Prevention of Maternal to Child Transmission of HIV

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Conflict of Interest

- I have no relevant financial relationships or affiliations with commercial interests to disclose

- I do not intend to discuss unapproved or investigative uses of commercial products in my presentation

Learning Objectives

1. **Review the global, national and regional epidemiology of HIV infection**

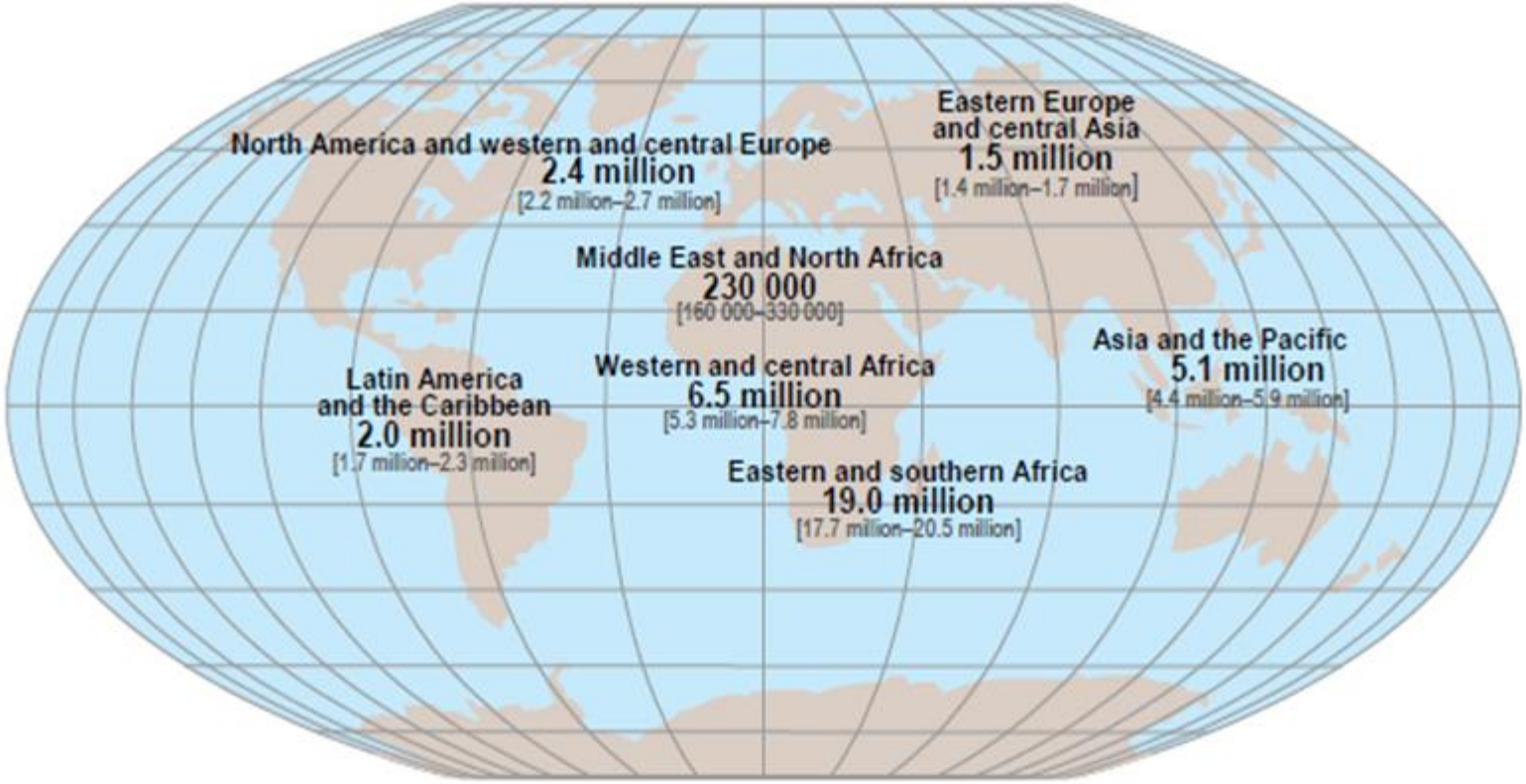
2. **Understand the major risk factors for perinatal transmission of HIV and review current national guidelines for prevention**

3. **Explain the methods for prevention of perinatal HIV transmission**

HIV throughout the World

- In 2017, there were an estimated 36.9 million people living with HIV
  - 1.8 million children

Adults and children estimated to be living with HIV, 2017



TOTAL: 36.9 million (31.1 million-43.9 million)

HIV throughout the World

In 2017:

- 1.6 million new infections
  - 180,000 children
  - Approx. 5000 new infections daily (4400 adults, 500 children)
- Every week, around 7000 young women aged 15–24 years become infected with HIV

HIV throughout the World

- Since 2010, new HIV infections have declined by an estimated 16% among adults and 35% in children

- New HIV infections have been reduced by 47% since the peak in 1996

HIV throughout the World

In 2017:

- 940,000 people died of AIDS
  - 110,000 were children

- AIDS related deaths have been reduced by more than 51% since the peak in 2004

HIV throughout the World

Since the beginning of the epidemic:

- 77.3 million people have become infected
- 35.4 million people have died

HIV throughout the World

In 2017:

- 75% of all people living with HIV knew their status
- 21.7 million HIV infected persons were on treatment
  - Increased 2.3 million from 2016 and 8 million from 2010

HIV throughout the World

In 2017:

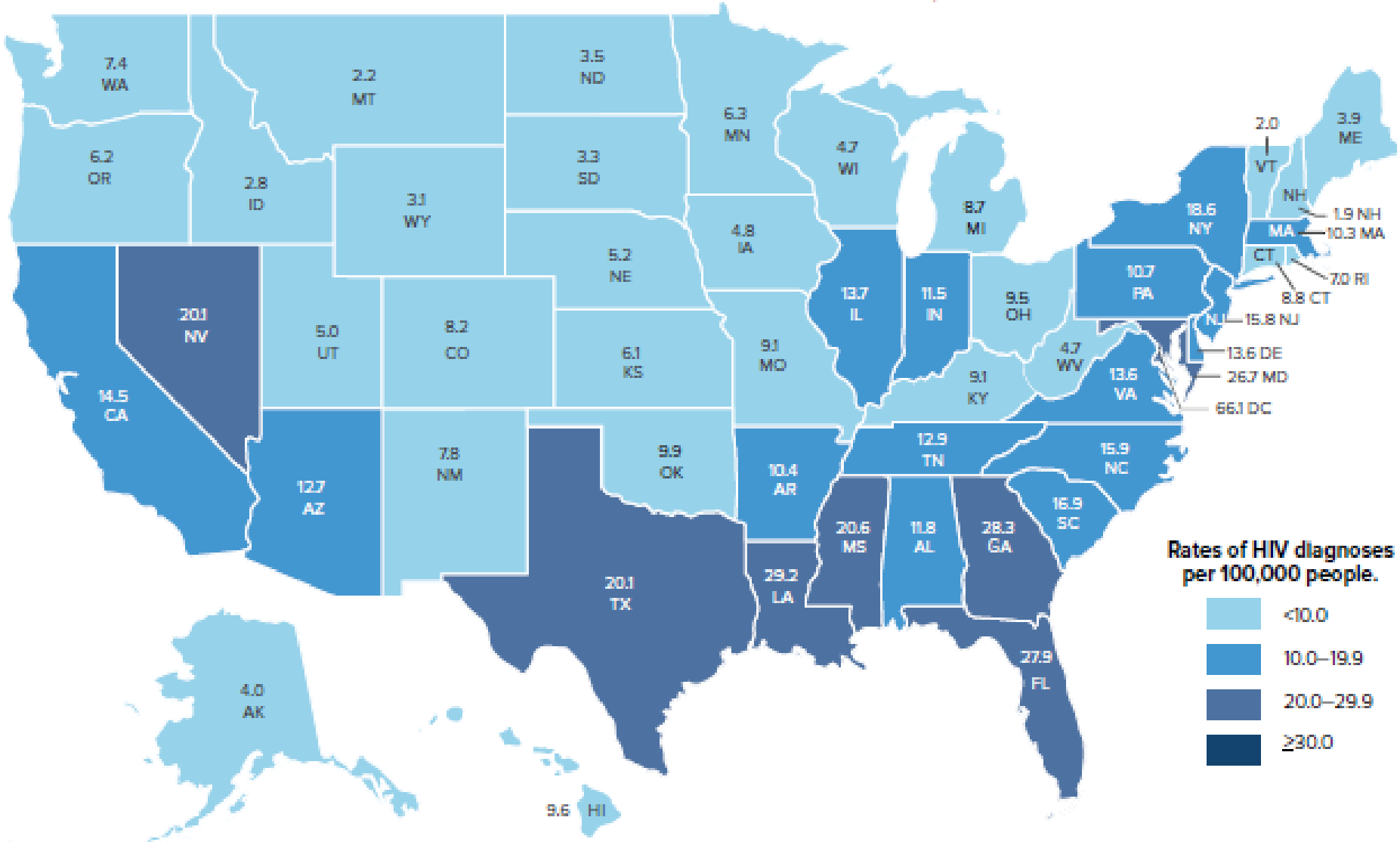
- 59% of adults and 52% of children living with HIV had access to HAART

- 80% of pregnant women living with HIV had access to HAART to prevent transmission of HIV to their babies

HIV in the United States

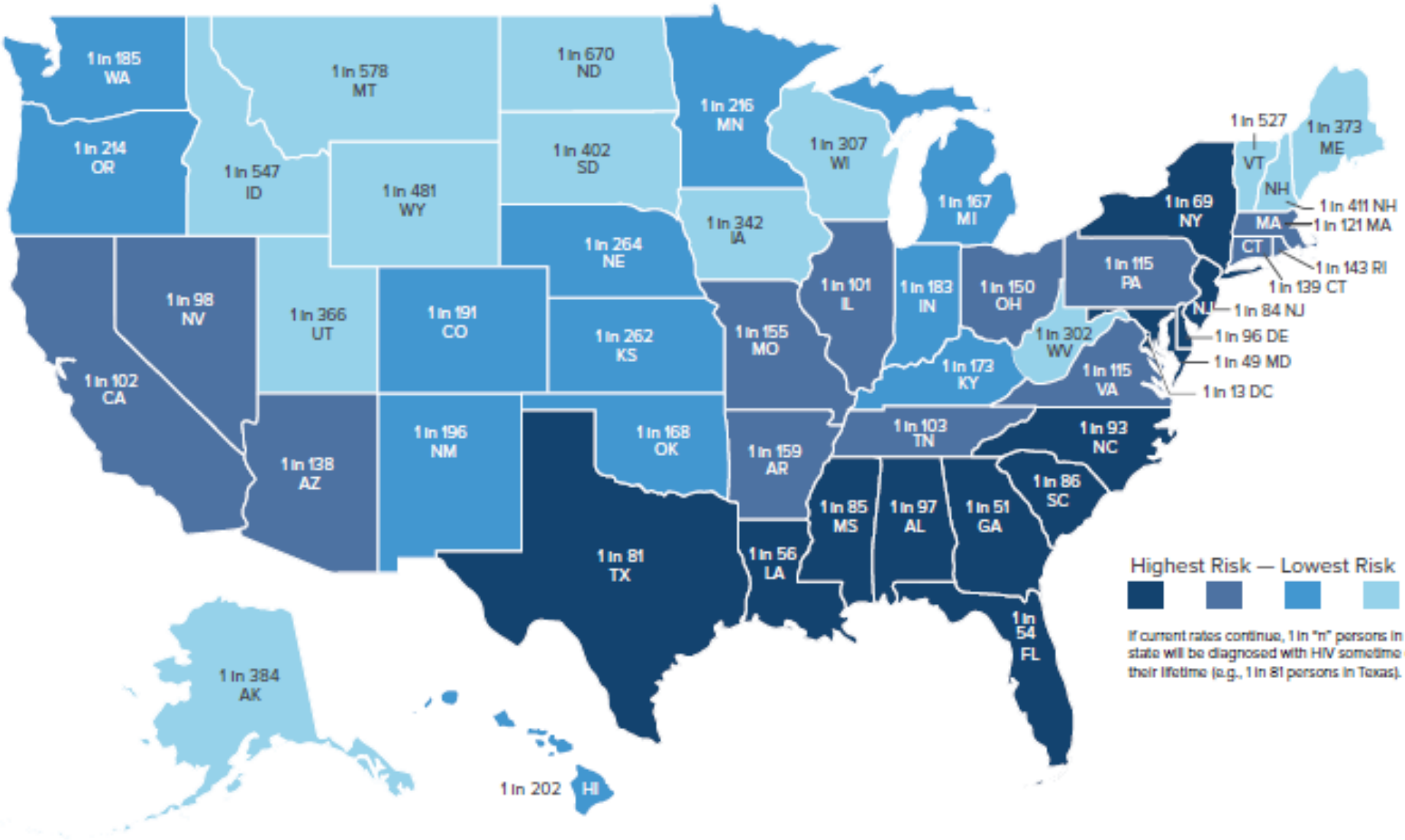
- 1.1 million people in the United States living with HIV (2016)
  - Prevalence of 0.6%
  - 40,000 new infections/year
  - 1 in 8 infected persons unaware of HIV status
  - 1 in 5 of all new HIV infections in ages 13-24
  - 4 in 5 of these infections occur in males
  - 60% of infections in youth occur in African Americans
  - 51% of youth with HIV unaware of HIV status

