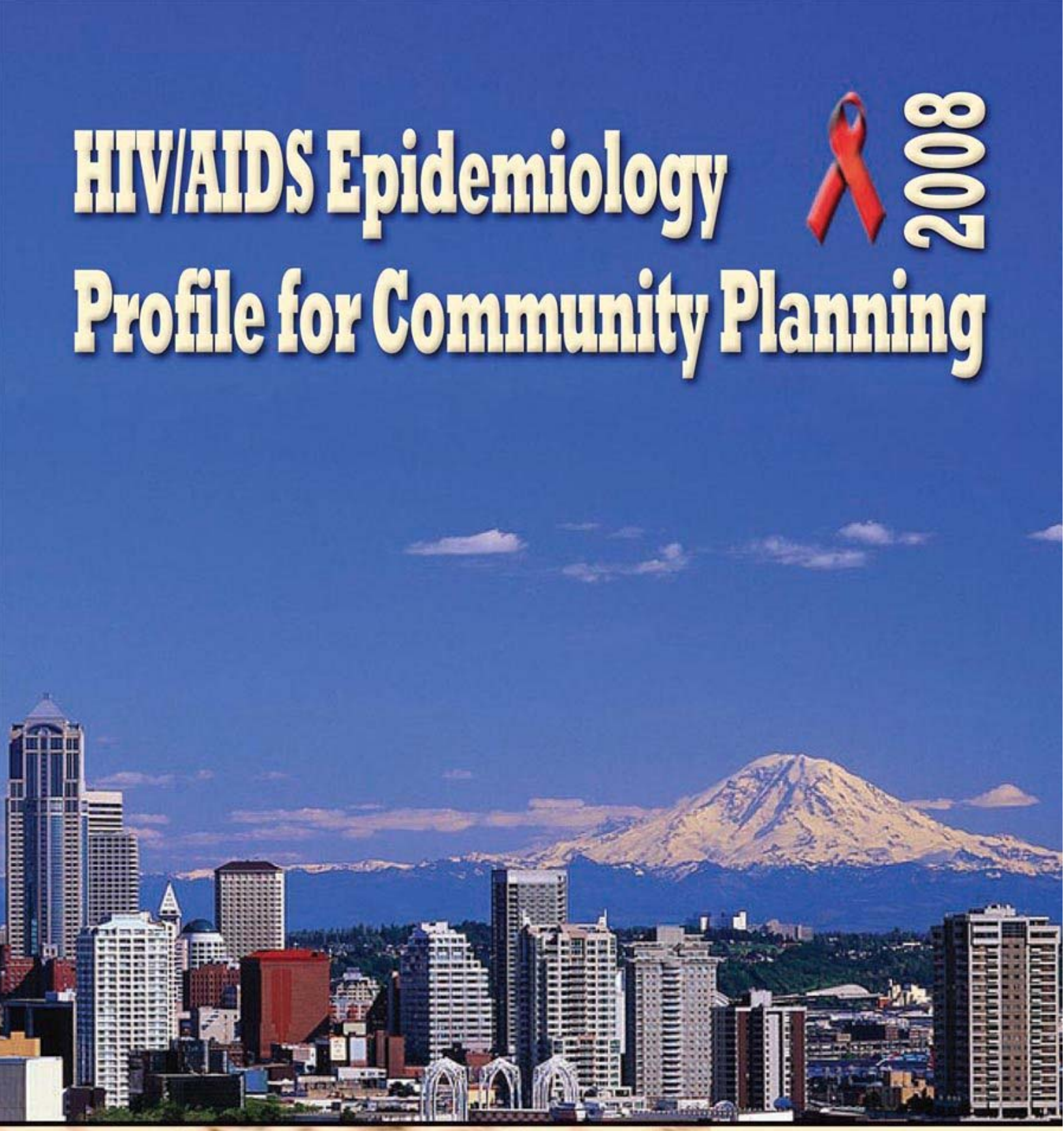
HIV/AIDS Epidemiology Profile for Community Planning

2008



Public Health
Seattle & King County

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David Fleming, MD, Director

2008 HIV/AIDS Epidemiology Profile for Community Planning Public Health – Seattle & King County

A report to the community prepared by the HIV/AIDS Epidemiology Unit

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- **The report is available at www.kingcounty.gov/health/hiv.**

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Table of Contents

List of Tables and Figures

List of Tables and Figures (continued)

2008 HIV/AIDS Epidemiology Profile for Community Planning – Report Highlights

This 6th edition of the HIV/AIDS Epidemiology Profile for Community Planning, Seattle & King County, describes the current status of the HIV/AIDS epidemic and changes to the epidemic in our community. Our ability to describe HIV and AIDS has grown since our first cases of AIDS in 1982. HIV/AIDS epidemiology now monitors a large number of parameters on reported cases of HIV and AIDS, as well as deaths and morbidity in these persons, acquired resistance and recency of infection among newly-infected persons, risk and testing behaviors in high-risk populations, and whether persons with HIV are in care for their infection. Epidemiologists also actively participate in various special studies, needs assessments, care and prevention planning activities, and pull together data such as these to help people propose and carry out programs for HIV care and prevention.

The *2008 Profile* is a multi-dimensional profile of local HIV and AIDS epidemiology. First, this report provides an overall description of King County residents, then it describes HIV infection, AIDS, and their geographic distribution in King County. Next, HIV-related illnesses, behavioral indicators, and HIV testing practices are summarized. Finally, this report highlights HIV/AIDS epidemiology in eleven target populations.

Since AIDS was identified in mid-1981 (28 years ago) through 2008, AIDS has killed at least 27,000,000 people globally, including 500,000 Americans, and 4,441 persons in Seattle and King County. Between 1989 and 1996 AIDS was the main cause of death of King County men age 25-44; for example, in 1996 about 450 persons died of AIDS. But in the mid-1990s HIV disease progression to AIDS and to death was greatly reduced by the advent of a new treatment strategy enabled by new classes of anti-retroviral agents. Known as "highly active anti-retroviral treatment (HAART) cocktails" consisting usually of multiple, multi-class anti-retroviral agents, these regimens keep persons with HIV/AIDS alive longer than before HAART, and have made HIV a chronic manageable disease. Yet, in recent years, about 100 King County residents are still dying with HIV/AIDS each year, half from consequences of HIV disease.

SUCCESSES:

- AIDS case numbers peaked in 1993 when 626 cases were reported among King County residents. Annual AIDS cases have since fallen to a low of about 200-250 cases per year from 2000 through 2007.
- Follow-up of persons reported to have HIV locally has shown that almost all are under care by HIV specialists.
- Only one perinatally-acquired infection occurred among children born in King County since 1997.
- HIV prevalence (~2-3%) and incidence levels have remained low and stable among heterosexual injection drug users since the start of the epidemic.

CONTINUING CHALLENGES:

- Despite nearly a quarter-century of HIV testing and numerous public education campaigns, over 20% of persons with HIV are not aware of their infection. As a result, more persons are estimated to be infected than are reported, persons unaware of their infection are gradually losing their immunity to life-threatening diseases without the benefit of monitoring or treatment, and unaware persons are more likely to be transmitting HIV to their partners. The CDC called for broader screening for HIV infection in 2006, but their recommendations are slow to be adopted because testing is not well funded and barriers exist to making HIV screening easy in medical offices.
- About 30% of persons with HIV infection are diagnosed too late to prevent progression to AIDS within 12 months of their HIV diagnosis. This rate is significantly higher in foreign-born and racial and ethnic minority persons.
- Men who have sex with men (MSM) comprise the majority of cases of HIV/AIDS nationally and locally, with the highest rates of infection. In industrialized countries since the advent of HAART, MSM have actually increased their risk behaviors, and subsequently, the rates of new infections, as HIV has become less threatening.

- Sexually-transmitted infections (STIs) among MSM, especially those with HIV infection, have also risen since HAART made HIV a chronic manageable disease. STIs facilitate HIV transmission.

- Since more persons are acquiring HIV than are dying with HIV/AIDS each year locally, the "pool" of persons living with HIV infection is continuing to expand by about 5% per year.

- As predicted, HIV/AIDS disparately impacts not just sexual minorities but also racial and ethnic minority people, whether born in the U.S. or elsewhere. The highest HIV infection rates by race/ethnicity are now seen locally among foreign-born Blacks, followed by native-born Blacks, Hispanics, and Native Americans/Alaska Natives – all of whom have higher rates than Whites.

- HIV and AIDS in King County, while declining gradually in MSM and in urban areas, are increasingly affecting women and residents of more rural areas. Women with HIV/AIDS are younger on average than men with HIV.

NEXT STEPS:
HIV/AIDS Epidemiology continues to assist Public Health - Seattle & King County, the HIV/AIDS Planning Council, and our community partner agencies to understand and re-prioritize efforts for both HIV prevention and care. Working with the King County Board of Health, in 2007 we developed and adopted a "Strategic HIV Prevention Plan" which can be used to measure our success. As new methods and new epidemiologic findings emerge, we will continue to update our HIV epidemiology reports.

Chapter I. Introduction

The *2008 HIV/AIDS Epidemiology Profile for Community Planning* is the most detailed document available describing HIV infection in Seattle and King County, Washington.

More recent (but less detailed) information is available by calling HIV/AIDS Epidemiology at 206-296-4649 or on our website at www.kingcounty.gov/health/hiv.

- Each month a table of basic King County statistics is updated.
- Twice a year the *HIV/AIDS Epidemiology Report* is published. This report contains several tables of Washington and King County data, and summaries of local and statewide studies.
- The Annual Review of HIV Epidemiology in King County is included in the first of the two *HIV/AIDS Epidemiology Reports* published each year.

The *2008 HIV/AIDS Epidemiology Profile for Community Planning* provides Seattle and King County data to guide community-based planning and prioritization of HIV/AIDS prevention and care services. Previous editions were published in 1995, 1996, 1999, 2001, and 2003. This *2008 Profile* is the first to include separate chapters on behavioral indicators and HIV testing practices.

This *2008 Profile* addresses key questions to facilitate effective community planning.

- What are the social and demographic characteristics of the community?

- What is the current and future impact of HIV/AIDS on the community?

- What is the geographic distribution of HIV/AIDS in the community?

- Which members of the community are at highest risk for becoming infected with HIV?

- Who is accessing HIV testing?

The most important data sources used for this *2008 Profile* are the King County HIV/AIDS surveillance system and various supplemental surveillance projects, including the Medical Monitoring Project; the Adult Spectrum of HIV-Related Diseases Study; HIV Incidence Surveillance; Variant, Atypical, and Resistant HIV Surveillance; and the National HIV Behavioral Surveillance System.

We also included information from other sources like STD surveillance, the Behavioral Risk Factor Surveillance System and the American Community Survey. A comprehensive description of data sources is included in Appendix B.

Chapter II. Demographic Description of King County

Located on Puget Sound in western Washington, King County (population 1,835,525 in 2006) is home to 29% of Washington's population and ranks as the 14th most populous county in the country.[1] It spans an area of 2,134 square miles. Thirty-two percent of county residents reside in Seattle (pop. 578,709) and 49% reside in the 39 incorporated suburban cities.[2] King County's population is 6% Hispanic, and 74% non-Hispanic white, 13% Asian or Pacific Islander, 6% African American, and 1% American Indian or Alaska Native. Twenty percent of residents are foreign-born immigrants, among whom 49% were born in Asia, 18% in Latin America, 18% in Europe, 8% in Africa, 5% in Canada, and 1% in Oceania. An estimated 190,603 persons over age five are not fluent in English. Young people under age 18 make up 22% of the county population. People living in King County are highly educated; 92% of persons 25 years of age or older have a high school education, and 53% have a college degree. The median King County household income is $63,489 and 9% of the population live in households with incomes below the poverty level.

The ports of Seattle and Tacoma make Puget Sound the second largest combined loading center in the U.S. The Seattle-Tacoma International Airport is the largest airport in the Pacific Northwest. Interstate 5 runs from Tijuana, Mexico along the west coast of the U.S. and through King County to Canada. Interstate 90 runs from Boston to Seattle, crossing Washington from east to west.

Some characteristics of the 2006 population estimates from the state of Washington Office of Financial Management are given in Table 1.

Table 1: Population estimates[2] by sex, race, and age, King County (2006)

King County populations (2006)	Male	Female	Total	
Race and ethnicity			Number	Percent
White non-Hispanic	676,661	687,604	1,364,265	74%
Black non-Hispanic	57,092	54,417	111,509	6%
Hispanic	60,560	51,083	111,643	6%
Native American	8,045	8,154	16,199	1%
Asian & Pacific Islander	111,627	120,282	231,910	13%
Age				
Age 0-17 years	199,864	190,436	390,300	21%
Age 18-24 years	91,403	89,839	181,242	10%
Age 25-29 years	76,284	72,184	148,468	8%
Age 30-39 years	148,330	138,250	286,580	16%
Age 40-49 years	150,018	147,380	297,398	16%
Age 50-59 years	127,044	130,315	257,359	14%
Age 60 and over	121,042	153,136	274,178	15%
Total	**913,985**	**921,540**	**1,835,525**	**100%**

1. U.S. Census Bureau Population Estimates for 2006
2. Washington state Office of Financial Management population estimates for 2006

Chapter III. Overview of HIV/AIDS in King County

This chapter summarizes the status of the HIV/AIDS epidemic in Seattle and King County. Most sections in this chapter rely on HIV case data. Unless specifically indicated, these data include all persons reported with HIV infection, including those who have progressed and developed AIDS.

AIDS cases are discussed separately in Section B and include the subset of HIV-infected persons with severe immune deficiency or one of the 26 opportunistic illnesses that are part of the Centers for Disease Control and Prevention (CDC) AIDS case definition.

The King County estimate of persons living with HIV infection including AIDS was developed in collaboration with the Washington State Department of Health. Based upon on-going evaluation work, we estimate that over 95% of AIDS and 85% of HIV diagnoses are reported within 12 months of diagnosis. We also assume that 10 to 20% of persons infected with HIV are not diagnosed and not aware of their status. Finally, we know that 63% of Washington's reported HIV and AIDS cases reside in King County. These data led us to conclude that, in 2007, 11,000 to 12,000 Washington residents and 7,200-7,800 King County residents are infected with HIV, mid-point 7,500 individuals.

Case data include HIV and AIDS cases that have been confidentially reported to Public Health - Seattle & King County. We believe these reports of HIV and AIDS are representative of infected persons in the various population groups, but a gap exists between the actual reports and the estimated number of HIV cases in King County. Therefore, we also present estimates of the number of persons believed to be infected by population group in King county. To estimate the distribution of these undiagnosed or unreported cases across population groups, we multiply the number of actual reports for each group by the ratio of estimated infections (7,500) divided by the actual number of reported cases living with HIV or AIDS (6,283).

A. HIV infection in King County

Summary: Approximately 7,500 King County residents are living with HIV or AIDS, with tremendous variation in impact on different populations. Approximately 22% of men who have sex with men (MSM) and also inject drugs (IDU) are infected, compared with 14% of MSM who do not inject, and 3% of IDU. Fewer than 0.1% of heterosexuals who do not inject drugs are infected, although rates are as high as 1.6% among foreign-born blacks. The number of King County residents diagnosed with HIV recently declined to about 330 each year.

What is HIV infection? Untreated infection with the human immunodeficiency virus (HIV) causes generally progressive symptoms called HIV disease. HIV infection causes AIDS, and everyone with AIDS has HIV infection. The initial mild symptom-free phase of HIV disease can last for several years, but clinical symptoms appear as the virus gradually attacks and destroys immune cells. When immune cells called CD4 lymphocytes drop below 200 cells/µL (or 14%) or any of 26 opportunistic illnesses are diagnosed, the advanced disease is called Acquired Immunodeficiency Syndrome, or 'AIDS'. HIV infections are acquired primarily through sexual contact, exposure to blood through use of contaminated injection drug use equipment (or historically, through transfusion), or from HIV-infected mothers to their infants. Transmission rarely occurs from exposure to other body fluids, such as breast milk, vaginal secretions, or exposures in the health care setting.

Number of people infected with HIV in King County (Figure 1): In 2007, the Washington State Department of Health estimated that 11,000 to 12,000 Washington residents, including 7,200 to 7,800 from King County, are living with HIV or AIDS.[1] New HIV diagnoses reported in King County totaled 350-400 each year 1998 to 2004, but declined to 330 diagnoses per year between 2005 and 2007. There are about 100 HIV-related deaths annually, and the reported number of King County residents living with HIV/AIDS is increasing by 4-5% per year. Figure 1 displays the number of people diagnosed and living with HIV, but is limited to cases that have been reported to Public Health. An additional 750 to 1,500 HIV-infected people have not yet been diagnosed. The peak of about 700 new HIV diagnoses in 1990 is based on reported data, some of which was collected retrospectively. Ninety percent of all infections are among MSM, IDU, or foreign-born blacks. Most HIV-infected King County residents are white men who have sex with men, are 30-45 years of age at the time of diagnosis, and reside in Seattle. However, an increasing proportion of cases are among women,

foreign-born blacks and King County residents outside Seattle.

As of June 30, 2008, HIV-infected King County residents include 3,511 reported living with AIDS, 2,772 reported living with HIV but not AIDS, an estimated 300-500 people diagnosed but not yet reported, and an estimated 700-1,200 people who are unaware of their infection status.

Declining HIV transmission rates: While the number of people living with HIV has been increasing about 5% annually since effective treatments became available, the number who are diagnosed each year has been relatively stable. Therefore, the transmission rate (new diagnoses divided by total infected population) is declining slightly.

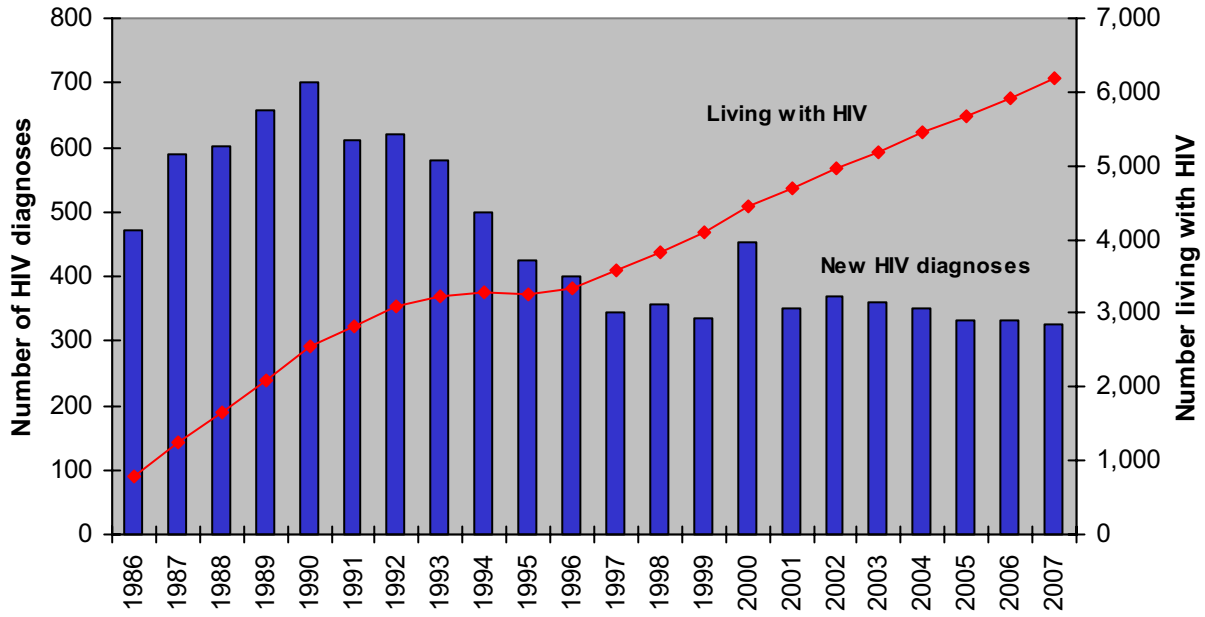
The infected persons who transmit the virus to uninfected persons represent a smaller proportion of the entire infected population each year. This may be partly due to more HIV-infected people knowing their status and reducing risk to their partners.

Characteristics of people living with HIV or AIDS (Tables 2 and 3): Table 2 represents the number of reported cases, the estimated number of total infections, and the estimated 2006 infection rate. We also present estimates of the number of persons believed to be infected by population group in King county. To estimate the distribution of these undiagnosed or unreported cases across population groups, we multiply the number of actual reports for each group by the ratio of estimated infections (7,500) divided by the actual number of reported cases living with HIV or AIDS (6,283).

The estimated rates of HIV infection vary widely between population groups. The highest rates are among MSM, IDU, MSM who also inject drugs (MSM/IDU), and foreign-born blacks, with over 1% of these populations infected. These four groups account for 90% of all diagnoses in King County. Approximately 30% of people diagnosed with HIV are diagnosed with AIDS simultaneously or within 12 months. Most of these diagnoses are based on a low CD4 value.

These results may reflect transient low CD4 levels among people with acute infection in a small number of

Figure 1: New diagnoses of HIV, and persons reported living with HIV infection, King County, 1986-2007 (June 2008)



cases, but usually indicate that the person has been infected for some length of time and is 'diagnosed late.' One goal of Public Health is to decrease the proportion of people who are diagnosed with HIV late in the course of disease. Ninety percent of people living with HIV or AIDS in King County are male. Most, 68%, are white, 17% black, 9% Hispanic, 3% Asian & Pacific Islander (API), and 1% Native American & Alaska Natives (NA/AN). Eighty-one percent were born in the U.S. or territories, 15% were foreign-born, and the birthplace was unknown for 5%. Compared with non-Hispanic whites, the rates are four times higher among foreign-born blacks, twice as high among U.S.-born blacks and 1.5 times higher among NA/AN.

Six percent of cases have no identified behavioral exposure to HIV. Among cases with known exposure, 74% are MSM, 9% are MSM/IDU, 6% are IDU, 10% were likely infected heterosexually, and 1% each were born to HIV-infected mothers or received blood products (mostly prior to 1985 in the U.S.). While the distribution of exposure categories differs by race, gender, and birth country, 97% of all male cases are MSM, IDU, or foreign-born blacks. MSM exposure accounts for the majority (58% to 85%) of HIV cases among men of all races (Table 3).

MSM/IDU is the second most common exposure among white men (11%), Hispanic men (8%), and NA/AN men (30%). Foreign-born blacks make up 26% of cases among black men and are mostly due to heterosexual transmission.

The vast majority of HIV-infected women are either IDU or have a heterosexual risk (Table 2). Heterosexual risk cases are those with partners known to be HIV-infected, partners who are IDU, partners who are bisexual men, or partners with hemophilia. Heterosexual exposures account for the majority of HIV cases among white (68%), black (80%), Hispanic (82%), and API (89%) women. However, among NA/AN women with HIV, IDU is the most common risk behavior.

King County residents who have HIV include people born worldwide. The place of birth for the 663 diagnosed with HIV in 2005 or 2006:

- U.S. (70%)
- Africa (8%)
- Mexico, Latin America and Caribbean (7%)
- Asia and Eastern Europe (4%)
- Western Europe or Canada (1%)
- Unknown (8%)

Prevalence rates are substantially higher among foreign-born blacks (1.6%) than native-born blacks (0.9%). Foreign-born blacks are a population where we target prevention interventions because the mode of transmission, language, and culture may differ greatly from U.S.-born counterparts.

The majority of reported cases among foreign-born blacks are due to heterosexual transmission (40%) or presumed heterosexual transmission (15%); another 32% have no reported risk. Sixty-one percent of reported cases in native-born blacks are MSM or MSM/IDU and 17% are IDU.

Seventy-one percent of King County residents living with HIV are age 35-54 years, and 16% are at least 50. At the time of diagnosis, 77% of HIV-infected individuals resided in Seattle, 8% on the Eastside or north of Seattle and Lake Washington, and 15% in South King County.

Table 2: Characteristics of King County residents living with HIV or AIDS (June 2008)[a]

	Actual reports		Estimated HIV prevalence		
	Number reported	**Percent**	**Estimated infected[b]**	**2006[c] population**	**Estimated rate per 100[d]**
Total	6,283	100%	7,500	1,835,525	0.4%
Race/ethnicity					
White, not Hispanic	4,299	68%	5,190	1,364,265	0.4%
Black, not Hispanic	1,041	17%	1,260	111,509	1.1%
Foreign-born blacks	*361*	*6%*	*440*	*27,346*	*1.6%*
Native-born blacks	*650*	*10%*	*780*	*84,162*	*0.9%*
Hispanic	593	9%	710	111,643	0.6%
Asian & Pacific Islander	197	3%	240	231,910	0.1%
Native American or Alaska Native	86	1%	100	16,199	0.6%
Multiple Race	54	1%	N.A.	Not applicable	Not applicable
Unknown Race	13	<1%	N.A.	Not applicable	Not applicable
Sex & race/ethnicity					
Male	5,657	90%	6,750	913,985	0.7%
White	4,071	65%	4,910	676,661	0.7%
Black	740	12%	890	57,092	1.6%
Hispanic	549	9%	660	60,560	1.1%
Asian or Pacific Islander	174	3%	210	111,627	0.2%
Native American or Alaska Native	61	1%	80	8,045	1.0%
Multiple or unknown race	62	1%	N.A.	Not applicable	Not applicable
Female	626	10%	760	921,540	<0.1%
White	228	4%	280	687,604	0.0%
Black	301	5%	360	54,417	0.7%
Hispanic	44	1%	60	51,083	0.1%
Asian or Pacific Islander	23	<1%	30	120,282	<0.1%
Native American or Alaska Native	25	<1%	30	8,154	0.3%
Multiple or unknown race	5	<1%	N.A.	Not applicable	Not applicable
HIV exposure category					
Men who have sex w/men (MSM)	4,344	74%	5,550	39,000	14.2%
Injection drug user (IDU)	342	6%	440	15,000	2.9%
MSM/IDU [e]	531	9%	680	3,150	21.6%
Blood product exposure	36	1%	50	Unknown	Unknown
Heterosexual contact [f]	601	10%	770	1,250,000	0.06%
Perinatal exposure	21	<1%	30	Unknown	Unknown
Subtotal-known exposure	**5,875**	**100%**	**7,500**	**1,835,525**	**0.4%**
Undetermined/ other	*408*	*6%*	*N.A.*	*Not applicable*	*Not applicable*
Current age as of 6/30/2008					
0-19 years	28	<1%	30	436,484	0.01%
20-24 years	63	1%	80	135,059	0.1%
25-34 years	734	12%	880	290,446	0.3%
35-44 years	2,186	35%	2,610	291,936	0.9%
45-54 years	2,269	36%	2,710	290,000	0.9%
55-64 years	841	13%	1,000	195,617	0.5%
65 years and over	162	3%	190	195,983	0.1%

Table 2: (continued) Characteristics of King County residents living with HIV or AIDS (June 2008)[a]

	Number reported	Percent	Estimated infected [b]	2006[c] population	Estimated rate per 100[d]
Place of birth					
Born in U.S.	5,083	81%	6,360	1,470,872	0.4%
Born outside U.S.	912	15%	1,140	364,653	0.3%
Unknown birthplace	288	5%	N.A	Not applicable	Not applicable

[a] Populations in this table are from Washington Office of Financial Management and are updated since original publication in HIV/AIDS Epidemiology Report, 1st Half 2008.
[b] Between 7,200 and 7,800 King County residents may be infected with HIV. Each estimate is the percentage of cases within known categories times the midpoint (7,500), rounded to the nearest 10.
[c] 2006 population estimates are from Washington Office of Financial Management.
[d] The estimated rate is the estimated number infected divided by the population, and is presented as a percent.
[e] Includes all MSM who have ever injected drugs, an estimated 2,000 are current injectors.
[f] Includes presumed heterosexual cases (women who do not inject drugs but have had sex with men of unknown HIV status).

Table 3: King County residents living with HIV/AIDS by gender, race or ethnicity, and HIV exposure category (June 2008)

HIV exposure category	White[a]		Black[b]		Hispanic		Asian & PI[a, b]		Native Am/ AN[1a,c]	
	No.	%	No.	%	No.	%	No.	%	No.	%
Male										
Male-male sex	3,378	85%	365	62%	399	81%	128	88%	33	58%
Injection drug use (IDU)	111	3%	70	12%	30	6%	5	3%	6	11%
IDU & male-male sex	420	11%	40	7%	37	8%	5	3%	17	30%
Heterosexual contact	47	1%	106	18%	24	5%	5	3%	1	2%
Other [d]	17	<1%	8	1%	2	<1%	2	1%	0	0%
Male subtotal – known exposure	**3,973**	**100%**	**589**	**100%**	**492**	**100%**	**145**	**100%**	**57**	**100%**
Male total [f]	**4,071**		**740**		**549**		**174**		**61**	
Female										
Injection drug use (IDU)	61	29%	37	14%	3	8%	1	6%	14	58%
Heterosexual contact [e]	145	68%	211	80%	32	82%	16	89%	10	42%
Other [d]	7	3%	16	6%	4	10%	1	6%	0	0%
Female subtotal – known exposure	**213**	**100%**	**264**	**100%**	**39**	**100%**	**18**	**100%**	**24**	**100%**
Female total [f]	**228**		**301**		**44**		**23**		**25**	
Total [f]	**4,299**	**68%**	**1,041**	**17%**	**593**	**9%**	**197**	**3%**	**86**	**1%**

[a] And not Hispanic. All race and ethnicity categories are mutually exclusive.
[b] Asians, Native Hawaiians, and other Pacific Islanders.
[c] Native American or Alaska Native.
[d] Includes blood product exposure and perinatal exposure.
[e] Includes presumed heterosexual cases (females who deny injection drug use but have had sexual intercourse with a man whose HIV status and HIV risk behaviors are unknown).
[f] Totals include cases with no reported risk.

Trends in diagnosis (Table 4): Based upon data reported through June 2008, we compared the characteristics of persons diagnosed with HIV infection during 1999-2001, 2002-2004, and 2005-2007. A chi-square test for trend was used to determine if there was a statistically significant change in proportion of cases for each group over those three time periods.

Only moderate shifts occurred in the proportion of persons newly diagnosed with HIV infection groups over the past nine years. Between the three-year periods 1999-2001 through 2005-2007, the proportion of cases increased among Hispanics (from 10% to 13%), Asians and Pacific Islanders (from 3% to 6%), and in persons over age 50 (from 7% to 11%). The proportion of total cases decreased for all whites (from 64% to 57%).

There was an increase in the proportion of King County residents age 50 and over at the time of diagnosis (from 7% to 11%), and a decrease in people age 30-39 at the time of diagnosis (from 46% to 36%). Over the past decade, the population of people living with HIV has aged, as HIV has become a treatable, chronic infection since the mid-1990s. In 1998, half of individuals living with HIV were under age 40. In 2006, the median age was 44. The geographic residence of people with new diagnoses of HIV is shifting away from Seattle. The proportion of newly diagnosed cases among city residents dropped from 84% to 75% between 1999 and 2007, while residents outside Seattle comprise an increasing proportion. South King County residents increased from 10% to 16% of the total, and East/North King County residents increased from 6% to 9% of new cases.

