



PERINATAL HIV SURVEILLANCE IN NEW YORK CITY

“Missed Opportunities for Perinatal HIV Prevention”

Vicki Peters, MD

**NYC, Department of Health and Mental Hygiene
HIV Epidemiology Program**

May 1, 2007

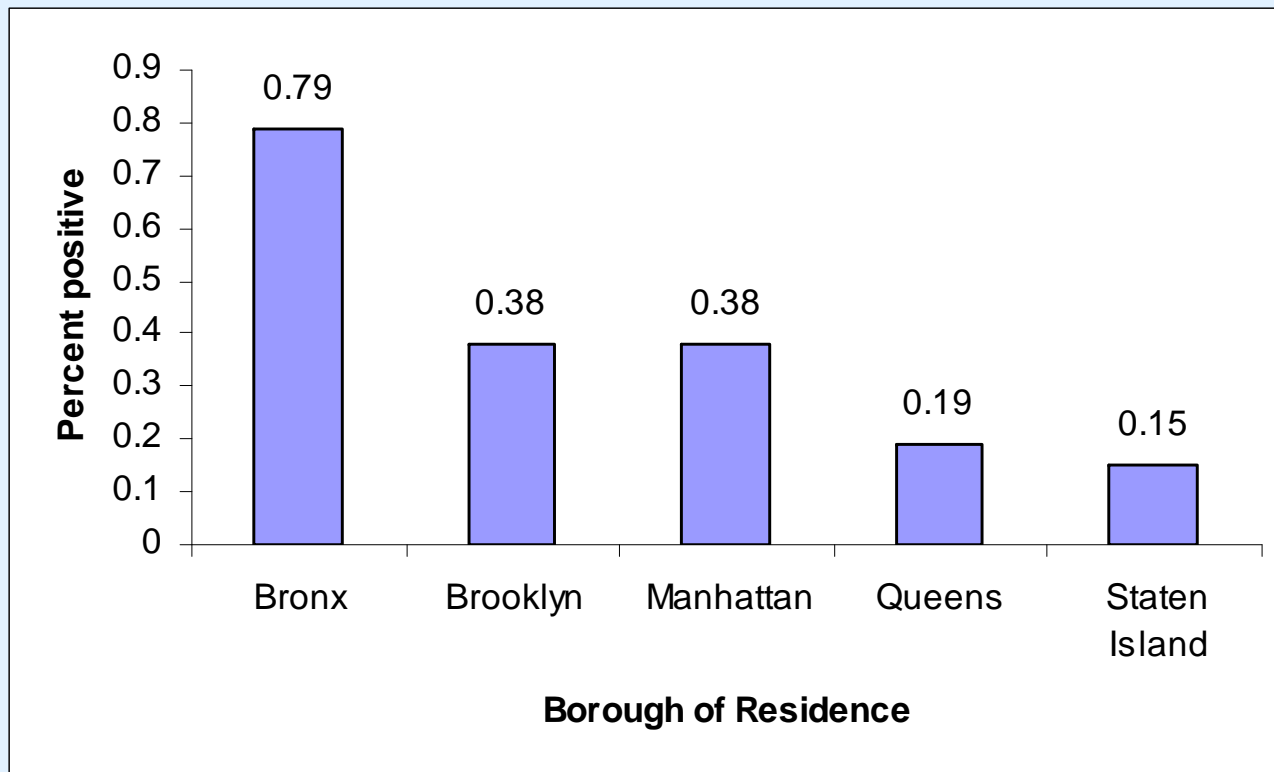


Prevalence of Diseases Screened for in Newborns

- Tyrosinemia 1 in >300,000
- Maple-syrup urine disease
1 in 175,000
- Homocystinuria 1 in 100,000
- Galactosemia 1 in 60,000
- Phenylketonuria 1 in 14,000
- Hypothyroidism 1 in 4,000
- Perinatal HIV exposure,
NYC about **4 in 1,000**
(2005-06)*
- HIV infection, NYC:
1 in 1,000 to 1 in 10,000 (according to interventions)

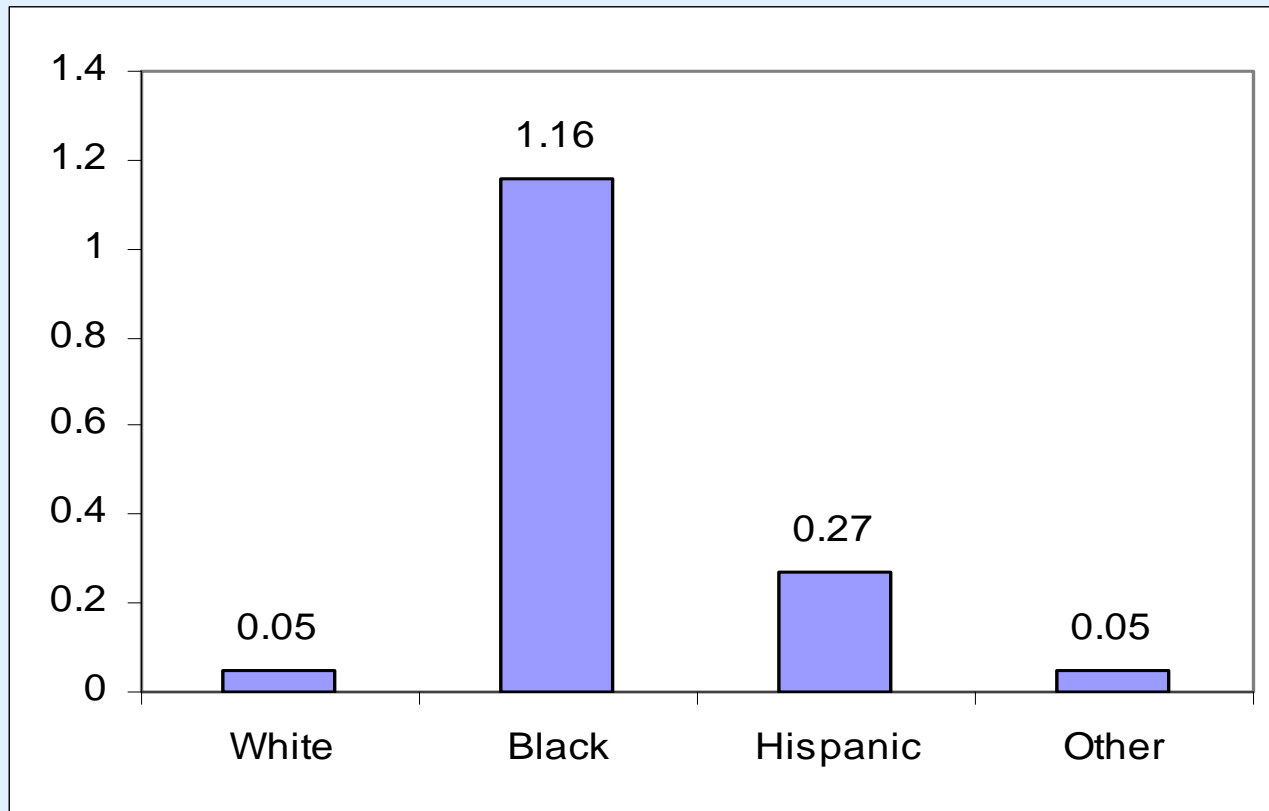
*Source: NYS DOH Comprehensive Newborn Screening Program

