AIDS in Women

San Diego County

2012

County of San Diego

Health and Human Services Agency

Division of Public Health Services

Epidemiology & Immunization Services Branch

COUNTY OF SAN DIEGO

HHSA

HEALTH AND HUMAN SERVICES AGENCY

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www.sdhivaids.org
(click on 'Reports and Statistics')

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The first female AIDS case in the San Diego County was diagnosed in 1984 in a pediatric transfusion case. Over the course of the epidemic, females have comprised 1,196 (8.1%) of the 14,848 AIDS cases diagnosed in the county through December 31, 2011 and reported through March 31, 2012. The proportion of AIDS cases that are female increased significantly ($p<0.001$) until 2001, but has not changed significantly ($p=0.307$) since then (see Table 1). Since 1997, the proportion of women has been 10-11% of AIDS cases diagnosed in residents of the County. This is in contrast to the 20.0% of cumulative cases that are female reported by the Centers for Disease Control and Prevention (CDC) and 25% in 2010.

Mode of Transmission

In male AIDS cases, the predominant risk for transmission identified is "Men who have Sex with Men" (MSM), while more than half (56%) of all female AIDS cases in San Diego County are associated with heterosexual contact (see Figure 1). There has been a significant increase ($p<0.001$) in the proportion of cases attributed to heterosexual contact over 5-year periods (see Table 2). In 2010, the CDC estimated that 45% of cumulative adult or adolescent female cases were associated with heterosexual contact. In more recent (2007-2011) cases, 76% of female cases in San Diego County are associated with heterosexual transmission; this is similar to the 72% identified by the CDC in 2010. Of the 674 cumulative female AIDS cases in the county with heterosexual transmission, 34% had an Injecting Drug User (IDU) as a sexual partner, 29% had a bisexual male partner, and 34% had sex with a partner known to have HIV or AIDS with no risk specified (see Table 3). About 2% had a sexual partner who had a transfusion or transplant, or who had hemophilia. Following heterosexual contact, the next most com-

Table 1:
Number and Percent of Female and Male AIDS Cases by Five-Year Time Periods, San Diego County

	Female		Male	
Time period	number	% of cases for time period	number	% of cases for time period
1981-1986	13	2.8	458	97.2
1987-1991	167	5.1	3,124	94.9
1992-1996	360	7.4	4,495	92.6
1997-2001	251	10.4	2,172	89.6
2002-2006	238	11.0	1,924	89.0
2007-2011	167	10.1	1,479	89.9
Total cases	1,196	8.1	13,652	91.9

FIGURE 1:
Recent (2007-2011) and Cumulative (1984-2011) Modes of HIV Transmission in Females, San Diego County

