hiv/aids

International Focus Edition

2nd HALF '05 EPIDEMIOLOGY REPORT

WASHINGTON STATE • SEATTLE & KING COUNTY

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

Summary Tables and Figures

HIV/AIDS Epidemiology and Surveillance News

HIV/AIDS Epidemiology publications are also on the internet at: www.metrokc.gov/health/apu/epi

Alternative Formats Provided Upon Request. To be included on the mailing list or to request address corrections, write to the Public Health - Seattle & King County HIV/AIDS Epidemiology Program, 400 Yesler Way, 3rd Floor, Seattle, WA 98104 or phone (206) 296-4645.

Suggested Citation: *HIV/AIDS Epidemiology Unit, Public Health - Seattle & King County, and Infectious Diseases and Reproductive Health Assessment Unit, Washington State Department of Health. HIV/AIDS Epidemiology Report. Second half 2005:Vol 67.*

Credits

This 67th edition of the HIV/AIDS Epidemiology Report, in general, includes data through the end of December 2005. The report is produced jointly by Public Health - Seattle & King County and the Washington State Infectious Disease and Reproductive Health Assessment Unit. It is funded in part 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 the public health departments' HIV/AIDS control efforts permits the collection of data included in this report. We also wish to acknowledge the outstanding assistance of our staff, including Roxi Smith (desktop publishing), Faythe Crosby, Lexa Moongrace, and Mark Charonis (disease investigation), Laura Arnold and Sandy Hitchcock (data entry), and Amy Bauer, Jae Taylor, and Alexia Exarchos (epidemiology and data management).

HIV/AIDS Epidemiology Report Co-editors:

HIV/AIDS Epidemiology Program
Susan Buskin, PhD, MPH and Jim Kent MS
Senior Epidemiologists
400 Yesler Way, 3rd Floor; Seattle, WA 98104
(206) 296-4645

IDRH Assessment Unit
Maria Courogen, MPH
Section Manager/Lead Epidemiologist
Washington State Department of Health
PO Box 47838; Olympia, WA 98504-7838
(360) 236-3458

Contributors to this issue

Public Health - Seattle & King County

- Elizabeth Barash, MPH, Epidemiologist
- Amy Bauer, MPH, Epidemiologist
- Susan Buskin, PhD, MPH, Senior Epidemiologist
- Erin Kahle, MPH, Epidemiologist
- Jim Kent, MS, Senior Epidemiologist
- Christina Lynch, MPH, Epidemiologist
- Libby Charhon Page, Project/Program Manager

University of Washington

- N. Jeanne Conley, RN
- Lisa Frenkel, MD, Professor of Pediatrics and Laboratory Medicine, University of Washington and Children's Hospital
- Jeffrey T. Schouten, MD, Staff Physician, University of Washington AIDS Clinical Trials Unit

Washington State Department of Health

- Jason Carr, MPH, Epidemiologist
- Maria Courogen, MPH, Section Manager/Lead Epidemiologist
- Alexia Exarchos, MPH, Epidemiologist
- Todd E. Rime, MA, Research Investigator
- Mark Stenger, MA, Epidemiologist

HIV/AIDS Reporting Requirements

Washington health care providers are required to report all HIV infections, regardless of the date of the patient's initial diagnosis, to the local health department.

Local health department officials forward case reports to the State Department of Health, replacing the name of the patient with a standard code if the report indicates asymptomatic infection. Under a temporary rule change (see page 9), the state now keeps names. As has been the case since 1984, AIDS and symptomatic HIV case reports are not subject to coding. Names are not sent to the Federal Government.

Laboratories are required to report evidence of HIV infection (i.e., western blot assays, p24 antigen detection, viral culture, nucleic acid detection [viral load]), and low CD4 counts (<200/µl or <14% of total lymphocytes). However, laboratory reporting does not relieve health care providers of their duty to report since 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 Department of Health at 1-888-367-5555. In King County contact the HIV/AIDS Epidemiology Program at (206) 296-4645.

Technical Note

You may notice the numbers of people living with HIV and AIDS in Washington and King County are lower than in our previous report. The current figures are more reliable and reflect efforts to improve the accuracy of our data. Mortality data were improved by identifying more than 200 previously unreported deaths through comparison with the Social Security Administration Death Master File. In addition ongoing de-duplication efforts with other states have resulted in reassignment of 81 cases previously counted in Washington. These corrections are spread over several years and account for fewer than 5% of total deaths and less than 1% of total cases. If you have questions about these data or the quality improvement efforts, please contact Jim Kent in King County or Maria Courogen at the Washington Department of Health.

Table 1: Surveillance of reported[1] HIV/AIDS cases, deaths, and people living with HIV/AIDS - reported as of 12/31/2005 - King County, other Washington Counties, all Washington State, and U.S.

