

Pediatric HIV/AIDS

Surveillance Update
New York City

Data Reported through 12/31/2010

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 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 (212) 442-3388 or 442-3389

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

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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 3,920 children infected through perinatal transmission and diagnosed through December 31, 2009. An additional 104 children were infected through non-perinatal risk (92 through contaminated blood products). Data on 7,879 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 16,743 HIV-infected youth, diagnosed with HIV infection between 13 and 24 years of age, of whom 6,152 were diagnosed during 2001-2009.

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. Most perinatally HIV-exposed children are diagnosed as HIV-infected or uninfected by 4 to 6 months of age.

4. Enhanced Perinatal HIV Surveillance (EPS): EPS is a national CDC-funded project that collects data on perinatally HIV-exposed infants. DOHMH began collecting for EPS in 2001; since 2005, 16 NYC sites participate in this project.

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

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

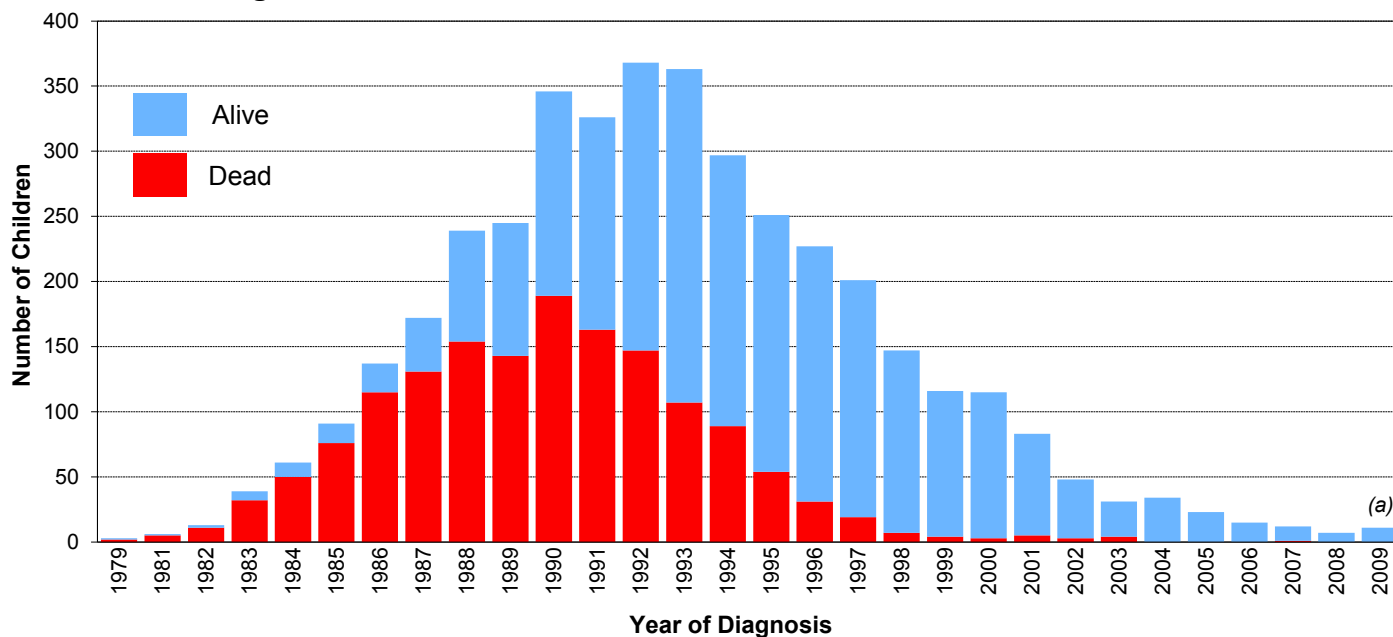
Table 1. Children Diagnosed with HIV Infection Before 13 Years of Age, 1979-2009, by HIV Transmission Risk Category and Latest HIV Status, as of December 31, 2009, NYC

	HIV-infected, non-AIDS	AIDS diagnosed before 13 years	AIDS diagnosed at 13 years or older	Total	
Perinatal HIV Risk^(a)	1,359	2,096	465	3,920	(97.3%)
Non-perinatal HIV Risk:				104	(2.6%)
Receipt of blood products ^(b)	16	41	35	92	
Sexual abuse	5	4	3	12	
Pending investigation	2	1		3	(0.1%)
Total (%)	1,382 (34.3%)	2,142 (53.2%)	503 (12.5%)	4,027 (100%)	

Sexual abuse was reported in addition to perinatal risk for 19 children.

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=4,027), by Year of HIV Diagnosis and Current Vital Status, 1979–2009^(a), NYC



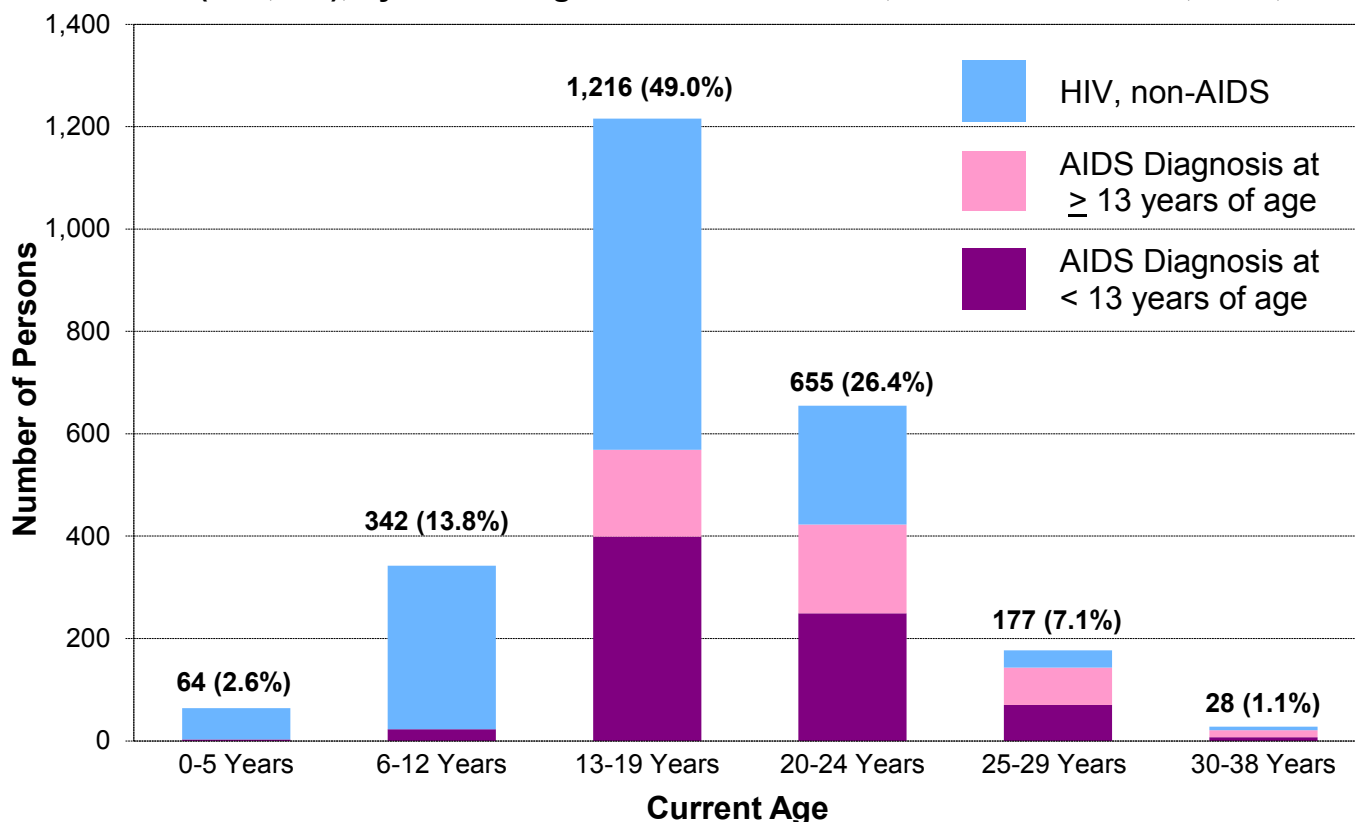
Vital Status	Year of Diagnosis																Total
	1979-1989	1990-1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006 ^(a)	2007	2008	2009	
Alive	287	1202	196	182	140	112	112	78	45	27	34	23	15	11	7	11	2,482
Dead	719	749	31	19	7	4	3	5	3	4	0	0	0	1	0	0	1,545
Total	1,006	1,951	227	201	147	116	115	83	48	31	34	23	15	12	7	11	4,027

^(a) Data are incomplete for 2009 due to reporting lag.

