Local Experience with High-Risk & Low-Risk Perinatal HIV Exposure in Infants

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Disclosures

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American Board of Pediatrics – SubBoard ID	X							
JNJ			X (Site PI)					Contract with UMMC
MSD			X (Site PI)					Contract with UMMC
Eli Lilly			X (Site PI)					Contract with UMMC
HRSA								COVID-19 Response

- I will not be discussing any off label use of medications related to this talk
- Cases may not be diagnostic & therapeutic in nature, management should be individualized

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Objectives

- Review the epidemiology of perinatal HV infection
- Discuss the various clinical scenarios (high risk versus low risk) associated with perinatal HV exposure in infants
- Recognize the appropriate antiretroviral regimen and the initial postnatal management of the newborn exposed to HV
- Determine the long-term follow up of infants exposed to ART

Epidemiology of perinatal HIV

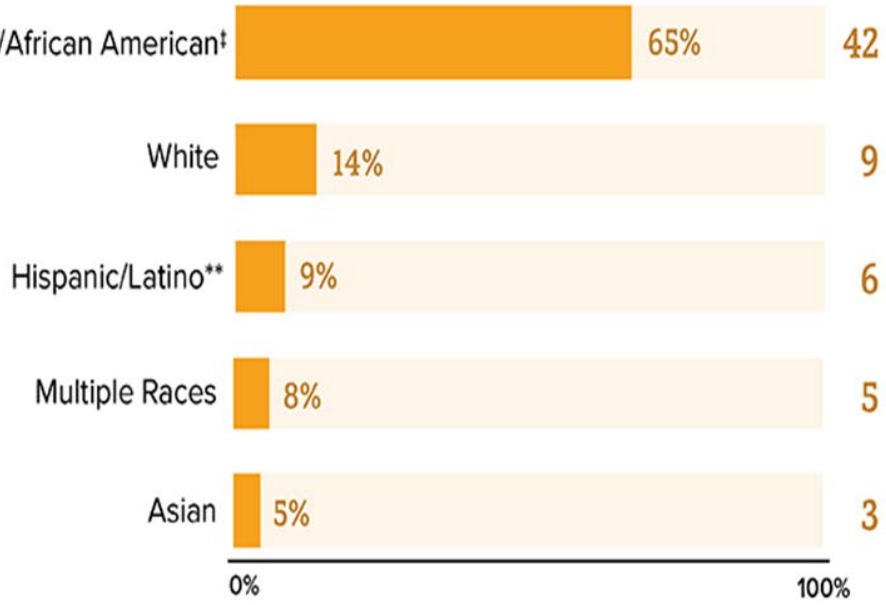
- We don't know exactly how many women with HV give birth annually in the US
  - More recent evidence suggests that the number is less than 5,000
  - Our local experience at the Children's of Mississippi: no perinatal transmission in the last decade

Of the **37,968 NEW HIV DIAGNOSES** in the US and dependent areas in 2018, <1% (65) were due to perinatal transmission.

https://www.cdc.gov/hiv/group/gender/pregnantwomen/index.html

Diagnoses of Perinatal HIV Infections in the US and Dependent Areas by Race/Ethnicity, 2018*

Most perinatal HIV diagnoses were among Black/African American children.†



*In 2018, there were no cases of perinatal HIV among Native Hawaiians/Other Pacific Islanders and American Indians/Alaska Natives.

† Children under the age of 13.

‡ *Black* refers to people having origins in any of the Black racial groups of Africa. *African American* is a term often used for Americans of African descent with ancestry in North America.

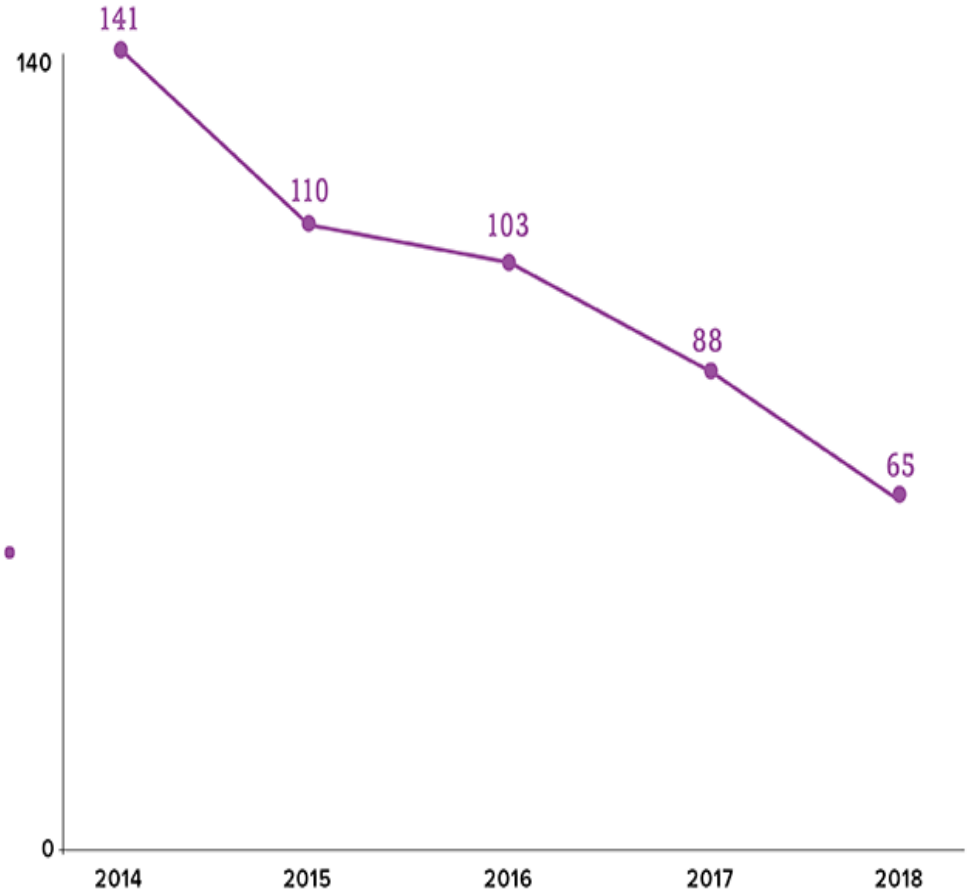
** Hispanics/Latinos can be of any race.

Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2018 (updated). *HIV Surveillance Report* 2020;31.

https://www.cdc.gov/hiv/group/gender/pregnantwomen/index.html

Diagnoses of Perinatal HIV Infections in the US and Dependent Areas, 2014-2018

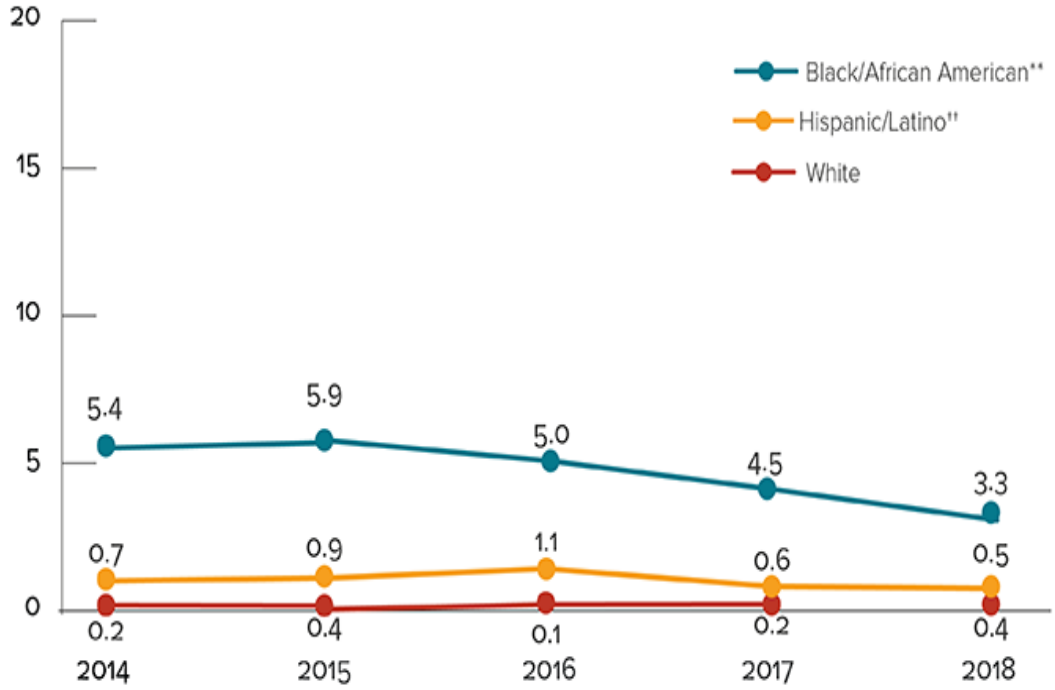
HIV diagnoses declined 54% among children overall from 2014 to 2018.



Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2018 (updated). *HIV Surveillance Report* 2020;31.

https://www.cdc.gov/hiv/group/gender/pregnantwomen/index.html

Rates of Perinatally-Acquired HIV Infections Among Persons Born in the United States, by Year of Birth and Mother's Race/Ethnicity, 2014-2018 *†‡



*Data include only persons born in the United States (50 states and District of Columbia). Data accounted for delays between birth and diagnosis, as well as between diagnosis and reporting.
†Rates are per 100,000 live births.
‡Live-birth data reflect race/ethnicity of the infant's mother.
**_Black_ refers to people having origins in any of the Black racial groups of Africa. _African American_ is a term often used for Americans of African descent with ancestry in North America.
††Hispanics/Latinos can be of any race.

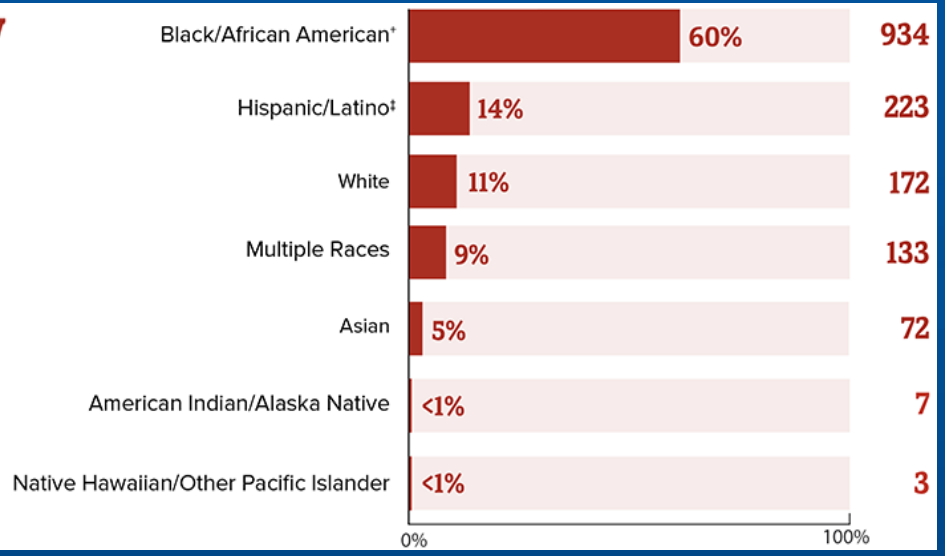
Source: Monitoring selected national HIV prevention and care objectives by using HIV surveillance data—United States and 6 dependent areas, 2018. *HIV Surveillance Supplemental Report* 2020;25(2).

https://www.cdc.gov/hiv/group/gender/pregnantwomen/index.html

Living with HIV from Perinatal Exposure

Of the **1,042,270 people with diagnosed HIV** at the end of 2018, <1% (1,544) were among children with diagnosed perinatal HIV.

Most children with diagnosed perinatal HIV are Black/African American.



https://www.cdc.gov/hiv/group/gender/pregnantwomen/index.html

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HIV Medication Chart

Combination Antiretrovirals

- **Atripla** (EFV/TDF/FTC)
- **Biktarvy** (BIC/TAF/FTC)
- **Combivir**† (ZDV/3TC)
- **Complera** (RPV/TDF/FTC)
- **Delstrigo** (DOR/TDF/3TC)
- **Descovy** (TAF/FTC)
- **Dovato** (DTG/3TC)
- **Epzicom**† (ABC/3TC)
- **Genvoya** (EVG/COBI/TAF/FTC)
- **Juluca** (DTG/RPV)
- **Odefsey** (RPV/TAF/FTC)
- **Stribild** (EVG/COBI/TDF/FTC)
- **Symtuza** (DRV/COBI/TAF/FTC)
- **Triumeq** (DTG/ABC/3TC)
- **Truvada** (TDF/FTC)

Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTI)

- **Emtriva*** (emtricitabine, FTC)
- **Epivir*†** (lamivudine, 3TC)
- **Retrovir*†** (zidovudine, ZDV)
- **Viread*†** (tenofovir DF, TDF)
- **Ziagen*†** (abacavir, ABC)
- **Vemlidy** (tenofovir alafenamide, TAF) FDA approved for HBV only

Protease Inhibitors (PI)

- **Evotaz** (ATV/COBI)
- **Kaletra*** (lopinavir/ritonavir, LPV/RTV)
- **Lexiva*** (fosamprenavir, FPV)
- **Prezcobix** (DRV/COBI)
- **Prezista*** (darunavir, DRV)
- **Reyataz*†** (atazanavir, ATV)
- **Viracept*** (nelfinavir, NFV)

Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI)

- **Edurant** (rilpivirine, RPV)
- **Intelence** (etravirine, ETR)
- **Pifeltro** (doravirine, DOR)
- **Sustiva†** (efavirenz, EFV)
- **Viramune*†** (nevirapine, NVP)

Entry Inhibitors

- **Fuzeon** (enfuvirtide, T-20) Fusion Inhibitor
- **Selzentry** (maraviroc, MVC) CCR5 Antagonist
- **Trogarzo** (ibalizumab, IBA) Post-Attachment Inhibitor

Integrase Inhibitors (INSTI)

- **Isentress*▲** (raltegravir, RAL)
- **Isentress HD** (raltegravir, RAL)
- **Tivicay** (dolutegravir, DTG)

Boosting Agents

- **Norvir*†** (ritonavir, RTV)
- **Tybost** (cobicistat, COBI)

All pills shown in relative size/scale. *Medication brand names appear in bold. Generic names and commonly used abbreviations appear in parentheses.*

