

HIVAIDS

Special Surveillance Report

=====**Number 4**=====

Enhanced Perinatal Surveillance United States, 1999–2001



DEPARTMENT OF HEALTH AND HUMAN SERVICES
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Commentary

In February 1994, the Pediatric AIDS Clinical Trial Group Protocol 076 demonstrated that zidovudine (ZDV) could reduce the risk of mother-to-child HIV transmission from 25% to 8% (1). As a result, a United States Public Health Service (USPHS) task force issued recommendations in August 1994 for the use of ZDV to reduce perinatal HIV transmission. Included are treatment options for HIV-infected pregnant women and for infants born to HIV-infected women and recommendations for the medical monitoring of pregnant women and of infants who receive ZDV (2). In July 1995, the USPHS published recommendations for HIV counseling and voluntary testing for all pregnant women, which include advice to health care professionals on educating women about the importance of knowing their HIV status and the steps to preventing mother-to-child transmission (3). Revised recommendations for HIV screening for pregnant women, which further emphasized HIV testing as a routine part of prenatal care, including rapid testing during labor and delivery, were published in 2001 (4).

After the recommendations were published in 1995, CDC began conducting enhanced perinatal surveillance activities in 7 states to monitor the effect of the guidelines. Prevention indicators were assessed for the years before, during, and after the implementation of the guidelines (1993, 1995–1996). These indicators included receipt of prenatal care, HIV testing before or during pregnancy, and administration of ZDV to the mother antepartum and intrapartum and to the infant after birth. Data showed that an increased number of pregnant women and infants received ZDV after the recommendations were published. The proportion of infants infected with HIV decreased from 16% of those who did not receive ZDV to 8% of those who received ZDV (5).

In 1999, the Institute of Medicine issued a report entitled *Reducing the Odds: Preventing Perinatal Transmission of HIV in the United States*. In this report, the committee described factors that lead to perinatal transmission. They include the lack of prenatal care, HIV testing, and antiretroviral therapy (ART) for HIV-infected women and HIV-exposed infants (6). Also in 1999, Congress appropriated \$10 million per year for activities aimed at reducing perinatal HIV infection. These activities included enhanced perinatal HIV surveillance, funded in 24 state and local health departments (Figure 1); perina-

tal HIV prevention programs, funded in 16 state health departments; and partnerships with 6 national organizations (Figure 1, Note).

CDC implemented activities to further reduce perinatal transmission in areas with high prevalence. The Enhanced Perinatal Surveillance (EPS) project was created as an extension of routine surveillance activities. The overall goals of EPS are to (a) monitor the implementation of the USPHS recommendations for counseling and voluntary testing of pregnant women, the use of ZDV to prevent perinatal HIV transmission, and the effect of implementation on the trends of HIV disease among children; (b) to establish a surveillance system to collect data that enable states to respond to selected requirements of the Ryan White CARE Act; and (c) to assist in timely evaluation of perinatal prevention efforts.

The data in this report represent the 24 sites conducting EPS for live births during 1999–2001 (Figure 1). As of September 2003, a total of 8577 mother-infant pairs, representing 8448 pregnancies, had been reported to EPS. The report, comprising data for birth years 1999–2001, is organized in 3 sections: (a) demographic, behavioral, and clinical information on HIV-infected pregnant women who gave birth; (b) demographic, behavioral, and clinical information on those women, by race/ethnicity; and (c) clinical information on infants born to HIV-infected women. EPS methods are described in the Technical Notes.

The purpose of this report is to describe the population of HIV-infected women who gave birth during the years 1999, 2000, and 2001. These data provide essential information for further focusing perinatal prevention efforts in the United States. The data are presented by child's birth year so that readers can understand the characteristics of this population in a particular year. However, readers are cautioned against comparing the data for the birth years, as not all sites contributed data for all 3 years.

An estimated 6000 to 7000 HIV-infected women gave birth in the United States during the year 2000: an estimated 280–370 infants were infected (7). According to EPS data, 1 in 8 HIV-infected women did not receive prenatal care, and 1 in 9 was not tested for HIV before giving birth. One of the goals of Advancing HIV Prevention, CDC's recently launched initiative, is to further decrease perinatal HIV transmission (8). Strategies for accomplishing

this goal include (a) working with prevention partners to disseminate recommendations and support implementation, (b) providing training for providers and health departments in conducting prenatal testing, (c) promoting universal prenatal HIV screening according to the opt-out approach (HIV testing is part of the routine battery of prenatal tests unless a woman declines), and (d) promoting routine rapid testing during labor and delivery for women whose HIV status is still unknown. These and other strategies will be necessary to further reduce perinatal HIV transmission in the United States.

