

Pediatric HIV AIDS

Surveillance Update
New York City

Data Reported through 12/31/2011

HIV EPIDEMIOLOGY AND FIELD SERVICES PROGRAM

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NOTE TO READERS

This report is published by the HIV Epidemiology and Field Services Program, Pediatric, Adolescent, Maternal Unit, New York City Department of Health and Mental Hygiene (DOHMH).

To receive this report via e-mail, please send an e-mail request to hivreport@health.nyc.gov.

For electronic versions of this and other HIV-related reports published by the DOHMH, visit: <http://www.nyc.gov/html/doh/html/dires/hivepi.shtml>

Message to Health Care Providers

- HIV-infected individuals are reportable by name in New York State: Article 21 Title III
- AIDS is designated as a reportable condition by New York State Sanitary Code Section 24.1
- All reports are kept confidential as required by New York State Sanitary Code Section 24.2
- If assistance is needed to report a case, or to clarify the CDC AIDS case definition, or for further information, please call (347) 396-7602.

Physician Health Care Provider Hotline

- During business hours, call Provider Access Line at 1-866-NYC-DOH1 (692-3641)
- After 5 PM, call the Poison Control Center at (212) POISONS (764-7667) or 1-800-222-1222
- Provides HIV/AIDS specific information, protocols and guidelines to health care professionals

New York City HIV/AIDS Hotline

- Call 1-800-TALKHIV (825-5448) from 9 AM to 9 PM
- Provides counseling, information and referrals to the public and to health care providers
- Assists HIV-infected people in securing referrals for follow-up services
- Refers callers to anonymous HIV testing sites throughout the five boroughs

Vicki Peters, MD, Director, Pediatric, Adolescent, Maternal Unit, vpeters@health.nyc.gov

Balwant Gill, PhD, Research Scientist, Pediatric, Adolescent, Maternal Unit, bgill@health.nyc.gov

HIV Epidemiology and Field Services Program
New York City Department of Health and Mental Hygiene
42-09 28th St., 22nd Floor, Room 153
Long Island City, NY 11101-4132

We thank the Pediatric HIV Epidemiology and Field Services Program staff for their contributions to this report: Myrna Beckles, Janine Brewton, Annette Brooks, Zindora Jones-Rowe, Karla McFarlane, and Rosamond Walker.

BACKGROUND

Pediatric HIV/AIDS surveillance in New York City (NYC) measures trends in prevention of perinatal HIV transmission, trends in perinatal HIV transmission rates, and morbidity and mortality of HIV-infected children who were first diagnosed with HIV infection before 13 years of age. This report contains information on 3,945 children infected through perinatal transmission and diagnosed through December 31, 2010. An additional 105 children were infected through non-perinatal risk (92 through contaminated blood products). Data on 8,149 perinatally HIV-exposed uninfected or indeterminate children from 22 NYC sites are presented with data on trends in perinatal HIV prevention; they represent about two-thirds of such children in NYC. HIV infection status is defined according to the CDC definition [MMWR, 2008; 57 (RR-10) that includes a presumed uninfected definition (two negative RNA or DNA virologic tests, at age ≥ 2 weeks and one at age ≥ 4 weeks or a negative virologic test obtained at age ≥ 8 weeks and no other laboratory or clinical evidence of HIV infection)]. This report also contains information on 17,827 HIV-infected youth, diagnosed with HIV infection between 13 and 24 years of age, of whom 7,059 were diagnosed during 2001-2010.

Data collection systems from which this report was generated include:

1. Routine AIDS Surveillance: AIDS surveillance began in 1981. Pediatric AIDS refers to AIDS first diagnosed in children before 13 years of age. Adult/Adolescent AIDS refers to AIDS first diagnosed at ≥ 13 years of age.

2. Routine HIV Surveillance: The New York State (NYS) named HIV reporting law took effect on June 1, 2000 and was amended on June 1, 2005. All diagnostic and clinical providers must report diagnoses of HIV infection and HIV illness in a previously unreported individual. Events reportable by laboratories include all positive Western blot test results, all viral load test results [detectable and undetectable (since June 1, 2005)], all CD4 test results (≥ 500 cells/mm³ since June 1, 2005) and all viral nucleotide sequence results (since June 1, 2005).

3. Expanded Pediatric HIV/AIDS Surveillance (E-PHAS): Initiated in 1989 as a special adjunct to AIDS Surveillance, E-PHAS collects data on perinatally exposed children from 22 sites that care for an estimated two-thirds of children exposed to and infected with HIV in NYC. Children are categorized as HIV-infected, with or without AIDS. Uninfected, or indeterminate (which includes children lost to follow-up before determination of their HIV status). Medical records of HIV-exposed and infected children are reviewed periodically. Perinatally HIV-exposed children are generally diagnosed as HIV-infected or uninfected by 4 to 6 months of age.

4. Enhanced Perinatal HIV Surveillance (EPS): Sixteen E-PHAS sites participated in EPS during 2001-2011. EPS was a national CDC-funded project that collected data on perinatally HIV-exposed infants and their mothers.

5. Pediatric Spectrum of HIV Disease Project (PSD): Ten E-PHAS sites participated in PSD during 1989-2004. PSD was a CDC-funded, Institutional Review Board-approved longitudinal surveillance project that collected chart review data on HIV-exposed and infected children.

6. New York City Office of Vital Statistics: Data on mortality are obtained from the NYC Vital Registry. The HIV Epidemiology Program investigates all pediatric deaths in which HIV or AIDS is noted on the death certificates.

7. New York State Health Department, Newborn HIV Testing: Since 1988, NYS Health Department has tested all newborns for HIV, initially as a blinded serosurvey, and since February 1997, through the Comprehensive Newborn Screening Program. Since 1997, data collected through this program are available from the NYS Department of Health, Comprehensive Newborn Screening Program, Annual Summary Report.

NEW YORK CITY CHILDREN DIAGNOSED WITH PEDIATRIC HIV/AIDS

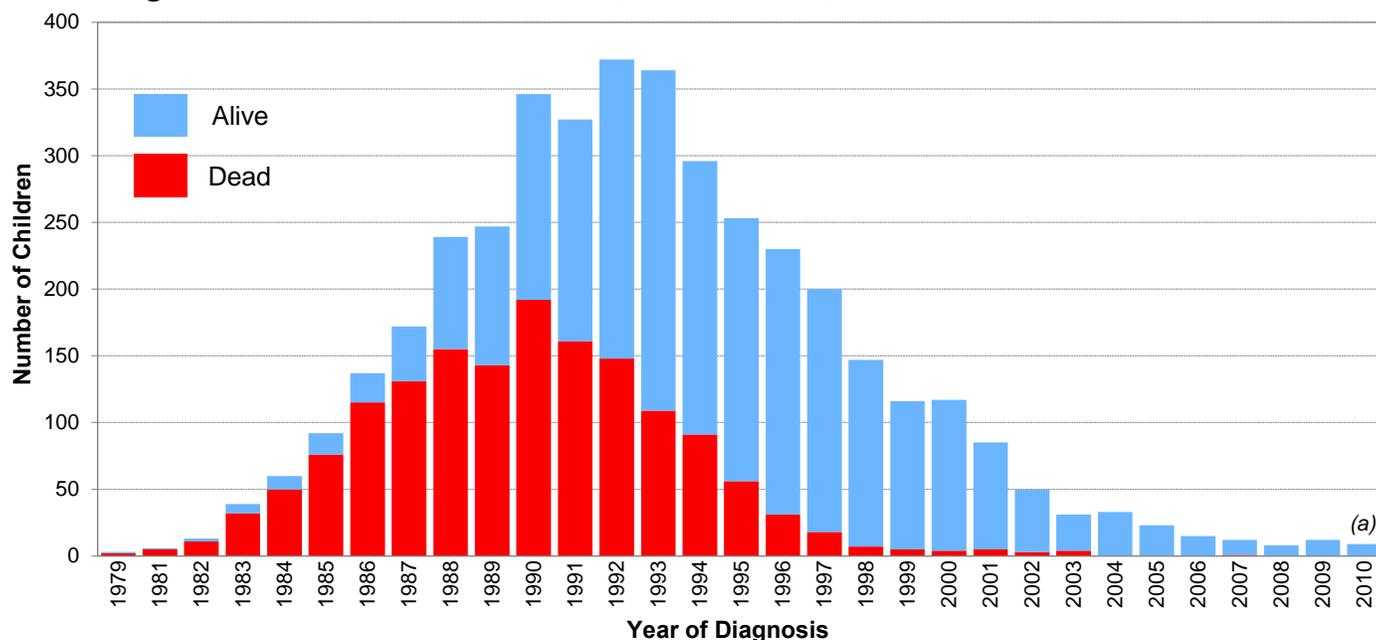
Table 1. Children Diagnosed with HIV Infection Before 13 Years of Age, 1979-2010, by HIV Transmission Risk Category and Latest HIV Status, as of December 31, 2010, NYC

| | HIV-infected, non-AIDS | AIDS diagnosed before 13 years | AIDS diagnosed at 13 years or older | Total | |
|--|------------------------|--------------------------------|-------------------------------------|--------------|---------------|
| Perinatal HIV Risk^(a) | 1,343 | 2,109 | 493 | 3,945 | (97.3%) |
| Non-perinatal HIV Risk: | | | | 105 | (2.6%) |
| Receipt of blood products ^(b) | 17 | 40 | 35 | 92 | |
| Sexual abuse | 4 | 4 | 5 | 13 | |
| Pending investigation | 3 | 1 | - | 4 | (0.1%) |
| Total (%) | 1,367 (33.7%) | 2,154 (53.1%) | 533 (13.2%) | 4,054 | (100%) |

^(a)Sexual abuse was reported in addition to perinatal risk for 19 children.

^(b)Ninety-seven percent were diagnosed between 1983 and 1995; see page 7 for further details.