NYS Survey of Childbearing Women: HIV Prevalence by Borough of Residence at Delivery, NYC 2005



Prevalence, Rest of NYS=0.11

NYS Survey of Childbearing Women: HIV Prevalence by Race/Ethnicity, NYC 2005



New York State Regulations: Universal Prenatal HIV Counseling and Newborn HIV Testing

- **May 1996:** universal prenatal HIV counseling required by regulation in licensed settings
- **February 1997:** all newborns in New York have an HIV antibody test
- Positive result indicates maternal infection and HIV-exposure in the infant (*requires 2-week turnaround time*)
- Positive results require HIV-specific tests for the exposed infant

New York State Regulations: Expedited HIV Testing of Women and Newborns

- **August 1999:** if no HIV test result available for a mother in labor, she must be offered an HIV screening test, unless she is known to be HIV-infected
- Mothers who decline test, expedited testing on newborn will be performed
- **2003:** Preliminary results must be available no later than 12 hours after birth

New York State: Repeat HIV Testing Late in Pregnancy of Pregnant Women who Tested Negative Earlier (2005)

NEW YORK STATE DEPARTMENT OF HEALTH
AIDS Institute

Informed Consent to Perform HIV Testing

HIV testing is voluntary. Consent can be withdrawn at any time by informing your provider. Please read Parts A and B of this form, and sign at the bottom of Part B, if you understand the following information and want HIV testing.

HIV infection is a serious health concern. The New York State Department of Health recommends HIV testing. For pregnant women, the Department recommends HIV testing early in pregnancy and again late in pregnancy.

Except for expedited HIV testing on labor units, this form replaces other HIV testing consent forms as of June 1, 2005.

NOTE: this form is intended to be used in conjunction with DOH-2556, Part B.

