Use of Antiretroviral Drugs to Prevent Perinatal HIV Transmission and Improve Health for Pregnant People

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Panel's Recommendations
• All pregnant people with HIV should initiate antiretroviral therapy (ART) as early in pregnancy as possible, regardless of their HIV RNA level or CD4 T lymphocyte count, to maximize their health and prevent perinatal HIV transmission and secondary sexual transmission (AI). • Persons with HIV initiating ART should receive the support necessary to achieve viral suppression to undetectable levels as rapidly as possible and maintain an HIV viral load that is below the limit of detection prior to conception, during pregnancy, postpartum, and throughout their lives (AII). (See Recommendations for Use of Antiretroviral Drugs During Pregnancy: Overview.) • Neonates should receive antiretroviral prophylaxis or presumptive HIV therapy appropriate to their risk of perinatal HIV acquisition (AI). (See Antiretroviral Management of Newborns with Perinatal HIV Exposure or HIV Infection.)
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*

All pregnant people with HIV should receive antiretroviral therapy (ART) early in pregnancy, preferably prior to conception, regardless of their viral load or CD4 T lymphocyte (CD4) cell count, to maximize their health and to prevent perinatal HIV transmission and secondary sexual transmission (see Recommendations for Use of Antiretroviral Drugs During Pregnancy: Overview). Antiretroviral (ARV) drugs are important for maintaining health before, during, and after pregnancy because they decrease the rate of HIV disease progression, reduce the risk of opportunistic diseases, and reduce the risk of death.[1] Use of an ARV regimen that successfully reduces plasma HIV RNA to undetectable levels substantially lowers the risk of vertical transmission of HIV to <1%, improves pregnancy outcomes, minimizes the need to consider elective cesarean delivery as an intervention to reduce the risk of transmission, and reduces the risk of ARV drug resistance.

ARV drugs reduce the risk of perinatal transmission of HIV in all pregnant people, regardless of their CD4 counts and HIV RNA levels, through several mechanisms. Antenatal drug administration decreases viral load in blood and genital secretions.[2-4] **Early and sustained control of HIV viral replication with a suppressed viral load at the time of delivery markedly reduces the risk of perinatal HIV transmission.** In the prospective multicenter French Perinatal Cohort, both viral load at delivery and the timing of ART initiation were independently associated with perinatal HIV transmission rate.[5] Among women treated at conception who had detectable viral load near delivery, transmission risk was 1.08% (95% confidence interval [CI], 0.49–2.04), but among women treated at conception with undetectable viral load near delivery, there were no infections in 5,482 infants (95% CI, 0.00–0.07).[6] Other studies have similarly found lack of early and sustained viremic control to be strongly associated with increased risk of perinatal HIV transmission.[7,8]

In addition, several studies have found that higher viral load during pregnancy is associated with adverse pregnancy outcomes, including preterm birth and pregnancy loss through miscarriage or stillbirth.[9,10] These data suggest that ideally, ART should be initiated and viral suppression should be achieved prior to conception. When not started prior to conception, **ART should be initiated as early as possible in pregnant people. Prompt initiation of ART is particularly important in pregnant people with acute HIV infection or who have high baseline viral loads.**[11-14]

Antenatal drug administration also provides infant pre-exposure prophylaxis (PrEP); this is important because viremia during pregnancy is not the only risk factor for perinatal HIV transmission and ART use during pregnancy reduces vertical transmission.[7,15-17] Infant PrEP is achieved by administering ARV drugs during pregnancy that cross the placenta and produce adequate drug levels that prevent HIV acquisition by inhibiting viral replication in the fetus. This is particularly important during the birth process, when there can be extensive viral exposure during passage through the birth canal. All *Preferred* nucleoside reverse transcriptase inhibitors—as well as integrase strand transfer inhibitors, such as dolutegravir and raltegravir—are known to have high transplacental passage (see Table 14. Antiretroviral Drug Use in Pregnant People with HIV: Pharmacokinetic and Toxicity Data in Human Pregnancy and Recommendations for Use in Pregnancy).[18-22]

ARV drugs administered to the infant after birth provide post-exposure prophylaxis by providing protection from cell-free or cell-associated virus that may have entered the fetal/infant systemic circulation during labor and delivery (see Antiretroviral Management of Newborns with Perinatal HIV Exposure or HIV Infection).[23] The importance of the pre- and post-exposure components of prophylaxis in reducing the risk of perinatal HIV transmission is demonstrated by the lower efficacy of interventions that involve administration of ARV drugs only during labor and/or as a single dose to the newborn compared to regimens that include postnatal infant antiretroviral medications.[24-31]

In conclusion, the most effective way to prevent perinatal transmission of HIV is (1) to begin ART as early as possible in pregnancy (ideally before conception) to achieve antepartum plasma viral load suppression as quickly as possible and to provide infant PrEP, (2) to maintain viral suppression throughout pregnancy, and (3) to provide infant ARV post-exposure prophylaxis or presumptive HIV therapy appropriate to their risk of HIV acquisition to reduce the risk of peri-partum transmission. Information about the historical context of perinatal HIV prevention is available in the Archived Guidelines (see Appendix A: Review of Clinical Trials of Antiretroviral Interventions to Prevent Perinatal HIV Transmission in the guidelines archived on January 31, 2024).

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