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Perinatal HIV Surveillance Report Georgia, 2020-2021

HIV/AIDS Epidemiology Section

GEORGIA DEPARTMENT OF PUBLIC HEALTH

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BACKGROUND

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. Interventions to prevent mother to child transmission of HIV (PMTCT) 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, and (5) Infant receipt of primary ART (and secondary ART for high-risk situations).

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. Maternal viral load at delivery determines the set of recommended transmission prevention measures. For mothers with a viral load <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 ≥ 1000 copies/ml unknown at delivery, the following prevention intervention are recommended: (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 ZDV plus at least one other additional antiviral after birth.

During the post-partum period, infants born to women with HIV should not be breastfed at any point, regardless of viral suppression status. Current guidelines recommend alternative feeding of infant formula for all infants of mothers 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 patient follow-up and provider adherence to proper guidelines in caring for women before, during, and after delivery.

SUMMARY

KEY PREVENTION SUCCESSES:

- 82% of HIV positive women who delivered a live infant in 2021 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.
- 98% of HIV positive women who delivered a live infant in 2021 were diagnosed prior to delivery.
- 90% of all HIV-exposed births were to mothers with a viral load <1000 copies/ml at delivery, minimizing transmission risk during the labor and delivery period.
- Almost all (99.4%) 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, 69% 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

- Almost one third (31%) of HIV-positive mothers in 2021 had inadequate prenatal care; 12% had no or very little prenatal care

Guideline-related

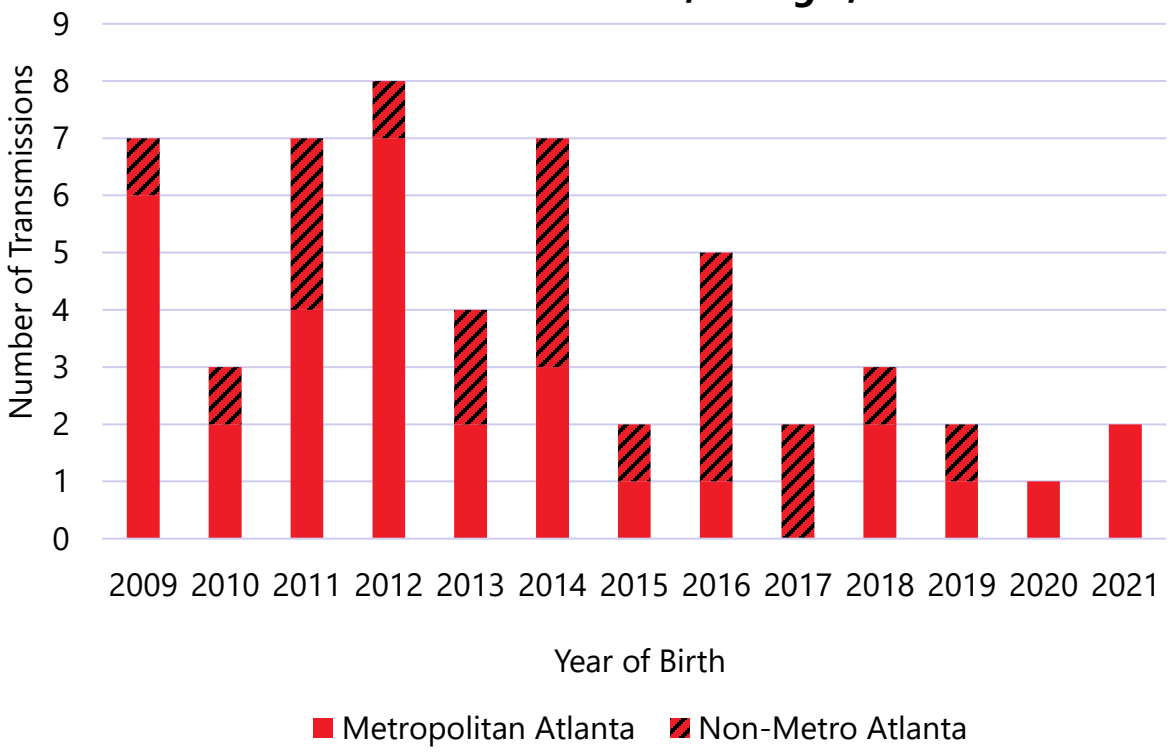
- One hospital failed to receive HIV test results back in time to administer proper interventions.