Figure 1. Children Diagnosed with HIV Infection Before 13 Years of Age (N=4,054), by Year of HIV Diagnosis and Current Vital Status, 1979–2010^(a), NYC



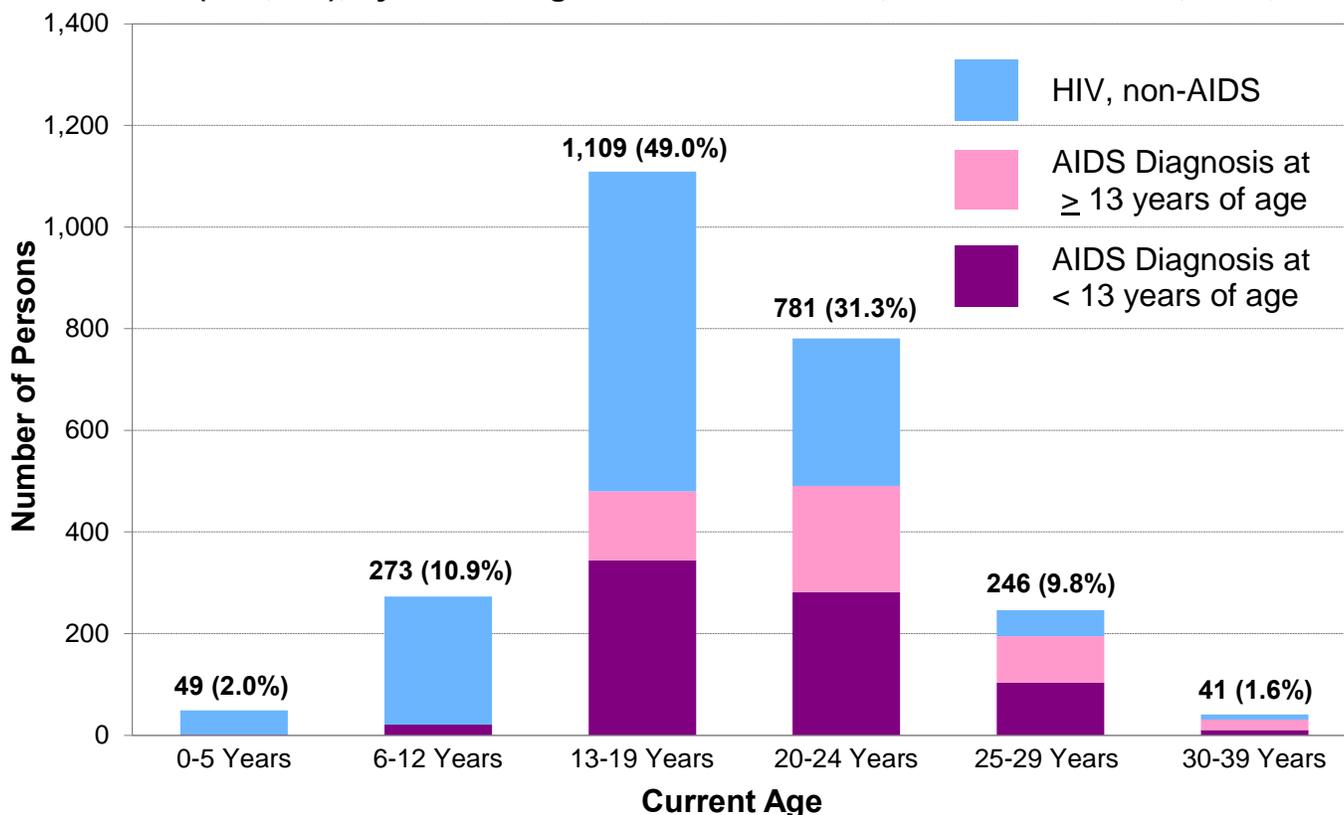
| Vital Status | Year of Diagnosis | | | | | | | | | | | | | | | | | Total |
|--------------|-------------------|--------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|---------------------|-----------|----------|-----------|----------|--------------|
| | 1979-1989 | 1990-1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 ^(a) | 2007 | 2008 | 2009 | 2010 | |
| Alive | 288 | 1201 | 199 | 182 | 140 | 111 | 113 | 80 | 47 | 27 | 33 | 23 | 15 | 11 | 8 | 12 | 9 | 2,499 |
| Dead | 720 | 757 | 31 | 18 | 7 | 5 | 4 | 5 | 3 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1,555 |
| Total | 1,008 | 1,958 | 230 | 200 | 147 | 116 | 117 | 85 | 50 | 31 | 33 | 23 | 15 | 12 | 8 | 12 | 9 | 4,054 |

^(a) Data are incomplete for 2010 due to reporting lag.

Table 1 and Figure 1 show data on 4,054 children diagnosed with HIV infection before 13 years of age and reported to the NYC DOHMH. Two thousand six hundred and eighty-seven (66.3%) developed AIDS (of whom 80.2% were diagnosed with AIDS before 13 years of age).

Of the 4,054 children, 1,555 (38.4%) have died [1,468 (54.6%) of the 2,687 diagnosed with AIDS and 87 (6.4%) of the 1,367 diagnosed with HIV infection without AIDS]. Survival has dramatically improved for the 278 children diagnosed during 2001-2010; 13 (4.7%) have died.

Figure 2. Pediatric Cases, Diagnosed with HIV Infection Before 13 Years of Age, Living with HIV/AIDS (N=2,499), by Current Age and Clinical Status, as of December 31, 2010, NYC



| Clinical Status | Current Age | | | | | | | | | | | | Total | |
|--------------------------|-------------|-------------|------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|
| | 0-5 years | | 6-12 years | | 13-19 years | | 20-24 years | | 25-29 years | | 30-39 years | | N | % |
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| HIV without AIDS | 48 | 98.0% | 252 | 92.3% | 629 | 56.7% | 290 | 37.1% | 51 | 20.7% | 10 | 24.4% | 1,280 | 51.2% |
| AIDS at <13 years of age | 1 | 2.0% | 21 | 7.7% | 344 | 31.0% | 282 | 36.1% | 103 | 41.9% | 10 | 24.4% | 761 | 30.5% |
| AIDS at ≥13 years of age | — | — | — | — | 136 | 12.3% | 209 | 26.8% | 92 | 37.4% | 21 | 51.2% | 458 | 18.3% |
| Total | 49 | 100% | 273 | 100% | 1,109 | 100% | 781 | 100% | 246 | 100% | 41 | 100% | 2,499 | 100% |

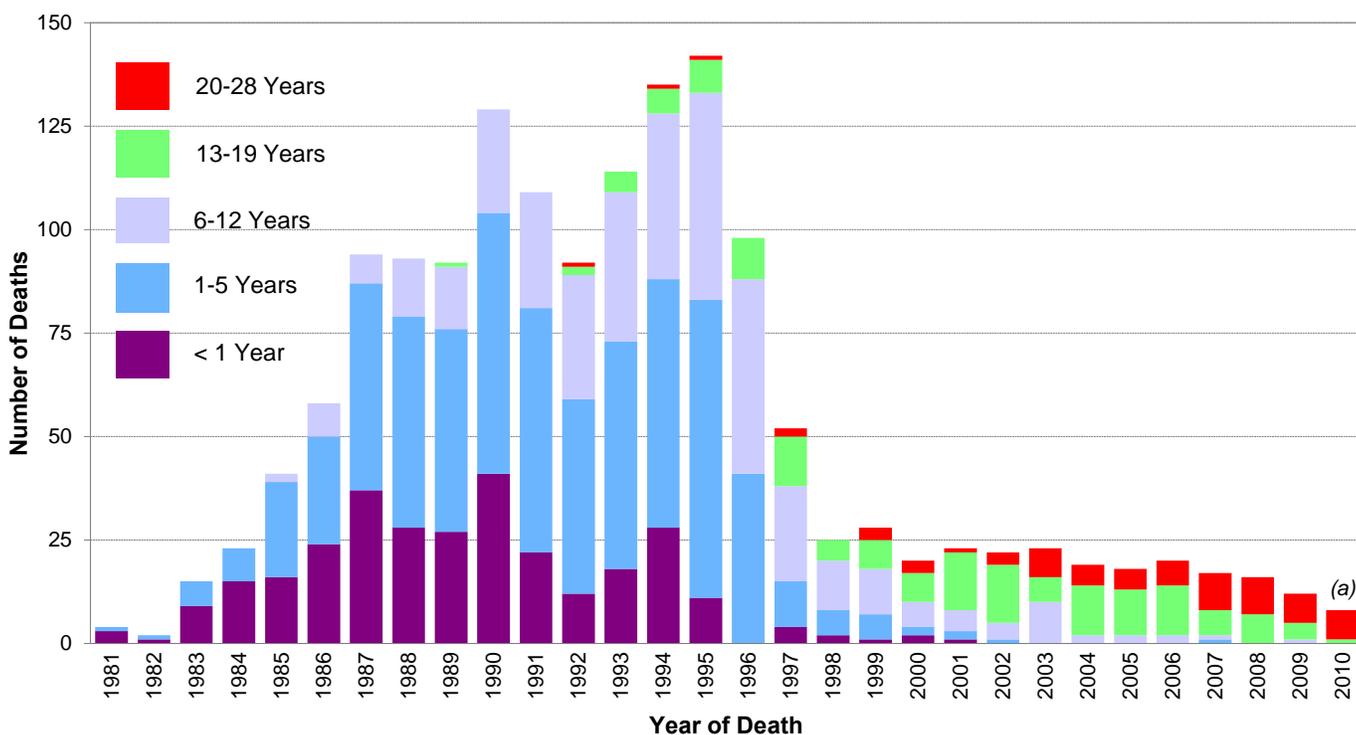
HIV-infected children surviving into adolescence and young adulthood are a growing population. Eighty-seven percent of living persons diagnosed with HIV infection before 13 years of age are currently 13 years of age or older. The oldest person is 39 years of age.

The proportion diagnosed with AIDS increased with successive age groups. Two percent of 0-5 year olds have developed AIDS, compared with 7.7% among 6-12 year olds, 43.3% among 13-19 year olds, 62.9% of 20-24 year olds, 79.3% of 25-29 year olds and 75.6% of 30-39 year olds.

Among the 2,499 pediatric cases, 50 (2.0%) persons had a non-perinatal HIV transmission risk (receipt of blood products and sexual abuse and for four the risk is under investigation).

For those persons currently 13-24 years of age, their data are also shown with adolescents and youth in Figures 11 and 12 on page 20.

Figure 3. Number of Deaths of Persons Diagnosed with HIV Infection Before 13 Years of Age (N=1,555), by Age at Death, 1981–2010^(a), NYC



| Age at Death (Years) | Year of Death | | | | | | | | | | | | | | | | | Total |
|----------------------|---------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------------------|--------------|
| | 1981-1989 | 1990-1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 ^(a) | |
| <1 | 160 | 132 | 11 | 4 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 313 |
| 1-5 | 215 | 356 | 41 | 11 | 6 | 6 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 641 |
| 6-12 | 46 | 209 | 47 | 23 | 12 | 11 | 6 | 5 | 4 | 10 | 2 | 2 | 2 | 1 | 0 | 1 | 0 | 381 |
| 13-19 | 1 | 21 | 10 | 12 | 5 | 7 | 7 | 14 | 14 | 6 | 12 | 11 | 12 | 6 | 7 | 4 | 1 | 150 |
| 20-28 | 0 | 3 | 0 | 2 | 0 | 3 | 3 | 1 | 3 | 7 | 5 | 5 | 6 | 9 | 9 | 7 | 7 | 70 |
| Total | 422 | 721 | 109 | 52 | 25 | 28 | 20 | 23 | 22 | 23 | 19 | 18 | 20 | 17 | 16 | 12 | 8 | 1,555 |

^(a) Data are incomplete for 2010 due to reporting lag.

