

Perinatal HIV Surveillance Report Georgia, 2016

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



The **Perinatal HIV Surveillance Report, Georgia 2016** is published by the Georgia Department of Public Health, HIV/AIDS Epidemiology Section (HAES), 2 Peachtree Street NW, Atlanta, Georgia 30303. The *Perinatal HIV Surveillance Report, Georgia 2016* is not copyrighted and may be used and reproduced without permission. Citation of the source is, however, appreciated.

SUGGESTED CITATION: Georgia Department of Public Health, HIV/AIDS Epidemiology Section, *Perinatal HIV Surveillance Report, Georgia 2016*, <https://dph.georgia.gov/data-fact-sheet-summaries>, Published May 2019, [Accessed: date]

ACKNOWLEDGEMENTS: Publication of this report was made possible by the contributions of the Georgia DPH HAES Core HIV Surveillance staff, Pediatric HIV Exposure Reporting Forms submitted by Georgia health care facility staff, HIV-infection-related laboratory test results transmitted by laboratory facilities in Georgia, the GDPH Vital Records Office staff, the ongoing efforts of multiple individuals from public and private sector organizations dedicated to improving surveillance, prevention, testing, and care of persons living with HIV infection, and the women and infants of Georgia that this data represents.

Georgia HIV Perinatal HIV Surveillance Team contributors: Lauren Barrineau-Vejjajiva, Lakeia Kelley, Thelma Fannin, Latosha Johnson, Jane Kelly, Rodriques Lambert, Mildred McGainey, Latoya Moss, Rama Namballa, Hanh Nguyen, Doris Pearson, A. Eugene Pennisi, Akilah Spratling, Lakecia Vanerson, and Andrenita West.

This report was prepared by the following staff from the Georgia Department of Public Health: Fay Stephens, MPH; Pascale Wortley, MD, MPH; Cherie Drenzek, DVM, MS.

Georgia Department of Public Health
HIV/AIDS Epidemiology Section
2 Peachtree St NW
Atlanta, GA 30303
Phone: 1-800-827-9769

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 1% when appropriate preventative action is taken¹. 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.

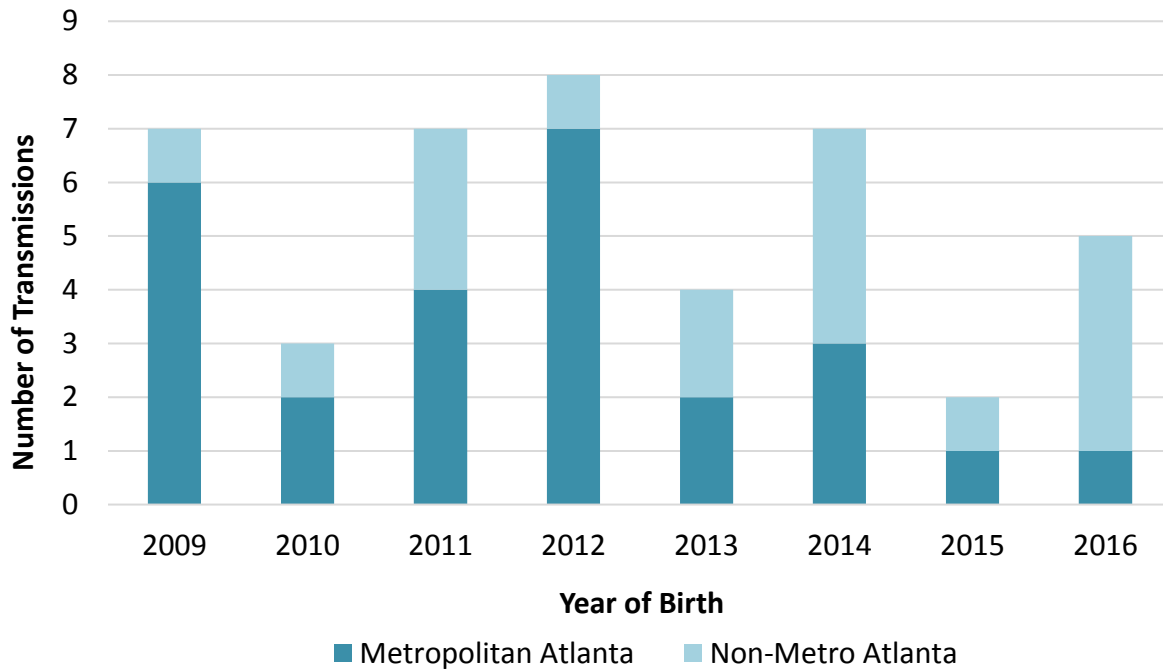
During labor and delivery, successful PMTCT requires that all providers know the HIV status and, if HIV-positive, recent viral load of every woman who presents to deliver at their facility. Current guidelines indicate the cutoff level for a suppressed viral load at delivery is 1000 viral copies/mL. Maternal 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 and in subsequent doses in addition to ZDV.