More information can be found at: https://dph.georgia.gov/perinatal-exposure-surveillance

PERINATAL HIV TRANSMISSION IN GEORGIA, 2009-2021

From 2009-2021, a total of 53 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 2013-2021, 13 of 27 (48%) were born to mothers residing in metro Atlanta, and 52% to mothers residing in other parts of Georgia.

Figure 1. Perinatal HIV Infections, by year and location of mother's residence, Georgia, 2009-2021



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

Perinatal HIV exposure surveillance

Perinatal exposure surveillance involves collecting information on all mother-baby pairs where the mother was known to be HIV positive. In contrast to collecting information only for infants who acquired HIV perinatally 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 list of all known births to HIV-positive mothers in Georgia in 2020 and 2021 was compiled through five different data sources to identify infants perinatally exposed to HIV:

1. Maternal HIV status indicated as positive on the infant's birth certificate
2. Registry match between birth registry and the HIV Surveilllance registry to identify women with HIV who gave birth
3. Pharmacy alert system
   - In place with three 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 reported to DPH 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 HIV-exposed births in 2020 and 2021 on the 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:

- Not all perinatal exposures are captured by the surveillance system and the numbers presented may be an undercount of the true number of perinatal exposures.
- 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.
- The time of HIV diagnosis is unknown for a small proportion of women. They may have been diagnosed before pregnancy, based on labs 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 lab reporting is considered to have a high level of completeness.

- Due to the COVID-19 pandemic causing disruptions in obtaining medical records and reporting in 2020 specifically, abstractions were only conducted for births over the 6-month period of April to September to avoid delaying start of 2021 abstractions. **Data for this period of 2020 are shown at the end of the report as an addendum**.

TABLES AND FIGURES: 2021

Table 1. Demographic characteristics of women with HIV in Georgia who had a live birth, 2021 (n=190)

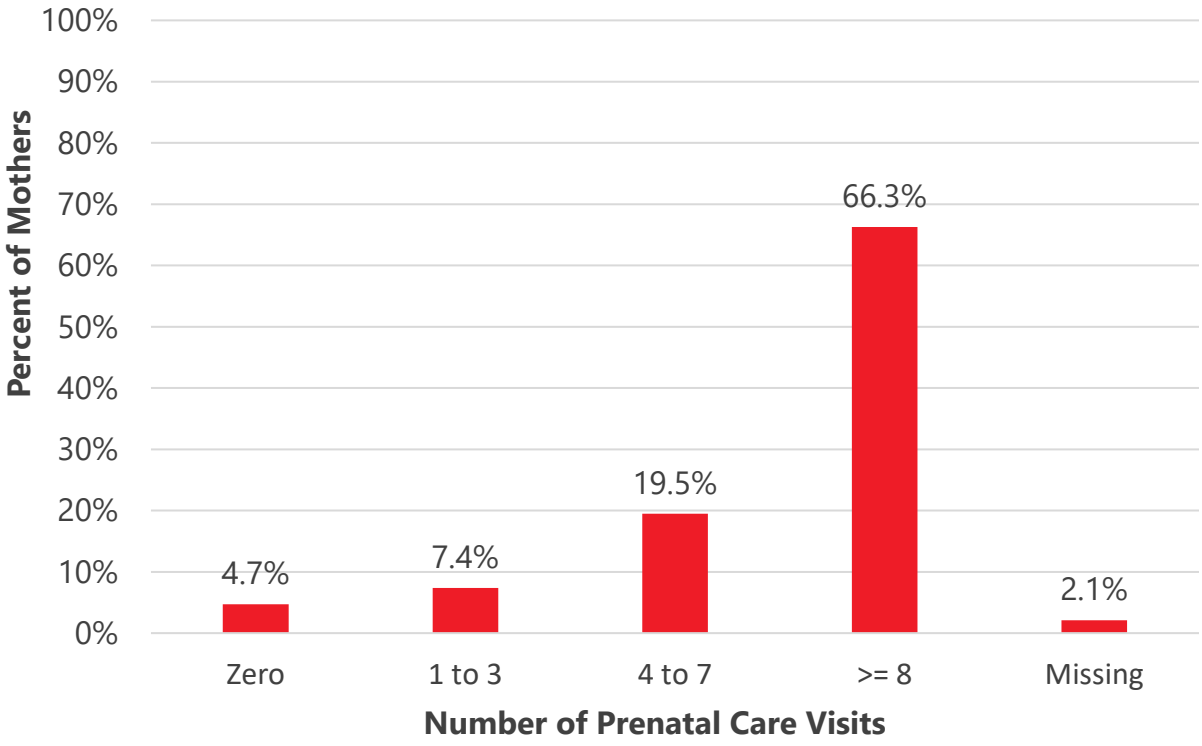
	Women with HIV who delivered a live infant*	Percent
Total	190	100
Maternal Age at Delivery		
<25 years	45	23.7
25-34 years	106	55.8
35+ years	39	20.5
Race		
Black, non-Hispanic	145	76.3
White, non-Hispanic	21	11.1
Hispanic	15	7.9
Other or unknown	9	4.7
Transmission Category		
Heterosexual contact	116	61.1
Injection drug use	4	2.1
Perinatal exposure	17	9.0
Missing**	53	27.9