Figure 3 shows the number of deaths by year of death in persons first diagnosed with HIV infection before 13 years of age. The number of deaths peaked in 1995. Overall, the majority of deaths occurred in children under 6 years of age. After 1995, most death deaths are occurring in the older age groups. Recent declines in pediatric HIV deaths can be attributed to declining numbers of newly infected children, widespread use of combination antiretroviral therapy and prophylaxis against opportunistic infections. Data on mortality are obtained from HIV/AIDS surveillance and the NYC Office of Vital Statistics as well as through matches with the National Death Index and Social Security Death Index.

NEW YORK CITY NON-PERINATALLY HIV-INFECTED CHILDREN**Table 2. Non-Perinatally HIV-infected Children (N=105), by Year of Birth, Current HIV Status and Current Vital Status, as of December 31, 2010, NYC**

| Year of Birth | HIV without AIDS | | AIDS | | TOTAL | | |
|---------------|------------------|-----------|-----------|-----------|-----------|-----------|------------|
| | Dead | Alive | Dead | Alive | Dead | Alive | Total |
| 1971 | 0 | 0 | 1 | 2 | 1 | 2 | 3 |
| 1972 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| 1973 | 0 | 0 | 1 | 1 | 1 | 1 | 2 |
| 1974 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 1975 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 1976 | 0 | 1 | 1 | 1 | 1 | 2 | 3 |
| 1977 | 0 | 1 | 6 | 1 | 6 | 2 | 8 |
| 1978 | 0 | 1 | 7 | 3 | 7 | 4 | 11 |
| 1979 | 0 | 1 | 4 | 2 | 4 | 3 | 7 |
| 1980 | 2 | 1 | 2 | 3 | 4 | 4 | 8 |
| 1981 | 1 | 2 | 6 | 1 | 7 | 3 | 10 |
| 1982 | 1 | 1 | 11 | 5 | 12 | 6 | 18 |
| 1983 | 0 | 1 | 6 | 3 | 6 | 4 | 10 |
| 1984 | 0 | 0 | 5 | 4 | 5 | 4 | 9 |
| 1985 | 0 | 0 | 2 | 0 | 2 | 0 | 2 |
| 1987 | 0 | 1 | 1 | 0 | 1 | 1 | 2 |
| 1988 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 1989 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 1990 | 0 | 1 | 0 | 1 | 0 | 2 | 2 |
| 1991 | 0 | 1 | 0 | 1 | 0 | 2 | 2 |
| 1992 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 1997 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 2006 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| Total | 4 | 17 | 55 | 29 | 59 | 46 | 105 |

Non-perinatally HIV-infected children represent 2.6 percent of NYC's HIV-infected children. Ninety-three percent were born during the 1971-1989.

Among the 105 children infected with HIV through non-perinatal risk, the risk was receipt of blood products for 92 (see also Table 1). Eighty-four of the 92 developed AIDS (91.3%) and 59 (64.1%) died. Ninety were diagnosed with HIV infection between 1983 and 1998, the two children diagnosed later (one in 1999 and the other in 2007) were diagnosed in foreign countries.

The risk factor for the remaining 13 children was sexual abuse; nine (69.2%) developed AIDS and four (30.8%) died. They were diagnosed with HIV infection between 1986 and 2005.

Among all 105 children, 59 (56.2%) died. As of December 31, 2010, the oldest surviving person is 39 years of age.

Four children whose risk is under investigation are not included in this table.

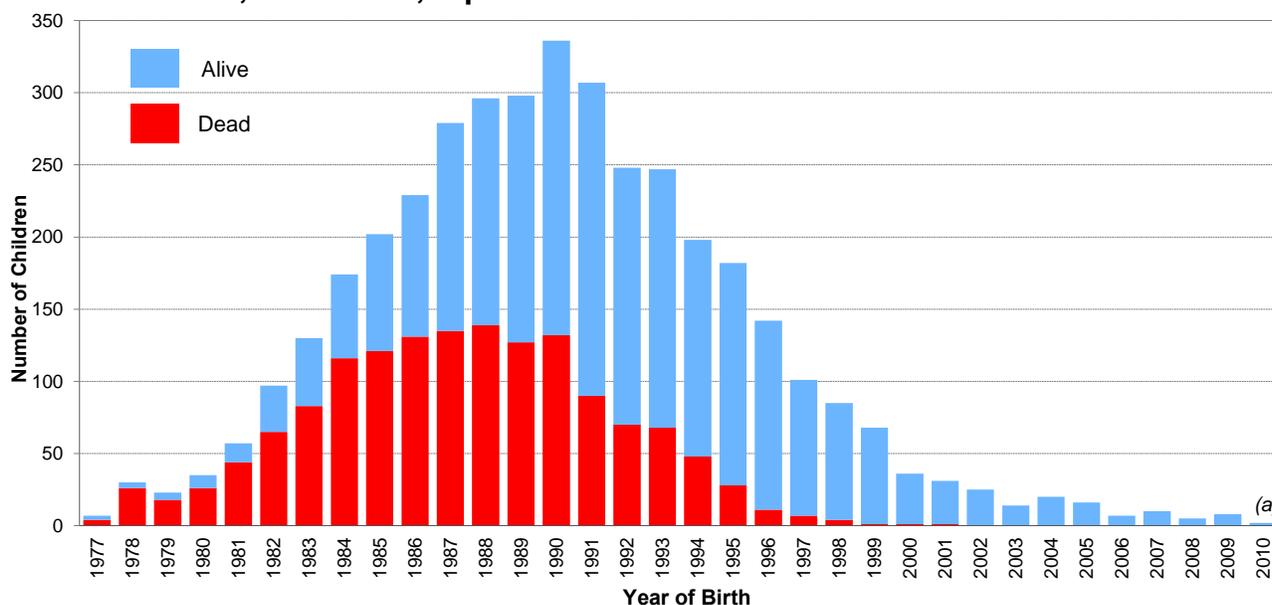
CHILDREN BORN TO HIV-INFECTED MOTHERS, DIAGNOSED WITH HIV INFECTION BEFORE 13 YEARS OF AGE, REPORTED IN NYC

Table 3. Current HIV Status of Children Born to HIV-infected Women, born 1977-2010

| Perinatally HIV-infected Children (Citywide) | | N |
|--|--|---------------|
| HIV-infected, non-AIDS | | 1,343 |
| AIDS | | 2,602 |
| <i>Diagnosed before 13 years</i> | | 2,109 |
| <i>Diagnosed at 13 years or older</i> | | 493 |
| Total HIV-infected Children | | 3,945 |
| Children with Perinatal HIV Exposure (NYC Expanded Pediatric HIV/AIDS Surveillance (E-PHAS) ^(a)) | | N |
| HIV-uninfected | | 7,010 |
| Indeterminate status | | 1,139 |
| Total Children | | 12,094 |

^(a) Since 1997, 69% of HIV-exposed children were in care at and/or born in NYC were in care at E-PHAS sites.

Figure 4. Perinatally HIV-infected Children (N=3,945), by Year of Birth, 1977–2010 and Current Vital Status, 1977–2010, reported to the NYC DOHMH



| Vital Status | Year of Birth | | | | | | | | | | | | | | | | | Total | | | | | | | | |
|--------------|---------------|--------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|----------|----------|----------|--------------|------|------|------|------|------|------|------|------|
| | 1977-1979 | 1980-1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Alive | 822 | 1,082 | 131 | 94 | 81 | 67 | 35 | 30 | 25 | 14 | 20 | 16 | 7 | 10 | 5 | 8 | 2 | 2,449 | | | | | | | | |
| Dead | 1,035 | 436 | 11 | 7 | 4 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,496 | | | | | | | | |
| Total | 1,857 | 1,518 | 142 | 101 | 85 | 68 | 36 | 31 | 25 | 14 | 20 | 16 | 7 | 10 | 5 | 8 | 2 | 3,945 | | | | | | | | |

^(a) Data are incomplete for 2010 due to reporting lag.

Figure 4 shows the number of perinatally HIV-infected children in care in NYC and reported to the NYC DOHMH of whom 91.4% were born in NYC. Prior to June 2000, only children with AIDS and children enrolled at the E-PHAS surveillance sites were reported to the NYC DOHMH. The number of HIV-exposed births (see Figure 7) and the number of infected infants born both peaked in 1990. Perinatally HIV-infected children, diagnosed at 13 years of age and older are shown on page 16.

Table 4. Demographics of Perinatally HIV-infected Children (N=3,945) and Maternal HIV Risk Transmission Categories, diagnosed 1979–2010, NYC

| Demographic Characteristics | | 1979–2000 N=3,673 | | 2001–2010 N=272 | |
|--|--|----------------------|----|--------------------|----|
| | | N | % | N | % |
| Sex | Males | 1,815 | 49 | 126 | 46 |
| | Females | 1,858 | 51 | 146 | 54 |
| Borough of Residence at Diagnosis | Bronx | 1,107 | 30 | 83 | 31 |
| | Brooklyn | 1,157 | 32 | 85 | 31 |
| | Manhattan | 667 | 18 | 46 | 17 |
| | Queens | 477 | 13 | 22 | 8 |
| | Staten Island | 76 | 2 | 6 | 2 |
| | Outside NYC | 178 | 5 | 28 | 10 |
| | Unknown | 11 | <1 | 2 | <1 |
| Race and Ethnicity | Black | 2,047 | 56 | 174 | 64 |
| | Hispanic | 1,368 | 37 | 85 | 31 |
| | White | 229 | 6 | 8 | 3 |
| | Other ^(a) | 15 | <1 | 5 | 2 |
| | Unknown | 14 | <1 | - | - |
| Maternal HIV Transmission Risk Categories | Injection drug use (IDU) | 1,317 | 36 | 16 | 6 |
| | Sex partner of an IDU man ^(b) | 405 | 11 | 8 | 3 |
| | Sex partner of man with HIV/AIDS, or with hemophilia, or in receipt of blood products, or a bisexual man or probable heterosexual ^(b) | 479 | 13 | 62 | 23 |
| | Receipt of blood products | 24 | <1 | 1 | <1 |
| | Perinatal HIV infection | - | - | 2 | <1 |
| | Mother's risk not specified | 1,448 | 39 | 183 | 67 |

^(a) Includes Asian, Pacific Islander, Native American, and multiracial persons.

