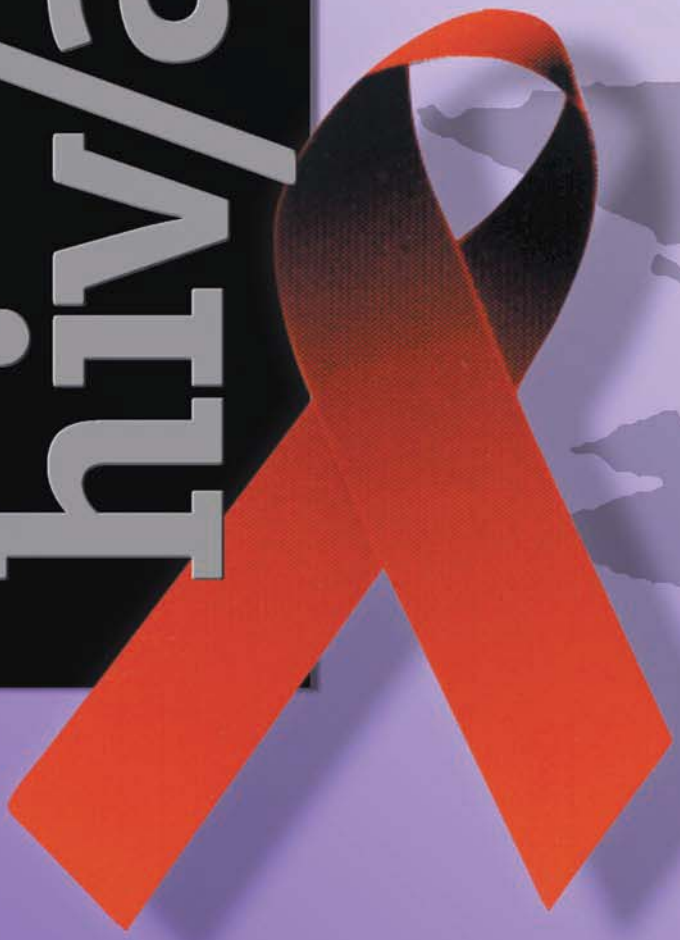
hiv/aids



1st HALF `09 EPIDEMIOLOGY REPORT

WASHINGTON STATE • SEATTLE & KING COUNTY

Washington State/Seattle-King County HIV/AIDS Epidemiology Report

Credits

This 74th edition of the HIV/AIDS Epidemiology Report includes data available through the end of June 2009. This report is produced jointly by Public Health – Seattle & King County (PHSKC) and the Infectious Disease and Reproductive Health Assessment Unit, Washington State Department of Health. It is funded partly by a Centers for Disease Control and Prevention cooperative agreement for HIV/AIDS surveillance. We thank the medical providers caring for people with HIV/AIDS and the clinics and patients participating in epidemiologic projects. Their cooperation with public health department HIV/AIDS control efforts permits the collection of data included in this report which are used for further prevention and planning efforts. We also wish to acknowledge the outstanding assistance of our staff, including Faythe Crosby, Tom Jaenicke and Christy Johnson (disease investigation), Sandy Hitchcock (data entry and quality assurance), Shirley Zhang and Leslie Pringle (data management), Amy Bauer and Christina Thibault (epidemiologists), and Susan Buskin (senior epidemiologist).

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HIV/AIDS Reporting Requirements

Detailed requirements for reporting of communicable disease including HIV/AIDS are described in the Washington Administrative Code (WAC), section 246-101, online http://apps.leg.wa.gov/WAC/default.aspx?cite=246-101.

Washington health care providers are required to report all HIV infections, regardless of the date of the patient's initial diagnosis, to the health department. Providers are also required to report new diagnoses of AIDS in a person previously diagnosed with HIV infection. Local health department officials forward case reports to the State Department of Health. Names are never sent to the federal government.

Laboratories are required to report evidence of HIV infection (i.e. positive western blot assays, p24 antigen detection, viral culture, and nucleic acid detection), all HIV viral load tests (detectable or not), and all CD4 counts in the setting of HIV infection. If the laboratory cannot distinguish tests, such as CD4 counts, done due to HIV versus other diseases (such as cancer), the CD4 counts should be reported and the health department will investigate. However, laboratory reporting does not relieve health care providers of their duty to report, as most of the critical information necessary for surveillance and follow-up is not available to laboratories.

For further information about HIV/AIDS reporting requirements, please call your local health department or the Washington State Department of Health at 1 (888) 367-5555. In King County, call (206) 296-4645.

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HIV/AIDS Epidemiology publications are online at:
www.kingcounty.gov/healthservices/health/communicable/hiv/epi.aspx.

Alternative formats provided upon request.
To be included on the mailing list or for address corrections,
please call (206) 296-4645.

Summary of Tables and Figures

HIV/AIDS Epidemiology and Surveillance News

Table 1: Surveillance of reported[a] HIV/AIDS cases, deaths, and people living with HIV/AIDS - King County, other Washington counties, Washington, and the United States (reported as of 06/30/2009)

		Adult/Adolescent		Pediatric[b]	
		HIV	AIDS	HIV or AIDS	Total
King County	New cases reported in 1st half 2009	98	101	2	201
	Cases reported year-to-date	98	101	2	201
	Cumulative cases	2,939	7,924	36	10,899
	Cumulative deaths	155	4,299	9	4,463
	Persons living (prevalent cases)	2,784	3,625	27	**6,436**
Other Counties in Washington	New cases reported in 1st half 2009	103	72	3	178
	Cases reported year-to-date	103	72	3	178
	Cumulative cases	1,719	4,616	42	6,377
	Cumulative deaths	126	2,367	12	2,505
	Persons living (prevalent cases)	1,593	2,249	30	**3,872**
Washington	New cases reported in 1st half 2009	201	173	5	379
	Cases reported year-to-date	201	173	5	379
	Cumulative cases	4,658	12,540	78	17,276
	Cumulative deaths	281	6,666	21	6,968
	Persons living (prevalent cases)	4,377	5,874	57	**10,308**
United States[c]	Estimated cases as of 12/31/2007				
	Cumulative cases	265,062	1,009,220	9,209	1,283,491
	Cumulative deaths	8,699	557,376	5,417	571,492
	Persons living (prevalent cases)	256,363	451,844	3,792	**711,999**

a. There are an estimated 11,500 to 12,700 persons living in Washington with HIV infection including AIDS. These include the 10,308 prevalent cases reported above. In King County, there are an estimated 7,200 to 8,000 persons living with HIV infection including AIDS. These include the 6,436 prevalent cases reported above. The difference between the estimated cases and the reported prevalent cases include three groups:
   i. A small number of persons diagnosed with AIDS but not yet reported (probably fewer than 5% of the total AIDS reports).
   ii. An unknown number of persons diagnosed with HIV infection but not yet reported.
   iii. An unknown number of persons (10-20% of the total) infected with HIV but not yet diagnosed or reported.

b. Pediatric cases are persons under age 13 at the time of diagnosis with HIV or AIDS.

c. U.S. data reporting includes:
   i. HIV data from the 34 states requiring confidential, named-based HIV infection reporting since at least 2003.
   ii. AIDS data from 50 states plus D.C., and excludes U.S. dependent areas with totals of 32,051 cumulative AIDS and 20,178 AIDS deaths.
   iii. Pediatric AIDS only cases.

Table 2: Cumulative HIV/AIDS case counts and deaths by resident county and AIDSNet region at diagnosis, Washington (reported as of 06/30/2009)

		Cumulative Cases	Deaths		Presumed Living			
			No.	%[a]	HIV	AIDS	Total	Total %[b]
Region 1	Adams	7	1	0.0%	1	5	6	0.1%
	Asotin	23	8	0.1%	4	11	15	0.1%
	Columbia	8	4	0.1%	1	3	4	0.0%
	Ferry	7	6	0.1%	0	1	1	0.0%
	Garfield	1	0	0.0%	1	0	1	0.0%
	Lincoln	4	2	0.0%	0	2	2	0.0%
	Okanogan	37	10	0.1%	9	18	27	0.3%
	Pend Orielle	9	6	0.1%	0	3	3	0.0%
	Spokane	720	317	4.5%	164	239	403	3.9%
	Stevens	26	15	0.2%	6	5	11	0.1%
	Walla Walla	63	31	0.4%	6	26	32	0.3%
	Whitman	21	4	0.1%	4	13	17	0.2%
	Subtotal	**926**	**404**	**5.8%**	**196**	**326**	**522**	**5.1%**
Region 2	Benton	124	39	0.6%	32	53	85	0.8%
	Chelan	66	26	0.4%	19	21	40	0.4%
	Douglas	5	2	0.0%	1	2	3	0.0%
	Franklin	79	21	0.3%	24	34	58	0.6%
	Grant	50	22	0.3%	10	18	28	0.3%
	Kittitas	24	10	0.1%	4	10	14	0.1%
	Klickitat	16	6	0.1%	7	3	10	0.1%
	Yakima	251	93	1.3%	57	101	158	1.5%
	Subtotal	**615**	**219**	**3.1%**	**154**	**242**	**396**	**3.8%**
Region 3	Island	82	38	0.5%	16	28	44	0.4%
	San Juan	25	12	0.2%	6	7	13	0.1%
	Skagit	99	41	0.6%	23	35	58	0.6%
	Snohomish	1010	367	5.3%	254	389	643	6.2%
	Whatcom	235	93	1.3%	60	82	142	1.4%
	Subtotal	**1,451**	**551**	**7.9%**	**359**	**541**	**900**	**8.7%**
Region 4	King	**10,899**	**4,463**	**64.0%**	**2,806**	**3,630**	**6,436**	**62.4%**
Region 5	Kitsap	315	127	1.8%	79	109	188	1.8%
	Pierce	1578	644	9.2%	435	499	934	9.1%
	Subtotal	**1,893**	**771**	**11.1%**	**514**	**608**	**1,122**	**10.9%**
Region 6	Clallam	82	39	0.6%	19	24	43	0.4%
	Clark	656	238	3.4%	189	229	418	4.1%
	Cowlitz	149	60	0.9%	43	46	89	0.9%
	Grays Harbor	85	34	0.5%	20	31	51	0.5%
	Jefferson	38	18	0.3%	9	11	20	0.2%
	Lewis	54	27	0.4%	9	18	27	0.3%
	Mason	116	30	0.4%	28	58	86	0.8%
	Pacific	33	12	0.2%	12	9	21	0.2%
	Skamania	7	6	0.1%	0	1	1	0.0%
	Thurston	269	96	1.4%	62	111	173	1.7%
	Wahkiakum	3	0	0.0%	1	2	3	0.0%
	Subtotal	**1,492**	**560**	**8.0%**	**392**	**540**	**932**	**9.0%**
Total		**17,276**	**6,968**	**100%**	**4,421**	**5,887**	**10,308**	**100%**

[a] Percent of county cases who have died (row %).
[b] Percent of total presumed living cases in Washington (column %).

Table 3: Demographic characteristics of people presumed living with HIV/AIDS – King County, other Washington counties, Washington, and the United States (reported as of 06/30/2009)

	King County		Other Counties		Washington		Estimated U.S. AIDS[a]	
	No.	%	No.	%	No.	%	No.	%
Sex								
Male	5,774	90%	3,108	80%	8,882	86%	349,180	77%
Female	662	10%	764	20%	1,426	14%	106,456	23%
Age Group at Diagnosis of HIV								
Under 13 years	30	0%	39	1%	69	1%	3,792	1%
13-19 years	123	2%	108	3%	231	2%	*Not Known*	
20-29 years	1,845	29%	1,168	30%	3,013	29%	*Not Known*	
30-39 years	2,709	42%	1,371	35%	4,080	40%	*Not Known*	
40-49 years	1,325	21%	846	22%	2,171	21%	*Not Known*	
50-59 years	334	5%	261	7%	595	6%	*Not Known*	
60 years and over	70	1%	79	2%	149	1%	*Not Known*	
"Current" Age as of 06/30/09								
Under 13 years	7	0%	11	0%	18	0%	889	0%
13-19 years	22	0%	23	1%	45	0%	3,340	1%
20-29 years	357	6%	309	8%	666	6%	20,736	5%
30-39 years	1,238	19%	792	20%	2,030	20%	84,866	19%
40-49 years	2,660	41%	1,439	37%	4,099	40%	190,315	42%
50-59 years	1,613	25%	950	25%	2,563	25%	117,289	26%
60 years and over	539	8%	348	9%	887	9%	38,201	8%
Race/Ethnicity[b]								
White	4,373	68%	2,722	70%	7,095	69%	159,338	35%
Black	1,066	17%	473	12%	1,539	15%	199,124	44%
Hispanic	631	10%	441	11%	1,072	10%	86,244	19%
Asian & Pacific Islander	205	3%	118	3%	323	3%	4,828	1%
Asian	*192*	*3%*	70	*2%*	*262*	*3%*	*4,398*	
Native Hawaiian & Other PI	*13*	*0%*	19	*0%*	*32*	*0%*	*430*	
Native American or Alaskan Native	81	1%	85	2%	166	2%	1,700	0%
Multiple Race	66	1%	15	0%	81	1%	4,402*	97%
Unknown Race	14	0%	18	0%	32	0%	**included in multiple race*	
HIV Exposure Category								
Male-male sex	4,431	69%	1,895	49%	6,326	61%	213,510	47%
Injection drug use (IDU)	333	5%	480	12%	813	8%	97,167	21%
IDU & male-male sex	543	8%	311	8%	854	8%	28,691	6%
Heterosexual contact[c]	639	10%	679	18%	1,318	13%	106,865	23%
Blood product exposure[d]	36	1%	46	1%	82	1%	N/A[d]	
Perinatal exposure	23	0%	30	1%	53	1%	3,592	1%
Other/Undetermined[d]	431	7%	431	11%	862	8%	5,811	2%
Total	**6,436**	**100%**	**3,872**	**100%**	**10,308**	**100%**	**455,636**	**100%**

[a] U.S. AIDS-only data for 50 states and Washington, D.C. were reported as of 12/31/2007; detailed summaries of the 246,909 living HIV cases reported from states and areas with confidential name-based HIV infection reporting were not readily available. Hemophilia and blood product numbers were included in the 'Other/Undetermined' category.

i. CDC data for age at diagnosis were grouped differently by CDC, and could not adequately be redistributed to agree with Washington state intervals. The current age data were calculated as of 12/31/2007.

ii. Includes hemophilia, blood transfusion, and risk not reported or not identified.

[b] All race and ethnicity categories are mutually exclusive; Asian, Native Hawaiian, and Pacific Islanders were grouped due to small cell sizes.

[c] King County and Washington data include presumed heterosexual cases (females who deny injection drug use but have had sexual intercourse with a man whose HIV status or HIV risk behaviors are unknown).

[d] Undetermined mode of exposure are cases with incomplete information and one King County/Washington case was probably infected via occupational exposure. For U.S. data, blood product exposure is included in category 'Other/undetermined'.

Table 4: People presumed living with HIV/AIDS by gender, race or ethnicity, and HIV exposure category – King County (reported as of 06/30/2009)

HIV Exposure Category	White[a]		Black[a]		Hispanic		Asian & PI[a,b]		Native Am/AN[a,c]		Total[d]	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male												
Male-male sex	3,431	78%	365	34%	423	67%	133	65%	32	40%	4,431	69%
Injection drug use (IDU)	109	2%	64	6%	30	5%	5	2%	6	7%	217	3%
IDU & male-male sex	429	10%	41	4%	37	6%	4	2%	17	21%	543	8%
Heterosexual contact	44	1%	109	10%	24	4%	6	3%	1	1%	184	3%
Blood product exposure	15	0%	3	0%	2	0%	1	0%	0	0%	21	0%
Perinatal exposure	2	0%	5	0%	0	0%	1	0%	0	0%	8	0%
Undetermined/other	108	2%	157	15%	66	10%	30	15%	2	2%	370	6%
Male Subtotal	**4,138**	**95%**	**744**	**70%**	**582**	**92%**	**180**	**88%**	**58**	**72%**	**5,774**	**90%**
Female												
Injection drug use (IDU)	61	1%	35	3%	4	1%	1	0%	13	16%	116	2%
Heterosexual contact[e]	151	3%	234	22%	35	6%	19	9%	10	12%	455	7%
Blood product exposure	4	0%	9	1%	2	0%	0	0%	0	0%	15	0%
Perinatal exposure	3	0%	9	1%	2	0%	1	0%	0	0%	15	0%
Undetermined/other	16	0%	35	3%	6	1%	4	2%	0	0%	61	1%
Female Subtotal	**235**	**5%**	**322**	**30%**	**49**	**8%**	**25**	**12%**	**23**	**28%**	**662**	**10%**
Total	**4,373**	**68%**	**1,066**	**17%**	**631**	**10%**	**205**	**3%**	**81**	**1%**	**6,436**	**100%**

Table 5: People presumed living with HIV/AIDS by gender, race or ethnicity, and HIV exposure category – Washington (reported as of 06/30/2009)

HIV Exposure Category	White[a]		Black[a]		Hispanic		Asian & PI[a,b]		Native Am/AN[a,c]		Total[d]	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male												
Male-male sex	4,922	69%	503	33%	595	56%	182	56%	57	34%	6,326	61%
Injection drug use (IDU)	340	5%	104	7%	63	6%	8	2%	14	8%	533	5%
IDU & male-male sex	679	10%	62	4%	60	6%	7	2%	26	16%	854	8%
Heterosexual contact	130	2%	160	10%	60	6%	14	4%	6	4%	370	4%
Blood product exposure	42	1%	3	0%	8	1%	1	0%	1	1%	55	1%
Perinatal exposure	8	0%	9	1%	3	0%	2	1%	1	1%	23	0%
Undetermined/other	308	4%	217	14%	136	13%	44	14%	5	3%	721	7%
Male Subtotal	**6,429**	**91%**	**1,058**	**69%**	**925**	**86%**	**258**	**80%**	**110**	**66%**	**8,882**	**86%**
Female												
Injection drug use (IDU)	172	2%	62	4%	15	1%	4	1%	25	15%	280	3%
Heterosexual contact[e]	419	6%	333	22%	110	10%	47	15%	30	18%	948	9%
Blood product exposure	7	0%	14	1%	3	0%	3	1%	0	0%	27	0%
Perinatal exposure	10	0%	13	1%	5	0%	2	1%	0	0%	30	0%
Undetermined/other	58	1%	59	4%	14	1%	9	3%	1	1%	141	1%
Female Subtotal	**666**	**9%**	**481**	**31%**	**147**	**14%**	**65**	**20%**	**56**	**34%**	**1,426**	**14%**
Total	**7,095**	**69%**	**1,539**	**15%**	**1,072**	**10%**	**323**	**3%**	**166**	**2%**	**10,308**	**100%**

[a] And not Hispanic. All race and ethnicity categories are mutually exclusive.
[b] Due to small cell sizes, data have been combined for Asians, Native Hawaiians, and other Pacific Islanders.
[c] Native American or Alaska Native.
[d] Totals include 64 King County and 81 Washington state persons classified as multiple race, and 14 King County and 32 Washington persons with missing race.
[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).

Table 6: People presumed living with HIV/AIDS by gender and age at HIV diagnosis – King County and Washington (reported as of 06/30/2009)

	King County				Washington			
Age at HIV Diagnosis	**Male**		**Female**		**Male**		**Female**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Under 13 years	13	0%	17	3%	30	0%	39	3%
13-19 years	86	1%	37	6%	153	2%	78	5%
20-29 years	1,624	28%	221	33%	2,532	29%	481	34%
30-39 years	2,491	43%	218	33%	3,629	41%	451	32%
40-49 years	1,220	21%	105	16%	1,918	22%	253	18%
50-59 years	279	5%	55	8%	490	6%	105	7%
60 years and over	61	1%	9	1%	130	1%	19	1%
Total	**5,774**	**100%**	**662**	**100%**	**8,882**	**100%**	**1,426**	**100%**

Table 7: People presumed living with HIV/AIDS by race or ethnicity and place of birth[a] – King County and Washington (reported as of 06/30/2009)

	King County				Washington			
Race / Ethnicity	**U.S.-born**		**Foreign-born**		**U.S.-born**		**Foreign-born**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
White, non-Hispanic	4,085	97%	109	3%	6,631	98%	157	2%
Black, non-Hispanic	646	63%	387	37%	1,001	67%	489	33%
Male Black, non-Hispanic	*512*		*206*		*769*		*250*	
Female Black, non-Hispanic	*134*		*181*		*232*		*239*	
Hispanic	239	41%	340	59%	379	39%	593	61%
Asian & PI, non-Hispanic	52	28%	137	72%	90	31%	204	69%
Native American, non-Hispanic	73	94%	5	6%	156	96%	6	4%
Multiple or unknown race, non-Hispanic	64	89%	8	11%	88	87%	13	13%
TOTAL	**5,159**	**84%**	**986**	**16%**	**8,345**	**85%**	**1,462**	**15%**

[a] Table 7 does not include 291 King County and 501 Washington cases missing place of birth information.

