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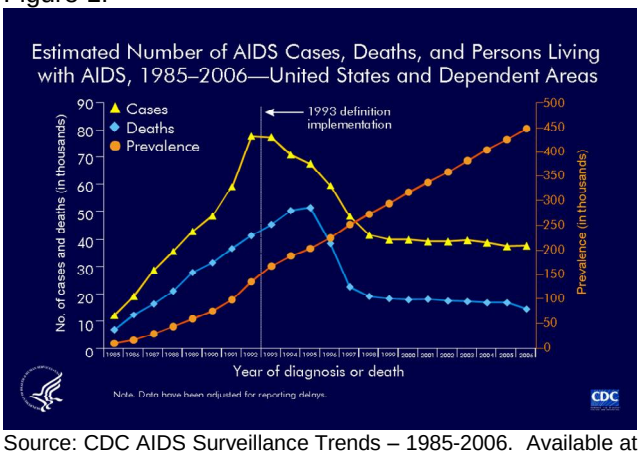
HIV/AIDS and Opportunistic Infections

AIDS Trends and the Impact Therapy

Since 1996 when the use of highly active antiretroviral therapy (HAART) began, the natural history and progression of HIV has changed dramatically. The incidence of AIDS and deaths due to HIV has decreased considerably throughout the U.S., while the number of people able to live with HIV has continued to increase steadily (Figure 1).

Figure 1.



Source: CDC AIDS Surveillance Trends – 1985-2006. Available at http://www.cdc.gov/hiv/topics/surveillance/resources/slides/trends/index.htm

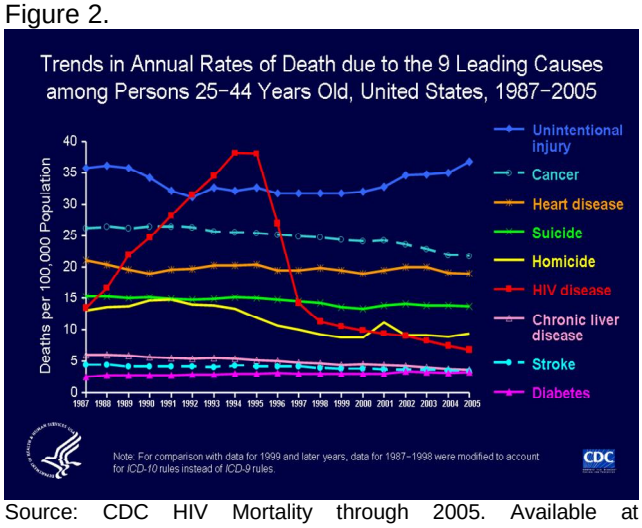
According to the Centers for Disease Control and Prevention (CDC), HIV was the leading cause of death among 25-44 year olds in the U.S. from 1992 to 1995. By 1998, deaths due to HIV dropped to fifth (Figure 2). This significant change has been attributed to HAART and proper preventive therapy for opportunistic infections (OIs).

Opportunistic Infections

Opportunistic infections cause disease in HIV-infected persons by taking advantage of the opportunity provided by a weakened immune system. Before identification of HIV, people were diagnosed with AIDS based solely on the presentation of certain OIs. After discovery of the virus, the AIDS case definition was revised to include a total of 23 new AIDS-defining OI conditions. The case definition was again revised in 1993 to add invasive cervical cancer, recurrent bacterial pneumonia, and pulmonary tuberculosis (TB). Included in the 1993 AIDS case definition, which is still in use today, was laboratory confirmation of low CD4+ cell counts.[1]

Based on the AIDS case definition currently in use, an HIV-positive person would receive an AIDS diagnosis based on either the clinical presence of an OI or immunologic testing indicating a CD4+ cell count < 200 or < 14% of all lymphocytes. Two additional conditions are included only for children (multiple, recurrent bacterial infections, lymphoid interstitial pneumonia/pulmonary lymphoid hyperplasia).

Figure 2.



Source: CDC HIV Mortality through 2005. Available at http://www.cdc.gov/hiv/topics/surveillance/resources/slides/mortality/

In the U.S., the most frequently observed OIs are esophageal candidiasis, *Mycobacterium avium* complex (MAC), and *Pneumocystis jiroveci* pneumonia (PCP). OI diagnoses continue to occur primarily in persons with low CD4+ cell counts.[2] Kaposi's sarcoma (KS) has been found most frequently among men who have sex with men (MSM) while esophageal candidiasis, recurrent pneumonia, TB, and toxoplasmosis were more frequently diagnosed among injection drug users (IDU).[2]

While the incidence of AIDS and deaths due to HIV has decreased, people continue to be diagnosed with OIs. Where HAART and preventive therapy are available, the frequency of OIs, hospitalizations and in-patient costs due to HIV have also decreased.[2] Today, OIs generally indicate a lack of medical care or access to care. Studies have shown that the majority of HIV-positive persons who develop an OI are not in care.[2] Many are also unaware of their HIV status.

