



MANAGEMENT OF THE NEONATE WITH PERINATAL HIV EXPOSURE UNIVERSITY OF MICHIGAN CLINICAL PRACTICE GUIDELINE

I. OVERVIEW:

Human immunodeficiency virus (HIV) is a retrovirus that infects humans and may result in significant effects on immune function, potentially leading to the development of acquired immune deficiency syndrome (AIDS). The management of neonates with known or possible perinatal HIV exposure requires the immediate initiation of antiretroviral drugs for prophylaxis. The use of antiretroviral drugs reduces perinatal transmission by several mechanisms, including lowering maternal antepartum viral load and providing infant pre- and post-exposure prophylaxis. Therefore, combined antepartum, intrapartum, and infant antiretroviral prophylaxis is recommended to prevent perinatal transmission of HIV.

These guidelines are adapted from recommendations outlined by the [Panel on Treatment of HIV-Infected Pregnant Women and Prevention of Perinatal Transmission](#), updated October 2016.

II. PURPOSE:

The purpose of this document is to guide clinicians through the immediate management of neonates with known or possible perinatal HIV exposures.

III. SCOPE:

This scope of this document encompasses the initial steps to take in the NICU or newborn nursery (including diagnostic testing, antiretroviral prophylaxis, and necessary consultation and follow-up) for an infant born to a mother with either a known positive HIV status or unknown HIV status.

IV. DEFINITIONS:

Perinatal HIV Exposure: Exposure occurs when an infant is born, via any mode of delivery, to a mother who is positive for HIV. The infant is considered to have perinatal HIV exposure regardless of the mother's burden of disease (i.e., her HIV viral load) and whether or not the mother received antepartum/intrapartum antiretroviral therapy.

Antepartum antiretroviral drugs: Antiretroviral drugs given to the mother during pregnancy.

Intrapartum antiretroviral drugs: Antiretroviral drugs given to the mother at the time of delivery.

V. GUIDELINE:

Infant Antiretroviral Prophylaxis

- Antiretroviral prophylaxis with zidovudine should be initiated **as soon as possible after birth** for all HIV-exposed neonates. Ideally, the first dose should be given within 6 hours of delivery and no later than 12 hours after delivery (see dosing recommendations in Table 1).
- **Infants at higher risk of HIV transmission** include those born to mothers with known HIV who have not received any antepartum or intrapartum antiretroviral drugs, have received only intrapartum antiretroviral drugs, or have received appropriate antepartum/intrapartum antiretroviral drugs but have had poor viral suppression (elevated HIV RNA level) near delivery.
 - These infants should receive **zidovudine PLUS** three doses of **nevirapine**, given within 48 hours of birth, 48 hours after the first dose, and 96 hours after the second dose (see Table 2 dosing recommendations, in Table 2).
- A 6-week course of zidovudine prophylaxis is generally recommended, but a 4-week course may be considered for a full-term infant whose mother received standard antiretroviral therapy during pregnancy, without concerns related

to maternal medication adherence, and has demonstrated consistent viral suppression (undetectable HIV RNA level) throughout pregnancy.

- The above recommended neonatal prophylaxis regimens still apply to infants born to women with HIV infection and known antiretroviral resistance.
- In cases where there is high risk of transmission, the physician managing the mother's HIV treatment should contact Pediatric Infectious Diseases, preferably prior to delivery, to further discuss optimal antiretroviral prophylaxis for the newborn.
 - The National Perinatal HIV Hotline (1-888-448-8765) provides free 24-hour clinical consultation on all aspects of perinatal HIV, including infant care, and may also be a helpful resource in this situation.

Infants Born to Mothers with Unknown HIV Infection Status

- For mothers with unknown HIV status, rapid HIV-1/2 antibody testing of the mother and/or infant is recommended as soon as possible. Ideally, rapid testing should be performed on the mother prior to delivery. If this is not possible, rapid testing should be performed as soon as possible after delivery, either on the mother or infant. This order is found in MiChart under "Rapid HIV" and has a turn-around time of 60 minutes. From an infant, only 3-4 drops of blood are required and can likely be obtained via heel stick. The test is not validated on cord blood. If testing of mother and/or infant is positive, the infant should be immediately started on antiretroviral prophylaxis while confirmatory testing is sent. For mothers who decline HIV testing for themselves and their infant, providers should document that counseling on the recommendation to be tested was provided.
- In the setting of a positive rapid HIV test, standard HIV-1/2 antigen/antibody confirmatory immunoassay testing should be performed on mothers (or their infants) as soon as possible.
 - If the confirmatory test is negative, but there is concern for *acute* HIV disease, then HIV RNA polymerase chain reaction (PCR) should be performed on the mother.
 - If maternal HIV RNA PCR is negative, then the infant's antiretroviral prophylaxis can be discontinued.
 - A positive maternal HIV RNA PCR would be concerning for maternal acute HIV infection. In this case, the infant's antiretroviral prophylaxis should be continued, and Pediatric Infectious Diseases should be consulted for additional recommendations.
 - If the confirmatory test is positive (or if mother is unavailable or declines confirmatory testing), viral testing should be sent from the infant (listed in MiChart as "HIV-1 DNA and RNA Qualitative Detection by PCR, Plasma").
 - If viral testing is positive, the infant's antiretroviral prophylaxis should be continued, and Pediatric Infectious Diseases should be consulted for additional recommendations.