Figure 1: Number of new HIV/AIDS diagnoses, deaths, and people living with HIV/AIDS at end of three year intervals – King County (reported as of 06/30/2009)

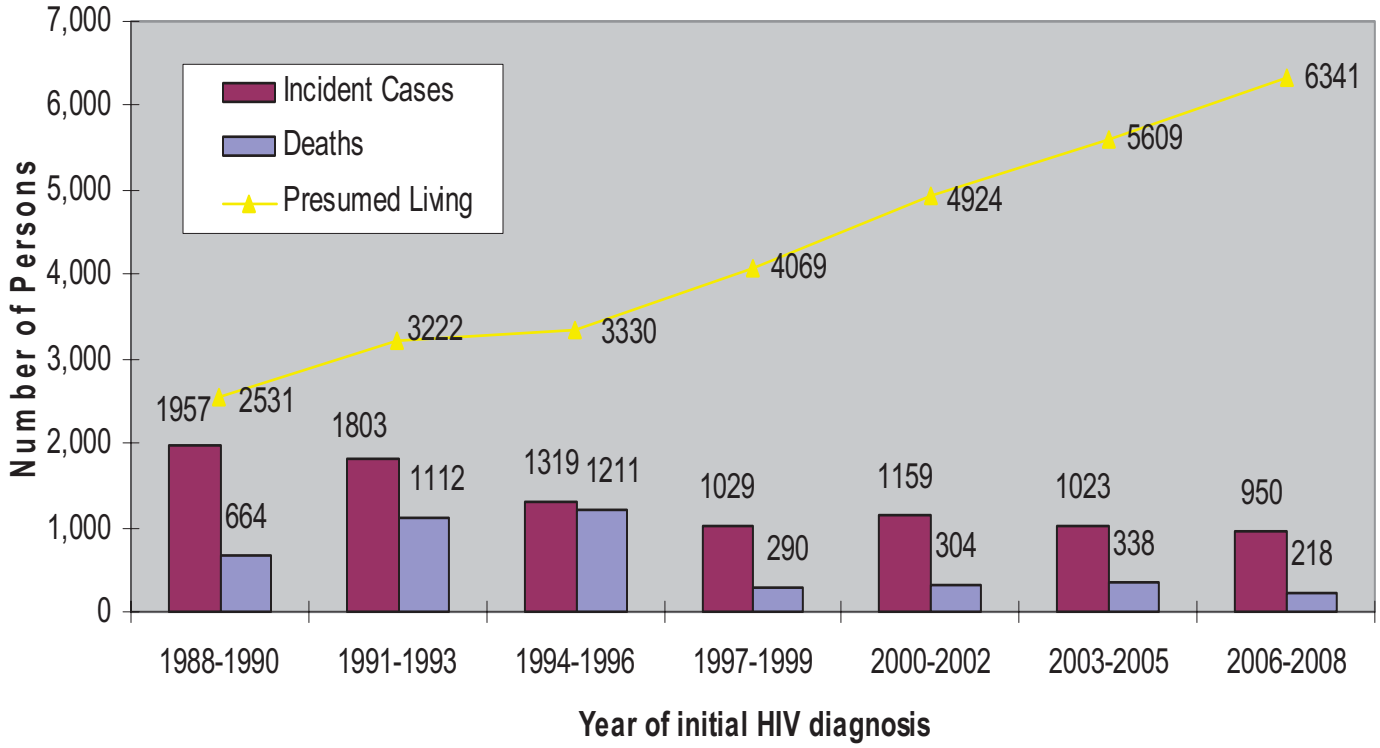


Figure 2: Number of new HIV/AIDS diagnoses, deaths, and people living with HIV/AIDS at end of three year intervals – Washington (reported as of 06/30/2009)

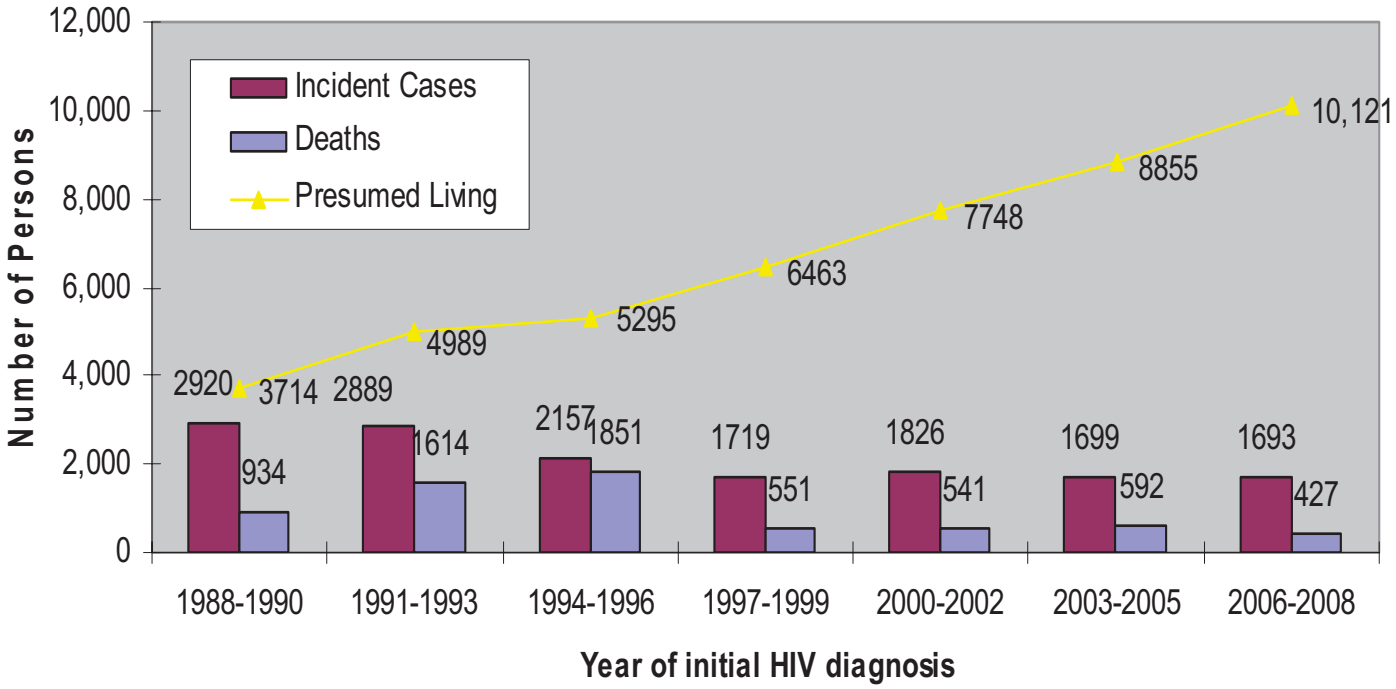


Table 8: Demographic characteristics of King County residents diagnosed 1982-2008, by date of HIV diagnosis (reported through 06/30/2009)

	1982-1999		2000-2002		2003-2005		2006-2008[a]		Trend[b]
	No.	%	No.	%	No.	%	No.	%	2000-2008
TOTAL	**7,661**	**100%**	**1,159**	**100%**	**1,023**	**100%**	**950**	**100%**	
HIV Exposure Category[d]									
Men who have sex with men (MSM)	5,751	77%	728	67%	648	71%	583	73%	up
Injection drug user (IDU)	425	6%	86	8%	51	6%	38	5%	down
MSM-IDU	799	11%	91	8%	79	9%	68	9%	N/A
Heterosexual contact[c]	349	5%	176	16%	135	15%	101	13%	N/A
Blood product exposure	94	1%	8	1%	5	1%	1	0%	N/A
Perinatal exposure	25	0%	2	0%	0	0%	3	0%	N/A
SUBTOTAL with known risk	*7,444*	*100%*	*1,091*	*100%*	*918*	*100%*	*794*	*100%*	N/A
Undetermined/other[d]	217	N/A	68	N/A	105	N/A	156	N/A	N/A
Sex & Race/Ethnicity									
Male	*7,200*	*94%*	*1,012*	*87%*	*904*	*88%*	*826*	*87%*	N/A
White male[e]	5,842	76%	673	58%	570	56%	504	53%	down
Black male[e]	686	9%	170	15%	155	15%	118	12%	N/A
Hispanic male	433	6%	105	9%	111	11%	127	13%	up
Other male[e]	239	3%	64	6%	68	7%	77	8%	up
Female	*461*	*6%*	*147*	*13%*	*119*	*12%*	*124*	*13%*	N/A
White female[e]	232	3%	47	4%	28	3%	40	4%	N/A
Black female[e]	161	2%	72	6%	71	7%	67	7%	N/A
Hispanic female	26	0%	14	1%	10	1%	7	1%	N/A
Other female[e]	42	1%	14	1%	10	1%	10	1%	N/A
Race/Ethnicity									
White[e]	6,074	79%	720	62%	598	58%	544	57%	down
Black[e]	847	11%	242	21%	226	22%	185	19%	N/A
Hispanic	459	6%	119	10%	121	12%	134	14%	up
Asian & Pacific Islander[e]	132	2%	40	3%	38	4%	63	7%	up
Native American or Alaska Native[e]	110	1%	18	2%	15	1%	6	1%	N/A
Multiple race[e]	36	0%	18	2%	21	2%	15	2%	N/A
Unknown race[e]	3	0%	2	0%	4	0%	3	0%	N/A
Place of Birth[d]									
Born in U.S. or Territories	6,949	93%	900	80%	759	77%	661	73%	down
Born outside U.S.	517	7%	230	20%	228	23%	240	27%	up
Birthplace unknown	195	N/A	29	N/A	36	N/A	49	N/A	N/A
Age at diagnosis of HIV									
0-19 years	142	2%	17	1%	8	1%	19	2%	N/A
20-29 years	2,080	27%	254	22%	215	21%	258	27%	up
30-39 years	3,411	45%	531	46%	421	41%	217	33%	N/A
40-49 years	1,523	20%	272	23%	287	28%	229	24%	down
50-59 years	407	5%	73	6%	77	8%	92	10%	N/A
60+ years	98	1%	12	1%	15	1%	35	4%	up
Residence									
Seattle residence	6,616	86%	920	79%	765	75%	687	73%	down
King County residence outside Seattle	1,045	14%	239	21%	258	25%	263	27%	up

[a] Due to delays in reporting, data from recent years are incomplete.
[b] Statistical trends ($p<.05$) were calculated for periods 2000-2002, 2003-2005, and 2006-2008 using the chi-square test for trend in proportions.
[c] Includes presumed heterosexual cases (females who deny injection drug use but have had sexual intercourse with a man whose HIV status or HIV risk behaviors are unknown).
[d] Cases with undetermined risk and cases with unknown place of birth are not included in percent calculations or trend calculations.
[e] And not Hispanic. The groups Asian, Native Hawaiian, and Pacific Islanders were grouped due to small cell sizes. All race and ethnicity categories are mutually exclusive.

Table 9: Demographic characteristics of Washington residents diagnosed 1982-2008, by date of HIV diagnosis (reported through 06/30/2009)

	1982-1999		2000-2002		2003-2005		2006-2008[a]		Trend[b]
	No.	%	No.	%	No.	%	No.	%	2000-2008
TOTAL	**11,848**	**100%**	**1,826**	**100%**	**1,699**	**100%**	**1,693**	**100%**	
HIV Exposure Category[d]									
Men who have sex with men (MSM)	8,014	70%	1,044	62%	945	63%	934	68%	up
Injection drug user (IDU)	1,047	9%	199	12%	138	9%	99	7%	down
MSM-IDU	1,221	11%	134	8%	129	9%	110	8%	N/A
Heterosexual contact[c]	823	7%	306	18%	276	18%	222	16%	N/A
Blood product exposure	224	2%	11	1%	11	1%	4	0%	N/A
Perinatal exposure	57	0%	3	0%	2	0%	6	0%	N/A
SUBTOTAL- known risk	*11,386*	*100%*	*1,697*	*100%*	*1,501*	*100%*	*1,375*	*100%*	N/A
Undetermined/other[d]	462	N/A	129	N/A	198	N/A	318	N/A	N/A
Sex & Race/Ethnicity									
Male	*10,785*	*91%*	*1,539*	*84%*	*1,438*	*85%*	*1,416*	*84%*	*N/A*
White male[e]	8,783	74%	1,043	57%	956	56%	893	53%	down
Black male[e]	952	8%	233	13%	218	13%	193	11%	N/A
Hispanic male	683	6%	167	9%	167	10%	215	13%	up
Other male[e]	367	3%	96	5%	97	6%	115	7%	up
Female	*1,063*	*9%*	*287*	*16%*	*261*	*15%*	*277*	*16%*	N/A
White female[e]	620	5%	124	7%	98	6%	119	7%	N/A
Black female[e]	267	2%	104	6%	101	6%	104	6%	N/A
Hispanic female	86	1%	28	2%	32	2%	33	2%	N/A
Other female[e]	90	1%	31	2%	30	2%	21	1%	N/A
Race/Ethnicity									
White[e]	9,403	79%	1,167	64%	1,054	62%	1,012	60%	down
Black[e]	1,219	10%	337	18%	319	19%	297	18%	N/A
Hispanic	769	6%	195	11%	199	12%	248	15%	up
Asian & Pacific Islander[e]	202	2%	65	4%	63	4%	87	5%	up
Native American or Alaska Native[e]	198	2%	36	2%	38	2%	22	1%	N/A
Multiple race[e]	42	0%	19	1%	22	1%	22	1%	N/A
Unknown race[e]	15	0%	7	0%	4	0%	5	0%	N/A

Table 9 continued on next page

[a] Due to delays in reporting, data from recent years are incomplete.
[b] Statistical trends ($p<.05$) were calculated for periods 2000-2002, 2003-2005, and 2006-2008 using the chi-square test for trend in proportions.
[c] Includes presumed heterosexual cases (females who deny injection drug use but have had sexual intercourse with a man whose HIV status or HIV risk behaviors are unknown).
[d] Cases with undetermined risk and cases with unknown place of birth are not included in percent calculations or trend calculations.
[e] And not Hispanic. The groups Asian, Native Hawaiian, and other Pacific Islanders were grouped due to small cell sizes. All race and ethnicity categories are mutually exclusive.

Table 9: (Continued) Demographic characteristics of Washington residents diagnosed 1982-2008, by date of HIV diagnosis (reported through 06/30/2009)

	1981-1999		2000-2002		2003-2005		2006-2008[a]		Trend[b]
	No.	%	No.	%	No.	%	No.	%	2000-2008
TOTAL	**11,848**	**100%**	**1,826**	**100%**	**1,699**	**100%**	**1,693**	**100%**	
Place of Birth[d]									
Born in U.S. or Territories	10,756	91%	1,444	79%	1,324	78%	1,203	71%	down
Born outside U.S.	801	7%	312	17%	324	19%	350	21%	up
Birthplace unknown	291	N/A	70	N/A	51	N/A	140	N/A	N/A
Age at diagnosis of HIV									
0-19 years	282	2%	31	2%	18	1%	49	3%	up
20-29 years	3,321	28%	389	21%	373	22%	445	26%	up
30-39 years	5,070	43%	790	43%	625	37%	518	31%	down
40-49 years	2,326	20%	449	25%	487	29%	424	25%	N/A
50-59 years	651	5%	130	7%	159	9%	186	11%	up
60+ years	198	2%	37	2%	37	2%	71	4%	up
Residence[f]									
Region 1- Spokane area	607	5%	105	6%	94	6%	109	6%	N/A
Region 2- Yakima area	384	3%	70	4%	73	4%	81	5%	N/A
Region 3- Everett area	968	8%	132	7%	165	10%	162	10%	up
Region 4- Seattle area	7,661	65%	1,159	63%	1,023	60%	950	56%	down
Region 5- Tacoma area	1,257	11%	200	11%	187	11%	215	13%	N/A
Region 6- Olympia area	971	8%	160	9%	157	9%	176	10%	N/A

[a] Due to delays in reporting, data from recent years are incomplete.
[b] Statistical trends ($p<.05$) were identified from the chi-square test for trend, calculated for periods 2000-2002, 2003-2005, and 2006-2008.
[d] Cases with undetermined risk and cases with unknown place of birth are not included in percent calculations or trend calculations.
[f] The counties and regions are: Region 1-Adams, Asotin, Columbia, Ferry, Garfield, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman; Region 2-Benton, Chelan, Douglas, Franklin, Grant, Kittitas, Klickitat, and Yakima; Region 3-Island, San Juan, Skagit, Snohomish, and Whatcom; Region 4-King; Region 5-Kitsap and Pierce; Region 6-Clallum, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Skamania, Thurston, and Wahkiakum.

HIV Prevalence Estimates in Washington

The U.S. HIV/AIDS Reporting System (HARS) is widely considered to be among the best-performing and most comprehensive national disease registries. Yet, because HARS is only able to track confidential HIV infections once they are diagnosed and reported (as opposed to the event of an individual actually becoming infected), a gap will always remain between the number of reported HIV/AIDS infections and the true HIV prevalence (the number of people who are living with HIV disease at any given time). The gap is partially caused by the long latency period associated with HIV, during which people can remain asymptomatic for years. Barriers to HIV testing, such as the social stigma associated with being HIV-infected, further limit the representativeness of HIV surveillance data, as do anonymous testing and reporting delays. Estimating true HIV prevalence is therefore essential in order to monitor surveillance system performance, characterize who is most at-risk for HIV, and understand where HIV prevention and care services are most needed. What makes the development of these kinds of estimates so challenging is a lack of representative data describing either HIV seroprevalence or the prevalence of HIV risk behaviors within Washington.

CDC National Estimates

In October 2008, the CDC reported that approximately 1.1 million people were living with HIV/AIDS in the United States as of the end of 2006.[1] The analysis also estimated that approximately one in five people living with HIV (21%) were unaware of their infection. While these estimates may accurately reflect the size of the HIV epidemic (and the representativeness of surveillance data) at the national level, they are heavily influenced by regional HIV epidemics within the United States, especially those located in the mid-Atlantic and Southeastern states where HIV prevalence is comparatively high and where more than half of all HIV cases are associated with unprotected heterosexual sex and/or injection drug use. Here in Washington, the majority of HIV cases are attributed to risky sexual behavior among men who have sex with men (MSM), who tend to get tested for HIV more frequently than do other at-risk populations. Hence, more people in Washington than nationally are likely to know their HIV status, and caution should be taken when applying CDC estimates to the HIV epidemic within Washington.

Washington DOH Estimates

The Washington State Department of Health (DOH) estimates that there are between 11,500 and 12,700 people living with HIV disease in the state (mid-point: 12,100).[2] This estimate represents a 5% increase over the previous estimate released in April, 2008.[3] As many as 700 new HIV infections occur each year in Washington, and fewer than 150 HIV/AIDS deaths. Some of the difference between this and last year's HIV prevalence estimates can be attributed to the addition of new, "incident" cases who became HIV-infected during the previous 12 months. However, improvements in the methods used to develop these estimates also contributed to the new estimates being higher than before. As of December 31, 2008, 10,171 people were reported to have HIV disease in Washington.

In order to develop reasonable HIV estimates, we rely on four main sources of information: the state's HIV/AIDS Reporting System (HARS), behavioral surveys, HIV seroprevalence surveys, and population estimates provided by the Washington State Office of Financial Management. Specific data sources are summarized in **Table 1**, along with definitions of the four HIV risk populations upon which the state-level HIV estimates are based.

For each risk population, we conducted sensitivity analyses in which we attempted to balance several model parameters with one another, finding what might be called a "happy medium" between population size, HIV seroprevalence, and the degree to which reported HIV infections represent all HIV-infected individuals within each population. We estimated that the reported MSM and MSM/IDU infections in our surveillance system represent 86% and 91% of all HIV-infected MSM and MSM/IDU living in Washington, respectively. Similarly, we estimated that reported IDU infections represent 84% of all HIV-infected IDU, and that reported high-risk heterosexual (HRH) infections represented 75% of all HIV-infected HRH. **Table 2** summarizes key parameters and estimates for each risk population. Reported HIV cases are thought to represent 80%-90% of all people living with HIV disease in Washington. Most of the remaining 10%-20% are people who are HIV-infected but have not yet been diagnosed.

Table 1: HIV Risk Populations and Data Sources, Washington 2008

Population	Definition	Data sources used to develop population-specific estimates
Men who have sex with men (MSM)		
	Adult men (age ≥ 18) who have had sexual contact with another man within the past 12 months and who are not injection drug users.	California Health Interview Survey (2001) Washington State Behavioral Risk Factor Surveillance System (2003,2005,2007) Washington State HIV Knowledge, Attitudes and Beliefs Survey (2006) British Columbia Centre for Excellence in HIV/AIDS (2005) Public Health Seattle—King County and the Seattle HIV Planning Council (2007) General Social Survey (2002) Washington State Office of Financial Management (2008)
Injection drug users (IDU)		
	Adolescent and adult men and women (age ≥ 13) who have used a syringe to inject drugs not prescribed by a physician within the past 12 months (excluding men who have sex with men).	National Survey of Drug Use and Health (2002-2004) Washington State Needs Assessment Household Survey (2003) Public Health Seattle—King County and the Seattle HIV Planning Council (2007) KIWI Study (PHSKC; 1998-2000) RAVEN Study (PHSKC; 1994-1997) Washington State Office of Financial Management (2008) National Institute on Drug Abuse/ Community Epidemiology Workgroup (2005)
MSM/IDU		
	Adult men (age ≥ 18) who have had sexual contact with another man within the past 12 months and who have used a syringe to inject drugs not prescribed by a physician within the past 12 months.	Public Health Seattle—King County and the Seattle HIV Planning Council (2007) Thiede, H. et al. Trends in HIV prevalence, incidence, and risk behaviors among Seattle-King County STD clinic patients (1998-2003) Thiede, H. et al. Methamphetamine use and HIV among Seattle area MSM. (2004) Washington State Office of Financial Management (2008)
High-risk heterosexuals (HRH)		
	Adolescent and adult heterosexual men and women (ages 13-64) who have had a sexual partner during the past 12 months who is either HIV-positive or whose behaviors place them at high risk for HIV infection.	Washington State Behavioral Risk Factor Surveillance System (2003,2005,2007) Washington State HIV Knowledge, Attitudes and Beliefs Survey (2006) Washington State Office of Financial Management (2008) General Social Survey (2002) Washington State Office of Financial Management (2008)

Assumptions

Here is a list of additional assumptions used to develop the current HIV estimates in Washington:

- The proportion of adult men who are MSM is higher inside King County (5-6%) than outside (2%).
- The proportion of MSM who are HIV-infected is higher inside King County (15%) than outside (7%).
- A small but constant proportion of MSM are also IDU (6%). MSM/IDU cases account for about 12% of all reported MSM cases, but are probably over-represented because of their increased HIV risk and greater likelihood for routine HIV testing.
- The distribution of HIV risk behaviors among reported, prevalent male HIV/AIDS cases with no identified risk behaviors (NIR) follows the same distribution as male cases for which an HIV risk behavior has been identified.
- The gender distribution among Washington IDU is 80% male (including MSM/IDU) and 20% female. Among all male IDU, approximately 20% are MSM, based on the distribution of reported cases.
- Statewide, the prevalence of IDU within the general population (including MSM) is between 0.4% and 0.8%. IDU prevalence is greater in King County than outside King County.
- Due to migration of IDU to urban centers, and to the increased availability of clean syringes via needle exchange programs, HIV seroprevalence among straight IDU in King County is similar to that among straight IDU living outside King County.
- There are approximately 15,000-20,000 IDU living in King County, 2,000-3,000 of whom are MSM.
- HIV prevalence is higher among IDU who are not in treatment than in those who are.
- The proportion of reported MSM cases who are IDU is similar inside and outside King County.
- HIV seroprevalence among MSM/IDU is between 20% and 25%.
- Sexual behavior among heterosexuals has not changed much over the course of the current decade in Washington. Hence, sexual behavior data obtained from the 2003 Behavioral Risk Factor Surveillance System (BRFSS) are applicable to heterosexuals living in 2008.
- The likelihood that an adult or adolescent heterosexual is a HRH is directly related to both the frequency of heterosexual partnerships they had during the past 12 months and the likelihood that one or more of those partners was an individual who is either HIV-positive or at high risk for HIV infection (MSM or IDU), the latter being measured by the prevalence of the first three risk populations living within the same communities.
- Although the frequency of heterosexual sex does not vary widely between regions (according to BRFSS and Washington State HIV Knowledge, Attitudes and Beliefs survey data), the likelihood of partnering with a person who is either MSM or IDU is at least twice as great inside King County than outside King County. Thus, similar to the prevalence of other HIV risk populations, the prevalence of HRH in King County is higher than it is elsewhere in Washington.
- The HIV seroprevalence among all adults and adolescents in Washington is approximately 0.03%. Since most heterosexuals in Washington are not at high-risk for HIV infection, and since being defined as HRH requires a recent sexual partnership with someone whose risk behaviors are relatively rare, HIV seroprevalence among HRH is much higher (but not more than ten times higher) than that of heterosexuals in Washington who are not at high-risk for HIV infection.
- HIV seroprevalence among HRH is the lowest of the four defined HIV risk populations for which HIV estimates were developed.
- Few standards exist on which to base a formal definition of HRH. Although our definition is somewhat unique, it fits well with the surveillance definition used in HARS. We recognize that the fact that having a potential partner be MSM or IDU (or both) would generally reduce the chance of a heterosexual partnership taking place at all.
- Surveillance data suggest that HRH are less likely to undergo routine HIV testing than MSM or IDU. Hence, we expect that a greater proportion of HIV-infected HRH remain unaware of their infection than MSM or IDU.

HIV prevalence in Washington has risen steadily in recent years. We will continue to look closely at surveillance system data and other sources to monitor the accuracy of our estimates and make adjustments as needed.

Table 2: HIV estimates by risk group, Washington 2008

	Estimated Risk Population	Reported, Redistributed Cases[a]	Estimated Cases	Estimated Seroprevalence	Estimated Representativeness of Reported Data
MSM	72,000	6,791	7,920	11%	86%
IDU	36,000	970	1,152	3.2%	84%
MSM/IDU	4,600	916	1,012	22%	91%
HRH	80,000	1,336	1,781	2.2%	75%
Other[b]	NA	158	212	NA	NA
Total	192,600	10,171	12,077	NA	84%

[a] All cases reported to the Washington HIV/AIDS Reporting System as of 03/31/09
[b] Estimated cases labeled "Other" are based on redistribution among known cases and account for approximately 2% of overall cases.

- *Contributed by Jason Carr, Mark Stenger, and Maria Courogen*

1. HIV Prevalence Estimates—United States, 2006. MMWR, October 3, 2008: 57(39);1073-1076.

2. Washington State HIV Surveillance Report, 1st Quarter 2009. Washington State Department of Health, Infectious Disease and Reproductive Health Assessment Unit. Available online at: http://www.doh.wa.gov/cfh/hiv_aids/Prev_Edu/docs/qtr4-09.pdf

3. Washington State HIV Surveillance Report, 1st Quarter 2008. Washington State Department of Health, Infectious Disease and Reproductive Health Assessment Unit. Available online at: http://www.doh.wa.gov/cfh/hiv_aids/Prev_Edu/docs/qtr5-08.pdf

Annual Review of the Epidemiology of HIV and AIDS in Seattle & King County

This article summarizes the status of the HIV and AIDS epidemics in King County, Washington through June 30, 2009, based upon reports of people with AIDS or HIV infection.

Global and National Perspective

According to the Joint United Nations Programme on HIV/AIDS, 33 million people worldwide were living with HIV or AIDS at the end of 2007, including 2 million children under 15 years of age.[1] On average, 0.8% of adults worldwide age 15-49 are infected with HIV. In 2007, an estimated 2.7 million persons acquired HIV infection, and 2 million deaths occurred. Twenty-five million people have died from AIDS worldwide since AIDS was first identified in 1981.