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

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

- The majority of mothers (~76%) were black, non-Hispanic.
- More than half (~56%) of women with HIV who delivered a live infant in Georgia in 2021 were between 25-34 years of age, and about 24% were under 25 years of age.
- The most common risk factor for HIV transmission was heterosexual contact. A small proportion of women (~9%) were perinatally infected with HIV.

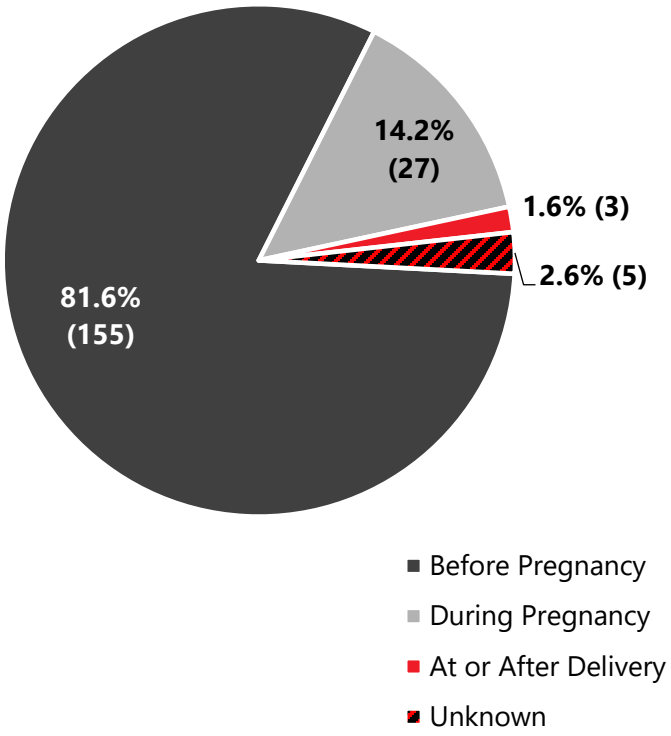
Figure 2. Number of prenatal care visits for pregnant women with HIV, Georgia 2021