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 formula².

Perinatal HIV transmission in Georgia, 2009-2016

From 2009-2016, a total of 43 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 2013-2016, 7 of 18 (39%) were born to mothers residing in metro Atlanta, and 61% to mothers residing in others parts of Georgia.

Figure 1. Perinatal HIV Infections, by year and location of mother's residence, Georgia, 2009-2016



**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 2016 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 6 hospital pharmacies in Atlanta and one in Columbus

-
- 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) Reports of infant exposures and infections from providers.

Data Collection

For all reported HIV-exposed births in 2016 on the master list, data was abstracted from review of the following sources:

- Maternal labor and delivery (L/D) charts
- Infant birth charts
- Birth certificate
- Prenatal care records, when available in L/D chart
- Statewide HIV surveillance data
- Pediatric chart

Limitations

A match between the Georgia vital records birth registry and eHARS was conducted after compiling the master list of exposures from these sources. This match identified an additional 32 mother-infant pairs where the mother's HIV diagnosis date preceded a 2016 birth. These charts were not abstracted, but these pairs are included to calculate the transmission rate.

Limitations of the data presented in this report include:

- The master list of HIV-exposed births is incomplete.
- Some relevant labor and delivery details regarding transmission prevention were not abstracted, including the time to first dose of infant HIV prophylaxis or the length of time maternal prophylaxis was given prior to delivery.
- The viral suppression at delivery of 12 women couldn't be determined from eHARS data or the labor and delivery chart (no viral load tests in eHARS). These women were considered to be unsuppressed at delivery in all analyses.
- 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

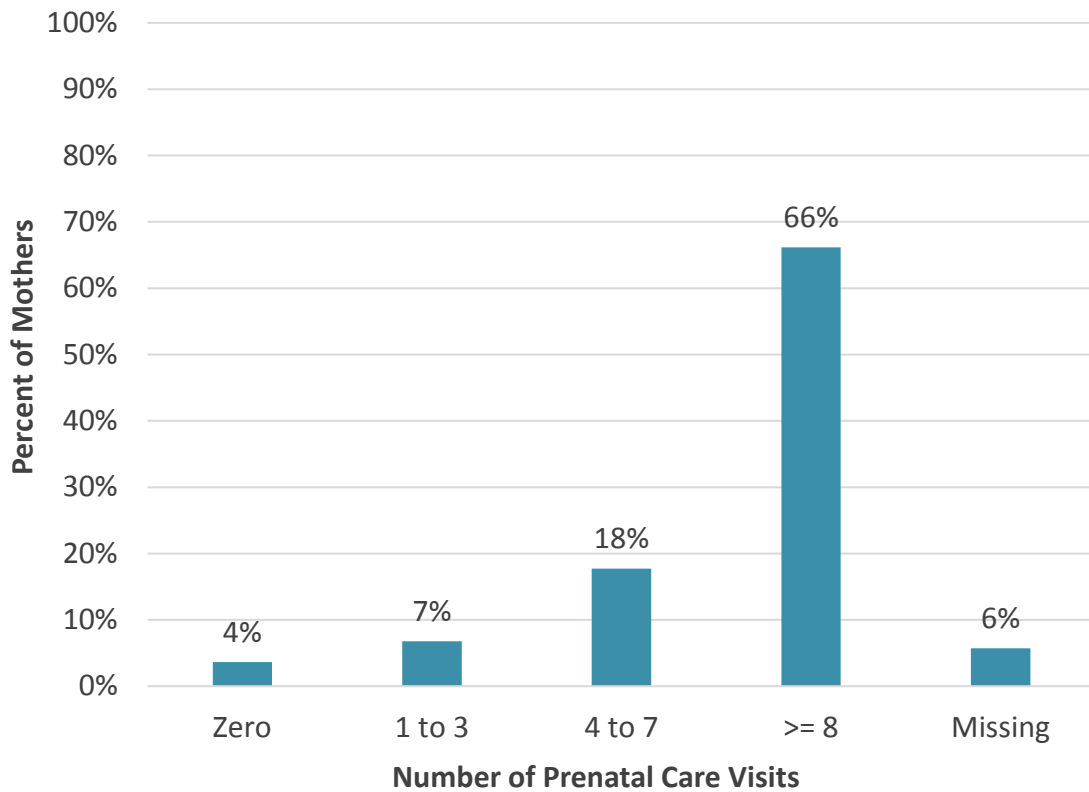
Table 1. Demographic characteristics of women living with HIV who delivered a live infant, Georgia 2016 (n=192)