Highlights

- Most (86%) of the HIV-infected pregnant women reported to EPS were of races other than white: 69% were black, 16% were Hispanic, and 1% were Asian/Pacific Islander (Table 1).
- Over one half (54%) of the HIV-infected women were exposed to HIV through heterosexual contact (Table 1).
- Most (88%) of the HIV-infected women received some prenatal care. Of this proportion, 82% had made ≥ 3 visits. Of the total, 8% received no prenatal care. Receipt of prenatal care was unknown for 4% (Table 2).
- The mother's HIV status was known before the birth of 90% of the reported HIV-exposed infants (Table 3).
- Of the mother-infant pairs, 79% received ART during the prenatal period, and 77% received ART during labor. Of the infants born to HIV-infected women, 92% also received ART during the neonatal period (Table 4).
- One third (31%) of the HIV-infected women had an elective cesarean section (Table 5).
- One fifth (20%) of the HIV-infected women had used illicit drugs during pregnancy (Table 6).
- By race/ethnicity, the following proportions of HIV-infected women received prenatal care: 92% of white women, 91% of Hispanic women, and 87% of black women (Table 9).
- Similar proportions of HIV-infected women, by race/ethnicity, were tested before or during pregnancy: 91% of white women, 91% of black women, and 89% of Hispanic women (Table 10).
- ART during the prenatal period was received by 86% of white women, 81% of Hispanic women, and 78% of black women (Table 11).
- ART during labor was received by 82% of white women, 78% of Hispanic women, and 76% of black women (Table 11).
- Similar proportions of infants, categorized by mother's race/ethnicity, received ART after birth: 93% of infants born to white women, 92% of those born to Hispanic women, and 92% of those born to black women (Table 11).
- Of the 8448 HIV-infected women, 96% gave birth to 1 child (Table 14).
- Of the 8577 infants born to HIV-infected women, 397 (5%) were perinatally infected with HIV, 5468 (64%) were not infected, and 2712 (32%) remain in the indeterminate category (Table 16).

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5. CDC. CDC report regarding selected public health topics affecting women's health. *MMWR* 2001;50(No. RR-6):17–28.
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7. Fleming P, Lindegren ML, Byers RH, et al. Estimated number of perinatal HIV infections, United States, 2000. In: Program and abstracts of the XIV International Conference on AIDS; July 7–12, 2002; Barcelona, Spain. Abstract TuPeC4773.
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Suggested Reading

CDC. Current trends: classification system for human immunodeficiency virus (HIV) infection in children under 13 years of age. *MMWR* 1987;36:225–230, 235.

CDC. 1994 Revised classification system for human immunodeficiency virus infection in children less than 13 years of age; official authorized addenda: human immunodeficiency virus infection codes and official guidelines for coding and reporting ICD-9-CM. *MMWR* 1994;43(No. RR-12):1–19.

CDC. Update: perinatally acquired HIV/AIDS—United States, 1997. *MMWR* 1997;46(No. 46):1086–1092.

CDC. Success in implementing Public Health Service guidelines to reduce perinatal transmission of HIV—Louisiana, Michigan, New Jersey, and South Carolina, 1993, 1995, and 1996. *MMWR* 1998;47:688–691.

Lindegren ML, Byers RH, Thomas P, et al. Trends in perinatal transmission of HIV/AIDS in the United States. *JAMA* 1999;282:531–538.

Figure 1. Location of Enhanced Perinatal Surveillance Project Sites, 1999–2001



Facility type, by site, 1999–2001

Population-based

Alabama
 Connecticut
 Houston
 Louisiana
 Michigan
 Mississippi
 New Jersey
 New York

New York City
 North Carolina
 Ohio
 Puerto Rico^a
 South Carolina
 Tennessee
 Texas
 Virginia

Facility-based

California
 Chicago
 District of Columbia
 Florida^{a, b}
 Los Angeles
 Maryland^c
 Pennsylvania
 Philadelphia

Participants, by race/ethnicity and recruitment type

<u>Race/ethnicity</u>	<u>Population-based</u>		<u>Facility-based</u>	
	No.	%	No.	%
White, not Hispanic	742	11.6	205	9.9
Black, not Hispanic	4394	69.0	1405	67.7
Hispanic	987	15.5	387	18.7
Asian/Pacific Islander	36	0.6	17	0.8
American Indian/Alaska Native	15	0.2	9	0.4
Unknown	199	3.1	52	2.5
Total	6373	100.0	2075	100.0

Note. See the Technical Notes for an explanation of the recruitment type. The 16 perinatal HIV prevention program sites funded for 1999–2003 were California, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Louisiana, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, Puerto Rico, South Carolina, and Texas.

The 6 national organizations funded for 1999–2003 were CityMatCH, Omaha, Nebraska; Association of Maternal and Child Health Programs, Washington, DC; American Academy of Pediatrics, Chicago, Illinois; American College of Obstetricians and Gynecologists, Washington, DC; National Pediatric and Family HIV Resource Center, Newark, New Jersey; and AIDS Alliance for Children, Youth & Families, Washington, DC.