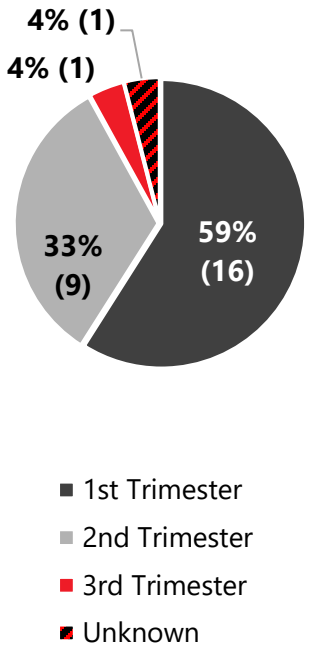
- 12% percent of women with HIV received no or very little (less than four visits) prenatal care.
- 66% received eight or more prenatal care visits.
- 31% received inadequate prenatal care according to the **Missouri Index**, which accounts for both the start time during pregnancy and number of prenatal 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 with HIV who delivered a live infant in Georgia, 2021

Time of maternal HIV diagnosis (n=190)

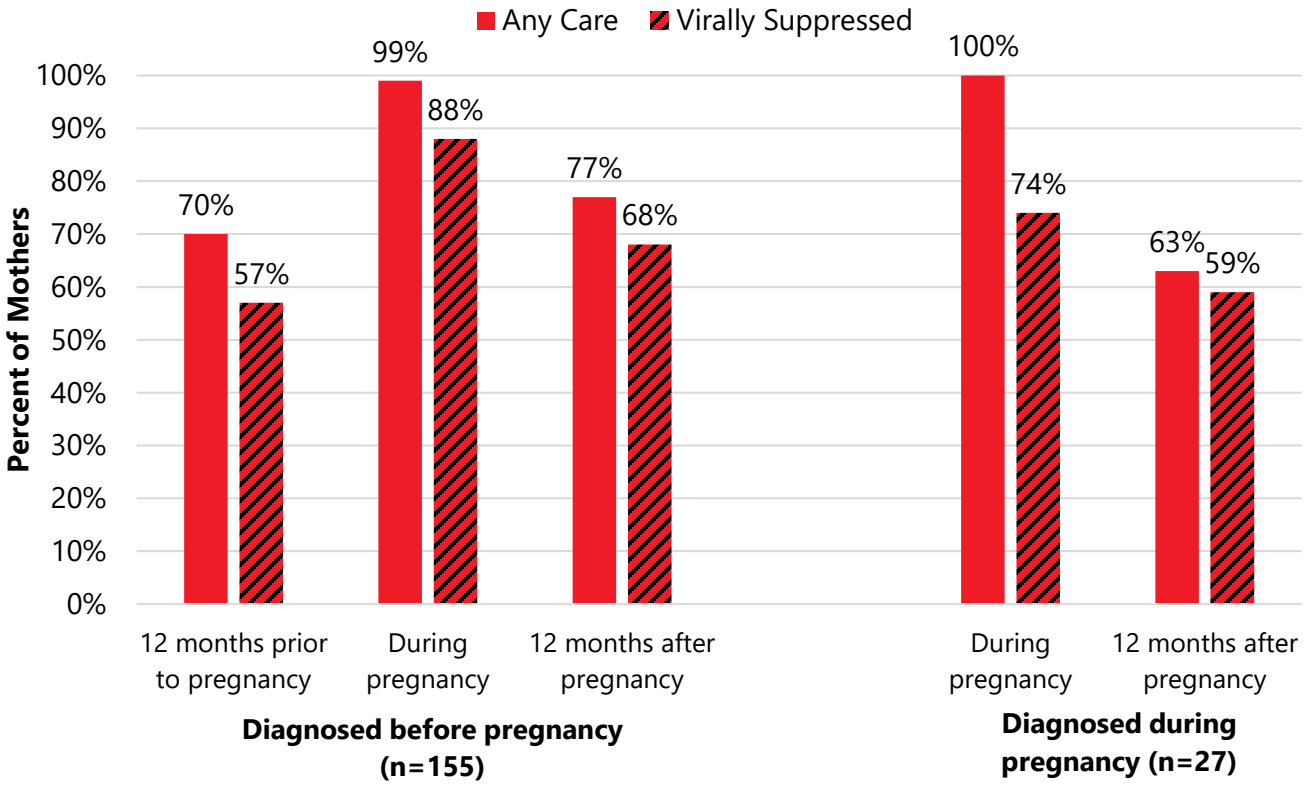


Trimester of HIV diagnosis, among women diagnosed during pregnancy (n=27)