	Women Living with HIV who delivered a live infant	Percent
Total	192	100
Maternal Age at Delivery		
< 25 years	52	27.1
25-34 years	104	54.2
35 + years	36	18.8
Race		
Black, non-Hispanic	162	84.4
White, non-Hispanic	11	5.7
Hispanic	9	4.7
Other or unknown	10	5.2
Transmission category		
Heterosexual contact	113	58.9
Injection drug use	3	1.6
Perinatal exposure	9	4.7
Missing*	67	34.9

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

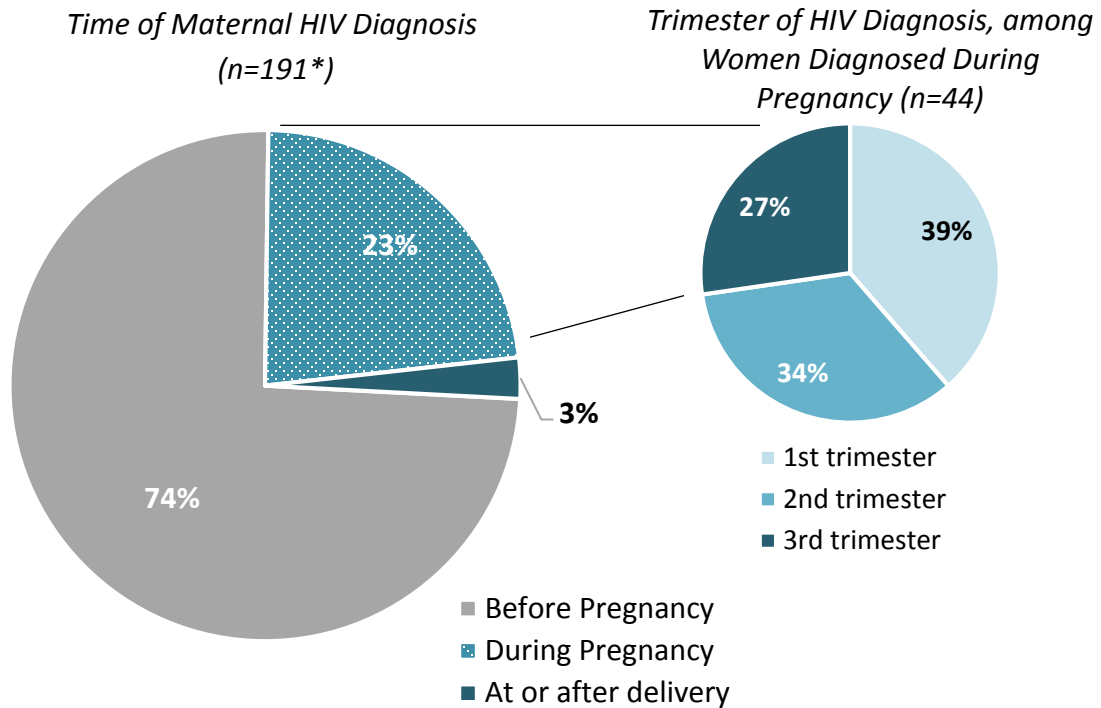
- The majority of mothers (84%) were black, non-Hispanic.
- Approximately half (54%) of WLWH who delivered a live infant in Georgia in 2016 were between 25-34 years of age, and 27% were under 25 years of age.
- The most common risk factor for HIV transmission was heterosexual contact. A small proportion of women (5%) were perinatally infected with HIV.

Figure 2. Number of prenatal care visits for pregnant women living with HIV, Georgia 2016



- Eleven percent of women living with HIV received no or very little (less than four visits) prenatal care.
- Only 66% received eight or more prenatal care visits.
- Approximately 38% 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.

