

2022

# Georgia Perinatal HIV Surveillance Report

HIV Epidemiology Section



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# BACKGROUND

## Interventions to prevent vertical transmission of HIV include:

1. Adequate prenatal care, including HIV testing and adherence to antiretroviral therapy (ART)
2. HIV viral suppression by time of delivery
3. Receiving intravenous ART during labor and delivery
4. Cesarean section delivery
5. Infant receipt of primary ART (and secondary ART for high-risk situations)

Vertical 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 pregnant woman to child ranges from 15-45%<sup>1</sup>. However, the risk of transmission can be reduced to less than 1% when appropriate preventative action is taken<sup>2</sup>. Successful prevention of vertical transmission of HIV 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.

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 pregnant women infected during pregnancy are diagnosed in time to prevent perinatal transmission. During labor and delivery, successful prevention of vertical transmission of HIV requires that all providers know the HIV status and, if HIV-positive, the recent viral load of every pregnant woman who presents to deliver at their facility. The woman's viral load at delivery determines the recommended transmission prevention measures. For women with a viral load of <1000 copies/ml by delivery, it is recommended that the infant receive zidovudine (ZDV) prophylaxis for 4-6 weeks after birth. For women with a viral load of ≥1000 copies/ml or an unknown viral load at delivery, the following prevention interventions are recommended: (1) receipt of ZDV administered intravenously (IV) for at least three hours prior to delivery, (2) delivery via cesarean section to minimize infant exposure during delivery, and (3) infant receipt of ZDV plus at least one other additional antiviral after birth.

During the post-partum period, it was previously recommended that infants born to women with HIV should not be breastfed at any point, regardless of viral suppression status. Guidelines at the time recommended alternative feeding of infant formula for all infants of women with HIV in settings such as the United States, where clean water is readily available for use in formula<sup>3</sup>. These guidelines were updated in January 2023 to support shared decision-making about infant feeding for women with HIV<sup>4</sup>.

Overall improvements in the prevention of vertical transmission of HIV in recent years are likely due to increased efforts in improving patient follow-up and provider adherence to proper guidelines in caring for women before, during, and after delivery.



# SUMMARY

## KEY PREVENTION SUCCESSES:

- 77% of women with HIV who delivered a live infant in 2022 were diagnosed **prior to pregnancy**.
  - o Earlier diagnosis allows for retention in care and viral suppression as early as possible, ideally before conception or as early as possible during pregnancy.
- 99% of women with HIV who delivered a live infant in 2022 were diagnosed **prior to delivery**.
- 90% of all HIV-exposed births were to women with a viral load <1000 copies/ml at delivery, minimizing transmission risk during the labor and delivery period.
- Almost all (99.5%) of infants received ZDV at delivery as recommended.
- Almost all women received the proper interventions indicated during labor and delivery and postpartum.
  - o Chart review of cases where the woman and baby did not receive all interventions almost always revealed valid reasons for interventions not being provided. Reasons why interventions were not provided are briefly described below and in detail further in the report on Table 3.

## KEY PREVENTION GAPS:

### HIV care for all pregnant women of childbearing age

- Ensure all women are diagnosed with HIV and in care prior to delivery:
  - o Among the 10% of women who were not suppressed at delivery, only 47% were diagnosed before pregnancy.
- Ensure all women are diagnosed with HIV and are in care prior to pregnancy:
  - o 23% of women were undiagnosed prior to pregnancy.
  - o 36% of women were virally unsuppressed in the 12 months prior to pregnancy.
- Improve retention in care for all women with childbearing potential living with HIV:
  - o 63% of women of childbearing potential were retained in care and 68% were virally suppressed during 2022.

### Prenatal Care

- One third (33%) of pregnant women with HIV in 2022 had inadequate prenatal care; 12% had no or very little prenatal care

### Guideline-related

- Some interventions were missed due to issues with timing and testing turnaround times. For issues with timing, several precipitous deliveries prevented the proper administration of ARTs and ordering of a C-section. At some hospitals, the turnaround time for laboratory results combined with a quick delivery upon arrival made it challenging for some hospitals to adhere to perinatal HIV exposure recommendations. Home births also prevented proper interventions prior to delivery but appropriate infant interventions were performed after the babies arrived at the hospital postpartum.

