Perinatal HIV Surveillance Report Georgia, 2018

Georgia Department of Public Health
Division of Health Protection
Epidemiology Program
HIV/AIDS Epidemiology Section

Georgia Department of Public Health

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BACKGROUND

Mother to Child Transmission of HIV

Mother to child transmission of HIV can occur during pregnancy, labor and delivery, or post-partum through breastfeeding. Without any intervention, the risk of transmission of HIV from mother to child ranges from 15-45%[1]. However, the risk of transmission can be reduced to less than 5% when appropriate preventative action is taken[1]. Successful prevention of mother to child transmission of HIV (PMTCT) requires interventions that span the prenatal, labor and delivery, and post-partum periods. This coordinated effort is critical to ensure that no infant is perinatally infected with HIV.

Maternal diagnosis of HIV and receipt of effective treatment, ideally before pregnancy or as early as possible in pregnancy, are key components of prevention of perinatal transmission. In addition to mandating HIV testing at the start of prenatal care, Georgia law also mandates third trimester testing to ensure that women infected during pregnancy are diagnosed in time to prevent perinatal transmission. During labor and delivery, successful PMTCT requires that all providers know the HIV status and, if HIV-positive, recent viral load of every woman who presents to deliver at their facility. Current guidelines indicate the cutoff level for a suppressed viral load at delivery is 1000 viral copies/mL. Maternal viral load at delivery determines the set of recommended transmission prevention measures. For mothers virally suppressed by delivery, it is recommended that the infant receive zidovudine (ZDV) prophylaxis for 4-6 weeks after birth. For women with an unsuppressed or an unknown viral load at delivery, infant ZDV prophylaxis is recommended, as well as three additional prevention interventions: (1) maternal receipt of ZDV intravenously (IV) administered for at least three hours prior to delivery, (2) delivery via cesarean section to minimize the infant's exposure during delivery, and (3) infant receipt of oral nevirapine (NVP) prophylaxis after birth.

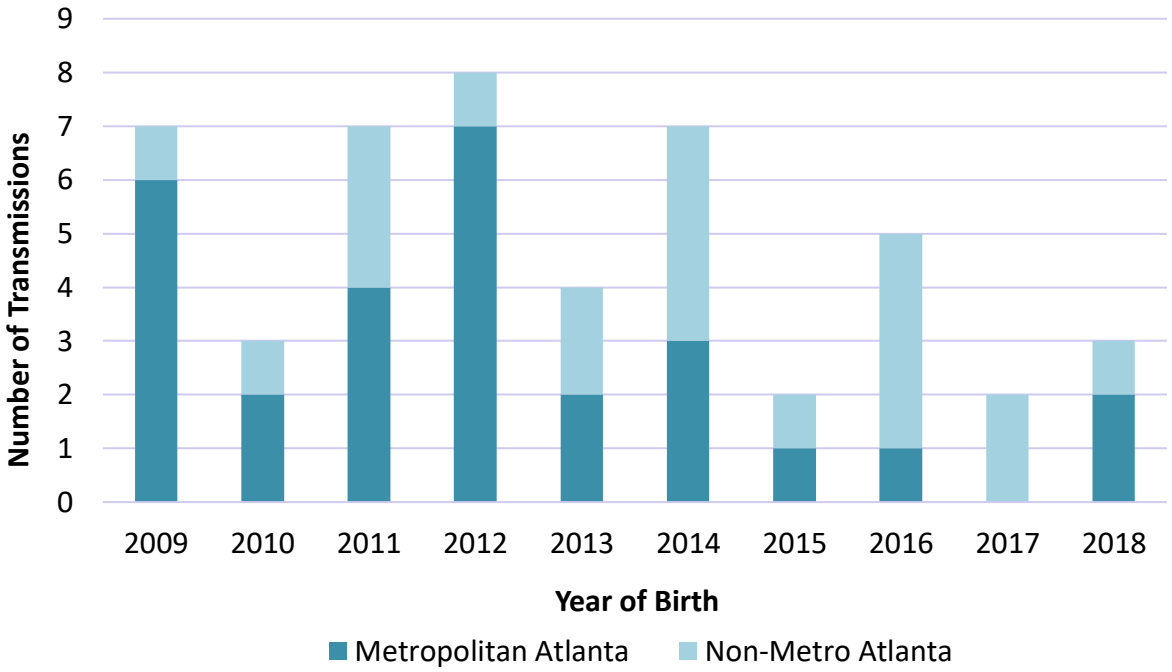
During the post-partum period, infants born to women living with HIV (WLWH) should not be breastfed at any point, regardless of viral suppression status. Current guidelines recommend alternative feeding of infant formula for all infants whose mothers are living with HIV in settings such as the United States, where clean water is readily available for use in formula[2].