The perinatal transmission rate in King County, and in Washington, is close to zero because of effective antiretroviral prophylaxis during pregnancy and at birth. Approximately 15-30 HIV-infected women give birth each year in Washington, but only one HIV infection was transmitted to an infant born in King County since 1997. Other recent diagnoses of perinatal infection locally were among children born elsewhere who moved to King County.

Incidence and resistance testing: Public Health – Seattle & King County participates in two CDC-funded projects in which leftover sera from HIV-diagnostic specimens is used to help characterize the infection in newly diagnosed people. Currently about half of newly diagnosed cases are being tested for these projects. These tests reveal several characteristics of the HIV viruses circulating within the local population:

- Approximately one-third of new HIV diagnoses are among persons likely infected within the preceding 12 months.
- 12% of people who have never taken HIV medications have high-level resistance to one or more antiretroviral drugs; 3% are resistant to two or more classes of drugs. These proportions have been stable since preliminary resistance testing data first became available in 1998.
- 11% of people tested are infected with a subtype of HIV-1 other than subtype B (which is most prevalent in North America, Europe, and Australia). Most of these were among persons born in other countries.

Immunologic and virologic status: State law requires that laboratories report all CD4 results and all HIV viral load results, regardless of level, to Public Health. While laboratory data are still incomplete, they allow us to evaluate the immunologic status of all people living with HIV infection. Between July 2007 and June 2008, we documented CD4 or viral load laboratory data on 4,932 King County residents diagnosed with HIV or AIDS as of June 30, 2008. Among 4,385 people with a CD4 result after June 2007, 24% had severe immune deficiency (CD4 under 200 cells or under 14% of total lymphocytes), 53% had moderate immune deficiency (200-500 cells per microliter or 14-28% of total lymphocytes), and 23% had negligible or no immune deficiency (CD4 over 500 and over 28% of total lymphocytes). Among 4,688 people with any viral load test after June 2007, 18% had a high viral burden (over 50,000 copies), 11% had a moderate viral burden (10,000-50,000 copies), 25% had a low viral burden (under 10,000 copies per microliter), and 46% had no detectable viral load. High CD4 levels and low viral burden are associated with better clinical outcomes.

Care status: Since late 2007, Public Health has worked to assure that all HIV infected people are receiving medical care and obtaining the recommended lab monitoring of their HIV disease. For every person diagnosed with HIV, we review laboratory results. If there is no evidence of any CD4 or viral load testing in the past 12 months, we attempt to locate and contact the person to ascertain whether they are in care, identify their barriers to accessing care, and refer them into care. Among 360 completed investigations as of April 2009, we have identified very few individuals (12) who are not in care, and we have learned that about half of these (6) are truly in care, and about 40% have moved out of Washington.

1. Estimates of People Living with HIV/AIDS in Washington state, HIV/AIDS Epidemiology Report, 1st Half 2007, Washington DOH.

Table 4: Trends in HIV diagnosis among King County residents (1999-2007)

Characteristics	1999-2007	
	Statistical trend	%
HIV exposure category		
Men who have sex with men (MSM)	No change	71%
Injection drug user (IDU)	Decreasing	7% to 5%
MSM/IDU	Increasing	7% to 11%
Heterosexual contact	No change	14%
Sex & race/ethnicity		
Male	No change	88%
White	Decreasing	60% to 54%
Black	No change	14%
Hispanic	Increasing	9% to 12%
Female	No change	12%
White	No change	4%
Black	No change	6%
Hispanic	No change	1%
Race/ethnicity		
White, non Hispanic	Decreasing	64% to 57%
Black, non Hispanic	No change	21%
Hispanic	Increasing	10% to 13%
Asian or Pacific Islander	Increasing	3% to 6%
American Indian/ Alaska Native	No change	1%
Age at diagnosis of HIV		
0-19 years	No change	1%
20-29 years	No change	23%
30-39 years	Decreasing	46% to 36%
40-49 years	No change	26%
50-59 years	Increasing	6% to 8%
60+ years	Increasing	1% to 3%
Residence		
Seattle	Decreasing	84% to 75%
North and East King County	Increasing	6% to 9%
South King County	Increasing	10% to 16%
Place of birth, race, and exposure		
Born outside the U.S.	Increasing	18% to 22%
Foreign-born blacks	*No change*	*9%*
Foreign-born who are not black	*Increasing*	*10% to 13%*
Born in the U.S.	Decreasing	77% to 71%
Native-born blacks	*No change*	*11%*
Native-born who are not black	*Decreasing*	*66% to 61%*

B. AIDS in King County

Summary: AIDS continues to have a major impact on the health of King County. Of 7,765 residents diagnosed with AIDS as of December 31, 2007, over 4,254 had died. The good news is the number of newly-diagnosed AIDS cases in King County has declined since 1993 and the number of AIDS deaths has dropped since 1995. After the 1993 change in the AIDS case definition and the introduction of highly active antiretroviral therapy (HAART) about 3 years later, opportunistic illnesses (OIs) have declined in incidence and in importance as AIDS-defining events. Deaths declined rapidly beginning in 1996 with the introduction of HAART. Because AIDS deaths have declined more rapidly than AIDS diagnoses, the number of King County residents living with AIDS continues to rise. Currently in King County, about 200 people are diagnosed with AIDS annually, and nearly 100 die from AIDS each year.

What is AIDS? Acquired Immunodeficiency Syndrome (AIDS) is caused by the Human Immunodeficiency Virus (HIV). When AIDS was first recognized in 1981, the cause was unknown. In 1984 HIV was identified as the virus that causes AIDS, and by 1985 a blood test was available for identifying HIV infection in persons who had not developed AIDS. Everyone who has AIDS also has HIV; AIDS is diagnosed after HIV infection has caused severe immune deficiency, as shown by special lab tests or certain opportunistic illnesses (OIs).

National ranking of King County: The latest published data[1] show that in 2007, the Seattle metropolitan statistical area (MSA) (King and Snohomish Counties) ranked 24th in the number and 56th in the annual rate of reported AIDS cases nationally. The Seattle MSA AIDS rate was 10.9 cases per 100,000 population, compared to an average 15.6 for all 118 metropolitan areas with more than a half million people.

Nationally, the five highest 2007 AIDS case rates per 100,000 population were in San Francisco (41.7), New York City (36.6), Ft Lauderdale (36.5), Miami (36.5), and Washington, DC (34.5). The Seattle MSA rate was 10.9, the Tacoma MSA rate was 4.5 and the Portland MSA rate was 8.6. Cases among the Seattle MSA comprise a decreasing proportion of total US cases. Seattle accounted for 1.01% of the US total at the end of 1992, 0.95% at the end of 1996, and 0.82% at the end of 2007.

King County has the highest AIDS rate among all Washington counties. Nearly one-third (29%) of the Washington population resides in King County, but almost two-thirds of all people diagnosed with AIDS resided in King County at the time of diagnosis. Within King County the AIDS rate is highest in Seattle.

AIDS diagnoses and deaths over time (Figure 2): As of December 31, 2007, 7,765 King County residents have been diagnosed with AIDS and 4,254 (55%) have died. New diagnoses of AIDS peaked in 1993 at 611, declined to about 250 cases each year from 1998 through 2004, and declined again to about 200 diagnoses per year in 2007. The number of HIV/AIDS deaths peaked in 1995 at 455 deaths, and declined to about 100 deaths annually 1997 through 2007.

With the introduction HAART in 1996, a dramatic decline in deaths and prevention of progression to AIDS began. Effective prevention for opportunistic infections (such as *Pneumocystis* pneumonia), better monitoring of HIV disease progression (such as by assays of HIV viral load and drug resistance), and sustained efforts to prevent HIV transmission also may have contributed to the decrease in numbers of AIDS diagnoses and deaths.

AIDS case and death numbers have been roughly level since 2004 for several reasons. Some people do not receive effective treatments because of late diagnosis of HIV status, while others have problems accessing treatment or refuse treatment. Other treatment failures are due to problems with taking medicines, adverse side effects, or the development of HIV strains resistant to currently available antiretroviral drugs. Finally, as people with long-standing HIV infection age, they die more frequently of conditions unrelated to their HIV infection. Figure 2 includes causes of death from all conditions.

While numbers of new AIDS diagnoses and deaths have declined, more King County residents than ever are living with AIDS. For example, there were fewer than 100 King County residents living with AIDS in 1984, over 2,000 living with AIDS in 1994, and over 3,600 living with AIDS in 2007. For the past few years there was an annual increase of 100-150 persons living with AIDS.

As a result of delayed progression of HIV to AIDS, the age of persons first diagnosed with AIDS has shifted toward older age groups, and the average age is gradually increasing. From 1993 through 1998, half of

persons diagnosed with AIDS were age 37 or younger; from 2002-2007 half were 39 or younger.

King County residents currently living with AIDS:

- Of the estimated 7,500 King County residents currently living with HIV, 45% (3,511) have been diagnosed with AIDS. The remaining 55% have HIV infection, but have not developed AIDS. Cases of HIV and AIDS are reported to Washington state and CDC.
- Sixty-two percent of Washington AIDS cases reside in King County. Twenty-nine percent of the state's population resides in King County.
- Eighty percent of those living with AIDS in King County were Seattle residents at the time of diagnosis. Thirty-one percent of the King County population lives in Seattle.
- Three-quarters of people diagnosed with AIDS in King County were 30-49 years old at the time of diagnosis. Most (98%) were 20-59 years of age at the time of diagnosis.
- Six people currently living with AIDS in King County were under 13 years at the time of AIDS diagnosis, of whom five were infected perinatally. Seven people were age 13-19 at the time of AIDS diagnosis, including two men who have sex with men (MSM), two MSM/IDU (injection drug user), two with heterosexually-acquired infection, and one infected through receipt of blood products.
- King County residents of color are disproportionately affected by AIDS. Non-Hispanic blacks constitute only 6.1% of the population, but represent 17% of those currently living with AIDS. Likewise, Hispanics represent about 6.1% of the population, and comprise 10% of those currently living with AIDS.
- Males constitute 90% (3,167) of King County residents currently living with AIDS relative to 50% of the general population.

Leading causes of death (Figure 3): HIV infection has dropped dramatically as a leading cause of death among 25-44 year old men in King County. From 1989 to 1996 HIV was the leading cause of death, but dropped to the 6th leading cause in 2005 after accidents, cancers, suicide, heart disease, and homicide.[2] HIV infection has remained a low contributing cause of death for young women in King County. Nearly half of all HIV deaths now occur among persons over age 45.

Please note that a limitation of leading causes of death data is that some people with AIDS die from conditions that are not considered HIV-related.[3] For example, between 2000 and 2006, 33% of deaths among people (men and women of all ages) with HIV were attributed by the King County Vital Statistics Office to underlying causes other than HIV: cancers (8%), heart disease (6%), accidents (5%), suicides (3%), and pulmonary disease, liver disease, and metabolic disorders (2% each).

AIDS-related opportunistic illnesses (OI): The case definition for AIDS has been modified several times, as medical understanding of the syndrome improved. The definition now includes any one of 26 OIs that occur predominantly as a result of destruction of the immune system, and also includes direct laboratory evidence of immune suppression even before development of opportunistic illness. The occurrence of an OI reflects two or more missed opportunities for prevention. These missed opportunities include failure to prevent HIV infection initially, failure of providing adequate HAART therapy to prevent disease progression, and for some OIs (notably *Pneumocystis* pneumonia [PCP] and *Mycobacterium avium* complex [MAC]) failure to provide adequate OI prophylaxis. Some OIs occur more frequently in MSM and others are more frequent among IDUs and/or women. OIs have declined markedly in incidence (both locally and nationally) since the introduction of HAART. With the AIDS case definition changed in 1993 to include severe immunosuppression, most diagnoses of AIDS no longer include an OI.

For additional information on the frequency of illnesses see Section C. HIV-related co-morbidities and social factors.

1. Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report. 2007. Vol. 19. Atlanta: US Department of Health and Human Services, Centers for Disease Control and Prevention; 2009.
2. King County Vital Statistics / VISTA System
3. Mortality among King County residents with AIDS. HIV/AIDS Epidemiology Report, First Half 2008. Volume 72:19-21.

Figure 2: New AIDS cases and deaths in King County (1987-2007)

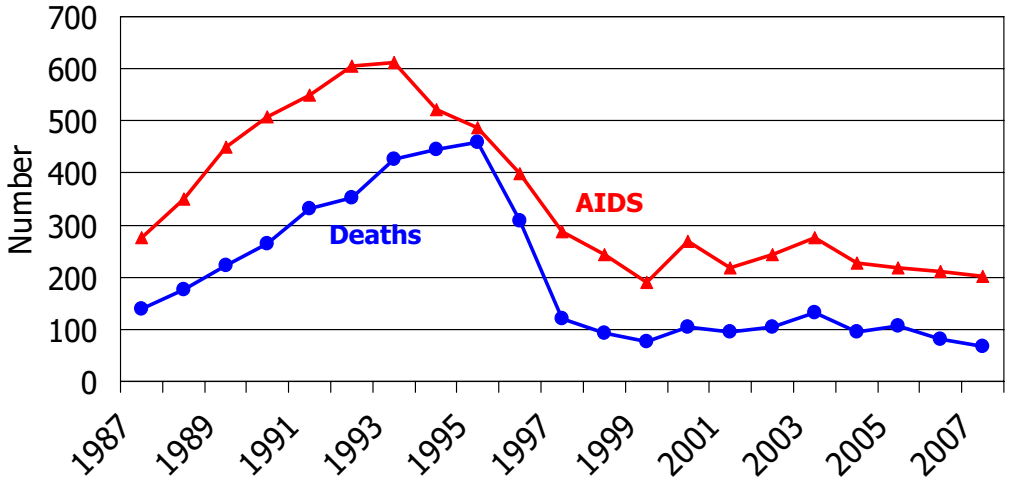
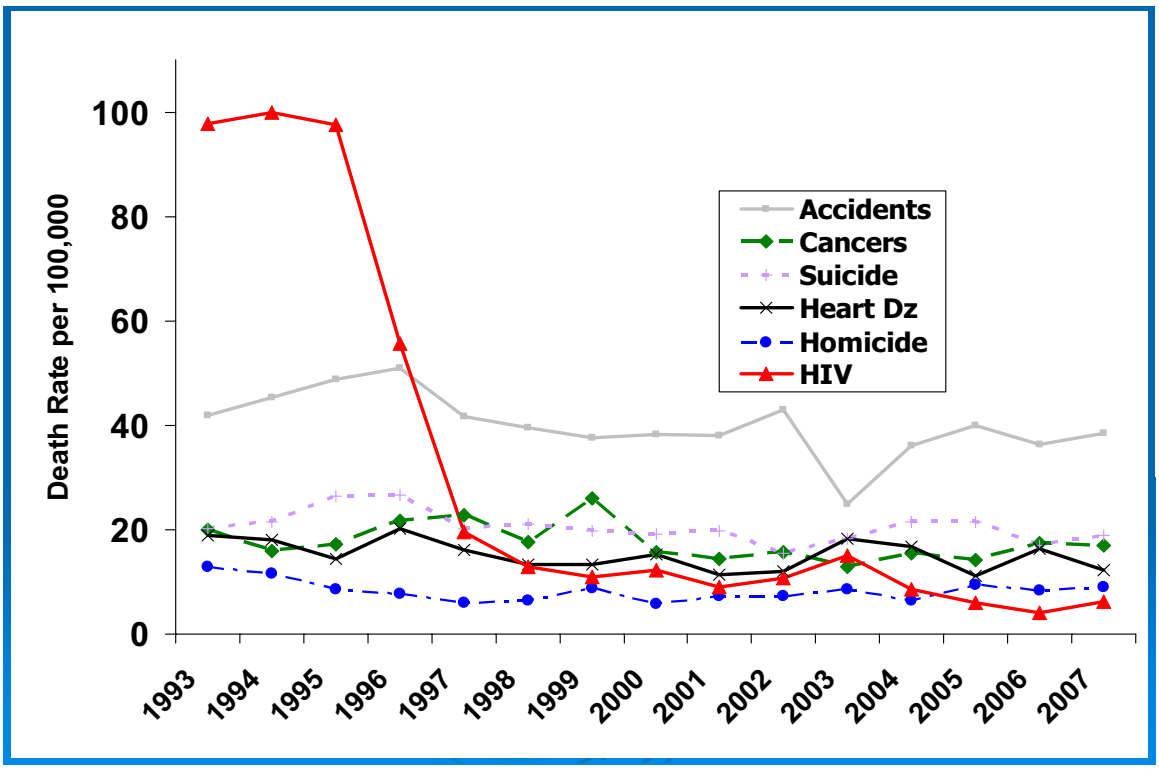


Figure 3: Leading causes of death in males age 25-44, King County (1993-2007)



C. HIV-related co-morbidities and social factors

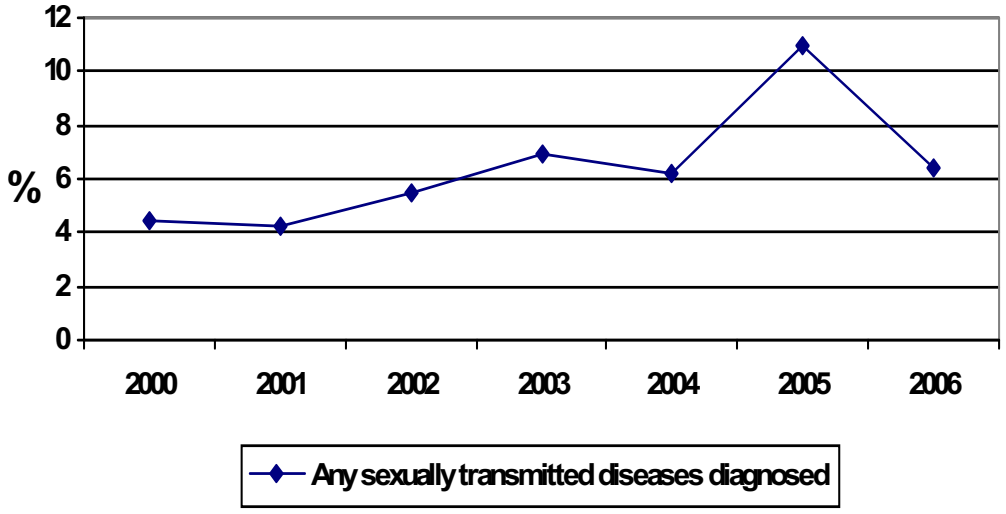
Background: People with HIV infection are at high risk for a wide range of illnesses. Among the most severe illnesses are AIDS-defining OIs. HIV/AIDS-related illnesses and co-morbidities have a significant impact on clinical presentation, quality of life, and medical care, as well as mortality for patients with HIV. Some of the diseases and conditions serve as markers of ongoing risks (sexually transmitted infections, substance use) and impact HIV treatment and the use of health services (homelessness, mental illness, substance use). The co-morbidity and OI information below was derived from four sources: the Adult/Adolescent Spectrum of HIV-related Diseases (ASD, 1989-2004), the Care and Prevention survey (CAP, 2006), the Medical Monitoring Project (MMP, 2005, 2007, 2008) data, and the HIV/AIDS Reporting System (HARS, 1982-present).

ASD was a dynamic prospective longitudinal medical-record review cohort project. A total of 4,799 people were followed in ASD for an average of 3.5 years each. We used ASD data from 2000 through 2004 with an average 1,128 individuals followed annually. **MMP** is an interview and medical record abstraction project that seeks to learn more about people living with HIV/AIDS and in care in Washington state. The project has collected medical record data on a total of 476 people. At this time, only the medical record data for the 95 participants who participated in 2005 are available for analysis. We conducted **CAP** during an MMP hiatus year and combined elements of MMP (chart review and interview) and ASD (CAP used the same chart review form as ASD), enrolling 315 HIV-infected individuals. We used core surveillance data from the **HIV/AIDS registry** to monitor homelessness, as the registry collected homeless status for all reported HIV cases using a consistent data collection methodology from 2000-2008. Other trend data may differ due to different project protocols and enrollment methods, as well as real time-related trends.

Sexually transmitted infections (Figure 4): Sexually transmitted infections (STIs) are important markers of ongoing risk-taking among HIV-infected people, with rates from 6-11% overall. In addition, most STIs greatly increase the risk of HIV transmission.

- The overall rate of diagnosis of any STI in the ASD cohort was 6% per year. Gonorrhea rates averaged 2% per year, syphilis 1% per year, Chlamydia 1% per year, pelvic inflammatory disease (in women) 3% per year, and non-gonococcal urethritis (in men) 2% per year.
- The overall prevalence of any STI in MMP was 11% among the 95 participants for whom medical record information is available. In MMP, the overall prevalence of syphilis was 2%, Chlamydia 2%, and gonorrhea 3%.
- The overall prevalence of any STI in CAP was 6%,including 4% with syphilis, 4% with Chlamydia and 3% with gonorrhea.

Figure 4: Sexually transmitted diseases, including syphilis, gonorrhea, Chlamydia, pelvic inflammatory disease (women), and non-gonoccocal urethritis (men) among HIV-infected persons, King County



2000-2004: Adult/adolescent Spectrum of HIV-related Diseases (mean N = 1,128)
2005: Medical Monitoring project (N =95)
2006: Care and Prevention (N=315)

Hepatitis prevalence and incidence (Figure 5): Hepatitis B (HBV) and hepatitis C (HCV) are two viral infections of the liver. When chronic, they greatly increase the risk of severe liver disease, including cirrhosis and liver cancer. About 5-10% of people infected with HBV as an adult, and about 80-85% of persons infected with HCV become chronically-infected carriers. Current recommendations are that all persons diagnosed with HIV should be screened for HCV.

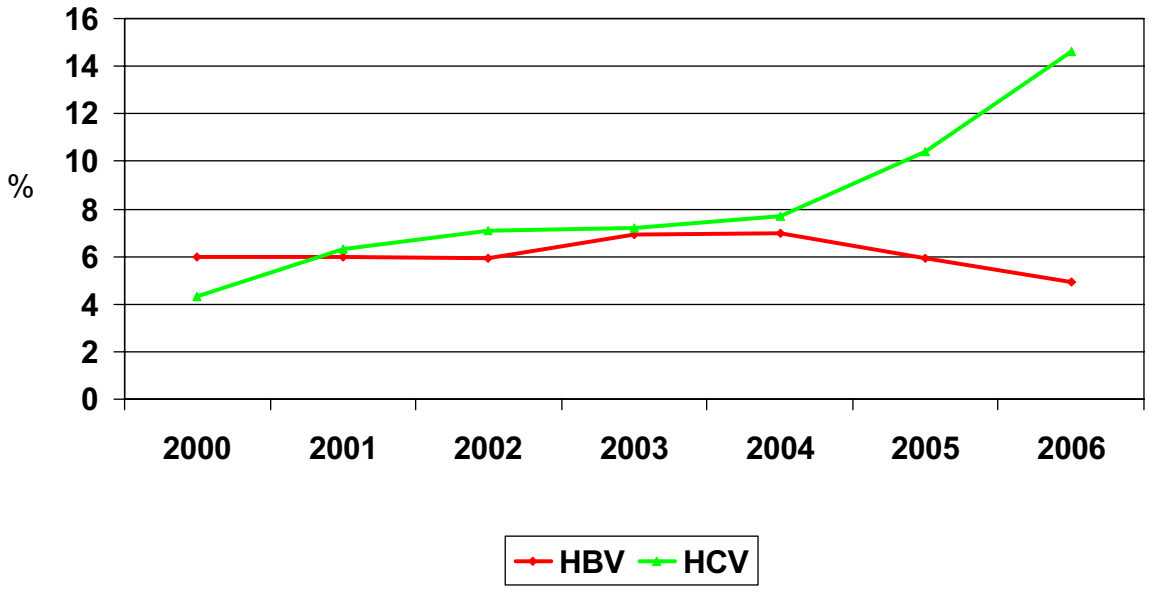
Although hepatitis probably does not worsen the course of HIV infection, HIV infection accelerates HBV and HCV progression to cirrhosis and liver cancer. Furthermore, hepatitis (or its outcomes, such as cirrhosis) may limit HIV treatment options. In addition, when viral hepatitis newly develops in a person infected with HIV, it suggests that the person may be engaging in unsafe sexual or needle-sharing behaviors.

- In ASD, 41% and 42% of 2,499 people followed since 1998 were screened for hepatitis B and C respectively. Overall, 9% of HIV-infected people screened for HBV had chronic HBV infection and 19% screened for HCV had chronic HCV infection.

Figure 5 shows hepatitis prevalence over time among *all* persons followed in ASD regardless of screening status, and is weighted by race/ethnicity, sex, and HIV exposure mode.

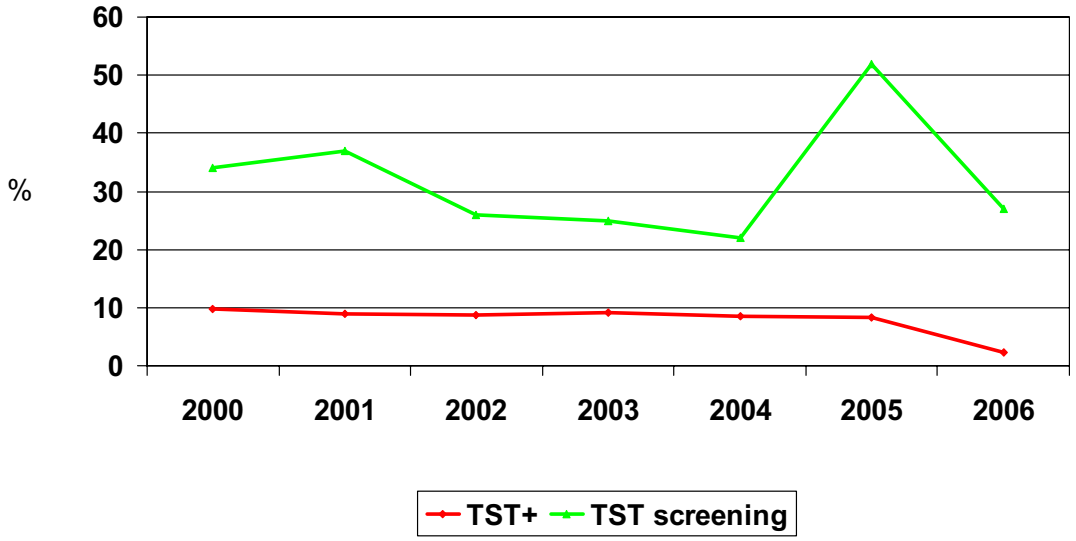
- The prevalence of hepatitis B did not vary substantially by mode of HIV exposure among those screened; about 10% of both MSM and IDU were infected. The prevalence of HCV was highest among MSM/IDU (67%) followed by heterosexual IDU (37%) and non-injecting MSM (8%). People followed in ASD may have been diagnosed with hepatitis at non-ASD sites, so these proportions may be considered minimal estimates.
- In a later study, MMP, 84% of participants were screened for hepatitis B and 76% were screened were for hepatitis C. Hepatitis B infection status was not well documented in MMP and 10% of those screened had documented HCV.
- About 5% of CAP participants had been diagnosed with chronic HBV and 15% with chronic HCV after weighting by race/ethnicity, sex, and HIV exposure mode. More IDU may have been enrolled in CAP relative to MMP and ASD.

Figure 5: Prevalence of chronic viral hepatitis in King County residents with HIV



2000-2004: Adult/adolescent Spectrum of HIV-related Diseases (mean N = 1,128)
2005: Medical Monitoring project (N =95 for HCV; rolling average used for HBV)
2006: Care and Prevention (N=315)

Figure 6: Prevalence of TB screening and infection (e.g. TST+ or PPD+, not disease) in HIV-infected King County residents



2000-2004: Adult/adolescent Spectrum of HIV-related Diseases (mean N = 1,128)
2005: Medical Monitoring project (N=95)
2006: Care and Prevention (N=315)

Latent tuberculosis (TB) infection (Figure 6): TB is a greater threat to a person infected with HIV relative to an uninfected person because HIV increases the risk of disease acquisition and progression to active TB. HIV care guidelines state that all persons with HIV should be screened for latent TB infection.

- 54% of the ASD cohort had tuberculin skin test (TST or PPD) results documented in their medical records; of these, 13% were documented to be TST positive, suggesting latent infection with *M. tuberculosis*. Of those documented as TST positive, 53% received prophylactic isoniazid (INH) to decrease their risk of developing active tuberculosis.
- In MMP, 51% had a tuberculin skin test result documented in their medical records.
- In CAP, only 27% had a tuberculin skin test documented in their medical records.

Mental illness: Mental illness can impair an HIV-infected person's ability to receive HIV prevention and treatment services.

- Schizophrenia and other psychosis diagnoses were present in about 6-8% of the ASD cohort each year since 2000. In comparison, about 1% of the general population are diagnosed with schizophrenia.
- Bipolar disorder was diagnosed in 6% of the ASD cohort. Bipolar type 1 disorder occurs among 0.4-1.6% of the general population.
- Depression is the most commonly diagnosed mental illness, with 50-55% of ASD patients having ever had a depression diagnosis and about 20-30% of ASD patients currently treated for or diagnosed with depression each year. At any given time, 3-6% of Americans suffer from clinical depression, but this increases to 20-25% for people who have a chronic medical condition.
- Overall, 72% of the MMP participants had been diagnosed with some type of mental illness: nearly two-thirds (63%) had depression, 7% a history of bipolar disorder, 6% psychosis, and 28% anxiety.

Substance use (Figure 7): Similar to people who have mental illness and HIV, individuals who have substance use problems may have difficulties accessing HIV prevention and treatment services or following recommendations.

- Current injection drug use was present in about 6-9% of the ASD cohort each year (2000-2004).
- Current alcohol problems or a history of problems were present in 8-11% of the ASD cohort each year (2000-2004).
- Other drug use was diagnosed in 9-13% of the ASD cohort each year, 2000 through 2004.
- About 32% of enrollees in ASD have tobacco use mentioned in their medical records, including

smoking cigarettes or cigars, or using chewing tobacco. A gradual decline was documented in tobacco use, from a high of 38% in 1995 to 32% in 2003.

- 56% of the CAP and 44% of MMP participants self-reported being current smokers. (CAP participants were more heavily recruited from publicly funded medical facilities relative to MMP and ASD thus more likely to be of lower socio-economic status and more likely to smoke and have substance use issues.)

- 12% of MMP participants had injection drug use documented in their medical record.

- 19% of MMP participants had documented problems with alcohol in their medical records.

- 30% of MMP participants had use of non-injection drugs documented in their medical records.