Table 1 and Figure 1 show data on 4,027 children diagnosed with HIV infection before 13 years of age and reported to the NYC DOHMH. Two thousand six hundred and forty-five (65.7%) developed AIDS (the majority before 13 years of age).

Of the 4,027 children, 1,545 (38.4%) have died [1,463 (55.3%) of the 2,645 diagnosed with AIDS and 82 (5.9%) of the 1,382 diagnosed with HIV infection without AIDS]. Survival has dramatically improved for the 259 children diagnosed during 2001-2009; 13 (5.0%) have died.

Figure 2. Pediatric Cases, Diagnosed with HIV Infection Before 13 Years of Age, Living with HIV/AIDS (N=2,482), by Current Age and Clinical Status, as of December 31, 2009, NYC



Clinical Status	Current Age												Total	
	0-5 years		6-12 years		13-19 years		20-24 years		25-29 years		30-38 years		N	%
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
HIV without AIDS	61	95	319	93	647	53	232	35	34	19	7	25	1,300	52
AIDS at < 13 years of age	3	5	23	7	399	33	249	38	70	40	7	25	751	30
AIDS at ≥ 13 years of age	–	–	–	–	170	14	174	27	73	41	14	50	431	17
Total	64	100	342	100	1,216	100	655	100	177	100	28	100	2,482	100

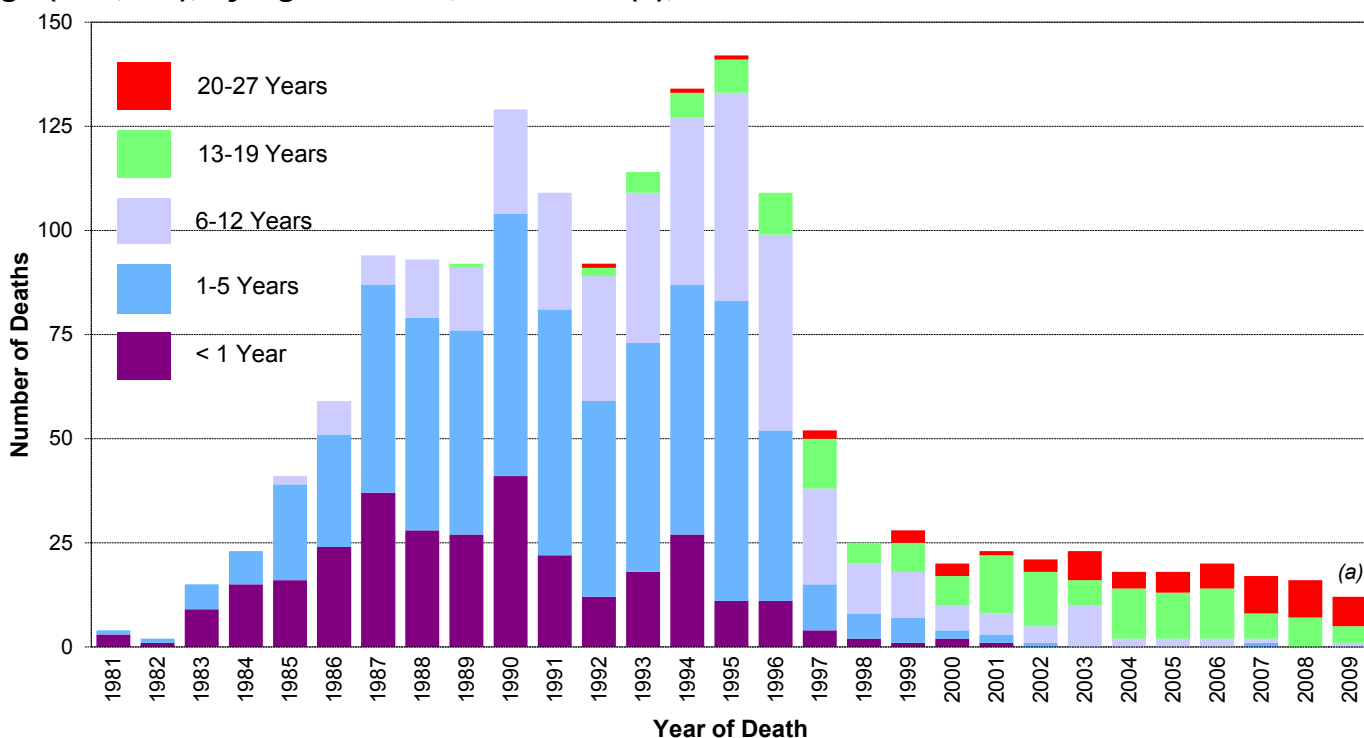
HIV-infected children surviving into adolescence and young adulthood are a growing population. Seventy-nine percent of living persons diagnosed with HIV infection before 13 years of age are currently 13 years of age or older. The oldest person is 38 years of age.

The proportion diagnosed with AIDS increased with successive age groups. Five percent of 0-5 year olds have developed AIDS, compared with 7% among 6-12 year olds, 47% among 13-19 year olds, 65% of 20-24 year olds, 81% of 25-29 year olds and 75% of 30-38 year olds.

Among the 2,482 pediatric cases, 45 persons had a non-perinatal HIV transmission risk (receipt of blood products and sexual abuse and for 3 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.

Figure 3. Number of Deaths of Persons Diagnosed with HIV Infection Before 13 Years of Age (N=1,545), by Age at Death, 1981–2009(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 ^(a)	
<1	160	131	11	4	2	1	2	1	0	0	0	0	0	0	0	0	312
1-5	216	356	41	11	6	6	2	2	1	0	0	0	0	1	0	0	642
6-12	46	209	47	23	12	11	6	5	4	10	2	2	2	1	0	1	381
13-19	1	21	10	12	5	7	7	14	13	6	12	11	12	6	7	4	148
20-27	0	3	0	2	0	3	3	1	3	7	4	5	6	9	9	7	62
Total	423	720	109	52	25	28	20	23	21	23	18	18	20	17	16	12	1,545

^(a) Data are incomplete for 2009 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=104), by Year of Birth, Current HIV Status and Current Vital Status, as of December 31, 2009, 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	1	1	3	3	4	4	8
1981	1	2	6	1	7	3	10
1982	1	1	11	5	12	6	18
1983	0	1	6	2	6	3	9
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	2	0	0	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	3	18	56	27	59	45	104

Non-perinatally HIV-infected children represent 2.6 percent of NYC's HIV-infected children. Most were born during the 1970s and 1980s.

Among the 104 children infected with HIV through non-perinatal risk, the risk was receipt of blood products for 92 (see also Table 1). Seventy-six of the 92 developed AIDS (82.6%) and 55 (59.8%) 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 12 children was sexual abuse; seven developed AIDS (58.3%) and 4 (33.3%) died. They were diagnosed with HIV infection between 1986 and 2005.

Among all 104 children, 59 (56.7%) died. As of December 31, 2008, the oldest surviving person is 38 years of age.