- 82% of women had been diagnosed with HIV before pregnancy.
- Among women diagnosed during pregnancy, only one mother was diagnosed during their third trimester.
- Two mothers (1%) were diagnosed with HIV at or after delivery.
- One mother 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, 2021



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=3) and women with unknown time of diagnosis (n=5)

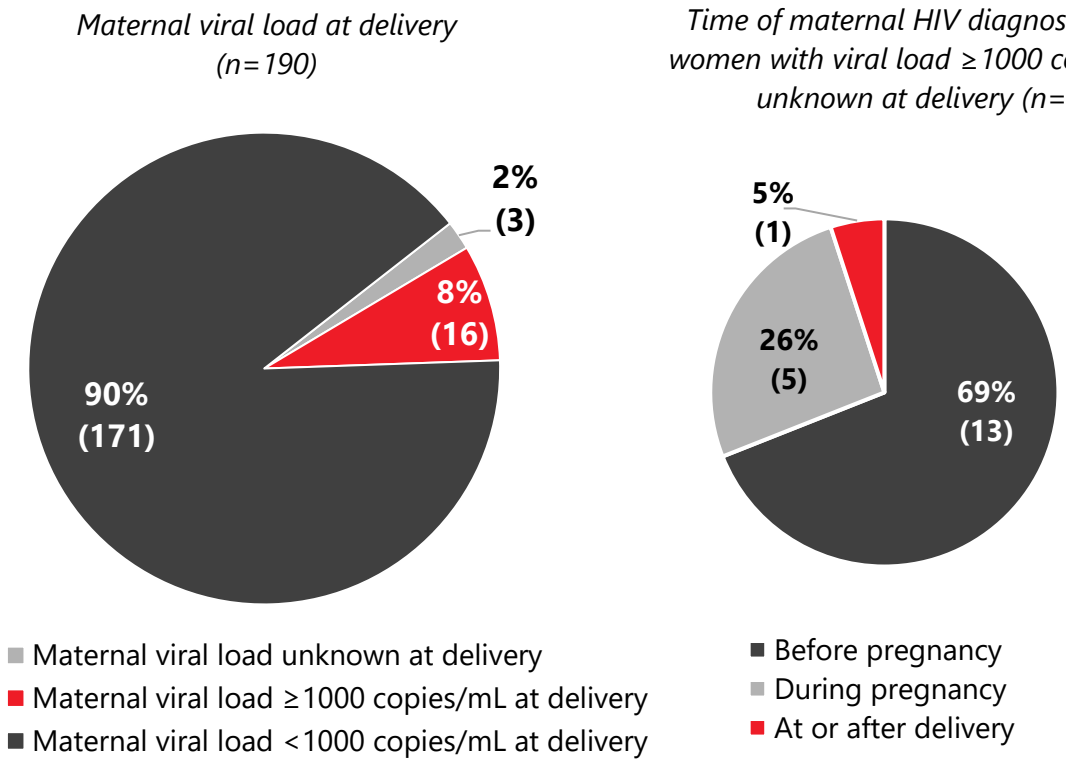
Any care:

- Among women diagnosed before pregnancy, more received HIV care during pregnancy (99%) than before (70%) 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:

- 88% of women diagnosed before pregnancy were virally suppressed during pregnancy.
- Among women diagnosed before pregnancy, 57% 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 load by the time of delivery among women with HIV who delivered a live infant, Georgia, 2021



** Count excludes mothers with unknown time of HIV diagnosis (n=5)*

- 90% of mothers had a viral load <1000 copies/ml by delivery.
- Among women with a viral load ≥1000 copies/ml at delivery, almost three quarters (69%) had been diagnosed before pregnancy.