^a Data collected for birth years 2000–2001.

^b Florida Enhanced Perinatal Surveillance represents HIV-infected women who gave birth at selected facilities in Broward, Dade, and Palm Beach Counties.

^c Data collected for birth years 1999–2000.

Table 1. Number and percentage of pregnant women with HIV infection who gave birth to a live infant, by year of infant's birth and selected characteristics of mother, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	% ^b
	No.	% ^a	No.	% ^a	No.	% ^a		
Age at delivery (yrs)								
13–19	223	8	217	7	168	7	608	7
20–24	694	23	756	24	563	24	2013	24
25–34	1521	51	1563	51	1200	50	4284	51
≥35	471	16	510	17	421	18	1402	17
Unknown ^c	61	2	50	2	29	1	140	2
Race/ethnicity								
White, not Hispanic	352	12	322	10	273	12	947	11
Black, not Hispanic	2052	69	2118	68	1629	68	5799	69
Hispanic	435	15	533	17	406	17	1374	16
Asian/Pacific Islander	19	1	22	1	12	1	53	1
American Indian/Alaska Native	7	0	11	0	6	0	24	0
Unknown ^d	105	4	90	3	56	2	251	3
Exposure category								
Injection drug use	390	13	369	12	274	12	1033	12
Heterosexual contact ^e	1553	52	1805	58	1227	52	4585	54
Other ^f	1027	35	922	30	881	37	2830	34
Marital status								
Single	1361	46	1505	49	1185	50	4051	48
Married	323	11	448	15	368	16	1139	14
Separated	35	1	36	1	30	1	101	1
Divorced	39	1	39	1	27	1	105	1
Widowed	18	1	16	1	15	1	49	1
Unknown	1194	40	1052	34	757	32	3003	36
Mother's country of birth^g								
United States	1703	57	1818	59	1334	56	4855	58
El Salvador	10	0	13	0	13	1	36	0
Haiti	9	0	62	2	79	3	150	2
Honduras	12	0	20	1	16	1	48	1
Jamaica	2	0	15	1	12	1	29	0
Mexico	40	1	50	2	51	2	141	2
Other ^h	75	3	114	4	117	5	306	4
Unknown	1119	38	1004	32	760	32	2883	34
Totalⁱ	2970	35	3096	37	2382	28	8448	100

Note. Because of rounding, column percentages may not total 100.

^a Percentages represent proportions of the total number of HIV-infected women for a given birth year.

^b Percentages represent proportions of the total number of HIV-infected women for all 3 birth years.

^c Records in which mother's date of birth is missing.

^d Includes women of unknown race or multiple races.

^e With an HIV-infected person or a person with a known risk factor.

^f Includes hemophilia ($n = 10$), blood transfusion ($n = 77$), perinatal ($n = 13$), and risk not reported or not identified ($n = 2730$).

^g Countries with a minimum of 20 women in the cumulative total.

^h Includes countries with fewer than 20 women in the cumulative total.

ⁱ Includes 1 record for a mother who was 12 years of age.

Table 2. Prenatal care of HIV-infected women, by year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Prenatal care								
Yes	2559	86	2729	88	2109	89	7397	88
No	257	9	242	8	196	8	695	8
Unknown	154	5	125	4	77	3	356	4
Prenatal care visits^a								
1–2 visits	197	8	165	6	128	6	490	7
≥3 visits	2102	82	2295	84	1693	80	6090	82
Unknown	260	10	269	10	288	14	817	11
Subtotal	2559	35	2729	37	2109	29	7397	100
Total	2970		3096		2382		8448	

Note. Because of rounding, column percentages may not total 100.

^a Includes only women whose prenatal care was documented in their records.

Table 3. Timing of HIV testing of HIV-infected women, by year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Timing of mother's HIV test	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Before labor or before pregnancy	2597	87	2812	91	2176	91	7585	90
During labor	97	3	142	5	107	5	346	4
After delivery	66	2	63	2	47	2	176	2
Unknown	207	7	79	3	50	2	336	4
Total^a	2970		3096		2382		8448	100

Note. Because of rounding, column percentages may not total 100.

^a Includes 5 women who refused HIV testing.

Table 4. Receipt of antiretroviral therapy by HIV-infected women and HIV-exposed infants, by timing of receipt and year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Receipt of antiretroviral therapy	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Prenatal period								
Yes	2280	77	2470	80	1932	81	6682 ^a	79
No	530	18	473	15	349	15	1352	16
Unknown	160	5	153	5	101	4	414	5
Intrapartum period								
Yes	2190	74	2395	77	1888	79	6473	77
No	430	15	387	13	292	12	1109	13
Unknown	350	12	314	10	202	9	866	10
Neonatal period^b								
Yes	2627	89	2886	93	2219	93	7732	92
No	245	8	136	4	86	4	467	6
Unknown	98	3	74	2	77	3	249	3
Total	2970		3096		2382		8448	

Note. Because of rounding, column percentages may not total 100. The numbers of women receiving antiretroviral therapy prenatally and intrapartum are not mutually exclusive.