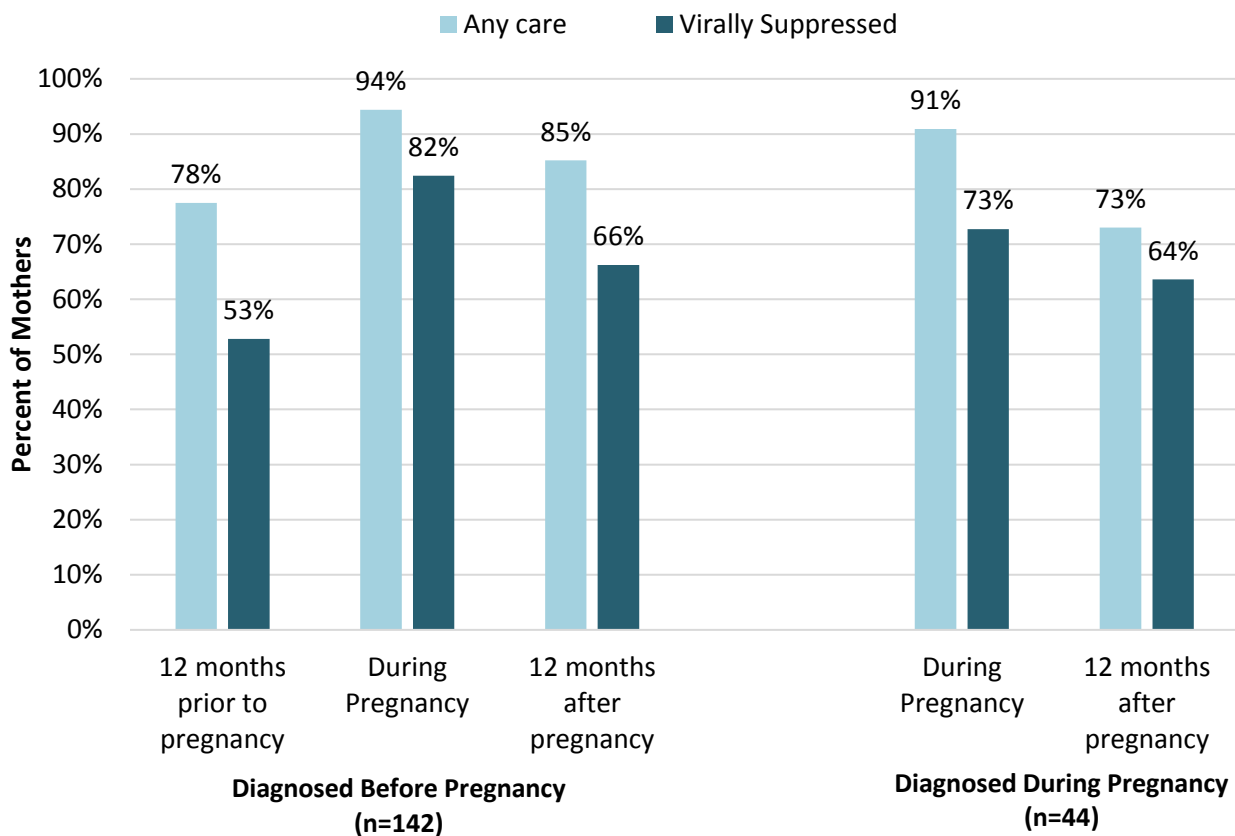
Figure 3. Time of HIV-diagnosis among women living with HIV who delivered a live infant in Georgia, 2016



**One mother was missing information on time of HIV diagnosis.*

- Three-quarters of women had been diagnosed with HIV before pregnancy.
- Among women diagnosed during pregnancy, 27% were diagnosed during their third trimester.
- Five mothers (3%) 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=5) and woman with missing HIV diagnosis time (n=1)*

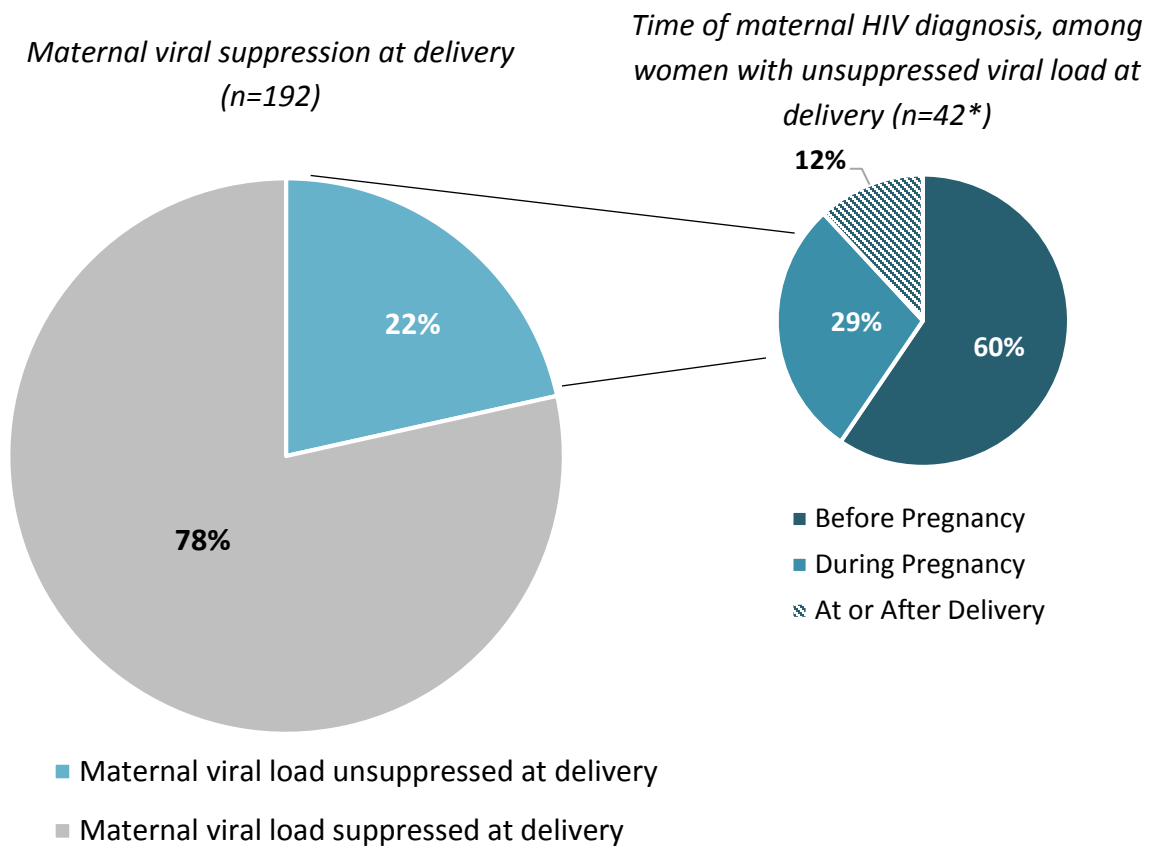
Any care:

- Among women diagnosed before pregnancy, more received HIV care during pregnancy (94%) than before (78%) or after (85%) 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.

Suppressed

- Approximately 80% of women overall achieved viral suppression during pregnancy.
- A higher proportion of women diagnosed before pregnancy achieved viral suppression by delivery (82%) compared with women diagnosed during pregnancy (73%).
- 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, 2016



**The 42 women considered unsuppressed at delivery include women (n=12) missing viral load data around the time of delivery.*

- 78% of mothers were virally suppressed (<1000 copies/mL) by delivery.
- Among WLWH who did not achieve viral suppression by delivery, 60% were diagnosed with HIV prior to pregnancy.

Table 2. Demographic and birth history characteristics, HIV-exposed infants born in Georgia, 2016 (n=196)

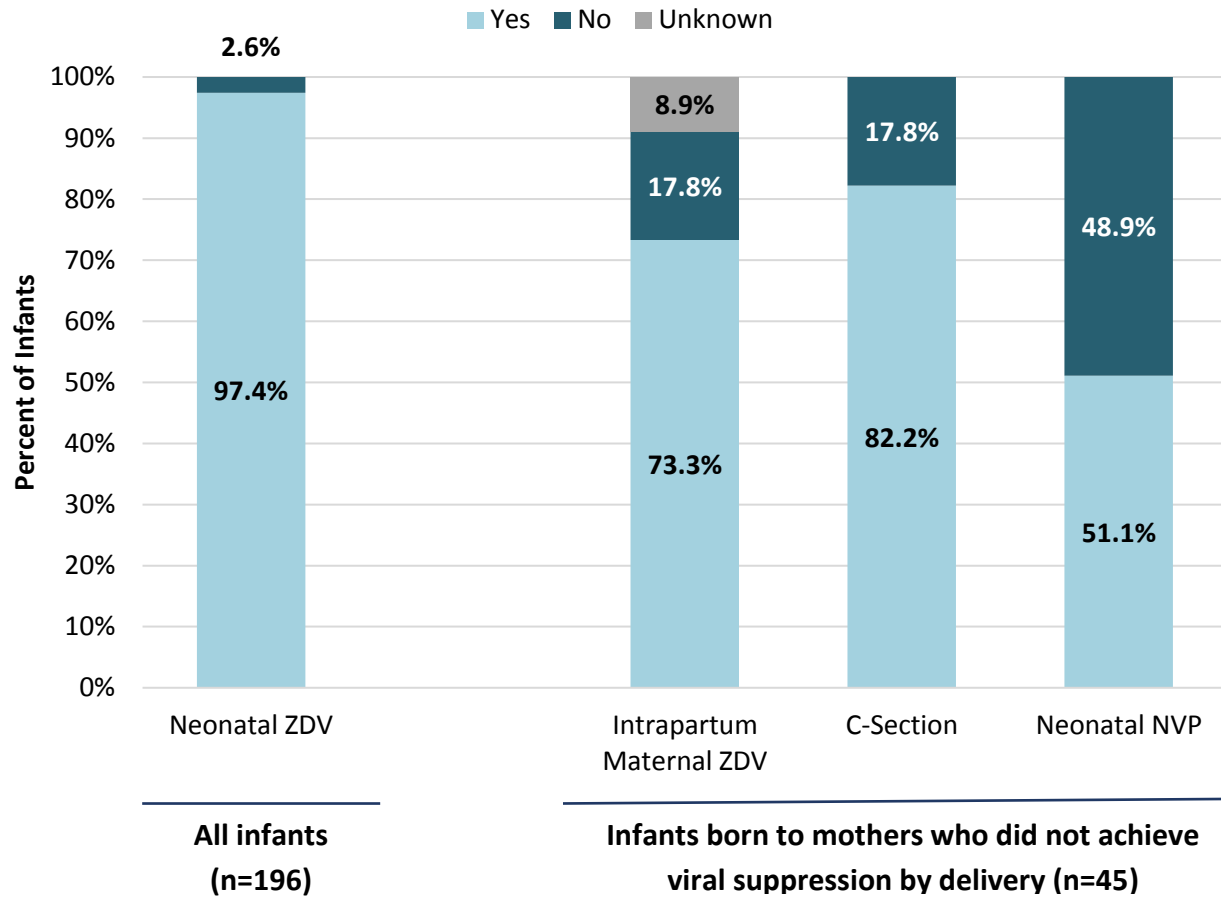
	Number of HIV-Exposed Infants	Percent
Total	196	100
DEMOGRAPHICS		
Birth Sex		
Female	104	53.1
Male	92	46.9
BIRTH DETAILS		
Birth Type		
Single	186	94.9
Twins	10	5.1
Delivery Method		
Vaginal	76	38.8
Cesarean	120	61.2
Neonatal Status		
Full Term (≥ 37 weeks)	143	73.3
Premature [†] (< 37 weeks)	52	26.7
Birth Weight		
Very Low (< 1500 g)	10	5.3
Low (≥ 1500 g, < 2500 g)	33	17.5
Normal (≥ 2500 g)	146	77.3
LOCATION OF BIRTH		
Regional Perinatal Center [‡]	80	40.8
Geographic Location		
Metro Atlanta	126	64.3
Non-Metro Area [^]	70	35.7