Rates of HIV Diagnoses Among Adults and Adolescents in the US in 2015, by State



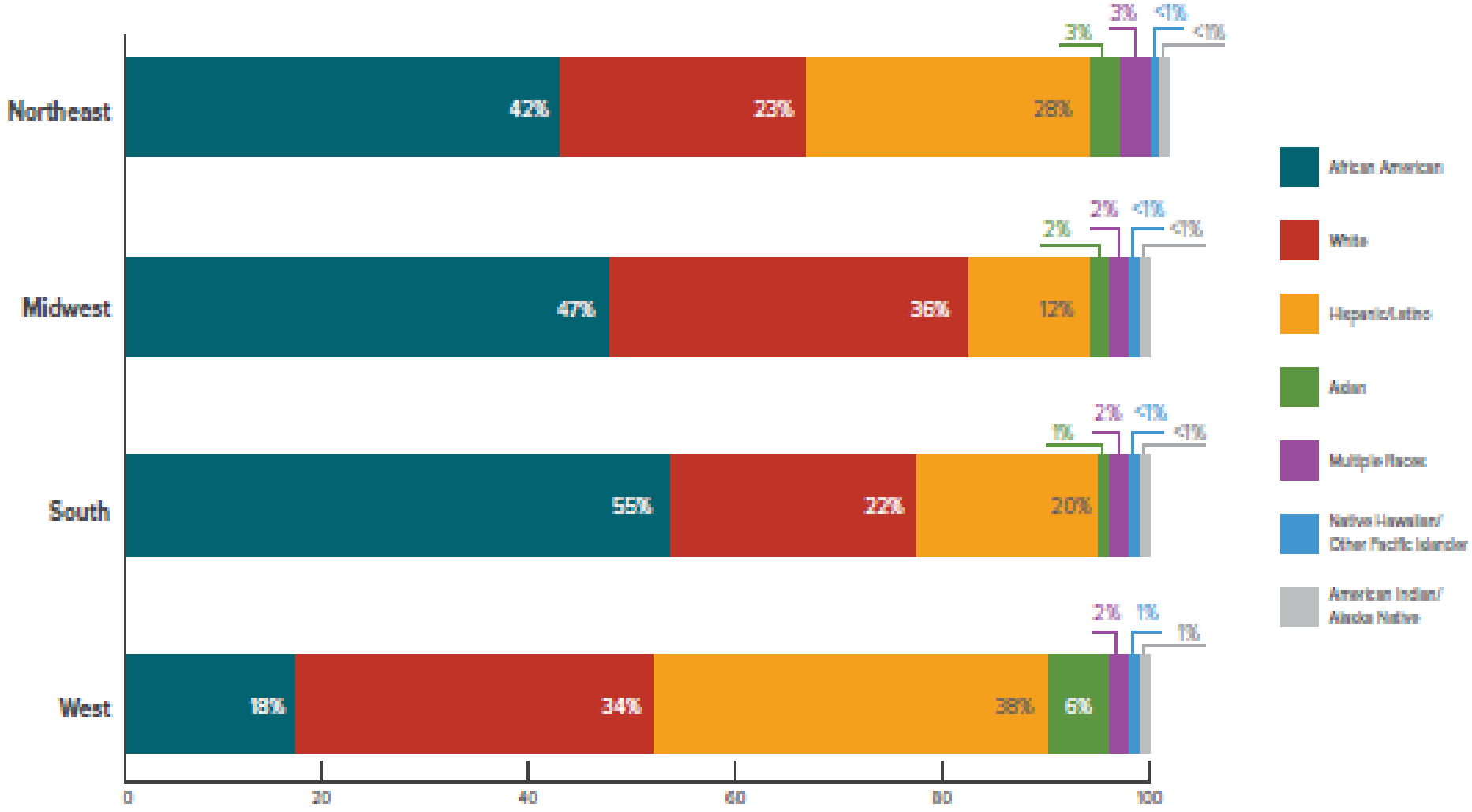
Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2015. *HIV Surveillance Report* 2016;27 (http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html).

Lifetime Risk of HIV Diagnosis, by State



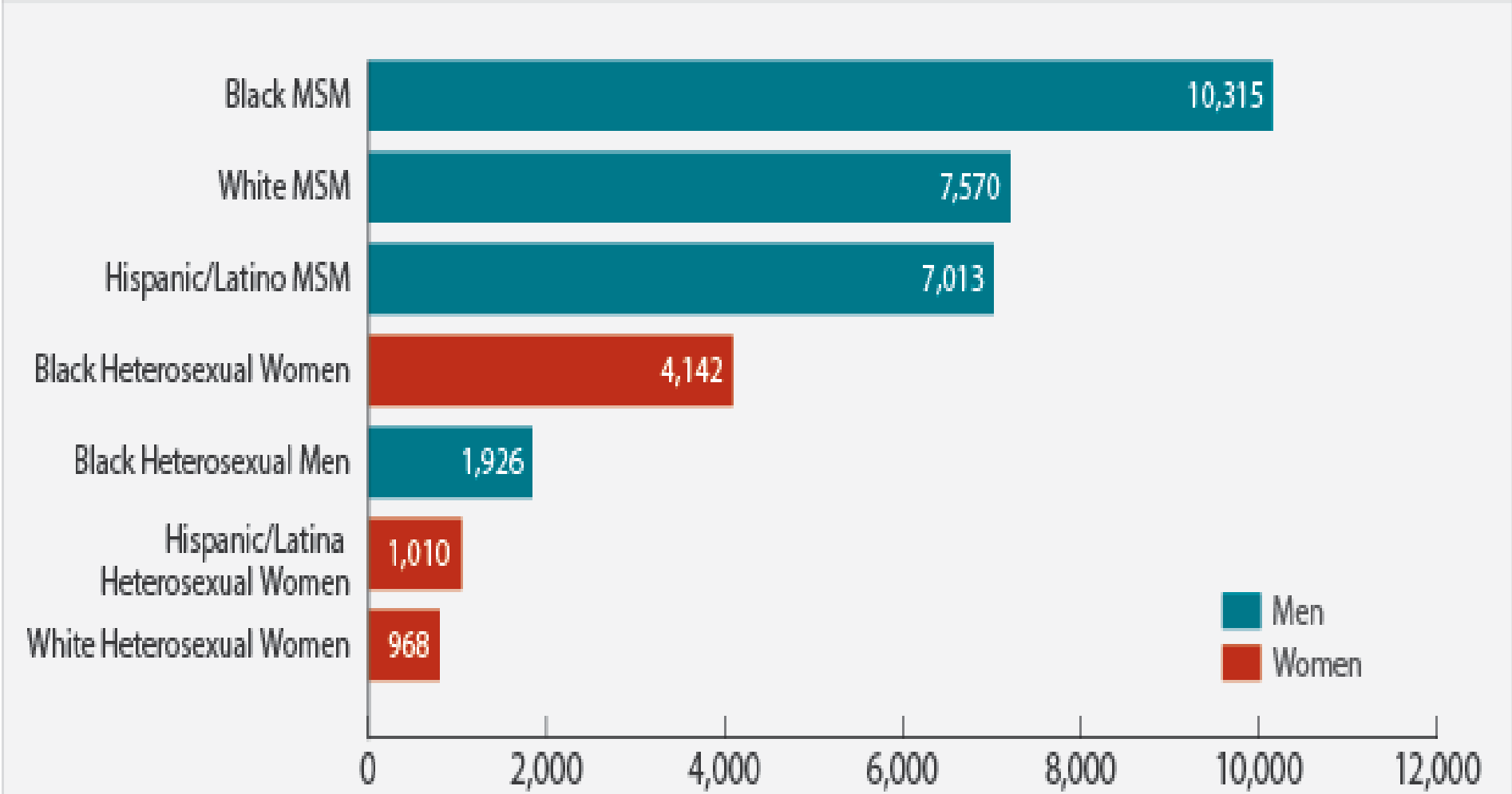
Source: CDC. Lifetime risk of HIV diagnosis [press release] (http://www.cdc.gov/nchhstp/newsroom/2016/croi-press-release-risk.html). February 23, 2016.

Diagnoses of HIV Infection in the US in 2015, by Race/Ethnicity and Region of Residence



Source: CDC. Diagnoses of HIV infection in the United States and dependent areas, 2015. *HIV Surveillance Report* 2016;27 (http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html).

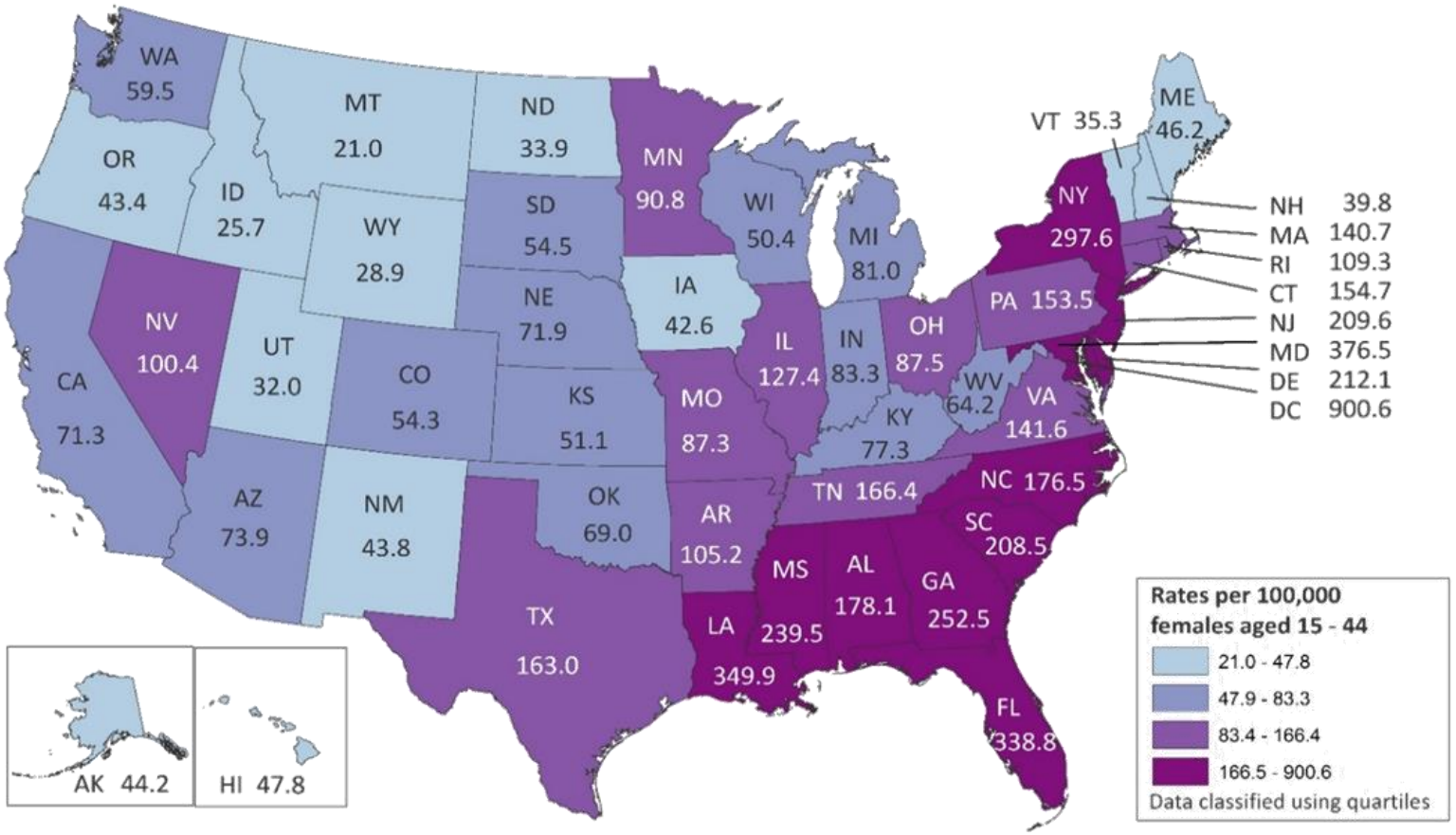
New HIV Infections by Subpopulations, 2015