Overall improvements in PMTCT prevention in recent years is likely due to increased efforts in improving case follow-up and provider adherence to proper guidelines in caring for women before, during, and after delivery.

Perinatal HIV transmission in Georgia, 2009-2018

From 2009-2018, a total of 48 infants born in Georgia were perinatally infected with HIV (Figure 1). During 2009-2012, 19 out of 25 (76%) were born to mothers residing in metro Atlanta and 24% to mothers residing in other parts of Georgia. During 2013-2018, 9 of 23 (39%) were born to mothers residing in metro Atlanta, and 61% to mothers residing in other parts of Georgia.

Figure 1. Perinatal HIV Infections, by year and location of mother's residence, Georgia, 2009-2018



**Categorization of Metro Atlanta vs. non-metro is determined by location of mother's residence*

Perinatal HIV exposure surveillance

Perinatal exposure surveillance involves collecting information on all mother-baby pairs where the mother was known to be living with HIV. In contrast to collecting information only for infected infants and their mothers, this allows for quantifying the prevalence of gaps in preventive measures among all infants with perinatal HIV exposure.

METHODS

Data Sources

A master list of all known births to HIV-positive mothers in Georgia in 2018 was compiled through three different data sources to identify infants perinatally exposed to HIV:

1) Maternal HIV status indicated as positive on the infant's birth certificate
2) Pharmacy alert system
    - In place with 3 hospital pharmacies in Atlanta

- Sends a notice to Infection Prevention (IP) when any infant dose of ZDV is ordered, identifying the birth of an HIV-exposed infant which is reported by IP to DPH via the State Electronic Notifiable Disease Surveillance System (SendSS)

3) Active reporting of exposed infants by 2 large hospitals
4) Reports of infant exposures and infections from providers.

Data Collection

For all reported HIV-exposed births in 2018 on the master list, data was abstracted from review of the following sources:

- Maternal labor and delivery (L/D) charts
- Infant birth charts
- Prenatal care records, when available in L/D chart
- Statewide HIV surveillance data
- Birth certificate (information on date of initiation of prenatal care and number of visits obtained from birth certificate if not available in chart)

Limitations

Limitations of the data presented in this report include:

- The master list of HIV-exposed births is incomplete.
- Missing lab data during the pregnancy period may contribute to an underestimation of the proportion of women who received any HIV care and achieved viral suppression during pregnancy.
- Prenatal care data was missing for a proportion of infants.
- There was incomplete ascertainment of definitive infant HIV status after birth due to incomplete reporting of negative qualitative PCRs and lack of information from pediatric providers. Children are assumed to be HIV negative if no positive virologic HIV tests have been received through routine electronic laboratory reporting. Electronic lab reporting is considered to have a high level of completeness.