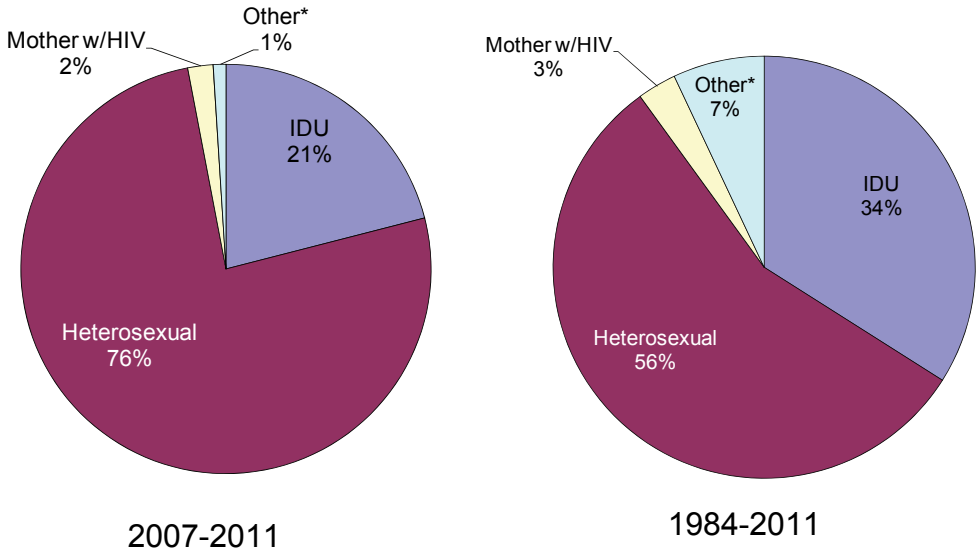


TABLE 2:
Modes of HIV Transmission in Females (%) Over 5-year Time Periods, San Diego County

	Time period of diagnosis					
	1987-1991	1992-1996	1997-2001	2002-2006	2007-2011	Cumulative*
Heterosexual contact	38.3	48.3	54.6	74.8	67.7	56.0
IDU	34.7	40.0	41.8	21.8	23.4	33.4
Blood/Tissue	18.6	5.9	0.0	0.0	0.0	4.7
Mother w/HIV	6.0	3.3	1.6	2.1	3.0	3.3
Other**	2.4	2.5	2.0	1.3	6.0	2.6
Total cases in group	167	360	251	238	167	1,196

*Includes cases from 1984-20011.

**Includes risk not specified and other confirmed risks.

Percents may not total 100 due to rounding.

TABLE 3:
Sexual Partners of All Women Diagnosed with AIDS and with Heterosexual Contact as Mode of Transmission, San Diego County

Sex with a/an	Percent
IDU	34.4
Bisexual male	29.2
Partner known to have HIV/AIDS	34.3
Known hemophiliac/transfusion recipie	2.1
Total with heterosexual contact	674

mon risk group is Injecting Drug Use (IDU), which accounts for more than a third of cumulative female AIDS cases (see Table 2). Although there was an increase in the proportion of cases attributed to IDU from the 1987-1991 to 1997-2001 time periods, there has been a decline in this proportion since that time.

The proportion of cases due to maternal exposure or pediatric exposure to blood or blood products has not changed significantly over time (p=0.780), but the number of these cases is small.

RACE/ETHNICITY

Cumulatively, there have been more whites among female AIDS cases, 37%, than other races/ethnicities (see Table 4), but this proportion has significantly decreased over 5-year time periods (p<0.001). As the proportion of whites has decreased, the proportion of Hispanic cases has increased significantly (p<0.001) over the same 5-year time periods. There has been no significant change in the proportion of blacks (p=0.758). Male cases over the same time periods also have significant decreases in the percent who are white (p<0.001) and increases in Hispanic (p<0.001), but have seen small yet significant increases in the percent who are black (p<0.001). The proportion of whites in cumulative female AIDS cases is significantly smaller (p<0.001) than the proportion seen in cumulative male cases, while the proportion of black (p<0.001) and Hispanic (p<0.001) female AIDS cases is significantly larger than that seen in male cases.

The case rate among white, black, and Hispanic female AIDS cases decreased from 1995 to 2005, but remained stable in recent years, and has declined in males across all races/ethnicities. The rate of AIDS in females and males is consistently

TABLE 4:
Race/Ethnicity in Female AIDS Cases (Percent) over 5-year Time Periods and Cumulative Male AIDS Cases, San Diego County

	Females						Males
Race/Ethnicity	1987-1991	1992-1996	1997-2001	2002-2006	2007-2011	cumulative*	cumulative*
White	47.9	45.3	32.3	24.4	32.3	37.2	61.1
Black	24.0	22.5	30.3	22.7	27.5	24.9	11.6
Hispanic	25.1	24.7	31.9	48.3	35.9	32.5	24.4
Other**	3.0	7.5	5.6	4.6	4.2	5.4	3.0
Total in group	167	360	251	238	167	1,196	13,652

*1981-2011

**Includes Asians, Pacific Islanders, and Native Americans.

Percent may not equal 100 due to rounding.