^a Includes 6338 women who received prenatal care and 344 women who did not receive prenatal care or for whom prenatal care is unknown.

^b Includes 1 HIV-exposed infant per pregnancy with the assumption that all infants of a multiple birth received the same antiretroviral therapy.

Table 5. Method of delivery for HIV-infected women, by year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Method of delivery	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Vaginal	1604	54	1487	48	1113	47	4204	50
Cesarean section								
Elective ^a	772	26	987	32	822	35	2581	31
Nonelective	499	17	530	17	367	15	1396	17
Type of decision unknown	58	2	57	2	50	2	165	2
Unknown	37	1	35	1	30	1	102	1
Total	2970		3096		2382		8448	

Note. Because of rounding, column percentages may not total 100.

^a Refers to a cesarean section that is performed before the membranes rupture and before labor begins. However, a planned cesarean section that was performed ahead of schedule because of unexpected circumstances was coded Elective.

Table 6. Substance use and toxicology screening of HIV-infected women during pregnancy, by year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Illicit drug use^a								
Yes	537	18	592	19	514	22	1643	20
No	1301	44	1703	55	1692	71	4696	56
Unknown	1132	38	801	26	176	7	2109	25
Alcohol/tobacco use^b								
Alcohol	68	2	61	2	62	3	191	2
Tobacco	174	6	198	6	165	7	537	6
Alcohol and tobacco	110	4	104	3	61	3	275	3
No	375	13	703	23	679	29	1757	21
Unknown	2243	76	2030	66	1415	59	5688	67
Toxicology screening^c								
Positive result	345	17	334	15	198	11	877	15
Negative result	415	21	472	21	357	20	1244	21
Not done	874	44	1043	46	926	53	2843	47
Unknown	367	18	401	18	277	16	1045	17
Subtotal	2001	33	2250	37	1758	29	6009	100
Total	2970		3096		2382		8448	

Note. Because of rounding, column percentages may not total 100. A woman may be represented in more than 1 category.

^a Included only if noted in medical or social work records during pregnancy: amphetamines, barbiturates, benzodiazepines, cocaine, crack, hallucinogens, heroin, marijuana, methadone, methamphetamines, opiates, and other drugs noted in the woman's records.

^b Only if noted in the medical or social work records during pregnancy.

^c Conducted during pregnancy. If more than 1 toxicology screening was done and any result was positive, only the positive test result was counted. Excludes 2439 records for which these data were not collected.

Table 7. Screening of HIV-infected women during pregnancy, by year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Screening ^a	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Group B strep								
Yes	1306	44	1379	45	1120	47	3805	45
No	212	7	269	9	208	9	689	8
Unknown	1452	49	1448	47	1054	44	3954	47
Hepatitis B (HBsAg)								
Yes	1688	57	1952	63	1554	65	5194	62
No	74	3	74	2	57	2	205	2
Unknown	1208	41	1070	35	771	32	3049	36
Rubella								
Yes	1656	56	1909	62	1489	63	5054	60
No	78	3	85	3	63	3	226	3
Unknown	1236	42	1102	36	830	35	3168	38
Syphilis								
Yes	1705	57	1963	63	1567	66	5235	62
No	64	2	73	2	61	3	198	2
Unknown	1201	40	1060	34	754	32	3015	36
Total	2970		3096		2382		8448	

Note. Because of rounding, column percentages may not total 100.

^a Only if screening performed during pregnancy. Each woman is represented 4 times, once for each condition.

Table 8. Number and percentage of HIV-infected women with positive test results for selected conditions, by year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Diagnosis	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Sexually transmitted disease^a								
Yes	609	21	699	23	628	26	1936	23
No	820	28	1126	36	948	40	2894	34
Unknown	1541	52	1271	41	806	34	3618	43
Selected condition^b								
Yes	476	16	554	18	539	23	1569	19
No	869	29	1172	38	943	40	2984	35
Unknown	1625	55	1370	44	900	38	3895	46
Total	2970		3096		2382		8448	

Note. Because of rounding, column percentages may not total 100. Percentages represent the total number of HIV-infected women with a positive test result during pregnancy.

^a Includes presumptive or definitive diagnoses, during pregnancy, of the following sexually transmitted diseases: chlamydia, genital herpes (primary herpes and active lesions), gonorrhea, hepatitis B, syphilis, and *Trichomonas*.

^b Includes presumptive or definitive diagnoses, during pregnancy, of the following conditions: bacterial vaginosis, group B strep, hepatitis C, and pelvic inflammatory disease.