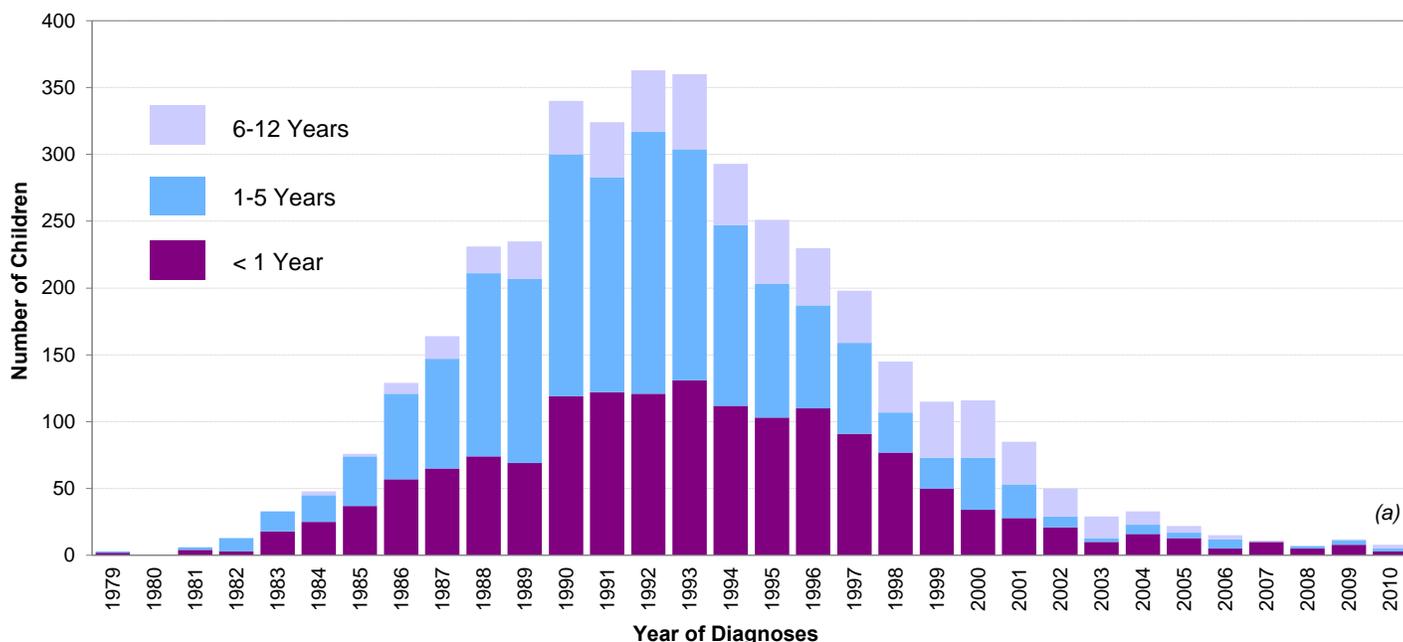
^(b) Maternal HIV risk factors that constitute heterosexual risks, includes probable heterosexual for whom this was noted in 16% of mothers during 2001-2010.

Table 4 shows the demographic characteristics of perinatally HIV-infected children by year of diagnosis time periods. The number of diagnoses during 2001-2010 dropped to 272.

Overall, the proportion of females was higher than males. The majority of children resided in the Bronx or Brooklyn at the time diagnosis; ten percent resided outside NYC during 2001-2010. The majority of children were black or Hispanic; among children diagnosed during 2001-2010, 64% of children were black.

A maternal HIV risk factor, including probable heterosexual risk was documented in the pediatric medical records for 59% of women. Among the known risk factors, injection drug was the most common risk factor during 1979-2000, accounting for 36% of the transmission risks but dropped to six percent during 2001-2010. Two children were born to mothers who acquired HIV through perinatal transmission.

Figure 5. Age at HIV Diagnosis of Perinatally HIV-infected Children (N=3,945) by Year of Diagnosis, 1979–2010^(a), NYC



| Age at Diagnosis (Years) | Year of Diagnosis | | | | | | | | | | | | | | | | | Total |
|--------------------------|-------------------|--------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|---------------------|--------------|
| | 1979-1989 | 1990-1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 ^(a) | |
| <1 | 354 | 708 | 110 | 91 | 77 | 50 | 34 | 28 | 21 | 10 | 16 | 13 | 5 | 10 | 5 | 8 | 3 | 1,543 |
| 1-5 | 506 | 946 | 77 | 68 | 30 | 23 | 39 | 25 | 8 | 3 | 7 | 4 | 7 | 0 | 2 | 3 | 2 | 1,750 |
| 6-12 | 78 | 277 | 43 | 39 | 38 | 42 | 43 | 32 | 21 | 16 | 10 | 5 | 3 | 1 | 0 | 1 | 3 | 652 |
| Total | 938 | 1,931 | 230 | 198 | 145 | 115 | 116 | 85 | 50 | 29 | 33 | 22 | 15 | 11 | 7 | 12 | 8 | 3,945 |

^(a) Data are incomplete for 2010 due to reporting lag.

Figure 5 shows the number of HIV-infected children by year of diagnosis of HIV infection. The number of diagnoses peaked in 1992-93. Declines in HIV diagnoses among children under 13 years of age are due to decreasing numbers of HIV-infected women delivering (see Figure 7) and increasing use of prenatal antiretroviral therapies to prevent transmission (see Figure 9).

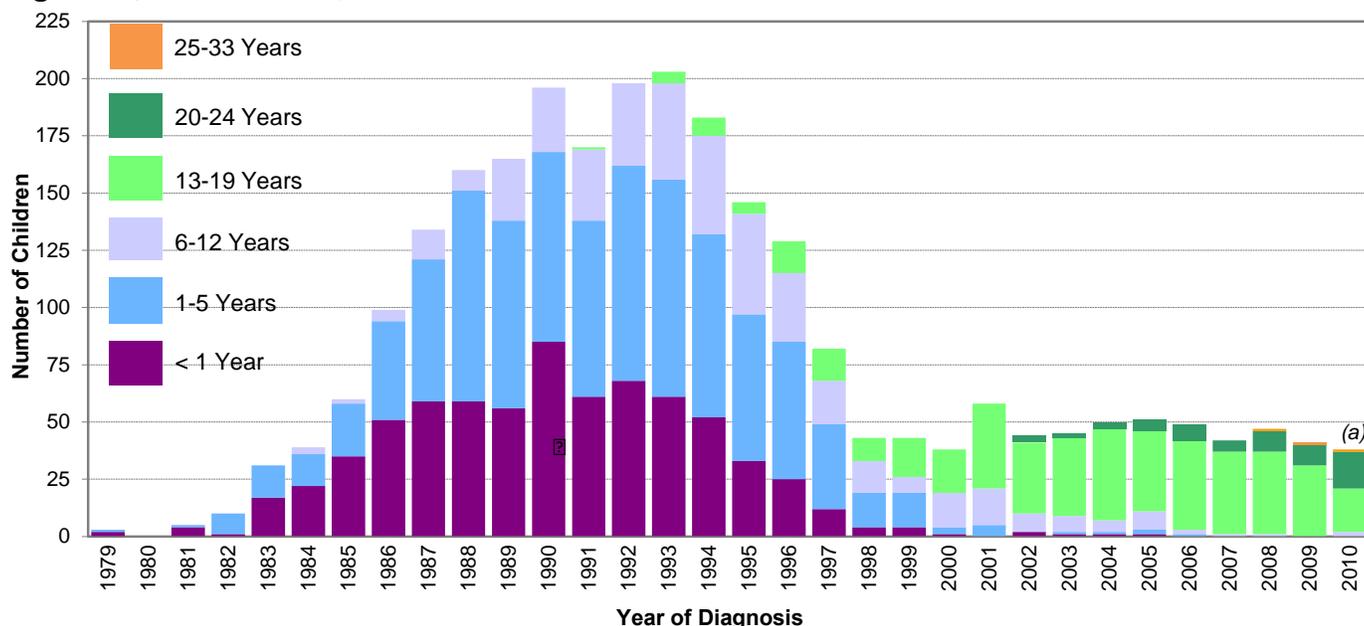
Cumulatively, 91.4% of children were born in NYC.

During 2001-2010, of the 272 children newly diagnosed with HIV infection, 208 (76.5%) were born in NYC, 6 (2.2%) outside NYC in New York State, 9 (3.3%) were born in the United States outside of New York, 7 (2.6%) in a United States possession, and 42 (15.4%) were foreign-born.

Overall, 1,383 children (35.1%) were concurrently diagnosed with HIV and AIDS (i.e. the AIDS diagnosis was within 60 days of the HIV diagnosis) (data not shown in figure and table).

Among children diagnosed before 1990, concurrent HIV and AIDS occurred in 66.7% of children. For those diagnosed during 1990-1996, it dropped from 46.8% in 1990 to 17.8% in 1996, for those diagnosed during 1997-2000 it was 8.5% (1997 was the start of universal HIV newborn screening in NY), for those diagnosed during 2001-2005 it was 9.6%, and for those diagnosed during 2006-2010, there was 3.8%.

Figure 6. Age at AIDS Diagnosis of Perinatally HIV-infected Children (N=2,602), by Year of Diagnosis, 1979–2010^(a), NYC



| Age at Diagnosis (Years) | Year of Diagnosis | | | | | | | | | | | | | | | | | Total | |
|--------------------------|-------------------|--------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------------------|--------------|-----|
| | 1979-1989 | 1990-1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 ^(a) | | |
| <1 | 306 | 360 | 25 | 12 | 4 | 4 | 1 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 717 |
| 1-5 | 341 | 493 | 60 | 37 | 15 | 15 | 3 | 5 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 974 |
| 6-12 | 59 | 224 | 30 | 19 | 14 | 7 | 15 | 16 | 8 | 7 | 5 | 8 | 2 | 1 | 1 | 0 | 2 | 418 | |
| 13-19 | 0 | 19 | 14 | 14 | 10 | 17 | 19 | 37 | 31 | 34 | 40 | 35 | 39 | 36 | 36 | 31 | 19 | 431 | |
| 20-24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 3 | 5 | 7 | 5 | 9 | 9 | 16 | 59 | |
| 25-33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | |
| Total | 706 | 1,096 | 129 | 82 | 43 | 43 | 38 | 58 | 44 | 45 | 50 | 51 | 49 | 42 | 47 | 41 | 38 | 2,602 | |

^(a) Data are incomplete for 2010 due to reporting lag.