highest in blacks, followed by Hispanics, and the rate of AIDS is higher in males than females across all races/ethnicities (see Table 5). In 2010, AIDS case rates for white females in the County (1.0/100,000) were similar to those reported in 2010 by the CDC (1.5/100,000). The County rates (2010) are less than a quarter of that reported by the CDC (2010) in blacks (7.5 vs. 33.7/100,000) and less than a third of that in Hispanics (2.0 vs. 7.1/100,000). In male cases, the County rate (2010) for whites (13.9/100,000) is significantly greater than the 9.1/100,000 reported by the CDC for 2010. Rates for the County are lower than those of the CDC for blacks (44.5 vs. 75.6/100,000) and Hispanics (23.6 vs. 29.1/100,000), but the difference is not as pronounced as it is in female cases

Age at Diagnosis

There are no significant differences in the mean age at diagnosis between recent (2007-2011) ($p=0.789$) or cumulative female and male AIDS cases ($p=0.199$) (see Table 6). In recently (2007-2011) diagnosed female cases, whites (mean age 46.7 years) are significantly older than black (mean age 39.0 years; $p=0.009$) and Hispanic (mean age 37.8 years; $p=0.001$) cases. Similar results are seen in cumulative cases, although the difference between whites (mean age 40.1 years) and blacks (mean age 37.0 years; $p=0.004$), and Hispanics (mean age 35.4 years; $p<0.001$) is less pronounced. There is no statistical difference in age at diagnosis between Hispanic and black female recent or cumulative cases.

Over the course of the epidemic, both female and male cases have had the most diagnoses in the 30to 39-year age group (36% and 44%, respectively), although the peak in this age group is not as pronounced in females (see Figure 2). In recent years (2007-2011), there has been a shift in female and male cases to the 40 to 49-year age group and a substantial increase in female cases in the 50+ age group.

TABLE 5:
AIDS Case Rates (per 100,000 population) in Female and Male Cases Over Time by Race/ Ethnicity, San Diego County

	Female					Male				
Race/Ethnicity	1990	1995	2000	2005	2010	1990	1995	2000	2005	2010
White	2.7	4.4	2.0	1.0	1.0	63.1	70.4	24.6	24.5	13.9
Black	17.5	18.5	15.1	9.1	7.5	84.9	120.7	74.8	45.0	44.5
Hispanic	6.5	7.2	5.3	2.8	2.0	47.4	59.1	37.7	28.2	23.6
Asian/Other*	**	7.0	**	**	**	13.3	15.8	7.5	7.5	8.2
All cases	4.1	6.1	3.5	2.5	1.5	57.4	65.2	24.2	24.2	17.7

*Includes Pacific Islanders and Native Americans. **Rates not calculated for fewer than 5 events.
Rates per 100,000 population.

TABLE 6:
Age at AIDS Diagnosis in Recent and Cumulative Adolescent and Adult Female and Male AIDS Cases, San Diego County

	Female		Male	
Age measure (years)	2007-2011	cumulative*	2007-2011	cumulative*
Mean age	41.2	37.8	40.9	38.2
Median age	42.0	37.0	41.0	37.0
Range	<1-73	<1-88	1-84	<1-92
Total cases	167	1,196	1,479	13,652

*1981-2011.