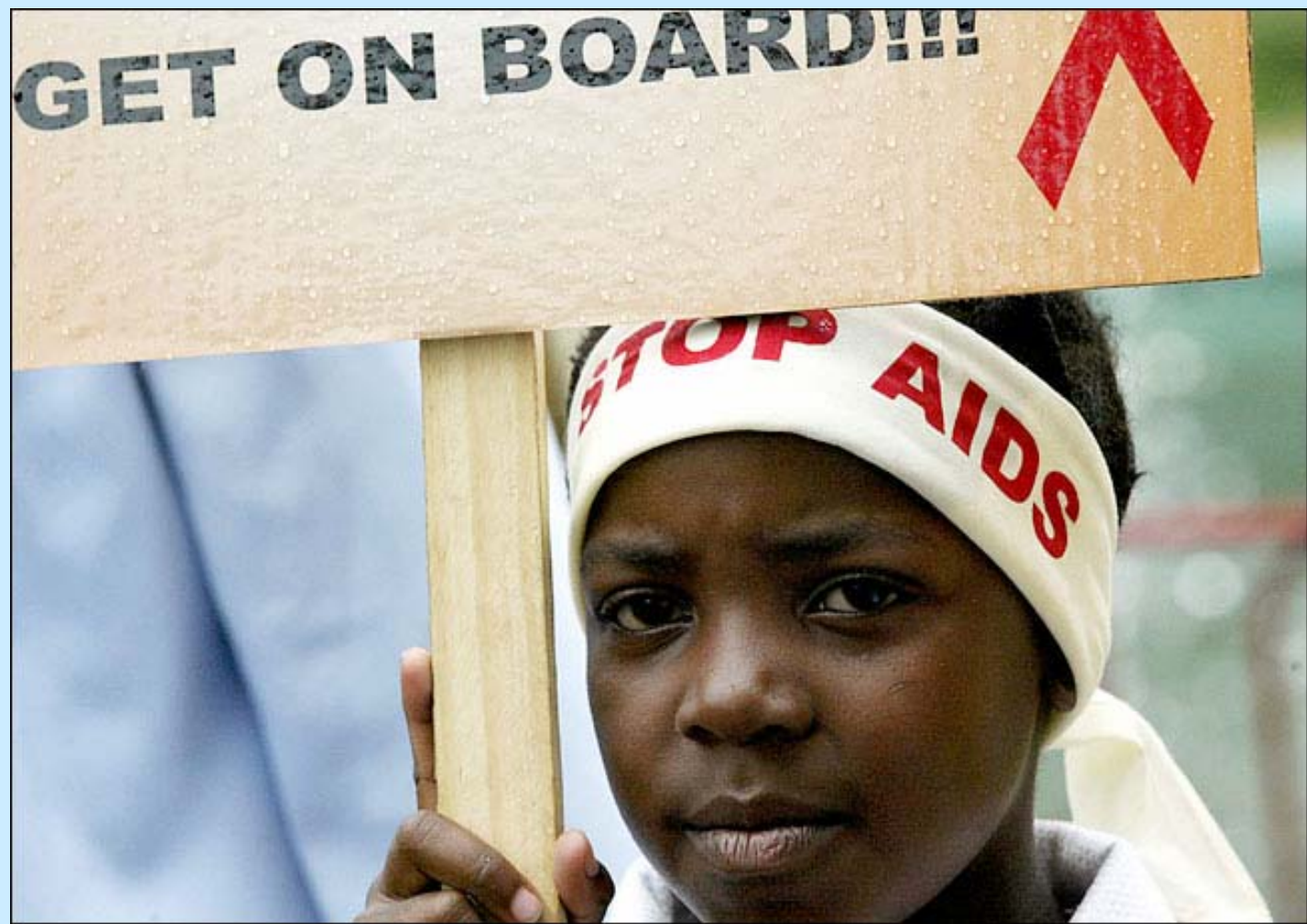
DOH-2556 (6/05) page 1 of 4

Part

A

For pregnant women only:

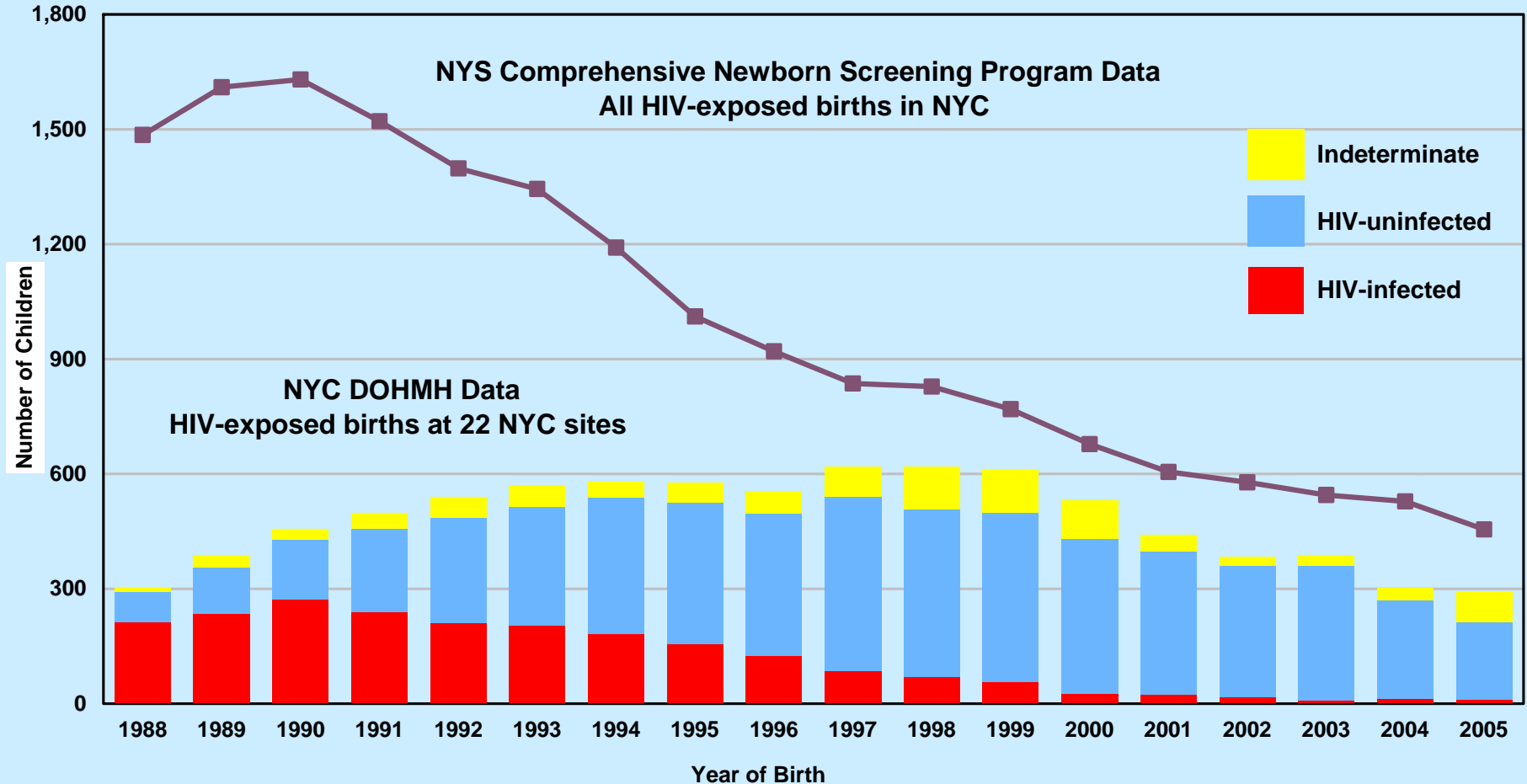
In addition to the testing described above, I authorize my health care provider to repeat HIV diagnostic testing later in this pregnancy. I understand that my health care provider will discuss this testing with me before the test is repeated and will provide me with the test results. The consent to repeat diagnostic testing is limited to the course of my current pregnancy and can be withdrawn at any time.