Pediatric Infectious Diseases Consult

- Please consult Pediatric Infectious Diseases when an infant is born to a mother with known HIV infection, or when an infant is born to a mother with unknown HIV status who subsequently tests positive for HIV. This will allow us to establish care and answer questions for the family.
- Do not delay starting antiretroviral prophylaxis while waiting for Pediatric Infectious Diseases consult to be completed.

Initial Postnatal Management of the HIV-Exposed Neonate

- HIV-infected mothers should be counseled not to breastfeed their infants. Mothers with unknown HIV status that test positive on rapid HIV screening should not breastfeed until infection is ruled out with further testing.
- Virologic tests (listed in MiChart as “HIV-1 DNA and RNA Qualitative Detection by PCR, Plasma”) are required to diagnose HIV infection in infants <18 months of age and should be performed between 14–21 days of life, at 1–2 months, and at 4–6 months of age.
- A baseline complete blood count and differential (CBCPD) should be obtained from newborns prior to hospital discharge.
- Subsequent postnatal management (outlined in the points below) will typically occur as an outpatient in the Pediatric Infectious Diseases Clinic. If an infant is to remain hospitalized for a prolonged period of time, the Pediatric Infectious Diseases consult service will assist with ongoing management.
 - Decisions about the timing of subsequent monitoring of hematologic parameters depend on baseline hematologic values, gestational age at birth, clinical condition of the infant, the zidovudine dose, concomitant medications, and maternal antepartum therapy.
 - If hematologic abnormalities are identified in infants receiving prophylaxis, decisions on whether to continue infant antiretroviral prophylaxis should be made on an individual basis in consultation with Pediatric Infectious Diseases.
 - To prevent *Pneumocystis jirovecii* pneumonia (PJP), all infants born to women with HIV infection should begin PJP prophylaxis at 4 to 6 weeks of age, after completing their antiretroviral prophylaxis regimen, unless the infant has had two or more negative virologic tests (one at age ≥14 days and one at age ≥4 weeks).

Table 1 – Recommended Neonatal Zidovudine Dosing for the Prevention of Perinatal Transmission of HIV

Gestational Age	Dosing	Duration
≥35 weeks	<ul style="list-style-type: none"> • <u>Oral</u>: 4 mg/kg/dose q12h • <u>IV</u> (if unable to tolerate oral agents): 3 mg/kg/dose q12h 	<ul style="list-style-type: none"> • Start as soon after birth as possible (at least before 12 hours of life) • Continue through 4-6 weeks*
<35 to ≥30 weeks	<ul style="list-style-type: none"> • <u>Oral</u>: 2 mg/kg/dose q12h <ul style="list-style-type: none"> • Advance to 3 mg/kg/dose q12h at 2 weeks • <u>IV</u> (if unable to tolerate oral agents): 1.5 mg/kg/dose q12h <ul style="list-style-type: none"> • Advance to 2.3 mg/kg/dose q12h at 2 weeks 	<ul style="list-style-type: none"> • Start as soon after birth as possible (at least before 12 hours of life) • Continue through 6 weeks
<30 weeks	<ul style="list-style-type: none"> • <u>Oral</u>: 2 mg/kg/dose q12h <ul style="list-style-type: none"> • Advance to 3 mg/kg/dose q12h at 4 weeks • <u>IV</u> (if unable to tolerate oral agents): 1.5 mg/kg/dose q12h <ul style="list-style-type: none"> • Advance to 2.3 mg/kg/dose q12h at 4 weeks 	<ul style="list-style-type: none"> • Start as soon after birth as possible (at least before 12 hours of life) • Continue through 6 weeks

* A 6-week course of zidovudine is generally recommended. A 4-week course could be considered when the mother has received standard ART during pregnancy with consistent viral suppression and there are no concerns related to maternal adherence.

Table 2 – Recommended Neonatal Nevirapine Dosing (Adjunct to Zidovudine for Higher Risk Infants) for the Prevention of Perinatal Transmission of HIV

<i>Birth Weight</i>	<i>Dosing</i>	<i>Dose Frequency</i>
1.5 – 2 kg	<ul style="list-style-type: none"> 8 mg/dose orally 	<ul style="list-style-type: none"> Administer three doses in the first week of life <ul style="list-style-type: none"> Within 48 hours of birth 48 hours after 1st dose 96 hours after 2nd dose
>2 kg	<ul style="list-style-type: none"> 12 mg/dose orally 	

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References:

- Panel on Treatment of HIV-Infected Pregnant Women and Prevention of Perinatal Transmission. 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. October 26, 2016; pp 1-262.
 - Available at <http://aidsinfo.nih.gov/contentfiles/lvguidelines/PerinatalGL.pdf>

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The recommendations in this guide are meant to serve as treatment guidelines for use at Michigan Medicine facilities. If you are an individual experiencing a medical emergency, call 911 immediately. These guidelines should not replace a provider's professional medical advice based on clinical judgment, or be used in lieu of an Infectious Diseases consultation when necessary. As a result of ongoing research, practice guidelines may from time to time change. The authors of these guidelines have made all attempts to ensure the accuracy based on current information, however, due to ongoing research, users of these guidelines are strongly encouraged to confirm the information contained within them through an independent source.

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