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

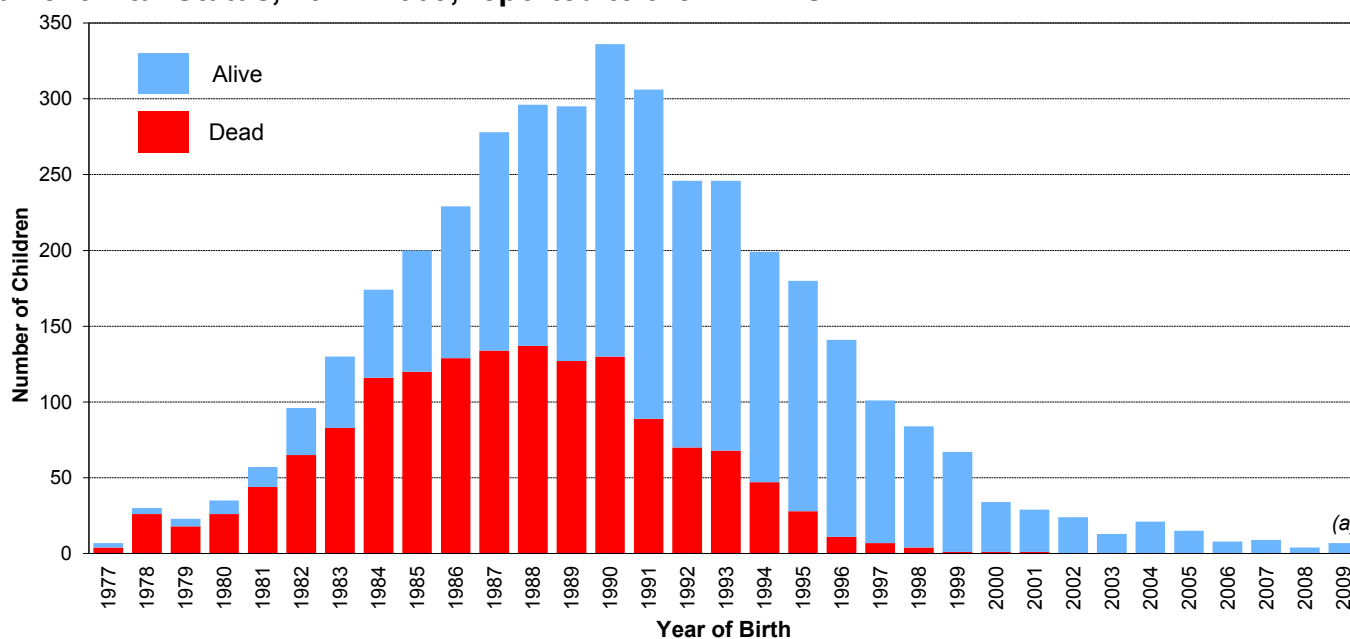
CHILDREN BORN TO HIV-INFECTED MOTHERS, DIAGNOSED WITH HIV INFECTION BEFORE 13 YEARS OF AGE, REPORTED IN NYC

Table 3. Current HIV Status of Children Born to HIV-infected Women, born 1977-2009

Perinatally HIV-infected Children (Citywide)		N
HIV-infected, non-AIDS		1,359
AIDS		2,561
<i>Diagnosed before 13 years</i>		2,096
<i>Diagnosed at 13 years or older</i>		465
Total HIV-infected Children		3,920
Children with Perinatal HIV Exposure (NYC Expanded Pediatric HIV/AIDS Surveillance (E-PHAS) ^(a))		N
HIV-uninfected		6,725
Indeterminate status		1,154
Total Children		11,799

^(a) Since 1997, 70% 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=3,920), by Year of Birth, 1977–2009 and Current Vital Status, 1977–2009, reported to the NYC DOHMH



Vital Status	Year of Birth																Total
	1977-1989	1990-1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009 ^(a)	
Alive	821	1,081	130	94	80	66	33	28	24	13	21	15	8	9	4	7	2,434
Dead	1,029	432	11	7	4	1	1	1	0	0	0	0	0	0	0	0	1,486
Total	1,850	1,513	141	101	84	67	34	29	24	13	21	15	8	9	4	7	3,920

^(a) Data are incomplete for 2009 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 91.8% 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=3,920) and Maternal HIV Risk Transmission Categories, diagnosed 1979–2009, NYC

Demographic Characteristics		1979–2000		2001–2009	
		N	%	N	%
Sex	Males	1,804	49	122	47
	Females	1,857	51	137	53
Borough of Residence at Diagnosis	Bronx	1,106	30	79	31
	Brooklyn	1,154	32	83	32
	Manhattan	666	18	44	17
	Queens	476	13	21	8
	Staten Island	77	2	7	3
	Outside NYC	170	5	23	9
	Unknown	12	<1	2	<1
Race and Ethnicity	Black	2,042	56	165	64
	Hispanic	1,360	37	82	32
	White	230	6	8	3
	Other ^(a)	15	<1	4	1
	Unknown	14	<1	-	-
Maternal HIV Transmission Risk Categories	Injection drug use (IDU)	1,317	36	17	7
	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)	473	13	57	22
	Receipt of blood products	25	<1	-	-
	Perinatal HIV infection	-	-	2	<1
	Mother's risk not specified	1,441	39	175	68

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

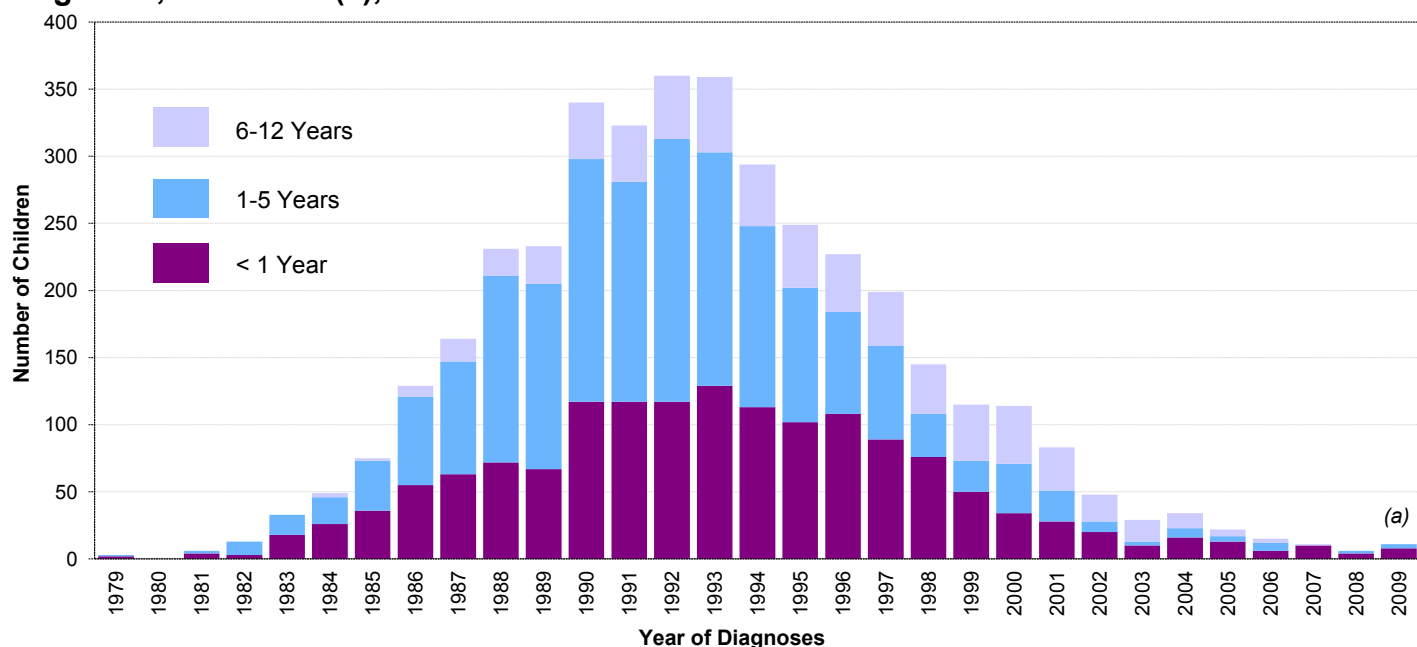
^(b) Maternal HIV risk factors that constitute heterosexual risks, includes probable heterosexual for whom this was noted in 16% of mothers during 2001-2009.