There are an estimated 1.06 to 1.16 million HIV-infected people in the United States, including 21% who remain undiagnosed and unaware of their status.[2] According to CDC incidence calculations published in August 2008, approximately 56,300 new infections occur in the U.S. each year (less than 1% of the world total), with over 14,600 deaths in 2006.[3, 4]

In 2007, the Seattle Metropolitan Statistical Area (MSA), including King, Snohomish and Island counties, ranked 57th nationally with an annual AIDS rate of 10.9 reported cases per 100,000 population. For regional comparison, the Tacoma MSA had a rate of 4.5 and the Portland, Oregon MSA rate was 8.6 per 100,000. The highest metropolitan AIDS rates (per 100,000 population) in the country were in San Francisco CA (41.7), New York City (36.6), Ft Lauderdale FL (36.5), Miami FL (35.4), and Washington DC (34.5).[5]

The Seattle MSA cases make up a decreasing proportion of total U.S. cases over time. The Seattle MSA accounted for 1.01% of the cumulative U.S. total at the end of 1992, 0.95% at the end of 1996, and 0.82% at the end of 2007.[5]

Number of People Infected with HIV in King County

The Washington State Department of Health estimates that 11,500 to 12,700 state residents, including 7,200 to 8,000 residents of King County are living with HIV or AIDS.[6, 7] The number of new HIV diagnoses in King County has dropped to about 330 per year (2005-2008) after being level at 350-400 new diagnoses 1998-2004. Approximately 100 HIV-related deaths happen annually, thus the reported number of King County residents living with HIV/AIDS is increasing (**Figure 1**).

Figure 1: Persons reported living with HIV infection or AIDS, King County 1986-2008 (reported through 6/30/2009)

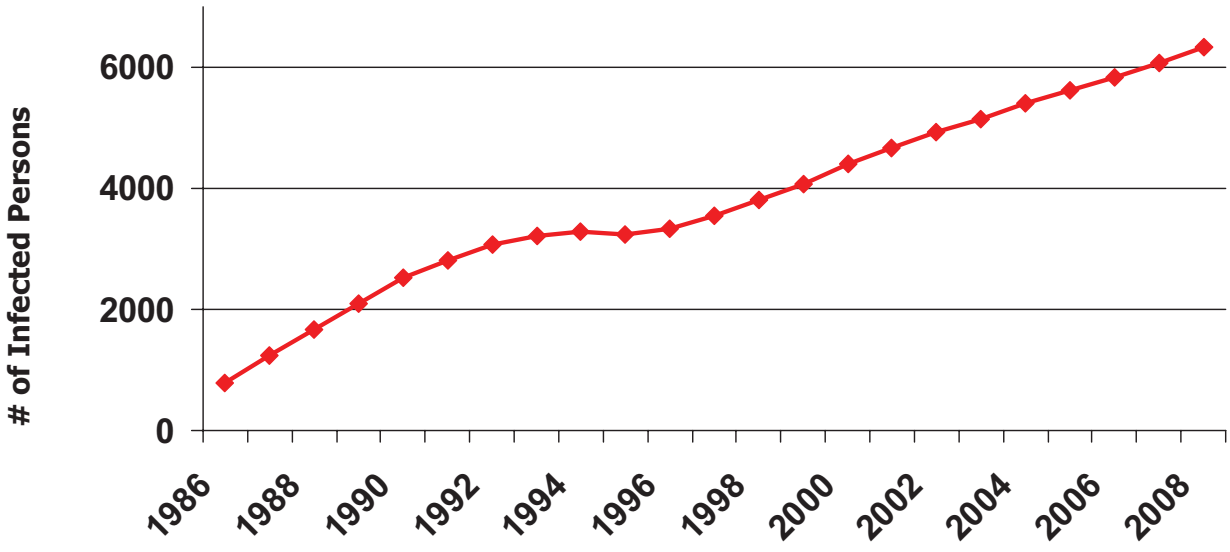


Table 1: Characteristics of King County residents with HIV or AIDS (reported through 6/30/2009)

	Actual Reports		Estimated HIV Prevalence		
	Number Reported	Percent	Estimated Infected[a]	2008[b] Population	Estimated Rate Per 100[c]
Total	6,436	100%	7,600	1,884,200	0.4%
Race/Ethnicity					
White, non-Hispanic	4,373	68%	5,230	1,319,615	0.4%
Black, non-Hispanic	1,066	17%	1,270	109,225	1.1%
Foreign-born Blacks	*387*	*6%*	*460*	*23,215*	*2.0%*
U.S.-born Blacks	*646*	*10%*	*770*	*86,010*	*0.9%*
Hispanic	631	10%	750	127,933	0.6%
Asian & Pacific Islander	205	3%	250	252,606	0.1%
Native American or Alaska Native	81	1%	100	15,160	0.7%
Multiple race	66	1%	N.A.	59,661	Not applicable
Unknown race	14	<1%	N.A.	Not applicable	Not applicable
Sex & Race/Ethnicity					
Male	5,774	90%	6,820	939,476	0.7%
White male	4,138	64%	4,950	654,771	0.8%
Black male	744	12%	890	56,517	1.6%
Hispanic male	582	9%	700	69,519	1.0%
Asian or Pacific Islander male	180	3%	210	121,697	0.2%
Native American or Alaska Native male	58	1%	70	7,573	0.9%
Multiple or unknown race	72	1%	N.A.	29,399	Not applicable
Female	662	10%	780	944,724	<0.1%
White female	235	4%	280	664,844	<0.1%
Black female	322	5%	380	52,708	0.7%
Hispanic female	49	1%	60	58,414	0.1%
Asian or Pacific Islander female	25	<1%	30	130,909	<0.1%
Native American or Alaska Native female	23	<1%	30	7,587	0.4%
Multiple or unknown race	8	<1%	N.A.	30,262	Not applicable
HIV Exposure Category					
Men who have sex with men (MSM)	4,431	74%	5,610	39,000	14.4%
Injection drug user (IDU)	333	6%	420	15,000	2.8%
MSM-IDU	543	9%	690	3,150	21.9%
Blood product exposure	36	1%	50	Unknown	Unknown
Heterosexual contact[d]	639	11%	810	1,300,000	0.06%
Perinatal exposure	23	<1%	30	Unknown	Unknown
Subtotal- known exposure	6,005	100%	7,600	1,884,200	0.4%
Undetermined/other	*431*	*7%*	*N.A.*	*Not applicable*	*Not applicable*
Current Age as of 6/30/2009					
0-19 years	29	<1%	40	444,245	<0.1%
20-24 years	74	1%	90	140,058	<0.1%
25-34 years	721	11%	850	304,196	0.3%
35-44 years	2,026	31%	2,390	284,257	0.8%
45-54 years	2,420	38%	2,860	293,903	1.0%
55-64 years	974	15%	1,150	211,903	0.5%
65 years and over	192	3%	230	205,638	0.1%
Place of Birth					
U.S.-born	5,159	80%	6,380	1,525,601	0.4%
Foreign-born	986	15%	1,220	358,599	0.3%
Unknown birthplace	291	5%	N.A.	Not applicable	Not applicable

[a] Between 7,200 and 8,000 King County residents may be infected with HIV. Each estimate is the percentage of cases with known categories, times the midpoint 7,600, rounded to the nearest 10. Because of rounding totals may not add exactly to 7,600.
[b] 2008 population estimates are from Washington Office of Financial Management as of 8/17/2009.
[c] The estimated rate is the estimated number infected divided by the population, and is presented as a percent.
[d] Includes presumed heterosexual cases (females who deny injection drug use but have had sexual intercourse with a man whose HIV status or HIV risk behaviors are unknown).

As of June 30, 2009, the 7,200-8,000 HIV-infected King County residents include:

- 3,630 reported living with AIDS
- 2,806 reported living with HIV but not AIDS
- 300-500 people diagnosed but not yet reported, and 400-1,200 people who are unaware of their infection status.

Characteristics of People Living with HIV or AIDS

Table 1 presents the 2008 number of reported cases, the estimated number of total infections, and estimated infection prevalence. The estimated prevalence of HIV infection varies widely between population groups. The highest prevalence is among men who have sex with men (MSM–14%), injection drug users (IDU–3%), MSM who also inject drugs (MSM/IDU–22%), and foreign-born Blacks (2%). These four groups account for 94% of all estimated infections in King County.

Ninety percent of people living with HIV or AIDS in King County are male. Most, 68%, are White, 17% are Black, 10% Hispanic, 3% Asian/Pacific Islander (API), and 1% Native American & Alaska Natives (NA/AN). Eighty 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 prevalence is five times higher among foreign-born Blacks, twice as high among U.S.-born Blacks, and 1.5 times higher among NA/AN.

Seven percent of cases have no identified behavioral exposure to HIV (using the standard CDC-defined categories). Among cases with known exposure, 74% are MSM, 9% are MSM-IDU, 6% are IDU, 11% report having a heterosexual partner with HIV or at risk of HIV infection, and fewer than 1% each were born to HIV-infected mothers or received blood products.

The distribution of exposure categories differs by race and gender, and by birth country. MSM, IDU, and foreign-born Blacks account for 95-98% of all male cases for each race. Among White, Hispanic, and API men, MSM exposures account for 82-89% of known exposures, 57% among NA/AN men and 62% among Black men. MSM-IDU is the second most common exposure among White men (11%), Hispanic men (7%), and NA/AN men (30%). Foreign-born Blacks make up 28% of cases among Black men and are reported to be mostly due to heterosexual transmission.

The vast majority of HIV-infected women are either IDU (19% of cases) or have a heterosexual risk (76%). Heterosexual cases are those with partners known to be HIV-infected (44%), partners who are IDU (13%), partners who are bisexual men (7%), or partners with hemophilia (2%). Another 33% of female heterosexual cases are presumed heterosexual transmission, which includes reported sex with men and denial of IDU.[8] Heterosexual exposures account for 69% of HIV cases among White, 82% among Black, 81% among Hispanic, and 90% among API women. However, among NA/AN women with HIV, IDU is the most common risk behavior (57%), and 43% were heterosexual or presumed heterosexual transmission.

King County residents with HIV include people born worldwide. Among people diagnosed with HIV from 2004-2008, the birthplace is

- 71% United States
- 10% Africa
- 8% Mexico, Latin America and Caribbean
- 4% Asia and Eastern Europe
- 2% Western Europe or Canada
- 5% unknown

Estimated infection rates are higher among foreign-born Blacks (2.0%), mostly from sub-Saharan Africa, than U.S.-born Blacks (0.9%). Foreign-born Blacks are a significant population for special prevention interventions because their risk profiles, language, culture, and educational needs differ from those of their U.S.-born counterparts. The majority of reported cases among foreign-born Blacks are due to heterosexual transmission (40%), presumed heterosexual transmission (19%), or have no reported risk (32%), while 58% of cases among U.S.-born Blacks are MSM or MSM-IDU, and 14% are IDU.

Sixty-nine percent of King County residents living with HIV are currently age 35-54 years, and 33% are at least age 50 years of age. Among diagnoses in 2006-2008, 72% of HIV-infected individuals resided in Seattle, 9% on the Eastside or north of Seattle and Lake Washington, and 19% in South King County.

Immunologic and Virologic Status

The Washington Administrative Codes require that laboratories report all CD4 results and all HIV viral load results, regardless of level, to Public Health on a monthly basis. While these data may be incomplete, they allow us to evaluate the immunologic status of many King County residents living with HIV infection. As of June 30, 2009, we received a 2008 CD4 or viral load laboratory result on 4,448 (70%) of the 6,341

Table 2: Characteristics of Persons Diagnosed with HIV Infection, King County 2000-2002, 2003-2005 and 2006-2008

Characteristics	2000-2008	
	%	Statistical trend
HIV exposure category		
Men who have sex with men (MSM)	67 to 73%	Increasing
Injection drug user (IDU)	8 to 5%	Decreasing
MSM-IDU	8%	No change
Heterosexual contact	15%	No change
Sex & race/ethnicity		
Male	88%	No change
White male	58 to 53%	Decreasing
Black male	14%	No change
Hispanic male	9 to 13%	Increasing
Female	12%	No change
White female	4%	No change
Black female	7%	No change
Hispanic female	1%	No change
Race/ethnicity		
White, non-Hispanic	62 to 57%	Decreasing
Black, non-Hispanic	21%	No change
Hispanic	10 to 14%	Increasing
Asian or Pacific Islander	3 to 7%	Increasing
American Indian/ Alaska Native	1%	No change
Age at diagnosis of HIV		
0-19 years	1%	No change
20-29 years	22 to 27%	Increasing
30-39 years	46 to 33%	Decreasing
40-49 years	25%	No change
50-59 years	6 to 10%	Increasing
60 + years	1 to 4%	Increasing
Residence		
Seattle	79 to 72%	Decreasing
North and East King County	7 to 9%	Increasing
South King County	13 to 19%	Increasing
Place of birth, race, and exposure		
Born outside the U.S.	20 to 25%	Increasing
Foreign-born Blacks	*9%*	*No change*
Foreign-born who are not Black	*11 to 16%*	*Increasing*
Born in the U.S.	78 to 70%	Decreasing
U.S.-born Blacks	*11%*	*No change*
U.S.-born who are not Black	*66 to 60%*	*Decreasing*

King County residents diagnosed with HIV prior to December 31, 2008. Based on the most recent reported result for 4,009 people with a 2008 CD4 result, 15% had severe immune deficiency (CD4 under 200 cells or under 14% of total lymphocytes), 42% had moderate immune deficiency (200-500 CD4 cells per microliter or 14-28% of total lymphocytes), and 43% had negligible or no immune deficiency (CD4 over 500 and over 28% of total lymphocytes). Based on the 4,201 people with a reported viral load test in 2008, 59% had no detectable viral load, 24% had a low viral burden (under 10,000 copies per milliliter), 8% a moderate viral burden (10-50,000 copies), and 9% a high viral burden (over 50,000 copies).

Trends in Diagnosis of HIV Infection

Based upon data reported through June 2009, we compared the characteristics of persons diagnosed with HIV infection during 2000-2002, 2003-2005, and 2006-2008 (**Table 2**). 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 periods.

Only moderate shifts have occurred in the proportion of persons newly diagnosed with HIV infection among different groups over the past nine years. Between the three-year periods 2000-2002 through 2006-2008 a statistically significant increase in the proportion of cases occurred among Hispanics (from 10% to 14%), Asians and Pacific Islanders (from 3% to 7%), and in persons ages 20-29 (from 22% to 27%). The proportion of total cases decreased for all Whites (from 62% to 57%).

There was also a statistically significant increase in the proportion of King County residents aged 50-59 at diagnosis (from 6% to 10%), persons aged 60 years and older (from 1% to 4%), and a decrease in people age 30-39 at the time of diagnosis (from 46% to 33%). At the same time, the population of people living with HIV has aged consistently over the past decade as HIV has become a chronic infection. In 1998, half of individuals living with HIV were under age 40 and half were over age 39. In 2008, this median age was 46.

King County residents diagnosed with HIV are shifting away from Seattle. Comparing the percent of cases for 2000-2002 to 2006-2008, the proportion of cases among Seattle residents has dropped from 79% to 72% of newly-diagnosed cases, while South King County residents now make up 19% rather than 13% of new cases, and East/North King County residents make up 9% rather than 7% of new cases.

The overall perinatal transmission rate in King County, and in Washington, is very low because of effective anti-retroviral prophylaxis during pregnancy and at birth. Approximately 15-30 HIV-infected women give birth each year in Washington, and since 1997, one new perinatal infection was transmitted to an infant born in King County. This recent infection was from a mother not diagnosed with HIV infection at the time of delivery. Several additional recently reported perinatal infections were among children born elsewhere who moved to King County.

Incidence and Resistance Testing

Public Health – Seattle & King County participates in two CDC-funded supplemental surveillance activities that characterize infection in persons newly-diagnosed with HIV. The goals of these activities are to measure the number of new infections that occur each year, and to measure the prevalence of transmitted antiretroviral drug resistance among people newly-diagnosed with HIV. About two-thirds of newly-diagnosed cases are included in these projects. The data reveal several characteristics of the HIV virus circulating within the local population:

- Approximately one-third of new HIV diagnoses are among persons likely infected within the preceding 12 months.
- 12% of newly-diagnosed, treatment-naïve people have high-level resistance to one or more class of anti-retroviral drugs; 2% are resistant to two or more classes of drugs. These proportions have not changed since local drug resistance surveillance began in 2003.
- 11% of people recently diagnosed with HIV are infected with a non-B subtype of HIV-1. Most of these infections were among persons born in other countries.

Declining 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. This may mean that infected persons who transmit the virus to uninfected persons represent a smaller proportion of

the entire infected population each year, partly due to more HIV-infected people knowing their status and reducing risk to their partners.

Diagnosis of AIDS and Death

The diagnosis of AIDS is an important marker of HIV disease progression. Between 1981 and 2007 a total of 7,765 King County residents have been diagnosed with AIDS and 4,254 (55%) of them have died. About 200 new AIDS diagnoses were made annually between 2005 and 2008 (**Figure 2**). The number of AIDS deaths fluctuated between 70 and 120 annually from 1998 through 2007.

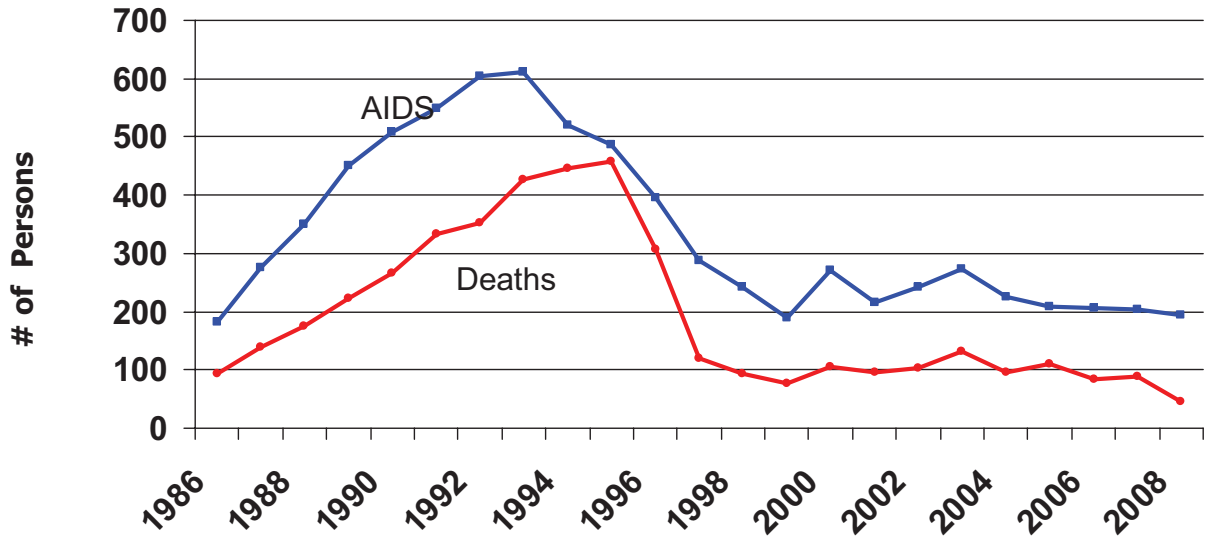
HIV/AIDS was the leading cause of death among all 25-44 year old males in King County during the years 1989 to 1996, but had dropped to the 5th leading cause of death by 2004.[5] The decline in deaths is due to implementing effective antiretroviral treatments, effective prophylaxis to prevent opportunistic infections, monitoring of HIV progression (for example by assays of CD4 counts and HIV viral load), and prevention efforts to reduce HIV transmission rates.

Given the availability and increasing use of highly active antiretroviral therapy (or HAART) since 1995-1996, HIV infections with ongoing progression to AIDS and death are worrisome. Many factors contribute to these HIV cases that develop into AIDS. Some people (~25%) learn their HIV status too late in the course of their HIV disease to prevent AIDS, some have problems accessing or adhering to treatment, and some refuse treatment. Other people may experience treatment failures due to problems with taking medications, adverse side effects of HAART, or development of HIV strains resistant to antiretroviral drugs. Strategies to counter these factors include increased HIV testing to promote earlier diagnosis and simplifying HAART regimens to improve adherence.

Conclusions

King County has an estimated 7,200–8,000 HIV-infected residents, including approximately 3,600 people with AIDS, 3,200 diagnosed with HIV, and 400–1,200 who have yet to learn they carry HIV. Over 4,500 HIV-infected persons have died in King County since 1982. The number of new HIV infections has declined recently, to about 330 each year since 2005, of which about one-quarter were not diagnosed with HIV until they had already developed AIDS. About 100 deaths and 200 new AIDS diagnoses occur each year.

Figure 2: New AIDS Cases and Deaths, King County 1986-2008 (reported through 6/30/2009)



The total number of people living with AIDS or with HIV infection in King County is increasing because each year there are more new diagnoses than deaths among infected persons. 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. The proportion of cases is increasing among men who have sex with men, Hispanics, Asian & Pacific Islanders, people over age 50, and residents outside Seattle.

- *Contributed by Amy Bauer and Jim Kent*

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3. Hall HI, Song R., Rhodes P, et al. Estimation of HIV Incidence in the United States. JAMA, 2008; 300(5):520-529.
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5. Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report, 2007 (Vol. 19), Atlanta: U.S. Department of Health and Human Services, CDC; 2007. Available at http://www.cdc.gov/hiv/topics/surveillance/resources/reports/2007report/default.htm
6. HIV Prevalence Estimates in Washington State, HIV/AIDS Epidemiology Report, 1st Half 2009, Washington DOH
7. Updated estimates of HIV infection in King County, HIV/AIDS Epidemiology Report, 1st Half 2009, PHSKC
8. Heterosexual HIV Transmission Classification, Council of State and Territorial Epidemiologists 2007, Resolution 07-ID-09, available online at http://www.cste.org/PS/2007ps/2007psfinal/ID/07-ID-09.pdf

Updated Estimate of HIV Infection in King County

In 2007, Public Health – Seattle & King County estimated there were between 7,200 and 7,800 people living with HIV infection in King County.[1, 2] In King County each year some 300 to 350 new HIV infections occur, with about 100 deaths. Therefore, the number of people living with HIV is increasing over time and our estimates need to be periodically updated.

Washington State Department of Health recently updated the statewide estimate of people living with HIV to 11,500 to 12,700, with a midpoint of 12,100.[3,4] Therefore, it is important that PHSKC update our local estimates as well.

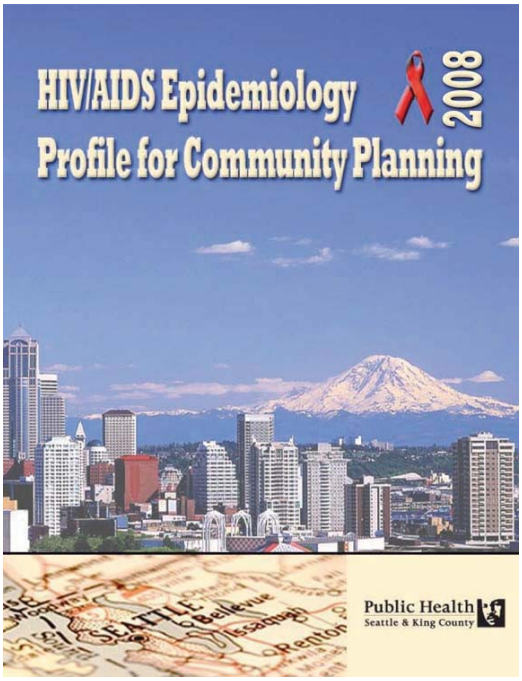
Since 2001, King County has accounted for 63% of persons diagnosed with HIV in Washington. After applying this proportion to the Washington prevalence estimate and rounding, King County currently has between 7,200 and 8,000 HIV infected residents, with a midpoint of 7,600. The 6,436 reported living cases of HIV represent about 84% of that total. This estimated total number of people living with HIV infection in King County is important in planning for HIV care and directing prevention resources.

- *Contributed by Jim Kent*

1. Frequently asked questions about estimates of people living with HIV/AIDS in Washington State, HIV Epidemiology Report, First Half 2007, pages 9-10.
2. Annual Review of the Epidemiology of HIV and AIDS in Seattle and King County, HIV Epidemiology Report, First Half 2007, pages 14-20.
3. Revised HIV prevalence estimates, *Washington State HIV Surveillance Report*, April 2009, page 2.
4. Revised HIV prevalence estimates in Washington State, *HIV Epidemiology Report* First Half 2009, pages 10-13.

