Thirty Years of HIV in the United States

Thirty years ago this week, the MMWR reported five diagnoses of *Pneumocystis carinii* pneumonia (PCP) in previously healthy young homosexual men in Los Angeles. One month later, Kaposi's sarcoma and additional diagnoses of PCP in men who have sex with men (MSM) were reported (Figure 1). Diagnoses among MSM continued and were followed in rapid succession with reports of diagnoses among injection drug users (IDU), their female sex partners, persons who received blood and blood product transfusions, and newborns of sick mothers. Within one year of the initial case reports, the risk profile was understood to be similar to that for Hepatitis B virus, and the disease had a new name, Acquired Immune Deficiency Syndrome, or AIDS. Within two years, the causative agent had been identified, Human Immunodeficiency Virus, or HIV. In March 1985 the first enzyme-linked immunoassay to screen donated units of blood and plasma for HIV was introduced. And by late 1985, nearly 16,500 persons had received an AIDS diagnosis (*1*). This report uses data from the National HIV Surveillance System to describe the history of the HIV epidemic in the United States between 1981 through 2008. The results show the dramatic impact of HIV in the first 15 years of the epidemic with new AIDS diagnoses and deaths increasing to highs of 75,460 in 1992 and 50,630 in 1995 respectively. With the introduction of highly active antiretroviral therapy (HAART) in late 1995 and early 1996, both AIDS diagnoses and deaths declined sharply between 1996 through 1998, and have remained stable at about 38,000 and 17,000 per year, respectively, between 1999 through 2008. Since 1981, a steady rise in the number of persons living with AIDS was observed. By contrast, the number of persons living with HIV infection grew more rapidly. At the end of 2008, more than 1.1 million persons were estimated to be living with HIV infection and 20% were undiagnosed. These results indicate that reducing HIV risk behaviors, increasing opportunities for routine HIV screening, and enhancing utilization of care, treatment, and prevention services remain public health challenges and demand renewed attention, and commitment to the goals of the National HIV/AIDS Strategy (*2*).

HIV infection is notifiable in all 50 states and the District of Columbia (DC). For this report, AIDS data reported to the CDC by the end of June 2010 from 50 states and DC were analyzed to determine the annual number of AIDS diagnoses, deaths among persons with AIDS, and persons living with AIDS from 1981 through 2008. Surveillance data were statistically adjusted for reporting delays and missing risk-factor information, but not for incomplete reporting (*3*). Additionally, using HIV and AIDS data for persons ≥ 13 years of age at diagnosis from 40 states that have had confidential name-based HIV infection reporting since at least January 2006 and AIDS data from 11 areas, we estimated the annual number of persons living with HIV infection using extended back-calculation (*4*). The number of undiagnosed HIV infections was calculated by subtracting diagnosed HIV prevalence from the estimated overall HIV prevalence. HIV prevalence rates per 100,000 population were calculated based on official postcensal estimates for 2009 from the U.S. Census Bureau (*5*).

From 1981 through 1992, the estimated number of adults and adolescents newly diagnosed with AIDS grew rapidly from 318 to 75,457 (Figure 2). The estimated number of deaths among adults and adolescents with AIDS also rapidly increased from 451 in 1981 to 50,628 in 1995. These increases were followed by a decline of 45% in AIDS diagnoses from 1993 (75,263) through 1998 (41,462) and 63% in deaths from 1995 (50,628) through 1998 (18,851). The declines began to level off in 1999 and diagnoses and deaths have remained fairly stable at about 38,279 AIDS diagnoses and 17,489 deaths per year between 1999 through 2008. Consequently, the estimated number of adults and adolescents living with AIDS more than doubled from 1996 (219,318) to 2008 (479,161). At the end of 2008, 1,178,350 adults and adolescents were estimated to be living with HIV, including 236,400 (20%) whose infection had not been diagnosed (Table 1). Men represented the majority (75.0%) of the persons living with HIV and, of them, a large percentage (65.7%) were MSM. HIV prevalence rates among blacks/African Americans and Hispanics/Latinos were nearly eight (1,819.0 per 100,000 population) and two and a half (592.9 per 100,000 population) times the rate among whites (238.4 per 100,000 population) respectively. The percentage of HIV prevalence that was undiagnosed was notably higher among persons younger than 35 years old (58.9% for 13 – 24 and 31.5% for 25 – 34), heterosexual males (25.0%), MSM (22.1%) and racial/ethnic minorities (20.9%).

