



**Recommendations for the Use of Antiretroviral Drugs in  
Pregnant Women with HIV Infection and Interventions to Reduce  
Perinatal HIV Transmission in the United States**

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## The Management of Prenatal Care and General Principles of Antiretroviral Therapy and HIV Management in Women with Perinatal HIV Infection (Last updated December 7, 2018; last reviewed December 7, 2018)

### Panel's Recommendations

- The management of prenatal care and general principles of antiretroviral therapy (ART) and HIV management do not differ between pregnant women with perinatally acquired HIV (PHIV) and those with nonperinatally acquired HIV (AII).
- Using the same guiding principles that are used for heavily ART-experienced adults, optimal ART regimens should be selected based on resistance testing, prior ART history, and pill burden (AII).
- Consultation with experts in HIV and pregnancy is recommended when the presence of extensive drug resistance warrants the use of antiretroviral drugs for which there is limited experience in pregnancy (AIII).
- Pregnant women with PHIV warrant enhanced focus on adherence interventions during pregnancy and after delivery (AIII).

**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

With the availability of potent antiretroviral therapy (ART), morbidity and mortality have significantly declined in individuals living with HIV, including those with perinatally acquired HIV (PHIV). An increasing number of women with PHIV are now reaching childbearing age and becoming pregnant. A significant number of these pregnancies are unplanned.<sup>1-3</sup> The components of prenatal care and general principles of ART and HIV management do not differ between pregnant women with PHIV and those with nonperinatally acquired HIV (NPHIV) who acquired HIV through sexual contact or injection drug use. However, there are unique challenges in this population related to reproductive health care needs and the prevention of perinatal transmission. Adherence to ART is commonly a major challenge for women with PHIV. In addition, because most of these women are still adolescents and young adults, they may be at higher risk of certain pregnancy complications, such as preterm delivery, small-for-gestational-age (SGA) infants, low birth weight, and preeclampsia.<sup>4-9</sup>

As many as 30% to 70% of pregnant women with PHIV have evidence of HIV drug resistance.<sup>8,10-12</sup> This is due to extensive ART exposure prior to pregnancy, including exposure to suboptimal monotherapy or dual-therapy regimens as children.<sup>8</sup> Optimal ART regimens should be selected on the basis of resistance testing, prior ART history, and the same guiding principles used for ART-experienced adults. Because of the potential for known or suspected complex drug-resistance mutation patterns in individuals who acquired HIV perinatally, clinicians may consider performing phenotypic resistance testing in these women during pregnancy when resistance testing is indicated. Consideration should be given to regimens that optimize dosing intervals and minimize pill burden. Regimens should be constructed using antiretroviral (ARV) drugs that are recommended for use in pregnancy whenever possible. However, in many cases, the presence of extensive drug resistance may warrant the use of ARV drugs for which there is limited experience in pregnancy; consultation with experts in HIV and pregnancy is recommended in such cases.

Women with PHIV are more likely to have lower median CD4 T lymphocyte counts, detectable viral loads, and genotypic drug resistance than women with NPHIV; these factors can have implications during labor and delivery.<sup>8,12-15</sup> Several studies have suggested that pregnant women with PHIV are more likely to have a cesarean delivery in order to prevent HIV transmission; cesarean deliveries are most commonly indicated in these women due to a lack of viral load suppression.<sup>10,13</sup> Cesarean delivery in these young women raises concerns for increased risk of adverse obstetric outcomes if repeated cesarean deliveries are required for future pregnancies. Women with PHIV experience prolonged HIV infection, receive multiple ART regimens, and have an increased likelihood of drug-resistant virus. Despite these factors, many studies have shown that the risk of perinatal transmission does not appear to be increased in this population, as long as these women

receive appropriate prenatal management and ART that results in viral suppression.<sup>8,10,12,13,16-18</sup> However, in a recent analysis of data from SMARTT PHACS that included 2,123 births from 2007 to 2015, mothers with PHIV had a higher perinatal HIV transmission rate (1.1%; 95% CI, 0.3–4.3) than mothers with NPHIV (0.4%; 95% CI, 0.2–1.0%); this higher rate was associated with a greater likelihood of detectable maternal viral load at delivery.<sup>15</sup>

Evidence from studies is conflicting as to whether women with PHIV have higher rates of preterm and SGA infants when compared with women with NPHIV.<sup>19,20</sup> Several studies have demonstrated no associations between perinatal route of maternal HIV infection and preterm birth, SGA infants, or low birth weight.<sup>8,12,19-21</sup> Other studies with smaller sample sizes have reported conflicting results:

- A case series reported high rates of preterm birth (31%) among women with PHIV.<sup>10</sup>
- Jao et al. reported a four-fold increased risk for SGA births among women with PHIV compared to those with NPHIV.<sup>9</sup>
- Munjal et al. reported earlier gestational age at delivery and lower average birth weights in infants born to women with PHIV compared to those with NPHIV.<sup>13</sup>
- Jao et al. found that infants born to women with PHIV had lower mean length-for-age throughout the first year of life than infants born to women with NPHIV.<sup>7</sup>

Women with PHIV also have both poor rates of retention in care and viral suppression for up to 2 years postpartum.<sup>22</sup> In a retrospective analysis of 37 pregnancies among women with PHIV and 40 pregnancies among age-matched women with NPHIV who delivered during the same time period, the viral load declines achieved during pregnancy in women with PHIV were not sustained during postpartum follow-up, in contrast to the age-matched comparison group. During 4 years of follow-up, there were four deaths due to AIDS-related complications among women with PHIV but none among the women with NPHIV.<sup>13</sup> Although genotypic mutations were more common in women with PHIV, loss of viral suppression that resulted in postpartum disease progression was more likely to be related to adherence difficulties, highlighting the need for special focus on adherence interventions after delivery.

Psychosocial challenges in PHIV may be magnified due to the presence of a lifelong chronic illness, high rates of depression,<sup>23</sup> and, frequently the loss of one or both parents. Attention to developmentally appropriate adherence counseling is critical. A systematic review and meta-analysis of 50 eligible studies on ART adherence in individuals living with HIV aged 12 years to 24 years old, reported 62.3% adherence overall among youth with HIV. Youth from U.S. studies had the lowest average rate of adherence at 53%.<sup>24</sup> In a 2014 study of 1,596 people with PHIV who were living in New York City, only 61% were virally suppressed. The authors attributed poor ART adherence to social, behavioral, and developmental factors.<sup>25</sup> A history of depression has also been associated with nonadherence to ART among pregnant women with PHIV.<sup>26</sup> Focused attention on diagnosis and treatment of depression during the preconception period may lead to better medication adherence. Self-motivation and social support were key to achieving medication adherence in a study of adolescents living with HIV in the United Kingdom.<sup>27</sup>

Among adolescents with PHIV, pregnancy may create additional complications in the transition from pediatric/adolescent HIV care to adult care due to the complexity of navigating an adult health care system with multiple providers. However, pregnancy may also be an opportune time for a young woman to transition to adult care. Studies have noted reduced rates of retention in care and viral suppression among pediatric and adolescent persons with HIV who are transitioning to adult health care.<sup>28</sup> Continuing support for adherence to treatment is needed in this population. Coordination of care across multiple disciplines, including HIV primary care, OB/GYN, and perinatal case management, is advised.<sup>29</sup> Integration of reproductive health counseling and pregnancy prevention, including consistent condom use and developmentally appropriate skill building to support disclosure, is recommended.

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