## PERINATAL TRANSMISSION RATE:

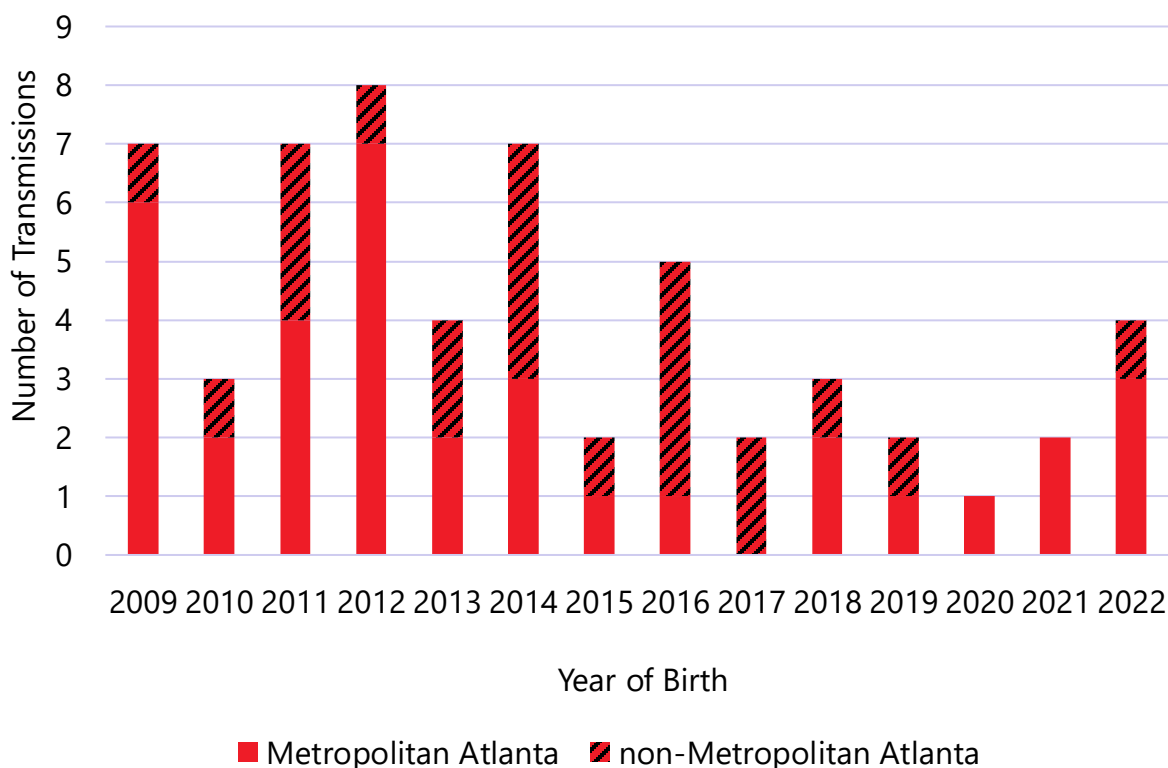
**The rate of perinatal HIV transmission in Georgia in 2022 is estimated to be 2.1%**

**More information can be found at:** <https://dph.georgia.gov/epidemiology/georgias-hiv-aids-epidemiology-section/perinatal-exposure-surveillance#PerinatalExposureCurrentData>

# PERINATAL HIV TRANSMISSION IN GEORGIA, 2022

From 2009–2022, a total of 57 infants born in Georgia were perinatally infected with HIV (Figure 1). 35 of 67 (52%) were born to women residing within the Atlanta metropolitan statistical area (metro) and 48% to women residing in other parts of Georgia (non-metro).

**Figure 1. Perinatal HIV Infections, by year and location of pregnant woman's residence, Georgia, 2009–2022**



*\*Categorization of Metropolitan Atlanta vs. non-metropolitan Atlanta is determined by location of pregnant woman's residence at time of delivery*

## Perinatal HIV exposure surveillance

Perinatal exposure surveillance involves collecting information on all pairs of pregnant women and infants where the woman was known to be HIV positive. In contrast to only collecting information on infants and pregnant women across confirmed cases of perinatal transmission, this allows for quantifying the prevalence of gaps in preventive measures among all infants with perinatal HIV exposure.