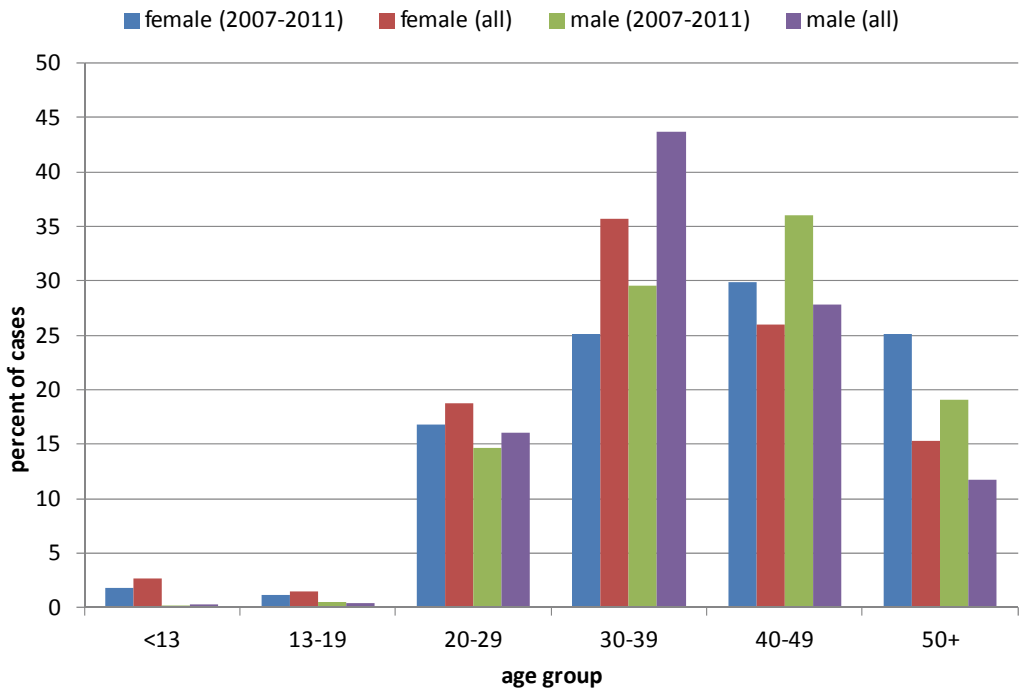
CURRENT AGE (2011)

The average age of female AIDS cases in the County alive in 2011 is about 48 years (see Table 7). Although male AIDS cases alive in 2011 were statistically significantly older (p=0.005) than female cases, their mean age of 49 years is unlikely to be clinically significantly greater.

TIME FROM HIV TO AIDS

There is no statistical difference (p=0.370) in the mean time from reported HIV diagnosis and AIDS diagnosis between cumulative female (2.7 years) and

FIGURE 2:
Recent (2007-2011) and Cumulative (1981-2011) AIDS Cases by Gender and Age Group at Time of Diagnosis, San Diego County



male (2.8 years) cases in the County, but this data is highly skewed to shorter times. There is also no statistical difference (p=0.091) in the proportion of female cases (52.9%) and male cases (55.5%) with less than 12 months between HIV diagnosis and AIDS diagnosis (see Table 8). For cases diagnosed in 2009 (the year the CDC uses for comparison) there was a significantly greater proportion of County female cases with less than 12 months between HIV diagnosis and AIDS diagnosis and the proportion reported by the CDC (54% vs. 31%; p=0.0.35), although the number of female cases in the County is small. In male cases, this difference is also seen with County cases having a significantly greater proportion with less than 12 months compared to that reported by the CDC (51% vs. 33%; p<0.001). For those with less than a month between HIV diagnosis and AIDS diagnosis, however, there is a significant (p<0.001) difference between female (35%) and male (42.0%) cumulative cases, although the difference is no longer significant in recent years.

In recent years, treatment options have expanded not just for those with an AIDS diagnosis, but also for those whose disease has not progressed beyond HIV infection. Increased treatment options for patients with HIV should lengthen the time from HIV diagnosis to AIDS diagnosis if people test early enough in the course of their infections and receive medical care. After a substantial and significant decline in the

TABLE 7:
Age in 2011 of Living Female and Male AIDS Cases, San Diego County

Age measure (years)	Females	Males
Mean age	47.6	49
Median age	48.0	49.0
Range	7-86	5-90
Total cases	672	6,334

TABLE 8:
Percent of Cumulative and Recent Male and Female AIDS cases with HIV Diagnosis to AIDS Diagnosis in Less than 1 and Less than 12 Months, San Diego County

	Female		Male	
HIV-to-AIDS time	2007-2011	cumulative*	2007-2011	cumulative*
<1 month	30.5	35.2	30.9	41.5
<12 months	50.0	52.9	53.6	54.4
Total cases	164	1,166	1,662	13,087

*1981-2011.

