Poster # 925

# Perinatally-Infected Women Giving Birth in New York State: 2002 through 2006

Pulver WP[1], Smith L[1], Warren BL[2], Carrascal A[2]

[1]New York State Department of Health, Bureau of HIV/AIDS Epidemiology, Albany, NY, [2]New York State Department of Health, AIDS Institute, Albany, NY

Lou Smith, MD, MPH
New York State Department of Health
Corning Tower, ESP
Albany, NY 12237
Email: LLS04@health.state.ny.us
Tel. 518/474-4284 Fax: 518/474-1947

**ABSTRACT # T-136:**

**BACKGROUND:** The number of women giving birth who were themselves perinatally infected with HIV is likely to increase. In New York State (NYS) the number of HIV-exposed births reached its zenith in 1990, with nearly 1900 HIV-infected women giving birth and an estimated 400 infants acquiring HIV. Many infected as infants are now attaining sexual maturity. Young pregnant perinatally infected women may have special medical requirements. This analysis describes a cohort of perinatally infected mothers (PIM) who gave birth in NYS between 2002 and 2006.

**METHODS:** The Newborn Screening Program tests all NYS infants for HIV antibodies. Prenatal, labor and infant charts of HIV-exposed infants are reviewed by the NYS Department of Health for programmatic monitoring. Data collected includes demographics, maternal HIV risk, timing of maternal HIV diagnosis and antiretroviral treatment.

**RESULTS:** HIV exposure was identified in 3,330 birth events from January 2002 through December 2006. Chart abstraction data sufficient to complete analysis was available for 3,112 (93%). Perinatal infection of the mother was identified in 48 mothers who delivered on 58 occasions (6 mothers delivered twice, and 2 mothers delivered on 3 separate occasions). The number of PIM has increased over time, from 4 (0.56%) of the 711 HIV-infected mothers in 2002 to 22 (3.89%) of the 570 HIV-infected mothers giving birth in 2006. Among the HIV-exposed birth events, Hispanic women were more likely to be PIM than white or black women; whereas 26% of HIV-exposed births were to Hispanic women, 28 of 58 (48%) births to PIM were Hispanic (RR: 2.66, 95% CI:1.60,4.42). C-section was more common among PIM than other HIV-infected mothers (RR:2.50, 95% CI:1.37,4.55). Otherwise, PIM and non-PIM had similar pregnancy outcomes. One PIM did not receive prenatal care. Infants < 2500 grams were born to 19% of PIM and 21% of non-PIM. PIM did not appear more likely to transmit HIV to their infants than non-PIM, with mother to child transmission occurring in 2 of 58 PIM cases (3.4%) compared to 68 transmissions in the 3054 non-PIM (2.2%) (RR:1.55 95% CI:0.39,6.23).

**CONCLUSIONS:** The number of PIM progressively increased from 2002-2006. Although HIV transmission and birth weight outcomes of PIM do not appear to be significantly different than those in non-PIM deliveries, continued assessment of this growing subpopulation for emerging medical and psychosocial issues is reasonable.

## Background

- Number and rate of HIV-infected childbearing women has steadily declined since 1990
- Number and rate of HIV-infected infants has declined significantly since 1997
- Effective antiretroviral (ARV) treatment available since the mid-90's has allowed many perinatally infected children to reach sexual maturity
- Knowledge of pregnancy outcomes in perinatally infected mothers (PIM) is limited

## Methods

- Statewide newborn screening identified HIV-exposed delivery events
- PCR testing service determined infant infection status
- Chart reviews of HIV-exposed births were conducted
- HIV-infected women giving birth from 2002 through 2006 with chart review and infant infection status determined were evaluated
- Comparisons were made between perinatally-infected mothers and those infected by other means to determine associations for PIM and differences in delivery outcomes using univariate analysis and logistic regression on residence, race/ethnicity, age at delivery, parity, drug use, STIs, ARV regimen, viral load, delivery type, gestational age, infant birth weight, breastfeeding and mother-to-child HIV transmission
- Estimation of the number of perinatally-infected women of reproductive age was undertaken using unlinked Survey of Childbearing Women data and perinatal HIV transmission rates