Trends in Perinatal HIV Prevention in New York City

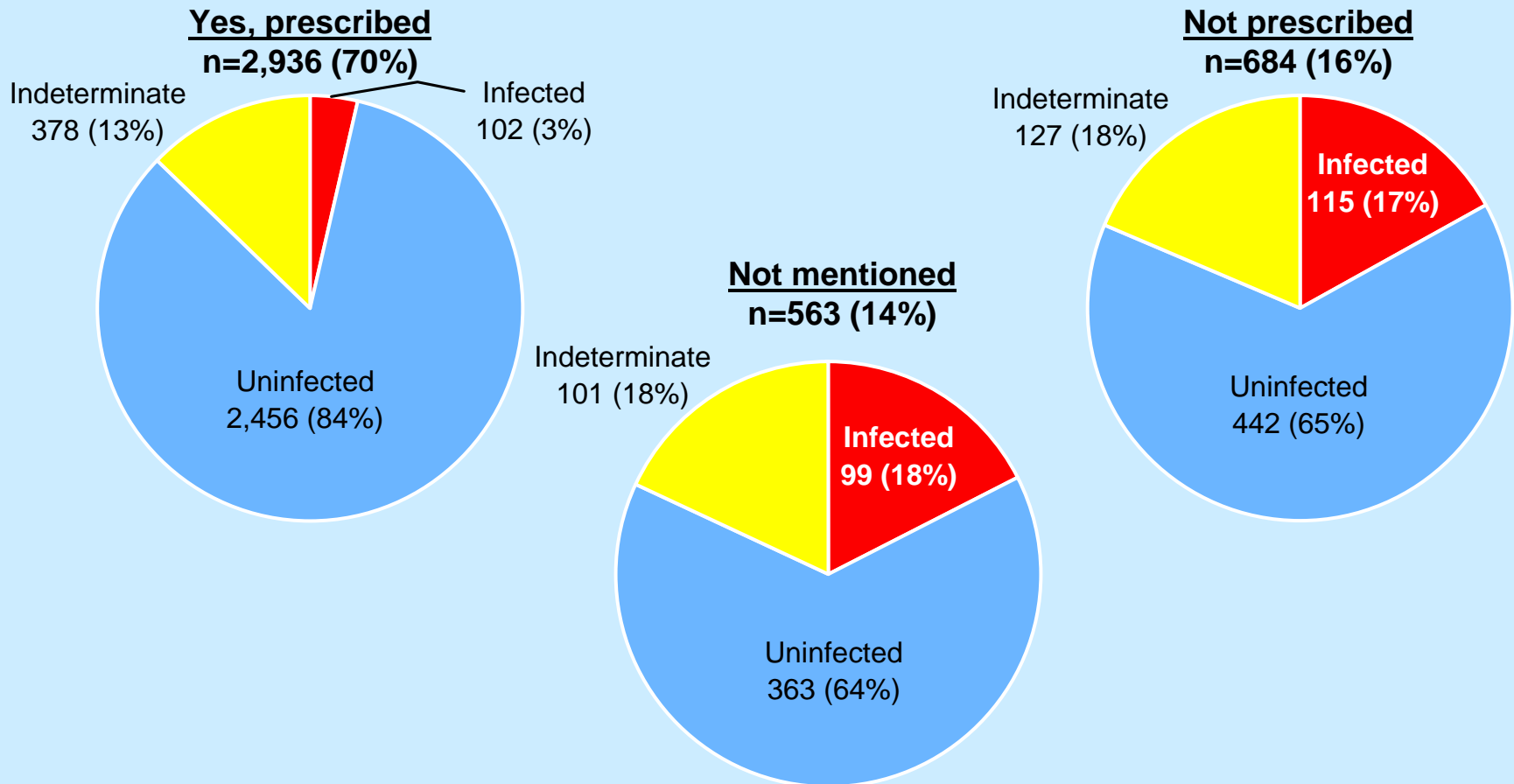
- 22 NYC sites participate in expanded Pediatric HIV/AIDS Surveillance and Enhanced Perinatal HIV Surveillance (EPS) (*care for 67% of NYC's HIV-exposed infants*)
- Trends in methods to prevent to perinatal HIV transmission
- Missed opportunities for perinatal HIV prevention
- Factors associated with lack of prenatal care
- Factors associated with perinatal HIV transmission

HIV-Exposed Births in New York City, 1988–2005



Number of HIV-exposed children born in NYC from NYS Newborn HIV Testing data (line) is compared with the number reported to the NYC DOHMH from the 22 NYC sites (bars). In 1997, NYS began universal newborn screening for HIV. The number of infected infants has dropped dramatically.

Infant HIV Status by Prenatal Antiretroviral Prescription for Infants (N=4,183) Born 1997–2005, 22 NYC Sites



Transmission was **3%** in infants born to mothers prescribed antiretroviral therapy and **17%** in those born to mothers who were not prescribed therapy.