Source: https://www.cdc.gov/hiv/

Rates Of Females Aged 15–44 Years Living With Diagnosed HIV Infection, By Area Of Residence, 2014—United States and Puerto Rico

N = 97,699 Total Rate: 152.4

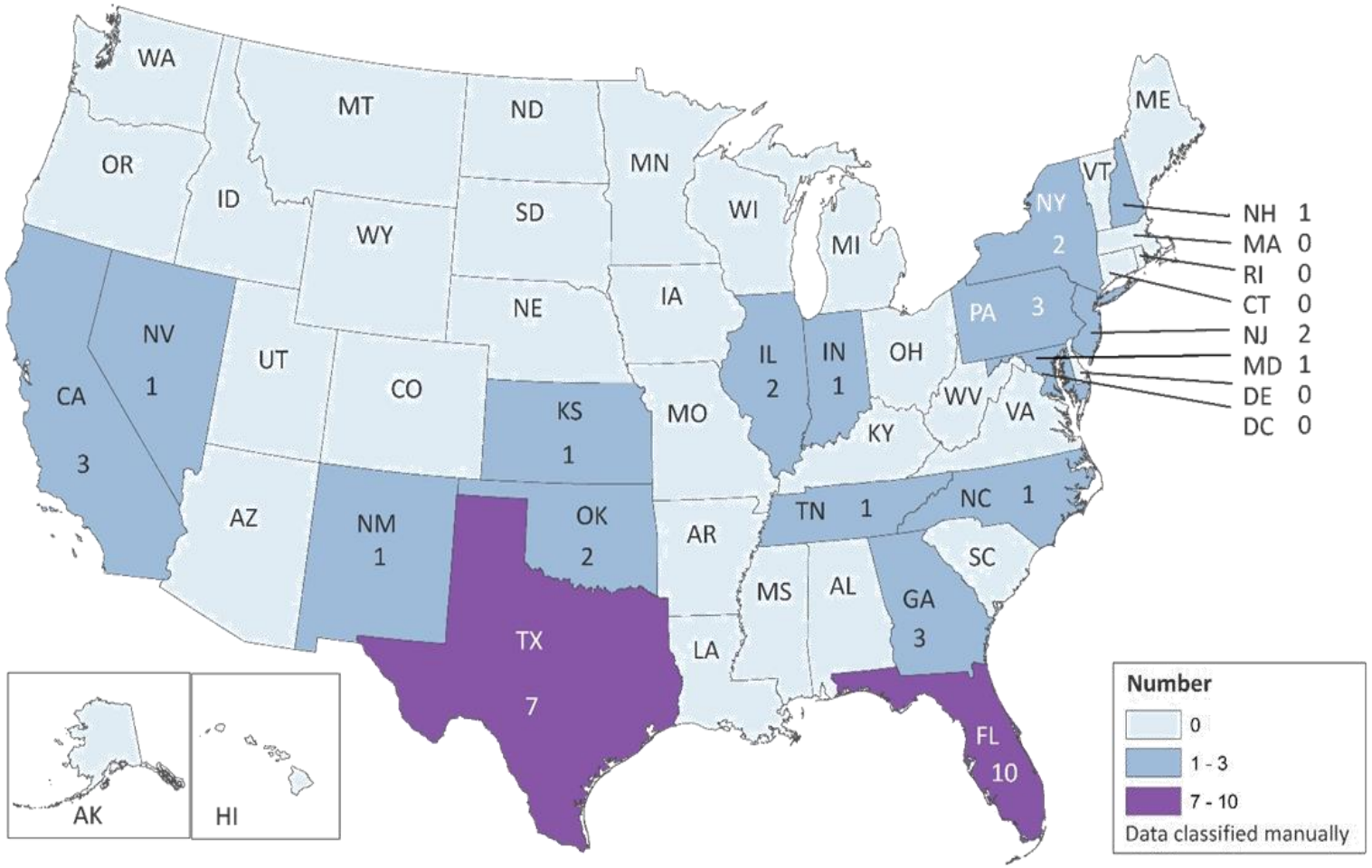


Puerto Rico 244.2

Source: https://www.cdc.gov/hiv/

Diagnoses Of Perinatally Acquired HIV Infection Among Children Born During 2013, by Area of Residence—United States and Puerto Rico

N = 42

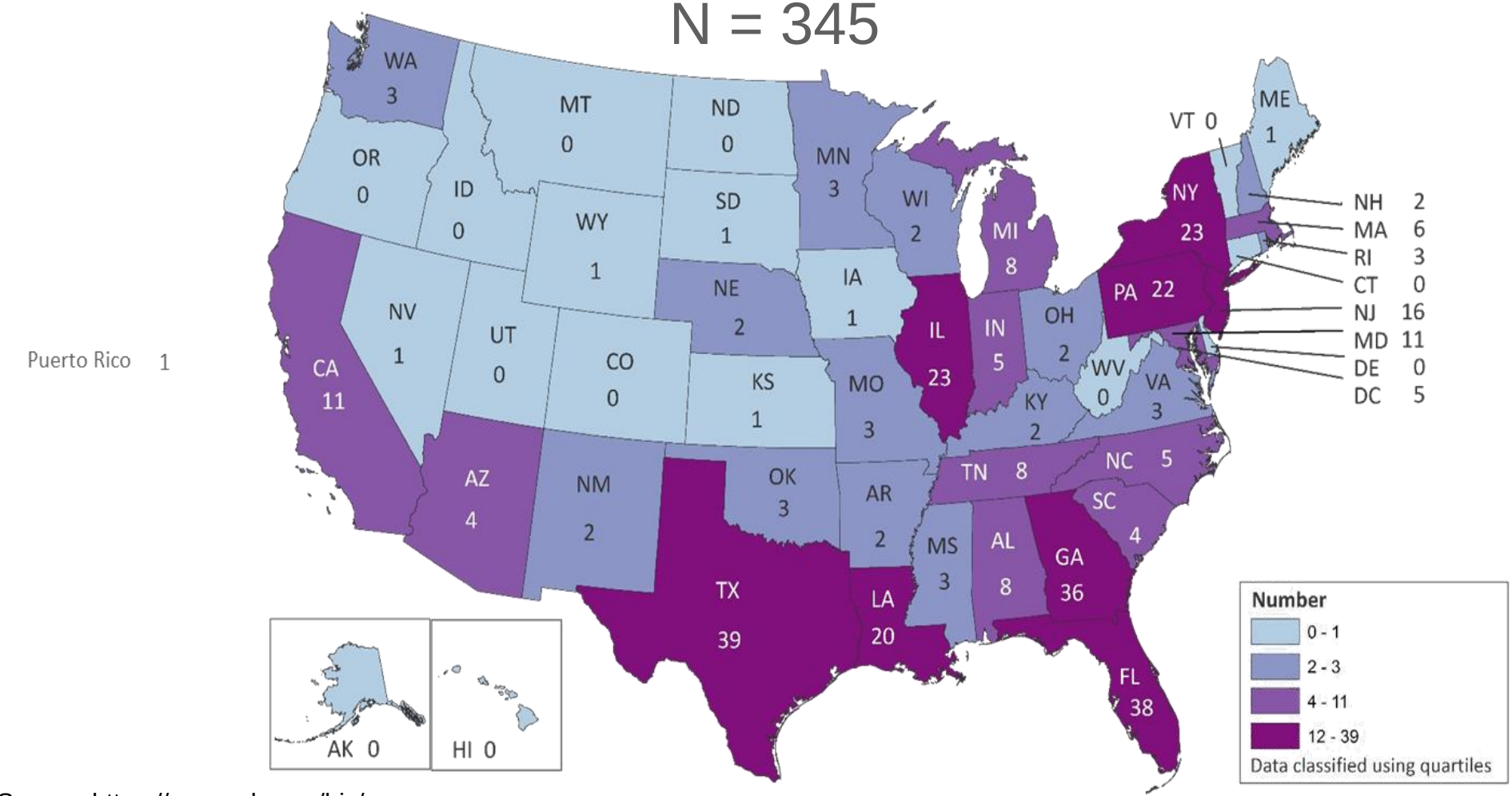


Puerto Rico 0

Source: https://www.cdc.gov/hiv/

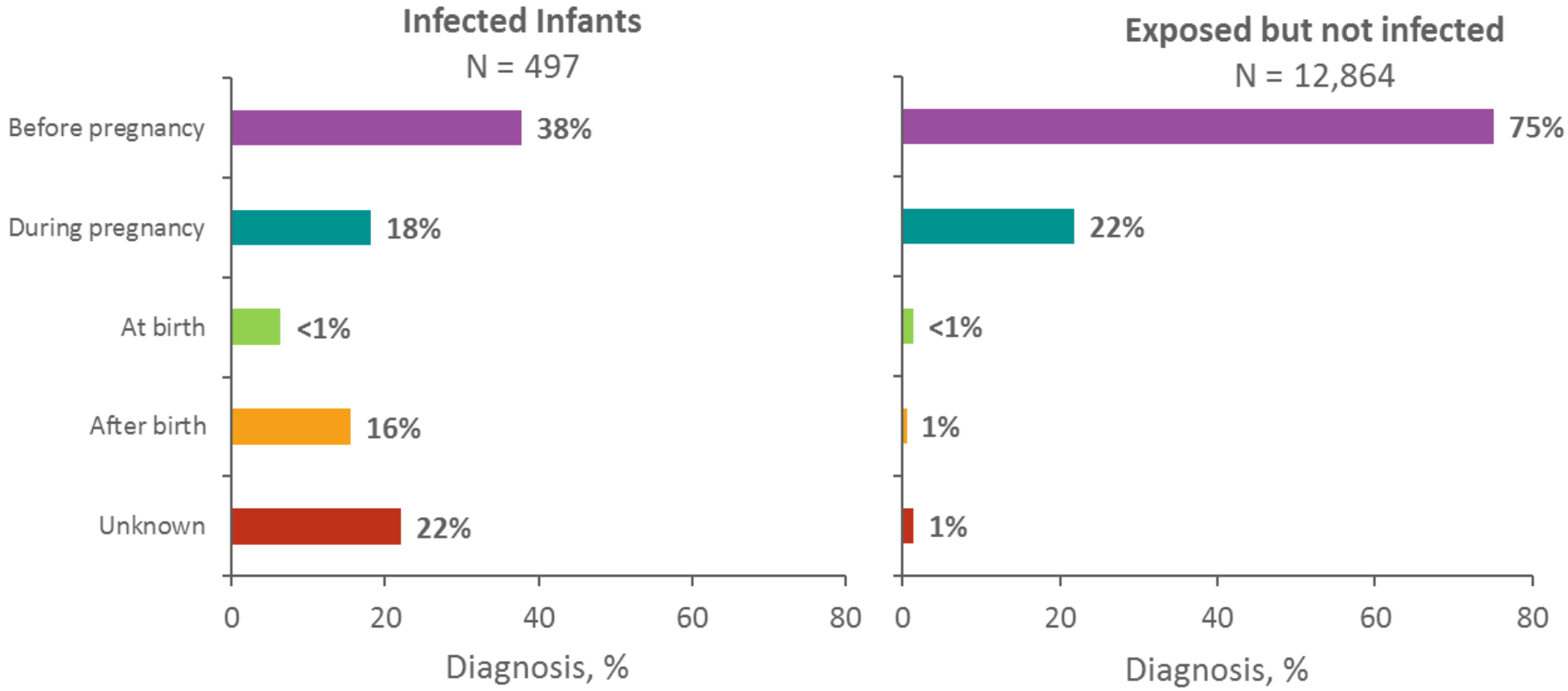
Diagnoses Of Perinatally Acquired HIV Infection Among Children Born In The United States and Puerto Rico, Birth Years 2009–2013, By Area of Residence