## Results

**Assessment of HIV-Infected Women Giving Birth and Maternal Perinatal Infection Status**
**New York State 2002 - 2006**

| Characteristics: | Non-Perinatally Infected Mothers Giving Birth N | % | Perinatally-Infected Mothers Giving Birth (PIM) N | % | Unadjusted RR (C.I. 95%) | Logistic Regression Significant Associations (p<0.05)* |
|---|---|---|---|---|---|---|
| **Total Delivery Events** | 3,054 | | 58 | | | |
| **Year of Delivery** | | | | | | |
| 2002 | 707 | 23.1 | 4 | 6.9 | reference | |
| 2003 | 659 | 21.6 | 4 | 6.9 | 1.1 (0.3 - 4.3) | N/A |
| 2004 | 596 | 19.5 | 14 | 24.1 | 4.1 (1.4 - 12.3)† | |
| 2005 | 544 | 17.8 | 14 | 24.1 | 4.5 (1.5 - 13.5)† | |
| 2006 | 548 | 17.9 | 22 | 37.9 | 6.9 (2.4 - 19.8)† | |
| **Region of Residence** | | | | | | |
| New York City | 2,415 | 79.1 | 46 | 79.3 | 1.0 (0.5 - 1.8) | |
| Rest of State | 614 | 20.1 | 12 | 20.7 | reference | |
| **Race/Ethnicity** | | | | | | |
| White | 256 | 8.4 | 1 | 1.7 | reference | |
| Black | 1,925 | 63.0 | 27 | 46.6 | 3.6 (0.5 - 26.0) | |
| Hispanic | 780 | 25.5 | 28 | 48.3 | 8.9 (1.2 - 65.1)† | 0.01 |
| Other/Unknown | 93 | 3.0 | 2 | 3.4 | 5.4 (0.5 - 59.0) | |
| **Maternal Age at Delivery** | | | | | | |
| 14-17 | 57 | 1.9 | 17 | 29.3 | 139.2 (48.0 - 403.6)† | < 0.0001 |
| 18-19 | 69 | 2.3 | 16 | 27.6 | 114.1 (39.0 - 333.9)† | < 0.0001 |
| 20-21 | 160 | 5.2 | 14 | 24.1 | 48.8 (16.2 - 146.6)† | <0.0001 |
| 22-24 | 343 | 11.2 | 7 | 12.1 | 12.1 (3.6 - 41.2)† | 0.0003 |
| 25+ | 2,420 | 79.2 | 4 | 6.9 | reference | |
| **Previous Pregnancies** | | | | | | |
| 0 | 324 | 10.6 | 26 | 44.8 | 25.0 (8.8 - 71.3)† | |
| 1-2 | 926 | 30.3 | 24 | 41.4 | 8.5 (3.0 - 24.5)† | |
| 3 or more | 1,344 | 44.0 | 4 | 6.9 | reference | |
| Unknown | 460 | 15.1 | 4 | 6.9 | | |
| **STI During Pregnancy**** | | | | | | |
| Documented diagnosis | 1,135 | 37.2 | 27 | 46.6 | 1.5 (0.9 - 2.4) | |
| None documented/Missing | 1,919 | 62.8 | 31 | 53.4 | reference | |
| **Illicit Drug use During Pregnancy** | | | | | | |
| Documented use | 561 | 18.4 | 4 | 6.9 | 0.3 (0.1 - 0.9)† | |
| None documented/Missing | 2,493 | 81.6 | 54 | 93.1 | reference | |
| **Prenatal Care** | | | | | | |
| No | 160 | 5.2 | 1 | 1.7 | 0.3 (0.04 - 2.3) | N/A |
| Yes | 2,837 | 92.9 | 56 | 96.6 | reference | |
| **ARV Regimen** | | | | | | |
| No ARV | 25 | 0.8 | 0 | 0.0 | --- | |
| 1 or 2 Arms | 579 | 19.0 | 5 | 8.6 | 0.5 (0.2 - 1.2) | |
| All 3 Arms (prenatal/labor/newborn) | 2,410 | 78.9 | 53 | 91.4 | reference | |
| **Viral Load Closest to Delivery** | | | | | | |
| Below Lower Detection Limit | 1,103 | 36.1 | 17 | 29.3 | reference | |
| < 1,000 copies | 606 | 19.8 | 16 | 27.6 | 1.7 (0.9 - 3.3) | |
| 1,000 - 10,000 copies | 306 | 10.0 | 8 | 13.8 | 1.7 (0.7 - 3.9) | |
| > 10,000 copies | 235 | 7.7 | 14 | 24.1 | 3.7 (1.9 - 7.4)† | 0.03 |
| Unknown test hx | 804 | 26.3 | 3 | 5.2 | | |
| **Delivery Type** | | | | | | |
| C-Section | 1,644 | 53.8 | 43 | 74.1 | 2.5 (1.4 - 4.5)† | 0.02 |
| Vaginal | 1,359 | 44.5 | 14 | 24.1 | reference | |
| **Gestational Age of Infant** | | | | | | |
| < 37 weeks | 594 | 19.4 | 6 | 10.3 | 0.5 (0.2 - 1.1) | |
| ≥ 37 weeks | 2,425 | 79.4 | 52 | 89.7 | reference | |
| **Birth Weight of Infant** | | | | | | |
| < 2500 grms | 642 | 21.0 | 11 | 19.0 | 0.9 (0.5 - 1.7) | |
| ≥ 2500 grms | 2,411 | 78.9 | 47 | 81.0 | reference | |
| **Breastfed** | | | | | | |
| Yes | 36 | 1.2 | 1 | 1.7 | 1.4 (0.2 - 10.2) | |
| No | 2,938 | 96.2 | 56 | 96.6 | reference | |
| **Mother-to-Child HIV Transmission** | | | | | | |
| Yes | 68 | 2.2 | 2 | 3.4 | 1.6 (0.4 - 6.2) | |
| No | 2,986 | 97.8 | 56 | 96.6 | reference | |