# METHODS

## DATA SOURCES

A list of all known births to pregnant women with HIV in Georgia in 2022 was compiled through five different data sources to identify infants perinatally exposed to HIV:

- 1 Pregnant woman's HIV status indicated as positive on the infant's birth certificate
- 2 Registry match between birth registry and the HIV Surveillance registry to identify pregnant women with HIV who gave birth
- 3 Pharmacy alert system:
  - In place with three Atlanta hospital pharmacies
  - Sends a notice to Infection Prevention (IP) when any infant dose of ZDV is ordered. Infection Prevention then reports the birth of an HIV-exposed infant to the Georgia Department of Public Health via the State Electronic Notifiable Disease Surveillance System (SendSS)
- 4 Active reporting of exposed infants by one large hospital
- 5 Reports of infant exposures and infections from providers

## DATA COLLECTION

For all reported perinatal HIV exposures in 2022, data was abstracted from review of the following sources by the HIV Perinatal Surveillance Team:

- Pregnant woman's labor and delivery (L/D) charts
- Infant birth charts
- Prenatal care records, when available in L/D chart
- Statewide HIV surveillance data (Georgia Enhanced HIV/AIDS Reporting System, eHARS)
- 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:

- Not all perinatal HIV exposures are captured by the surveillance system and the numbers presented may be an undercount of the true number of perinatal exposures.
- Missing laboratory data during the pregnancy period may contribute to an underestimation of the proportion of pregnant women who received any HIV care and achieved viral suppression during pregnancy.
- Prenatal care data was missing for a proportion of infants.
- The date of HIV diagnosis is unknown for a small proportion of pregnant women. They may have been diagnosed before pregnancy, based on laboratory results in eHARS.
- 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 laboratory reporting is considered to have a high level of completeness.

# TABLES AND FIGURES: 2022

**Table 1. Demographic characteristics of pregnant women with HIV in Georgia who had a live birth, 2022 (n=190)**

|   | Pregnant women with HIV who delivered a live infant* | Percent |
|---|--|---------|
| Total                                   | 181  | 100     |
| <b>Age at Delivery</b>                  |  |         |
| <25 years                               | 45   | 24.9    |
| 25-34 years                             | 98   | 54.1    |
| 35+ years                               | 38   | 21.0    |
| <b>Race</b>                             |  |         |
| Black, non-Hispanic                     | 141  | 77.9    |
| White, non-Hispanic                     | 14   | 7.7     |
| Hispanic                                | 13   | 7.2     |
| Other or unknown                        | 13   | 7.2     |
| <b>Adjusted Transmission Category**</b> |  |         |
| Heterosexual contact                    | 163  | 90.0    |
| Injection drug use                      | 8  | 4.5     |
| Perinatal exposure                      | 8  | 4.4     |
| Child no identified/recorded risk       | 2  | 1.1     |