Persons with disabilities:

- *Hearing disabilities*: 2.4% of the ASD cohort was diagnosed with a hearing disability, including complete and partial deafness. No noticeable trends in prevalence were noted over the 14 years of the study. Five percent of the 246 MMP participants who completed the local section of the MMP interview in 2007 and 2008 reported problems with hearing loss. Seven percent of the CAP participants reported problems with hearing loss.

- *Visual disabilities*: Over the course of ASD, 9.5% of the cohort has had a diagnosis of visual impairment, including complete and partial blindness. Visual impairment increased in the early 1990's and reached a plateau of 14% 1993 through 1996. Probably due to HAART-associated decreases in cytomegalovirus (CMV) retinitis, visual impairment diagnoses have been cut by more than half and were found in 6% of the cohort in 2003. Ten percent of the 246 MMP participants who completed the local section of the survey in 2007 and 2008 reported problems with low vision. Ten percent of the CAP participants reported problems with vision.

- *Impaired mobility*: About 1% of HIV-infected persons followed by ASD (roughly 1,200 per year 1990–2003) were diagnosed with mobility impairments, including paraplegia, semiplegia, and/or other types of paralyses. Eighteen percent of the 246 MMP participants who completed the local section of the survey in 2007 and 2008 reported problems with impaired mobility. Ten percent of the CAP participants reported problems with impaired mobility.

Homelessness: Homeless individuals are more likely to be impacted by mental illness and substance use than individuals who are not homeless. Homelessness, with or without these co-morbid conditions, makes health care access and medication adherence challenging. The HIV/AIDS registry tracks individuals who are homeless at the time of their HIV diagnosis. Most of this information is collected by chart review or provider report and is likely to be underreported. About one percent of people newly diagnosed with HIV are homeless at the time of their diagnosis. No consistent upward or downward trend was observed in the proportion of people who were homeless between 2000 and 2008.

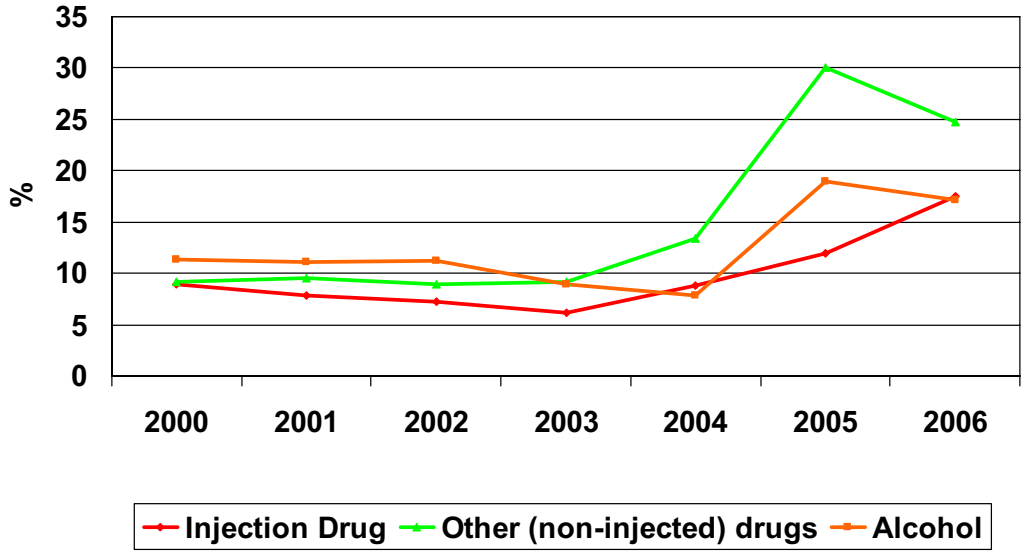
Opportunistic illnesses (OIs) (Figure 8): People with HIV infection are at high risk for a wide range of illnesses due to behavioral risk factors and HIV itself. Among the most severe illnesses are the 26 AIDS-defining OIs that occur as a result of HIV disease progression, and generally occur only after substantial damage to the immune system. OIs have markedly declined (locally and nationally) in incidence since the availability of HAART. Although HAART use has drastically reduced the incidence of OIs, these still occur, especially among individuals with late HIV diagnoses (e.g. diagnosed with HIV and AIDS concurrently).

- 1,820 persons living with AIDS were observed in ASD pre-HAART, and 1,254 (69%) had one or more OI diagnosed in this period.

- 1,515 were observed post-HAART; 556 (37%) were diagnosed with one or more OI. People in ASD were followed an average of 3.4 years. Most OIs occurred at rates between 1 and 2 per 100 HIV-infected individuals.

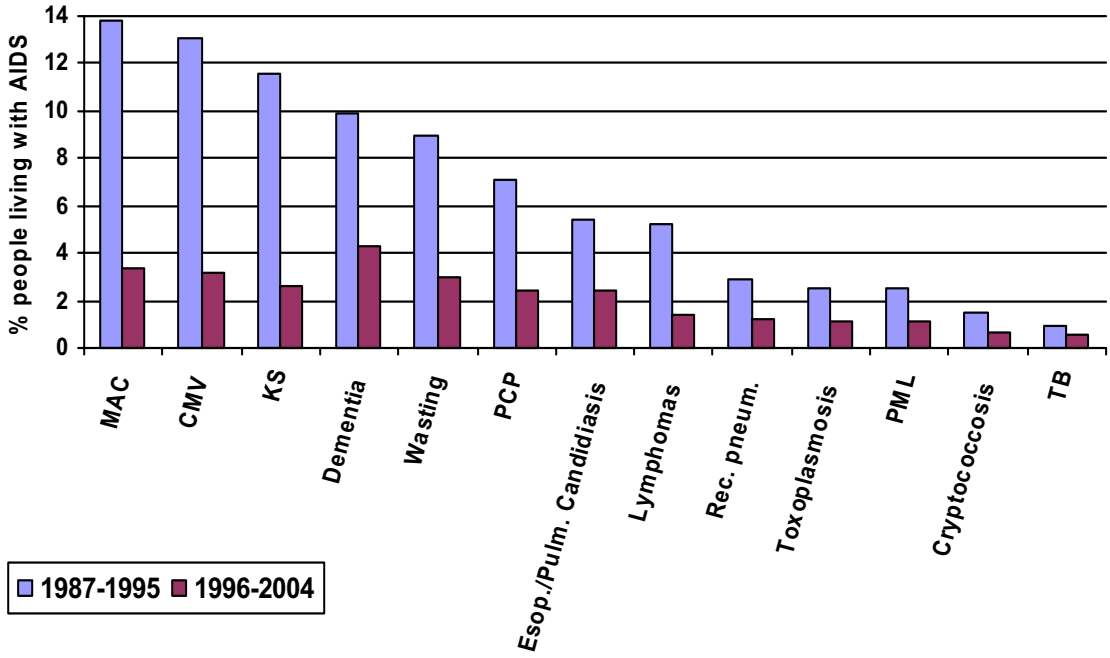
- In MMP, 68 (72%) of the 95 people living with HIV interviewed in 2005 were diagnosed with AIDS. Of these, 27 (40%) had one or more OI in the HAART era (1996-2005).

Figure 7: Prevalence of alcohol, injection drug use (IDU) and non-injected drug use In HIV infected King County residents



2000-2004: Adult/adolescent Spectrum of HIV-related Diseases (mean N = 1,128)
2005: Medical Monitoring project (N=95)
2006: Care and Prevention (N=315)

Figure 8: Opportunistic infections in pre-HAART and post-HAART eras from the Seattle Adult/Adolescent Spectrum of HIV-related Disease Project



D. Geographic distribution of HIV/AIDS across King County

Summary: Most HIV-infected residents of King County live around central Seattle, with progressively lower case rates further from the central core. Compared to cases from other areas in the county, South King County has a distinctive racial distribution of cases, with a lower proportion of whites and a higher proportion of blacks than other areas. South King County cases were also more likely to be female, fall into the heterosexual exposure category and be born outside of the U.S.

Characteristics of HIV/AIDS cases by region of residence (Table 5): King County accounts for 59% of newly diagnosed HIV/AIDS cases in Washington state.[1] From 1999 to 2007 the proportion of King County cases residing in the City of Seattle decreased from 84% to 75%, the proportion from South King County increased from 10% to 16% and the proportion from North and East King County rose from 6% to 9%.[1]

For 2,310 people newly diagnosed with HIV in King County from 2002 through 2008, the residence at the time of diagnosis was categorized in terms of four broad regions of the county: Seattle, East King County, North King County and South King County. Cases from South King County differed from those in other regions of the county in a number of characteristics: they were less likely to be white and more likely to be black, female, classified in the heterosexual exposure category and born outside of the U.S.

Numbers of new HIV cases and rates by zip code (Table 6 and Figure 9): The zip code of residence at the time of new HIV diagnosis is shown for the 2,157 people with valid data. Zip codes are grouped by Health Planning Areas, 25 areas that represent the county on a broader scale by breaking Seattle into neighborhood groupings and pooling together contiguous cities and areas in King County outside of Seattle. Health Planning Areas were designed to correspond with neighborhoods, utilization of health clinics, travel patterns and other community factors.

Table 6 also presents rates of new diagnoses of HIV by zip code, based on King County zip code population estimates for 2006.[2] These figures are not influenced by differences in survival or migration across zip codes after diagnosis.

The overall rate for new HIV/AIDS cases 2002-2008 in King County was 17.9 annually per 100,000 population, similar to the national rate of 19.0 annually per 100,000 population reported by CDC in 2006.[3] The geographic distribution showed a concentration of new cases in three central zip codes and a relatively rapid fall off beyond these areas. The 98122 zip code had the highest numbers and rate of new cases. This zip code encompasses Capitol Hill south of Denny Way, and includes parts of the Central District and Madrona. The next highest concentrations are in the 98102 zip code (Capitol Hill north of Denny Way and Eastlake), and 98104 (downtown Seattle south of Spring Street, First Hill, Pioneer Square and the International District). reported in King County. These three zip codes account of 22% of all cases reported in King County. Five zip codes in King County reported no new HIV/AIDS cases in 2002-2008.

Table 5: Demographic characteristics and transmission mode of HIV/AIDS cases newly diagnosed in King County (2002-2008)[a]

	East King County		North King County		Seattle		South King County		Total	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Age at diagnosis										
<18	1	<1%	0	-	1	<1%	8	2%	10	<1%
18-29	46	30%	7	15%	404	24%	113	29%	570	25%
30-39	29	19%	9	19%	320	19%	65	17%	423	18%
40-49	63	40%	27	56%	813	47%	162	42%	1,065	46%
50+	17	11%	5	10%	181	11%	39	10%	242	11%
Race										
White	100	65%	32	67%	1,053	62%	165	43%	1,350	59%
Black	22	14%	9	19%	315	18%	139	36%	485	21%
Hispanic	23	15%	5	10%	207	12%	49	13%	284	12%
Native American	0	-	0	-	27	2%	4	1%	31	1%
Asian/Other	9	6%	2	4%	78	5%	20	5%	109	5%
Multiple races	1	<1%	0	-	31	2%	10	3%	42	2%
Sex										
Male	135	87%	43	90%	1,558	91%	297	77%	2,033	88%
Female	21	13%	5	10%	161	9%	90	23%	277	12%
Transmission mode										
MSM	100	64%	34	71%	1,141	66%	166	43%	1,441	62%
IDU	0	-	0	-	93	5%	23	6%	116	5%
MSM/IDU	5	3%	6	13%	156	9%	19	5%	186	8%
Heterosexual	28	18%	3	6%	153	9%	97	25%	281	12%
Other	1	<1%	1	2%	1	<1%	5	1%	8	<1%
Not reported	22	14%	4	8%	175	10%	77	20%	278	12%
Total	**156**	**7%**	**48**	**2%**	**1,719**	**74%**	**387**	**17%**	**2,310**	**100%**

[a] Numbers may not add up for each category due to missing data.

Table 6: Number and rate of newly diagnosed HIV/AIDS cases by zip code in King County (2002-2008)

Health Planning Area	Zip Code	Population in 2006	# new HIV cases 2002-2008	Cases /100,000 Per year [a]
King County	**Total**	**1,840,884**	**2,310**	**17.9**
N Seattle/North King County	**Total**	**130,107**	**115**	**12.6**
	98125	35,951	48	19.1
	98133	42,314	32	10.8
	98155	33,180	21	9.0
	98177	18,662	14	10.7
N Seattle (Ballard, Fremont, Greenlake)	**Total**	**91,334**	**105**	**16.4**
	98103	43,225	57	18.8
	98107	19,157	27	20.1
	98117	28,952	21	10.4
N Central Seattle (Capitol Hill, Eastlake)	**Total**	**40,702**	**234**	**82.1**
	98102	20,685	171	118.1
	98112	20,017	63	45.0
N East Seattle (University, Wedgewood)	**Total**	**82,826**	**68**	**11.7**
	98105	37,315	28	10.7
	98115	42,902	40	13.3
	98195	2,609	0	0
N West Seattle (Queen Anne, Magnolia)	**Total**	**56,371**	**127**	**32.2**
	98109	16,355	68	59.4
	98119	20,977	42	28.6
	98199	19,039	17	12.8
Central Seattle / Downtown	**Total**	**67,469**	**554**	**117.3**
	98101	10,732	90	119.8
	98104	13,782	125	129.6
	98121	13,281	66	80.0
	98122	29,674	273	131.4
West Seattle	**Total**	**77,842**	**117**	**21.5**
	98106	23,358	47	28.7
	98116	20,834	18	12.3
	98126	20,006	33	23.6
	98136	13,644	19	19.9
SE Seattle (Beacon Hill, Georgetown)	**Total**	**90,477**	**227**	**35.8**
	98118	40,797	98	34.3

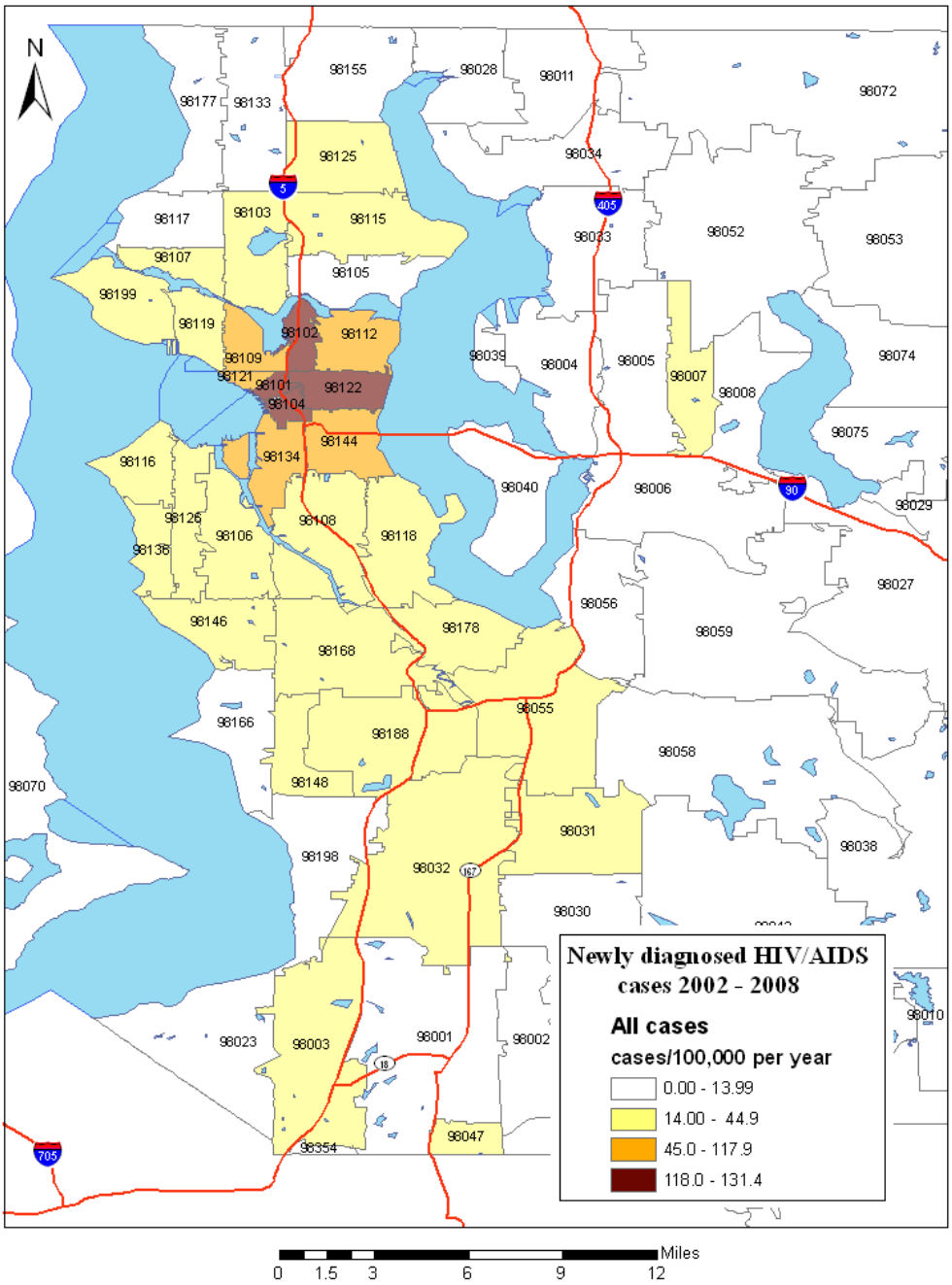
SE Seattle (Beacon Hill, Georgetown)-continued	98134	1,333	5	53.6
	98144	20,637	78	54.0
Auburn	**Total**	**94,732**	**68**	**10.3**
	98001	28,272	6	3.0
	98002	30,946	13	6.0
	98047	5,075	5	14.1
	98092	30,437	8	3.8
Bellevue	**Total**	**124,941**	**61**	**7.0**
	98004	24,420	17	9.9
	98005	17,030	2	1.7
	98006	36,352	10	3.9
	98007	23,127	20	12.4
	98008	24,012	10	5.9
Bothell / Woodinville / Kenmore	**Total**	**86,399**	**24**	**4.0**
	98011	29,137	11	5.4
	98028	20,104	6	4.3
	98072	21,797	7	4.6
	98077	15,361	0	0
Burien / Highline	**Total**	**54,153**	**39**	**10.3**
	98166	20,856	16	11.0
	98198	33,297	23	9.9
Cascade / Covington	**Total**	**68,981**	**20**	**4.1**
	98038	28,075	1	0.5
	98058	40,906	19	6.6
Federal Way	**Total**	**92,168**	**32**	**5.0**
	98003	43,544	42	13.8
	98023	48,624	26	7.6
Issaquah / Sammamish	**Total**	**83,858**	**19**	**3.2**
	98027	26,434	11	5.9
	98029	17,634	5	4.0
	98074	22,944	3	1.9
	98075	16,846	0	0
Kent	**Total**	**141,362**	**97**	**9.8**
	98030	33,195	17	7.3
	98031	36,815	34	13.2

Kent (continued)	98032	29,396	29	14.1
	98042	41,956	17	5.8
Kirkland	**Total**	**74,095**	**25**	**4.8**
	98033	32,348	8	3.5
	98034	41,747	17	5.8
Lower Valley / Snoqualmie [a]	**Total**	**47,316**	**6**	**1.8**
	98014	7,193	1	2.0
	98019	9,775	0	0
	98024	7,298	0	0
	98045	14,107	2	2.0
	98065	8,490	2	3.4
Mercer Island	**Total**	**24,830**	**5**	**2.9**
	98039	2,967	2	9.6
	98040	21,863	3	2.0
Redmond / Union Hill	**Total**	**71,304**	**33**	**6.6**
	98052	54,469	27	7.1
	98053	16,835	6	5.1
Renton	**Total**	**110,145**	**86**	**11.2**
	98055	21,227	31	20.9
	98056	30,211	21	9.9
	98057	10,092	0	0
	98059	27,499	8	4.2
	98178	21,116	26	17.6
Southeast King County	**Total**	**31,367**	**5**	**2.3**
	98010	5,392	2	5.3
	98022	22,279	3	1.9
	98051	3,696	1	3.9
Tukwila / SeaTac [a]	**Total**	**29,394**	**53**	**25.8**
	98148	8,269	17	29.4
	98188	21,087	36	24.4
Vashon Island	**98070**	**11,151**	**5**	**6.4**
White Center / Skyway	**Total**	**57,560**	**67**	**16.6**
	98146	25,754	25	13.9
	98168	31,806	42	18.9

[a] Zip codes with fewer than 500 King County residents are not shown separately but are included in the total for each area. These include 98158, 98224, and 98288.

Figure 9 maps the rates of new HIV/AIDS diagnoses by zip code. The map represents only the western, more densely populated portion of King County. No zip code missing from the map had more than 10 cases in 2002-2008. The map highlights the focal pattern of HIV/AIDS case rates, with the highest rates concentrated in central Seattle and progressively lower rates in zip codes farther from this central area.

Figure 9: Map of HIV/AIDS case rates by King County zip code (2002-2008)



1. HIV/AIDS Epidemiology Unit. Public Health - Seattle & King County and the Infectious Disease and Reproductive Health Assessment Unit, Washington state Department of Health, HIV/AIDS Epidemiology Report, First Half, 2008: volume 72. *Available at: http://www.kingcounty.gov/healthservices/health/communicable/hiv/epi/reports.aspx* 2008.
2. Washington state Department of Health, Vista Partnership, Krupski Consulting. *Population Estimates for Public Health Assessment*, accessed June 2009.
3. Centers for Disease Control and Prevention. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. *2006 Disease Profile,* Available at: *http://www.cdc.gov/hiv/topics/surveillance/resources/reports. 2008*.

CHAPTER IV. Behavioral Indicators

Background: It is important to understand HIV-related behaviors in order to effectively target HIV prevention programs to different population groups. There are several sources of behavioral data that can be used for this purpose. To address issues related to prevention of HIV transmission, the Medical Monitoring Project (MMP) collects data on sexual and drug-use behaviors among persons diagnosed and reported with HIV. Monitoring of HIV-related behaviors among populations at higher risk for HIV is important to recognize recent trends in behaviors that contribute to the epidemic. The National HIV Behavioral Surveillance (NHBS) system collects data about HIV risk behaviors and access to HIV prevention services among populations at increased risk of HIV infection. Finally, the Behavioral Risk Factor Surveillance System (BRFSS) collects data on sexual behaviors in the general population. Data from these three projects are presented below.

A. Behavioral risks in persons living with HIV – Medical Monitoring Project (MMP)

Methods: MMP involves a multi-stage sampling methodology in order to try and capture a representative sample of people with HIV who are in care. This is achieved by state and local health departments identifying all HIV care providers in their jurisdictions and then choosing a representative sample of these providers to participate in the MMP. The health department contacts all sampled providers; HIV-infected patients are then selected from these sampled providers.

MMP has two components: an interview and medical record abstraction. MMP staff invite each selected patient to participate in a face-to-face interview. The interview takes approximately 45 minutes and includes questions concerning medical history, use of medical and social services, and risk behaviors. Trained MMP abstractors then collect additional information from the patient's medical chart to complement data from the interview.

Table 7: Sexual behaviors reported by select King County, WA participants in the Medical Monitoring Project (2005, 2007, 2008)

	MSM, N=181	MSM/IDU, N=35	IDU, N=24
# Sexual partners last 12 months			
0	32%	29%	50%
1	30%	14%	33%
2-3	11%	14%	13%
≥4	25%	43%	4%
Used condom in all sex last 12 months			
Yes	83%	71%	62%
No	17%	29%	38%
Condom use with last partner			
Main partner	30%	0%	58%
Casual partner	24%	0%	25%
Know HIV status of last partner			
Yes	76%	72%	75%
No	22%	28%	25%
Discussed HIV status before sex			
Yes	58%	60%	58%
No	25%	12%	25%
Unknown	17%	28%	17%

The HIV/AIDS registry risk categories were used to define risk groups among the MMP participants for the following analysis. Although the numbers are small, especially in the men who have sex with men and also inject drugs (MSM/IDU) and injection drug use (IDU) risk groups, the data do elucidate some areas that could be important for future prevention resources.

Summary of results (Table 7): Among MMP participants, a higher percentage of MSM/IDU reported four or more sex partners in the last 12 months. A higher percentage of MSM compared with MSM/IDU and IDU reported using a condom during sex in the last 12 months.

Summary of results (Table 8): Among MMP participants, a higher percentage of MSM/IDU compared with MSM and IDU reported injecting drugs in the last 12 months. Non-injection drug use was common. More than 70% of all three groups reported marijuana use in the past 12 months, over half of MSM/IDU and one quarter of MSM reported methamphetamine use, and 64% of IDU reported using crack.

Table 8: Drug use behaviors reported by select King County, WA participants in the Medical Monitoring Project (2005, 2007, 2008)

	HARS		
MMP Drug & Alcohol Behaviors	**MSM N=181**	**MSM/ IDU N=35**	**IDU N=24**
Ever injected drugs			
Yes	19%	86%	83%
No	81%	14%	17%
Injected drugs last 12 months			
Yes	1%	43%	13%
No	18%	43%	71%
Used non-injection drugs last 12 months			
Yes	49%	69%	58%
No	51%	31%	42%
Non-injection drugs most frequently used last 12 months			
Marijuana	35%	51%	42%
Poppers	20%	23%	4%
Methamphetamines	11%	37%	0%
Crack	4%	29%	38%
Cocaine	7%	11%	17%
Used drugs or alcohol during sex with last casual partner			
Yes	35%	56%	100%
No	65%	44%	0%
Binge drinking (5 or more drinks) in the last 30 days >4 times			
Yes	8%	11%	4%
No	92%	89%	96%

B. Behavioral risks in populations at higher risk for HIV - National HIV Behavioral Surveillance (NHBS) system

Methods: The NHBS system is funded by the Centers for Disease Control and Prevention (CDC) in 21 large urban areas in the U.S. to monitor HIV-related behaviors and access to HIV prevention services among groups at highest risk for HIV. Surveys were conducted locally among the following groups from 2005 to 2008:

1. Injection drug users (NHBS-IDU1) 18 years and older were surveyed in 2005 using respondent-driven sampling (RDS). RDS starts with a few participants selected who recruit IDU peers who in turn recruit their IDU peers. For RDS data analysis, the prevalence of factors of interest is estimated after adjustment for potential recruitment biases (such as network size and "who recruits who").

2. Higher risk heterosexuals (NHBS-HET1) 18-50 years old were surveyed in 2007 using venue-based sampling (VBS). In VBS, participants are recruited at venues in the community that are frequented by members of the survey population. For NHBS-HET1 venues were located in three census tracts that were judged to have disproportionately high numbers of residents at elevated risk for heterosexually transmitted HIV infection based on HIV case reporting and high poverty rates (census data).

3. Men who have sex with men (NHBS-MSM2) 18 years and older were surveyed in 2008 using VBS. Eligible venues could be located throughout King County, but most were in Seattle.

Standardized CDC study protocols and questionnaires are used in each survey cycle. NHBS aims to survey samples that represent the community. Although the majority of survey participants are HIV-negative, persons with HIV are also included.

Summary of results (Table 9): MSM2 participants reported a much higher number of sex partners than IDU1 and HET1 participants. About one-third of each sample reported using a condom with their last partner. IDU1 and MSM2 participants were more likely to know the HIV status of their last sex partner than were HET1 participants. While about one-third of MSM2 participants reported unprotected anal intercourse with a man of opposite or unknown HIV status in the last year, only 11% reported that this was the case with their last partner.

Table 9: Sexual behaviors of Seattle-area NHBS participants (2005–2008)

Sexual behaviors last 12 months	***IDU1 (2005)[a]***	***HET1 (2007)***	***MSM2 (2008)***
Total	**N=371 N (%)**	**N =509 N (%)**	**N = 368 N (%)**
Number of sex partners[b,c]			
0	66 (17%)	0	0
1	118 (38%)	208 (41%)	65 (18%)
2-4	110 (30%)	236 (46%)	118 (32%)
5-9	43 (7%)	40 (8%)	84 (23%)
10+	34 (8%)	25 (5%)	101 (27%)
Any female sex partners	---	---	26 (7%)
Any male-to-male sex[d]	33 (7%)	---	368 (100%)
Any exchange sex partners	70 (19%)	40 (8%)	14 (4%)
Any UAI with a partner of opposite or unknown HIV status[e]	---	---	110 (31%)
Condom use with last sex partner	70 (30%)	152 (31%)	123 (34%)
Knew HIV status of last partner	190 (72%)	279 (55%)	250 (69%)
Unprotected anal or vaginal sex with a partner of opposite or unknown HIV status at last sexual contact	61 (19%)	183 (37%)	38 (11%)

[a] RDS-adjusted estimates. The estimated proportions may differ from the unadjusted proportions. MSM/IDU are included.
[b] All HET1 participants had at least one sex partner in the previous year.
[c] All MSM2 participants had at least one male sex partner in the previous year.
[d] HET1 participants reporting male-to-male sex are excluded from analysis.
[e] UAI=unprotected anal intercourse. These data were only collected in the MSM2 cycle.

Table 10: Drug and alcohol behaviors of Seattle-area NHBS participants (2005–2008)

Drugs and alcohol behaviors last 12 months[a]	***IDU1 (2005)[b]***	***HET1 (2007)***	***MSM2 (2008)***
Total	**N=371 N (%)**	**N =509 N (%)**	**N = 368 N (%)**
Injected drugs, ever[c,d]	371 (100%)	53 (10%)	58 (16%)
Injected drugs, 12 months[c,e]	371 (100%)	---	21 (6%)
Most commonly injected drug			
Heroin	235 (66%)	---	---
Speedball	31 (8%)	---	---
Cocaine	25 (8%)	---	---
Methamphetamine	37 (18%)	---	---
Other drug	3 (1%)	---	---
Shared syringes (receptive)	163 (34%)	---	---
Shared other injection equipment[f]	318 (86%)	---	---
Non-injection drug use			
Crack cocaine	289 (76%)	98 (19%)	22 (6%)
Powdered cocaine	193 (50%)	87 (17%)	92 (25%)
Amphetamines	150 (34%)	19 (4%)	58 (16%)
Ecstasy	32 (6%)	68 (13%)	67 (18%)
Drug or alcohol treatment	168 (47%)	93 (18%)	19 (5%)
Got syringes from needle exchange	304 (73%)	---	---
Got syringes from a pharmacy	228 (62%)	---	---
Binge drinking 4+ times, 30 days[g]	95 (23%)	136 (27%)	120 (33%)

[a] Unless otherwise specified.
[b] RDS-adjusted estimates. The estimated proportions may differ from the unadjusted proportions. MSM/IDU are included.
[c] NHBS-IDU1 only included participants who had injected in the previous 12 months.
[d] HET1 participants who had ever injected, but not in the previous year.
[e] Because of small numbers detailed injection related variables are not reported for MSM2.
[f] Includes receptive sharing of cookers, cottons, water, and backloading.
[g] Binge drinking was defined as drinking 5 or more drinks at one sitting.