Table 9. Prenatal care of HIV-infected women, by race/ethnicity and year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

	Year of infant's birth							
	1999		2000		2001		Subtotal	
	No.	%	No.	%	No.	%	No.	%
White, not Hispanic								
Prenatal care								
Yes	321	91	291	90	255	93	867	92
No	14	4	17	5	11	4	42	4
Unknown	17	5	14	4	7	3	38	4
Prenatal care visits^a								
1–2 visits	13	4	15	5	9	4	37	4
≥3 visits	271	84	249	86	217	85	737	85
Unknown	37	12	27	9	29	11	93	11
Subtotal	321		291		255		867	
Total	352		322		273		947	100
Black, not Hispanic								
Prenatal care								
Yes	1754	86	1860	88	1422	87	5036	87
No	207	10	184	9	160	10	551	10
Unknown	91	4	74	4	47	3	212	4
Prenatal care visits^a								
1–2 visits	160	9	118	6	97	7	375	8
≥3 visits	1433	82	1575	85	1136	80	4144	82
Unknown	161	9	167	9	189	13	517	10
Subtotal	1754		1860		1422		5036	
Total	2052		2118		1629		5799	100
Hispanic								
Prenatal care								
Yes	393	90	482	90	375	92	1250	91
No	25	6	33	6	21	5	79	6
Unknown	17	4	18	3	10	3	45	3
Prenatal care visits^a								
1–2 visits	15	4	28	6	17	5	60	5
≥3 visits	327	83	398	83	310	83	1035	83
Unknown	51	13	56	12	48	13	155	12
Subtotal	393		482		375		1250	
Total	435		533		406		1374	100

Note. Because of rounding, column percentages may not total 100. Asians/Pacific Islanders and American Indians/Alaska Natives were not included because of small numbers. See Table 2 for cumulative totals of all races.

^a Includes only those women who had documented prenatal care.

Table 10. Timing of HIV testing of HIV-infected women, by race/ethnicity and year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Timing of mother's HIV test	Year of infant's birth						Subtotal	
	1999		2000		2001			
	No.	%	No.	%	No.	%	No.	%
White, not Hispanic								
Before labor or before pregnancy	312	89	290	90	257	94	859	91
During labor	10	3	10	3	8	3	28	3
After delivery	9	3	15	5	3	1	27	3
Unknown	21	6	7	2	5	2	33	4
Total	352		322		273		947	100
Black, not Hispanic								
Before labor or before pregnancy	1824	89	1940	92	1493	92	5257	91
During labor	70	3	105	5	80	5	255	4
After delivery	40	2	32	2	32	2	104	2
Unknown	116	6	41	2	22	1	179	3
Total^a	2052		2118		1629		5799	100
Hispanic								
Before labor or before pregnancy	368	85	485	91	372	92	1225	89
During labor	14	3	24	5	15	4	53	4
After delivery	13	3	13	2	11	3	37	3
Unknown	39	9	11	2	8	2	58	4
Total^b	435		533		406		1374	100

Note. Because of rounding, column percentages may not total 100. Asians/Pacific Islanders and American Indians/Alaska Natives were not included because of small numbers. See Table 3 for cumulative totals of all races.

^a Includes 4 women who refused HIV testing.

^b Includes 1 woman who refused HIV testing.

Table 11. Receipt of antiretroviral therapy by HIV-infected women and HIV-exposed infants, by timing of receipt, race/ethnicity, and year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Receipt of antiretroviral therapy	Year of infant's birth						Subtotal	
	1999		2000		2001			
	No.	%	No.	%	No.	%	No.	%
White, not Hispanic								
Prenatal period								
Yes	294	84	274	85	243	89	811	86
No	37	11	37	12	23	8	97	10
Unknown	21	6	11	3	7	3	39	4
Intrapartum period								
Yes	278	79	261	81	240	88	779	82
No	40	11	31	10	23	8	94	10
Unknown	34	10	30	9	10	4	74	8
Neonatal period^a								
Yes	321	91	301	94	261	96	883	93
No	22	6	17	5	4	2	43	5
Unknown	9	3	4	1	8	3	21	2
Total	352		322		273		947	
Black, not Hispanic								
Prenatal period								
Yes	1569	77	1673	79	1304	80	4546	78
No	391	19	346	16	268	17	1005	17
Unknown	92	5	99	5	57	4	248	4
Intrapartum period								
Yes	1516	74	1634	77	1273	78	4423	76
No	301	15	276	13	211	13	788	14
Unknown	235	12	208	10	145	9	588	10
Neonatal period^a								
Yes	1833	89	1978	93	1512	93	5323	92
No	162	8	94	4	63	4	319	6
Unknown	57	3	46	2	54	3	157	3
Total	2052		2118		1629		5799	
Hispanic								
Prenatal period								
Yes	338	78	437	82	340	84	1115	81
No	72	17	76	14	50	12	198	14
Unknown	25	6	20	4	16	4	61	4
Intrapartum period								
Yes	331	76	416	78	330	81	1077	78
No	73	17	69	13	51	13	193	14
Unknown	31	7	48	9	25	6	104	8
Neonatal period^a								
Yes	379	87	502	94	387	95	1268	92
No	43	10	21	4	17	4	81	6
Unknown	13	3	10	2	2	1	25	2
Total	435		533		406		1374	

Note. Because of rounding, column percentages may not total 100. The numbers of women receiving antiretroviral therapy prenatally and intrapartum are not mutually exclusive. Asians/Pacific Islanders and American Indians/Alaska Natives were not included because of small numbers. See Table 4 for cumulative totals of all races.