Figure 6 shows trends in AIDS cases by age at AIDS diagnosis. Among 3,945 perinatally HIV-infected children, 2,602 (66.0%) developed AIDS. Of the 2,602 AIDS diagnoses, 1,383 (53.2%) were diagnosed concurrently with HIV and AIDS (i.e. the AIDS diagnosis was within 60 days of the HIV diagnosis) (data not shown in figure and table) and 1,219 (46.8%) were subsequently diagnosed with AIDS. The proportion of concurrent HIV and AIDS diagnoses has decreased significantly since 1997 as described on page 10.

Starting in 1994, there have been declining numbers of reported and diagnosed AIDS cases in NYC children under 13 years of age. Declines in children under 13 years of age coincide with the start of universal HIV newborn screening in NY in 1997, which allows for an early HIV diagnosis and the institution of *Pneumocystis* prophylaxis and use of antiretroviral therapy.

Through December 2010, 493 perinatally infected youth were diagnosed with AIDS at age 13 or older; 410 (81.2%) were diagnosed on the basis of a CD4 cell count <200 cells/mm³ or <14%.

Table 5. Cumulative AIDS-defining Conditions Reported in 2,602 Perinatally HIV-infected Children with AIDS^(a), by Year of Diagnosis, 1979–2010^(b), NYC

| AIDS-Defining Conditions | 1979 -1994 | 1995 -1999 | 2000 -2004 | 2005 -2009 | 2010 | Total | % |
|---|---------------|---------------|---------------|---------------|-----------|--------------|--------------|
| <i>Pneumocystis jirovecii</i> pneumonia ^(c) | 673 | 116 | 36 | 10 | 3 | 838 | 18.4 |
| Lymphoid interstitial pneumonia | 503 | 103 | 8 | 0 | 0 | 614 | 13.5 |
| HIV encephalopathy | 239 | 123 | 25 | 7 | 1 | 395 | 8.7 |
| <i>Mycobacterium avium</i> complex & other species disease | 219 | 121 | 39 | 22 | 0 | 401 | 8.8 |
| Recurrent bacterial infections | 261 | 50 | 5 | 3 | 0 | 319 | 7.0 |
| Wasting syndrome | 149 | 72 | 19 | 12 | 0 | 252 | 5.5 |
| Esophageal candidiasis | 140 | 48 | 31 | 13 | 5 | 237 | 5.2 |
| Cytomegalovirus disease | 136 | 29 | 5 | 1 | 1 | 172 | 3.8 |
| Chronic mucocutaneous herpes simplex | 82 | 23 | 8 | 15 | 2 | 130 | 2.9 |
| Chronic intestinal cryptosporidiosis | 60 | 18 | 3 | 0 | 0 | 81 | 1.8 |
| Pulmonary candidiasis | 43 | 8 | 2 | 1 | 0 | 54 | 1.2 |
| Cytomegalovirus retinitis | 23 | 19 | 6 | 0 | 0 | 48 | 1.1 |
| Extrapulmonary tuberculosis | 25 | 10 | 2 | 5 | 0 | 42 | 0.9 |
| Cryptococcosis | 18 | 6 | 2 | 3 | 1 | 30 | 0.7 |
| Burkitt's lymphoma | 17 | 2 | 3 | 3 | 1 | 26 | 0.6 |
| Toxoplasmosis, brain | 14 | 6 | 1 | 0 | 0 | 21 | 0.5 |
| Immunoblastic lymphoma | 7 | 9 | 2 | 3 | 0 | 21 | 0.5 |
| Lymphoma, brain | 10 | 2 | 2 | 0 | 0 | 14 | 0.3 |
| Progressive multifocal leukoencephalopathy | 5 | 4 | 2 | 2 | 1 | 14 | 0.3 |
| Recurrent pneumonia ^(d) | 1 | 3 | 6 | 2 | 0 | 12 | 0.3 |
| Histoplasmosis | 2 | 2 | 0 | 1 | 0 | 5 | 0.1 |
| Kaposi's sarcoma | 1 | 2 | 1 | 1 | 0 | 5 | 0.1 |
| Coccidioidomycosis | 0 | 0 | 1 | 0 | 0 | 1 | <0.1 |
| Pulmonary tuberculosis ^(d) | 0 | 0 | 1 | 0 | 0 | 1 | <0.1 |
| CD4 cell count <200 cells/mm ³ or <14 ^(d) | 36 | 121 | 271 | 334 | 60 | 822 | 18.0 |
| Total | 2,664 | 897 | 481 | 438 | 75 | 4,555 | 100.0 |

^(a) Includes the first and subsequent AIDS-defining conditions. Data are shown by cases diagnosed 1979-1994 and subsequent 5-year time periods (1995-1999, 2000-2004, and 2005-2009) and 2010.

^(b) Data are incomplete for 2010 due to reporting lag.

^(c) Previously named *Pneumocystis carinii* pneumonia.

^(d) In 1993, the CDC AIDS case definition was expanded to include CD4 cell counts <200 cells/mm³ or <14%, pulmonary tuberculosis, recurrent pneumonia, and invasive cervical cancer in adolescents and adults ≥13 years of age.

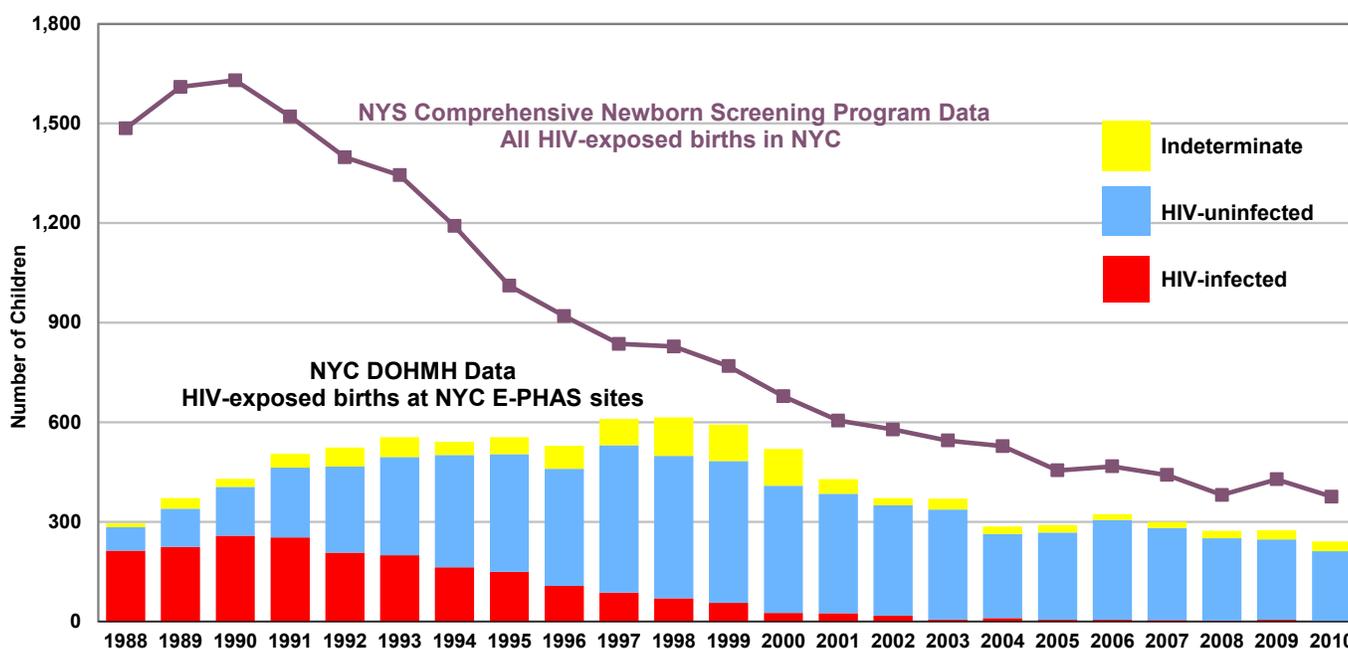
Conditions are reported through active surveillance and CD4 laboratory reports. They do not reflect all AIDS-defining conditions (as such, data are not presented as rates).

The number of AIDS-defining conditions declined dramatically after the mid-1990s. *Pneumocystis* pneumonia was the most common AIDS-defining condition during 1979-1994. Declines after 1994 are associated with the publication of revised guidelines for PCP prophylaxis in children [MMWR 1995. 44 (RR-4):1-11]. Since 1999, the majority of AIDS-defining conditions occurred among children ≥13 years of age and were based solely on CD4 cell count under 200 cells/mm³ or <14%.

TRENDS IN PREVENTION OF PERINATAL HIV TRANSMISSION IN NYC

Since 1988, data on the number of HIV-exposed births in New York are available through NYS DOH newborn HIV testing program as described on page 3. Data on trends in prevention of perinatal HIV transmission are from Expanded Pediatric HIV/AIDS Surveillance (E-PHAS) sites where perinatal HIV exposure surveillance has been conducted since 1989. E-PHAS sites care for an estimated two-thirds of children exposed to and infected with HIV in NYC. Since 1997, all HIV-exposed children are identified through the Comprehensive Newborn Screening Program (CNSP) allowing for evaluation of successive birth cohorts. Data presented in this section are presented on infants born through 2010.