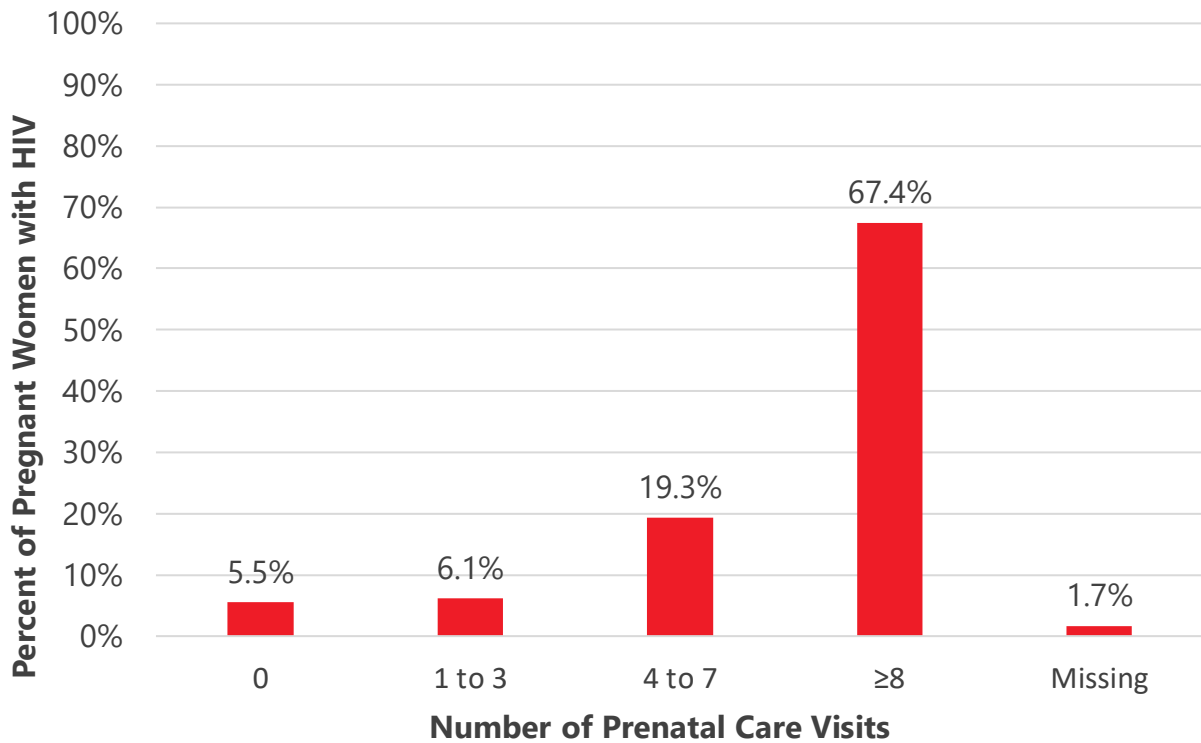
\* Categories may not add up to 100% due to missing information

\*\* Adjusted transmission categories are calculated using multiple imputation to account for missing transmission category information.

- The majority of pregnant women (~78%) were Black, non-Hispanic.
- More than half (~54%) of pregnant women who delivered a live infant in Georgia in 2022 were between 25–34 years of age, and 25% were under 25 years of age.
- The most common risk factor for HIV transmission was heterosexual contact. A small proportion of pregnant women (~4%) were perinatally infected with HIV and ~5% had a risk factor associated with injection drug use.

