, Blanco JL, Mallolas J, Leon A, Vanrell JA, Gatell JM, Pisa S, Vidal R, Cararach V, Zamora L, Segarra M, Laguno M, Sued O, Biglia A, Garcia F, Miro AM. **Increased risk of pre-eclampsia and fetal death in HIV-infected pregnant women receiving highly active antiretroviral therapy.** *AIDS* 2006;20(1):59-66.

**Abstr.** Background: Pre-eclampsia and/or fetal death have increased sharply in HIV-infected pregnant women receiving HAART. Methods: The occurrence of pre-eclampsia or fetal death was analysed in women who delivered after at least 22 weeks of gestation for all women (January 2001 until July 2003) and for HIV-infected women (November 1985 until July 2003). Results: In 2001, 2002 and 2003, the rates per 1000 deliveries of pre-eclampsia and fetal death, respectively, remained stable in all pregnant women at 25.4, 31.9 and 27.7 (P = 0.48) and 4.8, 5.8, and 5.0 (P = 0.89) (n = 8768). In 1985-2000 (n = 390) to 2001 -2003 (n = 82), rates per 1000 deliveries in HIV-infected women rose from 0.0 to 109.8 (P < 0.001) for pre-eclampsia and from 7.7 to 61.0 (P < 0.001) for fetal death. In all pregnant women, factors associated with pre-eclampsia or fetal death were multiple gestation [adjusted odds ratio (OR) 3.6; 95% confidence interval (CI), 2.3-5.6; P < 0.001], HIV infection (adjusted OR, 4.9; 95% CI, 2.4-10.1; P < 0.001), multiparity (adjusted OR, 0.76; 95% CI, 0.58-0.98; P = 0.040) and tobacco smoking (adjusted OR, 0.65; 95% CI, 0.46-0.90; P = 0.010). The use of HAART prior to pregnancy (adjusted OR, 5.6; 95% CI, 1.7-18.1; P = 0.004) and tobacco smoking (adjusted OR, 0.183; 95% CI, 0.054-

0.627; P = 0.007) were risk factors in HIV-infected women. Conclusions: HIV infection treated with HAART prior to pregnancy was associated with a significantly higher risk for pre-eclampsia and fetal death.

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Tubiana R. **HIV management in Africa** Presse Medicale 2005;34 (20) Part 2:1597-1604.

**Abstr.** Africa is the continent hardest hit by the HIV pandemic with, according to the WHO for 2004, more than 25 million people infected. Although the mortality and socioeconomic consequences of HIV infection have been visible and predictable, only since 2000 has the catastrophic situation in Africa and other developing areas mobilized international political and medical attention, in view of the impressive results from antiretroviral treatments where they are accessible. The intolerable lack of access to medical care and effective treatments has engendered a fusion of energy and will - political and scientific, local and international - to make HIV treatment available in Africa. Access to treatment must be accompanied by creation of national public health programs and establishment of infrastructures and trained teams. Necessary steps including anticipation and prevention of pitfalls in the large-scale use of antiretrovirals, long-term planning, organization of supplies and distribution, ensuring the permanence of financial support, and making appropriate strategic choices. These steps are required to guarantee the future and to prevent an epidemic rebound due to drug-resistant HIV strains. The conditions of international economic and medical aid have been clarified and are now better adapted to real needs. Nonetheless large disparities still exist according to country and region. The initial results of cohorts of treated patients show results similar to those in the industrialized countries and provide encouragement about the future. Results in countries such as Uganda and Senegal show that local political involvement is primordial for long-term success. Access to antiretroviral drugs is an urgent and essential marker of comprehensive management, but the conditions of their use must be taken into account in assessing future projects if we want to change the course of HIV in Africa.

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Wools Kaloustian K, Kimaiyo S, Diero L, Siika A, Sidle J, Yiannoutsos CT, Musick B, Einterz R, Fife KH, Tierney WM. **Viability and effectiveness of large-scale HIV treatment initiatives in sub-Saharan Africa: experience from western Kenya.** AIDS 2006;20(1):41-48.

**Abstr.** Objectives: To determine the clinical and immunological outcomes of a cohort of HIV-infected patients receiving antiretroviral therapy. Design: Retrospective study of prospectively collected data from consecutively enrolled adult HIV-infected patients in eight HIV clinics in western Kenya. Methods: CD4 cell counts, weight, mortality, loss to follow-up and adherence to antiretroviral therapy were collected for the 2059 HIV-positive non-pregnant adult patients treated with antiretroviral drugs between November 2001 and February 2005. Results: Median duration of follow-up after initiation of antiretroviral therapy was 40 weeks (95% confidence interval, 38-43); 111 patients (5.4%) were documented as deceased and 505 (24.5%) were lost to follow-up. Among 1766 (86%) evaluated for adherence to their antiretroviral regimen, 78% reported perfect adherence at every visit. Although patients with and without perfect adherence gained weight, patients with less than perfect adherence gained 1.04 kg less weight than those reporting perfect adherence (P= 0.059). CD4 cell counts increased by a mean of 109 cells/ $\mu$ l during the first 6 weeks of therapy and increased more slowly thereafter, resulting in overall CD4 cell count increases of 160, 225 and 297 cells/ $\mu$ l at 12, 24, and 36 months respectively. At 1 year, a mean increase of 170 cells/ $\mu$ l was seen among patients reporting perfect adherence compared with 123 cells/ $\mu$ l among those reporting some missed doses (P < 0.001). Conclusions: Antiretroviral treatment of adult Kenyans in this cohort resulted in significant and persistent clinical and immunological benefit. These findings document the viability and effectiveness of large-scale HIV treatment initiatives in resource-limited settings.

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