Figure 7. Current HIV Classification of Children Born to HIV-infected Women in NYC: A Comparison of NYS DOH Newborn HIV Testing and Comprehensive Newborn Screening Program Data and NYC DOHMH Data at E-PHAS NYC Sites, by Year of Birth, 1988–2010

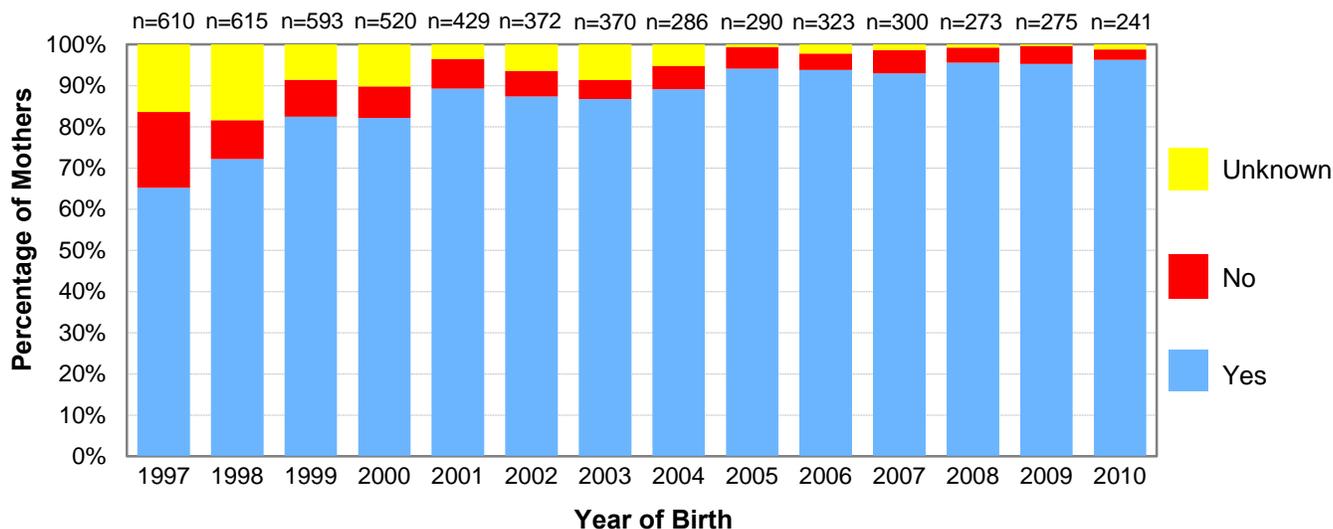


Children born to HIV-infected Women, by HIV Status, NYC DOHMH Data, NYC E-PHAS Sites

| HIV status | Year of Birth | | | | | | | | | | | | | | | | | | | | | |
|---------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | Pre 1990 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Infected | 438 | 258 | 253 | 207 | 200 | 163 | 149 | 107 | 87 | 70 | 56 | 26 | 25 | 17 | 6 | 10 | 5 | 5 | 4 | 2 | 5 | 1 |
| Uninfected | 186 | 147 | 210 | 260 | 295 | 338 | 355 | 353 | 444 | 429 | 427 | 383 | 360 | 333 | 331 | 254 | 263 | 301 | 278 | 249 | 242 | 211 |
| Indeterminate | 44 | 25 | 42 | 57 | 60 | 40 | 51 | 69 | 79 | 116 | 110 | 111 | 44 | 22 | 33 | 22 | 22 | 17 | 18 | 22 | 28 | 29 |

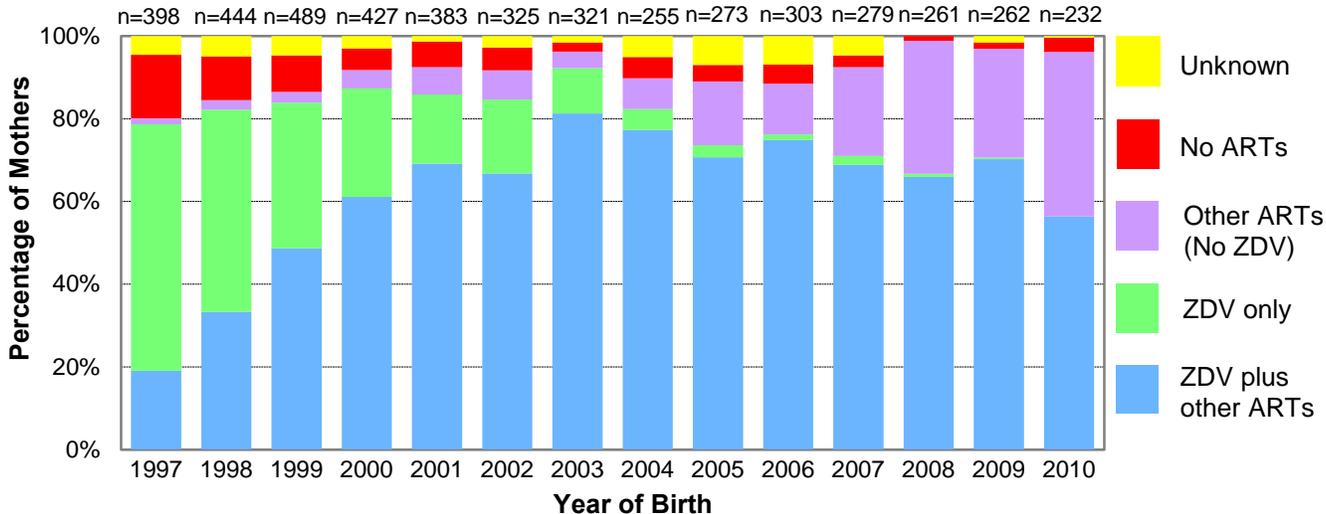
Figure 7 shows the number of HIV-exposed children born in NYC since 1988 from the NYS Newborn HIV Testing and CNSP data (line), in comparison with the number reported to the NYC DOHMH from the Expanded Pediatric HIV/AIDS Surveillance sites (bars). In 1997, statewide universal newborn screening for HIV began through the CNSP. From 1997-2010, 69% of NYC's HIV-exposed infants were born at and/or were in care at the E-PHAS sites.

Figure 8. Proportion of HIV-infected Women (N=5,497) who Received Prenatal Care, by Year of Infant Birth, 1997–2010, NYC E-PHAS Sites



Among the 1,702 births during 2005-2010, 1,683 (98.9%) had data available on prenatal care and 1,610 (95.7%) women had prenatal care.

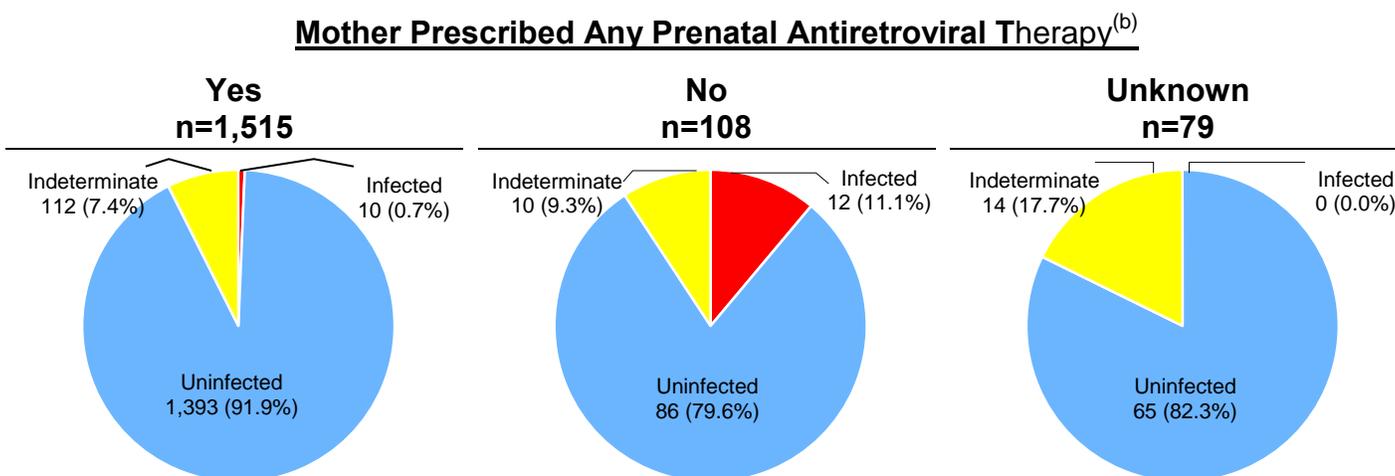
Figure 9. Prenatal Prescription of Antiretroviral Therapies for HIV-infected Women Known to Have Received Prenatal Care (N=4,652), by Year of Infant Birth, 1997–2010, NYC E-PHAS Sites



During 2005-2010, for 1,610 women in prenatal care, 1,552 (96.4%) had data available on antiretroviral therapy (ART) use and 1,504 (96.9%) women were prescribed ARTs.

During 2005-10, among the 1,552 women in prenatal care with ART data, 1,099 (70.8%) were prescribed prenatal zidovudine (ZDV) in combination with other ARTs, 384 (24.7%) were prescribed a prenatal combination ART regimen that did not contain ZDV, and 21 (1.4%) were prescribed ZDV alone. For 48 women (3.1%), no ART was prescribed.

Figure 10. Infant HIV Infection Status by Prenatal Antiretroviral Therapy for 1,702 Infants Born to HIV-infected Women, 2005–2010, NYC E-PHAS Sites^(a)



^(a) 67% of NYC HIV-exposed births were born at E-PHAS sites.

^(b) Any prenatal antiretroviral therapy includes zidovudine alone or with other antiretrovirals, or other antiretrovirals without zidovudine, regardless of intrapartum and neonatal antiretroviral therapy.

Among 1,702 infants born 2005–2010, 22 (1.3%) were infected, 1,544 (90.7%) uninfected, and 136 (8.0%) (had an indeterminate HIV status (see Table 6 below). Transmission was 0.7% in infants born to mothers prescribed ART and 11.1% in those born mothers who did not receive ART.

Table 6. Perinatal HIV Transmission Rates by Prenatal, Intrapartum, and Neonatal Antiretroviral Therapy for 1,702 Infants Born 2005-2010, NYC E-PHAS Sites^(a)

| Antiretroviral Regimens Prescribed ^(b) | N | % Infected | % Uninfected | % Indeterminate |
|--|--------------|------------|--------------|-----------------|
| Any 3-arm regimen (Prenatal + Intrapartum + Neonatal) | 1,402 | 0.7 | 91.7 | 7.6 |
| Any 2-arm regimen (Prenatal + Neonatal) ^(c) | 113 | - | 95.6 | 4.4 |
| Any 2-arm regimen (Intrapartum + Neonatal) | 61 | 6.6 | 80.3 | 13.1 |
| Any 1-arm (Neonatal only) ^(d) | 34 | 11.8 | 82.4 | 5.8 |
| No antiretroviral therapy | 13 | 30.8 | 69.2 | - |
| Regimens with unknown ART data (in one of the arms) | 79 | - | 82.3 | 17.7 |
| Total | 1,702 | 1.3 | 90.7 | 8.0 |

^(a) 67% of NYC HIV-exposed births were born at E-PHAS sites.

^(b) Any includes zidovudine (ZDV) alone or with other antiretroviral therapy (ART), or other ART (without ZDV). The majority of prenatal ART regimens contained combination ART (only 19 regimens contained ZDV alone).

^(c) This includes 44 deliveries in which the use of intrapartum ART was not specified. The lack of intrapartum ART was due to a precipitous delivery for 40 deliveries and to birth outside of hospital for 12 deliveries; for 61 deliveries, the reason was not specified.

^(d) All infants were evaluated for HIV exposure within 3 months of birth.