More information: For detailed descriptions of the methods, see Gallagher, Public Health Rep. 2007;122 Suppl. 1:56-62; MacKellar, Public Health Rep. 2007;122 Suppl. 1:39-47; Lansky, Public Health Rep. 2007;122 Suppl. 1:48-55. For more detailed descriptions of the results, see MMWR Morb Mortal Wkly Rep. 2009 Apr 10;58(13):329-32 (NHBS-IDU1); 1st Half 2007 WA State/Seattle-King County HIV/AIDS Epidemiology Report:17-22(NHBS-IDU1), 2nd Half 2008 WA State/Seattle-King County HIV/AIDS Epidemiology Report:9-19 (NHBS-HET1).

C. Behavioral risks in the general population - Behavioral Risk Factor Surveillance System (BRFSS)

Methods: The BRFSS is an ongoing, state-wide, random digit dialed telephone survey of the non-institutionalized U.S. population aged ≥18 years. BRFSS collects data on health-risk behaviors and use of preventive health services related to the leading causes of death and disability in the U.S.. BRFSS consists of a core section facilitated by the CDC with questions asked in all states, as well as state-added sections for state-specific interests. Data are weighted for probability of selection of telephone number, number of adults in the household, and number of telephone numbers in the household. In 2008, the Washington state survey included questions on sexual orientation and behavior.

Summary of results (Table 11): Females and heterosexual males reported having similar numbers of sex partners, new sex partners, and frequency of condom use during the past 12 months. MSM were more likely than women or heterosexual men to have had 3+ sex partners, new sex partners, or to have used condoms in the past 12 months; however, the number of MSM respondents was small relative to females and heterosexual males.

Table 11: Sexual behavior of adult King County residents by sex and sexual orientation, BRFSS (2008)[a]

	Female N=985	Heterosexual male[b] N=604	MSM[c] N=23
Sexual orientation			
Heterosexual	97%	100%	4%
Homosexual	2%	<1%	93%
Bisexual	2%	<1%	3%
# Sex partners last 12 mos.			
None	16%	18%	0%
1	79%	75%	51%
2	4%	4%	4%
3+	2%	3%	44%
New sex partner last 12 mos.			
Yes	18%	18%	50%
Condom use last intercourse			
Yes	20%	23%	56%
Condom use last 12 mos.			
Never	71%	66%	37%
Some of the time	15%	15%	15%
All of the time	14%	19%	48%

[a] Proportions are weighted for probability of phone selection, number of adults in household, and number of telephone numbers in household.
[b] Heterosexual male=male who denies ever having sexual intercourse (oral or anal) with another male.
[c] MSM=male who reports having sexual intercourse with another male in the past 12 months.

CHAPTER V. Sexually Transmitted Infections

Background: Other infections that are transmitted sexually serve as important indicators of behaviors that can also lead to HIV transmission. Many of these infections are much more common than HIV and changes in the spread of these infections may reflect changes in risk behaviors that affect the spread of HIV. In addition, sexually transmitted infections (STIs) increase the risk of acquiring and transmitting HIV infection. For example, syphilis infection may produce genital ulcers, increasing vulnerability to direct HIV infection into the bloodstream. Co-infection with HIV and gonorrhea enhances HIV transmission to uninfected sexual partners by increasing HIV viral shedding and increasing HIV viral load in genital secretions. Although HIV is not transmitted as readily as certain other STIs and the risk of HIV infection depends on the prevalence in the population, STI statistics provide useful information about the extent of risky sexual behaviors in specific geographical areas and populations. The STI data presented below are based on statistical analysis of reported cases in King County by the Public Health STD Program.

Reported gonorrhea case rates (Figures 10, 11 & 12): The incidence of gonorrhea in King County fell 29% from 2006 to 2007. This decline was observed among heterosexual men and women as well as among MSM. Incidence among women can be used to monitor the epidemic among heterosexuals. Among women 15-29 years old, gonorrhea incidence fell from 2006 to 2007 after a rapid increase from 2004 to 2006. Gonorrhea rates are highest in persons aged 15 to 29 years old and peaks among women at ages 15-19 and among men at ages 20-29. Rates of STIs continue to show marked racial disparities. In 2007 the incidence of gonorrhea was 14 and 8 times higher among African American and Native American women, respectively, compared to white women. Among men, the 2007 gonorrhea rate was nine times higher among African American men compared to white men.

Figure 10: Rate of gonorrhea cases in men and women, King County (1997-2007)

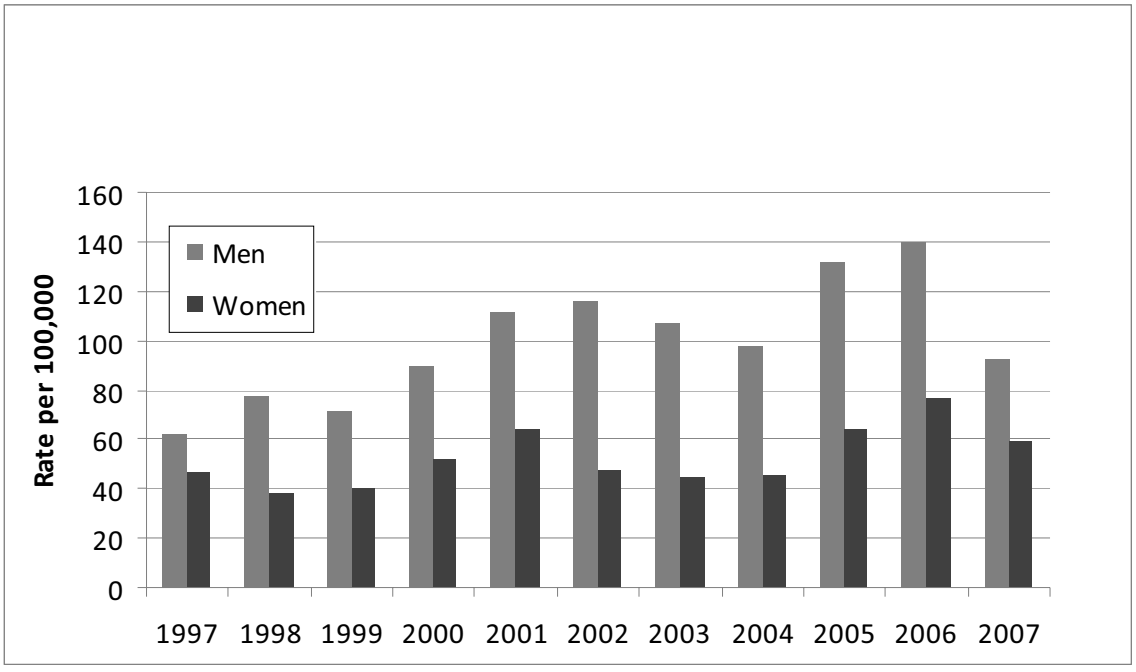


Figure 11: Rate of gonorrhea cases in men and women by age, King County (2007)

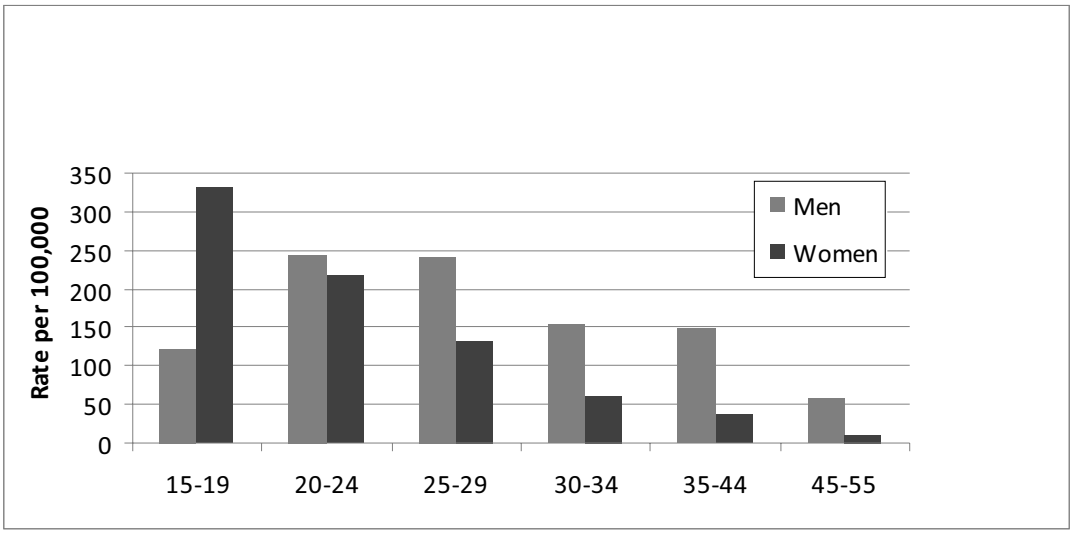
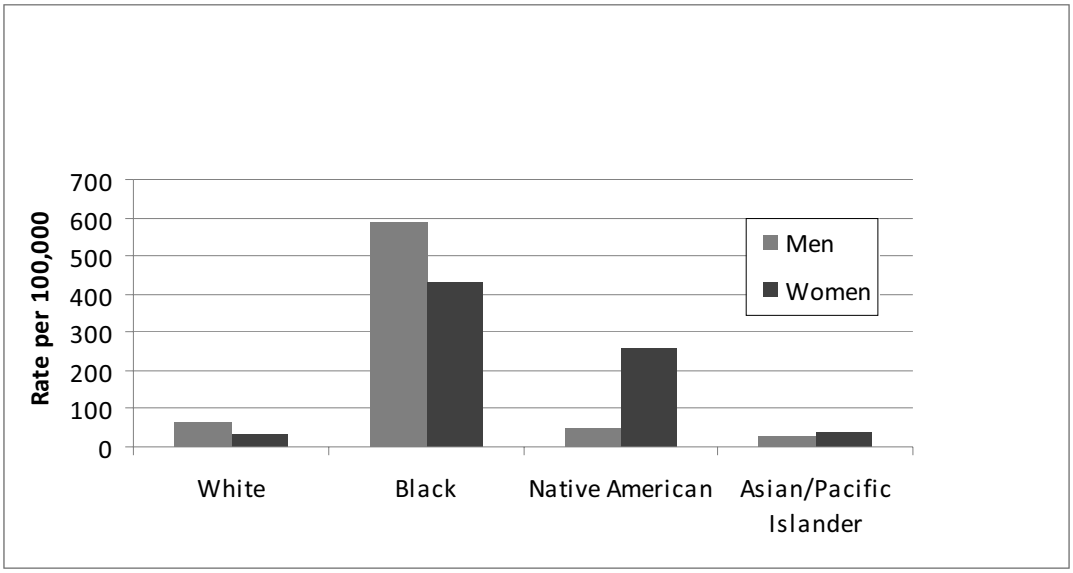


Figure 12: Rate of gonorrhea cases in men and women by race, King County (2007)



Reported STIs in men who have sex with men (MSM) (Figures 13 and 14): MSM continue to experience higher rates of all reportable STIs relative to heterosexuals. In 2007 the rate of gonorrhea among MSM was 786/100,000 compared to 60/100,000 in heterosexual men and women. The annual numbers of new gonorrhea, Chlamydia and early syphilis cases continued to increase annually from 1997 to 2005. In 2006 and 2007, the number of new syphilis cases remained stable and the number of gonorrhea cases declined. Chlamydia cases continued to rise in 2006 and 2007, possibly partly due to improved case ascertainment compared to previous years. The vast majority of early syphilis cases among MSM have occurred among MSM who were HIV-positive. The annual number of new early syphilis cases among HIV-positive MSM increased from 1997 to 2007 while the number of new annual early syphilis cases among HIV-negative MSM peaked in 2005 and remained stable in 2006 and 2007.

More information: For a detailed description of STIs reported in King County, see the PHSKC 2007 Sexually Transmitted Diseases Epidemiology Report available at http://www.kingcounty.gov/healthservices/health/communicable/std/statistics.aspx

Figure 13: Number of gonorrhea, Chlamydia, and early syphilis cases among MSM, King County (1997-2007)

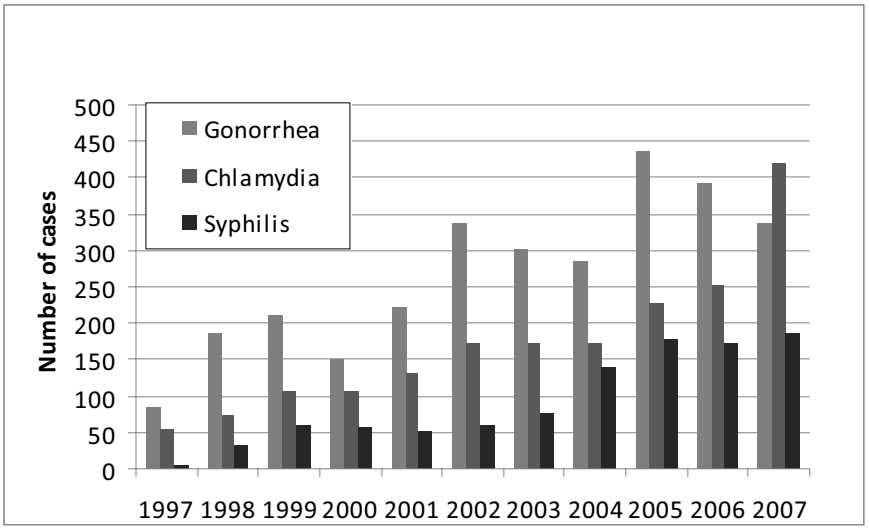


Figure 14: Rate of early syphilis cases among MSM by HIV status, King County (1997-2007)

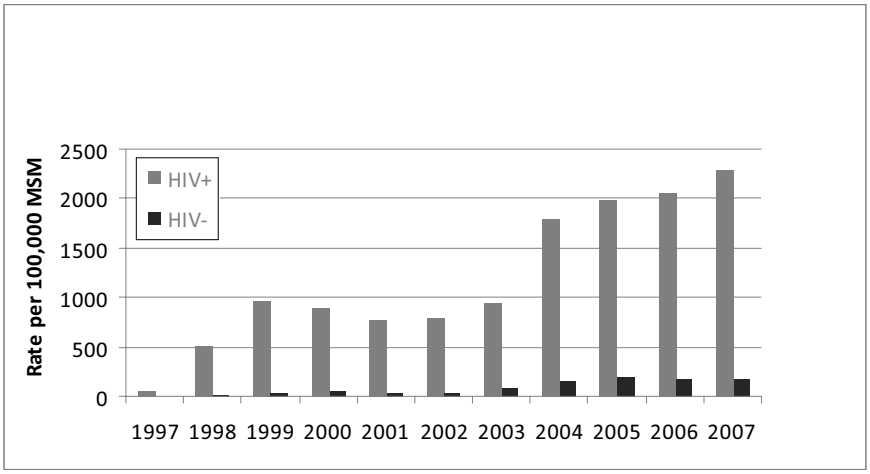


Table 12: Self-reported STI diagnosis and HIV status, Seattle-area NHBS participants (2005-2008)

Self-reported STIs past 12 months	IDU1 (2005)[a]	HET1 (2007)	MSM2 (2008)
Total	**N=371 N (%)**	**N =509 N (%)**	**N = 368 N (%)**
Self-reported STI diagnosis	26 (7%)	48 (9%)	29 (8%)
Among HIV-positive	---	---	(13%)
Among HIV-negative	---	---	(7%)

Self-reported STIs in the National HIV Behavioral Surveillance (NHBS) system (Table 12): Fewer than 10% of NHBS participants in the different groups reported having been diagnosed with an STI in the past 12 months. Among MSM, 13% of those who were infected with HIV reported an STI compared in the past 12 months to 7% of those who tested HIV negative.

CHAPTER VI. HIV Testing Practices

Background: An estimated 10-20% of persons with HIV in King County are unaware of their HIV-positive status compared to an estimated 21% nationwide. Early diagnosis of HIV infection is important in order to link newly diagnosed persons to clinical and prevention services so they can access healthcare and take steps to prevent infecting others. In 2006 the Centers for Disease Control (CDC) updated HIV testing recommendations to include universal one-time HIV screening for all persons age 13 to 64 years in all health care settings. The CDC also recommends HIV screening for pregnant women, for children of infected mothers, and for tuberculosis (TB) and sexually transmitted disease (STD) clinic patients, as well as more frequent screening for persons at high risk for HIV, including men who have sex with men (MSM) and injection drug users (IDU). Public Health Seattle-King County (PHSKC) recommends repeat HIV and sexually transmitted infections (STIs) testing every 3 months for anyone diagnosed with gonorrhea, Chlamydia or early syphilis, and for MSM with a history of unprotected anal intercourse with a partner of unknown or discordant HIV status or methamphetamine use in the last year. This chapter describes HIV testing practices in different populations in King County based on data from a variety of sources including publicly funded testing sites, population-based surveys, and surveys of special populations.

A. King County population

The Behavioral Risk Factor Surveillance System (BRFSS) is a national telephone survey conducted annually. Adults 18 years and older are randomly selected for a telephone interview on health conditions and health-related behaviors. Respondents between the ages of 18 and 64 are asked about HIV test practices.

In 2008, 41% of respondents had tested for HIV, and 6% had tested within the past 12 months (Table 13). Women between the ages of 25 and 44, African Americans, MSM, and those with three or more sex partners had the highest testing rates.

From 1998 to 2003, about half of adult King County residents reported that they had ever been tested for HIV (Figure 15). In more recent years, the proportion who recalled ever having been tested has declined to around two-fifths of respondents.

Table 13: Adult King County residents ever HIV tested and HIV tested in past 12 months, by selected characteristics, BRFSS (2008)

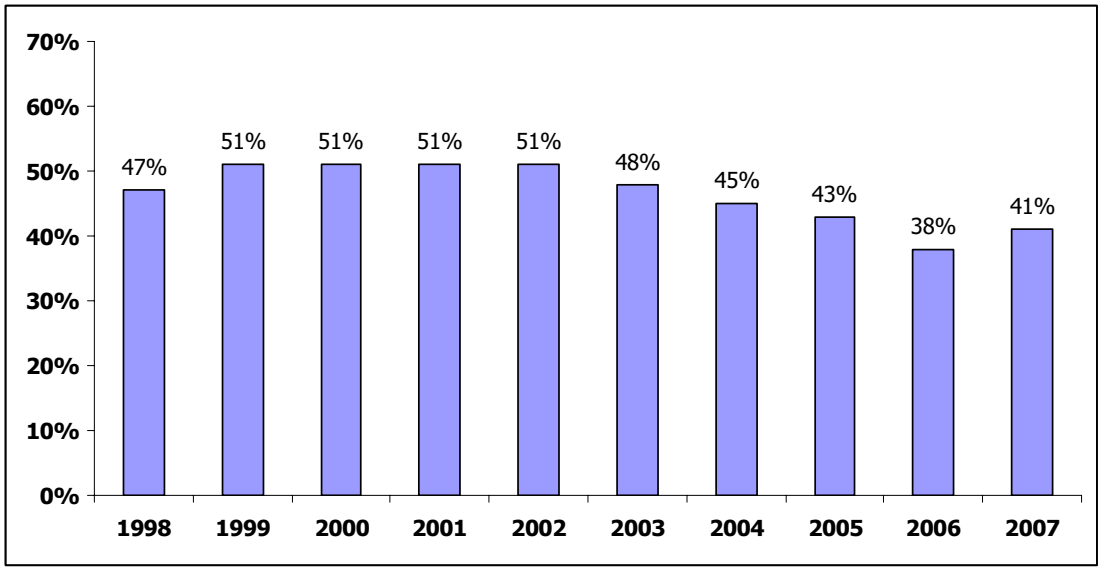
	N	Ever tested for HIV[a]	Tested for HIV in past 12 months[a]
Sex & age			
Male 18-24	49	29%	9%
Female 18-24	43	37%	8%
Male 25-34	115	46%	13%
Female 25-34	197	68%	10%
Male 35-44	237	41%	7%
Female 35-44	332	58%	2%
Male 45-64	546	30%	4%
Female 45-64	821	29%	1%
Race/ethnicity[b]			
White	2,005	41%	6%
Black	61	62%	19%
Hispanic	134	42%	7%
Native American/AK Native	19	20%	3%
Asian/Pacific Islander	157	31%	3%

Table 13 (continued):

	N	Ever tested for HIV[a]	Tested for HIV in past 12 months[a]
Income			
<$15K	76	35%	5%
$15K-$25K	172	55%	10%
$25K-$35K	148	45%	11%
$35K-$50K	269	35%	7%
$50K+	1,499	41%	5%
Education			
Less than HS	100	43%	7%
HS grad	323	34%	8%
Some college	624	42%	5%
College grad	1,354	41%	6%
Sexual orientation			
Heterosexual	1,521	39%	5%
Homosexual	53	76%	19%
Bisexual	18	74%	1%
# sex partners past 12 months			
None	327	27%	3%
1	1,110	40%	4%
2	43	56%	25%
3+	38	76%	32%
New sex partner past 12 months			
Yes	164	50%	21%
No	1,023	41%	3%
Overall King County	**2,402**	**41%**	**6%**

[a] Proportions are weighted for probability of phone selection, number of adults in household, and number of telephone numbers in household.
[b] White, black, American Indian/Alaska Native, Asian/Pacific Islander, and Multiracial groups are all non-Hispanic.

Figure 15: Percent of King County adults that recalled ever having been tested for HIV (1998-2007)



B. Pregnant women in Washington

The Pregnancy Risk Assessment Monitoring System (PRAMS) is a population-based survey of women who have recently given birth. Women are asked about behaviors and experiences before, during and soon after pregnancy, including prenatal HIV testing (Tables 14 and 15). Overall, 69% of women having a live birth in Washington state in 2005 reported that they were tested for HIV during their prenatal care, and 19% declined testing when offered.[1]

Table 14: HIV testing among pregnant women in Washington state, PRAMS (2005)

Women in prenatal care recalled that…	N=1395
a health care provider discussed HIV testing	84%
a health care provider asked if they wanted an HIV test	82%
they accepted an HIV test	69%

Table 15: Reasons for declining an HIV test among pregnant women in Washington state, PRAMS (2005)

	N=139
Did not think they were at risk	72%
Tested before and didn't think they needed to be tested again	50%
Didn't want people to think they were at risk for HIV	3%
Afraid of getting the result	2%

C. Clients at publicly funded King County test sites

Information about previous HIV testing was available for 84% of 19,596 clients who sought voluntary HIV testing at publicly funded King County test sites in 2007 and 2008 (Table 16). Overall, 16% had a prior test within the past 6 months, and 34% had a prior test within the past 12 months.

Table 16: Time since last HIV test among clients seeking HIV testing at publicly funded King County test sites (2007-2008)

	0-6 months	6-12 months	>1 year	Never tested before
Sex				
Male	18%	19%	40%	23%
Female	10%	15%	38%	37%
Race/ethnicity [a]				
White	17%	19%	41%	23%
Black	14%	17%	45%	24%
Hispanic	12%	15%	32%	40%
American Indian/AK Native	18%	19%	41%	22%
Asian/Pacific Islander	15%	16%	33%	37%
Multiracial	16%	21%	36%	27%
Risk				
MSM/IDU	24%	21%	47%	8%
MSM	28%	26%	37%	10%
IDU	16%	20%	49%	15%
Sex partner of high risk	15%	19%	42%	24%
Other/missing	9%	13%	41%	38%
Overall	**16%**	**18%**	**40%**	**27%**

[a] White, black, American Indian/Alaska Native, Asian/Pacific Islander, and Multiracial groups are all non-Hispanic.

Table 17: HIV testing history and knowledge of HIV positive status among Seattle-area NHBS participants (2005–2008)

HIV testing history	*IDU1[a] (2005)*	*HET1 (2007)*	*MSM2 (2008)*
Total	**N=371 N (%)**	**N=509 N (%)**	**N = 368 N (%)**
HIV positive[b]	---	5 (1%)	60 (16%)
Self-reported HIV positive	3 (0.3%)	2 (0.4%)	53 (14%)
HIV test			
Ever	360 (98%)	406 (80%)	345 (94%)
Total (not self-reported HIV positive)	364	497	315
In the past 12 months[c]	242 (65%)	201 (40%)	192 (61%)
In the past 6 months[c]	177 (47%)	119 (24%)	131 (42%)
In the past 3 months[c]	123 (29%)	72 (15%)	79 (25%)
Tested anonymously[d]	111 (35%)	79 (23%)	112 (41%)
Tested with a rapid test (last test)[d]	86 (27%)	70 (20%)	114 (42%)

[a] RDS-adjusted estimates. The estimated proportions may differ from the unadjusted proportions.
[b] Serologic HIV testing was not conducted in the IDU1 cycle.
[c] Among participants not reporting themselves HIV positive.
[d] At last test, among participants not reporting themselves HIV positive and reporting an HIV test in the previous five years.

D. National HIV Behavioral Surveillance (NHBS)

The National HIV Behavioral Surveillance (NHBS) system is funded by the CDC in 21 large U.S. urban areas to monitor HIV-related behaviors and access to HIV prevention services among groups at highest risk for HIV, including IDU, MSM and higher-risk heterosexuals.

The vast majority of NHBS participants in all groups had been tested for HIV and over 60% of IDU1 and MSM2 participants were tested in the past 12 months (Table 17).[2,3] Among HET1 participants, 40% had tested in the past year compared to 2%-13% of the BRFSS participants of the same age groups. Among MSM1 participants, 53 of 60 (88%) persons who tested positive as part of the survey already knew their HIV-positive status. Over 40% of MSM2 participants who had tested in the last 5 years tested anonymously at their last test and over 40% had been tested with a rapid test at their last test.

E. Seattle bathhouse patrons

A 2004 survey of Seattle bathhouse and sex club patrons[4] found that, of 357 men interviewed, 35% had an HIV test within the past 3 months and 71% had tested within the past 12 months Fourteen percent reported being HIV-infected. Six percent had never had an HIV test.

[1] Rime, T. WA State/Seattle-King County HIV/AIDS Epidemiology Report, 1st Half 2007:32-36.
[2] WA State/Seattle-King County HIV/AIDS Epidemiology Report, 1st Half 2007:17-22 (NHBS-IDU1).
[3] WA State/Seattle-King County HIV/AIDS Epidemiology Report, 2nd Half 2008:9-19 (NHBS-HET1).
[4] Reidy, W. American Journal of Public Health. 2009. Suppl 1:S165-72.

CHAPTER VII. HIV/AIDS Epidemiology In Populations Of Special Interest

This section of the profile summarizes HIV/AIDS epidemiology in eleven important prevention populations. These include men who have sex with men, injection drug users, people of color, foreign-born people, women, pregnant women and their children, homeless adults, incarcerated people, young people, heterosexuals and transgender people. Data from many sources are incorporated to provide a comprehensive description of the epidemiology of HIV and AIDS in each of these groups.

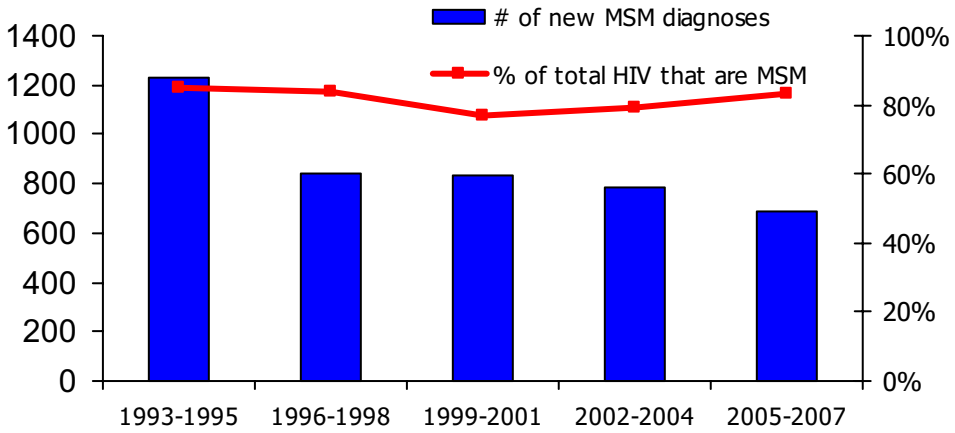
A. HIV/AIDS among men who have sex with men

Summary: Men who have sex with men (MSM) were affected earliest by HIV/AIDS, have the most new HIV/AIDS diagnoses, and include the largest numbers of people living with HIV/AIDS. In King County, 82% of people living with HIV/AIDS are MSM, including MSM who have injected drugs (MSM/IDU). The proportion of HIV diagnoses who are MSM increased from 77% to 83% from 1999-2007. Of nearly 6,300 people reported to be living with HIV in King County, about 4,900 were MSM.

Trends (Figure 16):

- King County data show only minor changes in the proportion of HIV diagnoses for MSM from 1993 to 2007.
- The numbers of newly reported HIV diagnoses decreased from an average 400 per year to about 250 per year in MSM from 1993 to 2007.
- From 1999 through 2007 the proportion of new HIV cases in MSM, including MSM/IDU, has increased.
- MSM account for over three-quarters of all HIV diagnoses.
- The proportion of new HIV diagnoses among MSM not injecting drugs increased from 70% of those with known risk 1999-2001 to 72% 2005-2007.
- The proportion of new HIV diagnoses among MSM/IDU increased from 7% to 11% of all diagnoses with known risk between 1999 and 2007.
- A higher proportion of HIV cases diagnosed among residents of the City of Seattle have been MSM or MSM/IDU (81%) compared to residents of King County outside of Seattle (62%).
- Hispanic MSM make up an increasing proportion of all MSM cases. The proportion of all MSM cases who are Hispanic increased from 9% in 1999-2001 to 13% in 2005-2007. Meanwhile the proportion of people who were diagnosed with HIV of Hispanic ancestry who were MSM increased from 73% to 87%.

Figure 16: Number and percent (%) of new HIV diagnoses among MSM



Population of MSM in King County: Public Health-Seattle & King County (PHSKC) estimates the current number of MSM as approximately 41,000, including 39,000 MSM without and 2,000 MSM with a recent history of injection drug use.[1]

HIV prevalence:

- Among 6,283 people reported with HIV or AIDS in King County and presumed alive as of June 30, 2008, 74% of those with known risk are MSM (excluding MSM/IDU) and 9% are MSM/IDU.
- Local HIV prevalence estimates range from 13 to 16% for MSM overall. The estimate among MSM/IDU is 20-29%, and among MSM without an IDU history, 11-15% are infected.
- In the National HIV Behavioral Surveillance MSM survey conducted in 2008, 368 King County MSM were identified through by venue-based sampling and interviewed. A total of 56 (16%) were HIV-infected, 86% of whom already knew of their HIV infection.
- The prevalence of HIV infection among MSM in King County has probably increased over the past 10 years as people are living longer with HIV due to effective treatments. Two projects gave conflicting results.
- Random digit dialing surveys conducted among Seattle MSM in three zip codes in 1992, 2003, and 2006 showed a small decline in the proportion of HIV-infected MSM who reported knowing they were HIV-infected: 19%, 15%, and 14% respectively.[2]
- A blinded analysis of remnant sera from MSM at the PHSKC Sexually Transmitted Disease (STD) Clinic showed that HIV prevalence rose from a low of 5% in 1997-1998 to 13% 2003-2004.
- Additional results from the 2003-2004 STD blinded HIV seroprevalence surveys include:
    - 12% seroprevalance among MSM who did not inject drugs and 28% among MSM/IDU.
    - 6% in MSM age 20-29 years; 18% in MSM age 30-39 years and 21% in MSM age 40+ years.
    - 11% in those without a diagnosis of gonorrhea relative to 31% with gonorrhea.
    - 29% of black MSM relative to 12% of white MSM and 10% of Hispanic MSM.
    - An estimated 85% of HIV+ MSM knew their status after the visit.