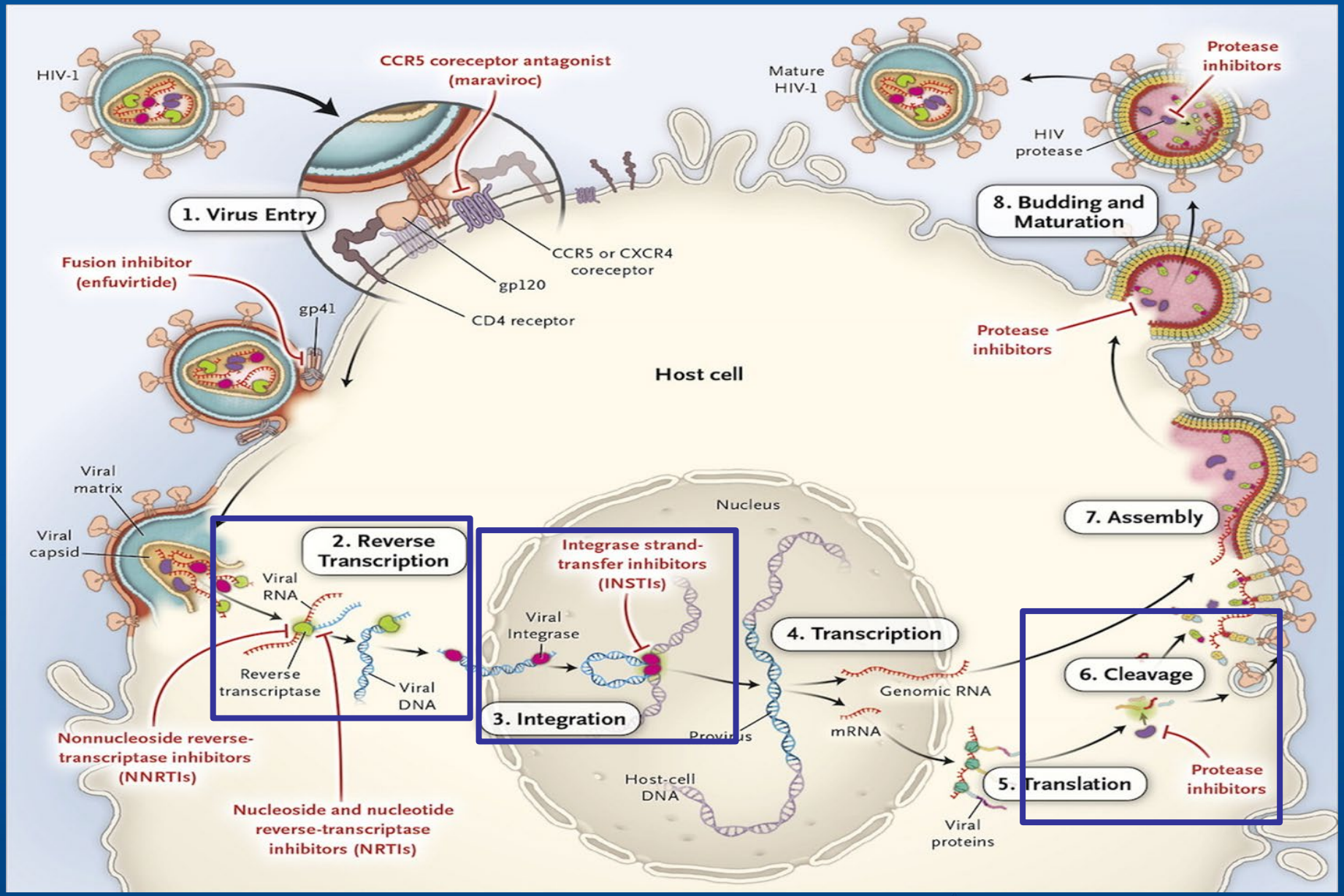
*Also available in liquid or powder form. †Generic formulation available. ▲Chewable form available.

6/19

https://aidsetc.org/resource/hiv-medication-chart-pad

ARV in the NB with Perinatal HIV Exposure

- Nucleoside reverse transcriptase inhibitors (NRTI)
  - ZDV, 3TC
- Non-nucleoside reverse transcriptase inhibitors (NNRTI)
  - NVP
- Integrase inhibitors (INSTI)
  - RAL (at birth), DTG (at 4 weeks)
- Protease inhibitors (PI)
  - LPV/r (at 2 weeks)
- Available ARV in local hospital pharmacy



Gandhi RT. Single-pill combination regimens for treatment of HIV-1 infection. N Engl J Med. 2014;371:248-59

1st scenario

- Mother (G2P1) with HV infections (behaviorally), on cART, CD4 >500 cells/cmm, HV VL <50 copies/mL (<4 weeks ago)
- Infected before her 1st pregnancy & her 2 yo is HV negative
- She is very adherent on her daily cART
- Delivered via SVD to healthy baby boy at 38 weeks gestation
- Plans for the NB

Management of Infants Born to People with HIV Infection

- All newborns who were exposed perinatally to HIV should receive postpartum antiretroviral (ARV) drugs to reduce the risk of perinatal transmission of HIV
- Newborn ARV regimens administered at doses that are appropriate for the infant's gestational age should be initiated as close to the time of birth as possible, preferably within 6 hours of delivery
- A 4-week zidovudine (ZDV) ARV prophylaxis regimen can be used in newborns whose mothers received ART during pregnancy and had viral suppression within 4 weeks prior to delivery (defined as a confirmed HIV RNA level <50 copies/mL) and for whom maternal adherence is not of concern

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-uninfected-infection?view=full

Level of Perinatal HIV Transmission Risk	Description	Neonatal ARV Management
Low Risk of Perinatal HIV Transmission	Mothers who received ART during pregnancy with viral suppression (defined as a confirmed HIV RNA level <50 copies/mL) within 4 weeks prior to delivery and no concerns related to adherence	ZDV for 4 weeks[a]

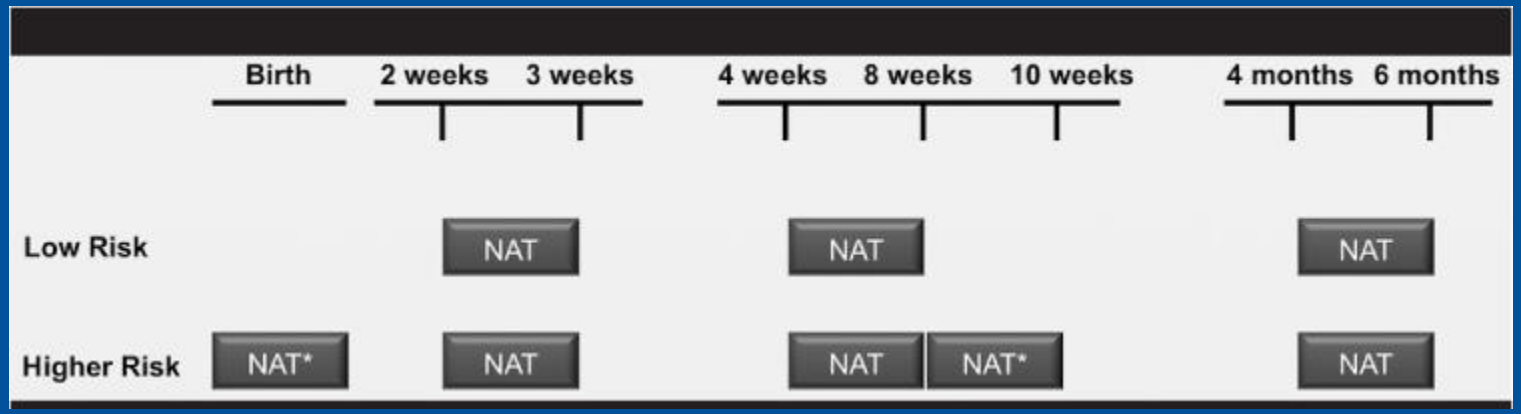
Drug	Drug Doses by Gestational Age at Birth
ZDV **Note:** For newborns who are unable to tolerate oral agents, the IV dose is 75% of the oral dose while maintaining the same dosing interval.	**≥35 Weeks' Gestation at Birth** *Birth to Age 4 Weeks:* • ZDV 4 mg/kg per dose orally twice daily *Age >4 Weeks:* • ZDV 12 mg/kg per dose orally twice daily; only make this dose increase for infants with confirmed HIV infection. **Simplified Weight-Band Dosing for Newborns Aged ≥35 Weeks' Gestation from Birth to 4 Weeks**