N = 345



Source: https://www.cdc.gov/hiv/

Time Of Maternal HIV Testing Among Children With Diagnosed Perinatally Acquired HIV Infection and Children Exposed To HIV, Birth Years 2009–2013—United States and Puerto Rico

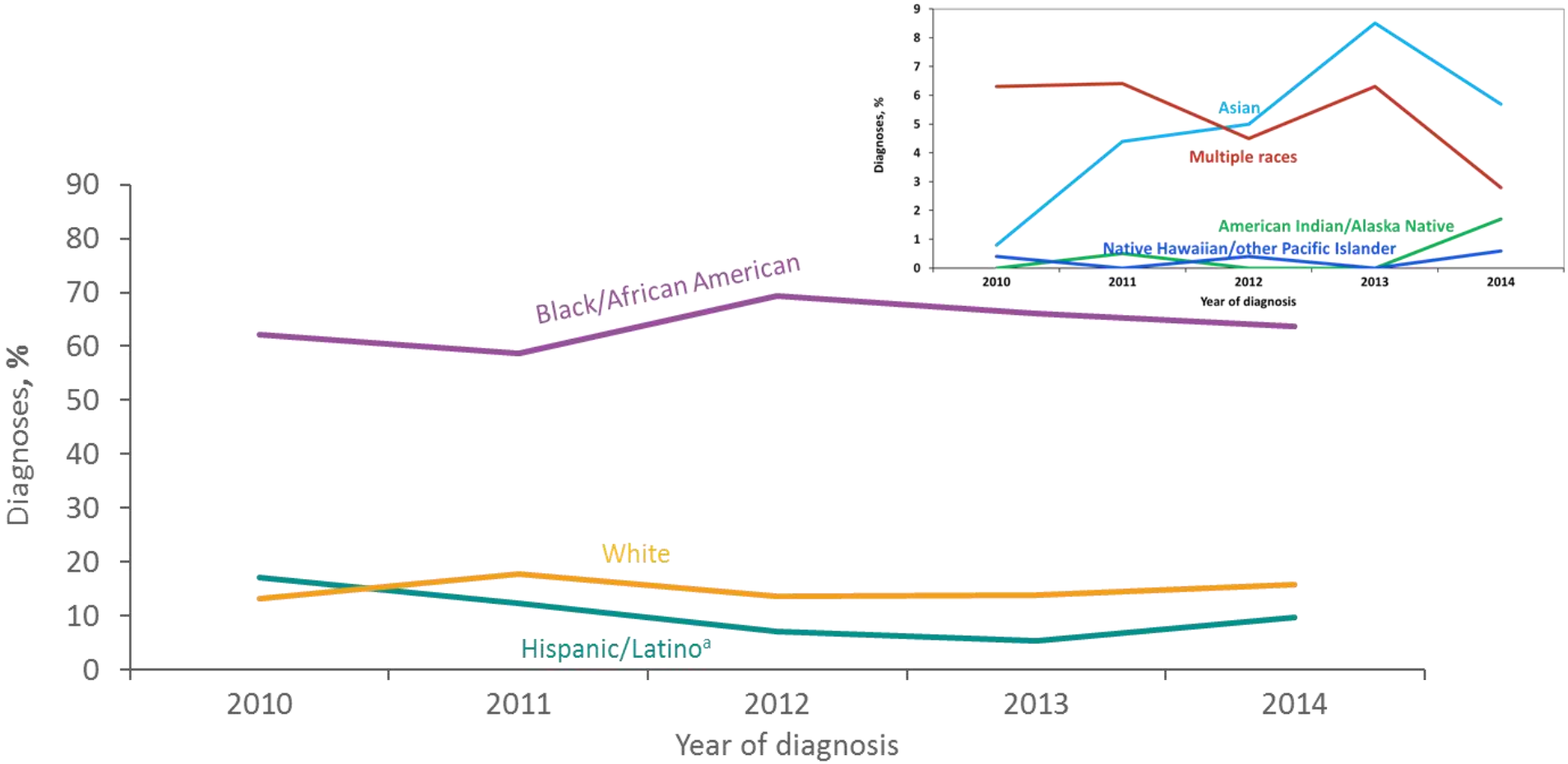


Source: https://www.cdc.gov/hiv/

Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis.

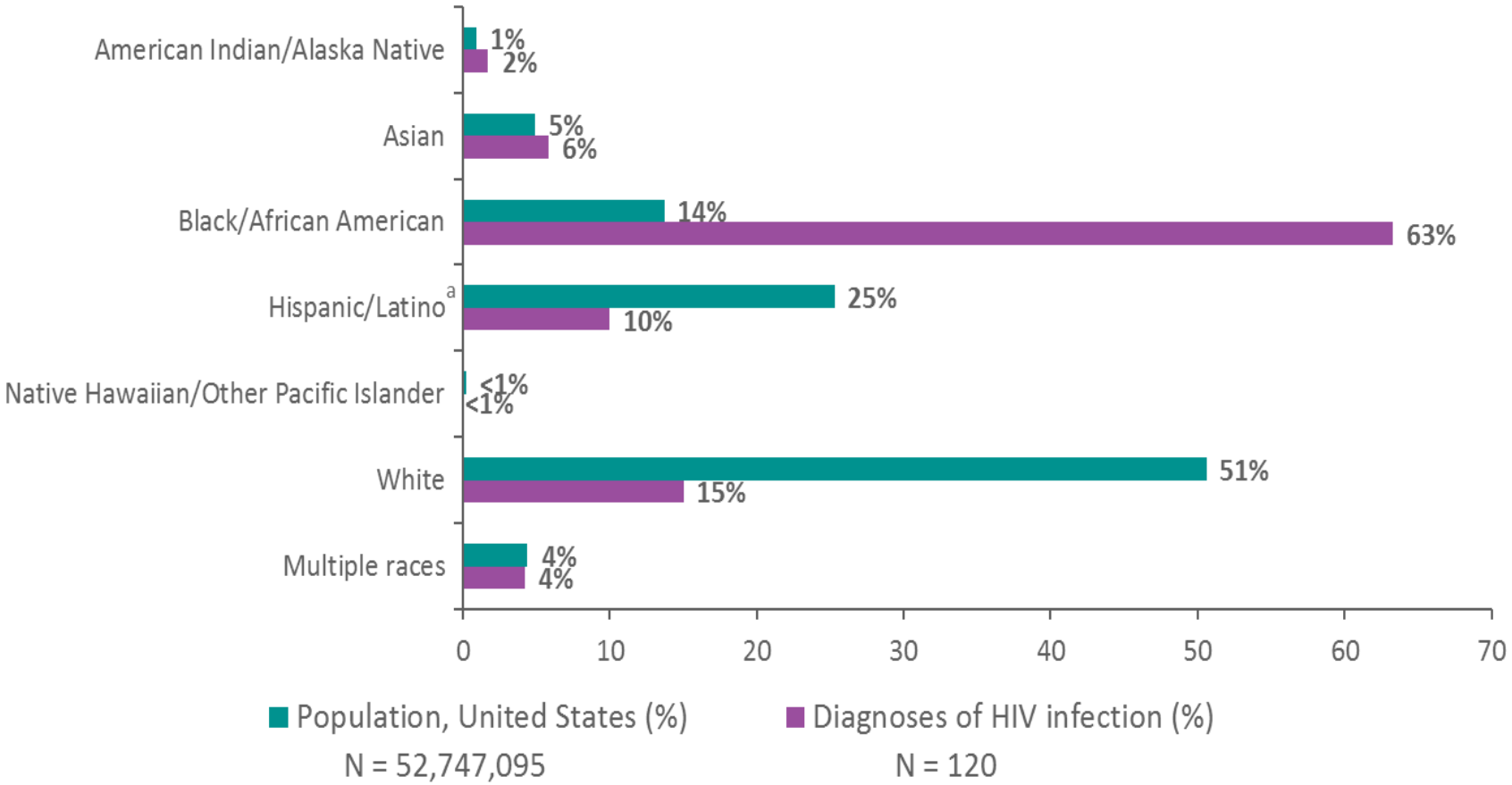
Diagnoses Of HIV Infection Among Children Aged <13 Years, By Race/Ethnicity, 2010–2014— United States And 6 Dependent Areas

N = 1,050



Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis.
[a] Hispanics/Latinos can be of any race.

Diagnoses Of HIV Infection And Population In Children Aged <13 Years By Race/Ethnicity, 2015—United States



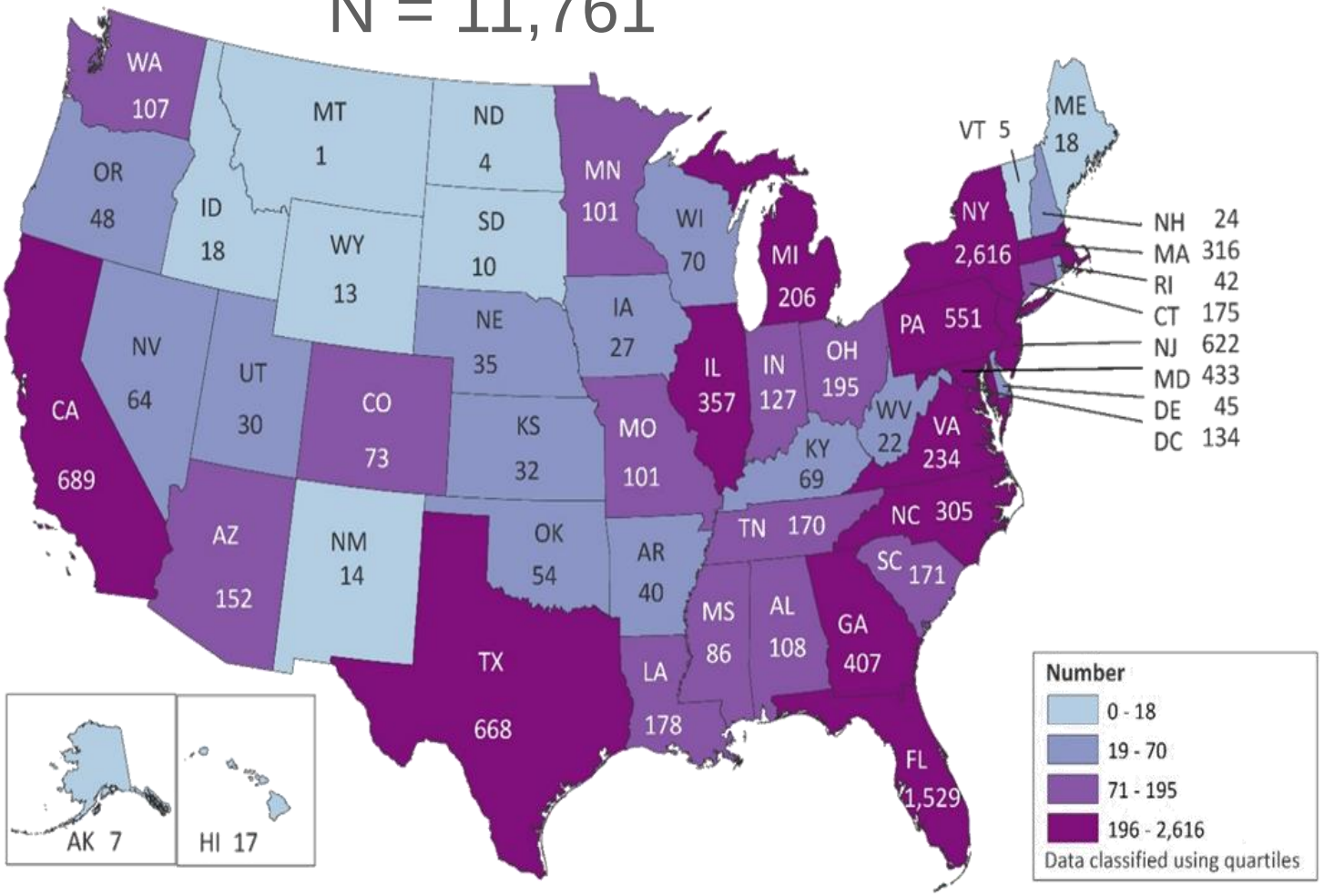
Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Data for the year 2015 are preliminary and based on 6 months reporting delay.