OIs in New Mexico

Among the 2,781 cumulative HIV-positive persons diagnosed with AIDS in New Mexico, 57% were diagnosed with AIDS based on the presence of an OI(s); however, the majority of those cases were before 1996. Until 1996, more than half of cases were diagnosed clinically with an OI(s), rather than immunologically based on a low CD4+ cell count (Figure 3).

Since 2000, fewer than 50 individuals who received an AIDS diagnosis in New Mexico have the diagnosis based on an OI. The majority of AIDS cases are now diagnosed using immunologic methods, which likely reflects better laboratory testing and technology. PCP is the most commonly diagnosed OI, followed by esophageal candidiasis, KS, MAC, and wasting syndrome (Figure 4).

Table 1 compares the number of persons clinically diagnosed with AIDS (indicative of diagnoses earlier in the epidemic) to those immunologically diagnosed (indicative of diagnoses later in the epidemic). Fifty-one percent of Whites and 39% of Hispanics were diagnosed immunologically compared to 45% and 42%, respectively, who were diagnosed clinically. Among women diagnosed with AIDS in New Mexico, over half (55%) were diagnosed immunologically; whereas almost two-thirds (58%) of men were clinically diagnosed. Heterosexuals were more likely to have been immunologically diagnosed while MSM were more likely to be diagnosed clinically; about equal proportions of IDU were diagnosed with AIDS by either method. This likely reflects a shift in New Mexico's AIDS epidemic over time from a concentration among MSM to later more among heterosexuals. All OIs diagnosed among cases diagnosed with AIDS in New Mexico are further described by time period in Table 2.

Table 1. Cumulative AIDS cases by diagnosis category, New Mexico, 1981-2008

	Immunologic		Clinical	
Sex	**N**	**%**	**N**	**%**
Male	1465	92	1069	91
Female	136	8	111	9
Age at Diagnosis				
<13	14	1	2	0
13-19	14	1	25	2
20-29	358	22	292	25
30-39	722	45	504	43
40-49	337	21	249	21
50+	156	10	108	9
Race/Ethnicity				
White	818	51	530	45
Hispanic	632	39	497	42
AI/AN	82	5	80	7
AA/Black	62	4	65	6
Asian/PI	6	1	7	1
Multi-race	1	0	1	0
Mode of Exposure				
MSM	1041	65	712	60
IDU	139	9	133	11
MSM/IDU	173	11	119	10
Heterosexual	87	5	112	9
Other	161	10	104	9
Total	1601	100	1180	100

Source: NMDOH, HIV & Hepatitis Epidemiology Program.

Looking to the Future

While the widespread use of HAART has helped to improve the lives of people living with HIV/AIDS (PLWH/A), many patients fail to be diagnosed and lack access to life-saving medications and care. Improvements in routine testing and health care access continue to be necessary. While HIV-infected persons live longer and deaths due to HIV have plummeted, there continue to be challenges. Co-infection and drug-related toxicities play an increasingly important role in deaths among PLWH/A. Careful attention must be paid to mortality trends in order to rapidly identify causes and develop solutions.

References

1. The Body. McGovern, T. AIDS, Case definition of, 1998. Available at: http://www.thebody.com/content/art14002.html
2. Kaplan, J. *Clinical Infectious Disease*. Epidemiology of Human Immunodeficiency Virus-Associated Opportunistic Infections in the United States in an Era of Highly Active Antiretroviral Therapy. 2000;30:S5-14.