New 2008 HIV/AIDS Epidemiology Profile for Community Planning

The HIV/AIDS Epidemiology Program has published the 6th edition of the Epidemiology Profile for Community Planning, which includes data through 2008. This report describes the current status of the HIV/AIDS epidemic within Seattle and King County. The document is produced to give city and county governments, community-based organizations, health care planners, and educators the data they need to propose and carry out programs for HIV care and prevention. Printed copies are available and can be requested by calling 206-296-4645. The report is also currently available on our website: http://www.kingcounty.gov/healthservices/health/communicable/hiv/epi/profile.aspx



Transmitted Antiretroviral Drug Resistance in King County and an Update on a Local Multi-class Drug Resistant Cluster

Background

Transmitted antiretroviral (ARV) drug resistance occurs when a person acquires a strain of HIV that is already resistant to ARV. ARV drug resistance can be transmitted to individuals already infected with an ARV-susceptible virus, but most ARV-resistant transmitted HIV infections occur in persons who were HIV uninfected. Drug resistance is an important cause of treatment failure in persons infected with HIV. **Both the DHHS Panel on Antiretroviral Guidelines for Adults and Adolescents[1] and the International AIDS Society-USA Panel[2] now strongly recommend genotypic resistance testing for all HIV-infected patients when they are first diagnosed with HIV, regardless of whether or not highly active ARV therapy (HAART) will be initiated immediately.**

Public Health – Seattle & King County has been monitoring transmitted ARV resistance among people newly-diagnosed with HIV since 2003. Antiretroviral Drug Resistance Testing (ARVDRT) was a CDC-funded pilot project conducted in King County from 2003 to 2007. Variant, Atypical, and Resistant HIV Surveillance (VARHS) is a supplemental HIV surveillance activity, also CDC-funded, which began in 2008 and is ongoing (and also includes the prior ARVDRT data). Washington is currently one of eleven jurisdictions in the U.S. conducting VARHS. A major goal of VARHS is to conduct ARV resistance tests and/or gather ARV resistance test results for as many people newly diagnosed with HIV as possible to monitor the prevalence of transmitted ARV resistance.

In this article, we discuss the expansion of VARHS to become an increasingly population-based surveillance system, the current epidemiology of mutations associated with ARV resistance among newly-diagnosed, treatment-naïve HIV cases in King County, and we provide an update on a local cluster of multi-class drug resistant (MDR) cases first identified in 2006.

Methods

For this analysis, we included people who were confidentially tested and newly diagnosed with HIV infection in King County between 2003 and 2008. An individual's genotype is eligible to be included in drug resistance surveillance if (1) the genotype specimen was collected within three months of HIV diagnosis, and (2) the patient is not known to have used ARV, including post-exposure prophylaxis, at the time of or immediately preceding the collection of the genotype specimen.

We obtain HIV sequence data in two ways. The PHSKC Laboratory and a large local laboratory store remnant aliquots of all HIV Western blot-positive diagnostic specimens for VARHS (when quantity permits); eligible specimens are sequenced and analyzed for genotypic drug resistance testing per VARHS protocol. In 2008, we negotiated with several commercial laboratories that conduct genotype testing to submit sequence data from clinical specimens. Two labs submitted retrospective results as far back as 2001, and currently three commercial labs routinely submit new sequence data, with a fourth laboratory planning to start submitting data later this year.

We compared protease and reverse transcriptase sequences to a wild type consensus B reference sequence using the Stanford University HIV Drug Resistance Database (http://hivdb.stanford.edu/) in order to identify mutations associated with potential low-, low-, intermediate-, and high-level resistance to three classes of ARV drugs: protease inhibitors (PI), nucleoside reverse transcriptase inhibitors (NRTI), and non-nucleoside reverse transcriptase inhibitors (NNRTI).

Results

1,945 people were diagnosed with HIV in King County between 2003 and 2008. Of those, 665 (34%) had a genotype within three months of diagnosis included in the VARHS drug resistance surveillance system. The proportion of new diagnoses with an early genotype available for resistance surveillance increased steadily over time to a high of 61% in 2007 (**Figure 1**). The majority of these (58%) were clinical genotypes conducted in an HIV-care setting, while the rest were remnant HIV test specimens that were sequenced for surveillance purposes per the VARHS protocol.

Figure 1: Proportion of newly-diagnosed cases with genotype available for drug resistance surveillance within three months of diagnosis, by source of genotype, King County 2003-2008

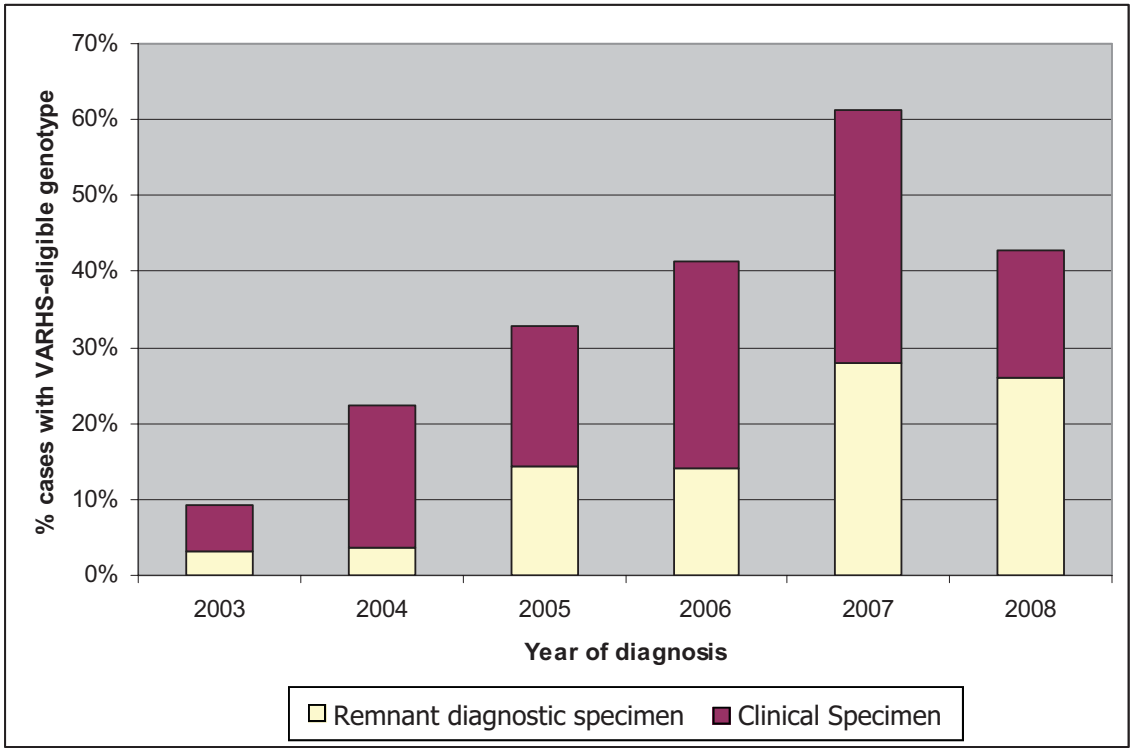


Figure 2: Prevalence of any drug resistance among newly-diagnosed cases, by diagnosis year, King County 2003-2008

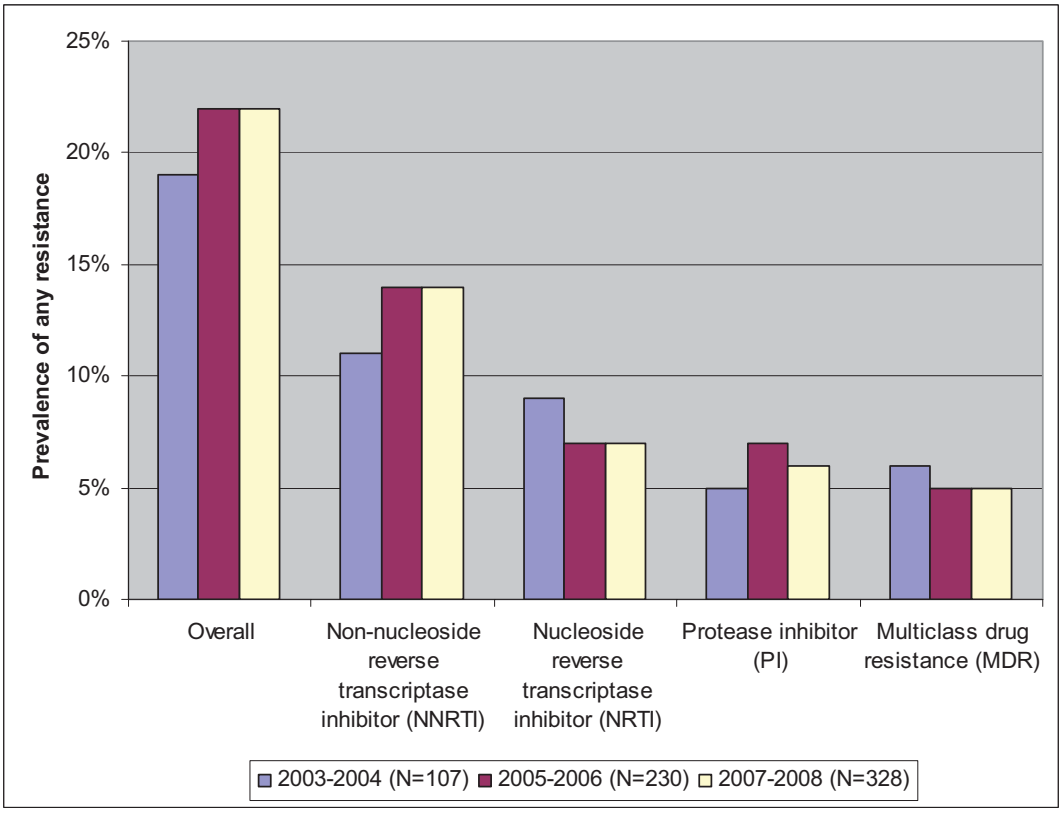
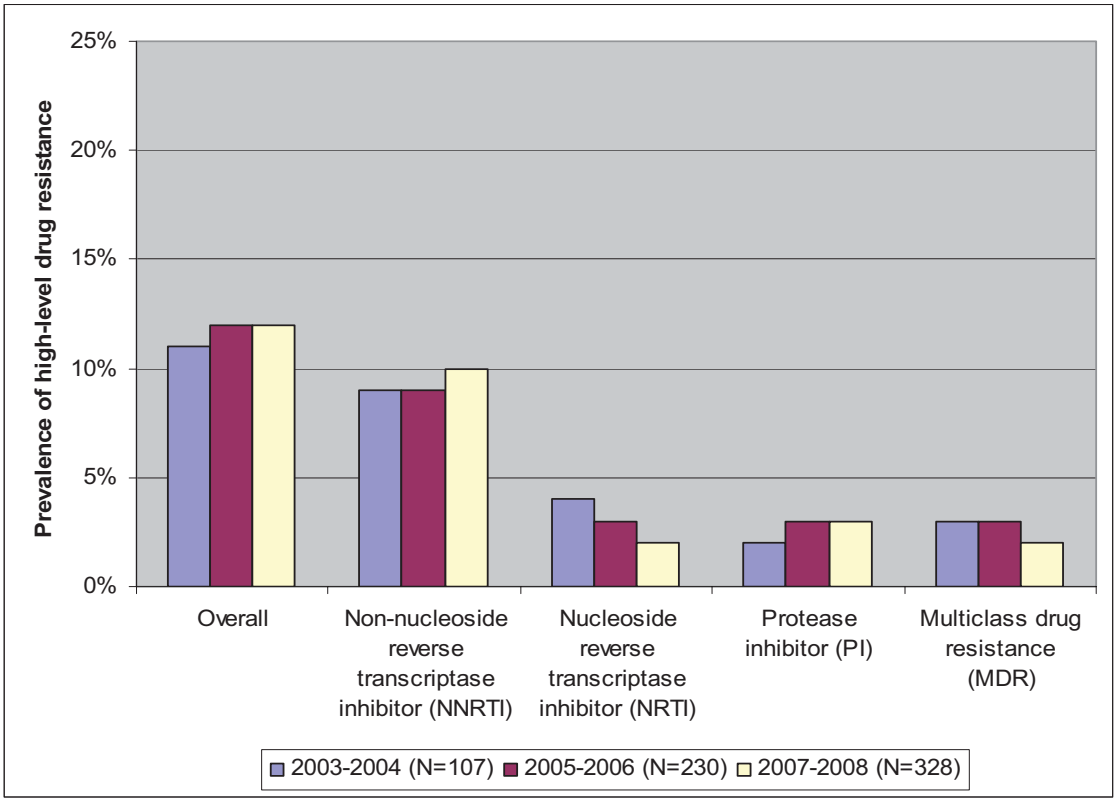


Figure 3: Prevalence of high-level drug resistance among newly-diagnosed HIV cases, by diagnosis year, King County 2003-2008



Overall, 21% of sequences had mutations associated with any (potential low-, low-, intermediate-, or high-level) ARV resistance; 12% had mutations associated with high-level resistance. Resistance to NNRTIs was most common (14% any level, 9% high-level), followed by resistance to NRTIs (8% any level, 3% high-level) and then PIs (6% any level, 3% high-level) (**Figures 2 and 3**). Resistance to two or three classes, known as multiclass drug resistance (MDR), was detected in 5% of genotypes when including any level of resistance, and 2% of genotypes when counting only high-level resistance. We compared prevalence of resistance by diagnosis year in 2-year time periods; there were no changes over time that were significantly different by chi-square test.

Prevalence of high-level ARV resistance differed by demographic characteristics among people diagnosed with HIV between 2007 and 2008 (**Table 1**). **Younger people, people with evidence that they acquired their HIV infection within the past 12 months, people born in the U.S., and men who have sex with men (MSM) were all significantly more likely to have high-level ARV resistance**. White, Black, Hispanic and Asian/Pacific Islander MSM all had similar levels of resistance, ranging from 17% to 20% (data not shown).

HIV subtype B was by far the most common HIV-1 subtype among cases diagnosed in King County (89% overall) and subtype C was the next most prevalent (5% overall) (**Table 2**). Subtype B decreased in prevalence over time while subtype C prevalence increased, although these changes were not significant by chi-square test.

Of the 26 subtype C sequences diagnosed between 2003 and 2008 for which sequence data are available, three (12%) had mutations associated with potential low-level resistance, and none had mutations associated with low-, intermediate-, or high-level resistance (data not shown).

Table 1: High-level drug resistance among HIV cases, by demographic characteristics, King County 2007-2008

Characteristic	# cases with genotype sequence[a]	% with any high-level resistance
Total	**328**	**12%**
Age group[b]		
<25	53	26%
25-34	96	13%
35-44	98	8%
45+	81	7%
Sex		
Male	288	14%
Female	40	3%
Mode of transmission[c]		
MSM	200	18%
IDU	7	0%
MSM-IDU	32	9%
Hetero	19	0%
Undetermined/other	70	3%
Race/ethnicity		
White, non-Hispanic	184	14%
Black, non-Hispanic	72	8%
Hispanic	51	10%
Asian & Pacific Islander, non-Hispanic	10	10%
Native American, non-Hispanic	5	20%
Multiple race, non-Hispanic	5	20%
Birthplace[c]		
Born in U.S. or Territories	231	14%
Born outside U.S.	92	7%
Earliest CD4		
<350	113	9%
350-700	93	12%
>700	23	22%
Time since last negative HIV test[b]		
≤12 months	106	20%
>12 months	101	10%
Never tested before	35	9%
HIV-1 subtype		
B	292	13%
C	17	0%
Non-B, non-C	19	5%

[a] Numbers in subgroups may not add up to 328 due to missing data
[b] Prevalence of resistance significantly different (chi-square p-value ≤0.05) among subgroups
[c] Prevalence of resistance significantly different (Fisher p-value ≤0.05) among subgroups

Table 2: HIV-1 subtype prevalence among newly-diagnosed HIV cases, by diagnosis year, King County 2003-2008

	2003-2004 n=107	2005-2006 n=230	2007-2008 n=328
HIV-1 subtype			
B	93%	91%	89%
C	2%	3%	5%
Non-B, non-C	5%	6%	6%

Discussion

About one in five people diagnosed with HIV in King County has some level of transmitted ARV resistance, and about one in nine has high-level transmitted ARV resistance. Resistance to NNRTIs is most common, followed by resistance to NRTIs and PIs. The prevalence of resistance has not changed significantly over the past six years.

We found that people who were young at the time of their HIV diagnosis, those who received a negative HIV test result within 12 months prior to their diagnosis, and those with a high initial CD4 count – all characteristics that suggest recent infection – were more likely to have high-level resistance. Published studies differ on whether or not mutations that confer drug resistance also render HIV less fit. If ARV-resistant virus is less fit, in the absence of ARV therapy, drug-susceptible wild type virus may predominate in individuals infected for longer periods of time and drug-resistant virus may become increasingly difficult to detect.

HIV-1 subtype B is most commonly found in North America, South America, and Europe, and is the predominant subtype in our drug resistance surveillance system. Subtype C is the most prevalent HIV-1 subtype globally and the second most prevalent subtype in our surveillance system, increasing from 2% to 5% over the past 6 years. As infections among foreign-born persons make up an increasing proportion of our local HIV epidemic[3], it makes sense that we are seeing a rising proportion of non-B subtypes. Subtype C is most common in India and Southern Africa (with Subtype A most common in sub-Saharan Africa). Of the 26 people we identified with HIV-1 subtype C, 24 (92%) were born outside the U.S., one was born in the U.S., and one has an undetermined birthplace. Of the 24 born outside the U.S., 16 (67%) were born in Ethiopia, four (17%) were born elsewhere in Africa, one was born in South Asia and one in Southeast Asia.

The expansion of drug resistance surveillance to include genotypes conducted for antiretroviral-naïve individuals in routine clinical practice has greatly improved our ability to monitor transmitted ARV resistance locally. VARHS is intended to be a population-based surveillance system, and as additional laboratories participate, we progress closer to reaching our goal of having a genotype within three months of HIV diagnosis for all newly diagnosed, ARV-naïve HIV cases in King County.

Update on Cluster of Nine MSM with Highly Multi-class Drug Resistant HIV

In February 2007, Public Health – Seattle & King County alerted providers about a cluster comprised of four men, all infected with highly MDR HIV. All four were antiretroviral-naïve, newly HIV-diagnosed MSM who used methamphetamine and had multiple anonymous sex partners. By the end of 2007, an additional three antiretroviral-naive and two long-term ARV/HAART-experienced MSM were linked to the initial four, making a total of nine MDR cluster members. All had triple-class (PI, NNRTI, NRTI) antiretroviral resistance. In 2008 we published a manuscript detailing the cluster.[4]

As genotype reporting has become increasingly comprehensive locally, we sought additional members of the cluster. A maximum likelihood phylogenetic tree analysis was conducted on all MDR cases found through VARHS and enhanced surveillance (nine cluster members and 22 additional MDR cases) and 100 randomly-selected others with single-class or no drug resistance, excluding non-B subtypes and limited to King County residents identified from 2000 through July 2009 (**Figure 4**). We also removed codons associated with resistance among the cluster members from all samples in the analysis to eliminate clustering due to co-evolution of acquired resistance. The average *pol* genetic distance between the 100 random non-MDR samples was 6.5% (SD=1.3, Median=6.4) and the smallest distance between an MDR case and a cluster member was 6.4%. Thus, we determined none of the other MDR cases had HIV genetically similar enough to the cluster cases to be considered possible new highly-MDR cluster members.

How Are They Doing Now?

The two long-term ARV-experienced cluster members remain on therapy and are doing well clinically, with relatively stable CD4+ lymphocyte counts, one with undetectable and one with detectable but very low plasma virus (viral load) levels (**Figure 5 and Figure 6**). Two originally ARV-naïve cluster members are now receiving HAART therapy, one with a three-class regimen and one with a four-class regimen. Both had nadir CD4 counts of < 350 cells per µL which increased to above 350 cells per µL (increases of 44% and 147%). Since HAART initiation, the majority of their viral loads have been undetectable but both have had one or more viral blips of < 1,000 copies per mL. In the past year, the remaining five ARV-naïve cluster members had CD4 counts in the 300-600 per µL range, with median CD4 ~520 cells per µL. The originally naïve cluster members' most recent viral loads range from undetectable (in the two who had initiated care) to > 90,000 copies/mL; the median viral load among those remaining HAART naïve was about 7,300 copies/mL.

In sum, all nine highly-MDR cluster members remain in care locally and remain relatively stable as measured by CD4 and viral load. Two of seven ARV-naïve cluster members have initiated HAART, and both have had good immunologic (CD4) and excellent virologic (viral load) response.

- *Contributed by Christina Thibault, Amanda Markovitz, and Susan Buskin*

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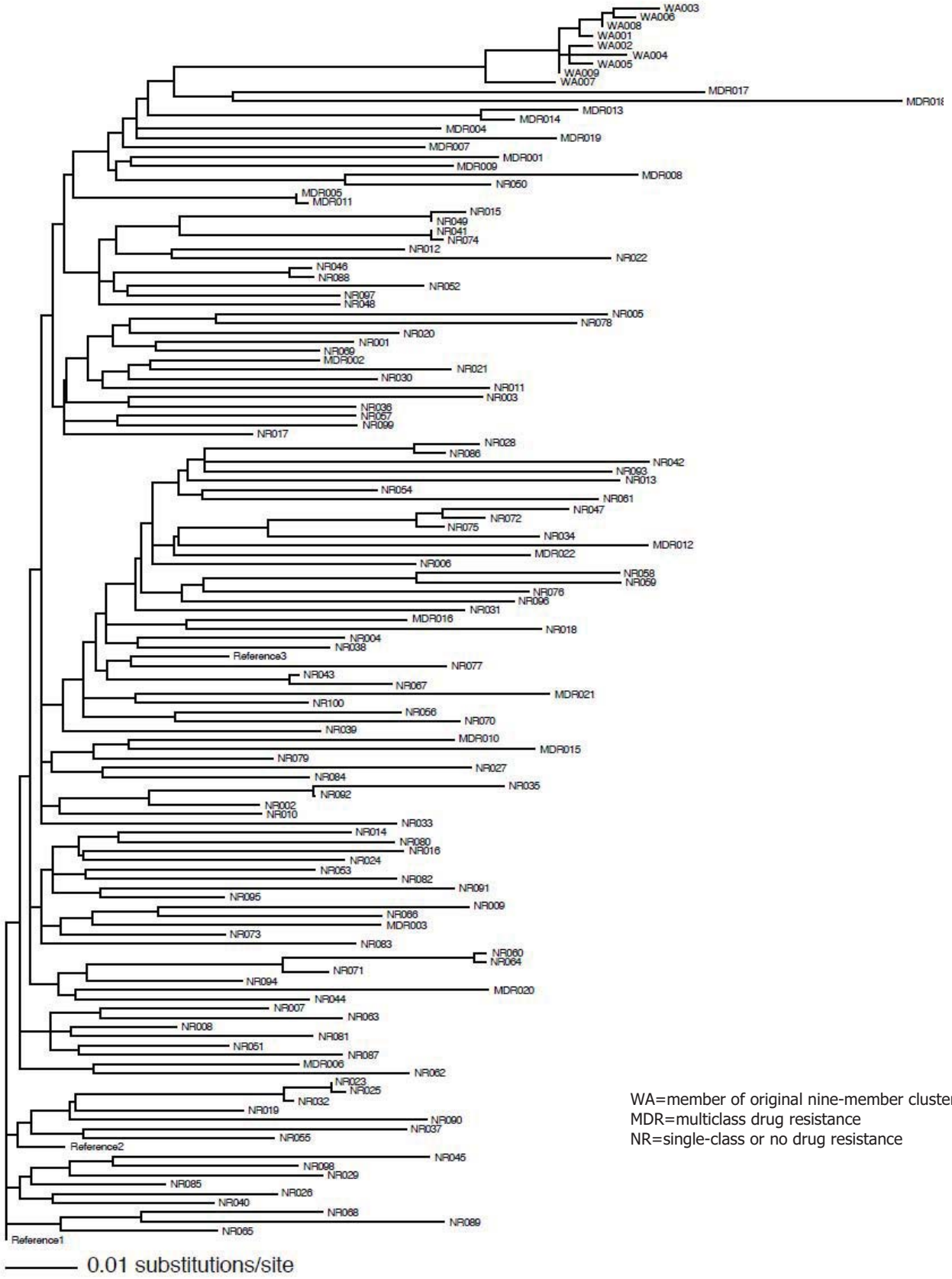
3. HIV/AIDS Epidemiology Unit, Public Health-Seattle & King County and the Infectious Disease and Reproductive Health Assessment Unit, Washington State Department of Health. HIV/AIDS Epidemiology Report, 2nd Half 2008: Volume 73, page 7.