Weight Band	Volume of ZDV 10 mg/mL Oral Syrup Twice Daily
2 to <3 kg	1 mL
3 to <4 kg	1.5 mL
4 to <5 kg	2 mL

≥30 to <35 Weeks' Gestation at Birth

Birth to Age 2 Weeks
• ZDV 2 mg/kg per dose orally twice daily

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full



- Fig 3.8. Recommended Virologic Testing Schedules for Infants Exposed to HV by Perinatal HV Transmission Risk
- NAAT or NAT – nucleic acid amplification test
- Low Risk: Infants born to mothers who received standard antiretroviral therapy (ART) during pregnancy with sustained viral suppression (usually defined as confirmed HV RNA level below the lower limits of detection of an ultrasensitive assay) and no concerns related to maternal adherence.
- Hgher Risk: * For higher-risk infants, additional virologic diagnostic testing should be considered at birth and 2 to 4 weeks after cessation of ARV prophylaxis (ie, at 8–10 weeks of life).

2021-24 Red Book, 32nd AAP – Report of the Committee on Infectious Diseases, pp. 432

Fig 3.9. Newborn testing and prophylaxis recommendations following low-risk* perinatal HV exposure

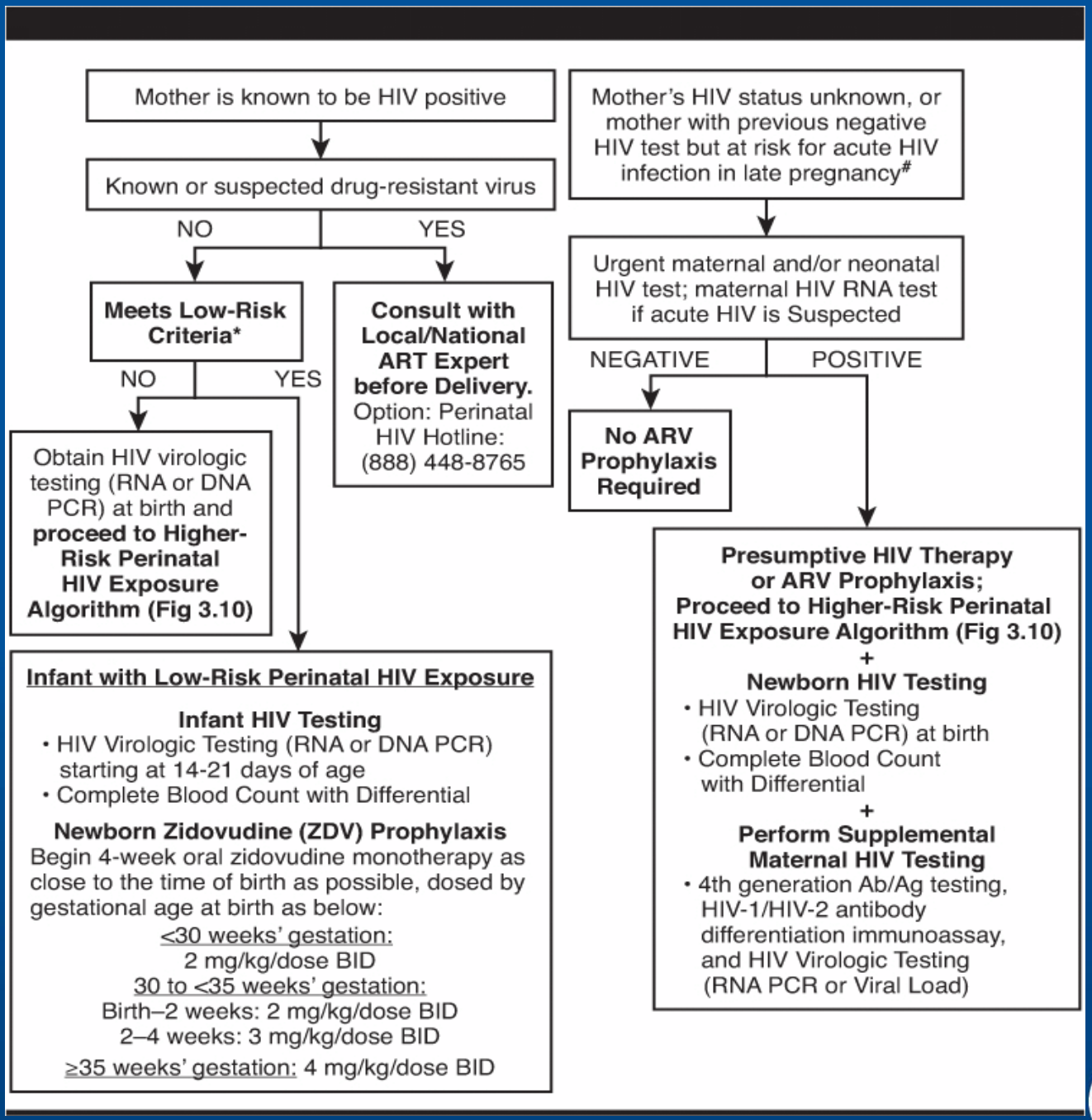


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Fig 3.9. Newborn testing and prophylaxis recommendations following low-risk* perinatal HV exposure

- *Low-risk criteria:
- (1) mother with HV who received ART throughout pregnancy or from the early 1st/2nd trimester; AND
- (2) confirmed maternal HV RNA <50 copies/mL near delivery (within 4–6 weeks); AND
- (3) no concerns regarding ART adherence; AND
- (4) mother did not have primary or acute HV infection during pregnancy.
- #Mothers with previous negative HV test at risk for seroconversion in late pregnancy are those with: documented STI, unprotected sex, partner with HV, multiple partners, or IV drug use.