HIV incidence (Figures 17 and 18):

- New diagnoses of HIV infection are concentrated among MSM living in the Capitol Hill zip code 98122, with over 150 during the period 2002-2007 (Figure 17). Residents of the Eastlake zip code 98102 had the second highest number of new diagnoses.
- HIV incidence (the number of new infections) was estimated at publicly-funded HIV test sites in King County by examining sera of MSM who had two or more HIV tests 1997-2004 (Figure 18). The sites included the Harborview STD Clinic, PHSKC testing sites, and one community clinic. At these sites, the incidence appears to have remained fairly stable over those 8 years, between one and two infections per 100 MSM per year.
- HIV incidence was also estimated at publicly funded sites in King County by applying STARHS (serologic testing algorithm for recent HIV seroconversion). STARHS combines two tests on a single serum sample to identify probable recent HIV infection. STARHS results suggest about three per 100 MSM become infected with HIV each year. There was no significant change in incidence from 1997 to 2004 (Figure 18). Within each two year period at least 4,000 MSM were tested for HIV. The higher incidence measured by STARHS relative to that among repeat testers may suggest HIV-infected MSM were less likely to have prior HIV tests relative to MSM uninfected with HIV.

Figure 17: Number of new HIV diagnoses among MSM in King County (2002-2008) by zip code

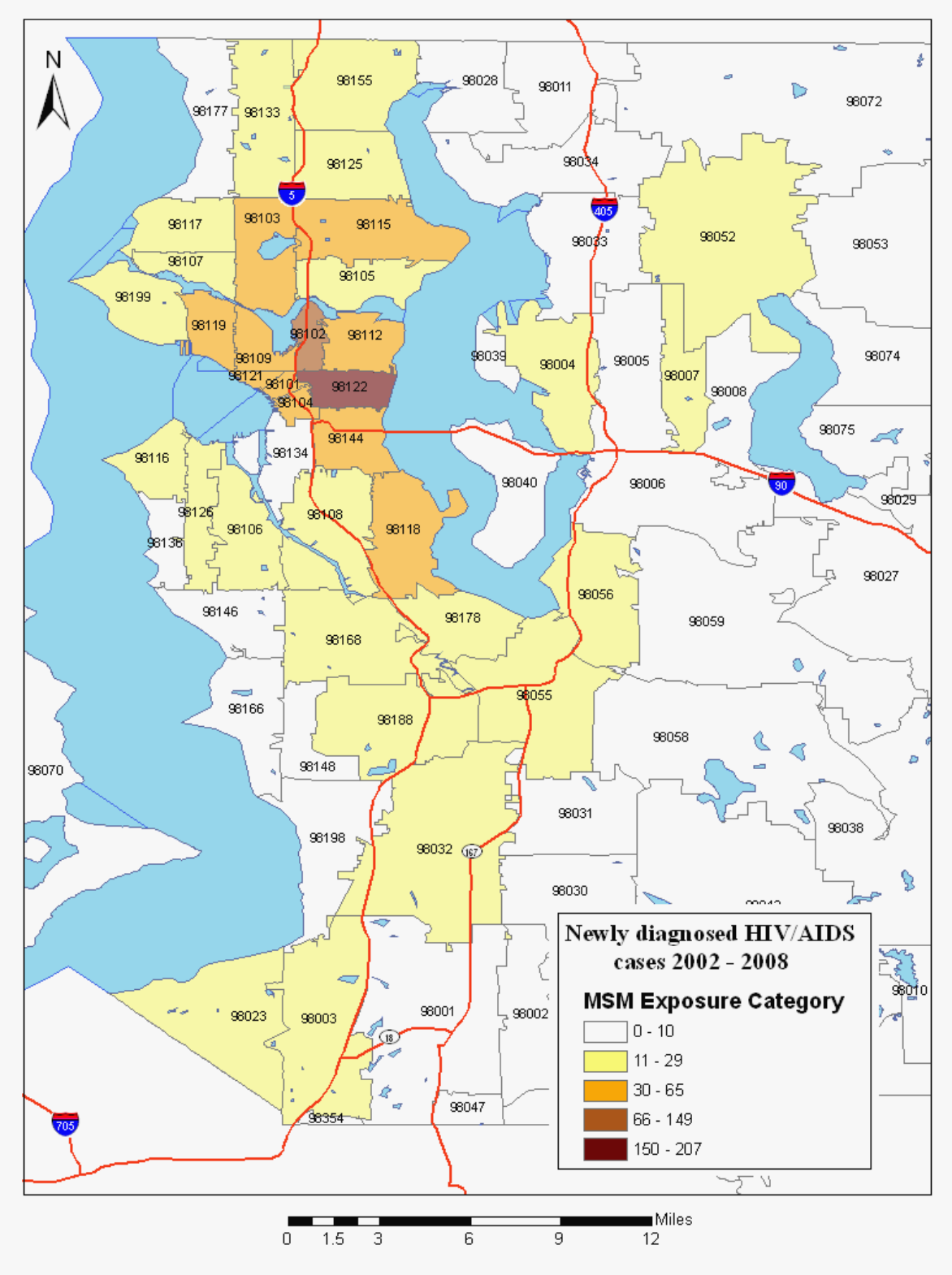
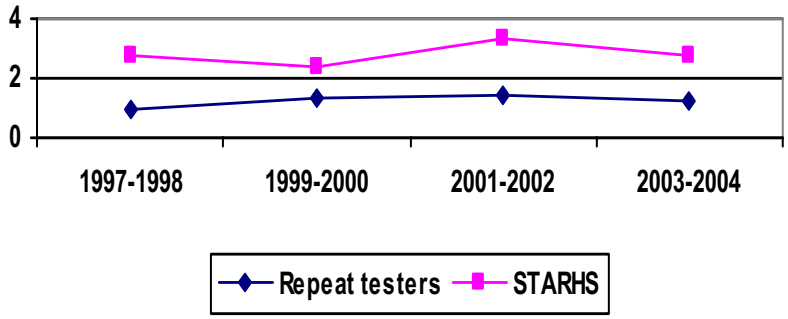


Figure 18: HIV incidence in MSM



Behavioral risks:

- In a 2006 random digit dialing survey of MSM, 7% of HIV-negative MSM and 22% of HIV-positive MSM recently engaged in behaviors that placed them at high-risk for acquiring or transmitting HIV (non-concordant unprotected anal sex). These proportions are slightly lower than those from a similar survey in 2003 where 10% of HIV-negative and 31% of HIV-positive men engaged in unprotected sex with a partner of unknown or non-concordant HIV status.[2]
- Health department counseling and testing data between 1993 and 2006 indicate that the proportion of MSM with two or more sexual partners in the past two months increased between 1993 and 1999 (from 24% to 34%), but has been level from 2000 through 2006 (around 36%).
- In the Seattle Area Men's Study (SAMS), 32 newly infected MSM were interviewed and compared to 110 MSM who had recently tested negative for HIV. Among those newly infected with HIV, 34% had used methamphetamine during unprotected anal intercourse during the previous six months relative to 13% of MSM without HIV infection. Poppers (amyl nitrate) were also used more frequently by newly HIV-infected MSM relative to uninfected MSM, 44% versus 22%.
- An anonymous survey in 2006 showed 44% of 276 MSM reported using poppers, but HIV-infected men had a much reduced rate of use relative to uninfected men (19% versus 72%).

Trends in sexually transmitted infection (STI) rates as an indicator of HIV risk (Figure 19):

- The presence of an STI increases the likelihood of HIV transmission by two-fold to five-fold according to the Centers for Disease Control and Prevention (CDC).[3] STIs are a marker for high risk sexual behavior, including both the risk of acquiring and transmitting HIV.
- After a low point in 1996 (not shown) the incidence rate of syphilis has increased dramatically among MSM in King County. Chlamydia and gonorrhea rates have also increased, partially due to more comprehensive screening and ascertainment of MSM status. (Figure 19)
- Early syphilis incidence rates 1999–2007 for HIV-infected MSM were four to five times higher than rates for HIV-uninfected MSM.
- Of 194 syphilis cases in 2007 in King County, 188 (97%) were in MSM. Among the 188 MSM diagnosed with early syphilis in 2007, 57% had known HIV infection.
- In 2007, the estimated rates of gonorrhea, Chlamydia, and syphilis among MSM were 786, 971, and 436 cases per 100,000, respectively. (Rates of these infections among heterosexuals were 60, 294, and 0.33 per 100,000, respectively.)
- Of 180 MSM in the 2006-2007 Care and Prevention survey, 6% reported a diagnosis of syphilis; 5% Chlamydia; 3% gonorrhea; 12% herpes; and 9% were diagnosed with genital warts in the last year.

Figure 19: Sexually transmitted infection incidence per 100,000 MSM

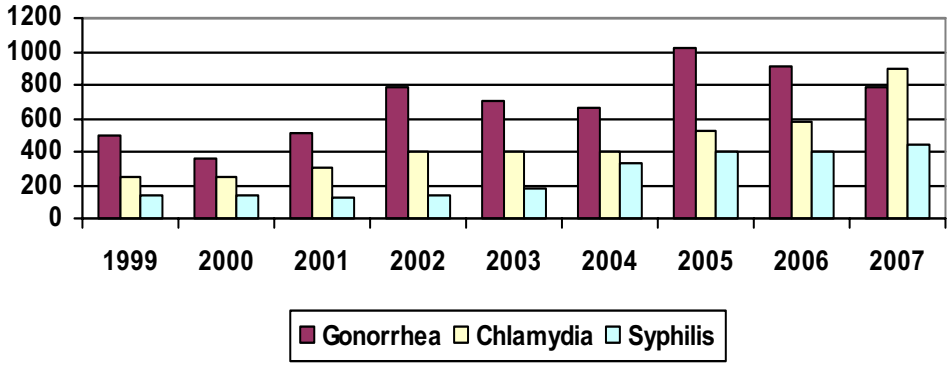


Table 18: Risk behaviors in past six months among young MSM in King County

Past six months	15-22 years (n=368)	23-29 years (n=462)
≥ 5 male sex partners	23%	29%
Sex while high on alcohol or drugs	54%	71%
Anal sex	67%	78%
Unprotected anal sex	38%	48%

Subgroup highlights:

Young MSM (Table 18):

- Young MSM are at high risk of acquiring HIV. Data from PHSKC HIV/AIDS surveillance indicate that of 4,929 HIV-infected MSM presumed alive as of December 2008, 1% were 15-19 years at time of HIV diagnosis, 30% were 20-29 years, and 44% were 30-39 years old.
- In the 2008 Seattle-area National HIV Behavioral Surveillance activity, 6.9% of MSM ages 18-29 were HIV-infected. Also, 31% of MSM in this age group reported unprotected anal sex with a male partner of opposite or unknown HIV status.
- Younger men were more likely to have multiple recent sex partners and higher rates of alcohol and drug use. For the one-quarter of Young MSM Survey (YMS) participants who had multiple sex partners recently, being high on alcohol or drugs was stated as a reason for unprotected sex. These risks were more common among MSM age 23-29 compared to those 15-22 years of age, as shown in Table 18.

Men of color:

- Among 1,524 men of color currently living with HIV/AIDS, 68% were MSM or MSM/IDU; this proportion is lower than among white men (93% MSM including MSM/IDU).
- Of male HIV/AIDS cases reported through 6/2008, 55% of blacks were MSM or MSM/IDU, compared to 79% of Latinos, 82% of American Indian/AK Natives, and 76% of Asians/Pacific Islanders.
- Overall, 11% of MSM living with HIV/AIDS were also IDU. This ranged widely among MSM of color, including 34% of American Indian/AK Natives and 4% of Asians/Pacific Islanders.

Bisexual men:

- Among 806 MSM captured in the blinded (unlinked) STD HIV seroprevalence survey 2003-2004, 21% also reported sex with women in the last year.

- In the same survey, five percent of men who had sex with both men and women were found to be HIV-infected, relative to 15% of MSM without female partners.
- Of 15,767 MSM who sought HIV counseling and testing at Public Health's HIV/AIDS Program testing site between January 1988 and December 2004, 23% also reported one or more female sex partner(s) in the past year. Fewer HIV-infected MSM (10%) had female sexual partners relative to MSM without HIV (26%).
- The proportion of MSM using condoms for vaginal intercourse was 56%; however, 70% of HIV-infected MSM used condoms for vaginal intercourse. Condom use among MSM having vaginal intercourse may be even higher as some HIV-infected MSM knew their HIV status prior to the visit where this question was answered and others did not. Even for MSM who knew they had HIV infection, the question may have included time prior to their seroconversion and/or diagnosis.

Amphetamine use in MSM:

- In the Kiwi study of incarcerated IDU, 1,811 people interviewed at two King County correctional facilities were tested for HIV between August 1998 and December 2002. MSM had a higher prevalence of HIV infection (9%) relative to other male IDU (2%); MSM who primarily injected amphetamines had the highest prevalence of HIV (20%) relative to MSM who primarily injected heroin (5%).
- The DUIT (Drug Users Intervention Trial) study included 404 men, 13% of whom were MSM. Thirty percent of the MSM amphetamine injectors were HIV-infected relative to only 10% of the MSM heroin injectors.
- Of 222 MSM cases reported with HIV/AIDS in the first 11 months of 2008, about half (99) had data on methamphetamine use on their HIV case report. Of the 99, 22 (22%) used meth, and 40% of the MSM who used methamphetamine injected it.

1. How many men who have sex with men live in King County? HIV/AIDS Epidemiology Report 2nd Half 2008, page 37. (Also see Appendix 3.)
2. Unsafe sexual behavior and correlates of risk in a probability sample of men who have sex with men in the era of highly active antiretroviral therapy. DD Brewer, MR Golden, HH Handsfield, Sexually Transmitted Diseases, April 2006, 33(4): 250-255.
3. www.cdc.gov/hiv/topics/aa/resources/slidesets/ppt/Comorbidities_STD.ppt

B. HIV/AIDS among injection drug users

Summary: As in other cities in the western U.S., the number of HIV/AIDS cases among injection drug users (IDU) in the Seattle-King County area is far lower than among men who have sex with men (MSM). The percent of cases due to IDU decreased from 7% in 1999-2001 to 4% in 2005-2007. Drug injection has a greater impact on HIV transmission for women compared with men and for people of color compared to whites. This fact sheet focuses on heterosexuals whose primary HIV risk is injection drug use.

Population sizes:

- An estimated 15,000 King County residents inject drugs (excluding about 1,575 MSM/IDU).
- Based on estimates from reported cases, up to 440 HIV-infected heterosexual IDU reside in King County, or about 3% of all IDU.
- There are an estimated 680 HIV-infected men with a history of male-male sex and injection drug use, or 22% of MSM who ever injected. Most of these men are thought to have acquired HIV through sexual transmission rather than by sharing of injection equipment. More information on MSM/IDU can be found in the fact sheet for MSM.

HIV prevalence and incidence (Figure 21):

- Among the estimated 15,000 IDUs who reside in King County 440 (3%) are HIV-infected, and prevalence has remained low and stable over time. In unlinked surveys, 1.5% of over 7,000 IDU entering drug treatment from 1988-1999 tested positive for HIV with no change in HIV prevalence over time.[1] From 1994-2004 HIV prevalence measured in the RAVEN, Kiwi, and DUIT studies in 18-30 year old IDU was 2.6% and did not change over time.[2]

- Among 1,811 IDU recruited for the Kiwi Study in the two main King County jails from August 1998 to December 2002, HIV prevalence was 2.5% and HIV incidence was about 1% per year.[3]

- Among 589 IDU aged 15 to 30 recruited through outreach, advertising and referrals for the DUIT Study in King County from 2002-2004, HIV prevalence was 2.6% (no females were HIV-infected).[4]

- Evidence of the potential for explosive growth of HIV rates among IDU occurred in nearby Vancouver, BC (Canada) from 1994 to 1997 when HIV prevalence rose from 3% to 23%.

- Among King County IDU, the highest numbers of new HIV diagnoses are among residents of the downtown zip code 98104, followed by 98122.

Status and trends in HIV/AIDS cases (Figure 20):

- Among the 6,283 King County residents reported living with HIV/AIDS as of June 2008, 342 (6%) were IDU.

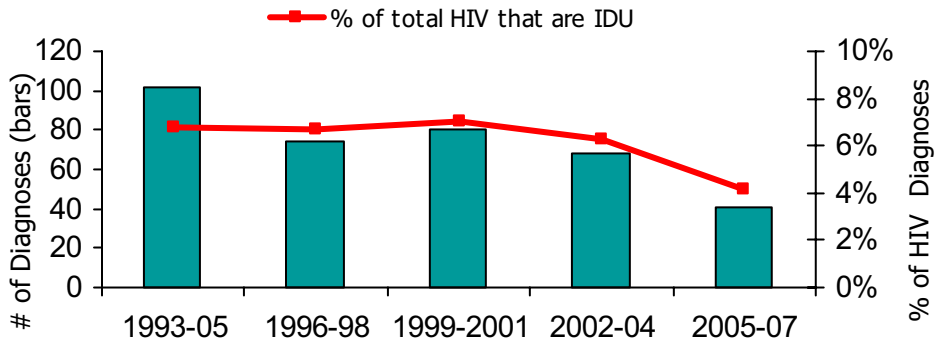
- The proportion of HIV/AIDS cases attributed to IDU who are not MSM has decreased from 7% of cases in 1999-2001 to 4% in 2005-2007.

- IDU make up a smaller proportion of all AIDS cases in King County compared with other areas. In King County, 6% of AIDS cases are IDU, compared with 13% in Washington outside of King County, and 23% nationally.

- More IDU living with HIV in King County are male (225) than female (117). However IDU exposure makes up a higher proportion of total infections among females (19%) than males (4%).

- Non-whites with HIV are more likely to have IDU exposures than whites. People with histories of IDU make up 10% of HIV cases among blacks, 6% among Hispanics, and 23% among Native Americans, but only 4% among whites and 3% among Asians & Pacific Islanders.

Figure 20: Number and percent of new HIV diagnoses among IDU, 1993-2007



HIV-related risk and preventive behaviors among IDU:

The Kiwi study surveyed 1,811 (77% men and 23% women) IDU from 1998-2002.[3]

- 26 (58%) of 45 IDU with HIV were aware of their HIV positive status.
- 89% reported a prior HIV test.
- The median age when study participants began injecting drugs was 19 years.
- In the past six months, 60% had injected with someone else's used syringe, 71% had shared cookers, and 58% had backloaded (measuring and dividing drugs with a shared syringe).

The DUIT study surveyed 589 IDU (69% men and 31% women) aged 15-30 from 2002-2004.[4]

- 11 (73%) of 15 IDU with HIV knew their status.
- 82% reported a prior HIV test.
- The median age when study participants started injecting was 17 years.
- In the past three months, 49% had injected with someone else's used syringe, 74% had shared cookers, and 68% had backloaded.

The National HIV Behavioral Surveillance (NHBS) system surveyed 371 IDU (77% males and 23% females) 18 years and older in the Seattle area in 2005 using respondent driven sampling (RDS).[5]

- 98% reported a prior HIV test (HIV testing was not included in the survey).
- In the past 12 months, 34% had injected with someone else's used syringe, 62% had shared cookers, and 63% had backloaded.

Behavioral trends in 18-30 year old IDU in the RAVEN, KIWI and DUIT studies: [2, 6]

- The proportion of 18-30 year old IDU who primarily injected amphetamine rose from 7% in 1994 to 32% in 2003 while the proportion who primarily injected cocaine decreased from 19% in 1994 to 5% in 2003. The proportion who primarily injected heroin did not change.
- No significant changes were seen in injection with someone else's used syringe from 1994-2004.
- The proportion of 18-30 year old IDU whose primary source of syringes was needle exchange rose from 48% in 1994 to 68% in 2004.
- The proportion of 18-30 year old IDU who reported at least one vaccination against hepatitis B increased from 20% in 1994 to 50% in 2004.

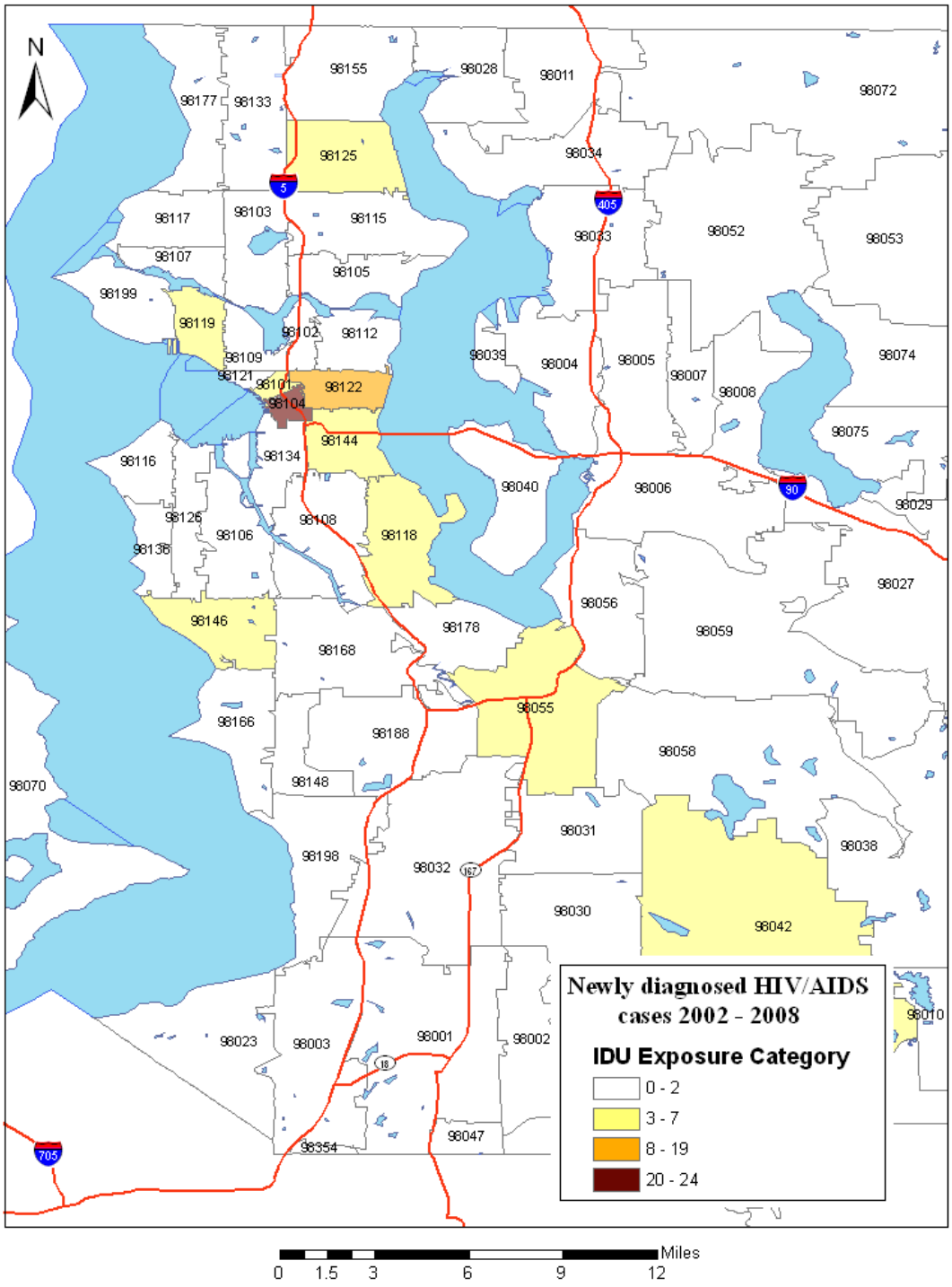
Exposures to other blood-borne infections[2, 7]**:**

Although HIV prevalence is quite low, King County IDUs acquire other blood-borne infections such as hepatitis B (HBV) and C (HCV). HBV and HCV incidence and prevalence indicate risk behaviors persist that can also spread HIV.

- In the RAVEN Study (1994-1997), antibody to HCV was present in more than 80% and antibody to HBV in about 60%. *[Note that HBV and HCV are more easily transmitted than HIV.]*
- In the RAVEN Study, 20% acquired HCV and 10% acquired HBV over a one-year period.
- HCV prevalence in 18-30 year old IDU decreased from 68% in 1994 to 32% in 2004 and HBV prevalence decreased from 42% in 1994 to 15% in 2004.

1. HIV/AIDS Epidemiology Report, 1st Half 2000, p. 35-37.
2. Journal of Urban Health 2007;84: 436-454.
3. HIV/AIDS Epidemiology Report, 1st Half 2003, p.25-35.
4. HIV/AIDS Epidemiology Report, 2nd Half 2004, p.20-25.
5. HIV/AIDS Epidemiology Report, 1st Half 2007, p. 17-22.
6. Recent Drug Abuse Trends in the Seattle-King Area, June 2005
7. Am J Epidemiol. 1999. Feb 1;149:203-13.

Figure 21: Number of new diagnoses of HIV among IDU in King County, 2002-2008 by zip code



C. HIV/AIDS in people of color

Summary: In King County as in the U.S., HIV and AIDS disproportionately affects U.S.-born blacks & foreign-born blacks, American Indians & Alaska Natives, and persons of Hispanic ethnicity compared to whites and Asians & Pacific Islanders. The racial disparity is even greater among women than among men.

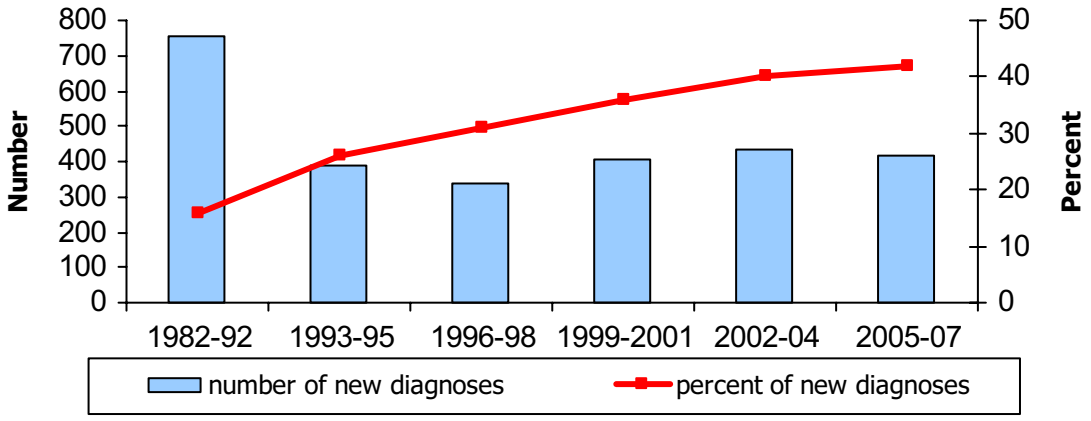
Status and trends in HIV/AIDS cases, with population sizes (Figure 21, Table 19 and 20):

- Thirty-one percent (1,971) of the total of 6,283 King County residents currently reported living with HIV infection (including those with AIDS) are people of color.
- HIV-infected King County residents are 68% white, 16% black (including 10% U.S.-born and 6% foreign-born blacks), 9% persons of Hispanic ethnicity, 3% Asian & Pacific Islander (API), 1% Native American & Alaska Native (NA/AN). An additional 1% are of multiple racial background.
- The proportion of HIV/AIDS cases among people of color has risen steadily since the early years of the epidemic in King County, increasing from 16% of cases in 1982-1992 to 36% in 1999-2001 and 42% in 2005-2007 (Figure 1). The increase since 1999 occurred primarily among Hispanics (from 10% to 13%) and API (from 3% to 6%).
- Population-based rates of recently diagnosed people show disproportionate impact on people of color. HIV rates among blacks, Hispanics, and NA/AN in King County were two to four times the rate of whites. The rate among foreign-born blacks was almost eight times higher than for whites. HIV/AIDS rates among API, however, are about one-half of that among whites (Table 19).
- Racial disparities are even greater for women. The average annual King County rate of HIV diagnoses 2005-2007 among foreign-born black females (122.4) is more than **50 times higher** than for white females (1.8 per 100,000). The rate is nine times higher (16.1) for U.S.-born black women than for white women. Although each group has fewer than five cases per year, NA/AN and Hispanic women also have rates higher than white women.
- Table 20 describes people living with HIV/AIDS as of June, 2008. Cases are shown by race, ethnicity, and sex and by exposure category. Compared with white males, black and NA/AN males were more likely to have been exposed via injection drug use (IDU & MSM/IDU) and less likely to be exposed via male-male sex. Compared with white females, foreign-born black females were more likely to have undetermined risk of transmission.

HIV prevalence:

- Seroprevalence data from the 2003-2004 unlinked surveys of Public Health's Sexually Transmitted Disease (STD) Clinic patients indicate that 0.7% of all heterosexual clients are HIV-infected. No significant difference exists in prevalence between white, black and Hispanic heterosexual clients, but HIV prevalence appears to be much higher in American Indian/Alaska Natives. However, in the STD Clinic surveys, there were great racial discrepancies among MSM by race (29.3% among blacks, 11.9% among whites, and 9.6% among both Hispanics and Asian/Pacific Islanders).
- Preliminary behavioral surveillance data from the 2008 MSM study cycle (*NHBS-MSM2)* interviewed 368 MSM in King County. The HIV prevalence was approximately 22% among blacks, 19% among Hispanics, 18% among whites, and 7% among API.

Figure 22: Number & percent of new HIV diagnosis in people of color, King County (1982-2007)



Other measures of risk:

- Information about other STIs is useful in evaluating the risk of HIV transmission. King County STI data indicate much higher rates of gonorrhea, syphilis, and Chlamydia among people of color. The 2007 rate of gonorrhea among black men was eight times higher, and among black women 14 times higher, than the rate among whites. Compared to whites, gonorrhea rates in 2007 were also significantly higher among NA/AN, but lower among API. Also in 2007, the incidence of Chlamydia was almost seven times higher among black women than white women and similarly, seven times higher among black men than among white men.
- The adolescent birth rate is one indicator of unprotected sexual activity and therefore, risk of HIV infection. Overall birth rates for young women 15 to 17 years of age in King County in 1999-2003 were highest among Hispanics (47 per 1,000), NA/AN (40 per 1,000), and blacks (23 per 1,000), and lowest among whites (10 per 1,000) and API (9 per 1,000).