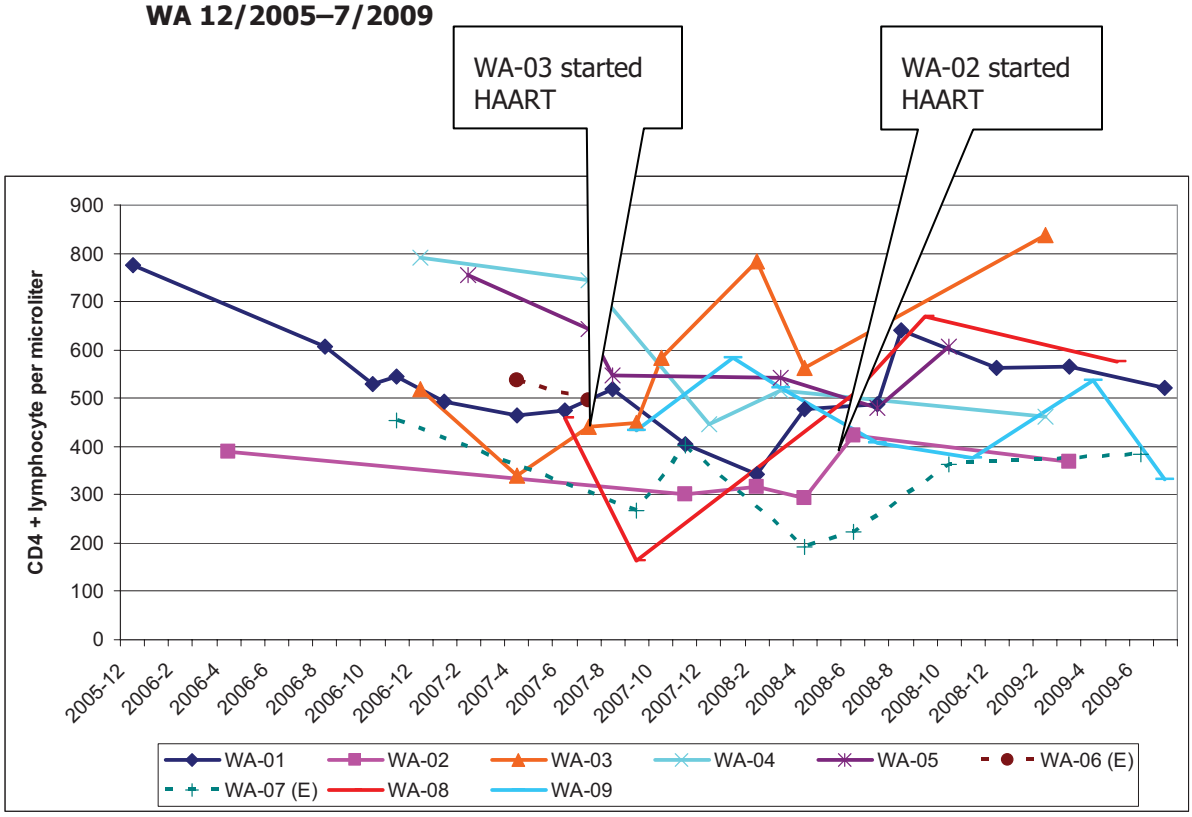
4. Buskin SE et al. Transmission cluster of multiclass highly drug-resistant HIV-1 among 9 men who have sex with men in Seattle/King County, WA, 2005-2007. J Acquir Immune Defic Syndr. 2008 Oct 1;49(2):205-11.

Figure 4: Maximum likelihood phylogenetic tree comparing nine highly-MDR HIV cluster cases with 22 other MDR cases and 100 randomly selected non-MDR cases, King County 2009



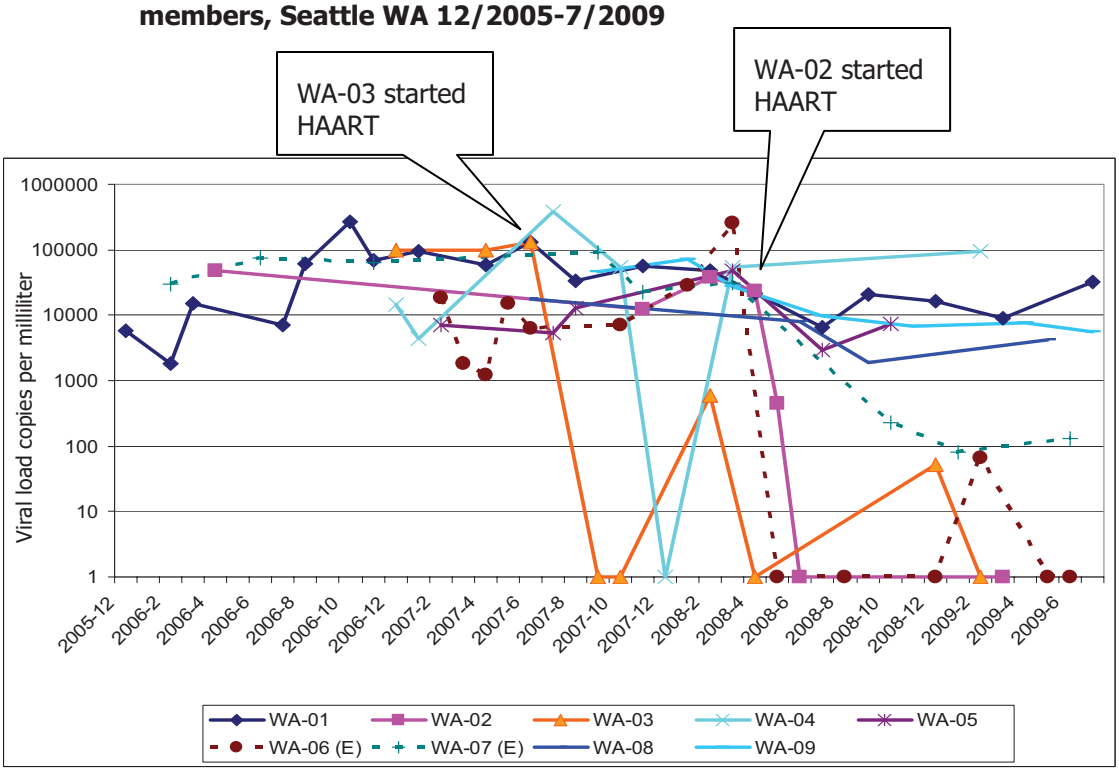
WA=member of original nine-member cluster
MDR=multiclass drug resistance
NR=single-class or no drug resistance

Figure 5: CD4+ lymphocyte counts of nine highly-MDR cluster members, Seattle WA 12/2005–7/2009



(E) Designates antiretroviral experience at the time of multi-class resistance diagnosis

Figure 6: Plasma viral load (plotted on log scale) of nine highly-MDR cluster members, Seattle WA 12/2005-7/2009



(E) Designates antiretroviral experience at the time of multi-class resistance diagnosis

Antiretroviral Treatment (ART) Outreach Project

Current guidelines from the U.S. Department of Health and Human Services (DHHS) recommend initiating antiretroviral therapy (ART) in persons living with HIV/AIDS (PLWHA) who have CD4 lymphocyte counts ≤350 cells/μL or certain clinical conditions regardless of the CD4 count, and that ART "be considered" for PLWHA who have CD4 counts >350 cells/μL.[1] Recent evidence suggests that ART is likely beneficial to PLWHA even when initiated at relatively high CD4 lymphocyte counts[2,3], and that ART can decrease HIV transmission.[4] While some uncertainty remains, new evidence in this area has altered the factors that providers and patients should consider in deciding when to initiate ART. Public Health – Seattle & King County (PHSKC) HIV/AIDS surveillance data suggest that many PLWHA who have CD4 counts ≤350/μL cells have significant viral loads (greater than 10,000/mL), as do a substantial number who have CD4 counts >350 cells/μL. Among nearly 5,000 patients with both CD4 and viral load results reported, 29% of those with low CD4 (350/μL or lower) had high viral load levels (10,000 copies/mL). Among patients with CD4 over 350/μL, 13% had viral load levels over 10,000 copies/mL. High viral load levels show the patient is either not on ART, or that it is not working. PHSKC does not have data on the reasons why PLWHA who have clinical indications for initiating ART are not taking it, nor does it have data on what information PLWHA with higher CD4 counts have regarding the factors that influence the timing of ART initiation. If we find that large numbers of PLWHA have not been given an opportunity to consider the risks and benefits of ART, an opportunity for improvement in the delivery of quality HIV care may present itself.

The goal of the ART Outreach Project is to ensure that PLWHA have been given adequate information about ART use. This new program is in keeping with the procedures of previous quality improvement work at PHSKC, including the "Not In Care" project, which uses HIV surveillance data to contact PLWHA who have not had recent laboratory testing. The goal of the ART Outreach Program is consistent with DHHS mandates to improve the quality of HIV care and with local prevention planning priorities to include information about ART in prevention efforts with PLWHA. We are developing the ART Outreach Project in two phases.

In the first phase, we are conducting in-depth qualitative interviews with 20 PLWHA who are off ART and 10 medical providers who care for PLWHA. These interviews will inform the development of the educational intervention. Topics addressed in the interviews include factors that affect the decision to start ART, ways of educating PLWHA about ART, how patients think about the effect of ART on prevention of HIV transmission, and perceptions of the role of public health programs in the decision to initiate ART.

The second phase of the project will include delivery and assessment of an educational program focusing on the risks and benefits of ART. The goal of this educational program will be to ensure that PLWHA are empowered with the knowledge they need to make an informed decision about ART. It will be offered to PLWHA in King County who are not taking ART at the time of program initiation. Our interviews with PLWHA will inform the specific content and presentation of information about ART, but we anticipate that the program will include discussion of the known benefits of ART on an individual's health, the potential benefits of ART on an individual's health, the likelihood of transmitting HIV, and the risks of ART, such as toxicities and the development of resistance with non-adherence to the medications. The information will be delivered in either telephone or face-to-face counseling sessions, depending on the preferences of program participants. We expect that the program will also include an educational website and the option to receive printed material.

- *Contributed by Julia Dombrowski and Matthew Golden*

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The Latitude Study: HIV Testing among Latino Men Who Have Sex with Men in Washington

Background

Currently about ten percent of people reported as living with HIV disease in Washington are of Latino (or Hispanic) origin.[1] Latinos in Washington are disproportionately affected by HIV disease. Rates of HIV diagnosis among Latinos are almost twice that of non-Latino Whites. Most Latino HIV cases are male, and nearly two-thirds are men who have sex with men (MSM), including MSM with a history of injection drug use (MSM/IDU). In addition to being at greater risk for HIV, statewide HIV surveillance data show that Latino MSM are also more likely than White MSM to be diagnosed late in the course of their HIV illness.[2] The Washington State HIV Prevention Planning Group (SPG) has designated Latino MSM as one of seven "most at-risk" populations considered to be in particular need of HIV prevention services.[3]

According to the U.S. Centers for Disease Control and Prevention, one of the most effective ways to control the HIV epidemic is to promote early detection of existing HIV infections.[4] Routine HIV screening can lead to improved clinical outcomes as a result of early diagnosis and access to treatment. Furthermore, many studies have shown that people are less likely to engage in risky sexual behaviors, and thus less likely to transmit the virus to others, once they become aware of their HIV infection.[5,6] Yet, as Washington HIV surveillance data indicate, convincing Latino MSM to undergo routine testing has its challenges.

Previous Studies

For Latinos living in the United States, potential barriers to HIV testing are often connected to the same factors that cause them to be at increased risk for HIV in the first place. For example, numerous researchers have reported associations between unprotected anal intercourse (a primary pathway for HIV transmission among MSM) and lower socioeconomic position.[7] Likewise, lack of knowledge about HIV, as well as social discrimination linked to both homosexuality and HIV disease, have been associated with risky sexual behavior among MSM of color.[8,9] There is some evidence that the above-mentioned factors might also influence people's interest in or ability to get an HIV test. In a study focusing on delayed HIV testing among recently diagnosed HIV-positive Latinos in Northern California, Levy et al. reported that limited knowledge about HIV risk and perceptions of negative stigma around HIV disclosure were associated with delayed presentation of HIV disease, a consequence of people not getting routinely tested.[10] Describing another study focusing on migrant Latino day laborers in the San Francisco Bay Area, Erhlich et al. reported a strong positive association between intentions to get an HIV test and both perceived risk for HIV as well as recent history of high-risk sexual behaviors.[11]

Beyond whether at-risk individuals recognize the importance of routine HIV testing, we must also consider practical issues such as how and where HIV testing services should be offered. For example, Galvan et al. conducted an experiment in Los Angeles County focusing on whether (mostly MSM) Latino men were more likely to accept HIV testing when the tests were offered by themselves or bundled with other types of screening tests for alcoholism, depression, or other STDs.[12] Overall, study participants showed no preference for single versus bundled tests. Men who described themselves as primarily heterosexual and men who reported having had an STD in the past twelve months were more likely to accept bundled testing. This is a potentially important finding, since both bisexual MSM and MSM who've been diagnosed with an STD constitute subpopulations that are widely recognized as being at increased risk for HIV. Describing their Bay Area study, Erhlich et al. reported that study participants exhibited a preference for HIV tests that rely on a blood sample versus a saliva sample, and tests that are able to provide results in less than 20 minutes versus longer. Such practical information could prove useful to HIV testing programs in Washington.

The Latitude Study

In order to better understand the HIV prevention needs of Latino MSM, the Washington State Department of Health (DOH) collaborated with the SPG to conduct a statewide HIV prevention needs assessment focusing on Latino MSM. The primary goals of *The Latitude Study* were to characterize HIV testing behaviors among Latino MSM and to gather information that could be used to develop appropriate, acceptable and effective HIV prevention interventions for this critical risk population.

This report describes a number of measurable factors associated with HIV testing behaviors among Latino MSM living in Washington. Knowledge of these factors can help HIV prevention programs identify testing barriers and improve utilization of HIV testing services among Latino MSM. Our findings suggest that factors such as educational achievement, knowledge about HIV, self-perceived level of HIV risk, and social stigma are associated with HIV testing behaviors among Latino MSM. The results of this research will be shared with state and regional community planning groups in order to guide local HIV prevention strategies and support the development of new HIV intervention plans. In addition, we hope that HIV educators, outreach counselors, and other HIV prevention program staff are able to use these data to encourage Latino MSM in Washington to get tested regularly for HIV disease.

Methods

We interviewed a convenience sample of adult Latino or Hispanic men living in Washington (note: for the purposes of this study, the two terms used to describe ethnicity are considered interchangeable). Interviews were conducted in King County - which contains the Seattle metropolitan area - and in Yakima, Benton, and Walla Walla counties, collectively described here as the Yakima Valley area. We collaborated with local public health staff from King and Yakima counties, as well as the Spokane-based marketing firm Desautel-Hege, in order to design and manage field activities. Data collection began in the Yakima Valley in early October 2007, and in King County a month later. All field operations ended on December 31, 2007.

Eligibility for inclusion in this study was based on the following criteria:

- Washington resident
- Male or transgender
- Latino or Hispanic
- Self-identifies as gay, homosexual or bisexual OR had sexual contact with a man during the previous 12 months

We did not use a formal screening tool in order to select potential candidates. Instead, we relied upon community recruiters who lived in the same areas as the men being recruited for the interview project and who had demonstrated familiarity with local MSM social networks. Most recruiters worked for local AIDS service organizations (ASOs). Recruiters identified potential study participants, provided them with basic information about the study, and distributed contact cards featuring both a unique identification code (for tracking purposes) and a toll-free telephone number. Once they called the number, potential participants were able to choose between conducting the approximately 30-minute interview over the phone or in person. The option of being interviewed over the phone was not initially included in our study design, but was added roughly one month after data collection began. Eligibility was based solely on information reported by the subject during the interview. As an incentive to take part in the study, we offered participants either a grocery gift card or an international calling card, each valued at $30. We distributed incentives to all participants who initiated an interview, regardless whether the interview was completed or whether they ultimately met the eligibility criteria.

Both recruiters and interviewers were required to attend trainings hosted by DOH staff. The trainings were meant to ensure field staff understood the overall purpose and design of the study, as well as their individual roles as field staff. We used PowerPoint slides and interactive discussion to review all study materials and ensure study protocols were well understood. The trainings also emphasized the importance of documenting problems or questions as they arose in the field and bringing them to the immediate attention of project investigators. In response to feedback provided by both recruiters and interviewers early in the study, some recruiters were cross-trained as interviewers so participants could choose whether to be interviewed by someone they knew or by an anonymous party.

All in-person interviews were conducted in clean, safe, convenient locations. Interviews were conducted in English or Spanish. All questions contained within the Spanish version of the questionnaire were both forward and back-translated using the Seattle-based language translation firm Dynamic Language. During the interview, trained, bilingual interviewers read both the study description and survey questions aloud to each participant and recorded responses.

As a direct benefit for participating in the study, each participant received a culturally-appropriate health information packet (in English or Spanish). The packets included referrals to HIV counseling and testing services as well as other local health and social services. We used manila envelopes and included non-HIV related materials in order make the packets less conspicuous and protect the confidentiality of participants. We provided each participant with a detailed study description and received oral consent prior to initiating the interview. This study was approved by the Washington State Institutional Review Board.

Results

Of the 113 men who agreed to be interviewed, eleven were excluded from the analysis because they did not meet all four selection criteria. We completed interviews with 80 eligible participants in King County and with 22 in the Yakima Valley. Most men were between the ages of 25 and 44 (**Table 1**). Roughly 80% were born in Mexico. While nearly half (46%) attended some level of college, more than a third (36%) had not completed high school. Most participants were employed, although nearly half (43%) reported working less than 30 hours a week. With regard to their living situation, most men reported either renting (75%) or living with friends or family members (13%). Although we observed some nominal demographic differences between the King County and Yakima Valley groups (especially in terms of educational achievement), the small size of the Yakima Valley group prevented us from being able to test whether such differences were statistically significant.

Overall, the men in our sample appeared to be relatively acculturated (**Table 2**). More than half (60%) had lived in Washington for at least five years. While most participants reported speaking mainly Spanish at home, a majority (53%) described their ability to speak English as being between good and excellent. Nevertheless, most men (78%) reported a preference for Spanish when communicating with a health care provider. About half of study participants (51%) admitted to living in the United States without legal documentation. English language ability was strongly associated with immigration status: 69% of legal immigrants described their ability to speak English as good or better versus 33% of those without legal documentation.

Although most men in our sample (81%) reported having access to medical care whenever they need it, about half (51%) reported not having any kind of health insurance coverage (**Table 3**). The proportion of men who lacked health insurance coverage was not associated with HIV status. However, a higher proportion of undocumented immigrants (69%) were without insurance versus those who reported living in the U.S. legally (38%). Similarly, a smaller proportion of undocumented immigrants (69%) reported having access to medical care versus those with documentation (95%).

Nearly half of the men in our sample (43%) reported having tested positive for HIV. HIV testing information about HIV-positive individuals is based on the testing event at which they were first diagnosed. Among participants presumed to be HIV-negative, 56% had been tested within the past 12 months (**Table 4**). Most men with a history of HIV testing (88%) reported having last been tested in the United States. More than half (66%) of those tests took place in Washington. Relatively few reported having been tested outside the U.S., although the proportion was higher among HIV-positive men (23%) versus HIV-negative men (2%). The median interval between HIV tests among HIV-negative men was 12 months, six months among HIV-positive men (prior to testing positive).

Table 5 describes potential correlates of HIV testing frequency among participants presumed to be HIV-negative. Testing frequency is based on whether participants reported getting tested at least once every 12 months versus either never having been tested or testing less often than every 12 months. Only self-reported knowledge of HIV and recent STD testing (within the last 12 months) showed statistically significant associations with HIV testing frequency. However, several potential correlates, while not statistically significant at the p=0.05 level, appeared to be weakly associated with HIV testing frequency.

Table 1: Demographic characteristics, The Latitude Study, Washington 2007 (N=102)

	King County n=80		Yakima Valley n=22	
	No.	%	No.	%
Sexual orientation				
Gay / homosexual	56	70%	13	59%
Straight / heterosexual	2	3%	1	5%
Bisexual	21	26%	8	36%
Age				
18-24	3	4%	4	18%
25-34	39	49%	10	45%
35-44	31	39%	3	14%
45+	7	9%	4	18%
Birthplace				
United States	6	8%	4	18%
Mexico	61	76%	18	82%
Central America	4	5%	0	0%
South America	6	8%	0	0%
Other	3	4%	0	0%
Highest education				
Primary school	9	11%	7	32%
Secondary school	15	19%	6	27%
High school / GED	16	20%	2	9%
Some college	40	50%	7	32%
Employment status				
Full time (≥ 30 hrs/week)	43	54%	16	73%
Part time (< 30 hrs/week)	22	28%	5	23%
Unemployed / other	15	19%	1	5%
Living situation				
Own	5	6%	5	23%
Rent	62	78%	14	64%
Live with family / friends	11	14%	2	9%
Other	2	3%	0	0%

Table 2: Measures of acculturation—The Latitude Study, Washington 2007 (N=102)

	King County, n=80		Yakima Valley, n=22	
	No.	%	No.	%
Years living in Washington				
Less than five years	37	46%	4	18%
Five to ten years	27	34%	8	36%
More than ten years	16	20%	10	45%
Ability to speak English				
Very good / excellent	20	25%	3	14%
Good	27	34%	4	18%
Moderate	26	33%	10	45%
Poor	7	9%	5	23%
Main language spoken at home				
English	12	15%	2	9%
Spanish	62	78%	19	86%
Both	6	8%	1	5%
Language preference when speaking with a health provider				
English	17	21%	3	14%
Spanish	61	76%	19	86%
Both	2	3%	0	0%

Table 3: Access to health care—The Latitude Study, Washington 2007 (N=102)

	King County, n=80		Yakima Valley, n=22	
	No.	%	No.	%
Health insurance coverage				
Private	23	29%	7	32%
Public	17	21%	1	5%
Both	1	1%	1	5%
None	39	49%	13	59%
Time since last seen by a physician				
Less than 12 months	65	81%	13	59%
1-2 years	5	6%	4	18%
More than 2 years	10	13%	5	23%
STD test last 12 months				
Yes	44	55%	7	32%
No	36	45%	14	64%
Access to medical care whenever it is needed				
Yes	65	81%	17	77%
No	15	19%	5	23%
Immigration status				
U.S. citizen	9	11%	0	0%
Visa or work permit	25	31%	4	18%
Undocumented	39	49%	13	59%
Refused / Missing	7	9%	5	23%

Table 4: HIV testing history—The Latitude Study, Washington 2007 (N=89)

	HIV-negative[a]		HIV-positive[b]		Total	
	No.	**%**	**No.**	**%**	**No.**	**%**
Ever been tested for HIV	45	100%	44	100%	89	100%
Been tested for HIV in past 12 months	25	56%	N/A	N/A	N/A	N/A
Last HIV test was anonymous	32	71%	25	57%	58	65%
Last test was in...						
Washington	39	89%	20	45%	59	66%
Another U.S. state	5	11%	14	32%	19	21%
Foreign country	1	2%	10	23%	11	12%
Facility where last test was received:						
Outreach / health fair / mobile unit	5	11%	11	25%	16	18%
Community clinic / health department	26	58%	16	36%	42	47%
Hospital / emergency room	9	20%	11	25%	20	22%
At home	2	4%	3	7%	5	6%
Type of last HIV test						
Non-rapid blood test	19	42%	31	70%	50	56%
Non-rapid oral test	9	20%	5	11%	14	16%
Rapid blood test	13	29%	6	14%	19	21%
Rapid oral test	3	7%	1	2%	4	4%

[a] The 'HIV-negative' category includes only those men who reported having been previously tested for HIV and who reported their current HIV status as negative

[b] The 'HIV-positive' category includes only those men who reported having been previously tested for HIV and who reported their current HIV status as positive

Table 5: Correlates with HIV testing frequency—The Latitude Study, Washington 2007 (N=58; excludes HIV-positive)

	Frequent Tester[a] n=32		Infrequent Tester[b] n=26		Crude Odds Ratio (95% CI) (BOLD = significant)
	No.	%	No.	%	
Education					
Some college	17	47%	8	31%	2.6 (0.9-7.5)
No college	15	53%	18	69%	------
Access to medical care					
Yes	25	78%	14	54%	3.1 (1.0-9.6)
No	7	22%	12	46%	------
Self-reported knowledge about HIV					
Know some or a lot	28	88%	15	58%	**5.1 (1.4-18.9)**
Know little or nothing	4	13%	11	42%	------
Immigration status					
U.S. citizen or legal immigrant	14	50%	8	33%	2.0 (0.6-6.2)
Undocumented immigrant	14	50%	16	67%	------
Identify as gay or homosexual					
Yes	25	78%	15	58%	2.6 (0.8-8.2)
No	7	22%	11	42%	
Tested for an STD during last 12 mos.					
Yes	18	58%	5	19%	**5.8 (1.7-19.5)**
No	13	42%	21	81%	------

[a] The 'Frequent Tester' category includes those who reported getting tested for HIV at least once every 12 months
[b] The 'Infrequent Tester' category includes men who reported either never having been tested or getting testing less often than every 12 months

Table 6: Reasons for getting tested for HIV—The Latitude Study, Washington 2007 (N=89)

	HIV-negative[a] n=45		HIV-positive[b] n=44		Total	
	No.	%	No.	%	No.	%
Just wanted to know where I stood	45	100%	39	89%	84	94%
Had a risky sexual encounter	32	71%	34	77%	66	74%
Concerned about infecting someone else	18	40%	22	50%	40	45%
Someone else suggested it	21	47%	8	18%	29	33%
Health problem potentially caused by HIV	6	13%	21	48%	27	30%
Doctor suggested it	9	20%	12	27%	21	24%
Partner tested positive	3	7%	1	2%	4	4%
Had a risky drug use experience	0	0%	4	9%	4	4%

[a] Response to question: "Do any of these reasons explain why you got your last HIV test?"
[b] Response to question: "Thinking about the time you tested positive, do any of these reasons explain why you got an HIV test?"