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1st scenario (Low Risk)

- Mother (G2P1) with HIV infections (behaviorally), on cART (DTG-TDF-FTC), CD4 >500 cells/cmm, HIV VL <50 copies/mL (<4 weeks ago)
- Infected before her 1st pregnancy & her 2 yo is HIV negative
- She is very adherent on her daily cART
- Delivered via SVD to healthy baby boy at 38 weeks gestation
- Plans for the NB
  - CBC, HIV DNA at 2 weeks (follow up at 2 weeks, 4 weeks, 4 months)
  - ZDV within 6 hours of life for 4 weeks
  - Peds ID (NP, RN, SW), no breastfeeding, no pre-chewed food

2nd scenario

- Mother (G2P1) with HV infections (behaviorally), prescribed cART but did not fill her Rx, CD4 >500 cells/cmm, HVVL >15,000 copies/mL (<4 weeks ago)
- Infected for the first time during this pregnancy
- She is not on her daily cART
- Delivered via CS to healthy baby boy at 38 weeks gestation
- Plans for the NB?

Management of Infants Born to People with HIV Infection

- Newborns at high risk of perinatal acquisition of HIV should begin presumptive HIV therapy.
- Newborns at high risk of HIV acquisition include those born to people with HIV who—
  - Have not received antepartum ARV drugs, or
  - Have received only intrapartum ARV drugs, or
  - Have received antepartum ARV drugs but who did not achieve viral suppression (defined as a confirmed HIV RNA level <50 copies/mL) within 4 weeks of delivery, or
  - Have primary or acute HIV infection during pregnancy

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full

Level of Perinatal HIV Transmission Risk	Description	Neonatal ARV Management
Low Risk of Perinatal HIV Transmission	Mothers who received ART during pregnancy with viral suppression (defined as a confirmed HIV RNA level <50 copies/mL) within 4 weeks prior to delivery and no concerns related to adherence	ZDV for 4 weeks[a]
High Risk of Perinatal HIV Transmission[a,b]	Mothers who did not receive antepartum ARV drugs Mothers who received only intrapartum ARV drugs Mothers who received antepartum ARV drugs but did not have viral suppression (defined as a confirmed HIV RNA level <50 copies/mL) within 4 weeks prior to delivery Mothers with acute or primary HIV infection during pregnancy or breastfeeding (in which case, the mother **should immediately discontinue breastfeeding**)[c]	Presumptive HIV therapy using either ZDV, 3TC, and NVP (treatment dose) *or* ZDV, 3TC, and RAL administered from birth up to 6 weeks[d]

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full

NVP[d]	**≥37 Weeks' Gestation at Birth** *Birth to Age 4 Weeks* • NVP 6 mg/kg per dose orally twice daily *Age >4 Weeks* • NVP 200 mg/m² BSA per dose orally twice daily; only make this dose increase for infants with confirmed HIV infection.
	≥34 to <37 Weeks' Gestation at Birth *Birth to Age 1 Week* • NVP 4 mg/kg per dose orally twice daily *Age 1 to 4 Weeks* • NVP 6 mg/kg per dose orally twice daily *Age >4 Weeks* • NVP 200 mg/m² BSA per dose orally twice daily; only make this dose increase for infants with confirmed HIV infection.
	≥32 to <34 Weeks' Gestation at Birth *Birth to Age 2 Weeks* • NVP 2 mg/kg per dose orally twice daily *Age 2 to 4 Weeks* • NVP 4 mg/kg per dose orally twice daily *Age 4 to 6 Weeks* • NVP 6 mg/kg per dose orally twice daily *Age >4 Weeks*

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full

RAL

Note: If the mother has taken RAL 2 to 24 hours prior to delivery, the neonate's first dose of RAL should be delayed until 24 to 48 hours after birth; additional ARV drugs should be started as soon as possible.[7]

≥37 Weeks' Gestation at Birth and Weighing ≥2 kg[e]

Birth to Age 6 Weeks

Body Weight	Volume (Dose) of RAL 10 mg/mL Suspension
Birth to 1 Week: Once-Daily Dosing	**Approximately 1.5 mg/kg per dose**
2 to <3 kg	0.4 mL (4 mg) once daily
3 to <4 kg	0.5 mL (5 mg) once daily
4 to <5 kg	0.7 mL (7 mg) once daily
1 to 4 Weeks: Twice-Daily Dosing	**Approximately 3 mg/kg per dose**
2 to <3 kg	0.8 mL (8 mg) twice daily
3 to <4 kg	1 mL (10 mg) twice daily
4 to <5 kg	1.5 mL (15 mg) twice daily
4 to 6 Weeks: Twice-Daily Dosing	**Approximately 6 mg/kg per dose**
3 to <4 kg	2.5 mL (25 mg) twice daily
4 to <6 kg	3 mL (30 mg) twice daily
6 to <8 kg	4 mL (40 mg) twice daily

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full

ZDV

Note: For newborns who are unable to tolerate oral agents, the IV dose is 75% of the oral dose while maintaining the same dosing interval.

≥35 Weeks' Gestation at Birth

Birth to Age 4 Weeks:

- ZDV 4 mg/kg per dose orally twice daily

Age >4 Weeks:

- ZDV 12 mg/kg per dose orally twice daily; only make this dose increase for infants with confirmed HIV infection.

Simplified Weight-Band Dosing for Newborns Aged ≥35 Weeks' Gestation from Birth to 4 Weeks

Weight Band	Volume of ZDV 10 mg/mL Oral Syrup Twice Daily
2 to <3 kg	1 mL
3 to <4 kg	1.5 mL
4 to <5 kg	2 mL

≥30 to <35 Weeks' Gestation at Birth

Birth to Age 2 Weeks

- ZDV 2 mg/kg per dose orally twice daily

Age 2 Weeks to 6 to 8 Weeks

- ZDV 3 mg/kg per dose orally twice daily

Age >6 to 8 Weeks

- ZDV 12 mg/kg per dose orally twice daily; make this dose increase only for infants with confirmed HIV infection.

<30 Weeks' Gestation at Birth

Birth to Age 4 Weeks

- ZDV 2 mg/kg per dose orally twice daily

Age 4 to 8 to 10 Weeks

- ZDV 3 mg/kg per dose orally twice daily

Age >8 to 10 Weeks

- ZDV 12 mg/kg per dose orally twice daily; only make this dose increase for infants with confirmed HIV infection