*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 levels³ (Grady Memorial Hospital, Phoebe Putney, Piedmont Columbus Hospital, Augusta University Hospital, Memorial); [^]Birth facility located outside of metropolitan Atlanta area.

- Approximately 39% of infants were delivered vaginally and 61% via cesarean section.
- Over one quarter (27%) of perinatally HIV-exposed infants were born premature, and 23% were low or very low birthweight.
- Approximately 40% of infants were delivered at Regional Perinatal Centers.
- Thirty six percent of infants were born outside the metropolitan Atlanta area.

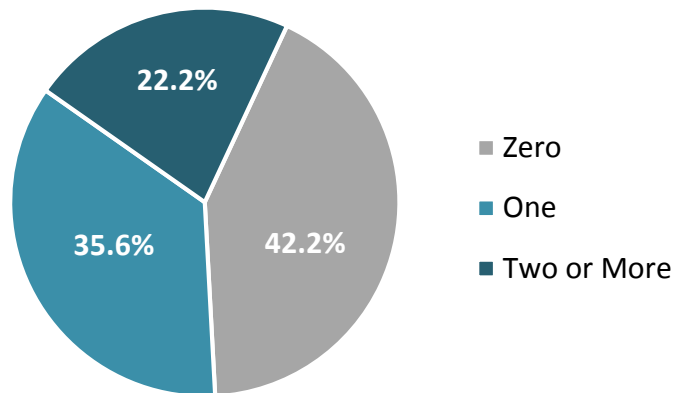
Figure 6. Percent of infants receiving recommended interventions at the time of labor and delivery, Georgia 2016



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

- Almost all infants (97%) received ZDV at birth as recommended.
 - Two infants born to mothers with undiagnosed HIV at delivery did not receive ZDV.
 - The 3 other infants who did not receive ZDV were born to mothers with suppressed viral loads at delivery.
- Additional interventions for births with unsuppressed maternal viral load:
 - 73% of unsuppressed mothers received IV ZDV at delivery (9% unknown).
 - 82% of infants were delivered via cesarean section as recommended.
 - Only half (51%) of infants for whom it was indicated received NVP at delivery.
- Birth circumstances outside of facilities' control may have precluded additional prevention measures at labor & delivery, such as women presenting with imminent delivery.