We asked men who reported ever having an HIV test to explain why they got their last HIV test. Participants were given a menu of potential reasons to choose from, although they also had the opportunity to explain their motivation for getting tested in their own words. Reasons for getting tested were largely similar between HIV-negative and HIV-positive participants (**Table 6**). Most men chose "just wanted to know where I stood" (94%), although approximately two out of three (74%) selected "had a risky sexual encounter." Nearly half of the respondents were "concerned about infecting someone else" (45%).

We also asked men who had not been tested within the last 12 months to choose one or more reason why they didn't get tested. As expected, most (85%) of the non-testers chose "think I am HIV-negative" as a reason. However, more than two-thirds of these men chose reasons that indicated they were afraid of the potentially harmful consequences of being tested. For example, 69% chose "think friends might react badly", while 62% chose "don't want to worry or upset family members." Confidentiality was also a common concern, as most non-testers reported fears that their test results would either be reported the government, reported to their employer, or seen by someone they knew.

Although we asked a number of very detailed questions related to HIV risk behaviors, none of the risk-based variables were even weakly associated with HIV testing behavior. Among the vast majority (95%) of our sample who reported being sexually active within the past year, one-third (33%) reported having had unprotected anal sex with a man during the same time period. Roughly one in four sexually-active participants reported having had sex with a woman (26%) in the past year. Very few participants reported either using a needle to inject drugs over the past 12 months (4%) or receiving money or drugs in exchange for sex (12%).

Discussion

From a methodological standpoint, we were pleased (and a bit surprised) that such a high proportion of our sample was willing to answer questions that were often very personal or sensitive in nature. For example, although we had no way of verifying the accuracy of this information, about half of our sample (51%) reported that they were currently living in the United States illegally, and 43% admitted to being HIV-positive. This apparent level of openness suggests that study participants felt comfortable during their interview. Also, the relatively low proportion of interviewees (9%) who, because they didn't meet all of the study's inclusion criteria, were eventually excluded from the analysis suggests that our community recruiters were able to successfully select and recruit men who fit the study criteria without relying on a formal screening tool. While our convenience sample probably isn't representative of all Latino MSM living in Washington, it is worth noting that the proportion of undocumented immigrants in our sample is similar to that reported by Levy et al.

The significant difference in study costs associated with interviewing men in the Yakima Valley area versus King County could prove valuable for researchers planning future studies with Latino MSM. Despite initiating data collection in the Yakima Valley a month earlier, we recruited nearly four times as many Latino MSM in King County (80) as in the Yakima Valley (22). With roughly half of our project budget devoted to each region, the cost per completed interview in the Yakima Valley was four to five times higher than in King County. Although some of this difference in cost might have been reduced had we made telephone interviews an option at the beginning of the three-month long data collection period (as opposed to half way through), understanding these cost differences makes it easier to plan future studies involving hard-to-reach populations living in urban versus suburban rural areas.

The proportion of participants who reported having ever been tested for HIV was higher than expected, 87% overall. However, most community recruiters involved with this study were chosen largely because of their experience working either for local ASOs or for local health departments where HIV testing is offered. Thus, the sample itself might have been biased in favor of Latino MSM with a history of receiving HIV prevention services (including HIV testing).

Nevertheless, it is interesting that the majority of men with a history of HIV testing reported that their last HIV test was taken anonymously (65%). We were both surprised and encouraged that so few men reported having gotten their last HIV test outside the U.S. (12%), indicating that few Latino MSM who get tested are apprehensive about getting tested here compared to their country of origin. Although type of HIV test received is obviously heavily influenced by the type of test(s) being offered, most men reported getting a conventional (or non-rapid) HIV test, despite the growing availability of rapid HIV testing kits in Washington. The proportion of HIV tests relying on a blood sample suggests at least some agreement between our findings and those reported by Erlich et al., which suggested that Latino MSM may actually prefer

Table 7: Reasons for NOT getting tested for HIV in the past 12 months—The Latitude Study, Washington 2007 (N=13)

	n=	%	Times chosen as most important reason[a]
Think I am HIV-negative	11	85%	
Afraid of finding out that I am HIV-positive	9	69%	3
Think friends might react badly	9	69%	3
Worried name reported to the government	8	62%	1
Worried someone else would see test results	8	62%	1
Don't want to worry or upset family members	8	62%	
Others might think I have HIV	8	62%	
Concerned name reported to insurer or employer	7	54%	
Don't want to think about HIV	6	46%	
Don't want to lose place in the community	6	46%	
Haven't done anything to put me at risk for HIV	5	38%	3
Don't have time to get tested	5	38%	1
People might think I am gay	5	38%	1
Don't know where to get tested	4	31%	

[a] Represents number of men who selected each option as the most important reason for not getting tested. Based on the follow-up question: "Which of these reasons was the most important reason you did not get an HIV test in the past 12 months?"

HIV tests requiring a blood sample. Our results also suggest that, regardless of their fluency in English, Latino MSM prefer to receive their health care information in Spanish. This preference is important to remember when implementing testing with a population that has expressed fears about the confidentiality of test results. Having been tested for an STD was also associated with HIV testing, so encouraging Latino MSM to get frequently tested for STDs (which may be less stigmatized) may lead to more HIV testing.

Despite the relatively small size of our sample, the results do suggest that both general level of educational achievement, and especially knowledge about HIV, are positively associated with routine HIV testing among Latino MSM. However, due to the cross-sectional nature of this study, we cannot say whether the higher level of HIV knowledge among frequent HIV testers is the reason they are being tested more often, or if it is instead a result of routine testing (which is often accompanied by HIV counseling or education). We were somewhat surprised that we did not observe any significant associations between measures of acculturation (such as the ability to speak English) and HIV testing behaviors. However, as in the case of access to health care, we suspect that our study sample simply wasn't large enough to provide statistical evidence for such an association.

Tables 6 and 7 may be useful to HIV educators and those who wish to develop effective social marketing campaigns that promote HIV testing among Latino MSM in Washington. For example, it appears that

many Latino MSM who do not undergo routine HIV testing are concerned about the confidentiality of their HIV test results. Hence, greater effort to educate these men about the availability of anonymous HIV testing, and about state and federal laws that protect the confidentiality of reported cases (regardless of immigration status), might help increase testing among these individuals. A number of participants indicated that they don't get routinely tested because they feel they aren't at risk, despite (in some cases) having engaged in risky sexual behaviors during the past twelve months. For example, one participant stated that he doesn't get tested regularly because the three men he had had sex with were "straight." Hence, it is important for educators to inform Latino MSM that it is having unprotected sex, not whether they or their partners self-identify as being gay, that places them at risk for HIV and therefore, in need of routine HIV testing.[14]

At a 2004 symposium focusing on HIV prevention with gay and bisexual men of color in Los Angeles, nearly 150 HIV prevention providers, representing 43 separate programs, collectively recognized the importance of expanding HIV prevention services to address social biases, especially those related to social stigma associated with being gay or bisexual. Those recommendations seem appropriate given the degree to which fear-based explanations were used by Latino MSM in our sample to explain why they aren't getting regularly tested for HIV. In **Table 7**, fear of losing friends and family; fear of losing status in the community; and fear of being perceived by others as either gay or HIV-positive all appear to negatively influence when and how often Latino MSM get tested for HIV. Although more research is certainly needed, our findings suggest that HIV prevention strategies should focus not only on changing individual behaviors but also on reducing HIV-related social discrimination and stigma that continue to prevent many Latino MSM from getting tested, thus contributing to ongoing HIV transmission within Latino communities across Washington.

Acknowledgements

We would like to thank all of the dedicated staff and volunteers who helped make *The Latitude Study* possible. Special appreciation goes to Barb Gamble of Public Health-Seattle & King County, to Wendy Doescher and Mary Lou Briceno of the Yakima Valley Health District, and to all the members of the SPG Community Services Assessment Committee.

- *Contributed by Jason Carr*

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"*It's the Little Prick You Can Deal With*" – Evaluation of an HIV Testing Promotion Campaign

Background

In June 2008 the HIV/AIDS Program at Public Health - Seattle & King County launched a multi-media campaign in Seattle, designed to increase the frequency of HIV testing among men who have sex with men (MSM) at high risk for HIV infection. Local data suggested that while most MSM had been tested for HIV at least once in their lifetime, some high-risk MSM were not testing at the recommended frequency. The campaign encouraged MSM who had had unprotected sex with a partner of unknown or discordant HIV status during the prior year to get tested every three months.

In developing a social marketing program to impart the message that HIV testing is easy and available, the HIV/AIDS program worked with an advertising agency (which donated much of its time to the project) to develop a culturally-appropriate campaign with a visual icon. Project staff pre-tested a number of campaign tag lines with community members, and determined that the community preferred clear, humorous and direct messages. This led to the development, implementation and evaluation of the multi-media *"Little Prick"* campaign.

In an effort to reach MSM in the Seattle area, the campaign was featured on gay-oriented Internet sites, gay-oriented print media, stationary and moving billboards, sidewalk chalk drawings outside well-known gay bars and bathhouses, and on coasters, posters and mirror clings at local bars and bathhouses. The campaign was conducted from June 20th to August 20th and then again from October 6th to November 30th. Some components of the campaign, including the sidewalk chalk drawings and the Internet sites, continued through the entire period of the campaign.

In order to evaluate the campaign's reach and impact, we conducted a venue-based survey before and after campaign implementation. In March, April and May of 2008, before implementation of the media campaign, we recruited 197 participants at nine locations for the baseline survey, and from the end of June through mid-December we recruited 464 participants at 70 events for the follow-up survey, for a total of 661 participants. Altogether, 43% of participants were recruited in bars, 19% in dance clubs and 19% in social organizations.

Exposure to the Media Campaign and Acceptance of the Campaign Message

In response to an open-ended question, almost a quarter of the 464 participants (24%) recruited after the beginning of the media campaign volunteered that they recalled seeing or hearing of the campaign. A further 50% recalled exposure to the campaign when shown the *Little Prick* logo, so that three-quarters of participants (75%) reported exposure to the campaign (**Table 1**).

Participants considered to be at high risk for HIV transmission were somewhat more likely to recall exposure to the media campaign than those not at high risk. High risk was defined as reporting in the previous 12 months either: unprotected anal sex with a partner of opposite or unknown HIV status, an STD diagnosis, or any amphetamine use (injected or not). High-risk participants were also more likely to report having seen the campaign six or more times.

Most participants reported high rates of acceptability of the campaign message; 80% who reported seeing the campaign had either a positive or a very positive response, and less than 3% had a negative response. Participants at high risk for HIV scored somewhat lower on media campaign acceptance than those not at high risk (p=.03), though still with small rates of negative response (**Table 2**).

Assessment of the Effects of the Media Campaign on HIV Testing

Among the 279 participants who reported exposure to the media campaign and reported HIV negative status, 38% said they would 'test more frequently due to the campaign' (**Table 3**). Forty-six percent of participants exposed to the campaign reported that it 'affected my thoughts on HIV testing', with about half of these reporting the campaign 'made me think I should test more often' and/or that it 'motivated me to get tested'. There was little evidence that participants exposed to the media campaign considered a higher HIV testing frequency as appropriate for themselves and their peers than those in the baseline group surveyed before the campaign.

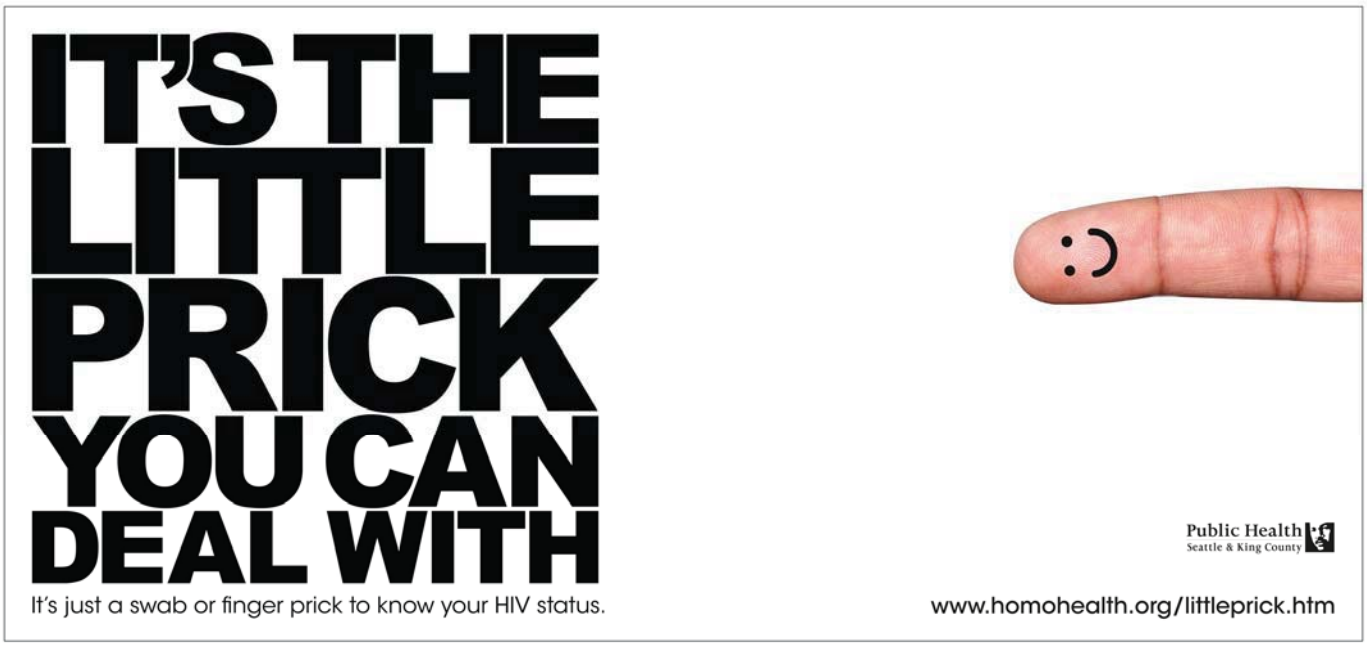

Table 1: Self-report of seeing the *Little Prick* media campaign, by risk status, among participants recruited after beginning of the media campaign, Seattle 2008

		UAI with partner of opposite or unknown HIV status, or STD, or amphetamine use[a]				Total	
		No	%	Yes	%		
***Little Prick* Campaign Exposure**	Volunteered seeing *Little Prick*	53	20%	55	30%	108	24%
	Recalled seeing *Little Prick* upon prompting	137	52%	88	49%	225	50%
	Saw media message but not *Little Prick*	37	14%	19	11%	56	13%
	Reported seeing no media message	39	15%	19	11%	58	13%
Total		266	100%	181	100%	447	100%

[a] High risk status is defined as reporting in the past 12 months either: unprotected anal intercourse (UAI) with a person of opposite or unknown HIV status, any sexually transmitted infection or any use of amphetamines (injected or not).

Table 2: Response to the *Little Prick* media campaign, by risk status, among participants recruited after beginning of the campaign who reported seeing or hearing the campaign, Seattle 2008

		UAI with partner of opposite or unknown HIV status, or STD, or amphetamine use[a]				Total	
		No		Yes			
Response to *Little Prick* Campaign	Very positive	75	40%	44	31%	119	36%
	Positive	86	46%	59	42%	145	44%
	Neutral	25	13%	33	23%	58	18%
	Negative	3	2%	6	4%	9	3%
Total		189	100%	142	100%	331	100%

[a] High risk status is defined as reporting in the past 12 months either: unprotected anal intercourse (UAI) with a person of opposite of unknown HIV status, any sexually transmitted infection or any use of amphetamines (injected or not).

Table 3: Self-reported effects of the *Little Prick* media campaign on HIV testing by risk behavior, among participants not reporting themselves HIV positive, recruited during the campaign, who reported seeing or hearing the campaign, Seattle 2008

	Not high risk		High risk		Total		p-value[a]
	n=165		n=114		N=279		
'Test more frequently due to campaign'	57	35%	49	43%	106	38%	.15
Campaign affected thoughts about HIV testing	70	42%	59	52%	129	46%	.10
Among those answering 'yes' to being affected							
'Made me think I should test more often'	40	57%	27	46%	67	52%	.20
'Motivated me to get tested'	33	47%	37	63%	70	54%	.08
'Motivated me to sign up for testing reminders online'	3	4%	0	-	3	2%	.11
'Talked to my partner or friends about testing'	15	21%	12	20%	27	21%	.88

[a] Testing whether there is a difference between the high-risk group and participants not in the high risk group.

Table 4: Months since last HIV test—participants recruited at baseline versus those recruited after beginning of the *Little Prick* media campaign, among participants who reported themselves HIV negative, Seattle 2008

	Recruited at baseline		Recruited during campaign		Total		p-value
	n=180		n=395		N=575		
Months since last HIV test							
0 – 3 months	60	33%	95	24%	155	27%	.01
4 – 6 months	45	25%	75	19%	120	21%	
7 – 12 months	27	15%	75	19%	102	18%	
13 – 24 months	23	13%	62	16%	85	15%	
25 – 60 months	7	4%	39	10%	46	8%	
> 60 months	13	7%	24	6%	37	6%	
Never tested	5	3%	25	6%	30	5%	

The time since participants' last HIV test was compared with the testing interval they described as appropriate for people like themselves. Among all participants, whether exposed to the campaign and not, who suggested that testing every three months was appropriate, only 43% had been tested themselves in the previous three months. For those suggesting testing every six months, the figure was 50% and for those suggesting every 12 months, 46%. Participants exposed to the media campaign were no more likely to report a recent HIV test than those not exposed to the campaign (**Table 4**).

Implications

Our experience with the *Little Prick* campaign suggests that high risk men who have sex with men respond positively to messages encouraging frequent HIV testing. The recognition and acceptance of the campaign was higher than expected. The data also suggest that a highly-targeted media campaign can be an effective way to impact attitudes toward testing.

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- *Contributed by Karen Hartfield, Richard Burt, and Hanne Thiede*

Findings from the 2009 "*Where HIV/AIDS Tangles with Substance Use Prevention*" (WHATS UP) Needs Assessment

Introduction

HIV prevention efforts are needed to reduce high-risk behavior among people who are HIV-infected.[1,2] Literature on the impact of an HIV diagnosis shows a majority of persons reduce risky sexual and drug practices after a positive diagnosis,[3] but a gap exists in knowledge around the relationship between an HIV infection diagnosis and the timing of substance use initiation.

In order to identify needs of HIV-infected individuals regarding substance use prevention, the Seattle HIV/AIDS Planning Council conducted a needs assessment in early 2009. An ad hoc committee of the Council worked with Council staff and an intern from the UW School of Public Health to develop a needs assessment that looked at methamphetamine, crack/cocaine, and heavy alcohol abuse in people living with HIV/AIDS in Seattle.

The needs assessment's central question was: *Are people living with HIV/AIDS (PLWHA) beginning substance use before or after an HIV diagnosis?* The goal of the assessment was to determine if there are predictive factors in the environment or social behaviors of people who initiate drug use after an HIV infection diagnosis. Furthermore, what are possible cues or interventions for service providers to help prevent initiation of, or increases in, substance use after HIV infection diagnosis?

Methods

From January-March 2009, the needs assessment called WHATS UP (Where HIV/AIDS Tangles with Substance Use Prevention) collected data through multiple methods from individuals who reported using substances and being HIV-infected. Substance use included use of methamphetamine, crack/cocaine, and/or heavy alcohol use – defined as six or more drinks in one day. A committee of the Council and Council staff developed a structured interview tool that included demographic and topic-related quantitative questions as well as 26 open-ended qualitative questions. Along with the written survey instrument, a visual timeline tool was filled in by interviewees with assistance from the interviewers. The timeline was used to track substance use patterns against HIV milestones such as HIV-positive diagnosis, AIDS diagnosis, initiation of HAART, disclosure of status, and adherence to HIV treatment (**Chart 1**). With the help of Ryan White-funded HIV service providers, 81 participants were recruited to participate in confidential interviews. Trained interviewers conducted interviews in a downtown Public Health building. Interviewees received a $25 cash incentive for participation in the assessment.

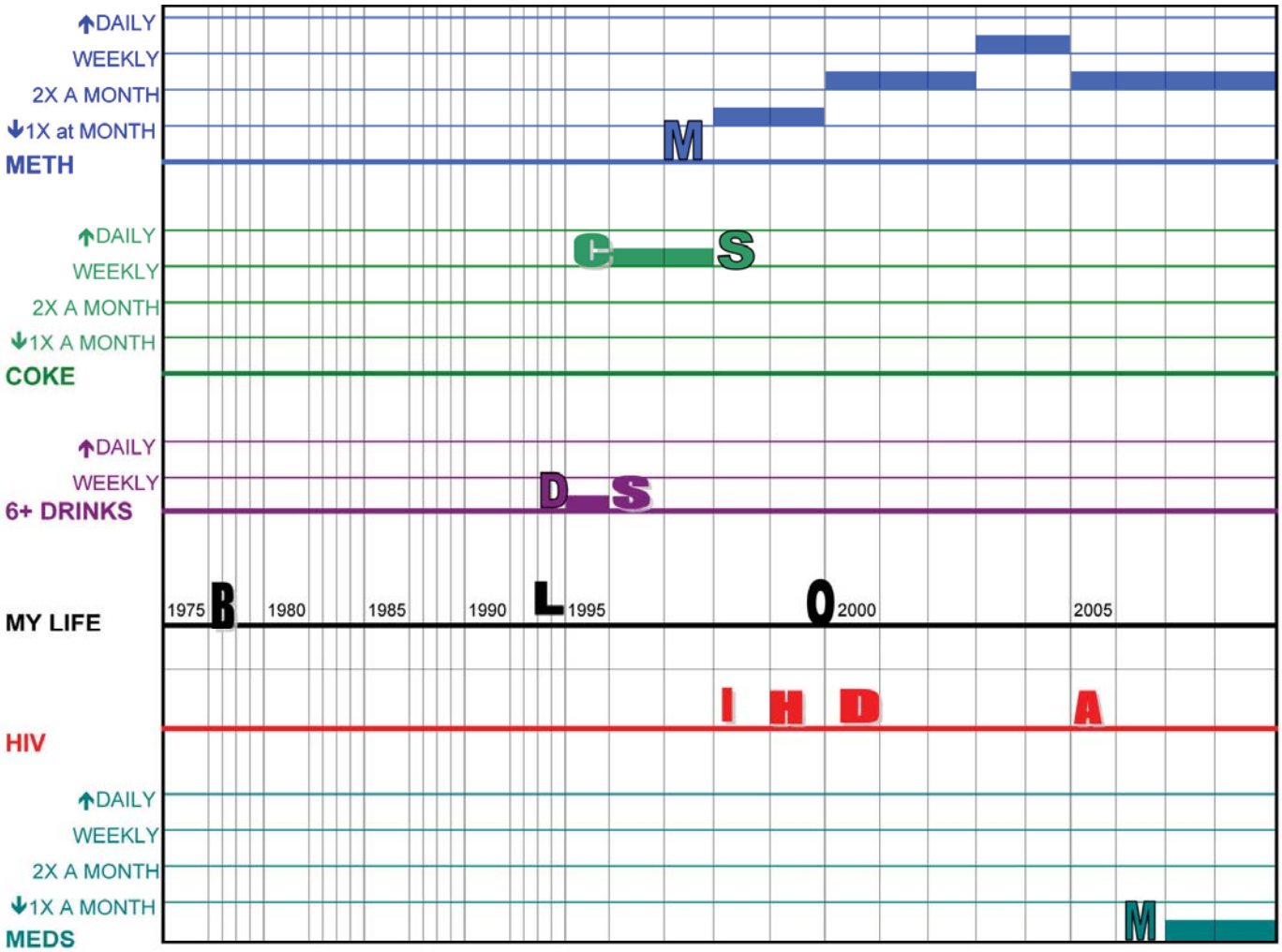
For quantitative analysis, the survey population was divided into individuals who initiated substance use before their HIV-positive diagnosis (pre-positive initiators), those who initiated at diagnosis, and those who initiated after diagnosis (post-positive initiators). Characteristics between pre- and post-positive groups were compared, with differences considered statistically significant if chi-square test p-values were $<.05$.