Table 19: King County population, new diagnoses of HIV, and diagnosis rates by race and ethnicity

	Estimated 2006 population [a]		HIV diagnosed 2005-2007		Average Annual Rate per 100,000	Rate Ratio (compared to white rate)
	No.	%	No.	%		
White [b]	1,303,959	71%	567	57%	14.5	1.0
Black [b]	112,218	6%	208	21%	61.8	4.3
U.S.–born blacks	84,698	4.6%	116	12%	45.7	3.1
Foreign-born blacks	27,520	1.5%	92	9%	111.4	7.7
Hispanic	131,277	6%	128	13%	32.5	2.2
Asian & Pacific Islander [b]	262,022	14%	59	6%	7.5	0.5
Native American & Alaska Native [b]	17,257	0.9%	8	1%	15.4	1.1
Total	**1,826,732**	**100%**	**988**	**100%**	**18.0**	--

[a] King County population estimates were derived from the 2006 American Community Survey of the U.S. Census Bureau.
[b] And not Hispanic.

Table 20: Exposure category of people living with HIV/AIDS by race, ethnicity, and sex

	White	U.S.-born black	Foreign-born black	Hispanic	API	Native American
Males *(N = 6,283)*						
Total males (n= 5,657)	4,071	522	194	549	174	61
MSM not injecting drugs	83%	64%	9%	73%	74%	54%
MSM who also inject drugs	10%	7%	0%	7%	3%	28%
Injection drug users (IDU)	3%	12%	3%	5%	3%	10%
Heterosexual partner is HIV+ or IDU	1%	6%	39%	4%	3%	2%
Other risk (perinatal or blood exposure)	<1%	1%	1%	<1%	1%	0%
Undetermined or not reported	2%	9%	48%	10%	17%	7%
Females *(N =626)*						
Total females	228	128	167	44	23	25
Injection drug users (IDU)	27%	27%	1%	7%	4%	56%
Heterosexual partner is HIV+, MSM, or IDU	64%	59%	80%	73%	70%	40%
Other risk (perinatal or blood exposure)	3%	9%	2%	9%	4%	0%
Undetermined or not reported	7%	5%	17%	11%	22%	4%

D. HIV/AIDS among foreign-born residents

Summary: Twenty percent of HIV-infected residents of King County were born outside the U.S. and territories, and this proportion has increased over time. Most of the increases were among foreign-born blacks and Hispanics. Foreign-born blacks with HIV are more likely than U.S.-born blacks with HIV to be female, and most were infected heterosexually. Both foreign-born and U.S.-born Hispanics are likely to be males who have sex with men. Because of these differences, these two groups are also described separately in the HIV/AIDS in people of color Fact Sheet.

Population: Estimates of the foreign-born population by characteristics such as race, ethnicity, sex, and age are imprecise. Small numbers can be heavily impacted by both documented and undocumented immigration, data categories are inconsistent from one year to the next, and Census Bureau surveys often present only incomplete data. According to the 2006 American Community Survey, an estimated 19.3% to 20.5% of King County residents were foreign-born. Foreign-born blacks could be as low as 1.3% and as high as 1.7% of the population. These challenges make calculation of rates problematic.

Status of HIV cases (Table 21 and 22):

- The proportion of HIV-infected King County residents who are foreign-born (912 total) is higher among people of color. Over one-half of Asian & Pacific Islanders (API) and Hispanics, and one-third of blacks who are HIV-infected were born outside the U.S. Only 2% of whites with HIV are foreign-born. The 86 cases among Native Americans and Alaska Natives are not described below because virtually all are U.S.-born.
- The proportion of HIV-infected persons who are female is higher among blacks and among foreign-born persons.
- 46% of HIV-infected foreign-born blacks are female
- 20% of HIV-infected U.S.-born blacks are female
- 9-13% of HIV-infected foreign-born whites, Hispanics, or API are female
- 5-10% of HIV-infected U.S.-born whites, Hispanics, or API are female
- The mode of HIV exposure differs substantially between the U.S.-and foreign-born infected people (Table 22). Most foreign-born blacks are infected heterosexually and many have undetermined mode of exposure. Most U.S.-born blacks are men who have sex with men (MSM) or injection drug users (IDU).
- The mode of HIV exposure is similar between U.S. and foreign-born whites, Hispanics, and API (Table 22). MSM is the most common exposure among these groups followed by IDU.
- Blacks born outside the U.S. make up just 6% of the total HIV-infected population in King County, but 35% of all heterosexually-acquired infections.

Table 21: Place of birth, sex, and race among King County residents living with HIV/AIDS (June 2008)

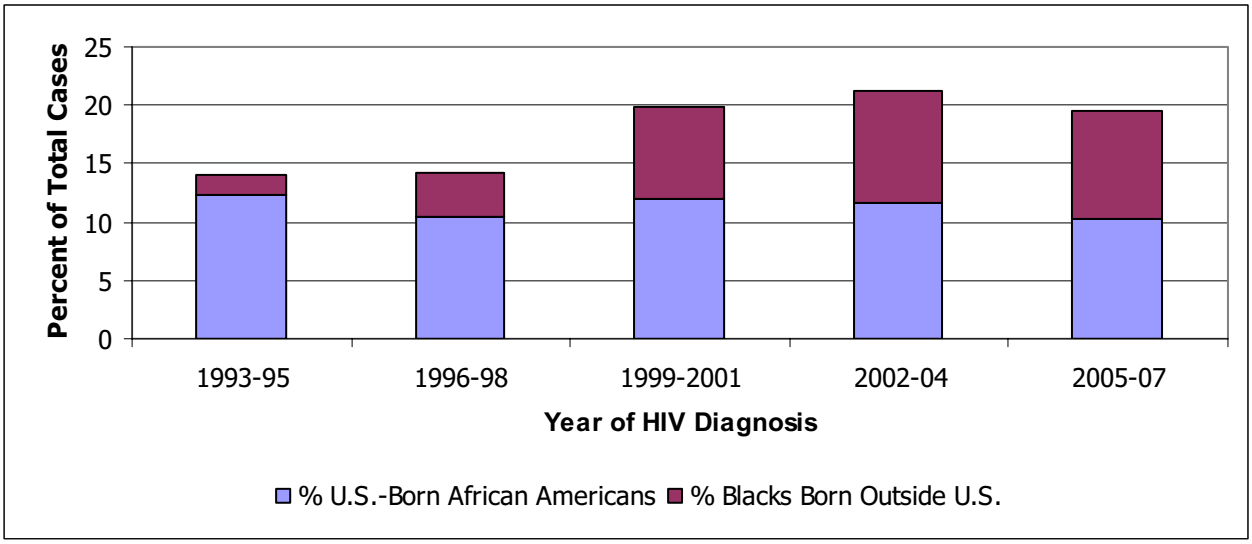
	White	Black	Hispanic	API	Total [a]
Total Number HIV+	**4,299**	**1,041**	**593**	**197**	**6,283**
Foreign-born	2%	35%	52%	66%	15%
U.S.-born	93%	62%	39%	26%	81%
Of Foreign-born, % Female	13%	46%	9%	12%	25%
Of U.S.-born, % Female	5%	20%	6%	10%	7%

[a] Total includes 67 people of multiple or unknown race, and 288 persons with unknown birthplace

Table 22: Mode of HIV exposure by place of birth and race of people living with HIV in King County (June 2008)[a]

	MSM or IDU	Heterosexual	Other exposure [b]	Total
US-born whites	93%	4%	3%	4,017
US-born blacks	73%	16%	11%	650
US-born Hispanics	90%	5%	5%	232
US-born API	88%	4%	8%	52
Foreign-born whites	79%	13%	8%	99
Foreign-born blacks	7%	58%	35%	361
Foreign-born Hispanics	70%	14%	16%	311
Foreign-born API	62%	13%	25%	130
Unknown birthplace	83%	4%	13%	288

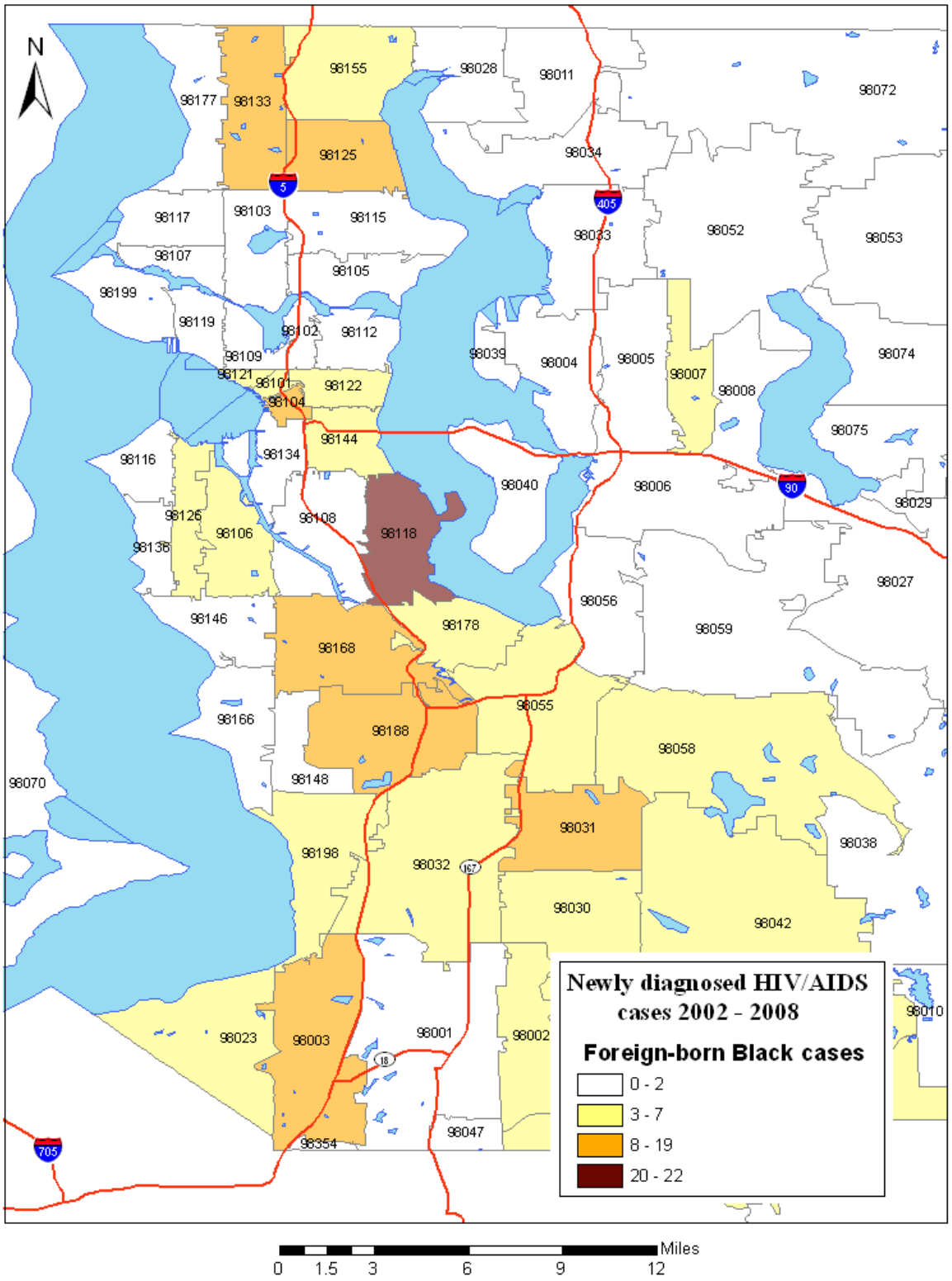
Figure 23: Percentage of HIV diagnoses among blacks, by place of birth



Trends in HIV/AIDS cases (Figure 23): The proportion of HIV cases among people who are foreign-born has increased from 7% of people diagnosed 1993-1995 to 23% of people diagnosed 2005-2007. Most of this increase was among blacks and Hispanics. Over these same time periods, the proportion of HIV cases among blacks who are foreign-born increased from 2% to 9%, while remaining relatively unchanged at 10-12% for U.S.-born blacks (see Figure 23). Foreign-born Hispanics increased slightly from 3-6%, while U.S.-born Hispanics were unchanged at 4%.

Geographic distribution of new diagnoses of HIV (Figure 24): The highest numbers of new diagnoses of HIV among foreign-born persons are among residents of the 98118 zip code, with 22 diagnoses between 2002 and 2008. Several other zip codes throughout western King County have eight or more residents diagnosed during that time period.

Figure 24: Number of new diagnoses of HIV among foreign-born blacks in King County (2002-2008) by zip code



E. HIV/AIDS in women

Summary: Since 1999, women represent approximately 12% of HIV/AIDS cases diagnosed in King County; this proportion has not changed over time. Women with HIV/AIDS tend to be younger than men, most acquire HIV through sexual contact with HIV-infected men, and women of color are disproportionately affected.

Population size:

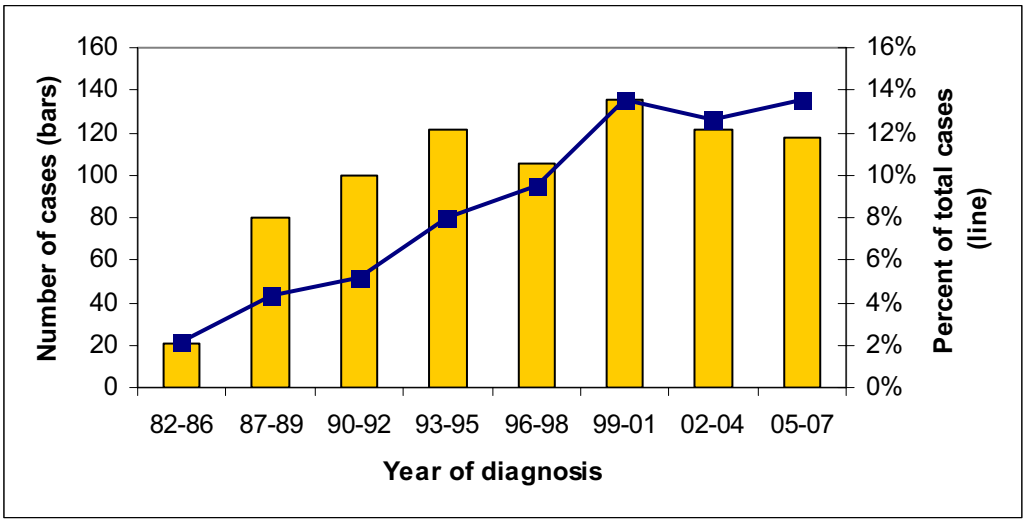
- In 2006 there were 921,540 females in King County.[1]
- The estimated number of King County women who are at-risk for HIV because they are drug injectors or sex partners of drug injectors is 9,000-15,000.
- The estimated number of HIV positive adult or adolescent women in King County is approximately 760. This estimate includes women who have not yet been diagnosed and a smaller number of women who have tested HIV positive but who have not been reported.

Status and trends in HIV/AIDS cases (Figure 25, Table 23 and 24):

- Women, defined as females ages 13 and over, represent 10% (611) of the total 6,283 King County residents reported living with HIV/AIDS as of June 2008.
- Fewer Washington HIV cases are among women than nationally. Women comprise 13% of cases in Washington (June 2008) compared with 26% of U.S. cases (at the end of 2006). The number of HIV/AIDS cases diagnosed annually in King County women is approximately the same each year. Diagnoses in women steadily increased through the 1990s; since 1999 about 40 women were diagnosed annually.
- The proportion of King County HIV/AIDS cases occurring in women has remained relatively stable since 1993 (Figure 25), fluctuating between 8% and 14% when grouped in 3-year periods.
- In King County, women tend to be diagnosed with HIV at an earlier age than men--34% of King County women with HIV/AIDS were 20-29 years old at their diagnosis of HIV infection compared to 28% of men. Also, 5% of women were aged 13-19 at HIV diagnosis compared to 1% of men.
- The majority (67%) of women living with HIV/AIDS in King County acquired HIV through heterosexual contact, includes females who deny injection drug use but have had sexual intercourse with a man whose HIV status and HIV risk behaviors are unknown. Nineteen percent had a history of injection drug use, and 2% received a blood transfusion before 1985.

  In King County in recent years, the prevalence rate is substantially higher among black (16 times), Native American & Alaska Natives (12 times) and Hispanic women (two times) than for white women. The rate is about half as high among Asian & Pacific Islander women.

Figure 25: Number and percent of HIV/AIDS cases in King County women (1982-2007)[a]



[a] Recent years not adjusted for reporting delay; case data reported as of 6/2008.

Table 23: Prevalence rates per 100,000 by race among King County women living with HIV/AIDS (2008)[a]

Race/ethnicity	Number of HIV/AIDS cases	Percent of cases in women	Rate per 100,000 women
White, non-Hispanic	228	36%	37
Black, non-Hispanic	301	48%	599
Hispanic	44	7%	84
Asian/Pacific Islander	23	4%	19
Native American/AK Native	25	4%	446

[a]Cases diagnosed and reported through 6/30/2008 but not adjusted for reporting delay. Rates calculated from 2004 American Community Survey populations.

Table 24: Surveys measuring HIV prevalence among King County women

Survey	Years	No. women tested	HIV prevalence
Drug Treatment Centers	1988-1999	3255	1.4%
Military Recruits (Washington state)	1985-2001	25303	<0.01%
Sexually Transmitted Disease (STD) Clinic	1988-2004	8926	0.3%
PHSKC Counseling &Testing (excluding jails)	2005-2007	9924	0.4%
National HIV Behavioral Surveillance	2007	242	0.8%

HIV prevalence:

- Based on the above estimate and a 2004 American Community Survey of 874,510 women age 13 and over in King County, we estimate that 0.1% of all adolescent and adult King County women are infected. The rate is higher among African American, Hispanic, and Native American women (see Table 23).
- HIV surveys in King County have been conducted to directly measure HIV prevalence (percent of people currently infected) among selected populations (Table 24). None of these surveys adequately measures the true prevalence of HIV among all women in King County.
- The prevalence of HIV among the 8,926 women tested for HIV in the unlinked (anonymous) STD Clinic survey has been less than one-half of one percent and has been stable over a 16-year study period from 1988 through 2004. Since these women were seeking care for a possible sexually-transmitted disease, women in this survey are considered to be higher risk of HIV than the general population of women.

Other measures of risk:

- Patterns of transmission of other sexually transmitted infections can indicate risk for HIV infection. Similar to HIV infection, both Chlamydia and gonorrhea disproportionately affect black and Native American King County women relative to women of other races. According to the 2007 Public Health Sexually Transmitted Diseases Epidemiology Report, rates of Chlamydia and gonorrhea among black women were seven and 14 times greater, respectively, than those of white women. Rates of Chlamydia and gonorrhea among Native American were five and eight times greater, respectively, than those of white women.

1. 2006 population estimates are from Washington Office of Financial Management.
2. HIV/AIDS Epidemiology Report, 1st Half 2008, p. 3-4,10.

F. HIV/AIDS in pregnant women and children

Summary: A small number of children who live in King County have been diagnosed with HIV or AIDS, and all since 1986 were perinatally infected. Locally, children under age 13 comprise 0.3% of all HIV diagnoses. We estimate that 11 out of every 10,000 women of child-bearing age in King County have HIV, with significantly higher rates among women of color and their children compared to whites. Since 1996, perinatally-acquired HIV has sharply declined nationally due to use of anti-retroviral therapies in HIV-infected pregnant women. Continued education and promotion on the benefits of HIV counseling and testing among pregnant women is necessary to maintain today's historically low levels. The risk of perinatal transmission is known to increase if a woman acquires HIV during pregnancy, has a high HIV viral load, refuses treatment, and/or breastfeeds.

AIDS/HIV cases among children in King County:

- A total of 37 pediatric HIV infections (age 0-12 years at the time of HIV diagnosis) have been reported in King County. These represent 0.3% of the 10,680 King County residents ever diagnosed with HIV.
- Twenty-nine of the 37 children were infected with HIV perinatally (before birth or during labor and delivery). Three children were infected through blood products administered for hemophilia treatment. Five children were born outside the U.S. and specific risk histories are unknown.
- No HIV diagnoses associated with blood-products have occurred among children since 1986.
- Approximately 20-30 infants are born to HIV-infected mothers each year, and only one case of perinatal transmission was confirmed in a King County resident since 1998.
- Sixteen of the 37 pediatric cases developed AIDS, and nine have died.
- Twenty of the 28 living cases are now young adults over age 13.
- The race/ethnicity of the 37 children diagnosed with HIV/AIDS is 54% African American; 27% white; 11% Hispanic; and 5% Asian/Pacific Islander. One child (3%) was of mixed race.

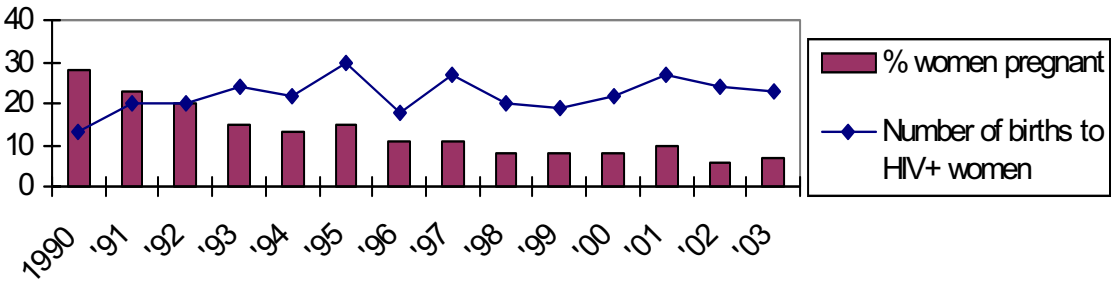
HIV positive pregnant women receiving care in King County (1990-2003) (Figure 26):

- A small number of HIV infections have been transmitted to children born to HIV-infected women. In the local Adult Spectrum of Disease study, 679 HIV positive women who receive care with King County providers were followed for an average of 3 years and 133 (26%) were pregnant at any time between 1990-2003.
    - There were 13-30 births per year among the HIV+ women followed in this study (Figure 26).
    - The percent of HIV positive women who were pregnant declined from 26% in 1990 to 7% in 2003.
    - The average age of women who were ever pregnant was 27 years, relative to 34 years for those who had not been pregnant. One-quarter of pregnant women had two or more pregnancies.
    - There were no differences in the race of women who became pregnant vs. those who did not.
    - Pregnant women were less likely than women with no pregnancy to have a diagnosis of severe mental illness (psychoses & bipolar disorders– 5% vs. 14%), but equally likely to be diagnosed with substance abuse (injection or non-injection drug use or alcohol abuse–42% vs. 43%).

HIV/AIDS among women of childbearing age (15-44 years) in King County:

- An estimated 760 HIV-infected adult or adolescent women live in King County.
- Sixty percent of HIV-infected women are currently 15 to 44 years old, for a total estimate of 460 women of childbearing age living in King County.
- About 11 out of every 10,000 women of child-bearing age in King County, have HIV infection (460 / 408,000).
- As of the end of 2007, women comprised 12% (383/ 3,137) of all persons currently living with HIV, 15-44 years old.
- Young women make up 27% of the 143 cases aged 15-19 at the time of their HIV diagnosis.

Figure 26: Pregnancy and births among HIV-infected women receiving care in King County (1990-2003)



Infants born to HIV positive mothers and maternal antiretroviral use:

- Between 1987 and 2005, 217 pregnancies among HIV-infected women were clinically managed at the University of WA Department of Obstetrics & Gynecology, Public Health—Seattle & King County's Northwest Family Center, or Children's Hospital & Medical Center. Approximately half of these women were residents of King County. Among the 71 children born to these women between 1987 and 1993, eight (11%) became infected with HIV. Since 1994, when antiretroviral therapy during pregnancy became standard, only one of 137 children (<1%) subsequently became HIV-infected.
- Among 11 HIV-infected children born to HIV-infected mothers since 1994, only one birth was after 1997. In three cases the mother was aware of her HIV status prior to pregnancy. Three births occurred locally, two in other states, four in other countries, and two have unknown birthplace.
- Of 96 pregnant women followed by local experts 1997-2003, 70% were prescribed highly active antiretroviral therapy, 14% dual therapy, and 16% monotherapy. Only one woman received no retroviral therapy.

HIV prevalence and incidence:

- The Survey of Childbearing Women was a federally-funded, population-based survey that used blood obtained by metabolic screening programs to anonymously test newborns for HIV antibodies; a positive test indicated maternal HIV infection. The survey tested 123,268 infants born from 1989-1995 and found maternal HIV infection in 0.04% (about 4 in 10,000) of King County women giving birth. Rates of HIV infection were 10 times higher in African American women compared to white women.
- Testing at local publicly-funded counseling and testing sites from 1997-1999 found 60 HIV-infected women of 15,635 women tested (less than 4 per 1,000). Among these, eight of 55 (15%) tested for recent infection by the LS-EIA method were found to have acquired HIV within the past two to six months.

National studies and policy recommendations:

- In 1994 the landmark Pediatric AIDS Clinical Trials Group (PACTG) 076 study results were released showing dramatic reduction of perinatal HIV transmission from 26% to 8% with maternal and neonatal zidovudine (AZT) use.
- The Centers for Disease Control and Prevention (CDC) and the Institute of Medicine recommend that all pregnant women are provided HIV testing during their pregnancy, with the option to decline testing. Universal HIV screening of pregnant women would reduce provider bias, as providers often do not request HIV tests for women they do not perceive to be at risk, and it could also reduce stigma about HIV testing that may be felt by pregnant women.
- The CDC recommends that all HIV positive pregnant women are prescribed highly active antiretroviral treatment (HAART) that includes AZT, especially in the last weeks of pregnancy and during delivery, and children born to these women are recommended to receive AZT at the time of birth.
- In PACTG 367, 945 HIV positive pregnant women observed in 1998-1999 were accessed for antiretroviral use and pregnancy outcomes. Of the 945 women, 13% received no antiretrovirals, 19% received AZT alone; and 68% received multidrug antiretroviral regimens with or without a protease inhibitor. Transmission rates of HIV to the infants were 26% with no antiretroviral therapy, 8% on AZT alone, and 1% to 3% for the other antiretroviral regimens.

G. HIV/AIDS in homeless persons

Summary: The McKinney Act (Public Health Law 100-628, November 1988) defines a homeless person as: "an individual who lacks a fixed, regular, and adequate residence or an individual who has a primary night-time residence that is either a supervised or publicly operated shelter designed to provide temporary or transitional living accommodation; or a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings."

Homelessness is strongly associated with mental illness and substance use problems, all of which need to be addressed to develop effective prevention and intervention programs for this population.

Population: Although there have been no local population-based surveys of HIV infection among homeless persons in King County, studies from other areas of the country indicate that homeless men and women are at higher risk for HIV. Homeless persons reported with HIV/AIDS in King County were more likely to be persons of color and to have been exposed to HIV through injection drug use compared to those who were not homeless.

- Approximately 8,000 persons are homeless in King County on any given day, and an estimated 24,000 persons have experienced homelessness in the past year. Unsheltered persons outside of Seattle are the least documented segment of King County's homeless; however, the annual 2008 One Night Street Count included Shoreline, Kent, White Center, Auburn and East King County.
- The 2008 One Night Street Count for King County found 36% of the homeless were single adult men, 13% were single adult women, 50% were families with children and 1% were single youth.
- Homelessness is a particular concern among injection drug users in King County. In a Public Health survey conducted 2002-2004 which recruited IDU ages 15-30, 66% of the participants reported being homeless sometime in the last six months. The National HIV Behavioral Surveillance Survey (NHBS) conducted 2005-2006, found 54% of IDU were currently homeless.[2]

Status of HIV/AIDS cases (Table 25):

- Among reported HIV/AIDS cases, homelessness is defined as having no residence at time of the HIV or AIDS diagnosis. This definition undercounts the number of homeless HIV/AIDS cases if, for example, a shelter or friend's home was reported as the residence. Two percent (2%) of the 6,283 King County residents living with HIV or AIDS were reported as homeless at the time of diagnosis.
- Among homeless persons with HIV, 49% were persons of color, and 56% were injection drug users (IDU) men who have sex with men and inject drugs (MSM/IDU). This compares to 32% and 13%, respectively, among persons who were not homeless at diagnosis.
- Ninety percent of homeless people with HIV are men, and 10% are women.

HIV prevalence:

- During the 2008 One Night Count, 107 people accessing shelter and transitional programs were reported as HIV-positive or having AIDS. It should be noted that this is almost certainly an undercount and does not include any people who were homeless and not able to access shelter/housing during the One Night Count.
- The 2007 HIV/AIDS Care Needs Assessment which surveys HIV positive consumers of services found that 8% of respondents reported having been homeless at least once in the past year.
- In the U.S., an estimated 3.5 million people are homeless every year, and as many as 3.4 percent are HIV positive. This rate is three times higher than for the adult population.
- The Medical Monitoring Project, which interviewed people with HIV who are in care from 2005-2008, found that 13% of the participants reported being homeless at some point during the last 12 months.

Broader issues and data gaps:

- Tuberculosis (TB) cases among homeless persons increased in King County in 2003. During 2003, 35 cases of TB were diagnosed among homeless persons compared to 30 cases reported in 2002 and 12 cases in 2001. In 2002, 30% were HIV-infected, whereas in 2003 this dropped dramatically to 3%. In 2007, of the 15 homeless TB cases, two (13%) were co-infected with HIV.
- HIV infection is one of many serious issues facing the homeless. The causes of homelessness and its association with mental illness and substance use

problems need to be better understood and better addressed in order to develop effective prevention and intervention programs for this population. Improved characterization of demographics, risk behaviors, and health status (including HIV, other sexually transmitted infections, TB, substance use, and mental illness) among the homeless is also important.