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Editorial Note

Three decades after the events that heralded the beginning of the US epidemic, we have witnessed many successes and failures. Scientific progress in immunology, virology, pharmacology and clinical management has occurred at a faster pace than ever before in history. HIV is no longer inevitably fatal. HAART suppresses viral replication for decades, allowing people to enjoy longer and healthier lives and making them less infectious to others (*6, 7*). HIV-related mortality, perinatal transmission, and HIV diagnoses among injection drug users have plummeted(*3*). Nucleic acid testing can now detect HIV as early as nine days after infection, ensuring the safety of the blood and organ supply and providing opportunities for early detection and disease intervention, including partner notification (*8*). Pre-exposure prophylaxis (PrEP) and topical microbicides are promising biomedical interventions (*9*). Existing HIV prevention efforts are estimated to have prevented more than 350,000 HIV infections between 1991 and 2006, and have averted more than $125 billion in medical care costs (*10*).

These successes have been matched by a failure to fully realize the potential of prevention. Today's MMWR presents some sobering statistics. Despite our longstanding knowledge of how HIV is transmitted and prevented, a total of 1,074,364 people have been diagnosed with AIDS nationwide and by the end of 2008 more than half (594,496) had lost their lives to the disease (*3*). CDC estimates about 50,000 people are infected each year, more than half are MSM, and almost half are black/African American (*4*), and today more than one million people are living with HIV in the United States; roughly 20% of whom are undiagnosed. What lessons can we learn from these numbers?

Surveillance data show us that the proportion of diagnoses attributable to MSM continues to grow. MSM accounted for 57% of all persons and 75% of men diagnosed with HIV in 2009 in the 40 states with long-standing confidential name-based HIV infection reporting, a proportion that has grown steadily during this decade (*3*). Syphilis and gonorrhea are endemic among MSM; outbreaks and/or hyperendemic sexually transmitted infection (STI) have been reported from many cities and communities which are also HIV epicenters.

Late diagnosis of HIV is common. Among persons newly diagnosed with HIV in 2008 in the 40 states, 33% developed AIDS within one year of initial diagnosis of HIV (*3*). These individuals were likely infected an average of 10 years prior to diagnosis. During this time they have missed opportunities to obtain available medical care and to prevent unwitting transmission to others; they are also at higher risk of short-term mortality than persons diagnosed earlier in the course of infection. Initiation of care after diagnosis is suboptimal (more than 25% of newly diagnosed persons do not initiate timely HIV-related primary care). Of those initiating care, less than half attend care appointments every six months for monitoring as recommended by the US Department of Health and Human Services.

The National HIV/AIDS Strategy (*2*) has three primary goals: reduce HIV incidence, increase access to care and improve health outcomes for people living with HIV, and reduce disparities. It refocuses our efforts toward intensified HIV prevention efforts in communities where HIV is most heavily concentrated, using a combination of effective strategies. It seeks to optimize entry and retention in care and maintenance of viral suppression and eliminate racial disparities in these outcomes. CDC in partnership with state and local health departments will use surveillance data to evaluate the measurable outcomes of the strategy such as new diagnoses, early detection, entry into care, retention in care, and viral suppression, as well as progression to AIDS and death.

We observe this thirty-year commemoration with respectful remembrance of those who have died, recognition of those who have dedicated their lives to fighting this disease, sober reflection on our successes and failures, and renewed hope and commitment to a strategy that is proactive, driven by hard evidence, and evaluated by the outcomes that count – incidence, engagement in care, and reductions in disparities.