Note: calculated only for those cases with a known HIV diagnosis date.

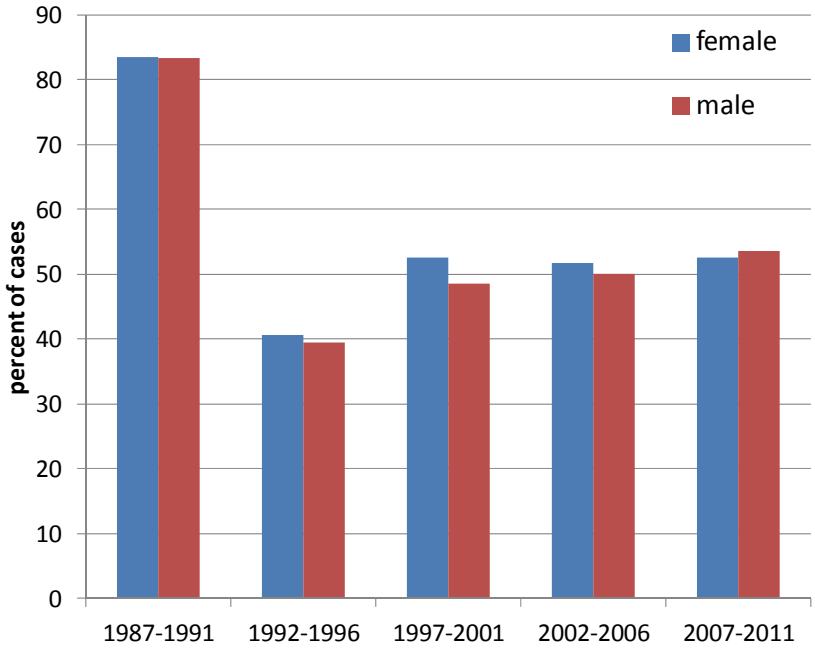
proportion of cases with less than 12 months between HIV diagnosis and AIDS diagnosis from about 84% in the 1987-1991 time period, the proportion has been relatively stable since 1997 at about 50% (see Figure 3).

It is possible that the change in case definition to include individuals with disease that is not as advanced (i.e., with decreased CD4+ counts, but no identified opportunistic infections) may decrease the time from HIV diagnosis to AIDS diagnosis in some cases by identifying them as AIDS cases earlier in their disease progression. For patients who are in care for HIV disease, this may be balanced by treatment options that prolong the HIV-only phase of disease by preventing declines in CD4 counts that can result in an AIDS diagnosis. Because the time of diagnosis may occur considerably later in time than the point of infection, the increase in the proportion of cases with less than a year between HIV diagnosis and AIDS diagnosis in the last ten years is likely due to cases testing later in the course of their infections.

SURVIVAL

As of the end of 2011, there is a greater proportion ($p<0.001$) of all female AIDS cases (58%) still alive compared to male cases (48%); however, when year of diagnosis is controlled for, this difference does not remain.. This may be due to the small numbers of female cases.

FIGURE 3:
Female and Male AIDS Cases with Less Than 12 Months Between HIV Diagnosis and AIDS Diagnosis over Five-Year Time Periods, San Diego County



There is no significant difference between male and female San Diego County cases in terms of survival. When the proportion of female AIDS cases diagnosed in 2002-2006 (the years used by CDC for survival analysis) surviving more than 12, 24, and 36 months is compared to data available from the CDC, the County has a greater proportion of surviving female cases at greater than 24 ($p=0.013$) and greater than 36 months ($p<0.001$). In each time comparison, male cases in the County are more likely to survive than those reported by the CDC ($p<0.001$) (see Table 9).