Table 2. Demographic and birth history characteristics, HIV-exposed infants born in Georgia, 2021 (n=197)

	Number of HIV-Exposed Infants	Percent
Total	197	100
DEMOGRAPHICS		
Birth Sex		
Female	77	39.7
Male	117	60.3
BIRTH DETAILS		
Birth Type		
Single	190	96.5
Twins	7	3.6
Delivery Method		
Vaginal	67	38.5
Cesarean	107	61.5
Neonatal Status		
Full Term (≥ 37 weeks)	151	78.2
Premature† (< 37 weeks)	42	21.8
Birth Weight		
Very Low (<1500 g)	7	3.6
Low (≥ 1500 g, <2500 g)	34	17.6
Normal (≥ 2500 g)	152	78.7
LOCATION OF BIRTH		
Regional Perinatal Center¥	79	40.1
Geographic Location		
Metro Atlanta	100	52.4
Non-Metro Area^	91	47.6

*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.

- 39% of infants were delivered vaginally and 62% via cesarean section.
- Under a quarter (22%) of perinatally HIV-exposed infants were born premature, and 21% were low or very low birthweight.
- 40% percent of infants were delivered at Regional Perinatal Centers.
- 48% percent of infants were born outside the metropolitan Atlanta area

Table 3. Interventions received by infants born to mothers with HIV in Georgia who had a live birth in 2021, by viral suppression status at delivery

Intervention	Number of infants – n (%)	Comments
Infants born to mothers with viral load <1000 copies/ml **at delivery*** **n = 178**		
Infant ZDV	177 (99%)	**1 infant did not receive intervention:** - Mother refused ART for infant due to personal beliefs
Infants born to mothers with viral load ≥1000 copies/ml or **unknown delivery** **n = 19**		
Maternal IV ZDV during labor	13 (68%)	**6 mothers did not receive intervention:** - 2 mothers refused to receive ZDV - 1 mother had an emergent C-section - 1 mother had a precipitous vaginal delivery - 1 mother delivered at home (unaware of pregnancy) - 1 mother who tested positive at admission gave birth before IV ZDV could be administered
C-section performed	15 (79%)	**4 mothers did not receive intervention:** - 1 mother had a precipitous vaginal delivery - 1 mother was non-cooperative - 1 mother tested positive by rapid test but went into delivery before results of normal testing therefore C-section was not done due to timing - 1 mother delivered at home
Infant ZDV	19 (100%)	**All infants received intervention**
Secondary ARV	19 (100%)	**All infants received intervention**

** Maternal viral load at delivery based on viral load closest to delivery (within generally a month)*

Table 4. Confirmed perinatal HIV transmissions, Georgia 2021			
Birth	**Time of Maternal HIV Diagnosis**	**Viral load at Delivery**	**Comments**
#1	During pregnancy	≥1000 copies/ml	Mother did not enter HIV care and was unsuppressed throughout pregnancy
#2	>1 year before delivery	<1000 copies/ml	Adherence challenges during pregnancy complicated by other medical problems

Estimated perinatal HIV Transmission Rate

Including all known HIV-exposed infants in Georgia in 2021, among 197 HIV-exposed live births, we are aware of 2 perinatal HIV transmissions. The rate of perinatal HIV transmission in Georgia in 2021 is estimated to be 1.0%, which is the same as in 2019.

ADDENDUM: 2020 DATA

- Perinatal surveillance for 2020 was conducted for live births during the 6 months spanning April-September 2020 instead of the full year. This was done because the start of 2020 abstractions were delayed due to COVID-19 and completing the full year would have substantially delayed the start of 2021 abstractions.
- Methods used for identification of mother-baby pairs were unchanged
- An abbreviated set of key findings is provided here. Overall findings are consistent with those from 2019 and 2021.