1. HIV/AIDS Epidemiology Report, 2nd Half 2004, p 20-25
2. HIV/AIDS Epidemiology Report, 1st Half 2007 p. 17-22
3. Seattle and King County Annual Tuberculosis Report 2007 http://www.kingcounty.gov/healthservices/health/communicable/TB.aspx

Table 25: King County residents living with HIV or AIDS and presumed homeless (June 2008)

	Homeless		All cases	
	Number	**%**	**Number**	**%**
Sex				
Male	95	90%	5,659	90%
Female	10	10%	651	10%
Age				
0-19 years	5	5%	144	2%
20-24 years	13	12%	653	10%
25-29 years	11	10%	1,168	19%
30-39 years	39	37%	2,685	43%
40-49 years	30	29%	1,274	20%
50+ years	7	7%	369	6%
Race/Ethnicity				
White	51	49%	4,299	68%
African American	31	30%	1,041	17%
Hispanic	15	14%	593	9%
Asian/Pacific Islander	1	1%	197	3%
Am Indian/AK Native	5	5%	86	1%
Multiple or Unknown Race	2	2%	67	1%
HIV Exposure Category				
Male/male sex (MSM)	25	(24)	4,344	(69)
Injection drug user (IDU)	33	(31)	342	(5)
MSM/IDU	28	(27)	531	(8)
Heterosexual sex	6	(6)	601	(10)
Other or undetermined	13	(12)	465	(7)
Total	**105**	**100%**	**6,283**	**100%**

H. HIV/AIDS in incarcerated people

Summary: Incarcerated populations tend to have a higher prevalence of HIV infection than the general population, in part because they are more likely to have engaged in high-risk behavior, such as injection drug use. Hepatitis C (HCV) infection, which is also spread by sharing injection equipment, is also common. Incarcerated people with HIV infection or HCV may have substantial health and medical care needs, and may put others at risk for becoming infected. Locally and nationally, jail prison populations continue to increase each year. An estimated 3-4% of inmates in King County jails have HIV infection. Because the average jail stay is short (there are no prisons in King County), close collaboration between jail and community services are particularly important to address prevention and health care needs, including substance use and mental health treatment in this high-risk population.

Jail and prison populations:

- The number and rate of people incarcerated in U.S. local jails and state and federal prisons has risen dramatically in recent years from 1,585,586 (601/100,000 population) in 1995 to 2,293,157 (756/100,000) in 2007.[1] Overall, 1 in 132 persons in the U.S. is incarcerated.
- The incarceration rate in state and federal prisons in 2007 was 69/100,000 for women and 955/100,000 for men. Incarceration rates were 6.5 times higher among black men and 2.6 times higher among Hispanic men compared to white men. Similar discrepancies exist among women.[1]
- There were 17,772 persons under jurisdiction (not all were incarcerated) of state and federal prisons in Washington state by the end of 2007.[1]
- The average daily King County adult detention population (includes inmates in the jails and inmates who are partially confined in Work Education Release or Electronic Home Detention) increased from 2,393 in 2003 to 2,726 in 2007. The average length of stay was 18.5 days in 2007.[2]

Prevalence and trends in HIV infection (Table 26):

- By year end 2006, 1.6% of male and 2.4% of female inmates in U.S. state and federal prisons were known to be HIV-infected.[3] AIDS-related deaths comprised 34.2% of all deaths in 1995 and 4.6% of deaths in 2006 in these facilities.
- A total of 84 inmates or 0.5% of the corrections population in state and federal prisons in Washington was known to be HIV-infected by the end of 2006.[3]

Table 26: Results of HIV testing among persons incarcerated in King County (2005-2007)

Males: Risk Category	**# Tested**	**# HIV positive**	**% HIV positive**
Male-male sex and inject drugs (MSM/IDU)	327	13	4.0%
Male-male sex (MSM)	212	8	3.4%
Injection drug use (IDU)	929	9	0.9%
HIV+ or high-risk female partner(s) [a]	730	9	1.2%
Other risk or risk not identified [b]	809	5	0.6%
Total, Males	**3,007**	**44**	**1.5%**
Females: Risk Category	**# Tested**	**# HIV positive**	**% HIV positive**
Injection drug use (IDU)	393	2	0.5%
HIV+ or high-risk male partner(s) [a]	234	3	1.2%
Other risk or risk not identified [b]	293	3	1.0%
Total, Females	**920**	**8**	**0.9%**

[a] Includes presumed heterosexual transmission.
[b] Transfusion recipients, and needle sticks or other blood exposure.

- HIV prevalence was <1% in inmates entering Washington state prisons in the mid-1990s.
- King County jail staff estimate that on any given day about 3-4% of inmates are HIV positive.
- From 2005-2007, 52 of the 3,927 (1.3%) persons who tested while incarcerated in the King County jails were HIV positive. Newly diagnosed HIV infection was more common among males than females, and among those with dual male-male sex and injection drug use exposures.

HIV and behavioral risks among IDU arrested in King County:

- Public Health – Seattle & King County conducted an interview and seroprevalence survey of IDUs who were recently arrested and booked into the King County adult correctional facilities in Seattle and Kent (the Kiwi Study).[4] From 1998-2002, 1,811 persons (77% men, 23% women) participated in the study.
  - Forty-five (2.5%) of the 1,811 persons tested were HIV positive. HIV prevalence in male injection drug users with a history of sex with other men (MSM/IDU) was 9% compared to 2% in non-MSM male IDU, and 20% among MSM/IDU whose primary injection drug was amphetamine.
  - Of the 45 participants who tested positive, 26 (58%) were aware of their HIV infection.
  - 89% of participants reported a prior HIV test.
- The Kiwi Study showed injection risk behaviors prior to incarceration were common.
  - The median age when study participants began drug injection was 19 years.
  - In the past six months, 60% had injected with a needle that had been used by somebody else before them, 71% had shared cookers, and 58% had backloaded (using a common syringe to measure and divide drugs).
- The Kiwi Study also showed that sexual risks were common among the study participants.
  - 38% percent reported history of a sexually transmitted disease.
  - 12% of male participants reported male-male sex, including six percent in the past year.
  - 55% percent of female and twelve percent of male participants reported a history of sex work.

Other measures of risk:

- **Prevalence of drug injection behavior:** Information from various national studies and the local Kiwi Study estimate the prevalence of drug injection in jail populations between 12-20%.[5,6]
- **Hepatitis C (HCV) infection:** HCV is transmitted by sharing drug injection equipment and is very common among the IDU population in King County. In the Kiwi Study, 65% of participating IDUs had antibodies to hepatitis C.
- **Sexually transmitted infections (STIs):** Several studies have documented a high prevalence of STIs in incarcerated populations.[7,8] In 2006, 4.5% of adult Chlamydia cases and 7.2% of adult gonorrhea cases diagnosed in King County residents were reported from correctional facilities in King County.
- **Tuberculosis (TB):** Studies have shown that rates of TB are higher in prison inmates than in the general population and that prison inmates are less likely to complete TB treatment,[9] a disparate number of people who are incarcerated are also at high risk of TB, including IDU, persons of lower socioeconomic status, and persons with HIV.

Additional information:
CDC recommendations for HIV testing in correctional facilities: www.cdc.gov/hiv/topics/prev_prog/AHP/resources/guidelines/Interim_RoutineTest.htm
CDC recommendations for prevention and control of TB in correctional facilities: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5509a1.htm

[1] Prisoners in 2007. US Department of Justice, Bureau of Justice Statistics Bulletin. See www.ojp.usdoj.gov/bjs/pub/pdf/p07.pdf
[2] King County Department of Adult and Juvenile Detention, See http://www.kingcounty.gov/courts/detention/administration/jail_stats.aspx#bookings
[3] HIV in Prisons 2006. US Department of justice, Bureau of Justice Statistics Bulletin. See www.ojp.usdoj.gov/bjs/pub/pdf/hivp06.pdf
[4] HIV/AIDS Epidemiology Report, 1st Half, 2003, p. 25-35. See www.kingcounty.gov/healthservices/health/communicable/hiv/epi/reports.aspx
[5] National Institute of Justice. Arrestee Drug Abuse Monitoring Program, Annual Report 2000 www.ncjrs.org/pdffiles1/nij/193013.pdf
[6] National Institute of Justice. ADAM Preliminary 2000 Findings on drug Use and Drug Markets, Adult Male Arrestees. www.ncjrs.gov/pdffiles1/nij/189101.pdf
[7] Kahn. Sex Transm Dis. 2004:31:360- 364.
[8] Pathela P. Sex Transm Dis. 2007 Nov 5. [Epub ahead of print]
[9] MacNeil JR. Am J Public Health. 2005;95:1800-1805.

I. HIV/AIDS in young people age 15-29

Summary: Young people age 15-29 comprise about 31% of people diagnosed with HIV in King County, including 2% adolescents 15-19 years old, 10% age 20-24, and 19% age 25-29. Since 1995, an average of four teens and 30 young adults were diagnosed with HIV each year. The majority of infections among young people were in men who have sex with men (MSM). Compared with young adults, however, HIV-infected teens 15-19 years old were more likely to be female and/or to acquire infection heterosexually and less likely to be MSM. Young MSM have high levels of risky sexual behavior, and about seven percent of 18-29 year old MSM are HIV-infected.

Population:

- The Washington Office of Financial Management population estimates 2006 King County residents include 113,597 who are age 15-19, 135,059 age 20-24, and 148,468 age 25-29.
- Public Health estimates the King County population of gay or bisexual men is about 6% of the male population, or 3,500 age 15-19, 4,000 age 20-24, and 4,500 age 25-29.

Status and trends in HIV/AIDS cases (Table 27):

- As of June 2008, 6,283 King County residents are living with HIV or AIDS and reported to Public Health – Seattle & King County. At the time of diagnosis of HIV infection, 2% were 15-19 years old, 10% were 20-24 years old, and 19% were 25-29 years old.
- Among people 15-19 years old when diagnosed with HIV, 45% were MSM, 30% injected drugs including 20% who were MSM who also injected drugs, 20% had heterosexual risk, and 4% were infected from blood products received before screening began in 1985.
- MSM make up 45% of those diagnosed with HIV at age 15-19, 66% of those diagnosed at age 20-24, and 72% of those diagnosed at age 25-29.
- The average number of King County residents diagnosed with HIV each year is 4 who are age 15-19, 30 age 20-24, and 50 age 25-29.

HIV prevalence of people currently living with HIV (Table 28): As the population living with HIV gets older, the current age of those living with HIV shifts further from the age at diagnosis described above.

- King County residents currently living with HIV as of June 2008 include 14 who are 15-19 years old, 81 who are 20-24 years old, and 307 age 25-29.
- About 0.01% of teens in King County age 15-19, 0.06% of young adults age 20-24, and 0.2% of adults age 25-29 are infected with HIV. This six-fold increased infection rate by 20-24 years of age demonstrates the importance of prevention during the years when young adults become sexually active.
- Several surveys have been conducted to determine HIV prevalence (percentage of people currently infected with HIV) in several specific populations in King County. Each survey and data source listed below has unique features, and results cannot be extrapolated to the general population. Overall these surveys confirm lower prevalence among the youngest age groups, and higher prevalence among MSM.

Risk behaviors in young gay males:

- The Seattle-area YMS in 1997-2000 showed that of MSM who had anal sex in the past six months, 53% of 15-18 year olds had sex without a condom compared to 64% of 19-22 year olds and 62% of 23-29 year olds.
- In the 2008 Seattle-area NHBS-MSM2 study, 31% of 18-29 year old participants reported unprotected anal sex with a male partner of opposite or unknown HIV status.

Other sexually transmitted infections:

- Diagnosis of a sexually transmitted infection (STI) indicates unsafe sexual behavior. The presence of an STI also increases the risk of acquiring or transmitting HIV. Young people continue to have the highest rates of STIs. In King County, the 2007 Chlamydia rate was 1,415 per 100,000 for 15-19 year olds, four times the rate among 30-34 year olds (343 per 100,000).

Table 27: King County residents presumed living with HIV, by age at diagnosis (June 2008)

	15-19 years	20-24 years	25-29 years
Sex			
Male	73%	87%	89%
Female	27%	13%	11%
Race/Ethnicity			
White	70%	63%	69%
African American	14%	17%	15%
Hispanic	11%	12%	11%
Asian & Pacific Islander	4%	4%	4%
Native American	1%	2%	1%
Multi Race	1%	2%	1%
Exposure Category			
Male-male sex	45%	66%	72%
Injection drug (IDU)	10%	5%	3%
Male-male/IDU	20%	11%	10%
Heterosexual sex	20%	12%	9%
Transfusion or hemophilia	4%	1%	<1%
Undetermined/other	2%	5%	5%
Total Cases	**111**	**643**	**1,168**

Table 28: HIV prevalence surveys among youth (1985-2008)

Source of data	Population	Age (yrs.)	HIV+/ No. tested	% HIV+
Young Men's Survey (YMS), 1997-1998	MSM recruited at venues	15-18	1/111	1.0%
		19-22	7/257	2.7%
Young Men's Survey (YMS), 1998-2000	MSM recruited at venues	23-29	22/462	4.8%
National HIV Behavioral Surveillance, 2008	MSM recruited at venues	18-29	10/144	6.9%
National HIV Behavioral Surveillance, 2007	Heterosexuals recruited at venues	18-29	0/236	0%
Military Recruitment Centers[a], 1985-2001	Military recruits	<20 20-24	2/24,111 9/13,641	<0.1% 0.1%
Unlinked STD Clinic Survey, 2001-2004 Females and men who have sex with women only	STI testing	<20 20-29	0/295 5/2,314	0.0% 0.2%
Drug Users Intervention Trial, 2002-2004	Female Injection Drug Use (IDU) MSM/IDU Non-MSM IDU	15-30 15-30 15-30	0/185 10/51 5/353	0.0% 20.0% 0.5%
PHSKC HIV test sites, 2006-2008	HIV/STD & family planning clients	13-19	11/2,970	0.4%
		20-24	91/6,294	1.4%

[a] King, Snohomish and Island counties

J. HIV/AIDS in heterosexuals

Summary: Nationally and locally, heterosexually-contracted HIV is the leading route of infection among women, and accounts for a higher proportion of cases among people of color and foreign-born blacks compared with whites. The proportion of HIV infections of known risk attributable to heterosexual transmission is unchanged at 14% of King County HIV cases between 1999 and 2007.

Definition: According to standard national case definitions for HIV surveillance, HIV transmission is considered heterosexually-acquired when the infected person is a) not a male who has sex with males, b) does not inject drugs, and c) has a heterosexual partner who is an injection drug user, a bisexual male, or known to be HIV-infected. In addition, women who do not inject drugs and have been sexually active are 'presumed heterosexual' cases and are included in our King County totals. A heterosexual male without a documented HIV-infected or injection drug using partner is considered to have 'no reported risk' and is not counted as heterosexually-acquired. Because of this definition, surveillance data provide a low estimate of heterosexual-acquired infection.

Population: The estimated King County population of 15-69 year-old heterosexuals is about 1.3 million (derived from the 2006 population estimate for ages 15-69, minus an estimated 40,000 men who have sex with men [MSM]). This number is likely an overestimate, as it includes women with female partners and people who are not sexually active.

Status and trends in HIV/AIDS cases (Figure 27): The proportion of HIV diagnoses attributed to heterosexual transmission in King County increased during the early part of the epidemic, but is currently stable (Figure 27). Over the period 1999-2007, 14% of new diagnoses of HIV infection with known risk were attributed to heterosexual contact (Figure 27).

HIV incidence (Figures 28 and 29): The number of people diagnosed with HIV infection attributed to heterosexual transmission is level at about 40 diagnoses annually from 2000-2007.

- Cases attributed to heterosexual transmission are more common among women, blacks, persons age 15-24, foreign-born persons, and residents of King County outside Seattle.
- While 31% of cases among foreign-born residents are heterosexually-acquired, only six percent of cases among U.S.-born residents are heterosexually-acquired.
- Heterosexual transmission accounts for 30% of cases among blacks, 13% among Native Americans, 11% among Asian & Pacific Islanders, 9% among Hispanics, and 4% among whites.
- Thirteen percent of persons age 15-24 at time of diagnosis likely acquired infection heterosexually, versus nine percent of those aged 25-69.

Figure 27: Number and percent of new HIV diagnoses among heterosexuals (1982-2007)

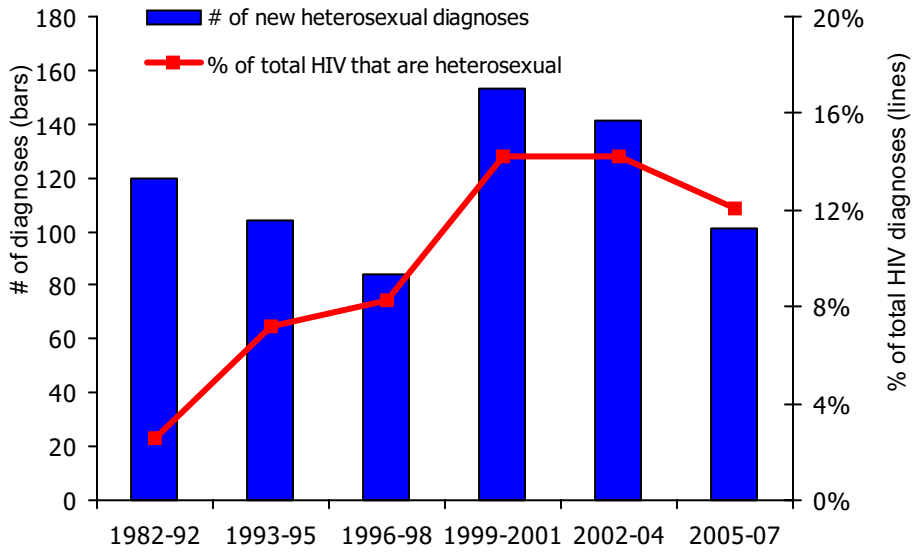
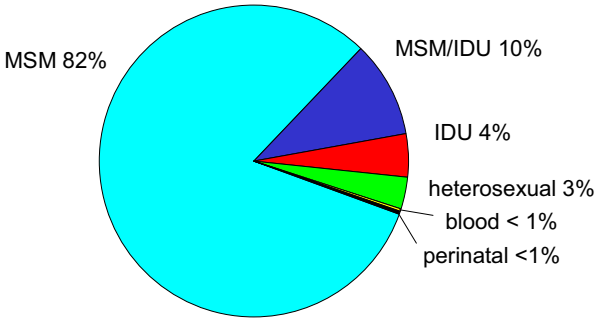
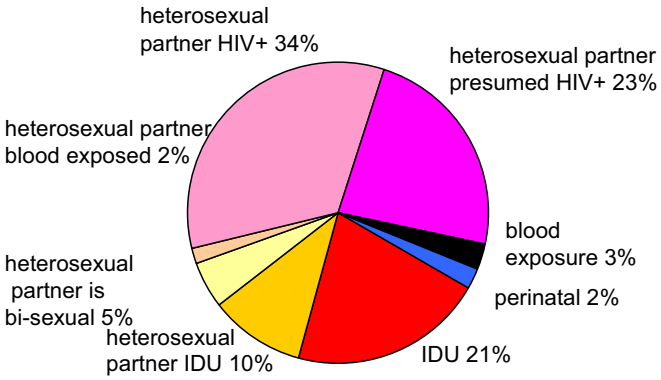


Figure 28: King County residents living with HIV or AIDS by gender and exposure category, as of 6/30/2008

Males, N=5,312 with known risk



Females, N=563 with known risk



- Among people with a known risk for HIV, heterosexual transmission accounts for 67% of HIV diagnoses among women, but just three percent of diagnoses among men (see Figure 28).
- The majority of women with known HIV risk were infected heterosexually (67%): women with male partners who injected drugs (9%), who were bisexual (4%), who were infected through receipt of blood products (2%), or who were infected with HIV but whose risk was unspecified (31%). An additional 21% of females were presumed heterosexual because they denied injection drug use and were sexually active, although no specific risk or HIV infection was known for their partners (Figure 28).
- New diagnoses of HIV infection 2002 through 2008 were distributed among residents living throughout King County. Residents of the 98118 zip code accounted for the highest number of new diagnoses from any single zip code.

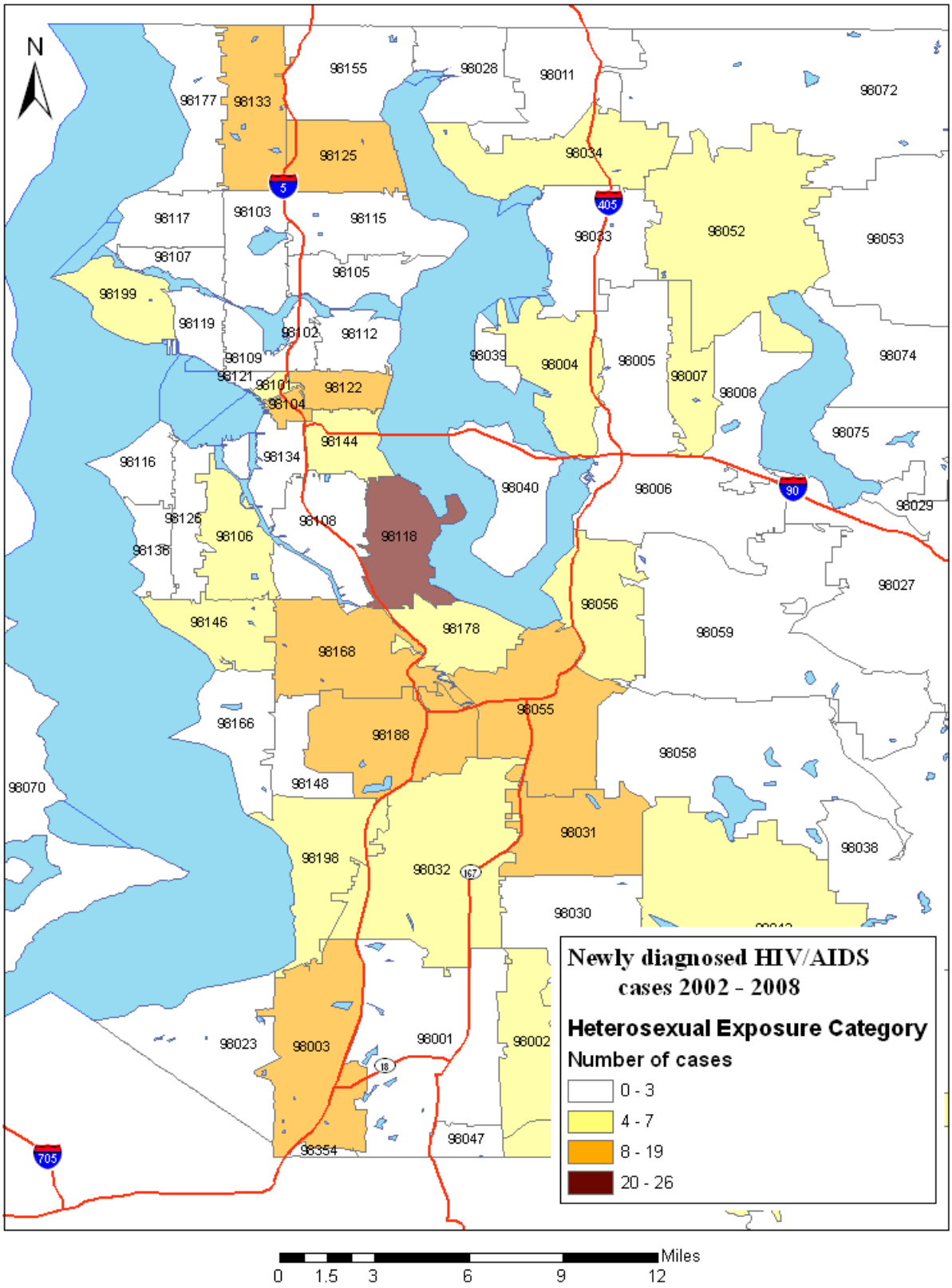
HIV prevalence:

- An estimated 770 King County residents are living with heterosexually-acquired HIV infection. In addition, among heterosexuals an estimated 440 HIV infections acquired infection through use of injection drugs and an estimated 50 infections are among heterosexuals who acquired HIV through receipt of blood products.
- The 770 estimated HIV infections among heterosexuals comprise roughly 0.1% of the King County heterosexual population in the age range of 15-69 years. Most HIV infections among the heterosexual population were acquired through injection drug use or blood exposure.
- Among both female and male non-drug-injecting heterosexual clients seen at the Harborview Sexually Transmitted Diseases (STD) Clinic from 1998-1999, the HIV prevalence was 0.3%. People attending an STD Clinic are at higher risk for HIV infection than the general population.

Other measures of risk:

- Sexually transmitted infections (STIs) are an indirect indicator of unprotected sexual activity that could result in transmission of HIV. Due to more acute onset of symptoms for most other STIs compared to HIV, these data may provide more timely information on behavioral trends in the community. The vast majority of gonorrhea and Chlamydia infections in King County are heterosexually transmitted.
- In 2002, the reported rate of sexually transmitted gonorrhea in King County was 256 per 100,000 in 15-24 year-olds. The rate among 15-24 year-old blacks (1,329/100,000) was twelve times greater than that among whites (105/100,000) of the same age.
- In 2002, King County Chlamydia rates were 1,347 per 100,000 persons aged 15-19 compared to 618 per 100,000 in 25-29 year-olds.
- In the HIV Testing Survey conducted at a local STD clinic in 2000, half of both men and women surveyed said they never used condoms during sexual intercourse with their heterosexual partner(s).

Figure 29: Number of new diagnoses of HIV among heterosexuals in King County, 2002-2008 by zip code



K. HIV/AIDS among people who are transgender

Summary: No population-based studies of HIV have been completed among transgender people living in King County. Of the 27 HIV infections among transgender reported as of 2003, almost all were born male but consider their current gender to be female. Transgender people may be at much higher risk for acquiring HIV infection due to risk behaviors, stigma, and discrimination.

Definition: "Transgender" is an inclusive term for persons whose gender identity, expression, or behavior differs from the norms expected from their birth sex. Various gender identities fall under this category, including transgender woman, transgender man, male-to-female (MTF), female-to-male (FTM), transsexual, transvestite, drag queen/king, and gender queer. While some transgender persons seek physical transformation through the use of hormones, sex reassignment surgery, or cosmetic procedures, others pursue masculine or feminine gender expression through behavior or self-presentation.[1]

The academic literature on transgender persons focuses primarily on MTF, genetic males who identify with female gender. Very little literature exists on FTM transgender persons, but HIV prevalence among FTM transgenders is known to be much lower than among MTF. Data suggest, however, that FTM also are at heightened risk for HIV infection. A recent meta-analysis estimated a national HIV prevalence of 27.7% among MTF, based on four studies in which serostatus was confirmed by an HIV test, whereas a mean prevalence of 11% was found among MTF across 17 studies relying on self-reported serostatus.[2]

Population: No reliable population estimates exist for transgender persons in King County.

Status and trends in HIV infection (Table 29): Although limited information is available about HIV/AIDS among transgender persons, HIV prevalence may be high among this population. Among 6,283 people living with HIV in King County as of 6/30/2008, 27 identify as transgender. The total size of the transgender community is unknown, and the known cases reflect a minimum number.

One to three new diagnoses of HIV have been reported each year since 2004. We modified our local case report form in 2003 to ask specifically about transgender information.

Risk behaviors among transgender people:

- Risky behaviors may be high among transgender people, according to multiple studies conducted with transgender persons. Risk behaviors include multiple sexual partners, irregular condom use, unsafe injection practices of both illicit drugs and other substances, such as hormone and silicone injections.[3]
- The 2002 King County Male-to-Female Transgender Needs Assessment found 31% of the 81 participants indicated having casual partners, 62% reported *not* using condoms the last time they engaged in sex, and 36% reported having ever exchanged sex for drugs or money.
- Forty-two percent of MTF in a recent meta-analysis reported participation in commercial sex work.[2]
- Over one-third of MTF in one study reported multiple sex partners and nearly half reported unprotected receptive anal intercourse during casual sex.[2]
- Although HIV/AID risk behaviors may be reportedly high among transgender persons, many self-identify as having low HIV risk (according to various local HIV/AIDS needs assessments of non-infected individuals and those not previously tested for HIV).[4]
- Transgender persons face stigma and discrimination which may exacerbate their HIV risk. The stigma of transgender status is associated with lower self-esteem, increased likelihood for substance abuse and survival sex work in male-to-female transgender individuals, and lessened likelihood of safer sex practices. Social marginalization can result in the denial of educational, employment and housing opportunities.[3,5]

Other relevant information for HIV prevention:

- Transgender persons are over 1.5 times more likely than non-transgender men to have suffered from depression and nearly twice as likely as non-transgender men or women to have considered or attempted suicide. [6,7]
- A risk-behavior study in San Francisco found that the majority of its transgender sample had a history of using non-injection drugs, including cocaine (66%) and speed (57%). In addition, 34% had a history of injecting drugs, and nearly half of these individuals had shared syringes.[6]

Table 29: Demographic characteristics of transgender people living with HIV in King County (June 2008)

Characteristic (N = 27)	Percent
Sex at birth	
Male	93%
Female	7%
Race / ethnicity	
White	52%
African American	26%
Hispanic	19%
Asian & Pacific Islander	4%
Mode of exposure	
Born male & sex with male	74%
Born male & sex with male & injection drug use	19%
Born female & sex with a bisexual male	4%
Born female no identified risk	4%
Age at diagnosis	
20 – 29 years	30%
30 – 39 years	44%
40 – 49 years	26%
Country of birth	
United States	77%
Other country	19%
Unknown birthplace	4%
Disease status 9/30/2006	
HIV infection	33%
AIDS	67%
Total cases	**27 = 100%**

- With respect to HIV prevention services, none of the CDC reviewed "best-evidence interventions" focused on at-risk populations target trans-genders.[8]
- Local epidemiologists are working with national colleagues to improve data collection on trans-gender people and HIV infection, especially in separating transgender from men-who-have-sex-with-men categories in data reporting.

[1] Center for AIDS Prevention Studies, UCSF. 2008.What are male-to-female transgender persons' (MTF) HIV prevention needs? http://www.caps.ucsf.edu/pubs/FS/revMtF.php.
[2] Herbst J, 2008. AIDS and Behavior 12:1–17
[3] "HIV-related tuberculosis in a Transgender Network: Baltimore, Maryland and New York City Area, 1998-2000". MMWR, April 20, 2000.
[4] Needs assessments on transgender persons and HIV/AIDS have been conducted in multiple sites. Data cited above refer to studies in Atlanta, Boston, Chicago, Los Angeles, Minnesota, New York City, Philadelphia, Washington, DC, with variable methods used to assess HIV status (i.e., self-reported through confidential surveys/ interviews as well as baseline HIV tests).
[5] Definitions by representatives of TLCA forum, January 2001
[6] Nemoto T. 2005. International Journal of Transgenderism 8 (2/3):5–19.
[7] Bockting W. 2005. International Journal of Transgenderism 8 (2/3):123–31.
[8] Lyles C. 2007. American Journal of Public Health 97(1):133–43.

CHAPTER VIII. Appendix

Section A. Glossary

1987 AIDS case definition: The CDC surveillance definition for AIDS implemented in 1987 included 23 clinical AIDS indicator diseases (MMWR 1987 Vol. 36, No. 1S). The 1987 case definition was based on the 1986 HIV Classification System and replaced the 1985 case definition.