^a Includes 1 HIV-exposed infant per pregnancy with the assumption that all infants of a multiple birth received the same antiretroviral therapy.

Table 12. Method of delivery for HIV-infected women, by race/ethnicity and year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Method of delivery	Year of infant's birth						Subtotal	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
White, not Hispanic								
Vaginal	145	41	150	47	114	42	409	43
Cesarean section								
Elective ^a	131	37	116	36	107	39	354	37
Nonelective	62	18	44	14	41	15	147	16
Type of decision unknown	9	3	9	3	8	3	26	3
Unknown	5	1	3	1	3	1	11	1
Total	352		322		273		947	100
Black, not Hispanic								
Vaginal	1169	57	1053	50	790	49	3012	52
Cesarean section								
Elective ^a	517	25	665	31	549	34	1731	30
Nonelective	320	16	357	17	241	15	918	16
Type of decision unknown	35	2	30	1	34	2	99	2
Unknown	11	1	13	1	15	1	39	1
Total	2052		2118		1629		5799	100
Hispanic								
Vaginal	229	53	227	43	184	45	640	47
Cesarean section								
Elective ^a	99	23	181	34	148	37	428	31
Nonelective	95	22	107	20	67	17	269	20
Type of decision unknown	9	2	15	3	7	2	31	2
Unknown	3	1	3	1	0	0	6	0
Total	435		533		406		1374	100

Note. Because of rounding, column percentages may not total 100. Asians/Pacific Islanders and American Indians/Alaska Natives were not included because of small numbers. See Table 5 for cumulative totals of all races.

^a Refers to a cesarean section that is performed before the membranes rupture and before labor begins. However, a planned cesarean section that was performed ahead of schedule because of unexpected circumstances was coded Elective.

Table 13. Substance use and toxicology screening of HIV-infected women during pregnancy, by race/ethnicity and year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

	Year of infant's birth							
	1999		2000		2001		Subtotal	
	No.	%	No.	%	No.	%	No.	%
White, not Hispanic								
Illicit drug use^a								
Yes	78	22	77	24	67	25	222	23
No	163	46	193	60	189	69	545	58
Unknown	111	32	52	16	17	6	180	19
Alcohol/tobacco use^b								
Alcohol	10	3	4	1	9	3	23	2
Tobacco	40	11	44	14	43	16	127	13
Alcohol and tobacco	9	3	17	5	6	2	32	3
No	35	10	46	14	65	24	146	15
Unknown	258	73	211	66	150	55	619	65
Toxicology screening^c								
Positive result	48	19	39	15	26	13	113	16
Negative result	48	19	52	20	39	19	139	19
Not done	116	46	126	49	108	53	350	49
Unknown	43	17	43	17	31	15	117	16
Subtotal	255	36	260	36	204	28	719	100
Total	352		322		273		947	
Black, not Hispanic								
Illicit drug use^a								
Yes	404	20	428	20	349	21	1181	20
No	940	46	1183	56	1172	72	3295	57
Unknown	708	35	507	24	108	7	1323	23
Alcohol/tobacco use^b								
Alcohol	54	3	47	2	39	2	140	2
Tobacco	126	6	116	6	92	6	334	6
Alcohol and tobacco	93	5	71	3	48	3	212	4
No	294	14	525	25	469	29	1288	22
Unknown	1485	72	1359	64	981	60	3825	66
Toxicology screening^c								
Positive result	266	18	264	17	154	12	684	16
Negative result	327	23	357	23	262	21	946	22
Not done	615	42	715	45	643	51	1973	46
Unknown	244	17	251	16	198	16	693	16
Subtotal	1452	34	1587	37	1257	29	4296	100
Total	2052		2118		1629		5799	

Table 13. Continued

	Year of infant's birth						Subtotal	
	1999		2000		2001			
	No.	%	No.	%	No.	%	No.	%
Hispanic								
Illicit drug use^a								
Yes	34	8	71	13	89	22	194	14
No	145	33	273	51	289	71	707	52
Unknown	256	59	189	36	28	7	473	34
Alcohol/tobacco use^b								
Alcohol	2	1	7	1	12	3	21	2
Tobacco	7	2	35	7	29	7	71	5
Alcohol and tobacco	4	1	12	2	7	2	23	2
No	41	9	123	23	135	33	299	22
Unknown	381	88	356	67	223	55	960	70
Toxicology screening^c								
Positive result	18	9	23	7	16	6	57	7
Negative result	31	16	52	16	49	19	132	17
Not done	104	53	170	53	158	60	432	55
Unknown	42	22	79	24	40	15	161	21
Subtotal	195	25	324	41	263	34	782	100
Total	435		533		406		1374	

Note. Because of rounding, column percentages may not total 100. Asians/Pacific Islanders and American Indians/Alaska Natives were not included because of small numbers. See Table 6 for cumulative totals of all races.

