Human Immunodeficiency Virus and Pregnancy

Perinatal Transmission, Medication Management, Monitoring, and Delivery Options

Stephanie P. Elko, MSPAS, PA-C[a,*], Erin McCartney, MPAS, PA-C[b]

KEYWORDS

• HIV • Pregnancy • Perinatal HIV transmission • Antiretroviral therapy • Prenatal care
• HIV replication cycle • CDC and Rutgers François-Xavier Bagnoud Center task force

KEY POINTS

- This article reviews HIV pregnancy testing guidelines and HIV diagnosis in pregnancy, followed by recommended perinatal monitoring of mother infected with HIV and the fetus.
- Understanding the process of perinatal HIV transmission occurs and how to prevent transmission is discussed in this article.
- This article outlines task force goals to eliminate perinatal HIV transmission.
- Discussion of the HIV replication cycle in relation to perinatal transmission prevention and antiretroviral therapy option for during pregnancy takes place within this article.
- This article also outlines the antiretroviral therapy and pregnancy recommendations for antenatal, intrapartum, and postpartum for women infected with HIV. These approaches are further broken down into treatment naive, or patients who have never been on antiretroviral therapy; those who have previously been on therapy but are not currently; and those currently receiving therapy.

INTRODUCTION

At the end of 2014, there were approximately 1.1 million people living with human immunodeficiency virus (HIV).[1] Of these 1.1 million, some of their infections may have resulted from transmission during the perinatal period or via breastfeeding, whereas others were acquired from behaviors. Adding close to 4 million live births in 2015, the potential for pregnancies occurring with an HIV-infected mother becomes

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[a] Physician Assistant Studies, Augsburg University, 2211 Riverside Avenue, Campus Box 149, Minneapolis, MN 55454, USA; [b] Division of Maternal Fetal Medicine, Eastern Virginia Medical School, 825 Fairfax Avenue, Suite 310, Norfolk, VA 23507, USA
* Corresponding author.
E-mail address: stephanie.elko@gmail.com

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evident.[2] Approximately 8500 women living with HIV give birth annually, but this is based on an estimate last given in 2006.[3] In all, this is likely a medical condition that most providers come across at some point in their career.

The annual rate of perinatal acquired HIV infection has decreased drastically in the United States, from 3.6 per 100,000 in 2008 to 1.8 per 100,000 in 2013. Unfortunately, this rate differs based on ethnicity, and although the rates among African American perinatal acquired HIV infections also have decreased, the decrease was from 12.7 per 100,000 to 7.1 per 100,000, which is still slower than women of other ethnicities.[4] Through all of the statistics and numbers, it is important to recognize that although strides have been made in decreasing rates of HIV transmission, there is still room for improvement.

HUMAN IMMUNODEFICIENCY VIRUS PERINATAL TRANSMISSION PREVENTION

Transmission from mother to child is the most common cause of childhood HIV. Transmission can occur in utero by the HIV crossing the placenta, by vertical transmission during vaginal delivery, or through breastfeeding via breast milk. Since the 1990s, there has been a decline of more than 90% of perinatal mother-to-child transmissions due to advancements in HIV research, treatment, and prevention.[5] These advancements have included the recommendation that all women, and their partners, considering pregnancy be offered HIV screening. According to the Centers for Disease Control and Prevention (CDC) all women who are, or are considering, pregnancy be screened for HIV infection. If the preconception testing confirms a positive diagnosis of HIV, patients, along with their partners and their health care providers, should discuss starting antiretroviral therapy (ART) as early as possible. This recommendation, called pre-exposure prophylaxis, helps decrease fetal transmission, thus protecting mothers and their offspring and reducing perinatal complications.[5]

The CDC and Rutgers François-Xavier Bagnoud Center have created a task force with a goal of eliminating mother-to-child transmission in the future. Several prevention challenges have been identified, and tools to address these challenges have been created and initiated (**Table 1**).[5]

GENERAL APPROACH TO THE HUMAN IMMUNODEFICIENCY VIRUS PREGNANT PATIENT

Knowing the nature of HIV and its accompany morbidities the general patient's health, it is apparent that women with HIV infection who become pregnant need comprehensive and continuous monitoring throughout pregnancy, and ideally beyond. The approach should be multifaceted for both mother and fetus. The mother should have routine prenatal care, including office visits, general screenings, and routine ultrasound evaluation, as well as undergo regular surveillance of laboratory testing, including but not limited to, CD4 T-lymphocyte (CD4) counts, viral load measurements, drug-resistance testing, antiretroviral (ARV) drug level monitoring, coinfection screening, and sexually transmitted infection testing.[6] Patients should also be monitored for opportunistic infections throughout pregnancy, particularly for toxoplasmosis and cytomegalovirus. Serologies for these infections are recommended for pregnant HIV patients given the high risk and often delayed diagnosis.[6] Furthermore, inquiring about and monitoring for high-risk behaviors, such as continued drug use, is recommended. If these behaviors are present, intervention and referral should be initiated as soon as possible.[7]

According to the CDC, all pregnant women should be screened for hepatitis B virus (HBV) early in each pregnancy. In pregnant women with HIV infection, however,