[a] Hispanics/Latinos can be of any race.

Source: https://www.cdc.gov/hiv/

Persons Living With Diagnosed Perinatally Acquired HIV Infection, 2014—United States and 6 Dependent Areas

N = 11,761



American Samoa	0
Guam	2
Northern Mariana Islands	0
Puerto Rico	231
Republic of Palau	0
U.S. Virgin Islands	8

Source: https://www.cdc.gov/hiv/

Case Vignette

- You are on call at your local hospital and are notified that a HIV-positive pregnant woman has presented to labor & delivery at 39.3 weeks with contractions.

What do you want to know?

Case Vignette

- When was the mother diagnosed?
- Is mother on ARV drugs? What regimen and when started?
- How was her adherence to therapy?
- What is the mother's viral load?
- Was there ROM?

After delivery:

- Did the mother receive IV AZT during labor?
- Was the delivery vaginal or cesarean section?

Rates and Timing of Perinatal Transmission

Risk of HIV Transmission from Mother-to-Child

Overall, what percentage of **breastfeeding** HIV-infected pregnant mothers will have a HIV-infected infant (without ARV drugs)?

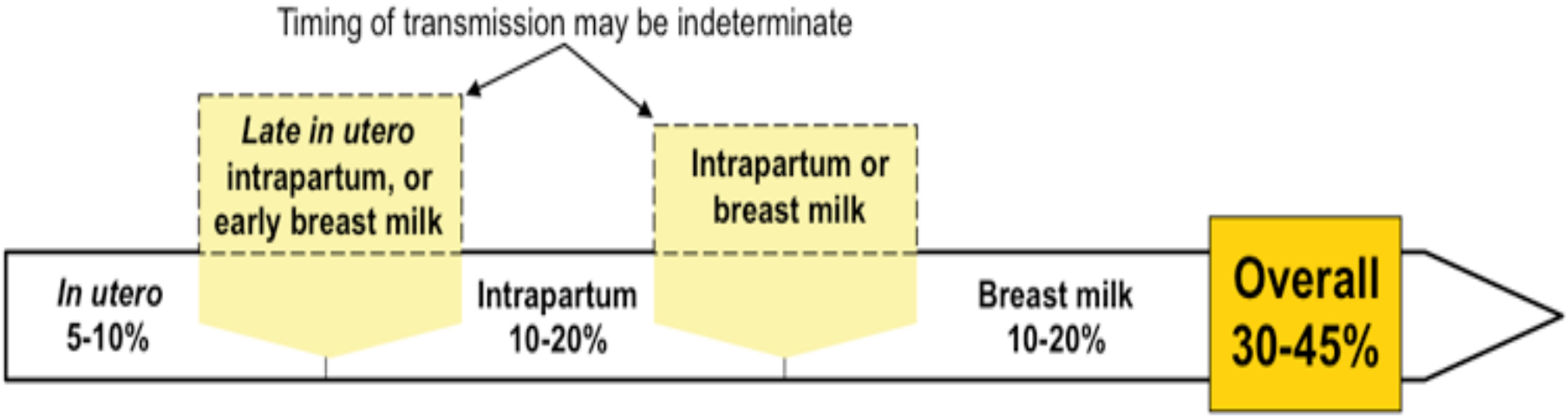
a) 25%
b) 45%
c) 65%
d) 85%

Risk of HIV Transmission from Mother-to-Child

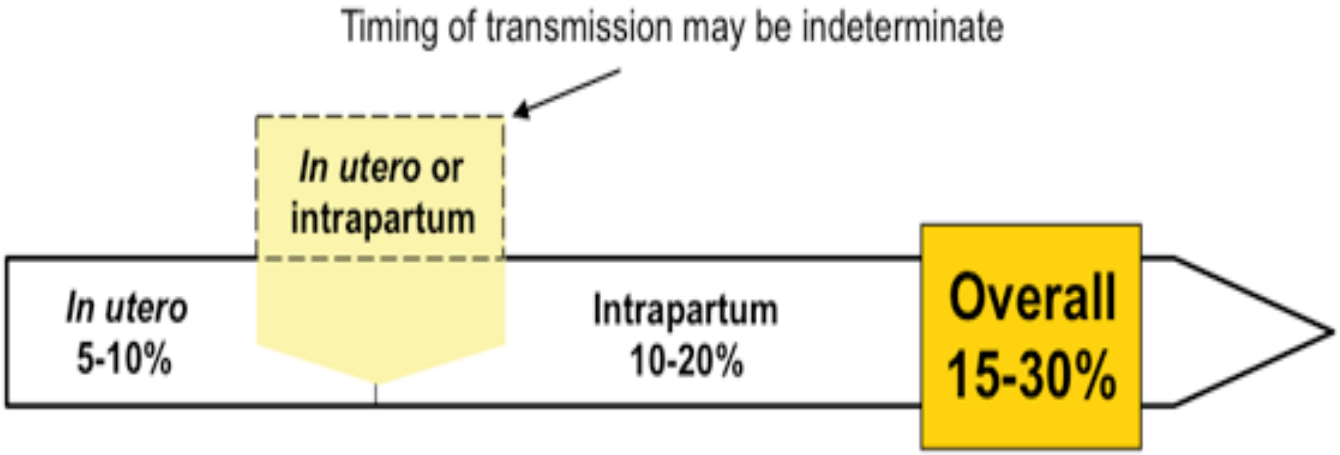
Overall, what percentage of **non-breastfeeding** HIV-infected pregnant mothers will have a HIV-infected infant (without ARV drugs)?

a) 30%
b) 45%
c) 65%
d) 85%

Breastfeeders



Non-breastfeeders



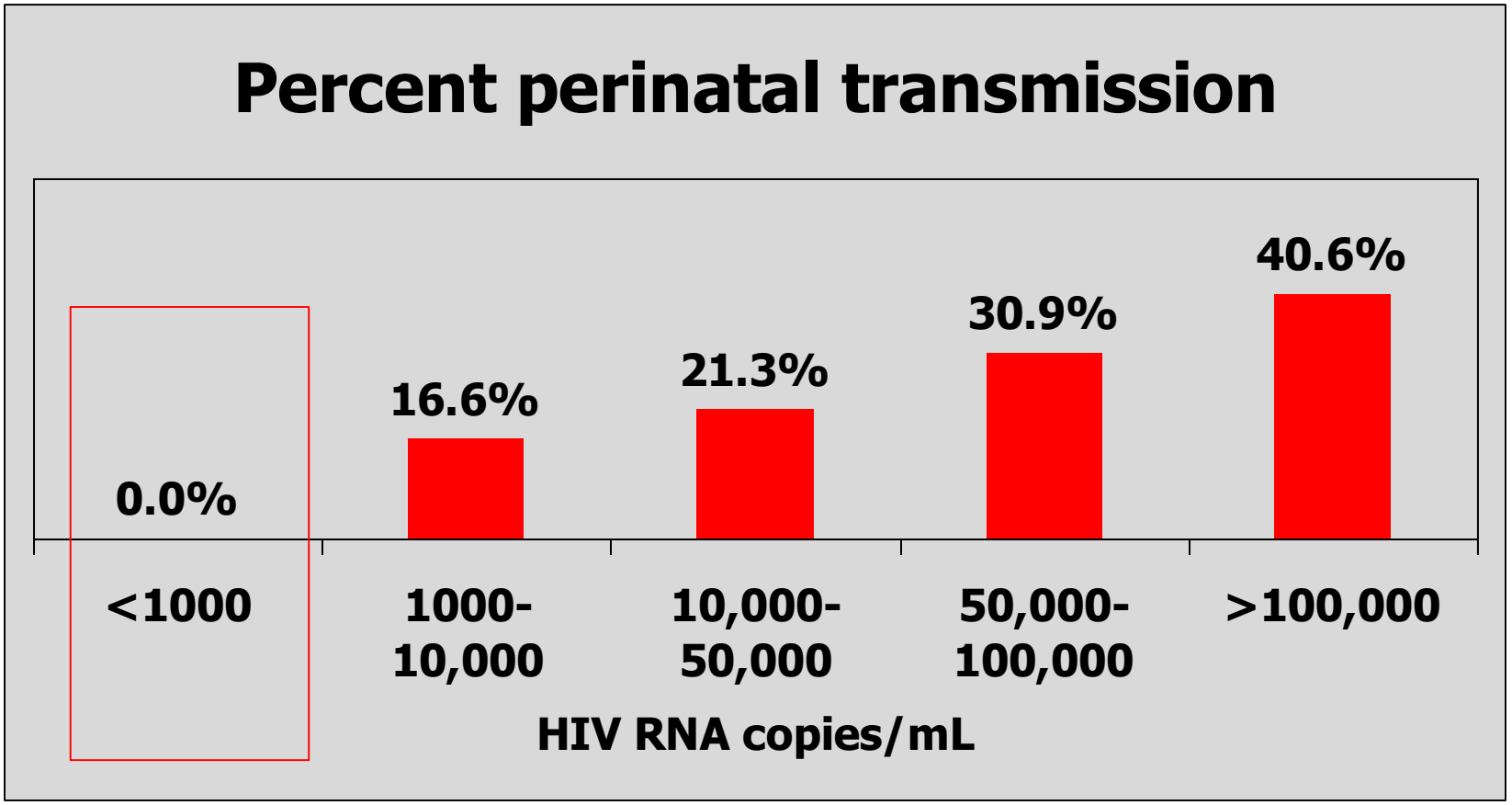
Rev Med Virol. 2007;17:381-403.

Risk Factors for Transmission

Factors Affecting Transmission: **Antepartum period**

- Best predictor: Maternal VL at delivery
- May be affected by:
  - Acute HIV infection
  - Antiretroviral drug resistance
  - Poor adherence to ARV therapy
- Other factors:
  - Advanced maternal disease (low CD4); smoking and drug use; genital tract infections

WITS 1999: HIV Transmission Risk by Maternal HIV RNA



N Engl J Med 1999;341:394-402

Factors Affecting Transmission: **Intrapartum Period**

- For women with VL > 1,000 copies/ml
  - Mode of delivery (vaginal vs C/S)
  - Duration of ROM
- Limited data on other obstetric practices, particularly for women with VL < 1,000 copies/ml
  - Fetal scalp electrodes
  - Operative delivery (forceps, vacuum, episiotomy)

HIV Transmission Risk By Mode of Delivery

- Meta-analysis of 15 prospective cohort studies; pre-HAART era
- Elective C/S (before onset of labor & ROM) reduces the risk of HIV transmission
- No additional benefit after onset of labor or ROM, or for women with VL < 1000 copies/ml

OBSTETRICS

Duration of membrane rupture and risk of perinatal transmission of HIV-1 in the era of combination antiretroviral therapy

Amanda M. Cotter, MD; Kathleen F. Brookfield, MD; Lunthita M. Duthely, MS; Victor H. Gonzalez Quintero, MD; JoNell E. Potter, PhD; Mary J. O'Sullivan, MD

OBJECTIVE: The objective of the study was to determine whether the duration of membrane rupture of 4 or more hours is a significant risk factor for perinatal transmission of human immunodeficiency virus (HIV) in the era of combination antiretroviral therapy (ART).

STUDY DESIGN: This was a prospective cohort study of 717 HIV-infected pregnant women-infant pairs with a delivery viral load available who received prenatal care and delivered at our institution during the interval 1996-2008.