Perinatal HIV Transmission Rates by Maternal and Neonatal Antiretroviral Use for Infants (N=2,708) Born 1997–2005, 22 NYC Sites

Timing of ART use	N	% Infected	% Uninfected	% Indeterminate	OR (95% CI) ^(a)
Prenatal ZDV with other ART ^(b) plus intrapartum and neonatal ZDV	1,577	2	88	10	0.06 (0.03-0.09)
Prenatal, intrapartum and neonatal ZDV	771	5	80	15	0.16 (0.10-0.25)
Neonatal ZDV only (started within 24 hours of birth)	100	10	67	23	0.39 (0.18-0.85)
None (no ART)	260	23	60	17	Referent

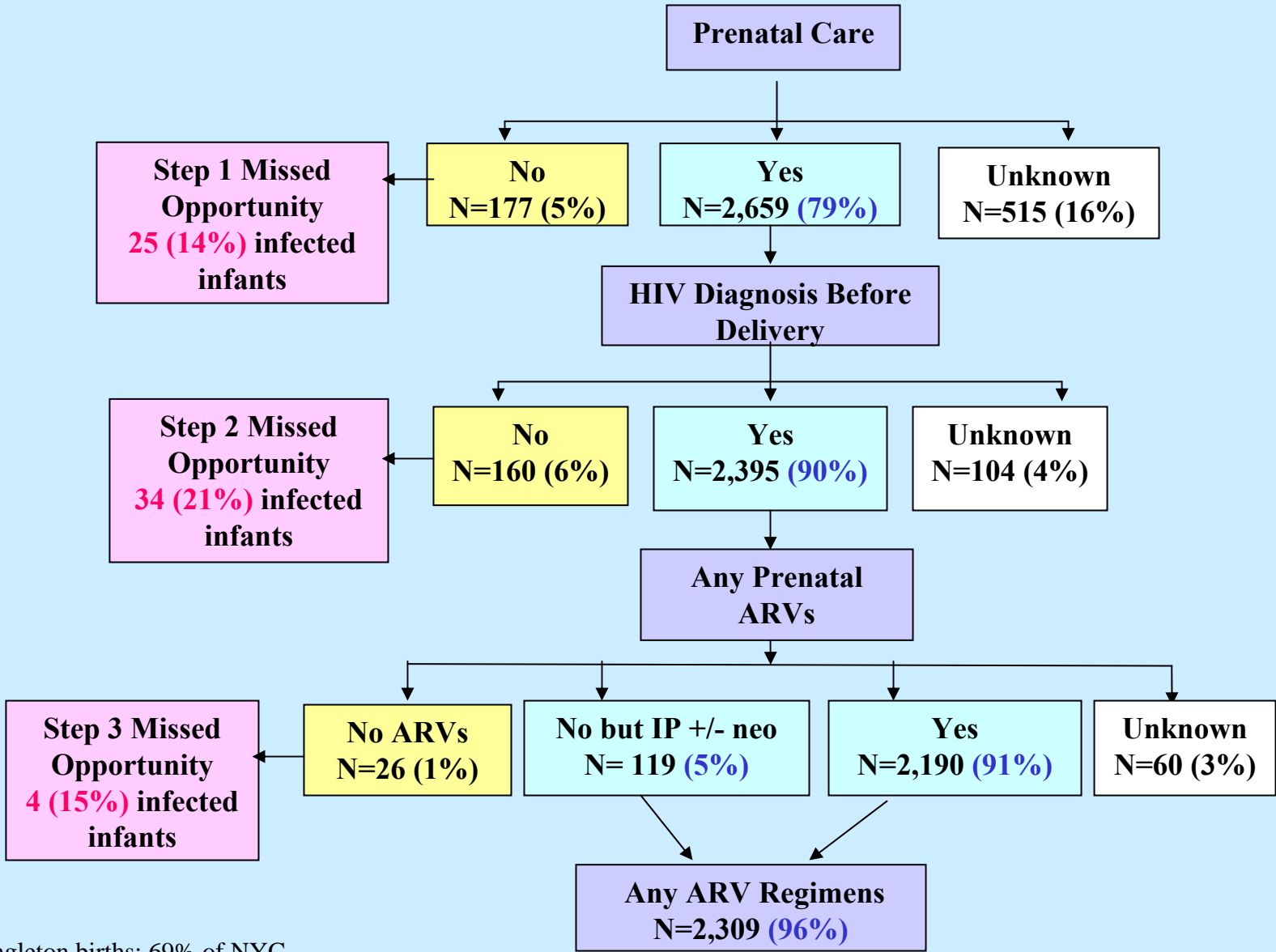
^(a) ORs were calculated based on the comparison of HIV-infected and HIV-uninfected infants

^(b) Reverse transcriptase inhibitors and/or protease inhibitors.

Transmission rates were lowest among deliveries with prenatal ZDV with other ART plus intrapartum and neonatal ZDV.