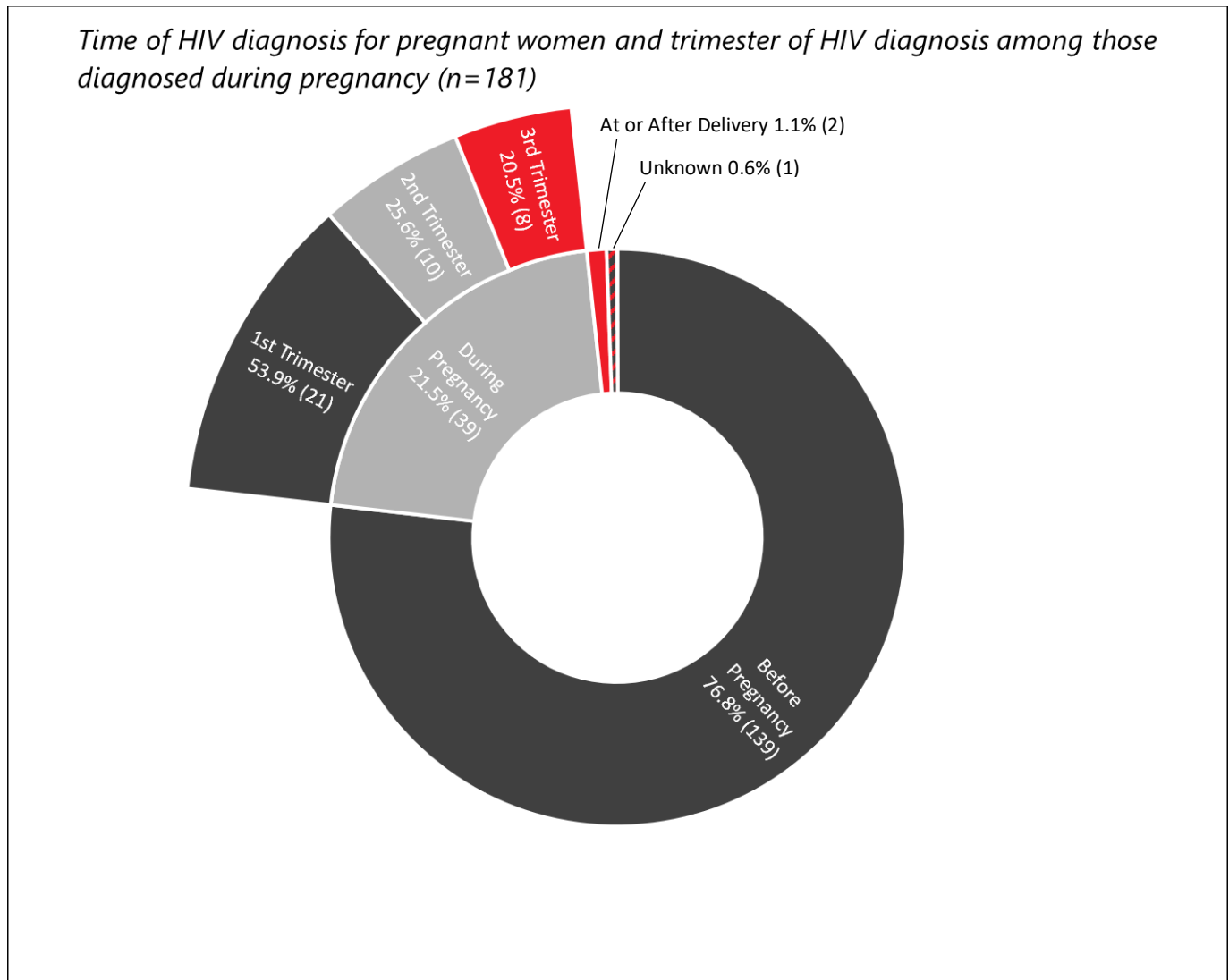


**Figure 2. Number of prenatal care visits for pregnant women with HIV, Georgia 2022**



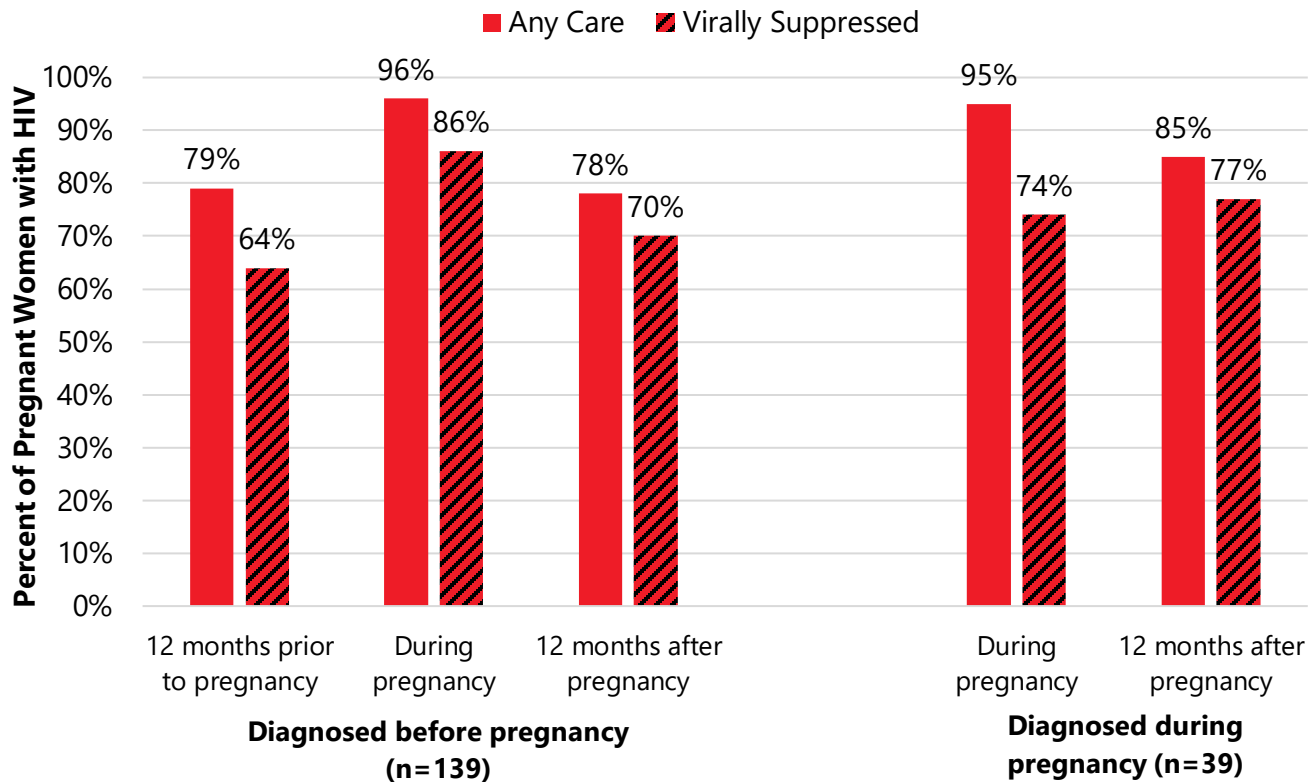
- 12% percent of pregnant women with HIV received no or very little (less than four visits) prenatal care.
- 33% received inadequate prenatal care according to the **Missouri Index**, which accounts for both the start time during pregnancy and number of prenatal care visits.
  - The **Missouri Index** 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.
- 67% received eight or more prenatal care visits.