Table 6 examines the relationship between prenatal, intrapartum, and neonatal antiretroviral prescriptions and infants' HIV infection status. Transmission rates were lowest among deliveries with 3-arm regimens prescribed during the prenatal, intrapartum, and neonatal periods. No transmissions occurred in the deliveries with 2-arm prenatal and neonatal antiretroviral therapy.

NEW YORK CITY HIV-INFECTED YOUTH DIAGNOSED AT 13-24 YEARS OF AGE

Cumulatively, HIV infection was reported in 4,026 adolescents diagnosed at 13-19 years of age (63.9% were males), and in 13,801 young adults diagnosed at 20-24 years of age (69.5% were males). Before June 2000, only persons with AIDS were reported. For males, the predominant known HIV transmission risk was MSM (69.3%), and for females, heterosexual contact (50.1%). Fifteen adolescents, infected through perinatal transmission were diagnosed between 13-19 years of age. AIDS was diagnosed in 59.5% of males and 65.1% of females. Overall, 23.7% died. Table 7 shows data on 7,059 HIV-infected youth diagnosed during 2001-2010. Tables 8 and 9, shown on page 18, show data for youth diagnosed 2005-2010 on CD4 immunologic staging with 6 months of their HIV diagnosis (starting June 2005, all CD4 tests available) and the timing of AIDS diagnosis.

Table 7. Demographics and Current Clinical and Vital Status of Youth Diagnosed with HIV Infection Between 13 and 24 Years of Age (N=7,059) during 2001-2010, NYC

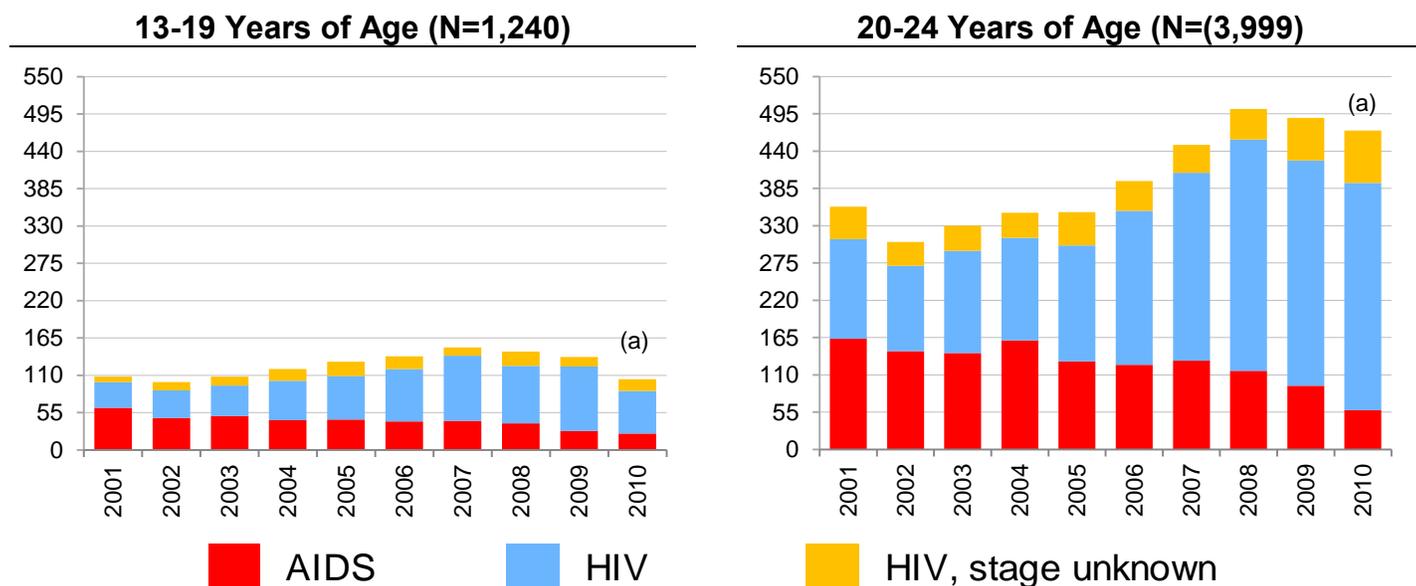
| Demographic characteristics | Males (age at diagnosis) | | | | Females (age at diagnosis) | | | | |
|--|---------------------------------|-------|-------------|-------|----------------------------|-----|-------------|-------|----|
| | 13-19 years | | 20-24 years | | 13-19 years | | 20-24 years | | |
| | (N=1,240) | | (N=(3,999)) | | (N=575) | | (N=1,245) | | |
| | N | % | N | % | N | % | N | % | |
| HIV Transmission Risk Categories | Men Who Have Sex With Men (MSM) | 942 | 76 | 3,020 | 76 | – | – | – | – |
| | Injection drug use (IDU) | 8 | <1 | 78 | 2 | 12 | 2 | 64 | 5 |
| | MSM and IDU | 32 | 3 | 88 | 2 | – | – | – | – |
| | Heterosexual ^(a) | 41 | 3 | 159 | 4 | 352 | 61 | 673 | 54 |
| | Perinatal transmission | 5 | <1 | – | – | 5 | <1 | 0 | 0 |
| | Sexual Abuse | 1 | <1 | 2 | <1 | 29 | 5 | 22 | 2 |
| | Not specified | 211 | 17 | 652 | 16 | 177 | 31 | 486 | 39 |
| Race/Ethnicity | Black | 743 | 60 | 1,949 | 49 | 379 | 66 | 794 | 64 |
| | Hispanic | 391 | 31 | 1,384 | 35 | 166 | 29 | 360 | 29 |
| | White | 88 | 7 | 583 | 15 | 17 | 3 | 72 | 6 |
| | Other ^(b) | 18 | 2 | 82 | 2 | 13 | 2 | 19 | 1 |
| | Unknown | – | – | 1 | <1 | – | – | – | – |
| Borough of Residence at Diagnosis | Bronx | 281 | 23 | 798 | 20 | 182 | 32 | 396 | 32 |
| | Brooklyn | 373 | 30 | 1,065 | 27 | 187 | 33 | 405 | 33 |
| | Manhattan | 266 | 21 | 1,067 | 27 | 90 | 16 | 217 | 17 |
| | Queens | 191 | 15 | 618 | 15 | 77 | 13 | 160 | 13 |
| | Staten Island | 29 | 2 | 55 | 1 | 9 | 2 | 21 | 2 |
| | Outside NYC | 97 | 8 | 388 | 10 | 29 | 5 | 45 | 4 |
| | Unknown | 3 | <1 | 8 | <1 | 1 | <1 | 1 | <1 |
| Clinical Status | AIDS | 424 | 34 | 1,265 | 32 | 187 | 33 | 407 | 33 |
| | HIV | 816 | 66 | 2,734 | 68 | 388 | 67 | 838 | 67 |
| Vital Status | Dead | 30 | 2 | 108 | 3 | 22 | 4 | 43 | 3 |
| | Alive | 1,210 | 98 | 3,891 | 97 | 553 | 96 | 1,202 | 97 |

^(a) Includes probable heterosexual for females (in 20%); for males (in 4%), included in not specified (also, see page 20).

^(b) Includes Asian, Pacific Islander, Native American, and multiracial persons.

During 2001-2010, 25.7% of youth were diagnosed at 13-19 years age (0.2% at 13 years of age, 0.5% at 14 years of age, 1.1% at 15 years of age, 2.3% at 16 years of age, 4.6% at 17 years of age, 7.0% at 18 years of age, and 10.0% at age 19 years of age), and 74.3% at 20-24 years of age.

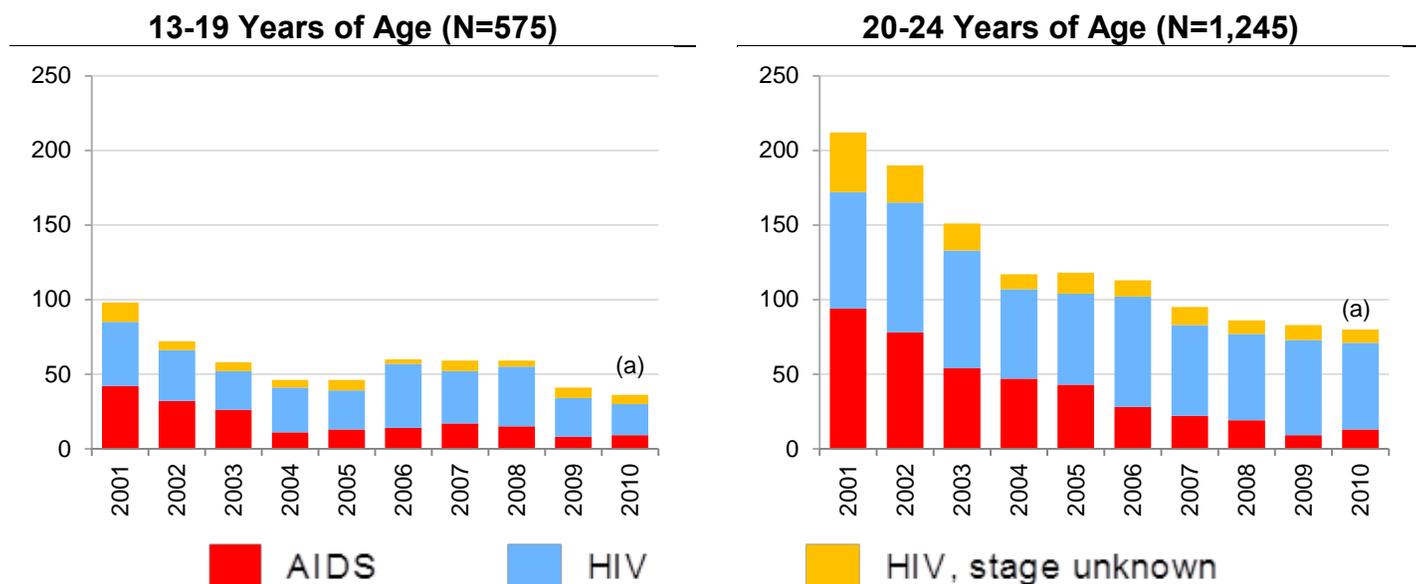
Figure 11. Males Between 13 and 24 Years of Age (N=5,239), by Year of HIV Diagnosis (2001-2010)^(a) and Current HIV Clinical Status, as of December 31, 2010, NYC



^(a) Data are incomplete for 2010 due to reporting lag.