Table 4 shows the demographic characteristics of perinatally HIV-infected children by year of diagnosis time periods. The number of diagnoses during 2001-2009 dropped to 259.

Overall, the proportion of females was higher than males. The majority of children resided in the Bronx or Brooklyn at the time diagnosis; nine percent resided outside NYC during 2001-2009. The majority of children were black or Hispanic; among children diagnosed during 2001-2009, 64% of children were black.

A maternal HIV risk factor, including probable heterosexual risk was documented in the pediatric medical records for 41% 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 seven percent during 2001-2009. Two children were born to perinatally HIV-infected mothers.

Figure 5. Age at HIV Diagnosis of Perinatally HIV-infected Children (N=3,920) by Year of Diagnosis, 1979–2009(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 ^(a)	
<1	346	695	108	89	76	50	34	28	20	10	16	13	6	10	4	8	1,513
1-5	512	950	76	70	32	23	37	23	8	3	7	4	6	0	2	3	1,756
6-12	78	280	43	40	37	42	43	32	20	16	11	5	3	1	0	0	651
Total	936	1,925	227	199	145	115	114	83	48	29	34	22	15	11	6	11	3,920

^(a) Data are incomplete for 2008 due to reporting lag.

Figure 5 shows the number of HIV-infected children by year of initial 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).

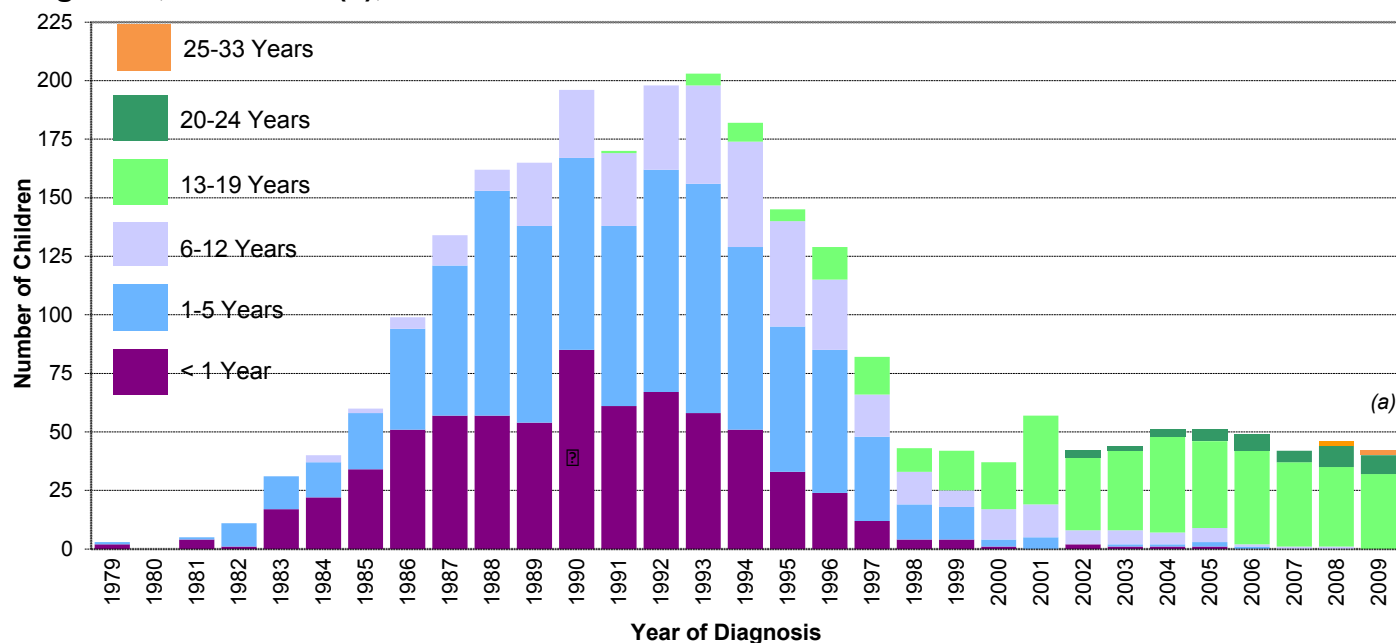
Cumulatively, 91.8% of children were born in NYC.

During 2001-2009, of the 259 children newly diagnosed with HIV infection, 205 (79.2%) were born in NYC, 5 (1.9%) outside NYC in New York State, 8 (3.1%) were born in the United States outside of New York, 7 (2.7%) in a United States possession, and 34 (13.1%) were foreign-born.

Overall, 1,352 children (34.5%) 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 65.9% of children. For those diagnosed during 1990-1996, it dropped from 46.5% in 1990 to 17.6% in 1996, for those diagnosed during 1997-2000 it was 7.5% (1997 was the start of universal HIV newborn screening in NY), for those diagnosed during 2001-2006 it was 9.1%, and for those diagnosed during 2007-2009, there were none.

Figure 6. Age at AIDS Diagnosis of Perinatally HIV-infected Children (N=2,561), by Year of Diagnosis, 1979–2009(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 ^(a)		
<1	299	355	24	12	4	4	1	0	2	1	1	1	0	0	0	0	704	
1-5	352	492	61	36	15	14	3	5	0	1	1	2	1	0	0	0	983	
6-12	59	228	30	18	14	7	13	14	6	6	5	6	1	1	1	0	409	
13-19	0	19	14	16	10	17	20	38	31	34	41	37	40	36	34	32	419	
20-24	0	0	0	0	0	0	0	0	3	2	3	5	7	5	9	8	42	
25-27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	
Total	710	1,094	129	82	43	42	37	57	42	44	51	51	49	42	46	42	2,561	

^(a) Data are incomplete for 2009 due to reporting lag.

Figure 6 shows trends in AIDS cases by age at AIDS diagnosis. Among 3,920 perinatally HIV-infected children, 2,561 (65.3%) developed AIDS. Of the 2,561 AIDS diagnoses, 1,352 (52.8%) 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 1,209 (47.2%) were subsequently diagnosed with AIDS. The proportion of concurrent HIV and AIDS diagnoses has decreased significantly since 1997 as described on page 10. There were none during 2007-2009.

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 2009, 465 perinatally infected youth were diagnosed with AIDS at age 13 or older; 382 (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 2,561 Perinatally HIV-infected Children with AIDS(a), by Year of Diagnosis, 1979–2009(b), NYC

AIDS-Defining Conditions	1979 -1994	1995 -1999	2000 -2004	2005 -2009	Total	%
<i>Pneumocystis jirovecii</i> pneumonia ^(c)	672	115	35	9	831	18.8
Lymphoid interstitial pneumonia	503	103	8	0	614	13.9
HIV encephalopathy	239	123	25	6	393	8.9
<i>Mycobacterium avium</i> complex & other species disease	219	121	38	20	398	9.0
Recurrent bacterial infections	261	50	5	3	319	7.2
Wasting syndrome	149	72	17	10	248	5.6
Esophageal candidiasis	140	48	31	11	230	5.2
Cytomegalovirus disease	136	28	5	1	170	3.8
Chronic mucocutaneous herpes simplex	82	23	7	14	126	2.9
Chronic intestinal cryptosporidiosis	60	18	3	0	81	1.8
Pulmonary candidiasis	43	8	2	1	54	1.2
Cytomegalovirus retinitis	23	19	6	0	48	1.1
Extrapulmonary tuberculosis	25	10	2	5	42	1.0
Cryptococcosis	18	6	2	3	29	0.7
Burkitt's lymphoma	17	2	2	1	22	0.5
Toxoplasmosis, brain	14	6	1	0	21	0.5
Immunoblastic lymphoma	7	9	2	1	19	0.4
Lymphoma, brain	10	2	2	0	14	0.3
Progressive multifocal leukoencephalopathy	5	4	2	1	12	0.3
Recurrent pneumonia ^(d)	1	3	6	1	11	0.2
Histoplasmosis	2	2	0	1	5	0.1
Kaposi's sarcoma	1	2	1	1	5	0.1
Coccidioidomycosis	0	0	1	0	1	<0.1
Pulmonary tuberculosis ^(d)	0	0	1	0	1	<0.1
CD4 cell count <200 cells/mm ³ or <14 ^(d)	36	121	270	299	726	16.4
Total	2663	895	474	388	4,420	100

^(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).