TABLES AND FIGURES

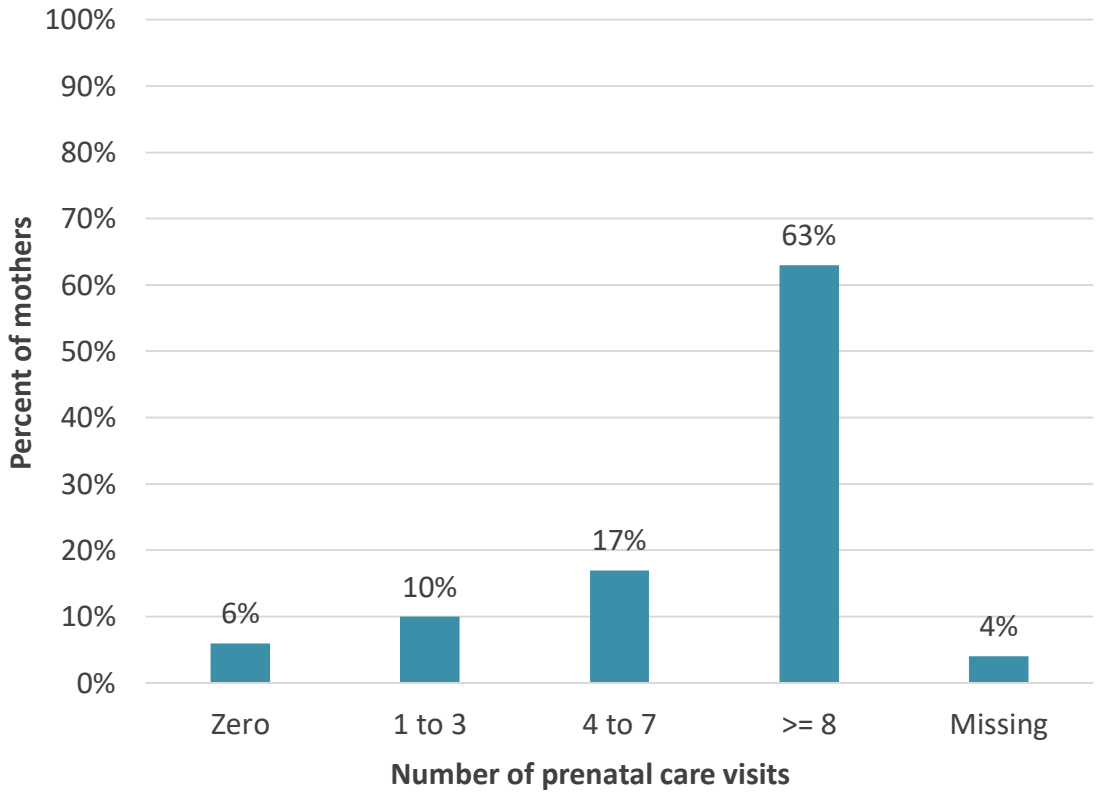
Table 1. Demographic characteristics of women living with HIV who delivered a live infant, Georgia 2018 (n=191)

	Women Living with HIV who delivered a live infant	Percent
Total	191	100
Maternal Age at Delivery		
< 25 years	44	23.0
25-34 years	95	49.7
35 + years	52	27.2
Race		
Black, non-Hispanic	152	79.6
White, non-Hispanic	15	7.9
Hispanic	14	7.3
Other or unknown	10	5.2
Transmission Category		
Heterosexual contact	117	61.3
Injection drug use	6	3.1
Perinatal exposure	9	4.7
Missing*	59	30.9

**The distribution of risk among these likely reflects those with complete risk information.*

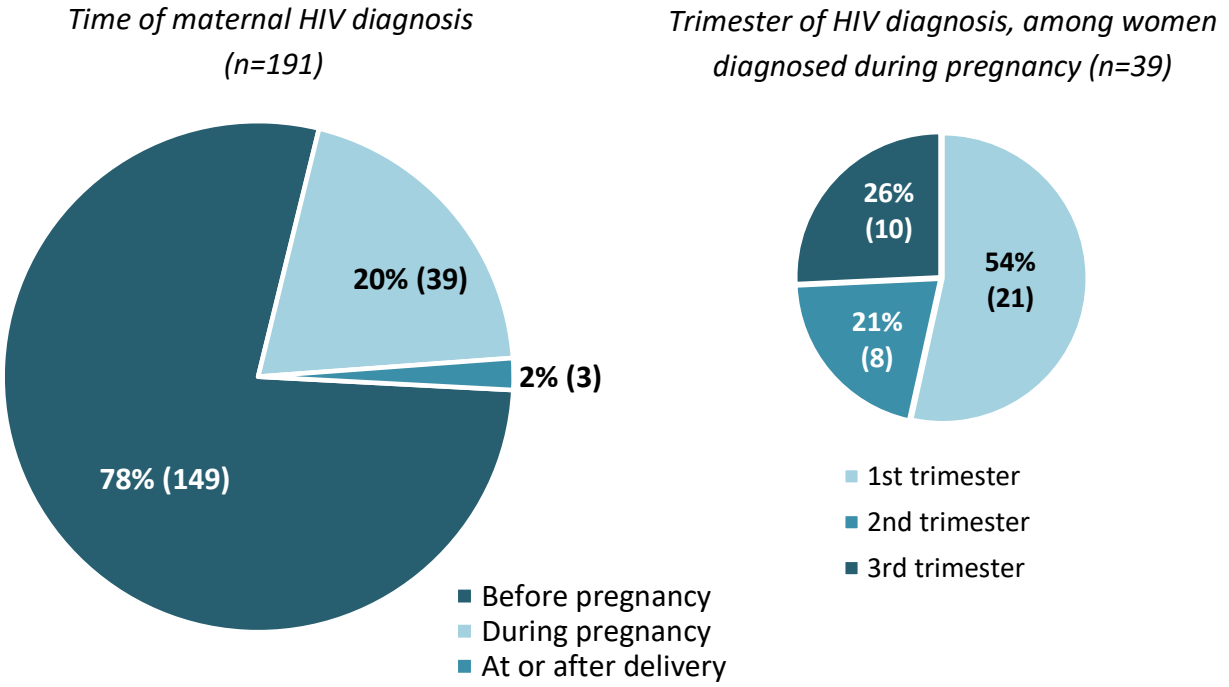
- The majority of mothers (~80%) were black, non-Hispanic.
- Approximately half (50%) of WLWH who delivered a live infant in Georgia in 2018 were between 25-34 years of age, and 23% were under 25 years of age.
- The most common risk factor for HIV transmission was heterosexual contact. A small proportion of women (~5%) were perinatally infected with HIV.