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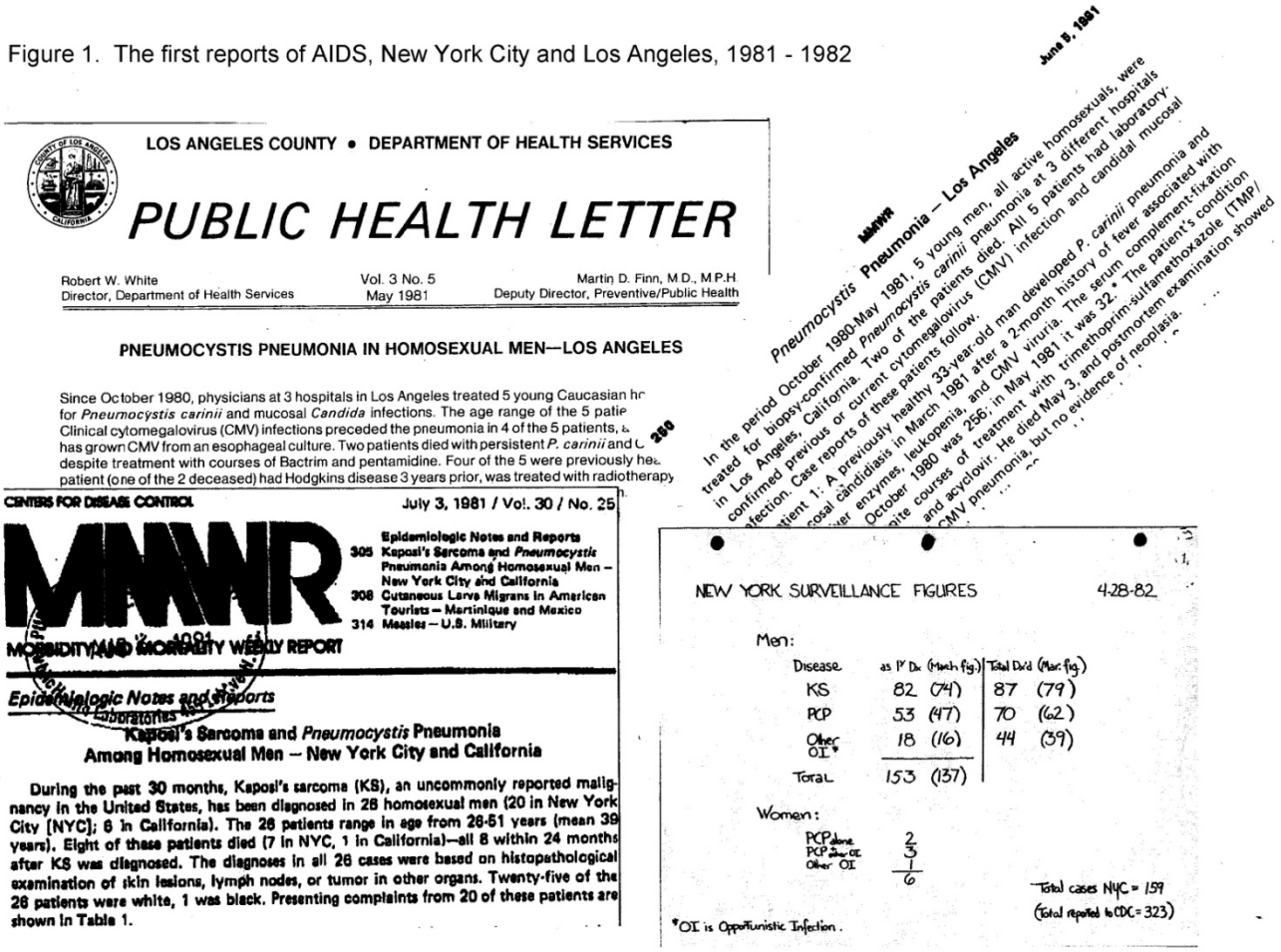
Figure 1. The first reports of AIDS, New York City and Los Angeles, 1981 - 1982



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PUBLIC HEALTH LETTER

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PNEUMOCYSTIS PNEUMONIA IN HOMOSEXUAL MEN—LOS ANGELES

Since October 1980, physicians at 3 hospitals in Los Angeles treated 5 young Caucasian ho
for *Pneumocystis carinii* and mucosal *Candida* infections. The age range of the 5 patie
Clinical cytomegalovirus (CMV) infections preceded the pneumonia in 4 of the 5 patients, a
has grown CMV from an esophageal culture. Two patients died with persistent *P. carinii* and C
despite treatment with courses of Bactrim and pentamidine. Four of the 5 were previously hea
patient (one of the 2 deceased) had Hodgkins disease 3 years prior, was treated with radiotherapy

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MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Kaposi's Sarcoma and *Pneumocystis* Pneumonia Among Homosexual Men -- New York City and California

During the past 30 months, Kaposi's sarcoma (KS), an uncommonly reported malignancy in the United States, has been diagnosed in 26 homosexual men (20 in New York City [NYC]; 6 in California). The 26 patients range in age from 26-51 years (mean 39 years). Eight of these patients died (7 in NYC, 1 in California)—all 8 within 24 months after KS was diagnosed. The diagnoses in all 26 cases were based on histopathological examination of skin lesions, lymph nodes, or tumor in other organs. Twenty-five of the 26 patients were white, 1 was black. Presenting complaints from 20 of these patients are shown in Table 1.