COUNTRY OF ORIGIN

The majority of AIDS cases diagnosed in San Diego County, both female and male, were born in the United States (see Table 10). A significantly ($p<0.001$) higher proportion of cumulative female AIDS cases (30.1%) were born outside the US than male cases (17.2%). This is not unexpected as male cases have a higher proportion of whites, more than 97% of whom were born in the US. Female cases are more likely to be Hispanic and a greater proportion of Hispanic cases were born outside the US. This significant difference is maintained when controlling for race/ethnicity ($p<0.001$). Both male and female cases have had increasing proportions of cases born outside the US over 5-year time periods ($p<0.001$), although there was a significant ($p<0.001$) increase in the proportion of female cases from 2002-2006, remaining stable in the 2000-2006 and 2007-2011 time periods (see Table 11). These data provide only country of birth and do not reflect how long a case has lived in the United States (U.S). For example, a case may have arrived in the U.S. at age 3 months, but not been infected until age 30 years.

The majority of cases born outside of the U.S. were born in Mexico. Female cases born outside the U.S. were more likely ($p<0.001$) to be born in Mexico than male cases; of those born outside of the U.S., female cases were more likely to come from Africa and less likely to come from Europe than male cases. There was little difference between male and female cases

TABLE 9:
Proportion of AIDS Cases Diagnosed in 2002-2006 Surviving More than 12, 24, and 36 Months, by Gender, Comparing to CDC (national) Data, San Diego County

		Proportion surviving (months)		
Gender		>12	>24	>36
Female	CDC	0.93	0.91*	0.90**
	CoSD	0.89	0.85	0.82
Male	CDC	0.92**	0.89**	0.88**
	CoSD	0.9	0.88	0.86

*p<0.05
**p<0.001

TABLE 10:
Country of Origin of Recent (2007-2011) and Cumulative (1981-2011) Female and Male AIDS Cases, San Diego County

	Female		Male		All cases	
Origin	2007-2011	1981-2011	2007-2011	1981-2011	2007-2011	1981-2011
USA	59.9	68.6	73.3	82.2	71.9	81.1
US Dependency	0.6	1.3	0.5	0.6	0.5	0.6
Mexico	20.4	18.6	20.7	13.0	20.7	13.4
Other	19.1	11.5	5.5	4.2	6.9	4.9
Total in group	167	1,196	1,479	13,652	1,646	14,848

*Percentages may not equal 100 due to cases of unknown origin.

in the proportion of those coming from South America and Asia.

RESIDENCE AT DIAGNOSIS

Fifty-seven percent (57%) of AIDS cases diagnosed in San Diego County were residing in the Health and Human Services Agency Central region at the time of diagnosis (see Table 12). A significantly smaller ($p<0.001$) proportion of female cases (41%) than male cases (58%) were living in this region at the time of diagnosis. The proportion of female cases in the Central region has remained stable, without significant change ($p=0.290$) since the 1992-1996 time period, but the proportion of male cases in this region has decreased significantly ($p<0.001$) over 5-year time periods. In the South region, the proportions of both female ($p=0.001$) and male ($p<0.001$) cases have increased significantly over 5-year time periods. The proportion of both female and male cases has decreased significantly ($p<0.001$) in the North Central region, but female cases have also decreased significantly ($p<0.001$) in the North Inland

TABLE 11:
United States Origin of Male and Female AIDS Cases over 5-Year Time Periods, San Diego County

	Percent born in US		
Time period	Male	Female	All cases
1987-1991	90.9	85.6	90.6
1992-1996	86.3	77.2	85.6
1997-2001	75.0	69.7	74.5
2002-2006	70.6	48.7	68.2
2007-2011	73.3	59.9	71.9

region over time.

The residence at diagnosis does not necessarily represent the location of current residence or the area in which health or social services are sought or obtained. It is not unusual for a case to move to a different zip code area, city, or region after diagnosis. A case who does not move may still seek medical care outside his or her zip code of residence within the County.