As shown in Figure 11, the number of HIV diagnoses among males 13-19 years of age increased from 2001-2007 and decreased thereafter; overall, 34% were diagnosed with AIDS. The number of HIV diagnoses among males 20-24 years of age increased during 2002-2008 and decreased thereafter; overall, 32% were diagnosed with AIDS.

Figure 12. Females Between 13 and 24 Years of Age (N=1,820), by Year of HIV Diagnosis (2001-2010) and Current HIV Clinical Status, as of December 31, 2010, NYC



^(a) Data are incomplete for 2010 due to reporting lag.

As shown in Figure 12, the number of HIV diagnoses among females 13-19 years of age and females 20-24 years decreased from 2001-2010; overall, in both age groups, 33% were diagnosed with AIDS.

Table 8. Initial CD4 immunologic Staging (within 6 months of HIV diagnosis), by Age at HIV Diagnosis, Youth, 13 and 24 Years of Age (N=4,337), Diagnosed 2005-2010, NYC

| Immunologic Staging within 6 months of HIV diagnosis | Males (age at diagnosis) | | | | Females (age at diagnosis) | | | |
|---|--------------------------|------|-------------|------|----------------------------|------|-------------|------|
| | 13-19 years | | 20-24 years | | 13-19 years | | 20-24 years | |
| | (N=805) | | (N=(2,656) | | (N=301) | | (N=575) | |
| | N | % | N | % | N | % | N | % |
| Stage 1: CD4 \geq 500 cells/mm ³ or \geq 29% | 169 | 21.0 | 579 | 21.8 | 96 | 31.9 | 182 | 31.7 |
| Stage 2a: CD4 350-499 cells/mm ³ or 21-28% | 144 | 17.9 | 448 | 16.9 | 54 | 17.9 | 95 | 16.5 |
| Stage 2b: CD4 200-349 cells/mm ³ or 14-20% | 99 | 12.3 | 385 | 14.5 | 30 | 10.0 | 75 | 13.0 |
| Stage 3: CD4<200 cells/mm ³ or <14% | 81 | 10.1 | 280 | 10.5 | 37 | 12.3 | 64 | 11.1 |
| Stage unknown: (within 6 months of diagnosis) ^(a) | 312 | 38.7 | 964 | 36.3 | 84 | 27.9 | 159 | 27.7 |

^(a) Among these youth, the first available counts were within 6-12 months after HIV diagnosis for 241 (5.6%), 1-2 years after diagnosis for 255 (5.9%), >2 years after diagnosis for 284 (6.5%), and 739 (17.0%) had none available.

As shown in Table 8, females were more likely than males to have an initial CD4 count within 6 months of their diagnosis. Overall, 10.7% were in Stage 3 within 6 months of their HIV diagnosis.

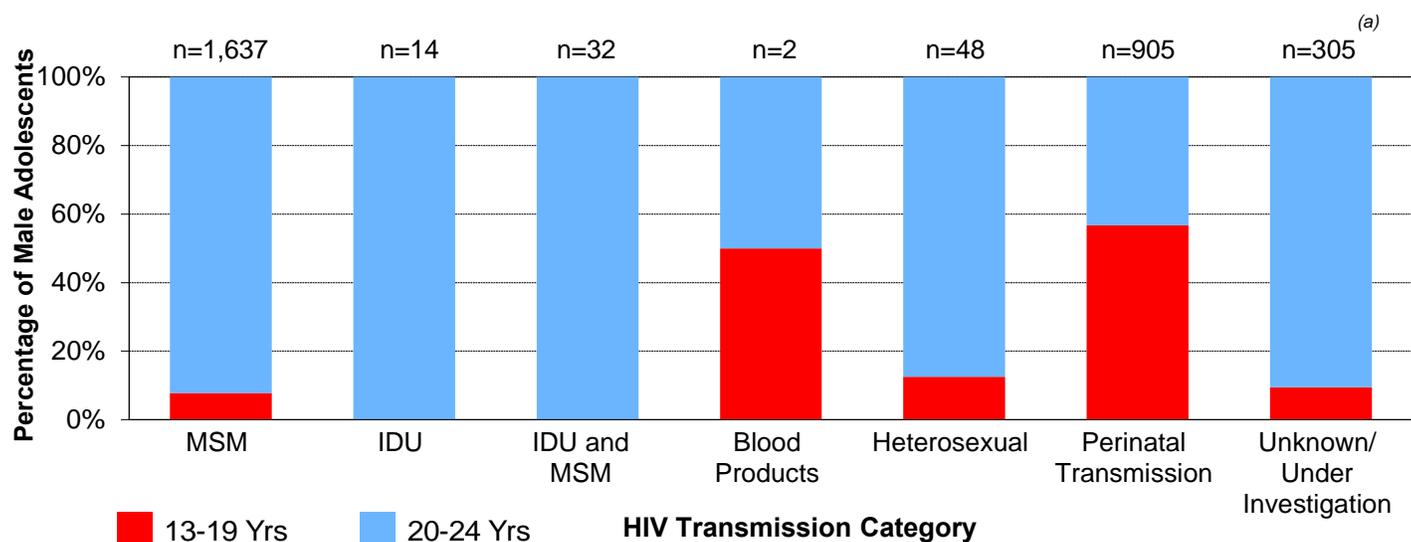
Table 9. Current HIV Clinical Status , by Age at HIV Diagnosis, Youth 13 and 24 Years of Age (N=4,337), Diagnosed 2005-2010, as of December 31, 2010, NYC

| Current Clinical Status | Males (age at diagnosis) | | | | Females (age at diagnosis) | | | |
|--|--------------------------|------|-------------|------|----------------------------|------|-------------|------|
| | 13-19 years | | 20-24 years | | 13-19 years | | 20-24 years | |
| | (N=805) | | (N=(2,656) | | (N=301) | | (N=575) | |
| | N | % | N | % | N | % | N | % |
| HIV only | 480 | 59.6 | 1,683 | 63.4 | 191 | 63.5 | 376 | 65.4 |
| HIV, Stage unknown ^(a) | 104 | 12.9 | 319 | 12 | 34 | 11.3 | 65 | 11.3 |
| AIDS within 6 months of HIV diagnosis | 109 | 13.6 | 367 | 13.8 | 49 | 16.3 | 81 | 14.1 |
| AIDS within 6-12 months of HIV diagnosis | 29 | 3.6 | 79 | 3.0 | 7 | 2.3 | 13 | 2.3 |
| AIDS within >12 months of HIV diagnosis | 83 | 10.3 | 208 | 7.8 | 20 | 6.6 | 40 | 6.9 |

^(a) As of December 31, 2010, of 3,252 youth classified as HIV only, 522 (12.0%) had no available CD4 counts available for classification of whom 9 died.

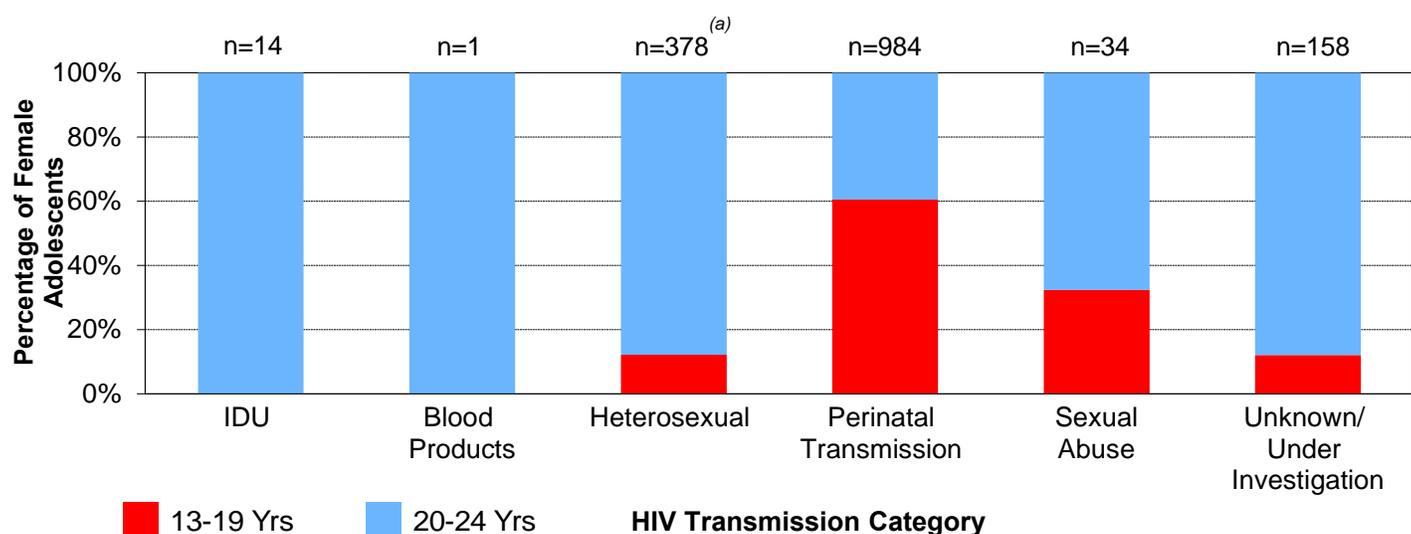
Among youth diagnosed 2005-2010, 25.0% have been diagnosed with AIDS either on the basis of an opportunistic infection or an AIDS-defining CD4 count as of December 31, 2010.

Figure 13. Males Between 13 and 24 Years of Age Living with HIV/AIDS (N=2,943), by HIV Transmission Risk Category and Current Age, as of December 31, 2010, NYC



^(a) Sexual abuse is reported for three and probable heterosexual risk for 98.

Figure 14. Females Between 13 and 24 Years of Age Living with HIV/AIDS (N=1,569), by HIV Transmission Risk Category and Current Age, as of December 31, 2010, NYC



^(a) Includes probable heterosexual risk reported for 176 females.

Figures 13 and 14 show data on 4,512 HIV-infected youth 13-24 years of age living with HIV/AIDS. They include 1,890 youth diagnosed before 13 years of age, for whom 99.4% had perinatal HIV transmission risk, and 2,622 diagnosed at 13-24 years of age. Among males diagnosed at 13-24 years of age, the predominant known risk is men who have sex with men, and among females diagnosed at 13-24 years of age it is heterosexual sex. Probable heterosexual risk is included with heterosexual risk for females in the absence of other known risk factors, e.g., IDU; probable heterosexual risk not included for males in the absence of a known heterosexual infected partner.

Of the 4,512 HIV-infected youth 13-24 years of age living with HIV/AIDS, 1,572 (34.8%) were diagnosed with AIDS (51.8% of those with perinatal HIV transmission risk, and 22.6% of the remaining youth).