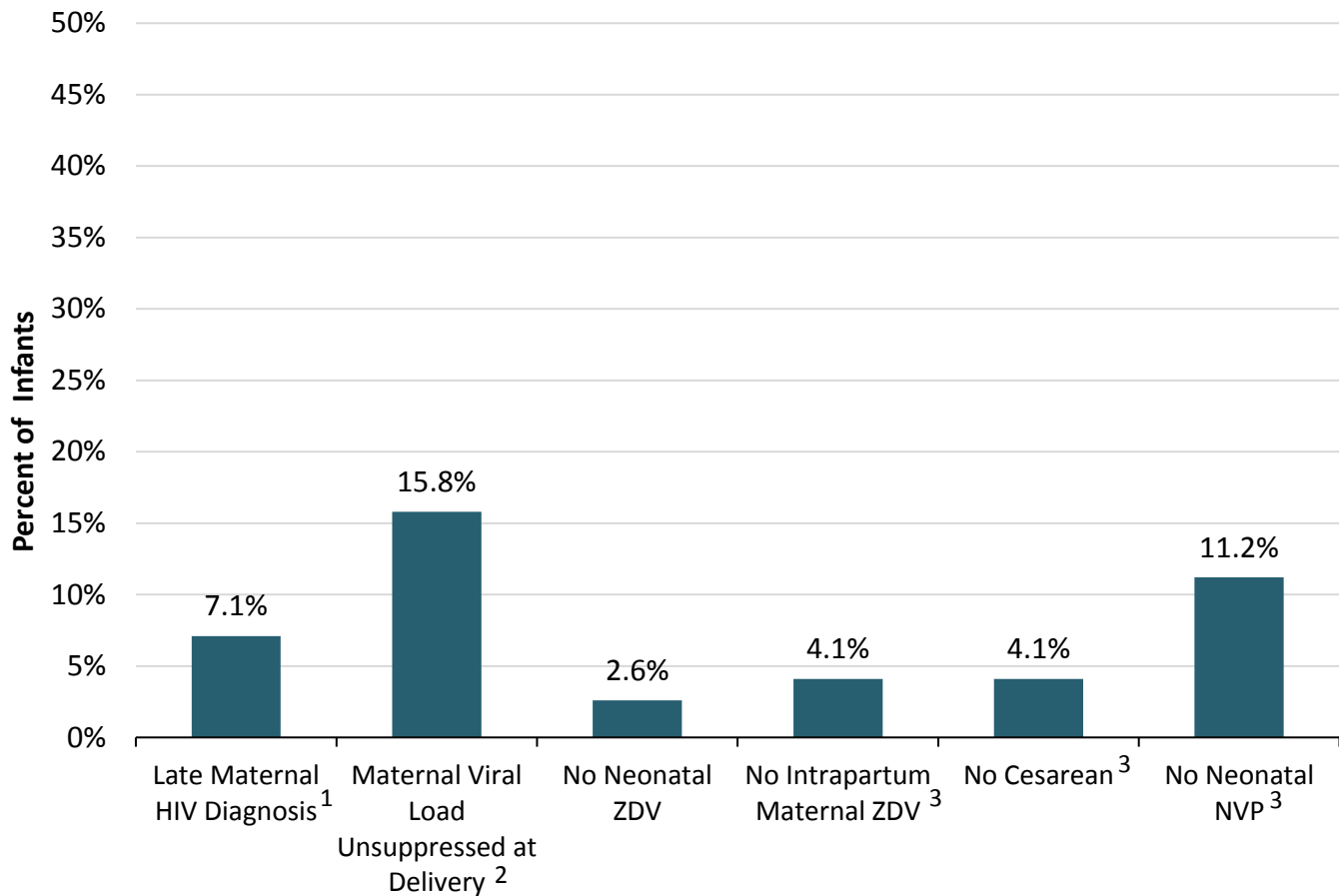
Figure 7. Total number of missed prevention opportunities at labor and delivery among infants with unsuppressed maternal viral load at delivery (n=45)



**Missed prevention measures considered in this count are maternal ZDV at delivery, cesarean delivery, and infant ZDV and NVP prophylaxis. Unknown maternal IV ZDV administration was not counted as a missed prevention measure.*

- Among infants born to mothers with unsuppressed viral load, less than half (42%) received all recommended interventions.
- Approximately one-fifth (22%) were missing two or more prevention measures.
- The pie chart assumes women who were missing data received the intervention. If infants with unknown maternal IV ZDV are assumed to have not received this intervention, the estimates are as follows: zero gaps (40%), one gap (33.3%), two or more gaps (26.6%).