Figure 2. Number of prenatal care visits for pregnant women living with HIV, Georgia 2018



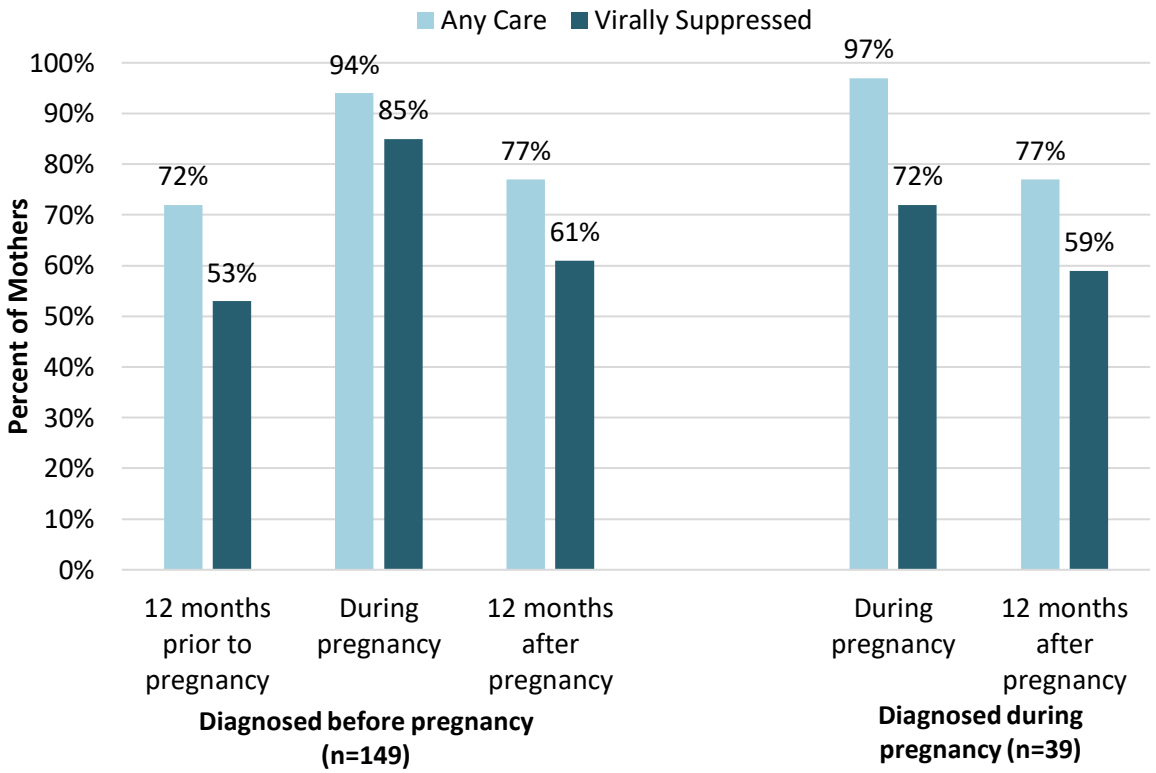
- Sixteen percent of women living with HIV received no or very little (less than four visits) prenatal care.
- Only 63% received eight or more prenatal care visits.
- Approximately 32% received inadequate prenatal care according to the Missouri Index, which accounts for both the start time during pregnancy and number of prenatal care visits.
    - The Missouri Index defines inadequate prenatal care as less than five prenatal care visits for infants born before 37 weeks gestational age, less than eight prenatal care visits for infants born at or after 37 weeks gestational age, or prenatal care which began after the first four months of pregnancy.