**Figure 3. Time of HIV-diagnosis among pregnant women with HIV who delivered a live infant in Georgia, 2022**



- 77% of women had been diagnosed with HIV before pregnancy.
- Among women diagnosed during pregnancy, eight were diagnosed during their third trimester.
- Two women (1%) were diagnosed with HIV at or after delivery.
- One woman who was diagnosed during pregnancy was missing trimester information on HIV diagnosis.

**Figure 4. Receipt of HIV care and viral suppression for women with HIV before, during and after pregnancy, Georgia, 2022**



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

*- Care continuum estimates exclude women diagnosed at or after delivery (n=2) and women with unknown time of diagnosis (n=1)*

**Any care:**

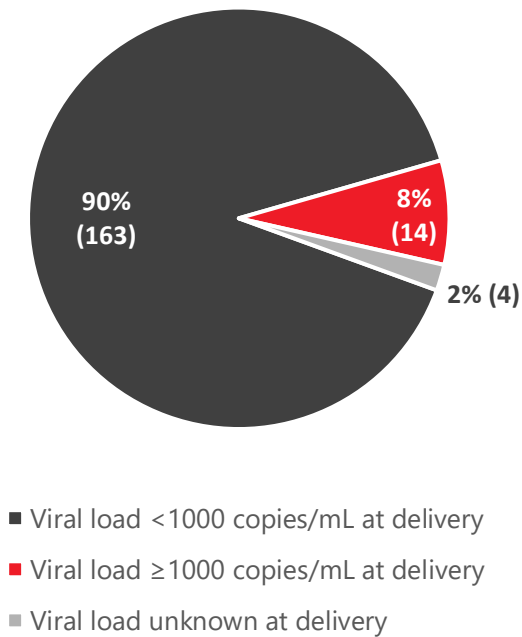
- Among women diagnosed before pregnancy, more received HIV care during pregnancy (96%) than before (79%) or after (78%) their pregnancy.
- Regardless of whether HIV diagnosis occurred before or during pregnancy, fewer women received HIV care in the 12 months post-partum than during pregnancy.

**Viral suppression:**

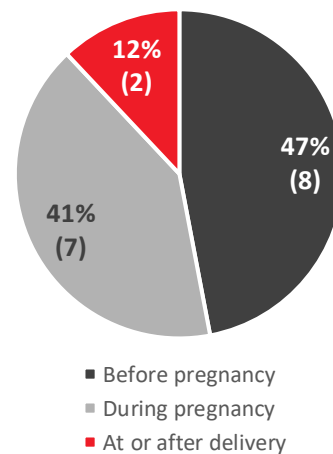
- 86% of women diagnosed before pregnancy were virally suppressed during pregnancy.
- Among women diagnosed before pregnancy, 64% were virally suppressed during the year preceding pregnancy.
- Fewer women who were diagnosed before pregnancy were virally suppressed in the twelve months after pregnancy than during pregnancy.