FACILITY OF DIAGNOSIS

In both female (30.4%) and male (28.1%) cumulative AIDS cases, the most common point of diagnosis in San Diego County was the inpatient hospital setting. Although there is no significant difference between male and female cases in terms of the inpatient hospital setting (p=0.081), female cases were significantly (p<0.001) less likely to be diagnosed in private physicians' offices and significantly (p=0.001) more likely to be diagnosed in an outpatient HIV clinic. Female cases were significantly (p=0.012) less likely to be diagnosed in a correctional facility.

LIMITATIONS

The data presented in this report are dependent on accurate reporting from healthcare providers, laboratories, and patients. Patients, for many reasons, may not wish to provide accurate current or historical information to their healthcare providers for reporting. Healthcare providers may not report complete information because it is not made available to them by the patient, or they wish to protect their patients' privacy, or other reasons. Each of these situations, and others, result in data that may not be accurate and these inaccuracies may impact analysis.

TABLE 12:
Female and Male AIDS Cases by Health and Human Services Agency Regions Over Five-Year Time Periods, San Diego County

	Percent of cases					
	Female		Male		All cases	
Region	2007-2011	1981-2011	2007-2011	1981-2011	2007-2011	1981-2011
Central	46.7	41.4	49.5	58.1	49.1	56.8
East	12.6	10.5	8.0	6.9	8.5	7.2
South	19.2	17.0	18.1	10.6	18.2	11.1
North Coastal	9.0	11.4	7.8	7.2	7.9	7.5
North Inland	6.0	8.1	5.0	4.3	5.1	4.6
North Central	6.6	11.6	11.7	12.9	11.2	12.8
Total	167	1,196	1,479	13,652	1,646	15

Percent may not total 100 due to rounding.

Caution should be exercised in the analysis of the most recent time period (2007-2011) because additional cases are likely to be reported over time. Retrospective case finding will continue; it is expected that cases diagnosed in 2011 will continue to be reported in 2012. Case reports are also updated as new information becomes available. When, for example, more information on risks is obtained, the database is updated and this may impact proportions and rates used in this and future analyses.

Some of the variables under study do not have sufficient numbers of occurrences to make statistical inferences. When small numbers are presented, caution should be exercised in the interpretation of data presented.

In 1993, the AIDS case definition was modified by the CDC to include those patients with evidence of HIV infection whose CD4 absolute count dropped below 200 or in whom the percent of CD4 cells fell below 14 percent. This increased the number of cases substantially and allowed for the identification of cases earlier in the disease process. It is likely that the change in definition increased both the number of surviving cases and the length of survival times from diagnosis to death. Because of changes in case definition and the increase in cases identified earlier in the course of disease, caution should be exercised when making comparisons to earlier cases, diagnosed after the onset of an opportunistic infection, or other indication of a profoundly failing immune system.

Whenever possible, case information is updated as to vital status of cases. It is possible that some cases may have died, but the death was not reported to the Epidemiology and Immunization Services Branch of the County. Some of these cases may have left the area or state and died. This may result in inaccurate assumptions and survival calculations.

San Diego County has a higher proportion of Hispanics and a lower proportion of blacks than do many states, the U.S. as a whole, and even some other counties within California. These racial/ethnic demographic differences require that caution is exercised when making comparisons of San Diego County to national AIDS statistics, and to other counties and states. These factors must be taken into account when discussing the impact of the AIDS epidemic on the San Diego region.

Comparisons are made in this report to CDC national estimates for rates and percentages of AIDS cases in terms of demographic and risk variables. National estimates are based on data submitted under many different state and local surveillance systems, while San Diego County data is based on individual cases reported. This can make these comparisons difficult to interpret.

Data sources:

- County of San Diego, HIV/AIDS Epidemiology Unit database.
- SANDAG population estimates (for years for which rates are provided).
- *HIV/AIDS Surveillance Report* (2010, Vol. 22), Centers for Disease Control and Prevention .

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