^(b) Data are incomplete for 2009 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.

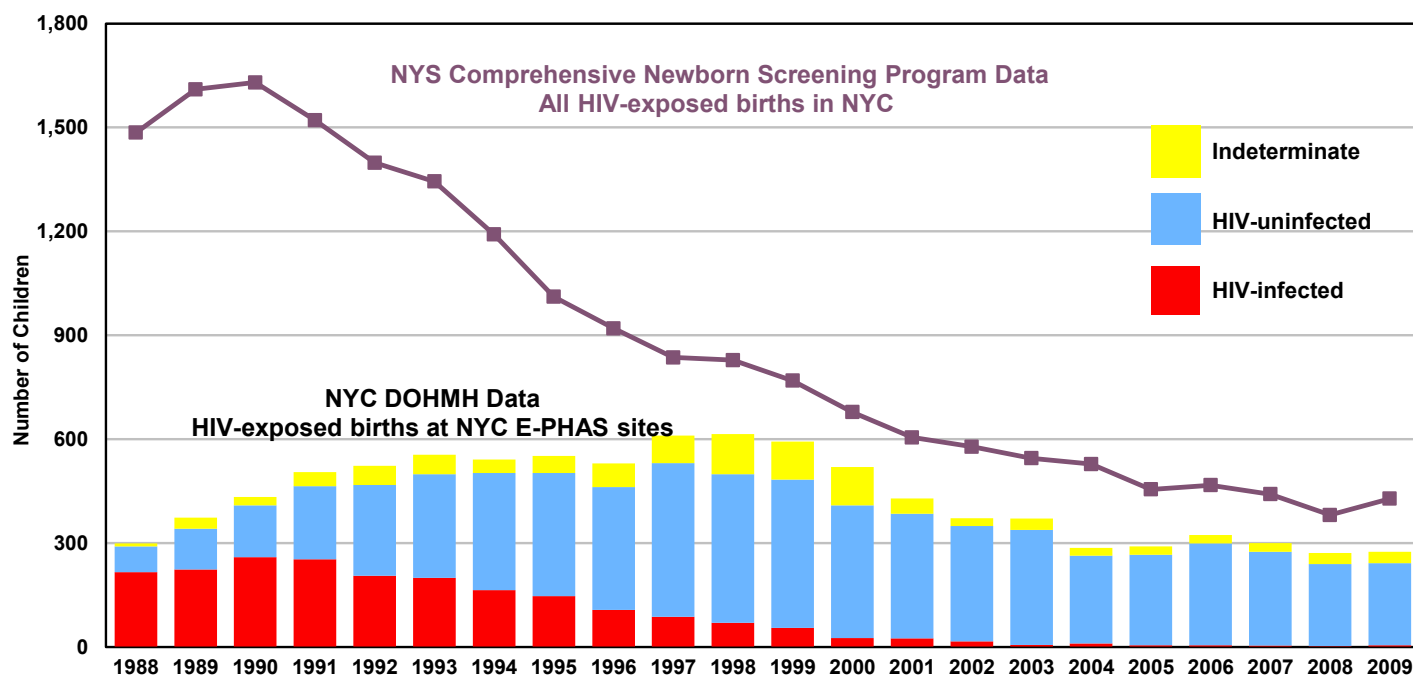
Conditions are reported through active case surveillance and physician report forms and do not reflect all AIDS-defining conditions that have been diagnosed in perinatally HIV-infected children.

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 2009.

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, 1988–2009

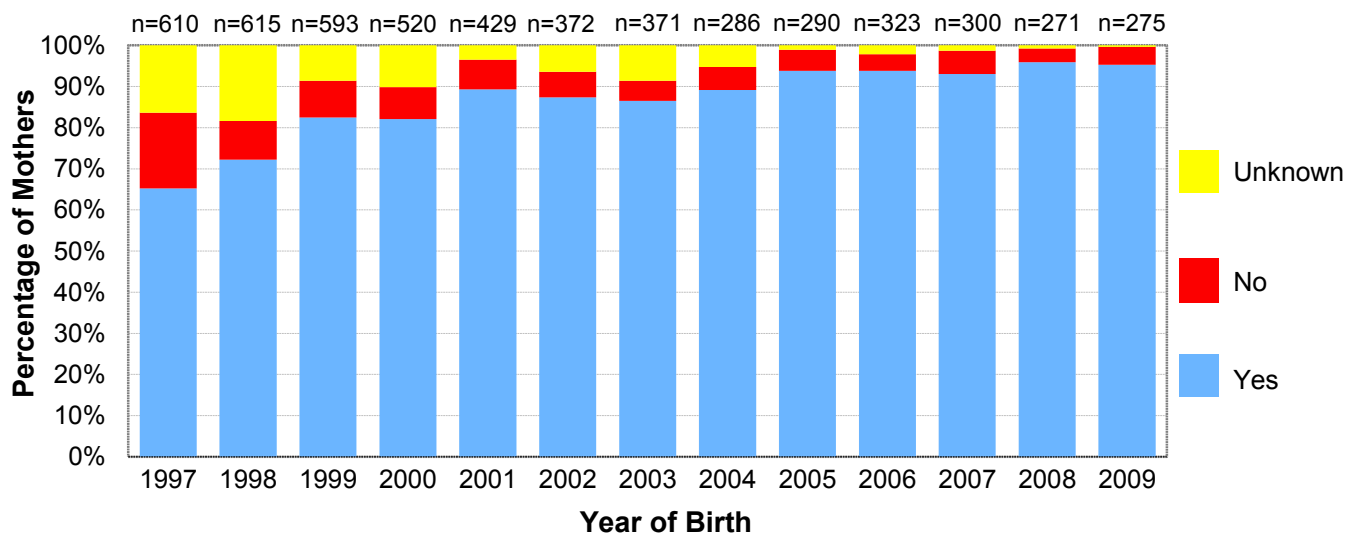


Children born to HIV-infected Women, by HIV Status, NYC DOHMH Data, NYC E-PHAS Sites

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
Infected	440	259	253	206	200	164	147	107	87	70	55	26	25	16	6	10	5	5	4	2	5
Uninfected	191	150	211	262	299	338	355	355	444	429	428	383	360	333	332	254	261	294	271	237	237
Indeterminate	41	24	41	55	56	39	50	68	79	116	110	111	44	23	33	22	24	24	25	32	33