Table A. Demographic characteristics of women with HIV in Georgia who had a live birth, April 2020 – September 2020 (n=96)

	Women with HIV who delivered a live infant*	Percent
Total	96	100
Maternal Age at Delivery		
<25 years	19	19.8
25-34 years	54	56.3
35+ years	23	24.0
Race		
Black, non-Hispanic	74	77.1
White, non-Hispanic	9	9.4
Hispanic	8	8.3
Other or unknown	5	5.2
Transmission Category		
Heterosexual contact	64	66.7
Injection drug use	3	3.1
Perinatal exposure	4	4.2
Missing**	25	26.0

* Categories may not add up to 100% due to missing information
** The distribution of risk among these likely reflects those with complete risk information.

- The majority of mothers (~77%) were black, non-Hispanic.
- More than half (56%) of WLWH who delivered a live infant in Georgia in Apr-Sept 2020 were between 25-34 years of age, and about 20% were under 25 years of age.
- The most common risk factor for HIV transmission was heterosexual contact. A small proportion of women (~4%) were perinatally infected with HIV.

Table B. Time of HIV diagnosis and viral suppression status at delivery among women with HIV in Georgia who had a live birth April 2020 – September 2020 (n=96)

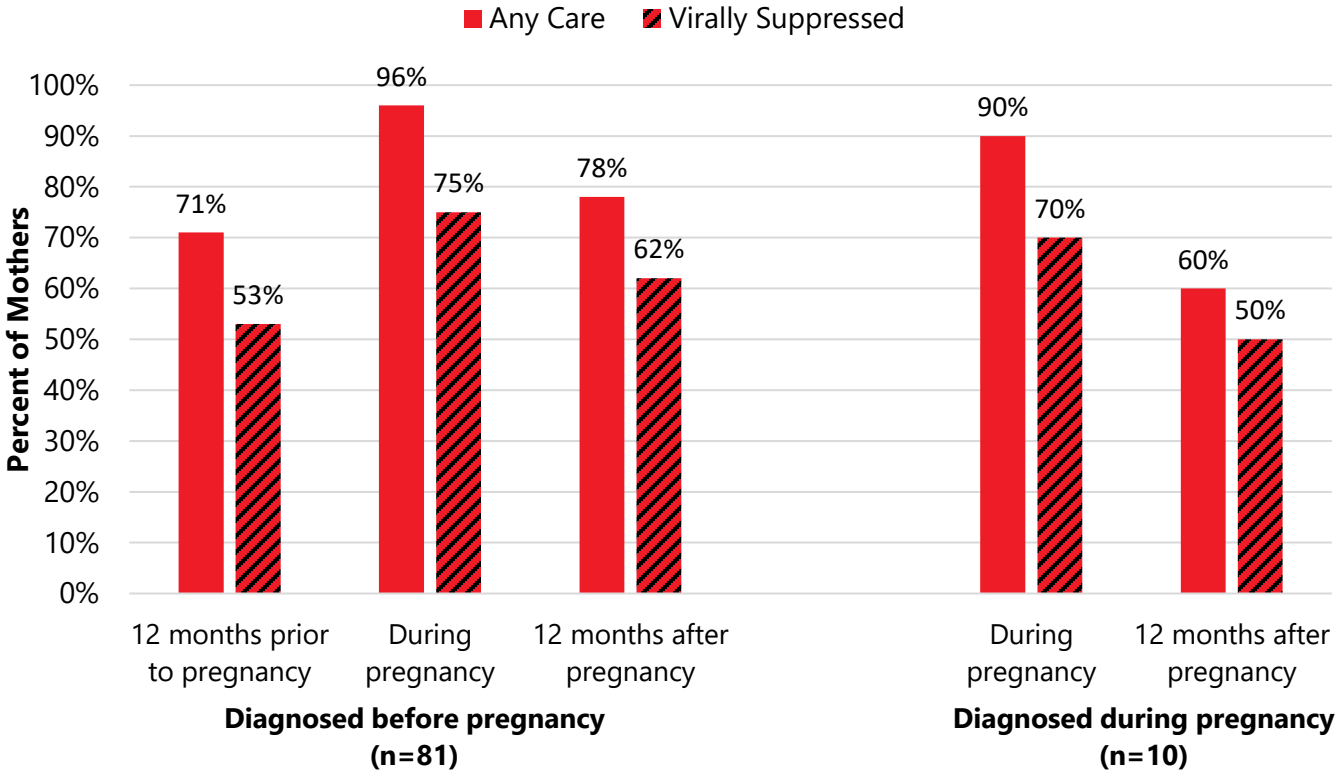
	Women with HIV who delivered a live infant*	Percent
Total	96	100
Time of HIV Diagnosis		
Before pregnancy	81	84.4
During pregnancy	10	10.4
At or after delivery	2	2.1
Unknown**	3	3.1
Viral Suppression Status		
Viral load <1000 copies/ml at delivery	82	85.4
Viral load ≥1000 copies/ml at delivery	12	12.5
Unknown viral load at delivery	2	2.1
Time of HIV diagnosis, among Mothers with Unsuppressed/Unknown Viral Load at Delivery		
Before pregnancy	10	71.4
During pregnancy	3	21.4
At or after delivery	1	7.1