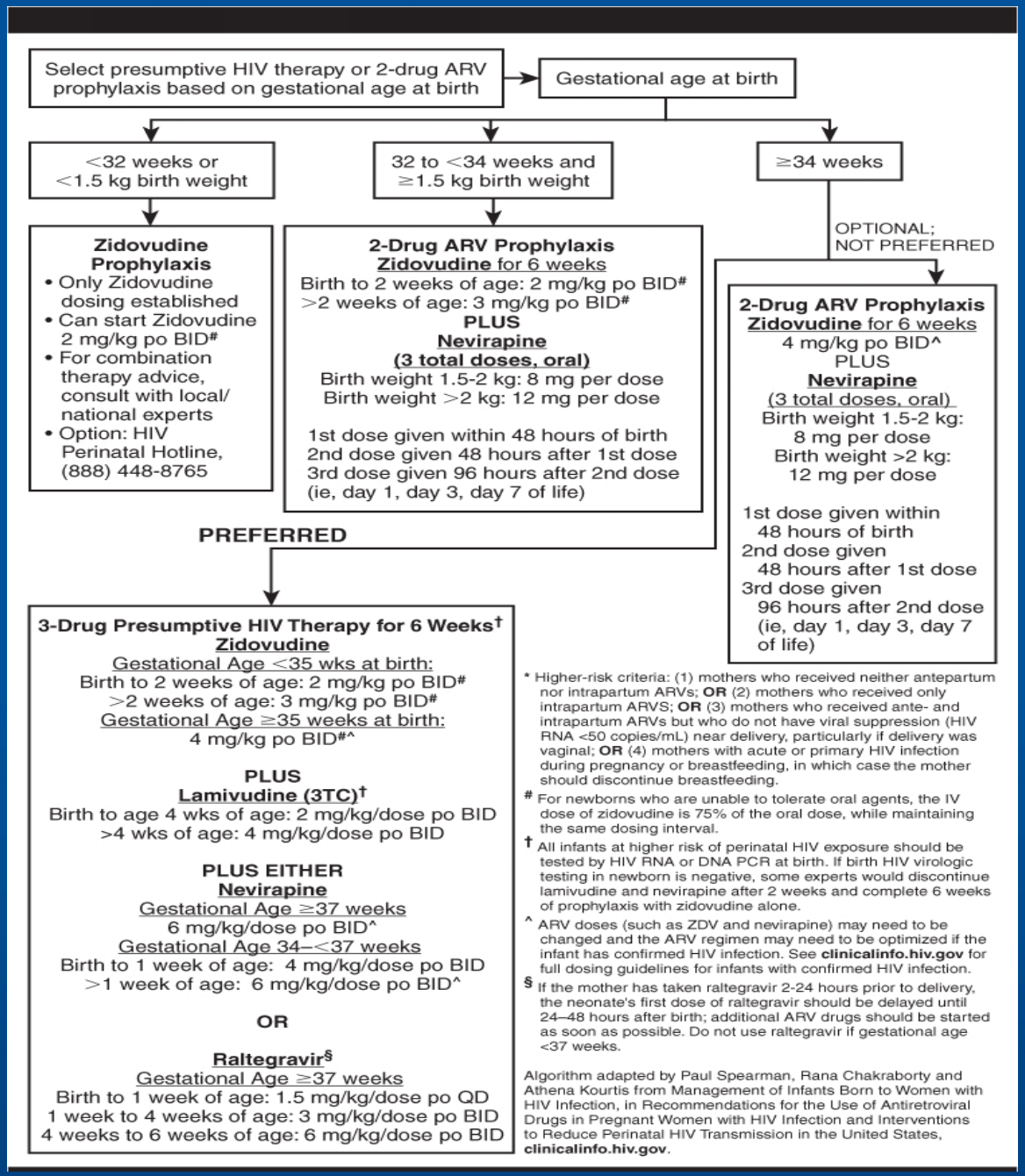
https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full

Management of Infants Born to People with HIV Infection

3TC	**≥32 Weeks' Gestation at Birth** *Birth to Age 4 Weeks* • 3TC 2 mg/kg per dose orally twice daily *Age >4 Weeks* • 3TC 4 mg/kg per dose orally twice daily

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full

Fig 3.10. Newborn Testing and Prophylaxis Recommendations Following Hgher-Risk Perinatal HV Exposure*



* Higher-risk criteria: (1) mothers who received neither antepartum nor intrapartum ARVs; **OR** (2) mothers who received only intrapartum ARVS; **OR** (3) mothers who received ante- and intrapartum ARVs but who do not have viral suppression (HIV RNA <50 copies/mL) near delivery, particularly if delivery was vaginal; **OR** (4) mothers with acute or primary HIV infection during pregnancy or breastfeeding, in which case the mother should discontinue breastfeeding.

\# For newborns who are unable to tolerate oral agents, the IV dose of zidovudine is 75% of the oral dose, while maintaining the same dosing interval.

† All infants at higher risk of perinatal HIV exposure should be tested by HIV RNA or DNA PCR at birth. If birth HIV virologic testing in newborn is negative, some experts would discontinue lamivudine and nevirapine after 2 weeks and complete 6 weeks of prophylaxis with zidovudine alone.

^ ARV doses (such as ZDV and nevirapine) may need to be changed and the ARV regimen may need to be optimized if the infant has confirmed HIV infection. See **clinicalinfo.hiv.gov** for full dosing guidelines for infants with confirmed HIV infection.

§ If the mother has taken raltegravir 2-24 hours prior to delivery, the neonate's first dose of raltegravir should be delayed until 24–48 hours after birth; additional ARV drugs should be started as soon as possible. Do not use raltegravir if gestational age <37 weeks.

Algorithm adapted by Paul Spearman, Rana Chakraborty and Athena Kourtis from Management of Infants Born to Women with HIV Infection, in Recommendations for the Use of Antiretroviral Drugs in Pregnant Women with HIV Infection and Interventions to Reduce Perinatal HIV Transmission in the United States, **clinicalinfo.hiv.gov**.

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2nd scenario (High Risk)

- Mother (G2P1) with HV infections (behaviorally), prescribed cART but did not fill her Rx, CD4 >500 cells/cmm, HV VL >15,000 copies/mL (<4 weeks ago)
- Infected for the first time during this pregnancy
- She is not on her daily cART
- Delivered via CS to healthy baby boy at 38 weeks gestation
- Plans for the NB?

  CBC, HV DNA & HV RNA VL at birth (follow up at 2 weeks, 4 weeks, 4 months)

  ZDV within 6 hours of life for 6 weeks, 3TC, RAL or NVP

  Peds ID (NP, RN, SW), no breastfeeding, counseling regarding pre-chewed food

3rd scenario

- Mother (G2P1) with HV infections (behaviorally), on cART, CD4 >500 cells/cmm, HVVL 200 copies/mL (<4 weeks ago)
- Infected before her 1st pregnancy & her 2 yo is HV negative
- She is adherent on her daily cART
- Delivered via SVD to healthy baby boy at 38 weeks gestation
- Plans for the NB?

Management of Infants Born to People with HIV Infection

- Newborns at high risk of perinatal acquisition of HV should begin presumptive HV therapy.
- Most Panel members would recommend initiating presumptive HV therapy with any detectable level of viremia within 4 weeks prior to delivery, others may opt for a two-drug prophylaxis regimen if maternal viral load was less than 200 to 400 copies/mL.

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full

Two-Drug Antiretroviral Prophylaxis

- Two-drug regimen consists of 6 weeks of ZDV plus three doses of the prophylactic dose of NVP, with the NVP doses given within 48 hours of birth, 48 hours after the first dose, and 96 hours after the second dose.
- The prophylactic doses are NVP 12 mg per dose orally for infants weighing >2 kg and NVP 8 mg per dose orally for infants weighing 1.5 kg to 2 kg. These are the actual doses, not the milligram per kilogram doses.

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full

3rd scenario

- Mother (G2P1) with HIV infections (behaviorally), on cART (DTG-TDF-FTC), CD4 >500 cells/cmm, HIV VL 200 copies/mL (<4 weeks ago)
- Infected before her 1st pregnancy & her 2 yo is HIV negative
- She is adherent on her daily cART
- Delivered via SVD to healthy baby boy at 38 weeks gestation
- Plans for the NB?