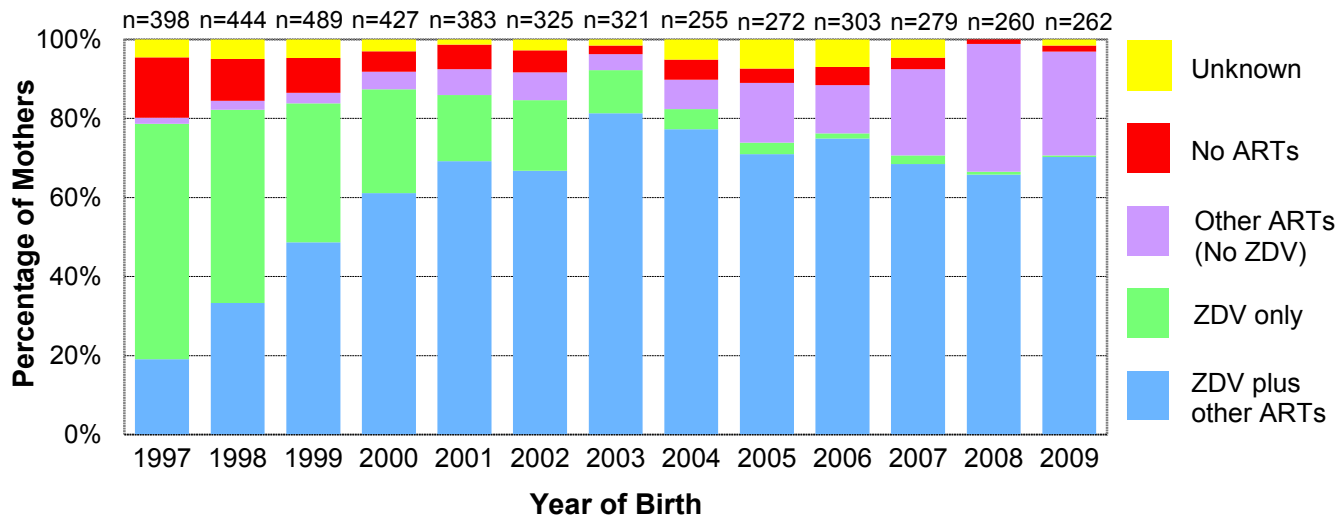
Figure 7 shows the number of HIV-exposed children born in NYC since 1988 from the NYS Newborn HIV Testing and CNSP data (line), in comparison with the number reported to the NYC DOHMH from the Expanded Pediatric HIV/AIDS Surveillance sites (bars). In 1997, statewide universal newborn screening for HIV began through the CNSP. From 1997-2009, 70% 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=5,436) who Received Prenatal Care, by Year of Infant Birth, 1997–2009, NYC E-PHAS Sites



Among the 1,459 births during 2005-2009, 1,442 (98.8%) had data available on prenatal care and 1,376 (95.4%) women had prenatal care.

Figure 9. Prenatal Prescription of Antiretroviral Therapies for HIV-infected Women Known to Have Received Prenatal Care (N=4,583), by Year of Infant Birth, 1997–2009, NYC E-PHAS Sites

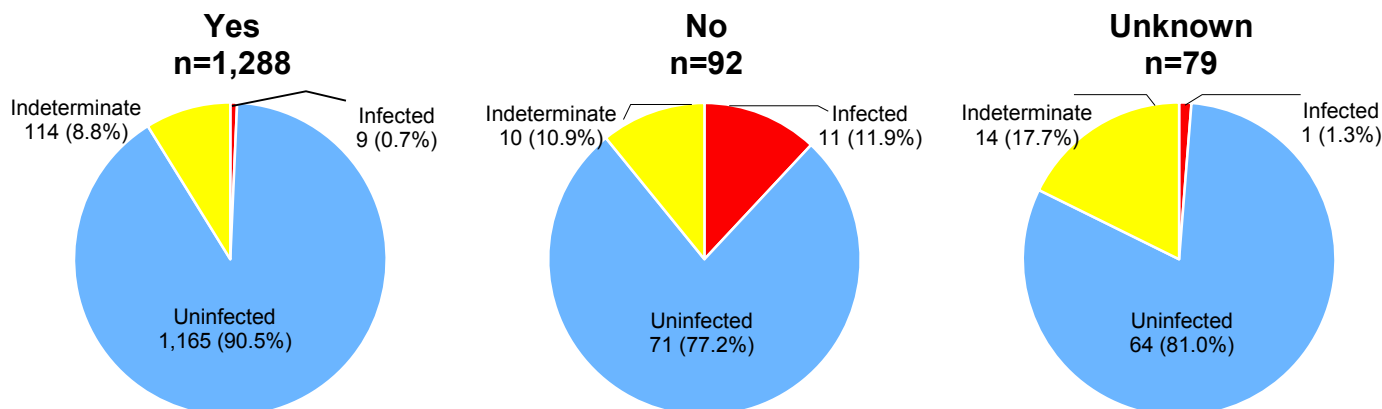


During 2005-2009, for 1,376 women in prenatal care, 1,318 had data available on antiretroviral therapy (ART) use and 1,279 (97.0%) women were prescribed ARTs.

During 2005-09, among the 1,318 women in prenatal care with ART data, 966 (73.3%) were prescribed prenatal zidovudine (ZDV) in combination with other ARTs, 292 (22.1%) were prescribed a prenatal combination ART regimen that did not contain ZDV, and 21 (1.6%) were prescribed ZDV alone. For 39 women (3.0%), no ART was prescribed.

Figure 10. Infant HIV Infection Status by Prenatal Antiretroviral Therapy for 1,459 Infants Born to HIV-infected Women, 2005–2009, NYC E-PHAS Sites^(a)

Mother Prescribed Any Prenatal Antiretroviral Therapy^(b)



^(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 1,459 infants born 2005–2009, 21 (1.4%) were infected, 1,300 (89.1%) uninfected, and 138 (9.5%) (had an indeterminate HIV status (see Table 6 below). Transmission was 0.7% in infants born to mothers prescribed ART and 11% in those born to mothers who did not receive ART.

Table 6. Perinatal HIV Transmission Rates by Prenatal, Intrapartum, and Neonatal Antiretroviral Therapy for 1,459 Infants Born 2005-2009, NYC E-PHAS Sites (a)

Antiretroviral Regimens Prescribed ^(b)	N	% Infected	% Uninfected	% Indeterminate
Any 3-arm regimen (Prenatal + Intrapartum + Neonatal)	1,179	0.8	90.1	9.1
Any 2-arm regimen (Prenatal + Neonatal) ^(c)	103	-	94.5	5.5
Any 2-arm regimen (Intrapartum + Neonatal)	56	7.1	80.4	12.5
Any 1-arm (Neonatal only) ^(d)	26	15.4	73.1	11.5
No antiretroviral therapy	9	33.3	66.7	
Regimens with unknown ART data (in one of the arms)	80	1.3	81.2	17.5
Total	1,459	1.4	89.1	9.5

^(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) The lack of intrapartum ART was due to a precipitous delivery for 35 deliveries and to birth outside of hospital for 11 deliveries; for 57 deliveries, the reason was not documented.

^(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 3,779 adolescents diagnosed at 13-19 years of age (62.9% were males), and in 12,964 young adults diagnosed at 20-24 years of age (68.5% were males). Before June 2000, only persons with AIDS were reported. For males, the predominant known HIV transmission risk was MSM (68.0%), and for females, heterosexual contact (49.1%). Thirteen adolescents, infected through perinatal transmission were diagnosed between 13-19 years of age. AIDS was diagnosed in 60.9% of males and 65.1% of females. Overall, 24.4% died. Table 7 shows data on 6,152 HIV-infected youth diagnosed during 2001-2009. Tables 8 and 9, shown on page 18, show data for youth diagnosed 2005-2009 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=6,152) during 2001-2009, NYC