Figure 3. Time of HIV-diagnosis among women living with HIV who delivered a live infant in Georgia, 2018



- Approximately three-quarters of women had been diagnosed with HIV before pregnancy.
- Among women diagnosed during pregnancy, 26% were diagnosed during their third trimester.
- Three mothers (2%) were diagnosed with HIV at or after delivery.

Figure 4. Receipt of HIV care and viral suppression for women living with HIV before, during and after pregnancy



**Definitions: Any care - at least one HIV-related lab (CD4 or viral load) in the specified time period; Viral suppression (before and after pregnancy) - viral load < 200 copies/mL; Viral suppression (during pregnancy) - viral load <1000 copies/mL by delivery.*

**Note: Care continuum estimates exclude women diagnosed at or after delivery (n=3)*

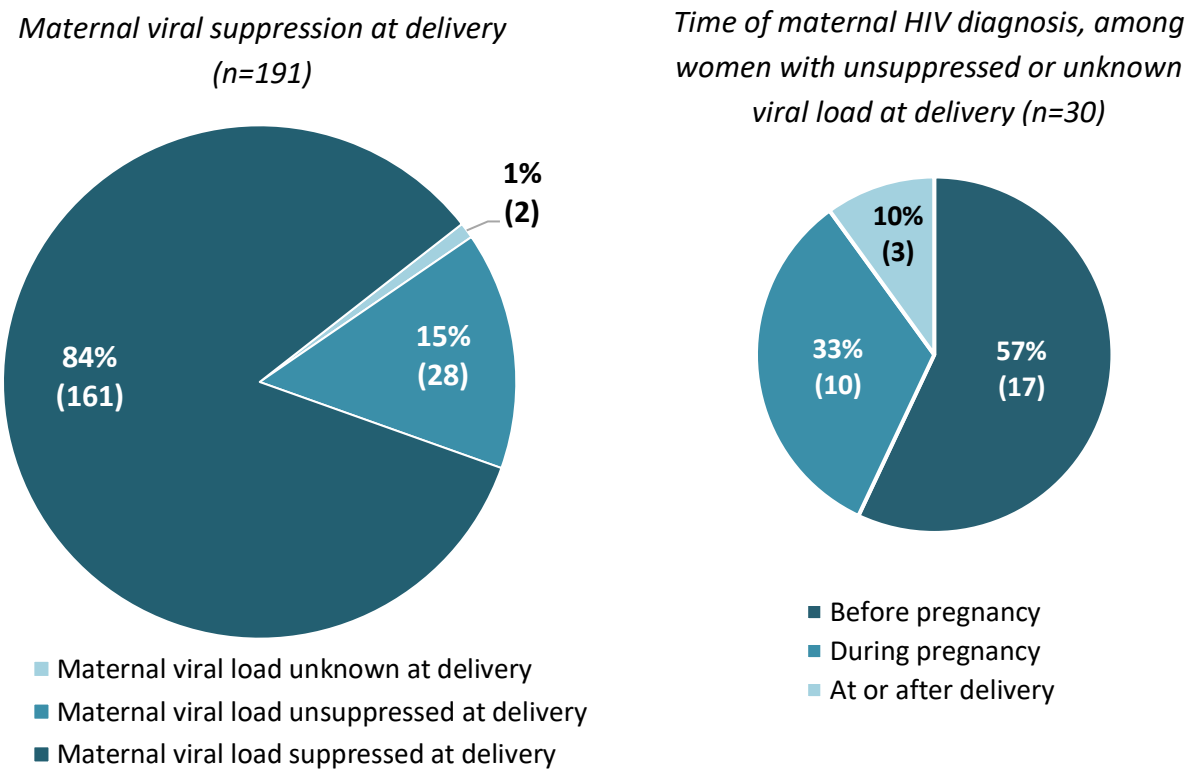
Any care:

- Among women diagnosed before pregnancy, more received HIV care during pregnancy (94%) than before (72%) or after (77%) their pregnancy.
- Regardless of whether HIV diagnosis occurred before or during pregnancy, fewer women received HIV care in the 12 months post-partum than during pregnancy.

Viral suppression

- Approximately 85% of women overall achieved viral suppression during pregnancy.
- A higher proportion of women diagnosed before pregnancy achieved viral suppression by delivery (85%) compared with women diagnosed during pregnancy (72%).
- Among women diagnosed before pregnancy, approximately half were virally suppressed during the year preceding pregnancy.
- Fewer women were virally suppressed in the twelve months after pregnancy than during pregnancy, regardless of timing of HIV diagnosis.

Figure 5. Maternal viral suppression by the time of delivery among women living with HIV who delivered a live infant, Georgia, 2018



- 84% of mothers were virally suppressed (<1000 copies/mL) by delivery.
- Among women who did not achieve viral suppression by delivery, more than half (57%) had been diagnosed before pregnancy

Table 2. Trimester at diagnosis and viral suppression by delivery by number of prenatal care visits, among women diagnosed in pregnancy

	< 8 PNC visits (n=11)	≥ 8 PNC visits (n=26)
Trimester of Diagnosis		
1st	3 (27%)	17 (65%)
2nd	3 (27%)	4 (15%)
3rd	5 (45%)	5 (19%)
Viral Suppression by Delivery		
Yes	5 (45%)	22 (85%)
No	6 (55%)	4 (15%)

A higher proportion of women with fewer than 8 prenatal care visits were diagnosed in the 3rd trimester and did not achieve viral suppression by delivery.

Table 3. Demographic and birth history characteristics, HIV-exposed infants born in Georgia, 2018 (n=201)

	Number of HIV-Exposed Infants	Percent
Total	201	100
DEMOGRAPHICS		
Birth Sex		
Female	97	48.3
Male	104	51.8
BIRTH DETAILS		
Birth Type		
Single	191	95.0
Twins	10	5.0
Delivery Method		
Vaginal	75	37.7
Cesarean	124	62.3
Neonatal Status		
Full Term (≥ 37 weeks)	154	76.6
Premature[†] (< 37 weeks)	47	23.4
Birth Weight		
Very Low (<1500 g)	5	2.5
Low (≥ 1500 g, <2500 g)	41	20.8
Normal (≥ 2500 g)	151	76.7
LOCATION OF BIRTH		
Regional Perinatal Center[¥]	80	39.8
Geographic Location		
Metro Atlanta	115	62.5
Non-Metro Area^	70	37.5

**Categories may not add up to total due to missing data; [†]Infant birth before 37 weeks gestational age; [¥]Regional Perinatal Centers- regional referral hospitals designated as locations where mothers and infants can receive the appropriate level of care for all risk levels[3] (Grady Memorial Hospital, Phoebe Putney, Piedmont Columbus Hospital, Augusta University Hospital, Memorial); ^Birth facility located outside of metropolitan Atlanta area.*

- Approximately 38% of infants were delivered vaginally and 62% via cesarean section.
- A little under a quarter (23%) of perinatally HIV-exposed infants were born premature, and approximately 23% were low or very low birthweight.
- Approximately 40% of infants were delivered at Regional Perinatal Centers.
- Thirty eight percent of infants were born outside the metropolitan Atlanta area.