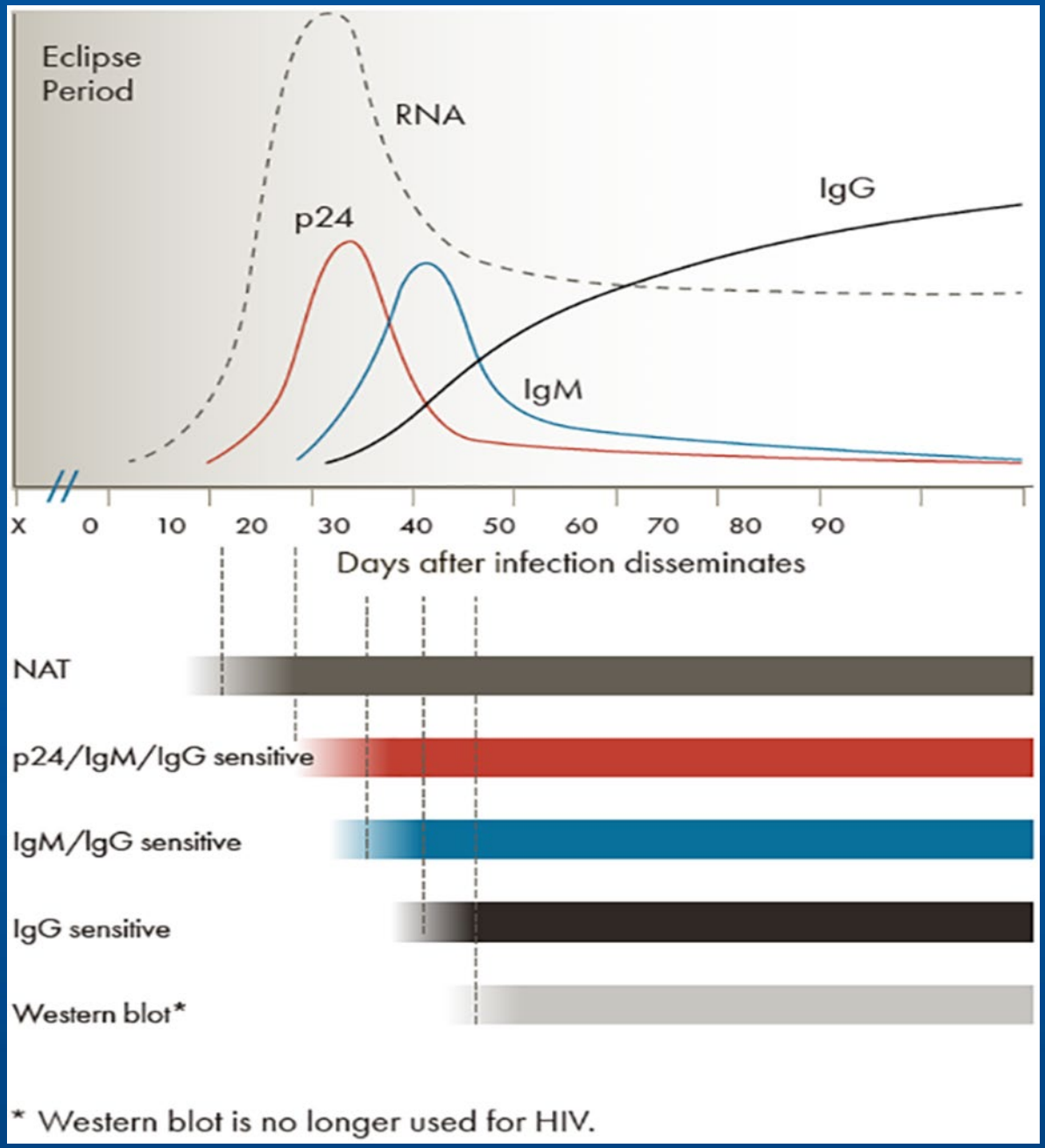
  CBC, HIV DNA & HIV RNA VL at birth (follow up at 2 weeks, 4 weeks, 4 months)

  ZDV within 6 hours of life for 6 weeks, NVP versus 3 cART (RAL/NVP, ZDV, 3TC)

  Peds ID (NP, RN, SW), no breastfeeding, counseling regarding pre-chewed food

4th scenario

- Mother (G2P1) without prenatal care, HV screening test positive at delivery
- Delivered via SVD to healthy baby boy at 38 weeks gestation
- Plans?

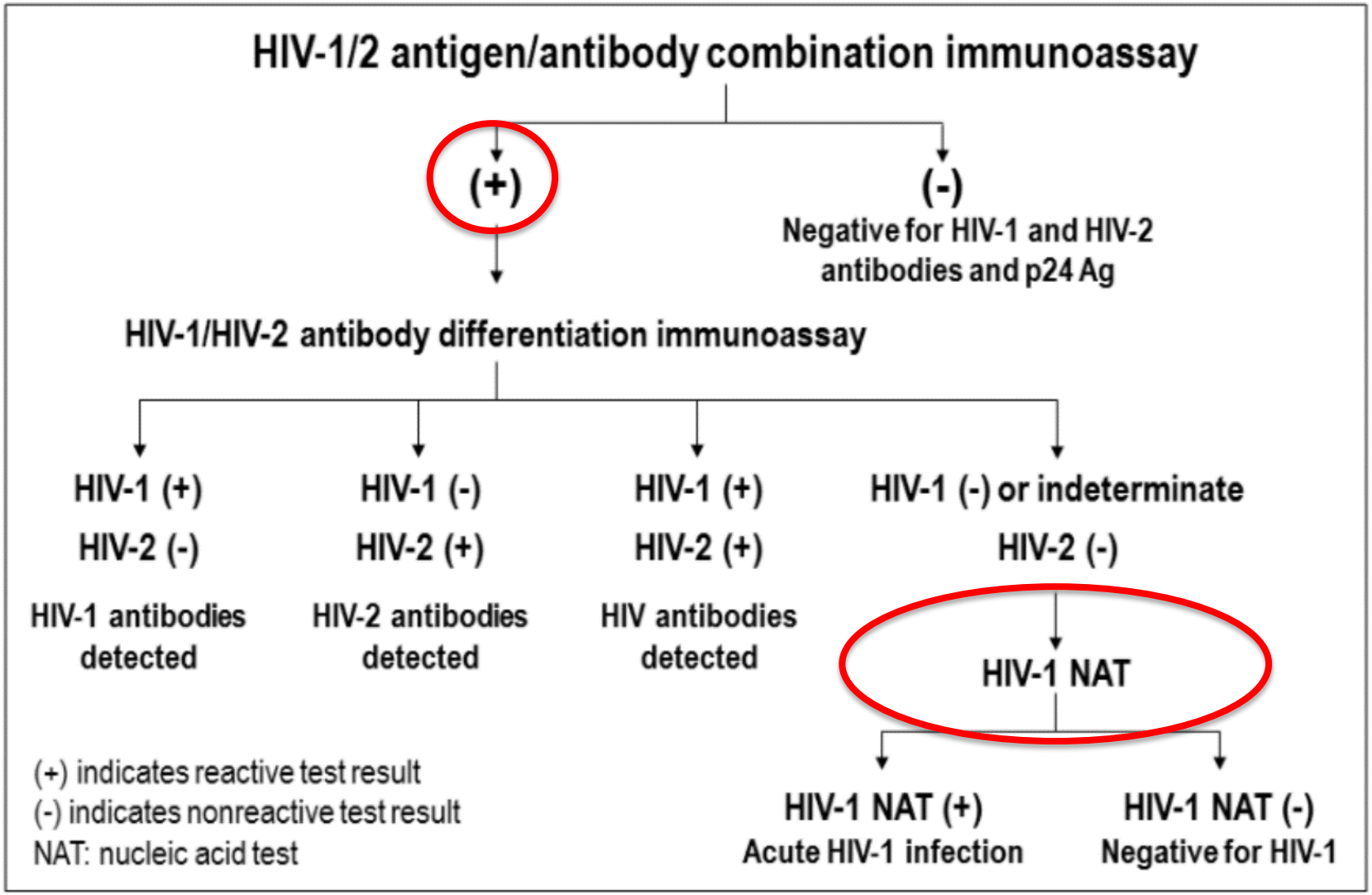


https:www.cdc.gov/hiv/clinicians/screening/diagnostic-tests.html

TRUE POSITIVE

- Eclipse period – the amount of time during which no existing diagnostic test is capable of detecting HV
- Window period – the time between potential HV exposure and an accurate test result
- HV screening (+), HV NAT (+)