1993 AIDS case definition: The 1993 CDC surveillance definition for AIDS in adult and adolescents was implemented January 1, 1993 (MMWR 1992 Vol. 41, No. RR-17). It adds to the 23 indicator conditions from the 1987 AIDS definition the following: 1) persons with HIV infection and CD4 T-lymphocyte levels under 200 cells per microliter, or under 14 percent of total lymphocytes; 2) HIV-infected persons with pulmonary TB, recurrent pneumonia, or invasive cervical cancer. Not all other countries have adopted the inclusion of severe immunosuppression as an AIDS-defining condition.

1993 HIV classification system: (MMWR 1992 Vol. 41, No. RR-17). This system classifies HIV according to clinical and immunosuppression stages as shown in the table below. In 1994, CDC published a revised pediatric HIV classification system for children less than 13 years (MMWR 1994 Vol. 43, No. RR-12), which is also organized according to clinical and immunosuppression stages of HIV infection although the categorization of CD4 counts is different. AIDS and Symptomatic non-AIDS HIV-related conditions in children, adolescents, and adults have been reportable in Washington state since 1987 (WAC 246-100). CDC has also published a revised surveillance case definition for HIV (MMWR 1999 Vol. 48, No. RR-13).

HIV classification system	**Laboratory category CD4 level**			
Clinical category	**> 500 or > 29%**	**200-499 or 14-29%**	**<200 or <14%**	**Unknown**
Asymptomatic HIV infection	A1	A2	A3	A9
Symptomatic HIV not AIDS	B1	B2	B3	B9
Clinical AIDS with disease	C1	C2	C3	C9
Unknown	X1	X2	X3	X9

2008 HIV classification system: For adults and adolescents (≥ 13 years of age):

HIV infection, stage 1: No AIDS-defining condition and either CD4 T-lymphocyte count of ≥500 cells/μL or CD4 T-lymphocyte percentage of total lymphocytes of ≥29.
HIV infection, stage 2: No AIDS-defining condition and either CD4 T-lymphocyte count of 200--499 cells/μL or CD4 T-lymphocyte percentage of total lymphocytes of 14--28.
HIV infection, stage 3 (AIDS): CD4 T-lymphocyte count of <200 cells/μL or CD4 T-lymphocyte percentage of total lymphocytes of <14 or documentation of an AIDS-defining condition (see OI below). Documentation of an AIDS-defining condition supersedes a CD4 T-lymphocyte count of ≥200 cells/μL and a CD4 T-lymphocytepercentage of total lymphocytes of ≥14.
HIV infection, stage unknown: No information available on CD4 T-lymphocyte count or percentage and no information available on AIDS-defining conditions.

AIDS: Acquired immunodeficiency syndrome, the end-stage of HIV infection.

AIDS case reporting delay: The time between diagnosis of an AIDS case and the receipt of the case report by the health department.

AIDS case reporting completeness: The proportion of all diagnosed AIDS cases which are reported to the health department after allowing for a certain reporting delay time.

Backloading: Sharing a syringe to measure and divide up drugs.

CDC: Centers for Disease Control and Prevention, a federal agency headquartered in Atlanta. The Division of HIV/AIDS Prevention is part of the National Center for HIV, STD, and TB Prevention.

95% confidence intervals (CI): The 95% CI is used to illustrate the uncertainty of a point estimate such as a rate, and is defined as follows: the range of values within which, upon repeated measure, the rate can be expected to fall 95% of the time**.**

Cumulative cases: All cases occurring during an extended period of time. Example: The cumulative number of HIV/AIDS cases in King County from 1982 to the end of 2002 is 8,937.

HAART: Highly Active Antiretroviral Therapy or the HIV "drug cocktail".

HBV: Hepatitis B virus, an infection of the liver which can be acute or chronic.

HCV: Hepatitis C virus, an infection of the liver which usually results in a chronic infection.

HIV: Human immunodeficiency virus type 1; previously known as HTLV-III or LAV, the cause of AIDS.

Health planning area(s) (HPA): King County is divided into 20 health planning areas based on aggregations of census tract areas, originally designed by PHSKC to correspond as closely as possible to neighborhoods, clinic utilization, travel patterns, and other factors of community interaction. Since census tract is not recorded for AIDS cases, zip code-defined HPAs are used for geographic analysis of AIDS data.

Incidence: The number of new cases within a given time period (usually one year). Example: The incidence of AIDS in King County in 2000 was 265 cases.

IDU: Injection drug user. For the purposes of defining HIV exposure, any injection drug use not prescribed by a medical professional since 1978 is included.

KC: King County.

Late diagnosis of HIV: Diagnosis of HIV either simultaneously or within a short time period of an AIDS diagnosis. The short period can be three months to one year.

PLWA: Persons currently living with AIDS**.**

PLWHA: Persons currently living with HIV or AIDS.

MSA: Metropolitan Statistical Area, geographic entities, containing a core urban area of 50,000 or more population, defined by the US Office of Management and Budget. The Seattle Division of the MSA includes King and Snohomish Counties.

MSM: Men who have sex with other men, whether or not they self-identify as homosexual; includes both homosexual and bisexual men.

Median survival time: The interval between the diagnosis of a specific illness (i.e., AIDS) and the point in time at which 50% of persons with this condition have died.

NIR: No identified risk. These are persons with no reported history of exposure to HIV through any of the routes listed in the hierarchy of exposure categories (e.g., in Table 4). NIR cases include persons whose risk is currently under investigation by local health department officials; persons whose exposure history is incomplete because they died, declined to be interviewed, or were lost to follow up; and persons who were interviewed or for whom other follow-up information was available and no exposure mode was identified. Persons who have an exposure mode identified at the time of follow-up are reclassified into the appropriate exposure category.

OI: Opportunistic Illness or AIDS defining conditions (with the addition of low CD4 count, < 200/14%):

1. Candidiasis of bronchi, trachea, or lungs
2. Candidiasis of esophagus[1]
3. Cervical cancer, invasive
4. Coccidioidomycosis, disseminated or extrapulmonary
5. Cryptococcosis, extrapulmonary
6. Cryptosporidiosis, chronic intestinal (>1 month's duration)
7. Cytomegalovirus disease (other than liver, spleen, or nodes)
8. Cytomegalovirus retinitis (with loss of vision)[1]
9. Encephalopathy, HIV related
10. Herpes simplex: chronic ulcers (>1 month's duration) or bronchitis, pneumonitis, or esophagitis
11. Histoplasmosis, disseminated or extrapulmonary
12. Isosporiasis, chronic intestinal (>1 month's duration)
13. Kaposi sarcoma[1]
14. Lymphoma, Burkitt (or equivalent term)
15. Lymphoma, immunoblastic (or equivalent term)
16. Lymphoma, primary, of brain
17. *Mycobacterium avium* complex or *Mycobacterium kansasii*, disseminated or extrapulmonary[1]
18. *Mycobacterium tuberculosis*, pulmonary[1]
19. *Mycobacterium tuberculosis*, disseminated[1] or extraplumonary[1]
20. *Mycobacterium*, other species or unidentified species, disseminated† or extrapulmonary[1]
21. *Pneumocystis jirovecii* pneumonia[1]
22. Pneumonia, recurrent[1]
23. Progressive multifocal leukoencephalopathy
24. *Salmonella* septicemia, recurrent
25. Toxoplasmosis of brain, onset at age >1 month[1]
26. Wasting syndrome attributed to HIV

[1] Condition that might be diagnosed presumptively.

PHSKC: Public Health – Seattle & King County

Prevalence: The number of existing cases in a population at a specific point in time. Example: The prevalence of HIV positive persons in King County in 2002 was 8,400.

Rate: A fixed ratio between two things; a quantity, amount, or degree of something measured per unit of something else, usually a period of time. Example: 55 miles per hour is a rate of speed; 55 cases per 100,000 population per year is an annual incidence rate.

RDS: Respondent-driven sampling. A sampling method that starts with a few participants from a specific population (such as injection drug users) recruiting peers in the same population for a small incentive. The newly recruited participants then in turn recruit their peers from the specific population. For RDS data analysis the prevalence of factors of interest is estimated after adjustment for potential recruitment biases such as network sizes and "who recruits who".

Single-race bridged estimates: In 2000 the U.S. Census Bureau began collecting data on multiple race background. While 92% of Washington residents indicated they were a single race (white, black, Asian, American Indian, or Native Hawaiian), the remainder indicated they were 'some other race' or 'two or more' of these races. In order to compare 2000 Census data with earlier years, the data indicating multiple race or other race were redistributed or 'bridged' into the older categories.

SI: Severe immunosuppression defined as a CD4 T-lymphocyte level under 200 cells per microliter, or under 14 percent of total lymphocytes. Under the expanded 1993 CDC AIDS case definition, SI in the presence of HIV infection is an AIDS-defining condition.

STD: Sexually-transmitted disease. STDs are also referred to as sexually transmitted infections.

STI: Sexually transmitted infection. STIs are also referred to as sexually transmitted diseases.

VBS: Venue-based sampling. A sampling method where participants are systematically recruited at randomly chosen venues that are frequented by the survey population.

YPLL: Years of potential life lost before a certain age (often 65). This measure is useful to compare the societal impact of mortality due to different causes.

Section B. Data sources

A summary of the main data sources used to develop the **2008 HIV/AIDS Epidemiology Profile for Community Planning** is presented below. Call the HIV/AIDS Epidemiology Program at (206) 296-4645 for additional information.

King County HIV/AIDS case registry (1982-ongoing): This database includes demographic, geographic, exposure, diagnostic, and laboratory data for HIV and AIDS cases residing in King County at time of diagnosis. These data provide good population-based epidemiological information on AIDS in King County because AIDS case reporting is at least 90% complete. AIDS reporting is the only population-based source of HIV epidemiology data and is widely used for prevention and care services planning. Because standard medical therapy has increased the time between acquiring HIV infection and developing AIDS, AIDS data no longer accurately reflects the epidemiology of recently-infected populations. HIV infection reporting was implemented in Washington in 1999, and provides epidemiological data on the earlier stages of HIV. The completeness of HIV reporting may be 60%-80% and does not include infected persons who are not yet diagnosed. HIV and AIDS reporting data include limited information that is readily available from medical records.

The Public Health – Seattle & King County (PHSKC) HIV/AIDS Epidemiology Program collects and manages HIV/AIDS data in King County. With the assistance of local health departments, the Washington state Department of Health Infectious Disease and Reproductive Health Assessment Unit conducts surveillance in the rest of the state and manages the statewide case registry.

Summary King County HIV/AIDS statistics are published each month only on the PHSKC web site, and more detailed statistics are printed every six months in the ***HIV/AIDS Epidemiology Report***. Both can be found at http://www.kingcounty.gov/healthservices/health/communicable/hiv/epi/reports.aspx

While the majority of data in this profile comes from the King County HIV/AIDS Case Registry, additional information on the local HIV epidemic was included from the following sources:

Adult Spectrum of HIV-related Diseases Study (ASD) (1989-2004): The Adult Spectrum of HIV-related Diseases (ASD) Study was a medical record review follow-up study of persons with HIV infection seen in outpatient settings. ASD was funded by the Centers for Disease Control and Prevention (CDC) and Seattle-King County wa one of 11 participating sites nationwide. Demographic, exposure, clinical, laboratory, treatment, and health utilization information is gathered semi-annually. These data are somewhat representative of people with HIV infection seeking care at a variety of outpatient facilities in King County.

American Community Survey (ACS): The American Community Survey (ACS) is a survey conducted by the U.S. Census Bureau in which households are sampled nationwide and socioeconomic characteristics of the U.S. population are produced annually.

Behavioral Risk Factor Surveillance System (BRFSS) (1995-ongoing): The Behavioral Risk Factor Surveillance System (BRFSS) is a national, annual telephone health survey sponsored by the Centers for Disease Control and Prevention (CDC). It enables the CDC, state health departments, and other health agencies to monitor modifiable risk factors for chronic diseases and other leading causes of death. Each state uses the national questionnaire and may add additional questions of local interest.

Care and Prevention Project (CAP, 2007): The Care and Prevention Project (CAP) was conducted in Washington state starting in January 2007. In King County, CAP was conducted at fourteen selected medical facilities; enrollment ended May 2007. CAP combines the work of two prior CDC surveillance initiatives, the Adult Spectrum of HIV Disease (ASD) Project, a longitudinal medical record abstraction study and the Supplement to HIV/AIDS Surveillance (SHAS) Project, a cross-sectional interview, by combining the data collection methods of both projects. The primary aim of CAP is to assess and evaluate the health status and well-being of HIV-infected patients receiving care in Washington state. The project combines patient interview data with clinical data from medical record abstractions on patients receiving medical care at the participating facilities.

Demographic, socioeconomic, and geographic population data: Projected and adjusted demographic population data for King County and smaller geographical areas of King County are based on 2006 data. Population data are based on U.S. Census Bureau count for 2000 Census and forecasted by the state of Washington Office of Finan-

cial Management for 2006. Sociodemographic data (i.e., household income, unemployment, and education), income-related measures, and education measures are from U.S. Census Bureau Population Estimates for 2006.

DUIT (Collaborative Injection Drug Users Study III/Drug Use Intervention Trial): DUIT was a CDC-funded behavioral intervention trial of injection drug users 15 to 30 years old in five cities, including Seattle-King County. Baseline data including HIV and hepatitis B and C testing occurred from May 2002 to January 2004 via audio computerized administered self-interview (ACASI). Participants were randomized to a intervention or a comparison group, each consisting of six small group sessions. Follow-up assessments were conducted after completion of these sessions. Data from the baseline survey are included in the Profile.

HIV Care Needs Assessment: Every two years the HIV/AIDS Planning Council for the Seattle Eligible Metropolitan Area (EMA) conducts a comprehensive needs assessment of Ryan White Care Act (RWCA) funded HIV/AIDS care services in King County. The comprehensive needs assessment provides a "snapshot" of community services, priorities, and gaps as identified by consumers and providers.

HIV Incidence Surveillance (HIS) (2004-ongoing): HIV Incidence Surveillance (HIS) is a supplemental HIV/AIDS surveillance funded by the Centers for Disease Control and Prevention (CDC). HIS uses remnant HIV diagnostic sera to test for recent HIV infection. These results, supplemented with information about a person's HIV test history, are applied to the serologic testing algorithm for recent HIV seroconversion (STARHS) to produce national and local HIV incidence estimates. Washington is one of 25 national health jurisdictions conducting HIS.

HIV Testing Survey (2000): This study was conducted in Seattle among persons at risk for HIV infection at gay bars (MSM), needle exchange programs (IDU), or at the STD clinic (high risk heterosexuals). Information from this research was used to design additional surveys among specific populations.

HIV Testing Survey among Asians and Pacific Islanders (2002-2003): One of five alternative HITS projects conducted in the U.S.. The study conducts interviews with Asian Pacific Islanders about their HIV testing experiences and attitudes about HIV.

HIV Testing Survey in Communities of Color and Central/Eastern Washington (2002-2003): In this CDC-funded study, information is collected about HIV-related risk behaviors, testing behaviors, knowledge and attitudes from populations at high risk for HIV infection. In 2002, the study was conducted at gay bars, needle exchanges, and STD clinics in Tacoma, Yakima, and Benton counties. In 2003, the study was conducted in Tacoma and Spokane.

Kiwi Study (1998-2002): The KIWI study was an HIV incidence and prevalence survey funded by CDC to collect data on HIV, HCV and sexual and injection risk behaviors among 1,811 injection drug users who were booked into the King County correctional facilities between August 1998 and December 2002.

Medical Monitoring Project (MMP, 2005-ongoing): The Medical Monitoring Project (MMP) is a study of individuals receiving care for HIV in Washington state. Washington is one of 26 states and cities across the nation taking part in MMP in collaboration with the Centers for Disease Control and Prevention (CDC). WA MMP staff members conduct face-to-face interviews and medical record abstractions with randomly selected people living with HIV across the state. The project is designed to produce information that truly represents the experiences of people living with HIV/AIDS.

Military Recruit Data (1985-2001): Aggregated statistical results from HIV screening of military recruit applicants are published annually by the CDC. Data include demographic (gender and race) and HIV prevalence information. Results for Washington state and the Seattle and Tacoma Metropolitan Statistical Areas are available from the PHSKC HIV/AIDS Epidemiology Program and are published regularly in the *HIV/AIDS Epidemiology Report.*

Mortality statistics: Death certificate information includes causes of deaths occurring among King County residents. Persons with HIV or AIDS who live in King County at the time of death are included, while HIV and AIDS case counts are based on residence at the time of their diagnosis. These data are available to the PHSKC HIV/AIDS Epidemiology Program through the VISTA database and data analysis system maintained by EPE. The mortality statistics are based on data collected by the PHSKC's Office of Vital Statistics.

National HIV Behavioral Surveillance system (NHBS, 2005-ongoing): NHBS is funded by the Centers for Disease Control and Prevention (CDC) in 21 large urban areas to monitor HIV-related behaviors and access to HIV prevention services among groups at highest risk for HIV. The groups are men who have sex with men, injection drug users, and high-risk heterosexuals. A sample of each population is surveyed each year using standardized CDC protocols and questionnaires.

Public Health – Seattle-King County HIV counseling and testing data (1987-ongoing): This database includes demographic data, risk data and HIV test results for all publicly funded HIV counseling and testing sites.

RAVEN Study: (1994-1998): This study was funded by the National Institute for Drug Abuse and the CDC. Injection drug users in drug treatment programs and not in treatment programs are interviewed at baseline and one year later about sexual and drug use behaviors. HIV, hepatitis C, hepatitis B, HTLV I and II, herpes simplex virus type 2, and syphilis status were assessed at baseline and follow-up. This study provided information on the prevalence and incidence of HIV and other parenterally-transmitted pathogens among injection drug users both in and out of treatment and the relationship between past or newly acquired infection and sexual and drug use behaviors.

Record-based HIV prevalence surveys: To monitor HIV seroprevalence in sentinel populations at higher risk of HIV infection, CDC funded surveys were conducted in selected clinics nationwide between 1988 and 1999. These surveys were ongoing, anonymous, record-based HIV prevalence surveys which collected HIV status, demographic, and certain behavioral characteristics of persons attending these clinics. Residual blood specimens drawn for clinical purposes were tested for HIV after removal of patient identifiers. These data provide good epidemiological information on persons attending the local clinics selected for the study, but cannot be generalized beyond the surveyed population. Updates from these studies were published in the *HIV/AIDS Epidemiology Report*. The more recent surveys included:

- **Drug Treatment Centers (1988-1999)**
- **STD Clinics (1988-2004) (supported by local funding in more recent years)**

Seattle Area MSM Study (SAMS, 2002-2004): The SAMS study looked at HIV transmission among using Audio-Computer Assisted Self-Interview (ACASI) qualitative interviews and the efficacy of peer referral as a tool for identifying positive men who do not know that they are HIV positive. The study collaborated closely with the PHSCKS HIV/AIDS and STD programs and One-on-One programs on recruitment.

Sexually Transmitted Disease Clinic Database: This database includes demographic, geographic, diagnosis and sexual orientation data for clients seen at the Seattle-King County Department of Public Health (PHSKC) Sexually Transmitted Disease (STD) Clinic. The PHSKC STD Program manages this database. Data from this database were included in the Unlinked STD Clinic HIV Serosurveys 1988–2004.

Sexually Transmitted Disease Reporting Data: The STD case reporting registry includes demographic, geographic and diagnosis data on persons with STIs which are legally notifiable under WA state administrative code. Statistics are compiled by the PHSKC STD Program. See http://www.kingcounty.gov/healthservices/health/communicable/std/statistics.aspx

Variant, Atypical, and Resistant HIV Surveillance (VARHS) (2003-ongoing): Variant, Atypical and Resistant HIV Surveillance (VARHS) is a supplemental HIV/AIDS surveillance activity funded by the Centers for Disease Control and Prevention (CDC). VARHS uses genotypic tests to determine viral subtype and the presence of any drug resistant mutations. The objectives of VARHS are to monitor the frequency of important antiretroviral resistance mutations, follow the outcomes of those with and without mutations, and measure the prevalence of different HIV-1 viral strains/types. Washington is one of 11 national health jurisdictions conducting VARHS.

Young Men's survey (YMS) (1997–2000): This study was funded by the Centers for Disease Control and Prevention in seven sites across the U.S., including the Seattle area. Young MSM age 15-29 were recruited via venue-based sampling and completed an interviewer-administered survey that included questions on sociodemographic characteristics, sexual and drug use behaviors, and health practices. Participants also received HIV counseling and testing. HIV incidence was measured using STARHS.

Section C. MSM population estimate

An estimate of the number of King County men who have sex with men (MSM).

An update from Public Health – Seattle & King County (PHSKC).

Purpose and background: On 12/10/08 a group of key stakeholders from the HIV/AIDS and STD programs of PHSKC (see Table 30) met to:

1. Create definitions for the King County MSM population estimate
2. Determine what informational sources and methods should be used to update the estimate of MSM
3. Review and update the King County MSM population estimate

Previous estimates of 32,000 to 53,000 (midpoint 42,500) have been used since about 1996. The 42,500 includes 2,500–3,800 injection drug using MSM (MSM/IDU).

Methods and materials: A variety of data sources and methods for updating the MSM estimate were reviewed. Major data sources are summarized below:

1. Behavioral Risk Factor Surveillance System (BRFSS): Although it is based on self-identity rather than behavior (that is, gay and bi-sexual identity), the BRFSS was deemed the best source, at least as a starting point, to determine what proportion of King County men are MSM. Other sources of this estimate are summarized in Table 31. The 2006 BRFSS data estimated 4.8% of King County males self-identified as gay or bisexual. To include men who might not disclose this in a telephone survey, and men who were MSM but consider themselves straight or heterosexual, we rounded this proportion up to 5-6% with a mid-point of 5.5%. (This was close to the 2003-2004 BRFSS estimate of 5.3%, as we do not believe that the proportion of men nor number of MSM in King County has decreased.)

2. American Community Survey (ACS): To estimate the number of men living in King County, we used the 2006 inter-census estimates from the American Community Survey, http://factfinder.census.gov/servlet/ADPTable?_bm=y&-geo_id=05000US53033&-qr_name=ACS_2007_3YR_G00_DP3YR5&-ds_name=ACS_2007_3YR_G00_&-_lang=en&-_sse=on accessed 12/10/08). These data estimated there were 712,493 men aged 18 years and older living in King County in 2006 (the most recent year available). To add an approximate number of youth age 15–17 years, 110,973 residents age 15 to 19 years were divided in half (n=55,486.5) then multiplied by 3/5 to get ~ 33,292 men 15–17 to add to the 712,493 making 745,785 men aged 15 years and greater. The ACS also estimated that 4,300 households in King County were headed by a man living with a male partner, resulting in an estimated 8,600 men living in male-male households.

3. National HIV Behavioral Surveillance (NHBS) system: According to NHBS-MSM2 (2008), 24% of participants lived with a male partner. Applying this percentage to the ACS estimate above (8,600 or 8,600/.24) results in an estimate of 35,833 MSM living in King County. According to NHBS-MSM2, 4.5% of MSM participants had injected illicit drugs in the past 12 months.

4. Medical Monitoring Project (MMP): According to MMP data from 2005 and 2007, the proportion of MSM who injected illicit drugs in the past 12 months was 4.3%.

5. HIV/AIDS Reporting System (HARS): Finally, after creating an estimate of the number of MSM and MSM/IDU, we used HIV-AIDS surveillance data to test whether these estimates fit an almost entirely independent estimate of the number of King County MSM. By using the number of reported, living HIV/AIDS MSM cases 4,344 MSM plus 531 MSM/IDU as of 6/30/2008 – total n=4875. After adjusting for undiagnosed and unreported cases, we arrived at an estimate of 5,550 MSM plus 680 MSM/IDU, or a total number of 6,230 HIV+ MSM. Local NHBS, blinded serosurveillance, and RDD surveys have given us relatively consistent estimates of a non-IDU-MSM seroprevalence of 15% and an MSM/IDU seroprevalence of 25%. Note that the proportion of MSM who inject drugs—nearly 11% in HARS—is higher than that estimated by looking at a general population of MSM (4–6%, as above). This is consistent with a MSM/IDU having a higher risk of HIV and thus being essentially "over-represented" in the HARS cohort.

Results

1. Definition of MSM population:

   MSM: Men who reside in King County who self-identify as gay or bisexual OR men who had sex with another man in the past 12 months OR men acquired HIV through male-male contact. (the definition needed to differ according to data source)

   MSM/IDU: MSM who injected drugs in the past year OR HIV-infected MSM who also reported injecting drugs between 1977 and their diagnosis of HIV.

2. Overall numbers of MSM: See Figure 1 below; most of the sources ranged from 5 to 6%.

   5.0% MSM of 745,785 King County men age 15+ = 37,289 MSM
   5.5% MSM of 745,785 King County men age 15+ = 41,018 MSM
   6.0% MSM of 745,785 King County men age 15+ = 44,747 MSM

   Thus we estimate there are about 37,000 to 45,000 MSM living in King County with a mid-point of 41,000.

3. MSM/Non-IDU and MSM/IDU: The proportion of MSM who inject drugs was estimated at 4 to 6 with a midpoint of five. These numbers were increased slightly (from NHBS and MMP estimates' midpoint of 4.4%) to reflect that 4.4% was the estimate of IDU in the past year and that IDU behaviors conferring HIV risk in MSM may have occurred more than a year previously.

   4.0% IDU among MSM X 37,289 MSM = 1,492
   5.0% IDU among MSM X 41,018 MSM = 2,051
   6.0% IDU among MSM X 44,747 MSM = 2,685

   Thus, we estimate there are 1500 – 2700 MSM/IDU living in King County with a midpoint of 2000.

   Summary MIDPOINTS:
   39,000 MSM/non-IDU
   2,000 MSM/IDU
   41,000 total MSM

4. Verification by HARS and HIV seroprevalence data:

   An estimated 5,550 HIV-infected MSM divided by 15% seroprevalence = 37,000 MSMAn estimated 680 MSM/IDU divided by 25% seroprevalence = 2700 MSM/IDU making a total of 39,700 MSM which is on target with the esti-

Figure 30: King County MSM denominators

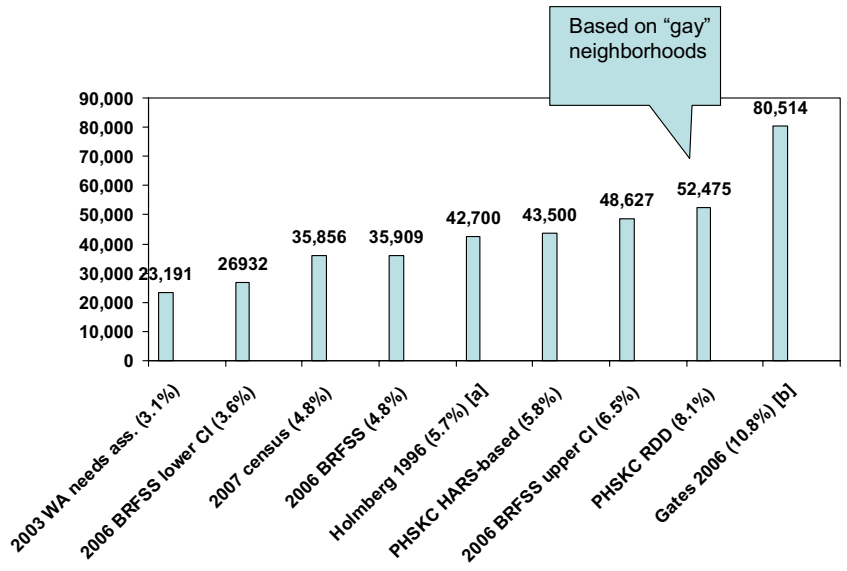


Table 30: Stakeholders present at the King County men who have sex with men (MSM) population estimation meeting, 12/10/2008

Stakeholder	Position
Bob Wood, MD	HIV/AIDS Disease Control Medical Officer, PHSKC
Elizabeth Barash, MPH	Epidemiologist, PHSKC
Hanne Thiede, DVM, MPH	Epidemiologist, PHSKC
Jim Kent, MS	Epidemiologist, PHSKC
Karen Hartfield, MPH	Prevention Planner, PHSKC, ; Assistant Professor, University of Washington (UW)
Matt Golden, MD, MPH	STD Clinic Medical Director, PHSKC, Associate Professor of Medicine, UW
Richard Burt, PhD	Epidemiologist, PHSKC
Roxanne Kerani, PhD	STD Program Epidemiologist PHSKC, Research Scientist/ Epidemiologist UW
Susan Buskin, PhD, MPH	Epidemiologist, PHSKC

Table 31: Proportion of men who have had sex with other men (MSM)

Data Source	Year	Methodology	Outcome	Estimate
National Data				
General Social Survey (GSS)[c]	2000-2002	Household based probability sample age 18-59	Sex with another man in the last year	4.5%
National Survey of Family Growth (NSFG)[d]	2002	Household based probability sample men age 15-44	Sex with another man in the last year Ever had sex with another man	2.9% 6.2%
National Health and Social Life Survey and GSS[c*]	1992	Household based probability sample age 18-59	Ever had sex with another man Sex with another man since age 18 Self-identify as gay or bisexual	7.1% 4.9% 4.1%
National Health and Nutrition Examination Survey	2003-2004	Household based probability sample men age 20-59	Ever had sexual intercourse with another man Sexual intercourse with another man in last year Self-identify as gay or bisexual	4.7% 2.2% 3.1%
King County Estimates				
Behavioral Risk Factor Surveillance Survey – King County	2003-2004	Random digit dial survey	Self identify as gay or bisexual	5.3%
NSFG adjusted for Census	2000	NSFG estimate multiplied by the proportion of households occupied by male partners in King County/ proportion of households occupied by male partners in U.S.	Sex with another man in the last year Ever had sex with another man	5.5% 11.7%
MSM Random digit dial study[e] – *Seattle Only*	2003	Random digit dial survey	Ever had sex with another man	8.1%
Washington State Needs Assessment	2003	Random digit dial survey	Self identify as gay or bisexual	3.1-3.7%

*9.1% of men indicated they had ever had sex with another man when asked the question anonymously.

[a]Holmberg SD. The estimated prevalence and incidence of HIV in 96 large US metropolitan areas. AJPH 1996; 86: 642-54.

[b]Gates GJ. Same-sex couples and the Gay, Lesbian, Bisexual Population: New Estimates from the American Community survey: October 2006 (The Williams Institute) http://www.law.ucla.edu/williamsinstitute/publications/SameSexCouplesandGLBpopACS.pdf

[c]Laumann EO, Gagnon JH, Michael RT, Michaels S. The Social Organization of Sexuality: Sexual Practices in the United States. Chicago: University of Chicago Press, 1994.

[d] Anderson JE, Mosher WD, Chandra A. Measuring HIV risk in the U.S. population aged 15-44: results from Cycle 6 of the National Survey of Family Growth. Adv Data 2006:1-27.

[e] Brewer DD, Golden MR, Handsfield HH. Unsafe sexual behavior and correlates of risk in a probability sample of men who have sex with men in the era of highly active antiretroviral therapy. Sex Transm Dis 2006; 33:250-5.