



**Recommendations for Use of Antiretroviral Drugs in Pregnant HIV-1-Infected Women for Maternal Health and Interventions to Reduce Perinatal HIV Transmission in the United States**

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## Perinatal Transmission of HIV and Maternal HIV RNA Copy Number (Last updated July 31, 2012; last reviewed July 31, 2012)

### Panel's Recommendation

- All HIV-infected pregnant women should be counseled about and administered antiretroviral drugs during pregnancy for prevention of perinatal transmission, regardless of their HIV RNA levels (**AI**).

**Rating of Recommendations:** A = Strong; B = Moderate; C = Optional

**Rating of Evidence:** I = One or more randomized trials with clinical outcomes and/or validated laboratory endpoints; II = One or more well-designed, nonrandomized trials or observational cohort studies with long-term clinical outcomes; III = Expert opinion

Mother-to-child transmission has been observed across the entire range of plasma HIV RNA levels.<sup>1,2</sup> HIV RNA levels correlate with risk of transmission even in women treated with antiretroviral (ARV) agents.<sup>3-5</sup> Although the risk of perinatal transmission in women with undetectable HIV RNA levels appears to be extremely low, transmission has been reported even in women with very low or undetectable levels of maternal HIV RNA **on antiretroviral therapy (ART)**.<sup>3-5</sup> Additionally, although HIV RNA may be an important risk factor for transmission, other factors also appear to play a role.<sup>6-8</sup>

Although there is a general correlation between viral loads in plasma and in the genital tract, **discordance between blood and genital tract virus has also been reported; low level cervico-vaginal HIV RNA and DNA shedding has been detected even in women treated with ART who have undetectable plasma viral load, particularly in the presence of genital tract coinfections.**<sup>9-11</sup> Penetration of ARV drugs into the female genital tract has been shown to vary between drugs.<sup>12-14</sup> If exposure to HIV in the maternal genital tract during delivery is a risk factor for perinatal transmission, plasma HIV RNA levels may not always be an accurate indicator of risk. Long-term changes in one body compartment with ARV drugs may or may not be associated with comparable changes in other compartments. Additional studies are needed to determine the effect of ARV drugs on genital tract viral load and the association between such effects and the risk of perinatal transmission of HIV.

Because transmission can occur even when HIV RNA copy numbers are low or undetectable, all HIV-infected women should be counseled about and administered ARV drugs during pregnancy, regardless of their HIV RNA levels.

## References

- Garcia PM, Kalish LA, Pitt J, et al. Maternal levels of plasma human immunodeficiency virus type 1 RNA and the risk of perinatal transmission. Women and Infants Transmission Study Group. *N Engl J Med*. Aug 5 1999;341(6):394-402. Available at <http://www.ncbi.nlm.nih.gov/pubmed/10432324>.
- Mofenson LM, Lambert JS, Stiehm ER, et al. Risk factors for perinatal transmission of human immunodeficiency virus type 1 in women treated with zidovudine. Pediatric AIDS Clinical Trials Group Study 185 Team. *N Engl J Med*. Aug 5 1999;341(6):385-393. Available at <http://www.ncbi.nlm.nih.gov/pubmed/10432323>.
- Warszawski J, Tubiana R, Le Chenadec J, et al. **Mother-to-child HIV transmission despite antiretroviral therapy in the ANRS French Perinatal Cohort.** *AIDS*. Jan 11 2008;22(2):289-299. Available at <http://www.ncbi.nlm.nih.gov/pubmed/18097232>.
- Tubiana R, Le Chenadec J, Rouzioux C, et al. Factors associated with mother-to-child transmission of HIV-1 despite a maternal viral load <500 copies/ml at delivery: a case-control study nested in the French perinatal cohort (EPF-ANRS CO1). *Clin Infect Dis*. Feb 15 2010;50(4):585-596. Available at <http://www.ncbi.nlm.nih.gov/pubmed/20070234>.

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5. European Collaborative Study. Mother-to-child transmission of HIV infection in the era of highly active antiretroviral therapy. *Clin Infect Dis*. Feb 1 2005;40(3):458-465. Available at <http://www.ncbi.nlm.nih.gov/pubmed/15668871>.
6. Maternal viral load and vertical transmission of HIV-1: an important factor but not the only one. The European Collaborative Study. *AIDS*. Jul 30 1999;13(11):1377-1385. Available at <http://www.ncbi.nlm.nih.gov/pubmed/10449292>.
7. Mock PA, Shaffer N, Bhadrakom C, et al. Maternal viral load and timing of mother-to-child HIV transmission, Bangkok, Thailand. Bangkok Collaborative Perinatal HIV Transmission Study Group. *AIDS*. Feb 25 1999;13(3):407-414. Available at <http://www.ncbi.nlm.nih.gov/pubmed/10199232>.
8. Shaffer N, Roongpisuthipong A, Siriwasin W, et al. Maternal virus load and perinatal human immunodeficiency virus type 1 subtype E transmission, Thailand. Bangkok Collaborative Perinatal HIV Transmission Study Group. *J Infect Dis*. Mar 1999;179(3):590-599. Available at <http://www.ncbi.nlm.nih.gov/pubmed/9952365>.
9. Launay O, Tod M, Tschope I, et al. Residual HIV-1 RNA and HIV-1 DNA production in the genital tract reservoir of women treated with HAART: the prospective ANRS EP24 GYNODYN study. *Antivir Ther*. 2011;16(6):843-852. Available at <http://www.ncbi.nlm.nih.gov/pubmed/21900716>.
10. Cu-Uvin S, DeLong AK, Venkatesh KK, et al. Genital tract HIV-1 RNA shedding among women with below detectable plasma viral load. *AIDS*. Oct 23 2010;24(16):2489-2497. Available at <http://www.ncbi.nlm.nih.gov/pubmed/20736815>.
11. Henning TR, Kissinger P, Lacour N, Meyaski-Schluter M, Clark R, Amedee AM. Elevated cervical white blood cell infiltrate is associated with genital HIV detection in a longitudinal cohort of antiretroviral therapy-adherent women. *J Infect Dis*. Nov 15 2010;202(10):1543-1552. Available at <http://www.ncbi.nlm.nih.gov/pubmed/20925530>.
12. Yeh RF, Rezk NL, Kashuba AD, et al. Genital tract, cord blood, and amniotic fluid exposures of seven antiretroviral drugs during and after pregnancy in human immunodeficiency virus type 1-infected women. *Antimicrob Agents Chemother*. Jun 2009;53(6):2367-2374. Available at <http://www.ncbi.nlm.nih.gov/pubmed/19307360>.
13. Dumond JB, Yeh RF, Patterson KB, et al. Antiretroviral drug exposure in the female genital tract: implications for oral pre- and post-exposure prophylaxis. *AIDS*. Sep 12 2007;21(14):1899-1907. Available at <http://www.ncbi.nlm.nih.gov/pubmed/17721097>.
14. Else LJ, Taylor S, Back DJ, Khoo SH. Pharmacokinetics of antiretroviral drugs in anatomical sanctuary sites: the male and female genital tract. *Antivir Ther*. 2011;16(8):1149-1167. Available at <http://www.ncbi.nlm.nih.gov/pubmed/22155899>.