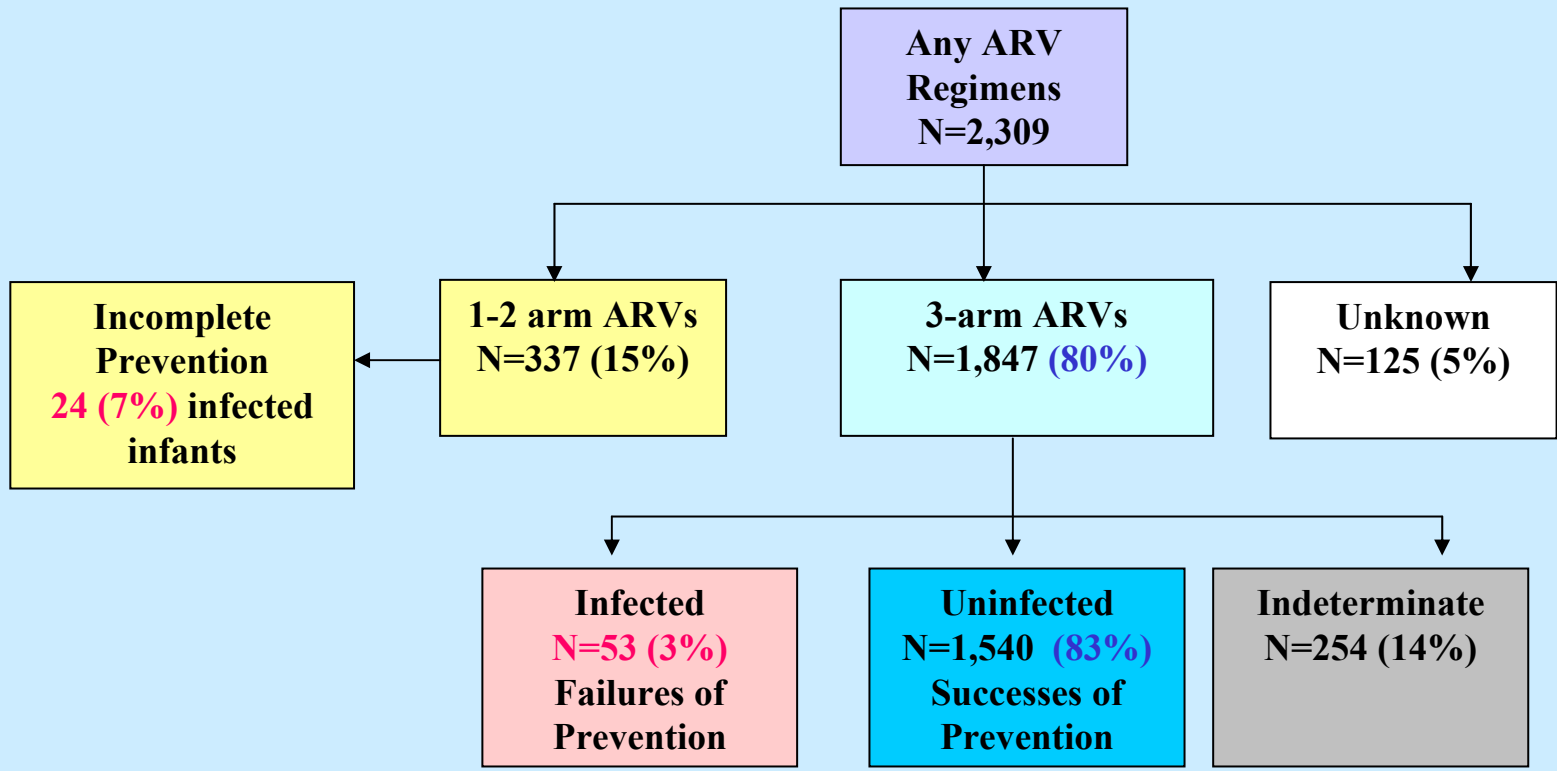


Perinatal HIV Prevention, 3,351 Births, 22 NYC Sites*, 1997-2003



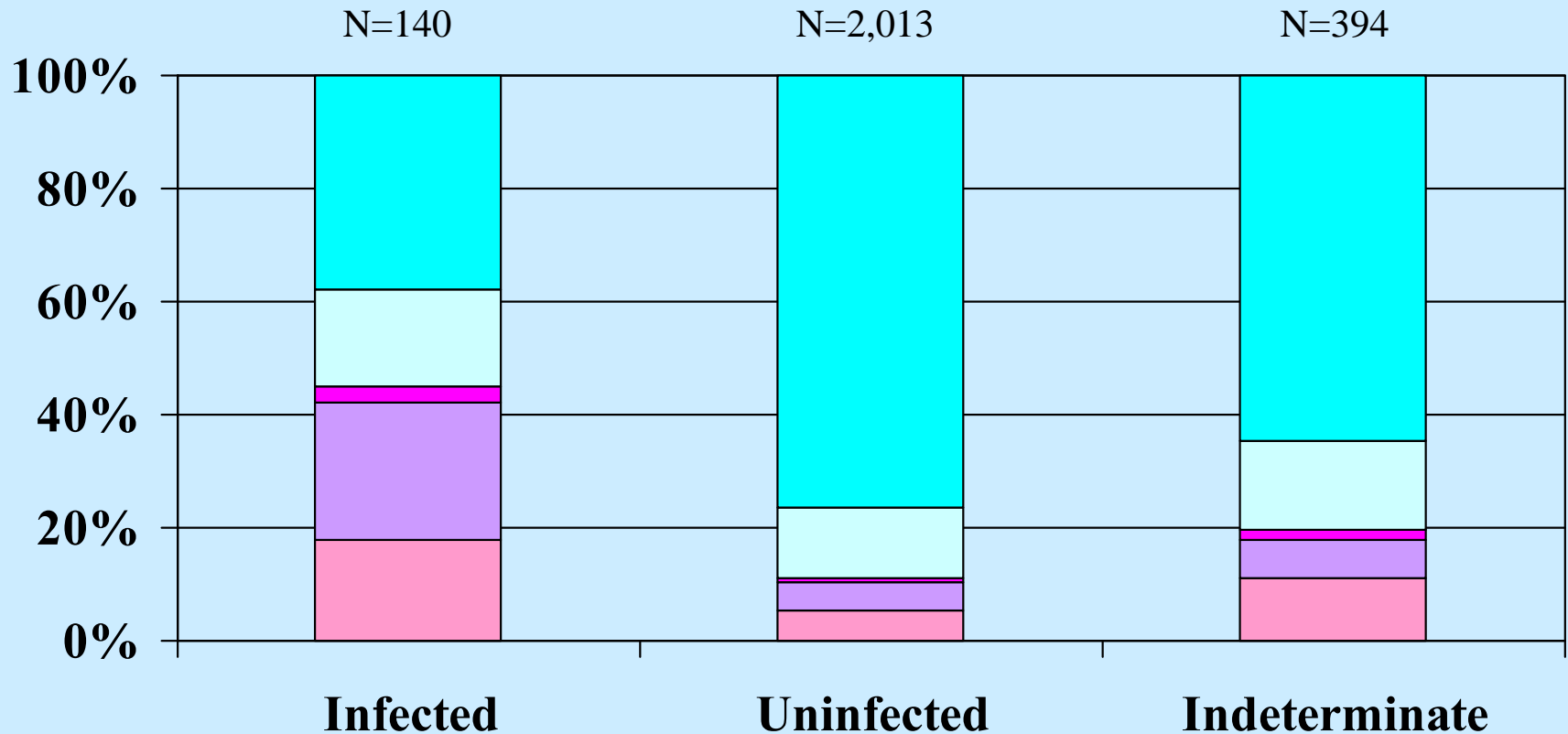
*Singleton births; 69% of NYC HIV-exposed births