Figure 8. Missed opportunities for prevention of perinatal transmission of HIV among exposed infants, Georgia 2016

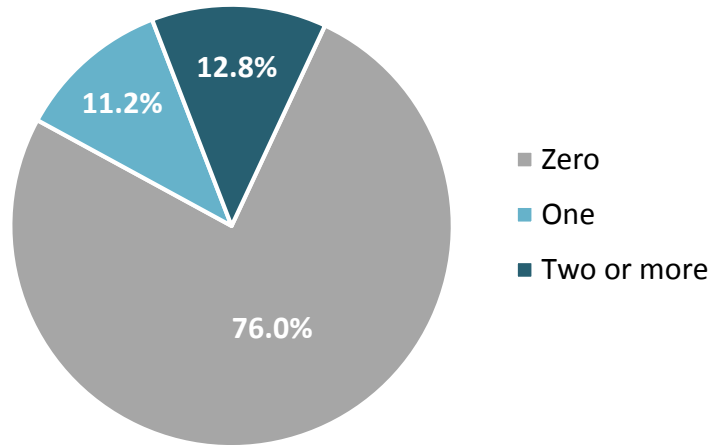


Missed Opportunities for Prevention

1. Late diagnosis defined as maternal HIV diagnosis after the seventh month of pregnancy, including diagnoses after delivery
2. Excludes infants with unknown maternal viral load at delivery (n=12)
3. Considered a missed opportunity if infant did not receive when indicated by prevention guidelines (maternal viral load was unsuppressed or unknown at delivery)

- The most common missed opportunity for prevention was failure to achieve viral suppression by delivery (16%).
- Administration of NVP to infants at higher risk of transmission with unsuppressed maternal viral load at delivery was the second most common missed opportunity (11%).
- There were gaps, though less prevalent, in delivery of neonatal ZDV, intrapartum maternal ZDV, and cesarean delivery.

Figure 9. Total number of missed prevention opportunities among all infants born to women living with HIV in Georgia, 2016



**Missed prevention measures considered in this total count are each of the six individual prevention missed opportunities presented in Figure 8. Unknown or missing values were not counted as a missed prevention measure.*

- 76% of perinatally HIV-exposed infants received all recommended transmission prevention measures from pregnancy through the labor and delivery period.
- 11% of infants were missing one prevention measure.
- 13% of infants had two or more missed opportunities for prevention.
- The pie graph assumes those with missing data received the intervention for which data is missing; if missing information on maternal IV ZDV or viral load at delivery are considered to be gaps in prevention, the estimates are as follows: zero gaps (74.0%), one gap (9.7%), two or more gaps (16.3%).

Table 3. Confirmed perinatal HIV transmissions, Georgia 2016 (n=5)

Birth	HIV Testing During Pregnancy?	Time of Maternal HIV Diagnosis	Time of viral suppression	Details
1	None (no prenatal care), delivered at home	>1 year after delivery	N/A	<ul style="list-style-type: none"> • Mother simultaneously diagnosed with Stage 3 HIV >1 year after infant born • Infant subsequently diagnosed at ~15 months of age
2	1 st Trimester: Negative 3 rd Trimester: Not tested	>1 year after delivery	N/A	<ul style="list-style-type: none"> • Infant diagnosed with Stage 3 HIV at 15 months of age • Mother diagnosed after infant
3	1 st Trimester: Negative 3 rd Trimester: Positive	3 rd Trimester	~1 month before delivery	<ul style="list-style-type: none"> • Infant received ZDV
4	3 rd Trimester: Positive	3 rd Trimester	< 1 month before delivery	<ul style="list-style-type: none"> • Infant received ZDV
5	1 st Trimester: Negative 3 rd Trimester: Positive, 2 weeks pre-delivery	3 rd Trimester (~2 weeks pre-delivery)	After delivery	<ul style="list-style-type: none"> • Known HIV+ partner through pregnancy • All recommended interventions given.

Estimated perinatal HIV transmission Rate

Including all known HIV-exposed infants in Georgia in 2016, among 228 HIV-exposed live births (196 described in this report and an additional 32 identified by the match between eHARS and the Georgia birth registry), we are aware of 5 perinatal HIV transmissions. The rate of perinatal HIV transmission in Georgia in 2016 is estimated to be 2.2%. This estimated rate of transmission is approximately twice the rate of <1% that can be achieved when all proper prevention measures are in place¹.

SUMMARY

Key Prevention Successes:

- **75% of HIV positive women** who delivered a live infant in 2016 **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.
- **78% 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 (**97%**) of **infants** received **ZDV** at delivery as recommended.
- 76% of infants had zero missed prevention opportunities and received all recommended interventions.

Key Prevention Gaps:

- **HIV care for all women of childbearing age**
 - **60%** of women who were **unsuppressed at delivery** 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 38% of HIV-positive mothers in 2016 had inadequate prenatal care; 11% had no or very little prenatal care.
- **Additional prevention steps when maternal viral load is unsuppressed:**
 - Among all infants who needed additional prevention measures at labor and delivery due to unsuppressed maternal viral load, less than half (42%) received all recommended interventions, and nearly one quarter (22%) were missing two or more recommended prevention measures.
 - Missed opportunities to administer all recommended ART at delivery.
 - Administration of infant NVP was an especially prevalent missed opportunity.

REFERENCES

¹World 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

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