RESULTS: The cohort comprised 707 women receiving ART who delivered during this interval. The perinatal transmission rate was 1% in women with membranes ruptured for less than 4 hours and 1.9% when ruptured for 4 or more hours. For 493 women with a delivery viral load less than 1000 copies/mL receiving combination ART in pregnancy, there were no cases of perinatal transmission identified up to 25 hours of membrane rupture. Logistic regression demonstrated only a viral load above 10,000 copies/mL as an independent risk factor for perinatal transmission.

CONCLUSION: Duration of membrane rupture of 4 or more hours is not a risk factor for perinatal transmission of HIV in women with a viral load less than 1000 copies/mL receiving combination ART.

Key words: antiretroviral therapy, duration of membrane rupture, perinatal transmission, pregnancy

Cite this article as: Cotter AM, Brookfield KF, Duthely LM, et al. Duration of membrane rupture and risk of perinatal transmission of HIV-1 in the era of combination antiretroviral therapy. Am J Obstet Gynecol 2012;207:482.e1-5.

Duration of ruptured membranes and mother-to-child HIV transmission: a prospective population-based surveillance study

H Peters,[a] L Byrne,[a] A De Ruiter,[b] K Francis,[a] K Harding,[b] GP Taylor,[c] PA Tookey,[a] CL Townsend[a]

[a] Population, Policy and Practice Programme, UCL Institute of Child Health, University College London, London, UK [b] Guys & St Thomas' NHS Foundation Trust, London, UK [c] Imperial College Healthcare NHS Trust, London, UK

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Accepted 31 March 2015. Published Online 22 May 2015.

Objective To investigate the association between duration of rupture of membranes (ROM) and mother-to-child HIV transmission (MTCT) rates in the era of combination antiretroviral therapy (cART).

Design The National Study of HIV in Pregnancy and Childhood (NSHPC) undertakes comprehensive population-based surveillance of HIV in pregnant women and children.

Setting UK and Ireland.

Population A cohort of 2398 singleton pregnancies delivered vaginally, or by emergency caesarean section, in women on cART in pregnancy during the period 2007–2012 with information on duration of ROM; HIV infection status was available for 1898 infants.

Methods Descriptive analysis of NSHPC data.

Main outcome measures Rates of MTCT.

Results In 2116 pregnancies delivered at term, the median duration of ROM was 3 hours 30 minutes (interquartile range, 0.34% for ROM <4 hours, with no significant difference between the groups (OR 1.90, 95% CI 0.45–7.97). In women delivering at term with a viral load of <50 copies/ml, there was no evidence of a difference in MTCT rates with duration of ROM ≥4 hours, compared with <4 hours (0.14% for ≥4 hours versus 0.12% for <4 hour; OR 1.14, 95% CI 0.07–18.27). Among infants born preterm with infection status available, there were no transmissions in 163 deliveries where the maternal viral load was <50 copies/ml.

Conclusions No association was found between duration of ROM and MTCT in women taking cART.

Keywords Duration of ruptured membranes, HIV, mother-to-child transmission, pregnancy.

Tweetable abstract Rupture of membranes of more than 4 hours is not associated with MTCT of HIV in women on effective ART delivering at term.

Linked article This article is commented on by C Eppes, p. 982 in this issue. To view this mini commentary visit http://dx.doi.org/

Interventions to Reduce Perinatal Transmission

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

Developed by the HHS Panel on Treatment of Pregnant Women with HIV Infection and Prevention of Perinatal Transmission—
A Working Group of the Office of AIDS Research Advisory Council (OARAC)

What's New in the Guidelines (Last updated December 7 ,2018; last reviewed December 7, 2018)

67% Reduction In Perinatal Transmission With PACTG 076 AZT Regimen

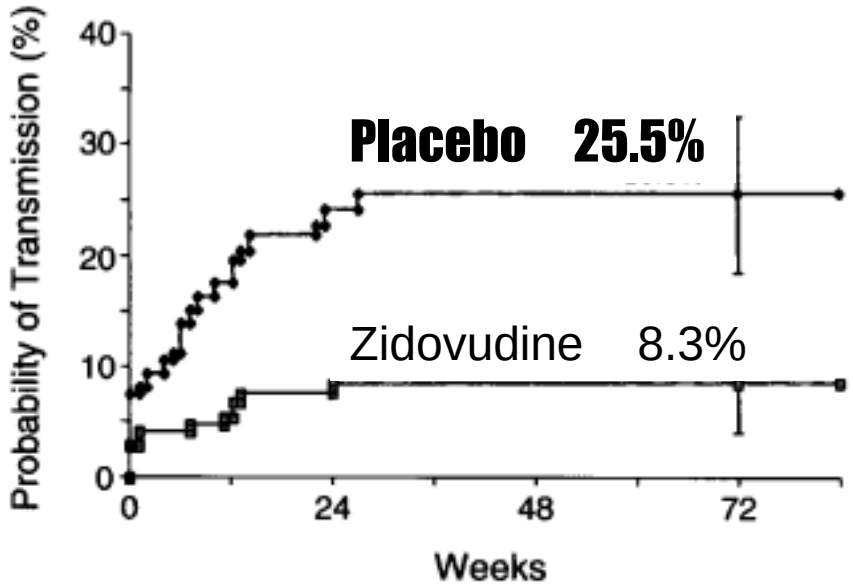
DSMB halted trial early in Feb 1994

The New England
Journal of Medicine

Volume 331 NOVEMBER 3, 1994 Number 18

REDUCTION OF MATERNAL–INFANT TRANSMISSION OF HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 WITH ZIDOVUDINE TREATMENT

Edward M. Connor, M.D., Rhoda S. Sperling, M.D., Richard Gelber, Ph.D., Pavel Kiselev, Ph.D., Gwendolyn Scott, M.D., Mary Jo O'Sullivan, M.D., Russell VanDyke, M.D., Mohammed Bey, M.D., William Shearer, M.D., Ph.D., Robert L. Jacobson, M.D., Eleanor Jimenez, M.D., Edward O'Neill, M.D., Brigitte Bazin, M.D., Jean-François Delfraissy, M.D., Mary Culnane, M.S., Robert Coombs, M.D., Ph.D., Mary Elkins, M.S., Jack Moye, M.D., Pamela Stratton, M.D., and James Balsley, M.D., Ph.D.,
for the Pediatric AIDS Clinical Trials Group Protocol 076 Study Group*

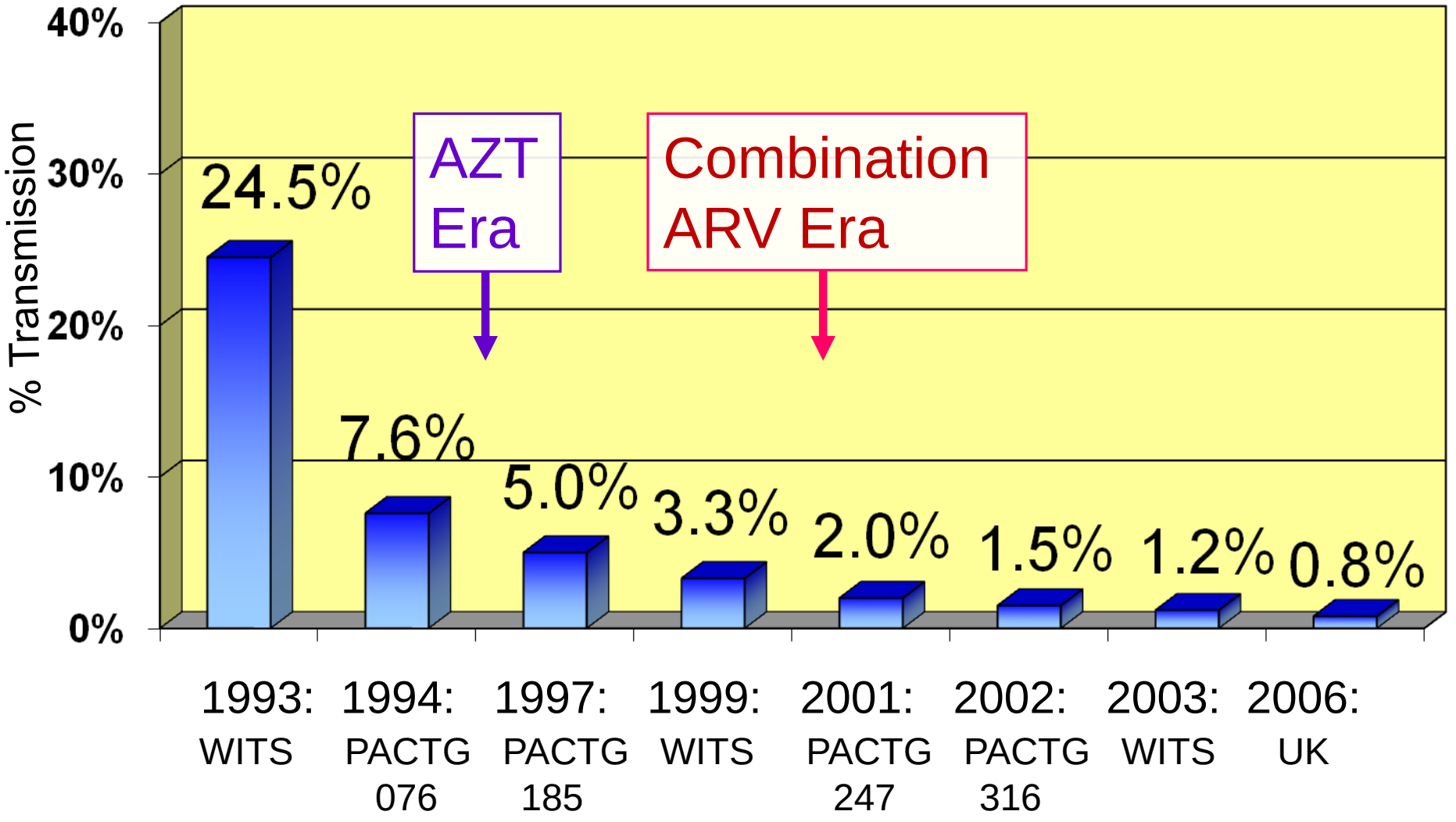


CDC
August 5, 1994 / Vol. 43 / No. RR-11
MMWR
Recommendations and Reports
MORBIDITY AND MORTALITY WEEKLY REPORT

Recommendations of the U.S. Public Health Service Task Force on the Use of Zidovudine to Reduce Perinatal Transmission of Human Immunodeficiency Virus

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
and Prevention (CDC)
Atlanta, Georgia 30333

Decreases In HIV Transmission Over Time



Low rates of mother-to-child transmission of HIV following effective pregnancy interventions in the United Kingdom and Ireland, 2000–2006

Claire L. Townsend[a], Mario Cortina-Borja[a], Catherine S. Peckham[a], Annemiek de Ruiter[b], Hermione Lyall[c] and Pat A. Tookey[a]

Aim: In the United Kingdom (UK) and Ireland, avoidance of breastfeeding and alternative combinations of antiretroviral therapy regimen and mode of delivery are recommended according to maternal clinical status. The aim of this analysis was to explore the impact of different strategies to prevent mother-to-child transmission at a population level.

Design: Comprehensive national surveillance study.