^a Included only if noted in medical or social work records during pregnancy: amphetamines, barbiturates, benzodiazepines, cocaine, crack, hallucinogens, heroin, marijuana, methadone, methamphetamines, opiates, and other drugs noted in the woman's records.

^b Only if noted in the medical or social work records during pregnancy.

^c Conducted during pregnancy. If more than 1 toxicology screen was done and any result was positive, only the positive test result was counted. Excludes 2439 records for which these data were not collected.

Table 14. Type of birth, by year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Birth type	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Single	2847	96	2973	96	2317	97	8137	96
Twin	56	2	80	3	46	2	182	2
Triplet or more	1	0	0	0	0	0	1	0
Unknown	66	2	43	1	19	1	128	2
Total	2970		3096		2382		8448	100

Note. Because of rounding, column percentages may not total 100. Values represent the total number of HIV-infected women who gave birth to a live infant.

Table 15. Number and percentage of infants receiving prophylaxis against *Pneumocystis carinii* pneumonia, by year of birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

Prophylaxis received	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Yes	1186	39	1255	40	909	38	3350	39
No	416	14	497	16	395	16	1308	15
Unknown	1409	47	1401	44	1109	46	3919	46
Total	3011		3153		2413		8577	100

Note. Because of rounding, column percentages may not total 100. Prophylaxis is recommended for children infected with, or perinatally exposed to, HIV. The recommended medication is trimethoprim/sulfamethoxazole (TMP-SMX); medications such as dapsone or aerosolized pentamidine can be used if TMP-SMX is not well tolerated (CDC, 1995 Revised guidelines for prophylaxis against *Pneumocystis carinii* pneumonia for children infected with or perinatally exposed to human immunodeficiency virus, *MMWR* 1995;44[No. RR-4]:1–11).

Table 16. Number and percentage of infants infected with HIV through mother-to-child transmission, as of October 2003, by year of infant's birth, 1999–2001—24 areas conducting Enhanced Perinatal Surveillance

HIV status	Year of infant's birth						Cumulative total	
	1999		2000		2001		No.	%
	No.	%	No.	%	No.	%		
Infected ^a	171	6	130	4	96	4	397	5
Not infected	1924	64	2056	65	1488	62	5468	64
Indeterminate ^b	916	30	967	31	829	34	2712	32
Total	3011		3153		2413		8577	100

Note. Because of rounding, column percentages may not total 100.

^a Includes children whose HIV diagnosis was made according to the January 2000 HIV case definition or whose AIDS diagnosis was made according to the August 1987 pediatric AIDS case definition.

^b Refers to the classification of children born to an HIV-positive mother but whose laboratory test results were insufficient for a classification of infected or not infected with HIV (reference 3: CDC, *MMWR* 1999;48[No. RR-13]:1–31).

Technical Notes

This special surveillance report describes the data collected from the 24 areas in the United States that were funded to conduct the Enhanced Perinatal Surveillance (EPS) project. These project sites include 18 state health departments and 6 city health departments that expect to serve annually at least 60 HIV-infected women who will give birth (number determined by the 1994 Survey of Childbearing Women [SCBW]). This project constitutes a population-based surveillance system for HIV-infected mothers and their perinatally exposed children. Data were collected by using both the HIV/AIDS case report form and a supplemental EPS data abstraction form. After the removal of personally identifying information, the data collected for EPS were submitted to CDC (see Figure 1 for list of participating sites).

Mother-infant pairs were identified through several means: pediatric HIV/AIDS surveillance, reports of HIV-infected pregnant women to surveillance, birth registry matching, and hospital discharge summaries. If the laws and regulations allowed, sites conducted a match with the HIV/AIDS Reporting System (HARS) and the birth registry for the birth years 1999–2001 to obtain a list of all possible mother-infant pairs. A small proportion of women who had not been tested or who did not disclose their HIV status during pregnancy were identified through their child's HIV infection status. This report does not include HIV-infected women who were not reported or their HIV-exposed children who tested negative or were not tested but presumed to be negative.