Qualitative data were analyzed for the entire study population using cross-case analysis methods which grouped answers to common questions into categories based on key words and themes within individual responses. Qualitative analysis was inductive, allowing the patterns, themes, and categories to emerge from the data itself instead of applying pre-determined themes to the data.

Results

Assessment participants showed an over-sampling of Black and Native American/Alaska Native PLWHA as compared to King County PLWHA as a whole (**Table 1**). The sample demographic is heavily weighted towards low-income and/or unemployed respondents. We found that pre-positive initiation of substance use was more common than post-positive initiation of substance use, regardless of substance (**Table 2)**. Multiple drug use was also common among the assessment population. Using the survey responses and the time line tool, type of substance use was divided into four categories: meth use only; crack/cocaine use only; meth and crack/cocaine use overlapping; both meth and crack/cocaine use at exclusive points in time. Meth-only users were more likely to be White, whereas crack/cocaine-only users were more likely to be Black. Differences in patterns of use among other racial and demographic groups were too small to show statistical

Chart 1: The WHATS UP Study timeline tool, King County 2009



LIFE **B** = Born **L** = Left home **O** = Came out

HIV **H** = First positive HIV test **I**=infected **A**=First diagnosed with AIDS **D** = Disclosed HIV status

METH **M** = Started meth **S**=Stopped meth **W**= First decline/stop after HIV diagnosis

COKE **C** = Started coke **S**=Stopped coke **X**= First increase/restart after dx

DRINK **D** = Started 1 or more bout of 6+ drinks/day **S**=Stopped 6+drinks/day **Y**= Most recent decline/stop

MEDS: **M**=Started meds/arv/HAART **S**=Stopped Meds/HAART/ARV **Z**=Most recent increase/restart

Table 1: Comparison of WHATS UP participants to King County PWLHA, 2009

	WHATS UP Assessment n=81		King County PLWHA[a, b]	
Sex	No.	%	No.	%
Male	68	84%	5,698	90%
Female	7	9%	640	10%
Transgender	3	4%	--	
Sexual Identity				
Gay	58	72%	--	
Bisexual	18	22%	--	
Straight	3	4%	--	
Confused	2	3%	--	
Race/Ethnicity				
White	39	48%	4,323	68%
Black	27	33%	1,051	17%
Hispanic	6	7%	611	9%
Asian & Pacific Islander	1	1%	196	3%
Native American or Alaska Native	5	6%	84	1%
Education				
High School grad or less	31	47%	--	
More than High School	38	53%	--	
Income				
<$10,000	54	67%	--	
>$10,000	27	33%	--	
Employed				
No	68	84%	--	
Yes, part time	7	9%	--	
Yes, full time	5	6%	--	

[a] People living with HIV/AIDS
[b] 2nd Half '08 HIV/AIDS Epidemiology Report—Washington State, Seattle & King County

Table 2: Timing of initiation of substance use, WHATS UP Study, King County 2009

	Before HIV diagnosis		At time of HIV diagnosis		After HIV diagnosis	
Methamphetamine (n=56)	39	70%	2	4%	15	27%
Crack/cocaine (n=55)	35	64%	3	5%	17	31%
Alcohol abuse (n=46)	41	89%	0	0%	5	11%

Table 3: Circumstances of first use among post-diagnosis initiators, WHATS UP Study, King County 2009

	Methamphetamine n=15		Cocaine n=17		Alcohol abuse n=5	
Introduced to substance by sex partner	7	47%	3	18%	--	
Experiencing depression	9	60%	10	59%	3	60%
Break up with partner	6	40%	3	18%	2	40%
Job loss	6	40%	3	18%	1	20%
Strained family relationships	5	33%	6	35%	3	60%
Feeling lonely	9	60%	10	59%	2	40%
Finding out had HIV	7	47%	2	12%	1	20%

significance. Observation of informant timelines showed that meth was the more frequently used drug for participants who overlapped in meth and crack/cocaine use; when both drugs were used at exclusive points in time, crack/cocaine use more frequently preceded meth use.

Methamphetamine

Meth users who were post-positive initiators were significantly more likely than pre-positive initiators to report family support of their minority sexual identity. When comparing circumstances around initiation of drug use, post-positive initiators were more likely to report a loss (a death or relocation of someone close to the participant) around the time of their first use of meth, while pre-positive initiators reported more meth use within their social circle (**Table 3**). Post-positive initiators were more likely to experience a decline in meth use related to a change in sex partners.

The role of peer pressure and social environment in relation to meth initiation was a common theme that emerged from the qualitative data regardless of initiation timing. A respondent who initiated post-positive highlights both the social group and loss factors: "I was dealing with a rough spot after testing positive and also my parents were dying. I was moving back to take care of them, which also meant moving back to Seattle where my friends were users."

Sex was a common sub-theme of the wider peer pressure category among responses regardless of initiation timing. Respondents shared stories of how a boyfriend or sex partner introduced them to meth. One respondent, who initiated post-positive, shared that he "was out drinking one night and met a (sex partner) who offered me meth." Another respondent who initiated pre-positive shared, "I was dating a guy who was a meth user. I had asked him not to push it on me, but when we went on vacation together he offered it and that was when I tried it for the first time."

Qualitative research elucidated a strong link between

meth use and the sex club experience. One respondent elaborated, "Everyone in my social circle was doing it at [a specific club]. At first I was trying to fit in, and then it became a sex thing." Frequent use of bath houses and sex clubs suggests a high chance of exposure to meth. One particular club was repeatedly mentioned throughout the assessment as being associated with meth use.

Finally, of the three substances, it appeared that an HIV diagnosis had the strongest effect on meth use; 58% of post-positive meth initiators reported that finding out they were HIV-infected contributed to their meth use, compared to only 14% of post-positive crack/cocaine users and 20% of post-positive alcohol abusers.

Crack/cocaine

There were no statistically significant differences in background characteristics between pre- and post-positive crack/cocaine initiators. Similar to meth users, pre-positive crack/cocaine initiators were more likely to have crack/cocaine use common within their social circle than post-positive initiators.

The open-ended questioning allowed for closer examination of the influences contributing to initiation and revealed similar themes for both pre- and post-positive initiation groups. One respondent who initiated pre-positive shared his story of environmental determinants of crack/cocaine initiation: "My foster mother was addicted to crack. She kept borrowing my money, and when I refused to give her more, she offered me crack, and I tried it, and I got hooked." While the theme of environmental determinants of first use was more common among respondents who used crack/cocaine than among those who used meth, there was an equally prevalent theme of social pressure and sex-related use.

One respondent who initiated use post-diagnosis shared, "I had a lover who used crack. It was hidden at first, but I caught him smoking and wanted to find out what it was about. I loved it. We eventually broke up but I kept using it."

Alcohol

No statistically significant characteristics differed between pre- and post-positive initiators for alcohol abuse.

Among the responses to open-ended questioning, again a common theme of all respondents was peer or social pressure, often interrelated with sex partners and lovers. Another common theme that emerged was use of alcohol as a coping mechanism for stress or an escape from depression. One respondent who initiated pre-positive shared, "I would drink in situations when meeting new people, or knowing I would have to discuss my HIV status, or even just thinking about HIV." This respondent initiated heavy drinking at a very young age, but significantly increased their consumption as a result of their HIV positive diagnosis.

Substance Use Within Family

While differences between the pre-positive and post-positive groups were not found to be statistically significant, the level of family history with substance use is still notable across post-positive initiators (**Table 4**). Furthermore, across the entire assessment population, family history of substance use is notable: 24% had a history of meth use in their immediate family, 44% had a history of crack/cocaine use in their immediate family, and 62% had a history of alcohol abuse in their immediate family.

Table 4: Family history of substance use among post-diagnosis initiators, WHATS UP Study, King County 2009

	Methamphetamine n=15		Cocaine n=17		Alcohol abuse n=5	
Family history of alcohol abuse	9	60%	9	58%	5	100%
Family history of cocaine use	6	40%	7	41%	2	40%
Family history of meth use	6	40%	1	6%	3	60%

Chart 2: Initiation of alcohol abuse in relation to HIV diagnosis, WHATS UP Study, King County 2009

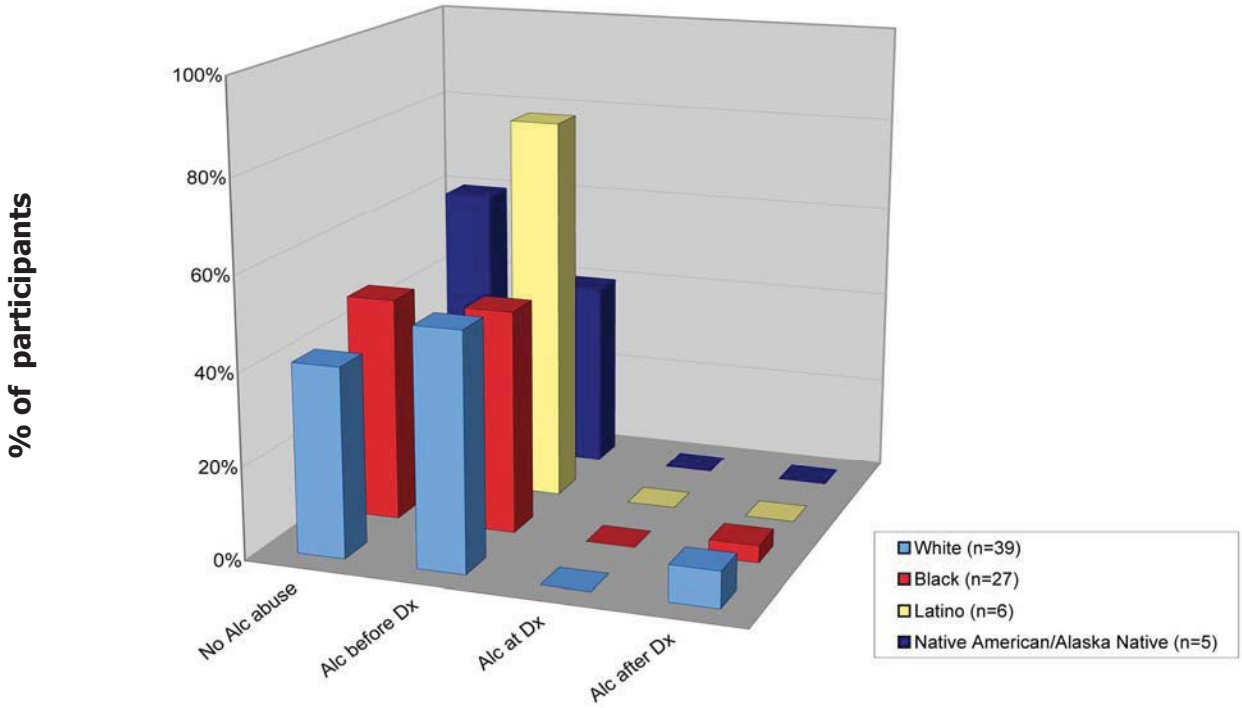


Chart 3: Initiation of cocaine use in relation to HIV diagnosis, WHATS UP Study, King County 2009

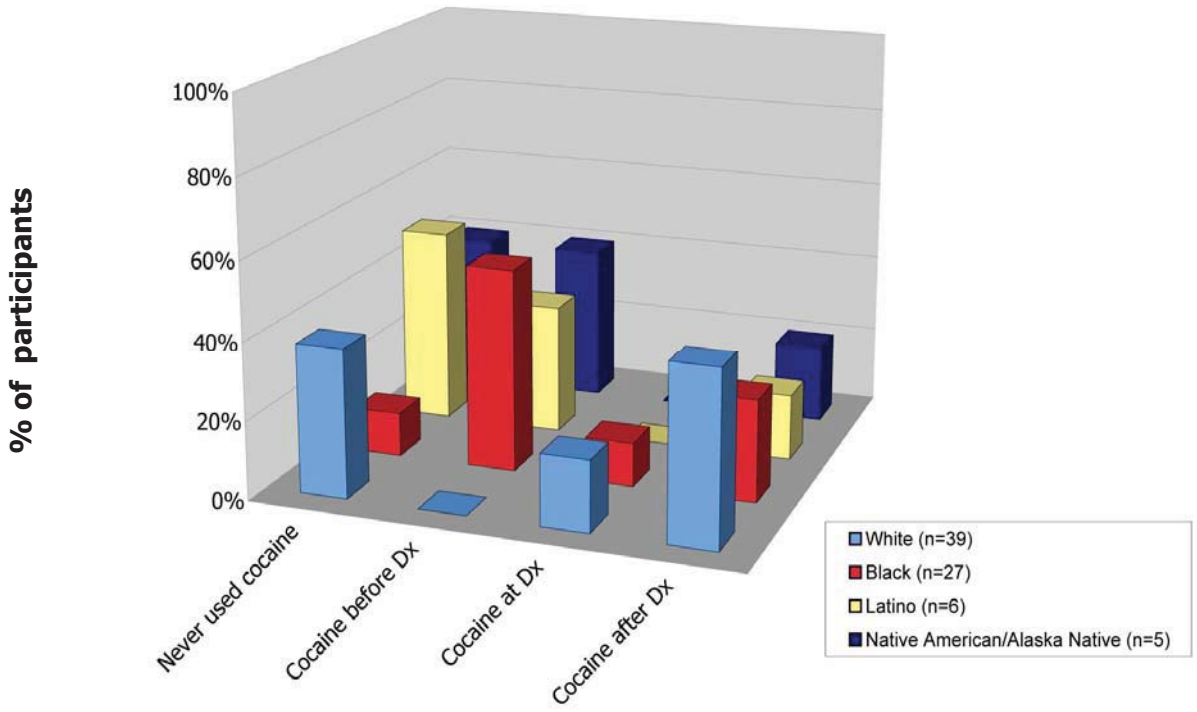


Chart 4: Initiation of methamphetamine use in relation to HIV diagnosis, WHATS UP Study, King County 2009

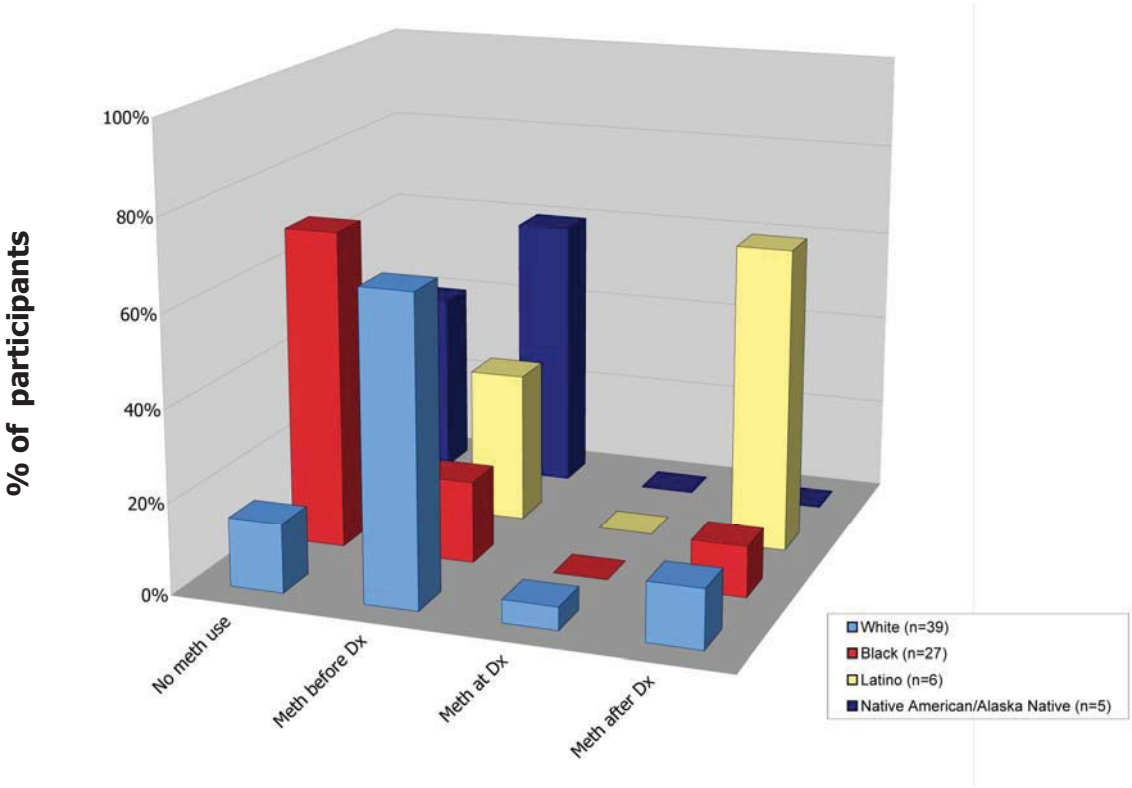


Table 5: Frequency of risk reduction conversations reported among post-diagnosis initiators, WHATS UP Study, King County 2008

	Meth, n=15		Crack, n=17		Alcohol, n=5	
Discussed drug use with medical care provider	11	73%	12	71%	1	20%
Discussed drug use with HIV case manager	9	60%	12	71%	3	60%
Discussed drug use with a mental health counselor	9	60%	9	53%	4	80%
Discussed drug use with a substance use or treatment counselor	9	60%	13	76%	3	60%
Discussed drug use with a peer counselor	6	40%	8	47%	3	60%

Mental Illness

Among post-positive initiators, 79% had been diagnosed with a mental illness. Diagnoses included depression, anxiety, bipolar disorder, post-traumatic stress disorder, schizophrenia, panic disorder and attention deficit disorder. In general, depression and factors influencing depression were prevalent among the respondents (factors such as feeling lonely, a romantic break-up, job loss, or a strained relationship with family). Overall, as indicated through responses to open-ended questioning, initiation was primarily tied more to feelings of despair and hopelessness than any social network exposure.

Relation of Use and HIV Positive Diagnosis

One respondent shared, "[My HIV diagnosis] is what kicked off my use. I had only used two times before testing positive. Then, the same day I went in for my first treatment appointment, I bought a quarter bag." Many respondents spoke of how they used substances as a coping mechanism to dealing with the stress and depression of a positive diagnosis—either as a reckless reaction or as an escape. One respondent shared, "When I was not using substances, I had to think about HIV."

Medical Providers as a Point of Information and a Barrier

Post-positive initiators repeatedly suggested that having more information from medical providers about the impact that meth, crack/cocaine, and/or alcohol would have on their viral load, CD4 count, and the effectiveness of anti-retroviral medications would have contributed to them making different choices about drug use initiation.

Yet, among the entire assessment population (regardless of time of initiation), judgments and a fear that they would lose services was repeatedly mentioned as a barrier to clients' use of their provider as a point of information or treatment for substance use issues. One respondent shared a feeling of being treated as a "lower being" by doctors once they knew about his meth use.

Conclusions

In answer to our central assessment question, most substance use initiation predated an HIV-positive diagnosis. Furthermore, due to the recruitment outreach at local Ryan White service providers, the data gathered through this assessment primarily reflects Ryan White-eligibles and does not represent the wider population of people living with HIV/AIDS.

The results of this assessment help remind service providers of the complicated circumstances that impact an individual's use of substances. These results confirm cues all service providers should be aware of, particularly family history of substance use and mental illness diagnosis.

The assessment also elucidated important information about frequency of drug use among certain environments within the community. From our research, it became clear that some people purposefully go to clubs to find drugs, which has implications for risk behaviors. Service providers should be aware of this correlation and be prepared to help educate their clients on such risks.

Finally, respondents set forth two important requests of medical providers in relation to substance use prevention (**Table 5**). Primarily, respondents frequently mentioned they wanted more information on substance use from their providers. While the risks and impacts of substance use in relation to HIV-related health might seem obvious to providers, explicitly speaking to clients about the risks of drug use in relation to HIV was suggested as the most helpful thing service providers could do to help prevent initiation. In addition, however, participants also illustrated how providers can create a barrier when they insinuate or evoke negative judgments about substance use behaviors. These stories act as a reminder to all providers to maintain genuine, non-judgmental approaches to client education on substance use prevention or treatment.

In conclusion, the assessment demonstrated the multi-factorial circumstances that contribute to drug use among HIV infected populations. While the small sample hampered the assessment's statistical power, the assessment allowed for confirmations of previous findings and assumed knowledge. Furthermore, the qualitative data helped to illuminate the relationship between substance initiation and HIV with individual stories and perspectives.

Acknowledgement

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- *Contributed by: Tegan Callahan, Joshua O'Neal, Jesse Chipps, and Susan Buskin*

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Evaluation of Exposure to Media Messages Regarding Multi-drug Resistant HIV Infection Among MSM in King County

Background

Drug resistant HIV is a growing public health problem.[1] Drug resistant HIV strains are harder and more expensive to treat, require more complex treatment regimens, and may be associated with faster progression to AIDS.[2] Drug resistant strains of HIV may be transmitted, so that newly-infected persons begin their treatment experience with resistance, and people already infected with HIV can be superinfected with a different strain of HIV, including multiple class drug resistant (MDR) HIV.[3]

Public Health – Seattle & King County (PHSKC) monitors HIV drug resistance as part of surveillance activity. MDR HIV is defined as high level resistance to one or more antiretrovirals in two or three classes of the three classes of antiretrovirals commonly included with standard resistance testing. By January 2007, PHSKC identified four men who had sex with men (MSM) newly diagnosed with HIV and MDR HIV. These cases were identified in King County in a relatively short time period. None of the men had taken ARVs and all had a history of methamphetamine use and multiple, mostly anonymous sexual partners.[4]

To alert both medical providers and people at risk of HIV infection in King County, PHSKC issued a press release on February 1, 2007. The intent was to increase awareness of MDR HIV among those at risk, particularly MSM, to heighten perception of the severity of MDR HIV infection, and lead to adoption of preventive behaviors by MSM. The press release described the MDR HIV cluster and how difficult MDR HIV is to treat, gave HIV testing guidance, encouraged condom use and the avoidance of sharing drug-injecting equipment, and reminded HIV-infected patients to take medications on schedule and talk to their providers about resistance.

To determine the impact of the press release, PHSKC and the Centers for Disease Control and Prevention (CDC) developed and conducted a rapid assessment, using the Health Belief Model (HBM) as the theoretical framework, to better understand the HIV-related behaviors of MSM in King County. The rapid assessment was conducted February 16-18, 2007, at Seattle bars and bathhouses with high attendance of MSM. The assessment looked at the factors (including the press release) that influence their behaviors and their perceptions of severity of MDR HIV. The HBM is a behavioral model, widely used in public health to explain and predict initiation, change and maintenance of health-related behaviors, and is comprised of five constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action.[5] The survey aimed to identify the perceived threat of becoming infected with MDR HIV among individual MSM, as well as their expectations about their future condom use and HIV testing, in the context of a significant cue to action, the press release.

Methods

Eligible participants were MSM 18 years or older, residing in western Washington, who had had sex with a man in the preceding 12 months. Participants were recruited at 12 bars and 3 bath houses; locations with high attendance of MSM of color were selected preferentially to try to obtain a diverse sample. Interviews were conducted at bars and clubs from 8 pm to midnight, and at bath houses from 10 pm to 2 am. Men were recruited sequentially by drawing an imaginary line across a well-trafficked area, and every second male who crossed the line was approached. If the man agreed to the interview, the interviewer moved to a more private location within the venue to conduct the eligibility screening and interview. Survey participants remained anonymous.