**Figure 5. Viral load at the time of delivery among women with HIV who delivered a live infant, Georgia, 2022**

*Viral load of pregnant women at delivery  
(n=181)*



*Time of HIV diagnosis,  
among pregnant women  
with viral load ≥ 1000  
copies/ml or unknown at  
delivery (n=17\*)*



\* Count excludes pregnant women with unknown time of HIV diagnosis (n=1)

- 90% of pregnant women had a viral load < 1000 copies/ml by delivery.
- Among pregnant women with a viral load ≥ 1000 copies/ml at delivery, 47% had been diagnosed before pregnancy.

**Table 2. Demographic and birth history characteristics, HIV-exposed infants born in Georgia, 2022 (n=187)**

|                                  | Number of HIV-Exposed Infants | Percent |
|----------------------------------|-------------------------------|---------|
| Total                            | 187                           | 100     |
| <b>DEMOGRAPHICS</b>              |                               |         |
| <b>Birth Sex</b>                 |                               |         |
| Female                           | 95                            | 50.8    |
| Male                             | 92                            | 49.2    |
| <b>BIRTH DETAILS</b>             |                               |         |
| <b>Birth Type</b>                |                               |         |
| Single                           | 181                           | 96.8    |
| Twins                            | 6                             | 3.2     |
| <b>Delivery Method</b>           |                               |         |
| Vaginal                          | 64                            | 37.4    |
| Cesarean                         | 107                           | 62.6    |
| <b>Neonatal Status</b>           |                               |         |
| Full Term ( $\geq 37$ weeks)     | 142                           | 75.9    |
| Premature† ( $< 37$ weeks)       | 45                            | 24.1    |
| <b>Birth Weight</b>              |                               |         |
| Very Low ( $< 1500$ g)           | 14                            | 7.9     |
| Low ( $\geq 1500$ g, $< 2500$ g) | 35                            | 19.8    |
| Normal ( $\geq 2500$ g)          | 128                           | 72.3    |
| <b>LOCATION OF BIRTH</b>         |                               |         |
| Regional Perinatal Center‡       | 66                            | 35.3    |
| <b>Geographic Location</b>       |                               |         |
| Metro Atlanta                    | 104                           | 55.6    |
| Non-Metro Area^                  | 83                            | 44.4    |

\*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 pregnant women and infants can receive the appropriate level of care for all risk levels<sup>3</sup> (Grady Memorial Hospital, Phoebe Putney, Piedmont Columbus Hospital, Augusta University Hospital, Memorial); ^Birth facility located outside of metropolitan Atlanta area.

- 37% of infants were delivered vaginally and 63% via cesarean section.
- Under a quarter (24%) of perinatally HIV-exposed infants were born prematurely, and 28% were low or very low birthweight.
- 35% percent of infants were delivered at Regional Perinatal Centers.
- 44% percent of infants were born outside the metropolitan Atlanta area.

**Table 3. Interventions received by infants born to women with HIV in Georgia who had a live birth in 2022, by viral suppression status at delivery**

| <b>Intervention</b>  | <b>Number of Infants – n (%)</b> | <b>Comments</b>  |
|--|----------------------------------|--|
| <b>Infants born to women with viral load &lt;1000 copies/ml at delivery*<br/>n = 168</b>       |                                  |  |
| <b>Infant ZDV</b>  | 167 (99%)                        | <b>1 infant did not receive intervention:</b> <ul style="list-style-type: none"> <li>- Infant born with multiple congenital anomalies, passed away shortly after birth</li> </ul>  |
| <b>Infants born to women with viral load ≥1000 copies/ml or unknown at delivery<br/>n = 19</b> |                                  |  |
| <b>Pregnant woman given IV ZDV during labor</b>  | 13 (68%)                         | <b>6 pregnant women did not receive intervention:</b> <ul style="list-style-type: none"> <li>- 1 woman had a precipitous vaginal delivery</li> <li>- 2 women delivered at home</li> <li>- 2 women were non-compliant with ARV, and testing results at hospital did not arrive until after delivery</li> <li>- 1 woman's prenatal care records may have been misinterpreted by delivering facility</li> </ul> |
| <b>C-section performed</b>   | 13 (68%)                         | <b>6 pregnant women did not receive intervention:</b> <ul style="list-style-type: none"> <li>- 1 woman had a precipitous vaginal delivery</li> <li>- 2 women delivered at home</li> <li>- 2 women were non-compliant with ARV, and testing results at hospital did not arrive until after delivery</li> <li>- 1 woman's prenatal care records may have been misinterpreted by delivering facility</li> </ul> |
| <b>Infant ZDV</b>  | 19 (100%)                        | <b>All infants received the intervention</b>   |
| <b>Secondary ARV</b>   | 16 (84%)                         | <b>3 infants did not receive intervention:</b> <ul style="list-style-type: none"> <li>- 2 infants were twin siblings, born extremely prematurely. Both were not expected to survive, and secondary ARV was not administered</li> <li>- 1 infant of the pair passed away shortly after birth</li> <li>- 1 infant the hospital did not administer secondary ARV until several days after birth</li> </ul>      |