Methods used by the sites to collect these data required additional linkage of mother-infant pairs and review of the records of both mother and infant. These records include prenatal care records, maternal HIV clinic records, labor and delivery records, pediatric birth records, pediatric HIV medical records, other pediatric medical records, birth certificates, death certificates, and health department records. The site-specific methods for collecting these data, however, differed to comply with local HIV reporting laws and regulations. Using the EPS abstraction forms, the sites collected information on the mother: prenatal care, HIV testing history, receipt of antiretroviral therapy during pregnancy, substance use, and clinical information. The sites also collected birth history and pediatric history for the infant and

then conducted follow-up of each infant every 6 months until the infant's HIV status was determined.

EPS sites conducted the project as population-based or facility-based. Population-based sites were defined as those that included all HIV-exposed infants born to HIV-infected mothers within the geographic area defined by the project (e.g., state or city). Medical records for all HIV-exposed infants and HIV-infected mothers were abstracted from all facilities within the defined geographic area. Facility-based sites conducted the project in selected facilities within the geographic area defined by the project. The selected facilities were those serving large numbers of HIV-infected women (e.g., delivery hospitals or high-risk prenatal clinics) and HIV-exposed children (e.g. specialty pediatric clinics, pediatric HIV clinics). The medical records for HIV-exposed infants and HIV-infected mothers were abstracted from the facilities selected in these geographic areas.

For 7 sites piloting these enhanced surveillance methods for births during 1993–1997, completeness of ascertainment of HIV-infected mothers and HIV-exposed infants was 90% (1). For data reported here, the estimated completeness of ascertainment of mother-infant pairs, based on the 1994 SCBW estimates for each participating site, is 63%. Use of the 1994 SCBW to estimate completeness assumes that the number of HIV-infected women who gave birth during 1999–2001 is the same as the number who gave birth during 1994. This assumption may not be valid. After 1994, the SCBW was conducted by 10 sites, all of which used state-specific funds to estimate the prevalence of births to HIV-infected women. At 1 site, the prevalence estimate increased 3%; however, at the other 9 sites, prevalence estimates declined substantially (range, 5% to 60%). When the updated prevalence estimates for the 10 sites are included, completeness of EPS reporting improves to 81%.

Most project areas collected data on HIV-exposed infants (and their mothers) born during 1999, 2000, and 2001 (see Figure 1 for participating sites and birth years for data collection). All infants born in the state, city, or facility specified as the project site have been included. These include each infant of a multiple birth (e.g., twins, triplets).

Tabulation and Presentation of Data

Data in this report are provisional. This report includes EPS reports received by CDC through September 8, 2003. All data tables are stratified by year of infant's birth. Data on the infants include each infant who was 1 of a multiple birth; the mother is counted only once per pregnancy. The mother, however, may be represented more than once if she gave birth more than once during the project period.

Table 1 shows the numbers and percentages of HIV-infected women who gave birth to a live infant and who were reported to EPS. The race/ethnicity categories in this table are the categories used before the implementation of Office of Management and Budget (OMB) Statistical Policy Directive 15. These revised standards, which were to be implemented by January 1, 2003, superseded the 1977 standards and reflect a change in federal policy on the collection of data on race and ethnicity. Because data for this report were compiled from births to HIV-infected women during 1999, 2000, and 2001, the race/ethnicity data are presented as they are in HIV/AIDS surveillance data collected before January 1, 2003. For EPS reports received after January 1, 2003, race and ethnicity data were collected in accordance with OMB Statistical Policy Directive 15.

For the purposes of this report, women with HIV infection or AIDS are counted only once in a hierarchy of exposure categories. If a woman is reported as having more than 1 mode of exposure, she is classified in the exposure category listed first in the hierarchy. Women whose exposure category is classified as heterosexual contact are those who reported specific heterosexual contact with a person with, or at increased risk for, HIV infection (e.g., an injection drug user) (2).

Tables 9–13 show data by infant's birth year and the mother's race/ethnicity. The cumulative totals reflect all racial/ethnic categories for the 3 birth cohort years. Because of small numbers for Asians/Pacific Islanders and American Indians/

Alaska Natives, Tables 9–13 do not show data for these groups.

Tables 15 and 16 show data by the number of infants, including all single and multiple births. Because these tables include all children born to HIV-infected women, the number of infants exceeds the number of women who gave birth during the 3-year period. Thus, the totals in these tables differ from those in Tables 1–14.

The EPS protocol includes follow-up of all HIV-exposed infants until HIV status can be determined. The revised HIV surveillance case definition for adults and children was published in December 1999 and became effective January 1, 2000. For surveillance purposes, a child younger than 18 months and born to an HIV-infected woman can be classified as not infected only if virologic or antibody testing was performed during specified periods. If the tests were not performed or were not performed during the specified time periods, the child's status is classified as indeterminate (3). In this report, the status of approximately one third (32%) of the total number of infants is indeterminate. It is presumed that many of these infants are not infected with HIV, but their status is indeterminate because the criteria for classification as not infected have not been met. Therefore, caution must be used in interpreting the perinatal HIV transmission rates. Follow-up of these indeterminate cases is ongoing.

References

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