Perinatal HIV Prevention, 3,351 Births, 22 NYC Sites*, 1997-2003



*Singleton births; 69% of NYC HIV-exposed births

Infant HIV Infection Status among HIV-exposed Deliveries (N=2,547) by HIV Prevention Methods, 22 NYC Sites, 1997-2003*



*804 (24%) of 3,351 infants born in the same period have incomplete data

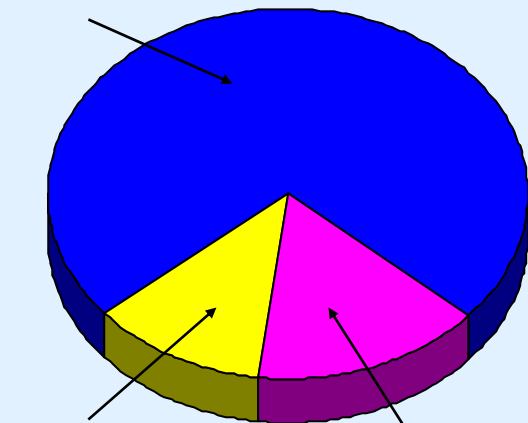
Any missed opportunity among infected (45%) compared with uninfected infants (11%) : unadjusted OR (95% CI) 8.25 (5.48-12.43)

- Prenatal care, prenatal HIV diagnosis, 3-arm ARVs
- Prenatal care, prenatal HIV diagnosis, 1-2 arm ARVs
- Prenatal care, prenatal HIV diagnosis but no ARVs (Step 3)
- Prenatal care but no prenatal HIV diagnosis (Step 2)
- No prenatal care (Step 1)

Proportion of HIV-Infected Women in Prenatal Care by Report of Illicit Drug Use, 1,485 Deliveries, 10 NYC PSD Sites, 1997-2003

**Illicit drug use⁺ N=391
(26%)**

73% PNC

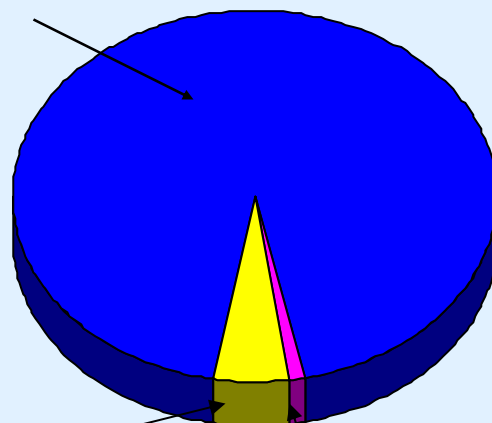


12% Unk

15% No PNC

**No Illicit drug use N=98
(7%)**

94% PNC

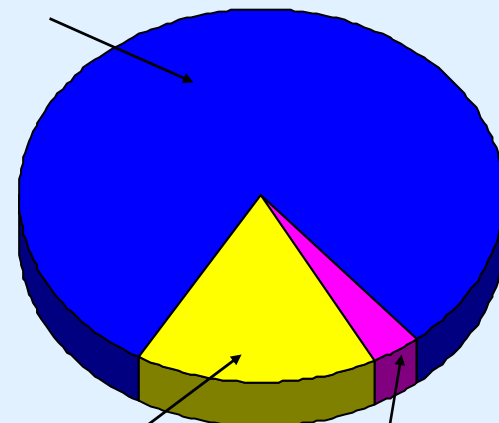


5% Unk

1% No PNC

**No mention N=996
(67%)**

81% PNC



16% Unk

3% No PNC

⁺Intravenous drugs, crack and other street drugs

Association between illicit drug use and prenatal care:

Illicit drug use vs. No/No mention of drug use: unadjusted O.R. **5.4 (95% C.I. 3.4-8.6)**

**What are the factors associated with
lack of prenatal care among
HIV-infected women?**

Factors Associated with HIV-infected Women NOT Receiving Prenatal Care: Logistic Regression, N=2,187*

Year of Infant Birth	aOR	95%C.I.
1997	1.8	0.9-3.7
1998	1.4	0.6-2.9
1999	0.8	0.4-1.8
2000	0.7	0.3-1.7
2001	0.8	0.4-1.8
2002	0.6	0.2-1.5
2003		Referent
Race/Ethnicity		
Black		Referent
White	1.2	0.4-3.6
Hispanic	0.9	0.6-1.4
Pediatric Medical Insurance		
Public		Referent
Private	0.2	0.03-1.8
None	2.8*	1.3-5.9
Maternal Illicit Drug Use		
No		Referent
Yes	5.7+	3.8-8.5

*only deliveries with known prenatal care included

+p=0.007; +p<0.0001

What are the factors associated with perinatal HIV transmission?