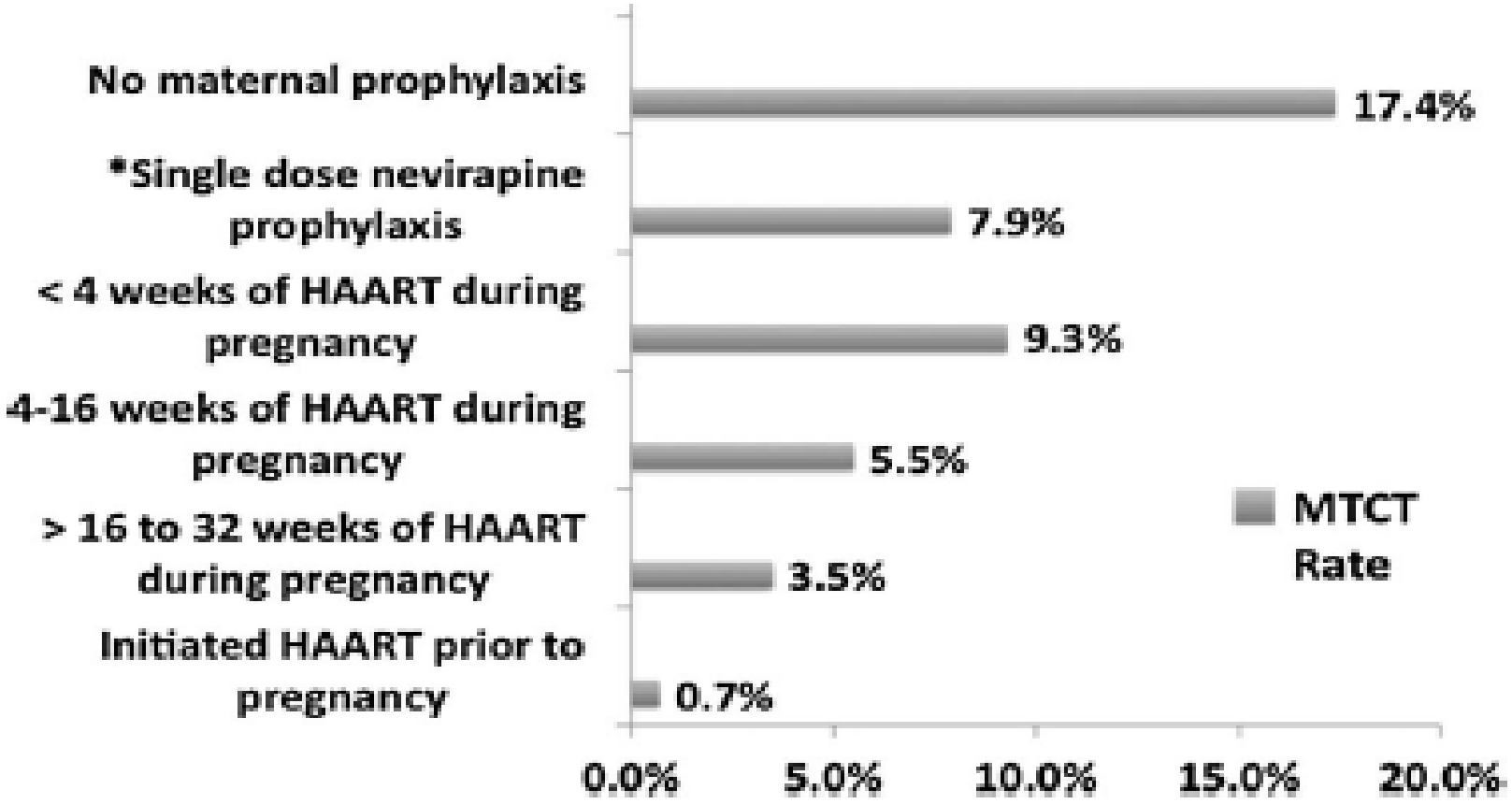
Methods: Pregnancies in diagnosed HIV-infected women in the UK and Ireland are notified to the National Study of HIV in Pregnancy and Childhood; infant infection status is subsequently reported. Factors associated with transmission in this observational study were explored for singleton births between 2000 and 2006.

Results: The overall mother-to-child transmission rate was 1.2% (61/5151, 95% confidence interval: 0.9–1.5%), and 0.8% (40/4864) for women who received at least 14 days of antiretroviral therapy. Transmission rates following combinations recommended in British guidelines were 0.7% (17/2286) for highly active antiretroviral therapy with planned Caesarean section, 0.7% (4/559) for highly active antiretroviral therapy with planned vaginal delivery, and 0% (0/464) for zidovudine monotherapy with planned Caesarean section ($P=0.150$). Longer duration of highly active antiretroviral therapy was associated with reduced [illegible] adjusting for viral load, mode of delivery and sex (adjusted odds ratio = 0.90 per week of highly active antiretroviral therapy, $P=0.0$[illegible]). Among 2117 infants born to women on highly active antiretroviral therapy with viral load less than 50 copies/ml, only three (0.1%) were infected, two with evidence of in utero transmission.

Conclusion: Sustained low HIV transmission rates following different combinations of interventions in this large unselected population are encouraging. Current options for treatment and delivery offered to pregnant women according to British guidelines appear to be effective.

AIDS 2008, **22**:973–981

Early ARV Initiation Needed



In women starting HIV drugs during pregnancy, each additional week of drugs reduced odds of transmission by 7% (adjusted OR 0.92, 95% CI 0.87-0.99)

Antepartum Care

Antepartum Care: General Principles

- **Start all pregnant women on ARV drugs to prevent perinatal transmission, regardless of VL or CD4 count**
  - Goal is to maintain VL undetectable throughout pregnancy
  - Combination antepartum, intrapartum, and infant prophylaxis most effective
  - Starting ARV drugs earlier during pregnancy more effective than starting later
  - Same regimens as non-pregnant adults, unless there are known adverse effects for mom or fetus
  - Evaluate for drug resistance if VL above threshold (500-1,000 copies/ml)
  - If already on ARV, continue regimen if well-tolerated and providing maximal VL suppression

Intrapartum Care

Intrapartum Care Guidelines

- Continue antepartum ARV during labor / before scheduled C/S
- Provide IV zidovudine (AZT) during the intrapartum period:
  - Give if VL > 1,000 copies/ml (or unknown)
  - No definitive guidelines in women with viral load 50-999 copies/ml. Some experts would give.
  - Give even if known/documented AZT resistance
  - Hold AZT component of ARV if mom is already on it and VL > 1,000 copies/ml
- Scheduled C-section at 38 weeks for women with HIV-1 RNA > 1,000 copies/ml

Intrapartum Care Guidelines

- Women presenting in labor with no documented HIV status (or at high risk of infection and not re-tested during 3rd trimester):
  - Expedited HIV testing (opt-out); if positive send confirmatory test
  - Start IV AZT immediately (do not wait for confirmatory test results)
  - Provide infant combination ARV prophylaxis
  - Counsel against BF while awaiting confirmatory test results

Infant Care and Prophylaxis

Infant Care And Prophylaxis

- 6-week AZT prophylaxis for neonates (term & preterm)
  - Initiate within 6-12 hours
  - Consider 4-week course if mother has received standard HAART with consistent viral suppression and no concerns for adherence
- Additional prophylaxis with 3-dose NVP regimen for infants with **HIGH RISK** of transmission (at birth, 48hrs later, 96hrs after 2nd dose) or 3 drug therapy

High Risk For HIV Transmission

- No antepartum or intrapartum ARV drugs
- Only received intrapartum ARV drug
- Antepartum ARV drugs but no viral suppression prior to delivery
- Unknown HIV status

Infant Care and Prophylaxis

- CBC with differential at 4 weeks of age
- No premastication of food
- No breastfeeding (US)
- Begin PCP prophylaxis at 4-6 weeks, unless HIV infection has been presumptively excluded
- Virologic testing for the infant

Neonatal Antiretroviral Drug Dosing

Table 7. Neonatal Dosing for Prevention of Perinatal Transmission of HIV

All HIV-Exposed Infants
Initiated as soon after delivery as possible

Regimen	Dosing	Duration
ZDV **Note:** Twice-daily dosing prophylaxis should be started as soon after birth as possible, preferably within 6–12 hours of delivery For infants 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 6 Weeks:* • 4 mg/kg orally twice daily **Simplified Weight-Band Dosing for Infants ≥35 Weeks:** **Weight Band (kg)** / *** Volume (mL) 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**	Birth through 4–6 weeks[a]
	≥30 to <35 Weeks' Gestation at Birth: *Birth to Age 2 Weeks:* • 2 mg/kg orally twice daily *Age 2 Weeks to 4–6 Weeks:* • 3 mg/kg orally twice daily	Birth through 6 weeks
	<30 weeks' Gestation at Birth: *Birth to Age 4 Weeks:* • 2 mg/kg orally twice daily *Age 4 Weeks to 6 Weeks:* • 3 mg/kg orally twice daily	Birth through 6 weeks

Source: AIDSinfo.nih.gov

AZT (Zidovudine)

- Well-tolerated in infants
- Common side effect:
  - Macrocytosis -- not significant, but can be a marker for adherence
- Serious side effects:
  - Anemia and neutropenia
  - Myositis (elevated CPK) and myopathy (rare)
  - Lactic acidosis (rare)
- Decreased dosing in premature infants

NVP Prophylaxis for High Risk Infants

Additional Antiretroviral Prophylaxis Agents for HIV-Exposed Infants Who are at High Risk of HIV Acquisition Initiated as soon after delivery as possible		
NICHD-HPTN 040/PACTG 1043 Study Regimen		
NVP In addition to ZDV as shown above	Birth Weight 1.5–2 kg: • 8 mg dose PO (Note: No calculation is required for this dose; this is the actual dose, not a mg/kg dose.)	Three Doses in the First Week of Life: 1. Within 48 hours of birth 2. 48 hours after first dose 3. 96 hours after second dose
	Birth Weight >2 kg: • 12 mg dose PO (Note: No calculation is required for this dose; this is the actual dose, not a mg/kg dose.)	

NVP Prophylaxis for High Risk Infants

- Long half life
- Prophylaxis doses well-tolerated in infants
  - None of the typical adverse events (rash, Stevens-Johnson syndrome, symptomatic hepatitis) were noted in infants taking prophylactic doses of NVP in NICHD HPTN 040/PACTG 1043 protocol

3 Drug Therapy For High Risk Infants

- **Empiric HIV therapy** using either ZDV, 3TC, and NVP (treatment dosage)
- *or* ZDV, 3TC, and RAL
- Administered from birth to age 6 weeks
- Current guidelines do not differentiate between who should receive 2 drug therapy and 3 drug therapy
- Consult a Pediatric HIV specialist to determine the best regimen

Back To Our Case

- You are on call and are notified that a HIV-positive woman has presented to labor & delivery at 39.3 weeks with contractions.
  - Mother was diagnosed with HIV in 2006, started on ARV drugs at the time of diagnosis. She is on tenofovir (TDF)/ lamivudine (3TC) / and efavirenz (EFV) and describes good compliance with her medications
  - Viral load was undetectable (<20 copies/ml) at 36 weeks
- **What is your assessment regarding the risk of transmission?**

Low Risk for HIV Transmission

- What is your plan for medications to prevent mother-to-child transmission of HIV?
  - Continue her current ARV regimen throughout labor (TDF-3TC-EFV)
  - IV AZT not necessary since on ARV drugs with VL < 1,000 copies/ml
- Delivery plan?
  - Vaginal delivery
  - Avoid fetal scalp electrodes, vacuum and/or episiotomy unless clear obstetric indications

Low Risk for HIV Transmission

- After delivery?
- Virologic testing at birth-21 days, 1-2 month, 4-6 months
  - HIV-1 DNA PCR or HIV-1 RNA PCR
- PO AZT (zidovudine) 4mg/kg/dose BID x4-6 weeks
- **NO BREASTFEEDING**, instruct against premastication
- Refer to Pediatric Infectious Diseases physician for viral testing and follow up
- Antibody testing at 18 months

But What If…

- You get a call from an OB practice seeing a pregnant woman at 37 weeks
  - Mother reports frequent nausea and vomiting with ARV drugs (TDF / 3TC / LPV/r) and was not adherent to therapy early on, though she has had excellent adherence (> 95%) throughout the third trimester.
  - Viral load at 36 weeks: 5,000 copies/ml
- What is your assessment of the risk of transmission?

High Risk of HIV Transmission

- What is your recommendation for medications and delivery to reduce the risk of perinatal transmission?
  - Schedule delivery via cesarean section at 38 weeks
  - Provide IV AZT intrapartum
  - Continue her current ARV regimen postpartum and recommend maternal resistance testing, due to incomplete viral suppression

High Risk of HIV Transmission

- After delivery?
- Virologic testing at birth, 2 weeks, 1-2 months, 4-6 months
    - HIV-1 DNA PCR or HIV-1 RNA PCR
- PO AZT (zidovudine) 4mg/kg/dose BID x 6 weeks
- PO NVP (nevirapine) x3 doses
- Or consider 3 drug therapy x 6 weeks
- **NO BREASTFEEDING**, instruct against premastication
- CBC at 1 month, bactrim at 4-6 weeks
- Referral to Pediatric Infectious Diseases for virologic testing
- Antibody testing at 18 months

What If…

- You are on call and are notified that a mother has presented to labor & delivery.
  - Mother was just informed that the father of the baby tested HIV positive 2 months ago.
  - Mother's rapid HIV test on this admission is negative.
- What is your assessment?
- What else do you want to know?
- How do you interpret mother's *negative* rapid HIV test?