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

*** Record indicates diagnosis during pregnancy but HIV viral load suppressed at time of diagnosis*

- Most mothers (84.4%) were diagnosed before pregnancy.
- Eighty five percent of mothers had a viral load <1000 copies/ml at the time of delivery.
- Among the mothers with viral load ≥1000 or unknown viral load status at delivery, 71% were diagnosed before pregnancy.

Figure A. Receipt of HIV care and viral suppression before, during, and after pregnancy for women with HIV who had a live birth in Georgia during April-Sept 2020



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=3)

- Almost all mothers (96%) received any form of HIV care during their pregnancy, while 75% were virally suppressed (<200 copies/ml) at time of delivery.
- Among the mothers diagnosed during pregnancy, 90% received care, and 70% were virally suppressed at time of delivery.
- At the start of the COVID-19 pandemic in March 2020, access to healthcare services including HIV testing, prevention, and care services was reduced or was temporarily suspended. Alternatives to in-person care such as telehealth were available to many people who were able to continue to access HIV care without routine laboratory testing. 2020 care continuum data should be interpreted with caution because of missing care lab information.

Table C. Interventions received by infants born to mothers with HIV in Georgia who had a live birth April 2020 – September 2020, by viral suppression status at delivery

Intervention	Number of infants – n (%)	Comments
Infants born to mothers with viral load <1000 copies/ml **at delivery*** **n = 85**		
Infant ZDV	85 (100%)	**All infants received intervention**
Infants born to mothers with viral load ≥1000 copies/ml or **unknown at delivery** **n = 14**		
Maternal IV ZDV during labor	12 (85%)	**2 mothers did not receive intervention:** - 1 mother had a precipitous vaginal delivery - 1 mother delivered prior to hospital admission
C-section performed	12 (85%)	**2 mothers did not receive intervention:** - 1 mother had a precipitous vaginal delivery - 1 mother delivered prior to hospital admission
Infant ZDV	14 (100%)	**All infants received intervention**
Secondary ARV	13 (93%)	**1 infant did not receive intervention:** - 1 mother's viral load test result was not available until after discharge; hospital unaware of viral load during labor and delivery

** Maternal viral load at delivery based on viral load closest to delivery (within generally a month)*

Table D. Confirmed perinatal HIV transmissions, Georgia April 2020 – September 2020			
Birth	**Time of Maternal HIV Diagnosis**	**Viral Load at Delivery**	**Comments**
1	Before pregnancy	≥1000 copies/ml	Maternal drug use during pregnancy, no prenatal care, no HIV care, pre-hospital delivery

- Confirmed perinatal transmissions are identified based on laboratory results reported to the Georgia Department of Public Health. Those processes were not affected by COVID-19. Only one perinatal transmission was identified in an infant born in Georgia in 2020 (full year).

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