Recommended Laboratory HIV Testing Algorithm for Serum or Plasma Specimens



https://www.health.ny.gov/diseases/aids/providers/regulations/testing/docs/guidelines_diagnostic_testing.pdf

False Positive HIV Test

- HIV Screening is (+), HIV Ab differentiation (–), HIV NAT (–)
- The HIV RNA assay can detect the presence of HIV as early as 10 days post-infection, so this test should be used when acute HIV infection is suspected.
- The combination of a positive antigen-antibody screen with a negative antibody differentiation assay and a negative HIV RNA assay is seen in people without HIV who have a false-positive antigen-antibody screen.
- False positive results occur during pregnancy may be associated with cross-reactivity with alloantibodies & autoantibodies

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/maternal-hiv-testing-and-identification-perinatal-hiv-exposure
J Infect Dis. 2021 Jan 15; 223(2): 234-237.
Published online 2020 Jun 19. doi: 10.1093/infdis/jiaa343

4th scenario

- Mother (G2P1) without prenatal care, HIV screening test positive (at delivery)
- Delivered via SVD to healthy baby boy at 38 weeks gestation
- Plans?

  Check HIV RNA VL in the mother

  CBC, HIV DNA & HIV RNA VL at birth (follow up at 2 weeks, 4 weeks, 4 months)

  ZDV within 6 hours of life for 6 weeks, 3TC, RAL or NVP

  Peds ID (NP, RN, SW), no breastfeeding, counseling regarding pre-chewed food

Initial Postnatal Management

- ARV (one-, two-, three-drug regimen)
- HIV DNA or HIV RNA VL
- CBC diff
- 4 weeks – check for neutropenia & anemia (s/p ZDV & 3TC)
- 4-6 weeks – PCP prophylaxis if cannot presumptively exclude HV infection
- Inquire regarding breastfeeding & the use of pre-masticated food
  - In the US, it is recommended that women with HV refrain from breastfeeding their infants as safe infant feeding alternatives are available
  - Counseling against the use of premasticated (prechewed or prewarmed) food should be provided as safe infant options are available

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/initial-postnatal-management-neonate-exposed-hiv?view=full

Diagnosis of HIV infection

- **Presumptively** excluded in non-breastfed infants with two or more negative virologic tests (one at age ≥2 weeks & one at age ≥4 weeks)
- **Definitively** excluded in non-breastfed infant is based on two or more negative virologic tests (i.e., negative NATs [RNA or DNA]), one at age ≥1 month and one at age ≥4 months, or two negative HIV antibody tests from separate specimens obtained at age ≥6 months.

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/diagnosis-hiv-infection-infants-and-children?view=full

Practice of Feeding Premasticated Food to Infants: A Potential Risk Factor for HIV Transmission

- 3 cases of HV infections diagnosed in children ages 9, 15, & 39 months; clinical symptomatology prompted HV testing.
- In 2 cases, the mothers were known to be infected with HV, had not breastfed their children, and perinatal HV transmission had previously been ruled out following US HV testing guidelines.
- In the 3rd case, a great aunt who helped care for the child was infected with HV, but the child's mother was not.

Pediatrics (2009) 124 (2): 658-666. https://doi.org/10.1542/peds.2008-3614

Practice of Feeding Premasticated Food to Infants: A Potential Risk Factor for HIV Transmission

- All 3 children were fed food on multiple occasions that had been premasticated by a care provider infected with HV; in 2 cases concurrent oral bleeding in the premasticating adult was described
- Phylogenetic analyses supported the epidemiologic conclusion that the children were infected through exposure to premasticated food from a caregiver infected with HV in 2 of the 3 cases.

Pediatrics (2009) 124 (2): 658-666. https://doi.org/10.1542/peds.2008-3614

Long-Term Follow-Up of Infants Exposed to Antiretroviral Drugs

- Children with in utero or neonatal exposure to antiretroviral (ARV) drugs who develop significant organ system abnormalities of unknown etiology, particularly of the nervous system or heart, should be evaluated for potential metabolic dysfunction (mitochondrial dysfunction).
- It is important that the long-term medical record of a child without HV includes information about in utero and neonatal ARV exposure

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/long-term-follow-infants-exposed-antiretroviral-drugs?view=full

Initial Consult

- Preventive:

  Continue ZDV or ZDV + NVP or NVP/RAL + ZDV + 3TC

  Peds HIV nurse case manager will deliver the medication supply to the caregiver in person with a syringe color tape-marked at the dosage to be administered, before discharge.

  In the US, it is recommended that women with HIV refrain from breastfeeding their infants as safe infant feeding alternatives are available

Initial Consult

- Preventive:

  Counseling against the use of premasticated (prechewed or prewarmed) food should be provided as safe infant options should are available

  It is important that the long-term medical record of a child without HV includes information about in utero and neonatal ARV exposure

- Follow up:

  F/u with HV clinic at 2 weeks of age

Take Home Message

- Reviewed the epidemiology of perinatal HV infection
  - <1%
- Discussed the various clinical scenarios & the ART for newborns with perinatal HV exposure
  - ZDV or ZDV-NVP or ZDV-3TC-NVP or ZDV-3TC-RAL
- Identified the initial postnatal management of NB exposed to HV
  - ART, HV DNA (HV RNA), CBC diff (CMP)
  - No breastfeeding, no pre-masticated food
- Determined the long-term follow-up of infants exposed to ART
  - Document in-utero & neonatal ARV exposure

Further Reading & Resources

- DHHS – Management of Infants Born to People with HIV Infection
  Updated & reviewed, Dec. 30, 2021
  Antiretroviral Management of Newborns with Perinatal HV Exposure or HV Infection
- National Perinatal HV Hotline (1-888-448-8765)
  Free clinical consultation on all aspects of perinatal HV
- 2021-24 Red Book, 32nd AAP – Report of the Committee on Infectious Diseases, pp. 427-440

https://clinicalinfo.hiv.gov/en/guidelines/perinatal/antiretroviral-management-newborns-perinatal-hiv-exposure-or-hiv-infection?view=full

Local Resources

- Pediatric HIV Clinic – Children's of Mississippi (HRSA, Part D)
- Spencer F. Brooks FNP, April Palmer MD, Roberto P. Santos MD
  Daphne Sigler RN, Cindy Stubblefield LMSW, Patricia Powers
- 601- 984-5206, 601-815-1117, 601-815-1119
  UMMC MEDCOM 601 984 4367

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