How Do You Interpret HIV Testing During The "Window Period"?

- Most HIV tests are not able to detect HIV during early infection.
- Timing of test reliability varies according to the type of test performed.
    - Antibody test
        - ELISA– reliable at 6 months
        - Rapid test– reliable at 3 months
    - Virologic testing– reliable at 1 month

Time To Detection

Virologic –NAT(Nucleic Acid Testing)

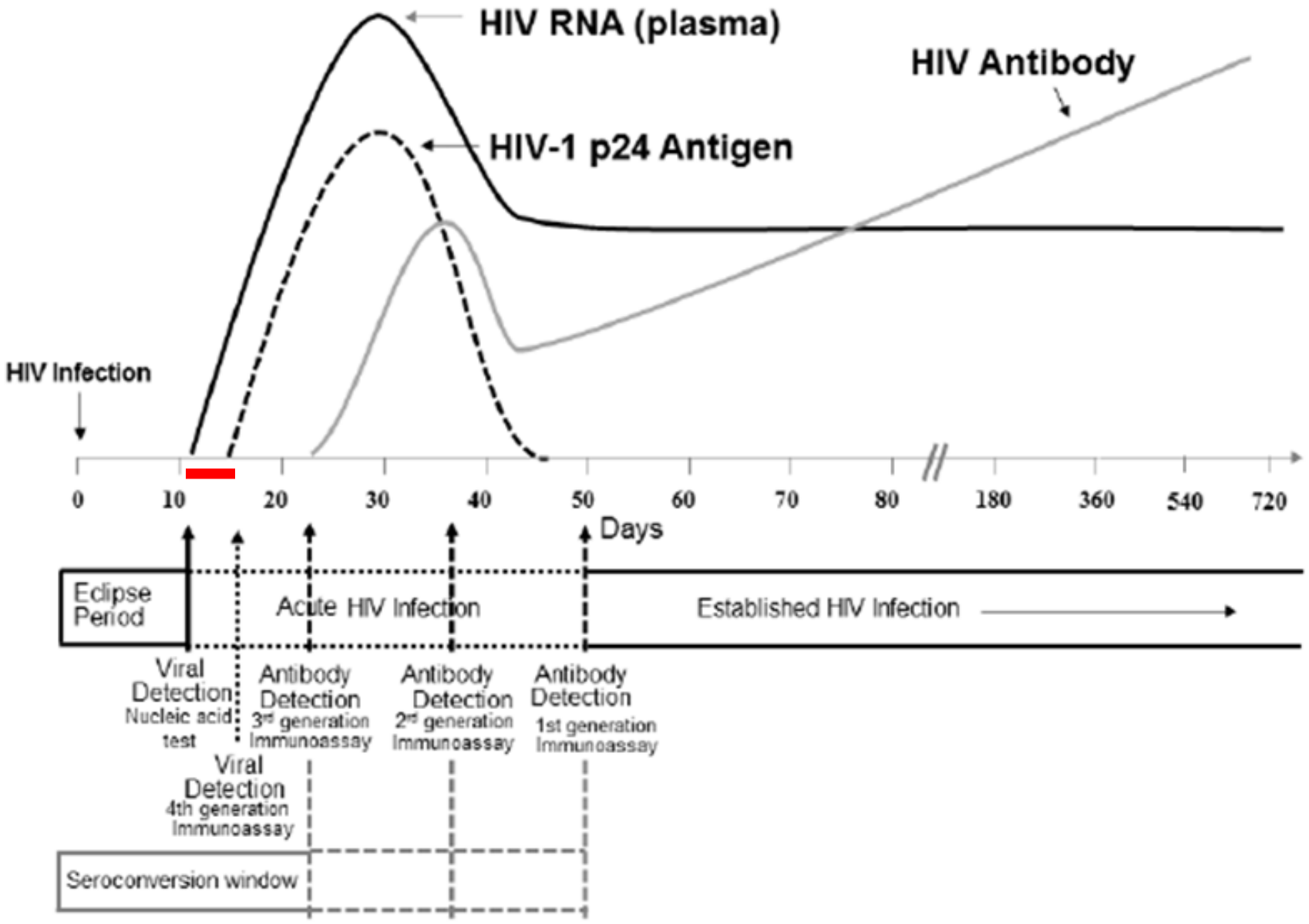
HIV RNA PCR: 10 days

Antibody + antigen

- 4th generation (IgG + IgM + p24 antigen detection): 14-20 days

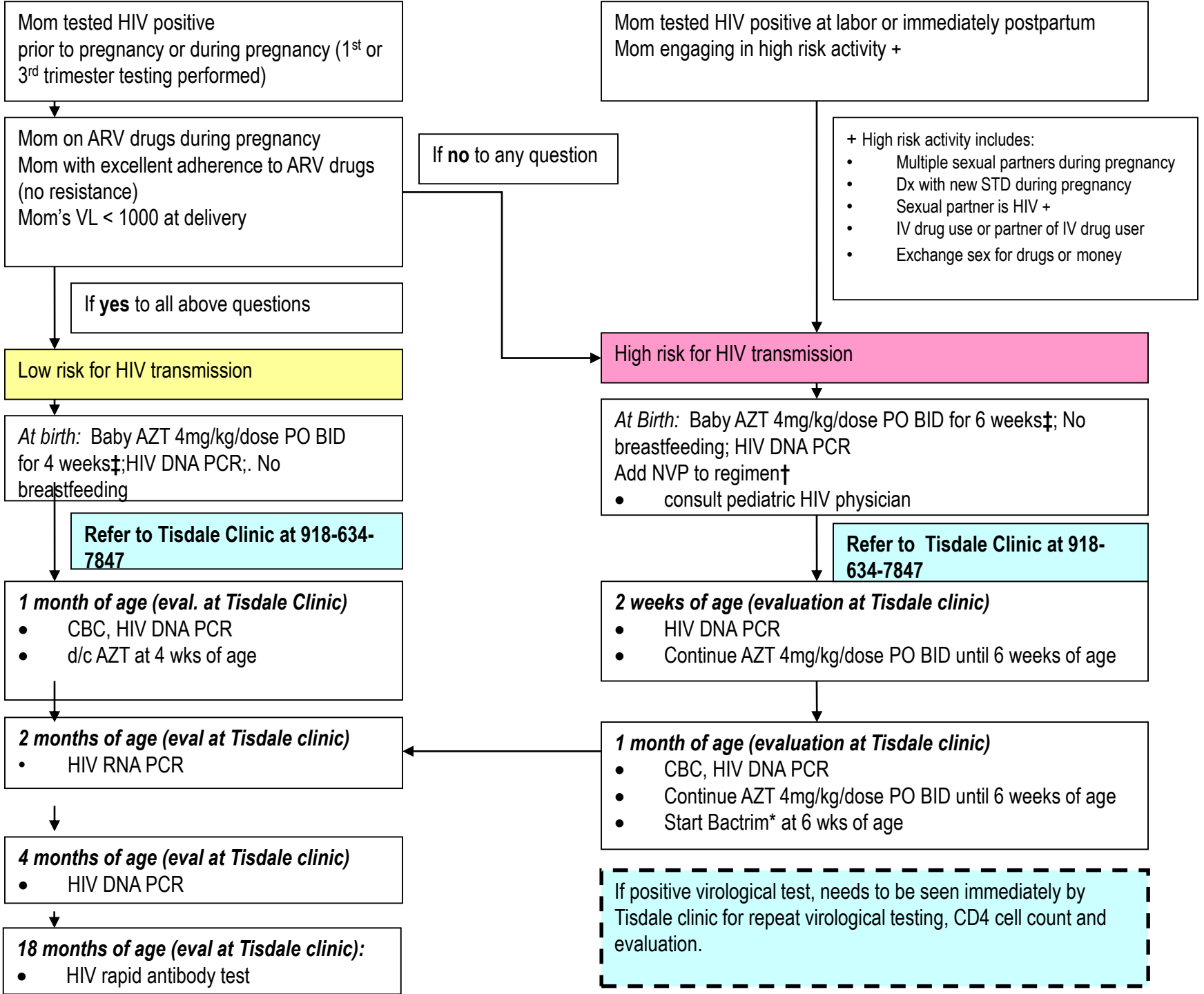
Antibody

- 3rd generation (IgG+IgM): 17-25 days
- 2nd generation (IgG): 18-35 days
- 1st generation ELISA/WB assays (IgG) : 50 days


HIV RNA (plasma)
HIV Antibody
HIV-1 p24 Antigen
HIV Infection
0
10
20
30
40
50
60
70
80
180
360
540
720
Days
Eclipse Period
Acute HIV Infection
Established HIV Infection
Viral Detection
Nucleic acid test
Antibody Detection
3rd generation Immunoassay
Antibody Detection
2nd generation Immunoassay
Antibody Detection
1st generation Immunoassay
Viral Detection
4th generation Immunoassay
Seroconversion window

High Risk Of HIV Transmission

- What do you do?
- Request HIV RNA PCR testing of mother
- Obtain records of father's viral load
- Virologic testing of the infant at birth, 2 weeks, 1-2 month, 4-6 months
- PO AZT (zidovudine) 4mg/kg/dose BID x6 weeks
    - If father's viral load is undetectable, this is all you need to start
- If father's viral load is unknown or high, start PO NVP (nevirapine) x3 doses and strongly consider 3 drug therapy
- **NO BREASTFEEDING**, instruct against premastication
- Consult Pediatric Infectious Diseases Physician
- Antibody testing at 18 months


Mom tested HIV positive
prior to pregnancy or during pregnancy (1st or 3rd trimester testing performed)
Mom on ARV drugs during pregnancy
Mom with excellent adherence to ARV drugs (no resistance)
Mom's VL < 1000 at delivery
If no to any question
If yes to all above questions
Low risk for HIV transmission
At birth: Baby AZT 4mg/kg/dose PO BID for 4 weeks‡;HIV DNA PCR;. No breastfeeding
Refer to Tisdale Clinic at 918-634-7847
1 month of age (eval. at Tisdale Clinic)
CBC, HIV DNA PCR
d/c AZT at 4 wks of age
2 months of age (eval at Tisdale clinic)
HIV RNA PCR
4 months of age (eval at Tisdale clinic)
HIV DNA PCR
18 months of age (eval at Tisdale clinic):
HIV rapid antibody test
Mom tested HIV positive at labor or immediately postpartum
Mom engaging in high risk activity +
+ High risk activity includes:
Multiple sexual partners during pregnancy
Dx with new STD during pregnancy
Sexual partner is HIV +
IV drug use or partner of IV drug user
Exchange sex for drugs or money
High risk for HIV transmission
At Birth: Baby AZT 4mg/kg/dose PO BID for 6 weeks‡; No breastfeeding; HIV DNA PCR
Add NVP to regimen†
consult pediatric HIV physician
Refer to Tisdale Clinic at 918-634-7847
2 weeks of age (evaluation at Tisdale clinic)
HIV DNA PCR
Continue AZT 4mg/kg/dose PO BID until 6 weeks of age
1 month of age (evaluation at Tisdale clinic)
CBC, HIV DNA PCR
Continue AZT 4mg/kg/dose PO BID until 6 weeks of age
Start Bactrim* at 6 wks of age
If positive virological test, needs to be seen immediately by Tisdale clinic for repeat virological testing, CD4 cell count and evaluation.

National Perinatal HIV Hotline

- Federally-funded service which offers free 24/7 clinical consultation to providers with perinatal transmission questions or issues

- 1-888-448-8765

Pediatric HIV Clinic at OU-Tisdale

Pediatric HIV Clinic At OU-Tisdale

- Open to all pediatric HIV infected patients birth - 21 years and all HIV exposed babies

- Call with any questions or patient referrals 918-634-7847 (confidential voicemail)

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THANK YOU

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