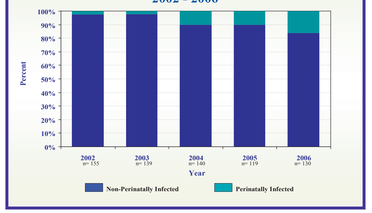
Note: category sums do not always equal total due to missing or unknown values. † significant association.

* Backwards stepwise logistic regression analysis - year of delivery and prenatal care were not assessed in model

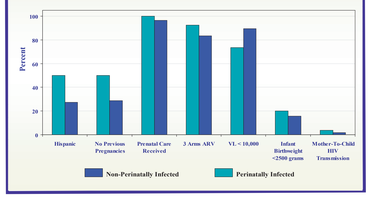
** STI include trichomonas, syphilis, pelvic inflammatory disease, hepatitis C, hepatitis B, group B strep, gonorrhea, genital herpes, bacterial vaginosis, chlamydia

- 3,330 HIV-exposed birth events occured in NYS from 2002-2006
- 3,112 (93%) events with infant status and chart review were available for analysis
- 48 perinatally-infected mothers gave birth to 58 (1.9%) infants

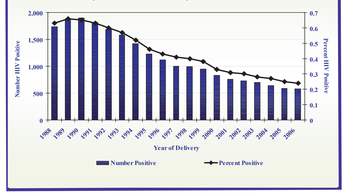
**HIV Infected Women 14-24 Years of Age Giving Birth by Perinatal Infection Status 2002 - 2006**




**Selected Characteristics of HIV Infected Women 14-24 Years of Age Giving Birth by Perinatal Infection Status 2002 - 2006**




**Survey of Childbearing Women HIV Prevalence and Number HIV Antibody Positive by Year of Delivery, 1988 - 2006**

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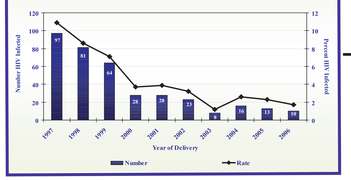
**Comprehensive Newborn Screening Program Number Infected Infants and Perinatal HIV Transmission Rate by Year of Delivery, 1997 - 2006**

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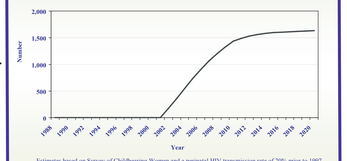
**Estimates of Living Perinatally-Infected Females Age 14 Years and Older 1988 - 2020**




Estimates based on Survey of Childbearing Women and a perinatal HIV transmission rate of 20% prior to 1997 and actual case data 1997-2006; assumes no deaths and no in or out migration.

## Discussion

- The number and proportion of PIM have been increasing since 2002-2003
- Measured outcomes indicated no significant difference between PIM and non-PIM deliveries
- Logistic regression indicated that PIM are more likely than other HIV-infected women giving birth to be young and Hispanic, to have a viral load >10,000 copies and to have delivered by C-section

## Conclusions

- Data from this population based cohort indicate that birthweight and HIV transmission outcomes for PIM were not different than for other HIV-infected mothers
- Outcomes not measured may be different between PIM and non-PIM (i.e. developmental characteristics of infants); therefore, this group of women and their infants should be monitored for special medical and social needs
- Based on existing surveillance data, we anticipate that the number of perinatally-infected women giving birth will increase for several more years as infants infected prior to highly effective prevention strategies reach reproductive age