Figure 3. Cumulative AIDS diagnoses by diagnosis category, New Mexico, 1981-2008

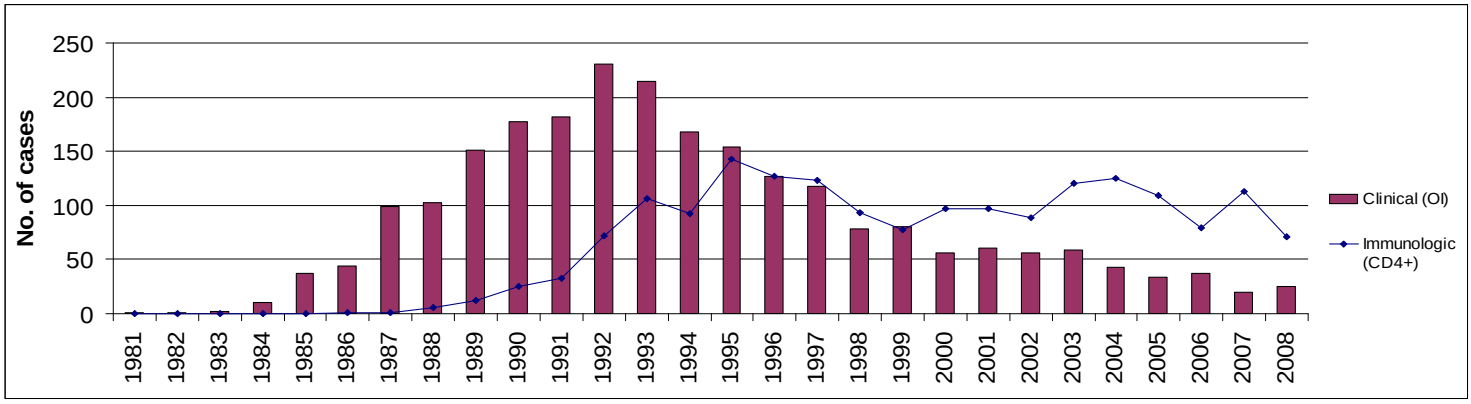


Figure 4. Trends in selected OIs among cumulative AIDS cases, New Mexico, 1981-2008

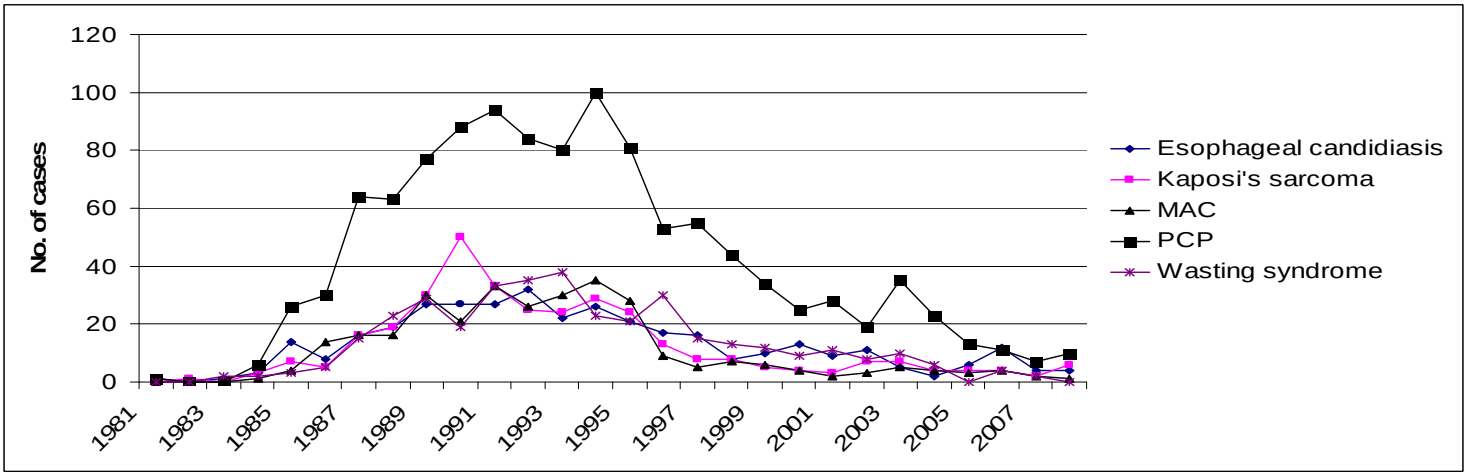


Table 2. Number of AIDS-defining OIs among cumulative AIDS cases diagnosed in New Mexico, 1981-2008