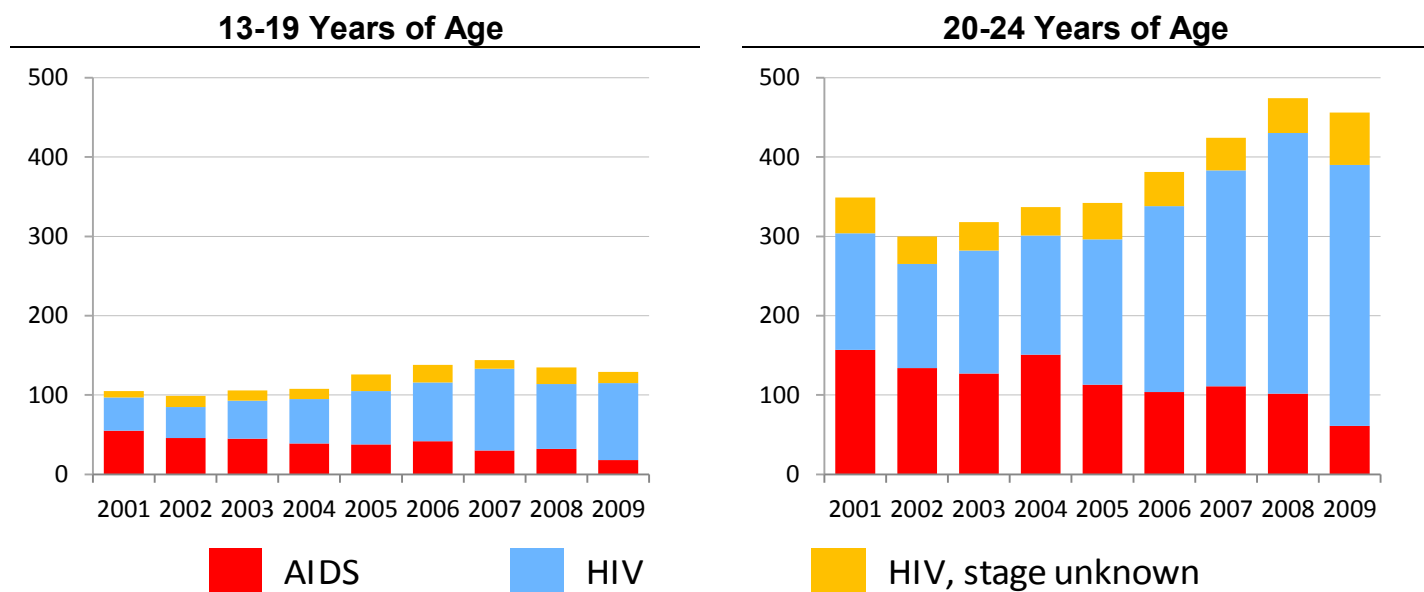
Demographic characteristics	Males (age at diagnosis)				Females (age at diagnosis)				
	13-19 years		20-24 years		13-19 years		20-24 years		
	(N=1,090)		(N=(3,381)		(N=534)		(N=1,147)		
	N	%	N	%	N	%	N	%	
HIV Transmission Risk Categories	Men Who Have Sex With Men (MSM)	811	74	2,496	74	–	–	–	–
	Injection drug use (IDU)	8	1	68	2	11	2	60	5
	MSM and IDU	26	2	75	2	–	–	–	–
	Heterosexual ^(a)	81	7	290	8	264	59	589	51
	Perinatal transmission	4	<1	0	0	4	<1	0	0
	Sexual Abuse	1	<1	2	<1	28	5	20	2
	Not specified	159	15	450	13	176	33	478	42
Race/Ethnicity	Black	658	60	1644	49	358	67	731	64
	Hispanic	340	31	1201	36	151	28	333	29
	White	75	7	471	14	14	3	66	6
	Other ^(b)	17	2	63	2	11	2	17	1
	Unknown	0	0	2	0	0	0	0	0
Borough of Residence at Diagnosis	Bronx	247	23	684	20	174	33	364	32
	Brooklyn	339	31	922	27	177	33	380	33
	Manhattan	239	22	934	28	84	16	198	17
	Queens	168	15	540	16	70	13	148	13
	Staten Island	28	3	53	2	7	1	22	2
	Outside NYC	69	6	248	7	22	4	34	3
Clinical Status	AIDS	345	32	1,060	31	163	31	358	31
	HIV	745	68	2,321	69	371	69	789	69
Vital Status	Dead	22	2	95	3	21	4	38	3
	Alive	1,068	98	3,286	97	513	96	1,109	97

^(a) Includes probable heterosexual among females for whom this was noted in 17% of cases.

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

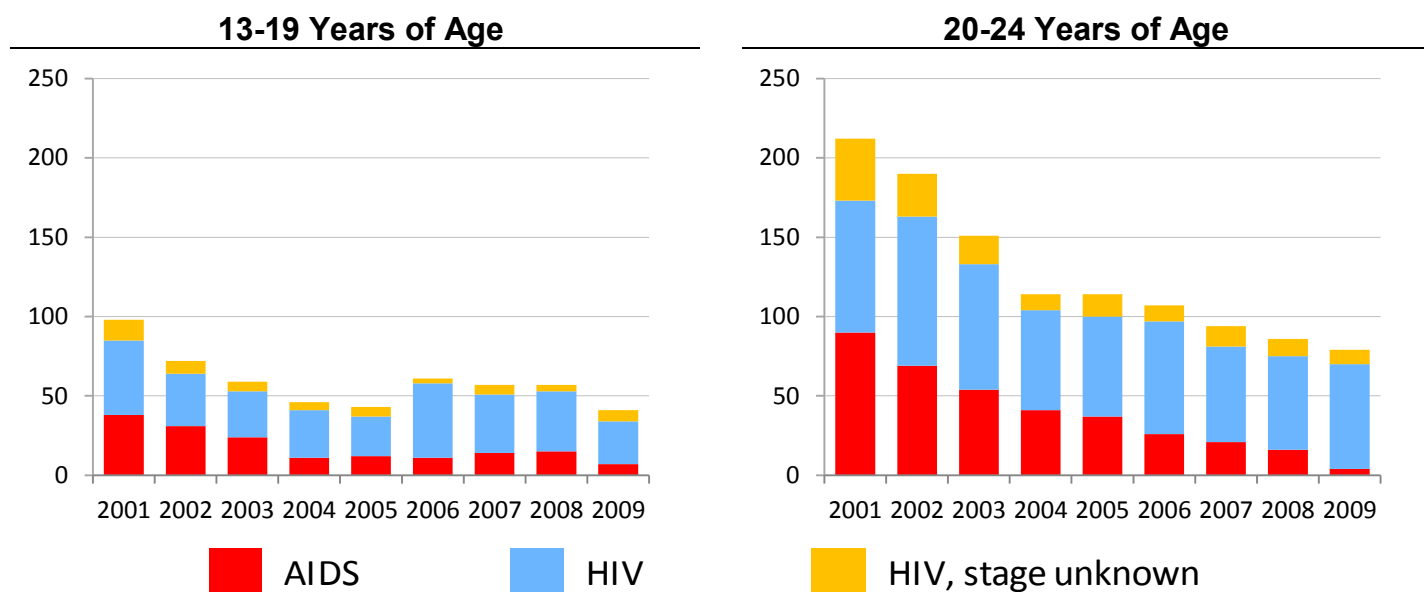
During 2001-2009, of the 6,152 youth, 26.4% were diagnosed at 13-19 years age (0.3% at 13 years of age, 0.5% at 14 years of age, 1.2% at 15 years of age, 2.4% at 16 years of age, 4.7% at 17 years of age, 7.2% at 18 years of age, and 10.0% at age 19 years of age), and 73.6% at 20-24 years of age. For males, the predominant known HIV transmission risk was MSM (76.2%), and for females, heterosexual contact (53.8%).

Figure 11. Males Between 13 and 24 Years of Age (N=4,471), by Year of HIV Diagnosis (2001-2009) and Current HIV Clinical Status, as of December 31, 2009, NYC



As shown in Figure 11, the number of HIV diagnoses among males 13-19 years of age increased from 2001-2005 and plateaued from 2005-2009 and overall, 32% were diagnosed with AIDS. The number of HIV diagnoses among males 20-24 years of age increased during 2002-2008 and plateaued from 2008-2009 and overall, 31% were diagnosed with AIDS.

Figure 12. Females Between 13 and 24 Years of Age (N=1,681), by Year of HIV Diagnosis (2001-2009) and Current HIV Clinical Status, as of December 31, 2009, NYC



As shown in Figure 12, the number of HIV diagnoses among females 13-19 years of age decreased from 2001-2009 and overall, 31% were diagnosed with AIDS. Similarly, the number of HIV diagnoses among females 20-24 years of age decreased during 2001-2009 and overall, 31% 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=3,488), Diagnosed 2005-2009, 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=672)		(N=(2,077))		(N=259)		(N=480)	
	N	%	N	%	N	%	N	%
Stage 1: CD4 \geq 500 cells/mm ³ or \geq 29%	105	15.6%	409	19.8%	83	32.0%	149	31.0%
Stage 2a: CD4 350-499 cells/mm ³ or 21-28%	145	21.6%	426	20.5%	50	19.3%	87	18.1%
Stage 2b: CD4 200-349 cells/mm ³ or 14-20%	100	14.9%	287	13.9%	25	9.7%	56	11.7%
Stage 3: CD4 <200 cells/mm ³ or <14%	71	10.6%	247	11.9%	31	12.0%	56	11.7%
Stage unknown (within 6 months of diagnosis) ^(a)	251	37.3%	708	33.9%	70	27.0%	132	27.5%

^(a) Among these youth, the first available counts were within 6-12 months after HIV diagnosis for 174 (5.0%), 1-2 years after diagnosis for 254 (7.3%), >2 years after diagnosis for 319 (9.1%), and 414 (11.9%) 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, 11.6% were in Stage 3 within 6 months of their HIV diagnosis.