\* Viral load at delivery based on pregnant woman's viral load closest to delivery (within generally a month)

**Table 4. Confirmed perinatal HIV transmissions, Georgia 2022**

| Birth | Time of HIV Diagnosis for Pregnant Woman | Viral Load at Delivery | Comments  |
|-------|--|------------------------|---|
| #1    | During pregnancy                         | ≥1000 copies/ml        | <ul style="list-style-type: none"> <li>• <b>Pregnant woman did not enter HIV care and was unsuppressed throughout pregnancy.</b></li> <li>• Pregnant woman received IV ZDV and delivered via C-section.</li> <li>• Baby received proper ART regimen for high-risk pregnancy.</li> </ul>   |
| #2    | During pregnancy                         | ≥1000 copies/ml        | <ul style="list-style-type: none"> <li>• <b>Pregnant woman received PNC and was properly screened during pregnancy but never started ARV regimen and did not achieve viral suppression</b></li> <li>• Pregnant woman received IV ZDV and delivered via C-section.</li> <li>• Baby received proper ART regimen for high-risk pregnancy.</li> </ul>                                       |
| #3    | During pregnancy                         | ≥1000 copies/ml        | <ul style="list-style-type: none"> <li>• <b>This was likely an acute HIV infection late in the 3<sup>rd</sup> trimester, combined with a precipitous vaginal delivery.</b></li> <li>• Pregnant woman received IV ZDV.</li> <li>• Pregnant woman did not deliver via C-section due to precipitous labor.</li> <li>• Baby received proper ART regimen for high-risk pregnancy.</li> </ul> |
| #4    | During pregnancy                         | ≥1000 copies/ml        | <ul style="list-style-type: none"> <li>• <b>Diagnosed during pregnancy during the 1<sup>st</sup> trimester but pregnant woman did not achieve viral suppression before delivery.</b></li> <li>• Pregnant woman received IV ZDV and delivered via C-section.</li> <li>• Baby received proper ART regimen for high-risk pregnancy.</li> </ul>   |

## **Estimated perinatal HIV Transmission Rate**

Including all known HIV-exposed infants in Georgia in 2022, among 187 HIV-exposed live births, 4 perinatal HIV transmissions were identified. The rate of perinatal HIV transmission in Georgia in 2022 is estimated to be 2.1%, more than double the rate in 2021. Further provider education and improved support for all pregnant women with HIV are key to preventing future cases of perinatal HIV transmission.





# REFERENCES

<sup>1</sup> World Health Organization, Mother to Child Transmission of HIV; <https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/hiv/prevention/mother-to-child-transmission-of-hiv>

<sup>2</sup> Introduction: Recommendations for the Use of Antiretroviral Drugs During Pregnancy and Interventions to Reduce Perinatal HIV Transmission in the United States; <https://clinicalinfo.hiv.gov/en/guidelines/perinatal/introduction?view=full>

<sup>3</sup> 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

<sup>4</sup> Infant Feeding for Individuals with HIV in the United States: Recommendations for the Use of Antiretroviral Drugs During Pregnancy and Interventions to Reduce Perinatal HIV Transmission in the United States  
<https://clinicalinfo.hiv.gov/en/guidelines/perinatal/infant-feeding-individuals-hiv-united-states?view=full>