Opportunistic Infection	1981-1989	1990-1999	2000-2008
Bacterial infections (multiple, recurrent)	1	4	1
Candidiasis (bronchi, trachea, lungs)	9	29	0
Candidiasis (esophageal)	59	145	42
Carcinoma (invasive, cervical)	0	1	0
Coccidioidomycosis (disseminated, extrapulmonary)	4	16	7
Cryptococcosis (extrapulmonary)	11	34	11
Cryptosporidiosis (chronic intestinal >1 mo.)	5	35	7
Cytomegalovirus disease (other than in liver, spleen, or nodes)	35	63	41
Cytomegalovirus retinitis (with loss of vision)	35	85	5
HIV encephalopathy	29	54	12
Herpes simplex: chronic ulcer(s) (>1 mo. duration) or bronchitis, pneumonitis, or esophagitis	17	59	8
Histoplasmosis (extrapulmonary, disseminated)	4	19	7
Isosporiasis, chronic intestinal (>1 mo. duration	0	1	1
Kaposi's sarcoma	60	148	32
Lymphoid interstitial pneumonia and/or pulmonary lymphoid hyperplasia	0	1	0
Lymphoma, Burkitts	4	6	6
Lymphoma, immunoblastic	7	31	1
Lymphoma, primary in brain	2	16	0
Mycobacterium avium complex disseminated or extrapulmonary	46	134	23
M. tuberculosis, pulmonary	4	9	4
M. tuberculosis, disseminated or extrapulmonary	5	14	5
Mycobacterium, of other species or unidentified species, disseminated or extrapulmonary	3	17	4
Pneumocystis jiroveci pneumonia	162	483	116
Pneumonia, recurrent, in 12 mo. period	0	21	3
Progressive multifocal leukoencephalopathy	5	24	3
Salmonella septicemia, recurrent	2	3	1
Toxoplasmosis of brain, onset at >1 mo. of age	10	25	7
Wasting syndrome due to HIV	57	170	27

HIV/AIDS IN NEW MEXICO FACT SHEET

Cases reported through January 7, 2009

In previous reports, the HIV & Hepatitis Epidemiology Program summarized only cases diagnosed in New Mexico. Living cases diagnosed in New Mexico are used by the U.S. Centers for Disease Control (CDC) to represent prevalent cases. However, data that include out-of-state diagnoses provide a better reflection of local prevalence patterns and are now also provided in the summary.

	Cases diagnosed in New Mexico					All cases in New Mexico				
	Living			Cumulative		Living			Cumulative	
	N	%	Rate*	N	%	N	%	Rate	N	%
Type of Case										
HIV	951	41%	47.3	1023	27%	1377	38%	68.5	1494	26%
AIDS	1362	59%	67.7	2781	73%	2255	62%	112.1	4179	74%
Sex										
Male	2017	87%	204.0	3396	89%	3201	88%	323.7	5093	90%
Female	296	13%	29.0	408	11%	431	12%	42.2	580	10%
Race/Ethnicity										
White	989	43%	113.9	1783	47%	1782	49%	205.3	2931	52%
Hispanic	1018	44%	116.6	1564	41%	1311	36%	150.2	1982	35%
Native American	164	7%	81.5	243	6%	238	7%	118.3	390	7%
African American	127	5%	314.6	192	5%	273	8%	676.3	334	6%
Asian/Pacific Islander	12	1%	42.6	18	0%	24	1%	85.2	31	1%
Multi-Race	3	0%	-	4	0%	4	0%	-	5	0%
Region at Diagnosis**										
Region 1 (Northwest)	294	13%	70.1	453	12%	294	8%	70.1	453	8%
Region 2 (Northeast)	446	19%	147.1	782	21%	446	12%	147.1	782	14%
Region 3 (Bernalillo Co.)	1056	46%	168.1	1808	48%	1056	29%	168.1	1808	32%
Region 4 (Southeast)	132	6%	52.2	234	6%	132	4%	52.2	234	4%
Region 5 (Southwest)	385	17%	94.5	527	14%	384	11%	94.3	527	9%
Out of state	-	-	-	-	-	1320	36%	-	1869	33%
Age at Diagnosis										
< 13	9	0%	2.5	13	0%	16	0%	4.5	24	0%
13-19	54	2%	25.8	57	1%	71	2%	34.0	76	1%
20-29	535	23%	186.1	783	21%	858	24%	298.4	1212	21%
30-39	891	39%	368.5	1549	41%	1455	40%	601.7	2391	42%
40-49	600	26%	202.7	980	26%	921	25%	311.1	1432	25%
50+	224	10%	36.1	422	11%	311	9%	50.1	538	9%
Exposure Risk										
MSM	1361	59%	-	2302	61%	2200	61%	-	3496	62%
IDU	221	10%	-	374	10%	357	10%	-	569	10%
MSM/IDU	207	9%	-	368	10%	387	11%	-	632	11%
Heterosexual	238	10%	-	309	8%	337	9%	-	427	8%
Other	14	1%	-	48	1%	18	0%	-	60	1%
No Identified Risk	259	11%	-	383	10%	312	9%	-	457	8%
Pediatric	13	1%	-	20	1%	21	1%	-	32	1%
TOTALS	**2313**	**100%**	**115.0**	**3804**	**100%**	**3632**	**100%**	**180.6**	**5673**	**100%**

*Rates per 100,000 based on Bureau of Business and Economic Research data for 2006; **Residence at time of HIV or AIDS diagnosis.

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(505) 476-3515 • Fax (505) 476-3544 • http://www.health.state.nm.us/hiv-aids.html