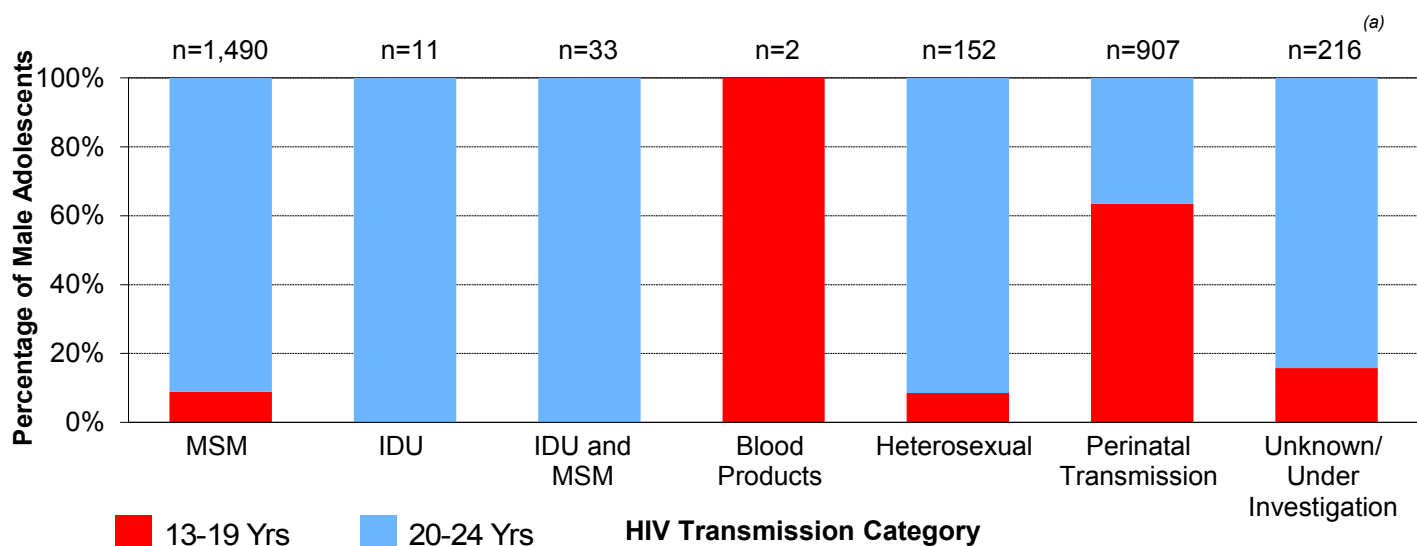
Table 9. Current HIV Clinical Status, by Age at HIV Diagnosis, Youth 13 and 24 Years of Age (N=3,488), Diagnosed 2005-2009, as of December 31, 2009, NYC

Current Clinical Status	Males (age at diagnosis)				Females (age at diagnosis)			
	13-19 years		20-24 years		13-19 years		20-24 years	
	(N=672)		(N=(2,077))		(N=259)		(N=480)	
	N	%	N	%	N	%	N	%
HIV only	423	62.9%	1346	64.8%	174	67.2%	319	66.46%
HIV, Stage unknown ^(a)	89	13.2%	240	11.6%	26	10.0%	57	11.88%
AIDS within 6 months of HIV diagnosis	83	12.4%	307	14.8%	40	15.5%	68	14.17%
AIDS within 6-12 months of HIV diagnosis	24	3.6%	60	2.9%	6	2.3%	10	2.08%
AIDS within >12 months of HIV diagnosis	53	7.9%	124	6.0%	13	5.0%	26	5.42%

^(a) As of December 31, 2010, among 2,674 youth classified as HIV only, 412 (11.8%) had no available CD4 counts available for classification of whom 8 died.

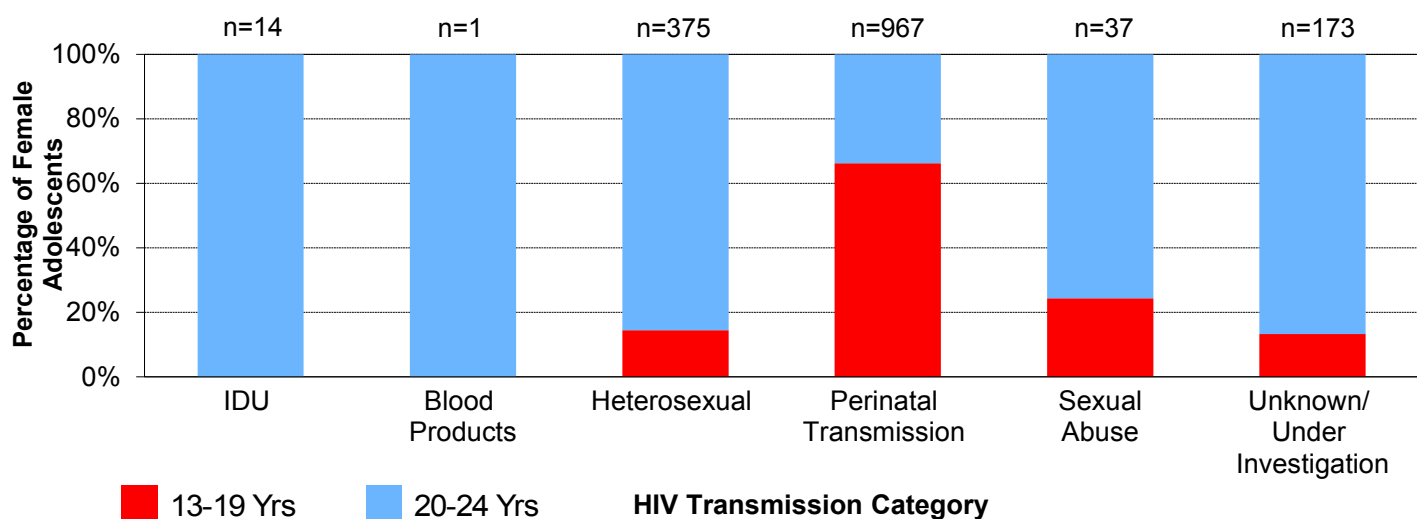
Among youth diagnosed 2005-2009, 23.3% have been diagnosed with AIDS either on the basis of an opportunistic infection or an AIDS-defining CD4 count as of December 31, 2009.

Figure 13. Males Between 13 and 24 Years of Age Living with HIV/AIDS (N=2,811), by HIV Transmission Risk Category and Current Age, as of December 31, 2009, NYC



^(a) Sexual abuse is reported for three persons.

Figure 14. Females Between 13 and 24 Years of Age Living with HIV/AIDS (N=1,567), by HIV Transmission Risk Category and Current Age, as of December 31, 2009, NYC



Figures 13 and 14 show data on 4,378 HIV-infected youth 13-24 years of age living with HIV/AIDS. They include 1,875 youth diagnosed before 13 years of age, for whom 99.5% had perinatal HIV transmission risk, and 2,503 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.

Of the 4,378 HIV-infected youth 13-24 years of age living with HIV/AIDS, 1,564 (35.7%) were diagnosed with AIDS (56.3% of those with perinatal HIV transmission risk, and 22.5% of the remaining youth).