To assess the impact of the press release, we used two behavioral intentions as outcomes: likelihood of engaging in unprotected anal sex with a partner of discordant or unknown HIV status ('unsafe sex') in the next 30 days, and likelihood of having an HIV test in the next 30 days. Response options for both outcomes were on a five-point Likert scale from 'no chance at all' to 'very likely.' Barriers to condom use were measured through two questions with Likert responses ranging from 1 (disagree a lot) to 4 (agree a lot). Four questions measured benefits of condom use, and three items measured benefits of getting tested for HIV using the same four-point Likert responses.

Using the HBM as a framework, we examined the relationship between each intention outcome and the constructs of the HBM and demographics. Past behavior measures of condom use and HIV testing were also included as independent variables; condom use was queried for most recent anal sex with partner of discordant or unknown HIV status during the two week period after the press release, and HIV testing was queried for the 12 months preceding the interview. The 19 HIV-infected men in the sample were not asked any testing questions and were excluded from the analysis on intention to test.

Analysis

For analysis, the benefits and the barriers items were each combined into single scale variables by summing the item scores and dividing by the total number of items such that scale scores also ranged from one to four. Internal consistency reliability for the scales was assessed using Cronbach's alpha coefficient and items were dropped, as needed, to improve reliability. Final measures of internal reliability for the scales were 0.57 and 0.46 for benefits and barriers of condom use respectively, and 0.43 for benefits of HIV testing. The scale measures of benefits of and barriers to condom use and benefits of HIV testing were dichotomized for multivariable modeling after examining the observed distribution of the scale responses, which were skewed (data not shown). The HIV testing barriers scale was not included in further analysis due to the small number of men not tested in the past 12 months (n=69). Both the condom benefits and testing benefits scales were dichotomized for scale scores of 4.0 (high agreement) vs. <4.0; the condom barriers scale was dichotomized as score of 1.0 (high disagreement) vs. >1.0.

The bivariate relationship between each relevant covariate and each outcome was evaluated using chi-square or Pearson correlation coefficients. Media exposure was analyzed to determine whether it modified the relationship between each HBM variable and the outcomes; there was no significant interaction in either model. Finally, logistic regression models were built for each behavioral intention outcome using all dichotomized HBM variables. Age and past behaviors (unsafe sex in the past 30 days and HIV testing in past 12 months) were significantly associated with the outcome variables in bivariate analysis, and therefore were also included in the respective models. Analysis was done using SAS analytical software.

Results

A total of 296 men were eligible to participate; six were deleted from analysis due to missing data. The final sample size was 290 men. The mean age of the participants was 35.4 years. Most men (70%) identified as White; 9% were Hispanic, 7% American Indian/Alaska Native, 7% Asian and 4% Black. A large majority (91%) had completed some college. Most (90%) reported being HIV-negative, 7% reported being HIV-positive, and 4% reported never having been tested for HIV. Nearly three out of five (57%) had heard of the MDR cluster and 84% considered MDR a serious problem. The sample is further described in **Table 1**.

The majority (75%) stated that there was "no chance at all" or it was "very unlikely" that they would have unprotected anal sex with a partner of discordant or unknown status in the next 30 days; only 6% reported that it was "very likely." Intention to get an HIV test during the next 30 days was more variable; 21% responded there was "no chance at all" they would get tested in the next 30 days, 28% stated it was "very unlikely," 16% "somewhat unlikely," 17% "somewhat likely," and 17% "very likely." Despite the fact that the majority (75%) stated that they did not intend to have unsafe sex over the next 30 days, 7.5% reported they had unsafe anal sex with a partner of discordant or unknown status in the previous 30 days. Most (74%) of the men who were not HIV-positive had tested for HIV during the past 12 months.

In the final model for intention to have unsafe sex, there were significant associations for perceived susceptibility and perceived barriers (**Table 2**). Although we hypothesized that men who perceived themselves to be less susceptible to MDR HIV would be more likely to intend to have unsafe sex, we found the opposite; men who reported that there was "no chance at all" they would get MDR HIV from a partner were less likely to intend to have unsafe sex (OR=0.2, 95% CI 0.1-0.4). Men who scored higher on the barriers to condom use scale were more likely to intend to have unsafe sex (OR=2.7, 95% CI 1.6-4.6). Unsafe sex in the previous 30 days was also associated with intention to have unsafe sex in the next 30 days (OR=6.2, 95% CI 1.3-28.5). Cue to action was not a significant predictor of intention to have unsafe sex. The final model for intention to get tested for HIV did not have significant associations for the HBM variables (**Table 3**). Contrary to our expectations, those who had seen or heard the press release were less likely to intend to get

Table 1: Characteristics of participants and Health Belief Model constructs—Rapid Assessment Survey for MDR HIV among men who have sex with men, King County, WA 2007 (N=290)[a]

Health Belief Model components	n[b]	%	mean	SD[c]	alpha
Cue to action (saw/heard about MDR HIV)					
Yes	164	56.6%			
No	126	43.4%			
Susceptibility to MDR HIV					
No chance at all	58	20.2%			
Very unlikely	145	50.5%			
Somewhat unlikely	51	17.8%			
Somewhat likely	28	9.8%			
Very likely	5	1.7%			
Severity of MDR HIV					
A very serious problem	241	84.0%			
A somewhat serious problem	39	13.6%			
Not a serious problem	4	1.4%			
Not a problem at all	3	1.1%			
Condom barriers (scale: 1-4)			1.5	0.71	0.46
Condom benefits (scale: 1-4)			3.5	0.57	0.57
Unsafe anal sex with serodiscordant partner in last 30 days					
Had sex without a condom	21	7.5%			
Had sex with a condom	33	11.8%			
Did not have anal sex with a serodiscordant partner in the past 30 days	226	80.7%			
Intention to have unsafe sex					
No chance at all	137	47.4%			
Very unlikely	81	28.0%			
Somewhat unlikely	31	10.7%			
Somewhat likely	22	7.6%			
Very likely	18	6.2%			
Testing benefits (scale: 1-4)			3.7	0.53	0.43
Tested in past 12 months					
Yes	201	74.4%			
No	69	25.6%			
Intention to get an HIV test in next 30 days					
No chance at all	57	21.0%			
Very unlikely	77	28.4%			
Somewhat unlikely	44	16.2%			
Somewhat likely	47	17.3%			
Very likely	46	17.0%			
TOTAL	**290**	**100%**			

[a] Variables related to HIV testing do not include men who reported they were HIV+. HIV status was self-reported

[b] Columns may not sum to totals due to missing data

[c] SD = standard deviation

Table 2: Final Model Results—intention to have unsafe sex in the next 30 days—Rapid Assessment Survey for MDR HIV, among men who have sex with men, King County, WA 2007 (N=268)

	aOR[a]	95% C.I.	p-value[b]
Susceptibility			
No chance at all of getting MDR HIV	0.2	0.1-0.4	<0.01
Very unlikely - very likely (ref)	1.0	--	--
Severity			
MDR HIV a very serious problem (ref)	1.0	--	--
Somewhat serious-not a problem	1.2	0.6-2.6	0.6
Condom benefits scale score[c]			
<4.0	0.8	0.4-1.3	0.3
4.0 (ref)	1.0	--	--
Condom barriers scale score[c]			
>1.0	2.7	1.6-4.6	<0.01
1.0 (ref)	1.0	--	--
Cue to action			
Yes (saw/heard about MDR HIV)	0.9	0.5-1.6	0.8
No (Ref)	1.0	--	--
Unsafe sex in past 30 days			
Yes	6.2	1.3-28.5	0.02
Other - no sex/sex with a condom (ref)	1.0	--	--

[a] aOR = adjusted Odds Ratio, odds of being likely or very likely to have unsafe sex in next 30 days vs. unlikely, very unlikely or no chance at all; CI=95% Confidence Interval
[b] Wald p-value
[c] Scale scores ranged from 1.0 (disagree) to 4.0 (agree) and were dichotomized at the median.

Table 3: Final model results—intention to get tested for HIV in the next 30 days—Rapid Assessment Survey for MDR HIV, among men who have sex with men, King County, WA 2007 (N=266)[a]

	aOR[b]	95% C.I.	p-value[c]
Susceptibility			
No chance at all of getting MDR HIV (ref)	1.0	--	--
Very unlikely – very likely	1.6	0.9-3.1	0.1
Severity			
MDR HIV a very serious problem	1.04	0.5-2.1	0.9
Somewhat serious-not a problem (ref)	1.0	--	--
Testing benefits scale score[d]			
<4.0 (ref)	1.0	--	--
4.0	0.7	0.4-1.2	0.2
Cue to action			
Yes (saw/heard about MDR HIV)	0.6	0.4-1.1	0.08
No (Ref)	1.0	--	--
Age			
18-24	3.0	1.1-8.1	0.03
25-34	1.2	0.6-2.5	0.6
35-44	0.8	0.4-1.7	0.5
45+ (ref)	1.0	--	--

[b] aOR = adjusted Odds Ratio, odds of being likely or very likely to test for HIV in next 30 days vs. unlikely, very unlikely or no chance at all; CI = 95% Confidence Interval
[a] Analysis excludes 19 people who were HIV+
[c] Wald p-value
[d] Scale scores ranged from 1.0 (disagree) to 4.0 (agree) and were dichotomized at the median.

tested (OR=0.6, 95% CI 0.4-1.1), although the difference was not statistically significant. Age was significantly associated with intention to test: younger MSM were more likely to plan to get tested than older MSM (OR 3.0, 95% CI 1.1-8.1).

Discussion

Our study evaluated the associations between beliefs and behavioral intentions for unsafe sex and HIV testing among MSM in King County following a press release announcing four local cases of MDR HIV. We were particularly interested in the role of the "cue to action" construct of the HBM, operationalized for this study as having seen or heard about MDR HIV in the media during the two-week time period following the press release. We found that the cue to action was not associated with behavioral intentions, nor did it modify the relationship between the other HBM components and behavioral intentions. Of the other HBM components analyzed in this study, perceived susceptibility to MDR HIV and perceived barriers to condom use were significantly associated with intention to have unsafe sex. These findings are consistent with two major reviews of HBM studies among adults, which also found perceived barriers and susceptibility to be the strongest predictors of the HBM.[6,7]

MSM who did not perceive themselves to be at risk were less likely to have unsafe sex; that is, those who did not think they were at risk were accurate in their perceptions as they did not intend to have unsafe sex. The association between perceived barriers and past unsafe sex behaviors with intention to have unsafe sex in the next 30 days supported the risk perspective; MSM who perceived more barriers to condom use were more likely to have unsafe sex.

The association between past risk behavior and intentions to engage in future risk behaviors was not unexpected. This finding underscores the lack of association between cue and intention and the lack of effect modification; that is, the press release was not associated with intentions to engage in less risky behaviors, even among those who previously engaged in risky behaviors. The lack of a significant relationship between cue to action and behavioral intentions may be attributed to the press release, as an intervention, being insufficient for changing intentions. In addition, the bar/club catchment of MSM may have precluded finding significance as attendees at these venues may be less susceptible to behavior change.

Other analyses from the rapid assessment in Seattle found that the press release was successful at informing the community about the cluster of MDR HIV cases, and that the vast majority of MSM surveyed thought it was important to make this kind of information accessible to the public, yet few people who had heard of the cluster recalled key prevention messages included in the media coverage.[8]

Following a press release which resulted in broad dissemination of information about MDR HIV and specific messages for HIV prevention, we found that this cue to action was not associated with behavioral intentions among a population at high risk for HIV. Further research with carefully constructed measures and larger samples are needed to better understand whether targeted cues to action, such as press releases, are effective for changing behaviors and attitudes. Barriers to condom use must also be addressed, as some MSM in our study had unsafe sex and intended to do so, even after receiving a media message about a severe public health threat such as MDR HIV. Since public health officials will continue to use the press and media for health communication, further research using models such as the HBM as the underlying framework is needed in order to have greater effect on behavioral outcomes and intentions among specific groups.

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The IMPACT Study: Can Raltegravir as Part of Treatment of Primary HIV Infection Impact the Size of Cellular Reservoirs?

The University of Washington Primary Infection Clinic (PIC) and AIDS Clinical Trials Unit (ACTU) are looking for participants with acute and early HIV infection for a new study known as IMPACT. This study will evaluate the impact of adding an integrase inhibitor to antiretroviral (ARV) treatment on the body's reservoir of HIV-infected resting CD4 cells. We're looking for anyone infected for less than six months who is interested in going on ARVs.

Although there are many unanswered questions about the benefits of treatment of primary HIV infection, we know that treatment of acute HIV can lead to immune responses that maintain low viral levels after discontinuation of ARVs. Although this degree of "success" has only been seen in a subset of people treated during acute infection, the observation suggests that the early days after HIV acquisition are a critical time period in which interventions could have lasting impact.

One possible benefit of treating primary HIV is the potential impact on viral reservoirs. It is possible that HIV persists in people with established HIV infection despite prolonged ARV therapy because of continued very low-level replication in activated CD4 cells and spread to a stable pool of latently-infected resting CD4 cells, which then serve as a source of virus when they become activated. In contrast, in a small group of subjects from the PIC who started ARVs during primary HIV infection, there was a progressive lowering of the amount of HIV that could be recovered from these resting CD4 cells. In these patients, this decrease in HIV over time leads to a calculated reservoir half-life of 7.7 years. This decline in the reservoir of infected cells suggests a potentially unique benefit of treatment during primary infection and makes us cautiously think about whether eradication of HIV could be possible.

Another reason for this new study protocol is the recent FDA approval of integrase inhibitors, which block the integration of HIV into host cellular DNA. By blocking this step of the HIV life-cycle shortly after HIV acquisition, it may be possible to decrease the number of infected CD4 cells and thereby lead to faster elimination of this cellular reservoir.

We're looking for participants with acute and early HIV infection for the raltegravir IMPACT study in order to evaluate whether the addition of an integrase inhibitor to standard potent ARV therapy will further decrease the reservoir of latently HIV-infected resting CD4 lymphocytes. We hope this study will be of interest to people who decide to begin treatment during primary HIV infection and that the study results lead to clearer information on the potential benefits of this early treatment.

For more information about Primary HIV Infection or the Raltegravir Impact Study, please call 206-667-5743, visit the PIC website http://depts.washington.edu/hpic (PIC protocol), or ACTU website www.uwactu.org (Raltegravir protocol).

- *Contributed by Janine Maenza, Joanne Stekler, and Ann Collier*

Primary HIV studies now enrolling

Study	Eligibility	Study Procedures
Primary Infection Clinic Longitudinal Cohort Study (This protocol has re-opened for enrollment)	Acute Infection: • New HIV infection with symptoms occurring within 30 days after exposure to HIV **OR** • A negative or indeterminate HIV antibody test with detectable HIV RNA	Observational follow-up including CD4 and RNA measurements for participants who enroll during acute infection (regardless of decision to initiate anti-retroviral therapy or remain untreated).
Raltegravir Impact Study	• HIV acquired within the prior 6 months • No prior HIV treatment • HIV RNA $\geq$ 500 c/ml	• Randomization to standard triple therapy OR standard triple therapy plus raltegravir. • Exams, lab tests, and raltegravir are provided. • Standard therapy is chosen in conjunction with a participant's primary care provider, and is not provided by protocol. • Study duration 96 weeks.

Recruiting for a Varicella-Zoster Vaccine Trial

Background

Varicella-zoster virus (VZV) is the herpes virus that causes chickenpox. This endemic childhood illness results in systemic symptoms, such as fever and malaise, accompanied by a characteristic rash. Each lesion starts as a red macule and passes through the stages of papule, vesicle, pustule, and crust. The rash appears on the trunk and face and spreads centrifugally. More crops of lesions appear over two to three days, so that the rash has all stages of lesions at the same time.

Following infection with varicella, the virus establishes latent infection in the dorsal root ganglia. The virus can reactivate years later with a similar rash in a dermatomal pattern. This rash, called herpes zoster or shingles, usually presents on the chest or abdomen, but can involve any area of the body. It is usually associated with significant pain described as aching, burning, stabbing, or shock-like. Altered sensitivity to touch and pain provoked by minimal stimulation are also often noted. It can lead to scarring and even blindness if the eyes are involved. In immunocompromised people, herpes zoster tends to be more severe and have a prolonged duration, and it is associated with more neurologic complications. The rash usually heals in 2 to 4 weeks, but approximately 10 to 20% of patients will continue to have residual nerve pain called postherpetic neuralgia (PHN) for months to years after an episode of herpes zoster. An episode of herpes zoster does not protect against future episodes.

VZV can result in significant morbidity for a large number of patients because approximately one-third of the general population will develop zoster during their lifetime. An estimated 1 million cases of herpes zoster occur each year in the U.S.. The majority of these cases occur in people over 50 years of age or in patients who have weakened immune systems. For example, individuals infected with HIV are approximately 15 times more likely to develop herpes zoster, and are also at increased risk for recurrence.

Herpes Zoster Vaccine

In 2006, the FDA approved a live, attenuated vaccine called Zostavax® for the prevention of herpes zoster in patients 60 years of age and older. It is a more potent version of the strain of varicella virus used in the chickenpox vaccine administered to children, which was isolated in Japan in the early 1970s from a healthy child who had varicella. In a randomized, placebo-controlled trial of more than 38,000 adults, Zostavax® was shown to reduce the incidence of herpes zoster by 51% and to decrease the risk of PHN by 67%. The vaccine was shown to be safe and well-tolerated; however, injection site reactions were more common in subjects who received the vaccine versus the placebo. Generalized varicella-like rashes occurred at similar rates in the two groups, and none of these rashes were linked to the vaccine. In addition, there was no evidence of transmission of vaccine virus to household contacts.

The herpes zoster vaccine is recommended for all persons 60 years of age and over who have no contraindications, and it may be given to those who have had previous episodes of zoster and to those who have chronic medical conditions. The herpes zoster vaccine is not approved for persons with immunodeficiency, including patients with AIDS or clinical manifestations of HIV, leukemia or lymphomas, and those receiving immunosuppressive therapy. However, these are the patients that could benefit the most from this vaccine.

ACTU Zoster Vaccine Trial

The University of Washington AIDS Clinical Trials Unit (UW ACTU) is currently participating in a study investigating the use of Zostavax® in HIV-infected people in hopes of decreasing the incidence of herpes zoster and/or PHN. Volunteers must be taking HIV medications and have a suppressed HIV viral load. These individuals must have a CD4 count above 200 cells/µL and cannot have had a CD4 nadir below 100 cells/µL; they also can not have had a herpes zoster reactivation within the past year. These subjects will be randomized to receive either the Zostavax® vaccine or a placebo and will be followed for 24 weeks.

The UW ACTU continues to evaluate treatment strategies both for the initial therapy of HIV and rescue (salvage) studies. We are also conducting studies investigating minocycline for the treatment of HIV-

related dementia and investigating a vaccine to prevent the virus associated with cervical and anal cancer, the human papilloma virus (HPV). We seek referrals for these and other studies. For more information, visit our web site at www.uwactu.org or call us at 206-744-3184.

- *Contributed by Shelia Dunaway*

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The following is a list of studies open for enrollment. Screening, lab tests and clinical monitoring that are part of a study are provided free of charge for participants. Enrollment in a study at the ACTU does not replace the role of a primary care provider. The ACTU coordinates efforts with each participant's primary care provider. **Providers and potential enrollees can call the ACTU at (206) 744-3184 and ask for Eric Helgeson for appointments or additional information.**

Antiretroviral Studies		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• Acquired HIV-1 infection within the past 6 months HIV viral load at least 500 copies/µl • CD4 T cells at least 350 cells/ml • No prior HIV treatment • No HIV progression to CDC category B or C disease • No history of pancreatitis	**(Study 5217)** To compare the safety and effectiveness of 36 weeks of treatment versus no treatment.	Screening, pre-entry, entry and weeks 1, 2, 4, and then every 4 weeks. Up to 96 weeks. Visits include physical exams, blood draws, and questionnaires Randomized (like flipping a coin) to either: **Group A**: Treatment with Emtricitabine/Tenofovir & lopinavir/ritonavir for 36 weeks (provided by study). After 36 weeks, participants will stop taking study medications. **or** **Group B**: No treatment (observation) At any time during the study, participants who are not on anti-HIV drugs may be encouraged to begin or restart based on symptoms or lab results.
Rescue Studies		
Eligibility	**Study Purpose**	**Study Drug or Treatment**

• HIV-infected people at least 16 years of age
• HIV viral load (HIV level) currently 1000 copies/µl or higher
• Currently on an HIV drug regimen that includes a protease inhibitor (PI)
• Have resistance to multiple types of HIV medications
• Had exposure to multiple types of HIV medications
	(Study 5241)
	To determine if adding nucleoside analogue reverse transcriptase inhibitors (NRTIs) to a novel antiretroviral regimen for volunteers who are triple-class antiretroviral-experienced or resistant is beneficial.
	
	Two strategies will be evaluated: 1) including or not including NRTIs in a new regimen and 2) the use of continuous phenotype susceptibility score (cPSS) to help choose study regimens. The treatment response will then be observed.
	
	The study will make available several new drugs, including raltegravir, darunavir, tipranavir, etravirine, enfuvirtide and, if a subject has R5-tropic HIV, maraviroc.
		<u>Part 1 – Continue current medications</u>
		• Genotype/phenotype/tropism assays performed – these tests determine what HIV medications would be effective
		• A regimen is identified containing at least two active mediations
		• Study clinician, primary health care provider, and volunteer select study regimen and NRTIs from among options identified
		<u>Part 2 - New Study Regimen</u>
		• Randomization if cPSS >2.0 (greater than two active HIV medications)
		  ○ Arm A: Study Regimen plus NRTIs for 48 weeks
		  ○ Arm B: Study Regimen **without** NRTIs for 48 weeks
		• Registration if cPSS ≤2.0 (Observational Arm)
		  ○ Arm C: Study Regimen plus NRTIs for 48 weeks
		  ○ Up to 100 subjects may be enrolled
		Screening, Part 2 pre-entry, Part 2 entry and then at weeks 1, 4, 8, 12, 16, 24, 36 and 48. Visits include physical exams and blood draws.

Complications of HIV and Other Conditions		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• HIV-positive men and women 18 to 65 years old with memory or thinking problems. • Worsening mental function • On stable HIV regimen for at least 16 weeks that doesn't include atazanavir. • Not pregnant or breast feeding • Able to sit or stand for at least 2 hours. • Willing to have two spinal taps.	**(Study 5235)** Study will evaluate if minocycline is safe and effective for treatment of thinking problems in people infected with HIV.	Subjects are randomized at entry to minocycline or placebo. At the end of 24 weeks, may receive open-label minocycline for an additional 24 weeks. Minocycline provided by study. Anti-HIV treatment not provided. **Length of Study:** Step 1 – 24 weeks. Step 2 – 24 weeks (Optional Open Label).

HIV & Women's Studies		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• HIV positive, female, age 13-45. • Any CD4 count and any viral load. • On stable HIV medications, or not on any HIV medications, for at least 12 weeks before joining the study. • No history of cervical cancer, very abnormal Pap smear, or genital warts within 6 months. • Have never received an HPV vaccine • Not pregnant or planning pregnancy and willing to use birth control if needed. • Not breast feeding.	**(Study 5240)** To see if the HPV vaccine is safe and effective in HIV-positive women and girls and to check if the HPV vaccine can help develop immunity to help fight off HPV infection.	**Medications while on study:** The HPV vaccine (Gardasil) will be provided to you by the study. **Length of Study:** 72 weeks. **Schedule of Study visits:** Screening, entry, and visits at 4, 8, 12, 24, 28, 52, and 72 weeks. **Reimbursement:** Exams, the HPV vaccine and lab tests are provided at no cost. You will receive $20-50 per visit, or up to $250 total if you complete all study visits.

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Key to Terms
3TC: lamivudine (Epivir)
ABC: abacavir (Ziagen)
ACTU: AIDS Clinical Trials Unit
APV: amprenavir (Agenerase)
AZT: zidovudine (Retrovir)
Category B: symptomatic non-AIDS such as thrush
Category C: clinical AIDS such as Kaposi's sarcoma
CDC: Centers for Disease Control and Prevention
cPSS: continuous phenotype sensitivity score
d4T: stavudine (Zerit)
EFV: efavirenz (Sustiva)
FTC: emtricitabine
HAART: highly active antiretroviral therapy
HCV: hepatitis C
LPV/r: lopinavir/ritonavir (Kaletra)
NFV: nelfinavir (Viracept)
NNRTI: non-nucleoside reverse transcriptase inhibitor
NRTI: nucleoside reverse transcriptase inhibitor
PI: protease inhibitor
RTV: ritonavir (Norvir)
TDF: tenofovir
UWMC: University of Washington Medical Center
> : greater than
< : less than
≥ : greater than or equal to
+ : positive

Research Helps - Help Research