Table 4. Interventions received by infants born to mothers by viral suppression status at delivery

Intervention	Number of infants – n (%)	Comments
Infants born to mothers ***suppressed at delivery**** ***n = 171***		
Infant ZDV	169 (99%)	**2 infants did not receive intervention:** - 1 infant deceased shortly after birth - 1 receipt unknown
Infants born to mothers ***unsuppressed at delivery*** or ***unknown status at delivery*** ***n = 30***		
Maternal IV ZDV during labor	25 (83%)	**5 mothers did not receive intervention:** - 3 mothers diagnosed at/after delivery - 2 mothers with emergent deliveries
C-section performed	25 (83%)	**5 mothers did not receive intervention:** - 3 mothers diagnosed at/after delivery - 1 mother with emergent delivery - for 1 mother, physician opted against due to other medical conditions
Infant ZDV	28 (93%)	**2 infants did not receive intervention:** - 1 mother diagnosed months after delivery - 1 very premature infant not expected to survive
Infant Nevirapine	25 (83%)	**5 infants did not receive intervention:** - 1 mother diagnosed months after delivery - 2 very premature infants not expected to survive, - 2 unexplained

**Maternal viral suppression at delivery defined as viral load closest to delivery <1000 copies/mL*

- Almost all mothers and infants received interventions indicated during labor and delivery and postpartum. In the great majority of cases when an indicated intervention was not delivered, chart review indicated valid reasons.

Table 5. Confirmed perinatal HIV transmissions, Georgia 2018

Birth	Time of Maternal HIV Diagnosis	Viral Suppression at Delivery	Comments
1	>1 year before delivery	No	• Mother did not take medication regularly during pregnancy • All hospital-based measures delivered • Compliance with infant ZDV/NVP unknown
2	At delivery	No	• Tested negative during the first trimester • No 3rd trimester testing
3	5 months after delivery	N/A	• Tested in 1st and 3rd trimester

Estimated perinatal HIV transmission Rate

Including all known HIV-exposed infants in Georgia in 2018, among 201 HIV-exposed live births, we are aware of 3 perinatal HIV transmissions. The rate of perinatal HIV transmission in Georgia in 2018 is estimated to be 1.5%. This estimated rate of transmission higher than the rate of <1% that can be achieved when all proper prevention measures are in place[1].

SUMMARY

Key Prevention Successes:

- 78% of HIV positive women who delivered a live infant in 2018 were diagnosed prior to pregnancy.
    - Earlier diagnosis allows for retention in care and viral suppression as early as possible, ideally before conception or as early as possible during pregnancy.
- 84% of all HIV-exposed births were to mothers with a suppressed viral load at delivery, minimizing transmission risk during the labor and delivery period.
- Almost all (99%) of infants received ZDV at delivery as recommended.
- Almost all mothers received the proper interventions indicated during labor and delivery and postpartum.
    - Chart review of cases where the mother-baby pair did not receive all interventions almost always revealed valid reasons for interventions not being provided.

Key Prevention Gaps:

- HIV care for all women of childbearing age
    - **Among women who were not suppressed at delivery, 57%** were diagnosed before pregnancy**.**
        - Missed opportunity to minimize transmission risk by ensuring all women diagnosed with HIV are in care and virally suppressed prior to pregnancy.
        - Better retention in care for all WLWH would reduce the number of higher risk HIV-exposed births to women virally unsuppressed at delivery.
- Prenatal Care:
    - Approximately 32% of HIV-positive mothers in 2018 had inadequate prenatal care; 16% had no or very little prenatal care.

Overall findings are similar in 2018 compared with 2016:

- The biggest change is the increase in the proportion of infants born to mothers who were not suppressed at delivery receiving Nevirapine. This increase may be a combination of a true increase, and of more thorough data collection, where all infants who appeared not to have received NVP were re-checked. Additionally, data were collected to better understand any mitigating circumstances that would explain why interventions were not delivered.
- More information can be found at: https://dph.georgia.gov/epidemiology/georgias-hivaids-epidemiology-section/perinatal-exposure-surveillance#PerinatalExposureCurrentData

REFERENCES

[1]World Health Organization, Mother to Child Transmission of HIV; http://www.who.int/hiv/topics/mtct/en/

[2] Infant Feeding and Transmission of Human Immunodeficiency Virus in the United States. Committee on Pediatric AIDS. Pediatrics Feb 2013, 131 (2) 391-396; DOI: 10.1542/peds.2012-3543

[3]Regional Perinatal Centers, Georgia Department of Public Health; https://dph.georgia.gov/RPC