Factors Associated with Perinatal HIV Transmission: Logistic Regression, N=2,059 deliveries*

Year of Infant Birth	aOR	95%C.I.
1997	3.9*	1.3-11.9
1998	3.3+	1.1-10.0
1999	3.3++	1.1-9.9
2000	2.1	0.6-6.6
2001	2.9	1.0-9.0
2002	2.4	0.8-7.8
2003		Referent
Birth Weight		
<2,500 grams	2.2 ^ψ	1.5-3.4
≥2,500 grams		Referent
Race/Ethnicity		
Black		Referent
White	2.7++	1.1-6.8
Hispanic	1.3	0.8-1.9
Pediatric Medical Insurance		
Public		Referent
Private	0.8	0.4-1.9
None	0.5	0.1-2.0

*only deliveries with prenatal care included

*p=0.02; +p=0.04; ++p=0.03; ^ψp=<0.0001

Factors Associated with Perinatal HIV Transmission: Logistic Regression, N=2,059 deliveries*

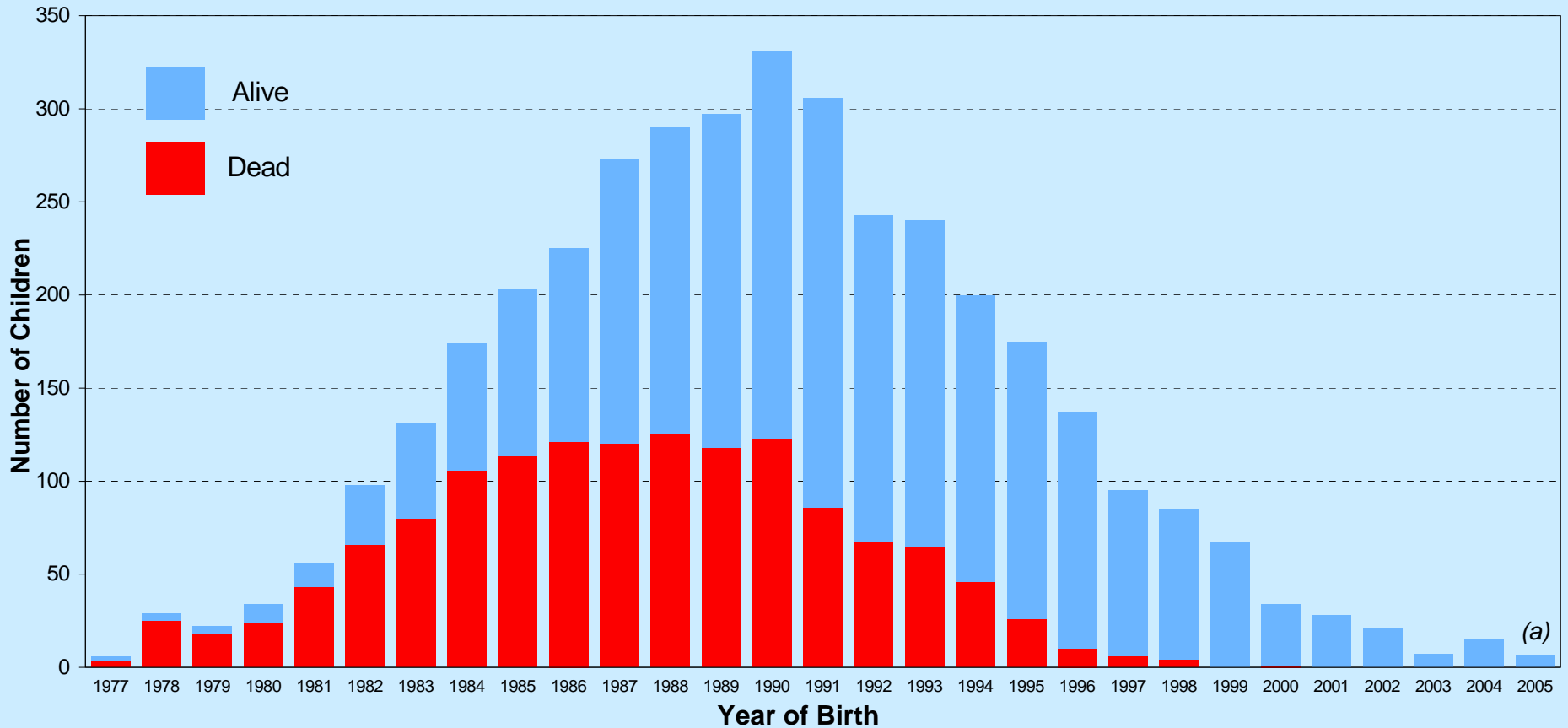
Prenatal Interventions	aOR	95%C.I.
No Prenatal HIV testing, no ARVs		Referent
Prenatal HIV testing, no ARVs	0.8	0.3-2.1
Prenatal HIV testing, 1-2 arm regimens	0.2*	0.1-0.3
Prenatal HIV testing, 3-arm ZDV	0.1*	0.06-0.2
Prenatal HIV testing, 3-arm combo ZDV	0.05*	0.03-0.1
Delivery Type		
Vaginal		Referent
Caesarian	1.1	0.7-1.6
Maternal Illicit Drug Use		
No/Unknown		Referent
Yes	1.8+	1.2-2.8

*only deliveries with prenatal care included

*p<0.0001; +p=0.007



Perinatally HIV-infected Children (N=3,828), by Year of Birth and Vital Status, 1977–2005, NYC



(a) Data are incomplete for 2005 due to reporting lag.

The number of HIV-infected infants born each year decreased dramatically from the peak in 1990. This coincides with the use of perinatal prevention measures.



HIV Epidemiology Program

Pediatric Staff

Research and Epidemiology Staff

- Balwant Gill, PhD
- Annette Brooks

Supervisory Staff

- Sharon Browne-Isles, MPH
- Karla McFarlane

Data Support Staff

- Maxine Davis
- Zindora Jones-Rowe

Field Investigation Staff

- Catrice Abner
- Myrna Beckles
- Janine Brewton
- Patricia Diggs-Herman
- Samuel Sawyerr
- James Swanzy-Parker
- Rosamond Walker