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Pneumocystis Pneumonia -- Los Angeles

In the period October 1980-May 1981, 5 young men, all active homosexuals, were treated for biopsy-confirmed *Pneumocystis carinii* pneumonia at 3 different hospitals in Los Angeles, California. Two of the patients died. All 5 patients had laboratory-confirmed previous or current cytomegalovirus (CMV) infection and candidal mucosal infection. Case reports of these patients follow.

Patient 1: A previously healthy 33-year-old man developed *P. carinii* pneumonia and mucosal candidiasis in March 1981 after a 2-month history of fever associated with liver enzymes, leukopenia, and CMV viruria. The serum complement-fixation October 1980 was 256; in May 1981 it was 32.* The patient's condition despite courses of treatment with trimethoprim-sulfamethoxazole (TMP/ and acyclovir. He died May 3, and postmortem examination showed CMV pneumonia, but no evidence of neoplasia.

NEW YORK SURVEILLANCE FIGURES 4-28-82

Men:

Disease	as 1st Dx (March fig.)	Total D'x'd (March fig.)
KS	82 (74)	87 (79)
PCP	53 (47)	70 (62)
Other OI*	18 (16)	44 (39)
Total	153 (137)	

Women:

PCP alone	2
PCP + other OI	3
Other OI	1
	6

Total cases NYC = 159
(Total reported to CDC = 323)

*OI is Opportunistic Infection.

Table 1. Estimated number and rate of persons ages ≥ 13 years living with HIV infection, and number and percent undiagnosed, by selected characteristics, 2008 – United States[*]

	Persons Living with HIV				Persons Undiagnosed		
	No.	**95% CI[†]**	**Rate[§]**	**95% CI**	**No.**	**95% CI**	**%**
Total	1,178,350	1,128,350-1,228,500	469.4	449.5-489.4	236,400	224,900-247,900	20.1
Sex							
Male	883,450	841,450-925,450	719.5	685.3-753.7	182,450	172,450-192,450	20.6
Female	294,900	269,900-319,900	230.0	210.5-249.5	53,950	47,950-59,950	18.3
Age group (in years)							
13 – 24	68,600	56,000-80,600	134.1	109.5-157.6	40,400	35,400-45,400	58.9
25 – 34	180,600	160,600-200,600	440.9	392.1-489.8	56,800	51,300-62,300	31.5
35 – 44	357,500	327,500-387,500	846.3	775.3-917.4	64,300	58,300-70,300	18.0
45 – 54	385,400	353,400-417,400	871.3	798.9-943.6	53,200	48,200-58,200	13.8
55 – 64	147,700	132,770-162,770	439.3	394.9-484.1	17,600	15,600-19,600	11.9
≥ 65	38,400	34,400-42,400	99.0	88.7-109.3	4,100	3,600-4,600	10.7
Race							
American Indian/Alaska Native	5,000	3,500-6,500	268.8	188.2-349.4	1,250	650-1,850	25.0
Asian/Pacific Islander	16,750	14,250-19,250	147.0	125.0-168.9	4,350	2,850-4,850	26.0
Black/African American	545,000	513,000-577,000	1,819.0	1,712.2-1,925.8	116,750	108,650-124,850	21.4
Hispanic/Latino	205,400	186,400-224,400	592.9	538.0-647.7	38,900	33,900-43,900	18.9
White	406,000	378,000-434,000	238.4	221.9-254.8	75,200	70,700-81,700	18.5
Transmission Category							
MSM	580,000	540,000-620,000	-	-	128,400	119,900-136,900	22.1
IDU – male	131,600	114,600-148,600	-	-	18,900	15,600-22,200	14.4
IDU – female	73,900	62,900-84,900	-	-	10,400	8,000-12,800	14.1
MSM and IDU	55,200	45,200-65,200	-	-	6,200	4,200-8,200	11.2
Heterosexual contact[¶] – male	110,900	95,900-125,900	-	-	27,700	23,700-31,700	25.0
Heterosexual contact – female	217,400	195,400-239,400	-	-	42,900	37,900-47,900	19.7
Other[**]	9,350	7,850-10,850	-	-	1,900	1,100-2,700	20.3

[*]Estimates derived using extended back-calculation on HIV and AIDS data for persons ≥ 13 years of age at diagnosis from 40 states that have had confidential name-based HIV infection reporting since at least January 2006 and AIDS data from 11 areas (California, Delaware, Hawaii, Maryland, Massachusetts, Montana, Oregon, Rhode Island, Vermont, Washington, and DC).
[†]CI, confidence interval
[§]Per 100,000 population. Rates for transmission category subgroups were not calculated because population denominators were unavailable.
[¶]Heterosexual contact with a person known to have, or to be at high risk for, HIV infection
[**]Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.