		Adult/Adolescent		Pediatric[2]	
		HIV	AIDS	HIV or AIDS	Total
King County	New cases reported in 2nd half 2005	147	118	0	265
	Cases reported year-to-date	321	247	0	568
	Cumulative Cases	2,741	7,215	31	9,987
	Cumulative Deaths	128	4,070	9	4,207
	Persons Living (prevalent cases)	2,613	3,145	22	**5,780**
Other Counties	New cases reported in 2nd half 2005	120	117	0	237
	Cases reported year-to-date	200	215	0	415
	Cumulative Cases	1,431	4,045	39	5,515
	Cumulative Deaths	90	2,116	12	2,218
	Persons Living (prevalent cases)	1,341	1,929	27	**3,297**
Washington State	New cases reported in 2nd half 2005	267	235	0	502
	Cases reported year-to-date	521	462	0	983
	Cumulative Cases	4,172	11,260	70	15,502
	Cumulative Deaths	218	6,186	21	6,425
	Persons Living (prevalent cases)	3,954	5,074	49	**9,077**
United States[3]	Estimated Cases as of 12/31/2003				
	Cumulative Cases	216,486	920,566	13,998	1,151,050
	Cumulative Deaths	1,913	518,567	6,916	527,396
	Persons Living (prevalent cases)	214,573	401,999	7,082	**623,654**

1. There are an estimated 11,000 to 13,000 people living in Washington with HIV infection including AIDS. These include the 9,077 prevalent cases reported above. In King County, there are an estimated 7,200 to 8,400 people living with HIV infection including AIDS. These include the 5,780 prevalent cases reported above. The difference between the estimated cases and the reported prevalent cases include three groups.
    a. People diagnosed with AIDS but not yet reported (probably fewer than 5% of the total AIDS reports).
    b. People diagnosed with HIV infection but not yet reported.
    c. People (possibly 25% of the total HIV estimate) infected with HIV but not yet diagnosed or reported.
2. Pediatric cases are people under age 13 at the time of diagnosis with HIV or AIDS.
3. U.S. data for people with HIV infection not AIDS are based upon reports from states and areas with confidential, named-based HIV infection reporting. Washington is not included in those counts at this time.

Table 2: Cumulative HIV/AIDS case counts and deaths by resident county and AIDSNet region at diagnosis - reported as of 12/31/2005 - Washington State

		Cumulative Cases	Deaths		Presumed Living			
			No.	(%)[1]	HIV	AIDS	Total	(Total %)[2]
	Adams	6	1	(17)	1	4	5	(0.1)
	Asotin	19	7	(37)	3	9	12	(0.1)
	Columbia	5	3	(60)	1	1	2	(0.0)
	Ferry	7	6	(86)	0	1	1	(0.0)
	Garfield	1	0	(0)	1	0	1	(0.0)
	Lincoln	4	2	(50)	0	2	2	(0.0)
	Okanogan	33	9	(27)	7	17	24	(0.3)
	Pend Orielle	9	5	(56)	1	3	4	(0.0)
	Spokane	624	279	(45)	135	210	345	(3.8)
	Stevens	25	10	(40)	6	9	15	(0.2)
	Walla Walla	60	28	(47)	7	25	32	(0.4)
	Whitman	13	4	(31)	0	9	9	(0.1)
Region 1	**Subtotal**	**806**	**354**	**(44)**	**162**	**290**	**452**	**(5.0)**
	Benton	105	38	(36)	26	41	67	(0.7)
	Chelan	55	24	(44)	16	15	31	(0.3)
	Douglas	4	2	(50)	2	0	2	(0.0)
	Franklin	68	15	(22)	19	34	53	(0.6)
	Grant	40	20	(50)	9	11	20	(0.2)
	Kittitas	20	9	(45)	3	8	11	(0.1)
	Klickitat	13	6	(46)	4	3	7	(0.1)
	Yakima	218	80	(37)	52	86	138	(1.5)
Region 2	**Subtotal**	**523**	**194**	**(37)**	**131**	**198**	**329**	**(3.6)**
	Island	73	34	(47)	14	25	39	(0.4)
	San Juan	24	11	(46)	5	8	13	(0.1)
	Skagit	84	37	(44)	22	25	47	(0.5)
	Snohomish	865	324	(37)	214	327	541	(6.0)
	Whatcom	200	82	(41)	48	70	118	(1.3)
Region 3	**Subtotal**	**1,246**	**488**	**(39)**	**303**	**455**	**758**	**(8.4)**
Region 4	**King**	**9,987**	**4,207**	**(42)**	**2,630**	**3,150**	**5,780**	**(63.7)**
	Kitsap	282	117	(41)	75	90	165	(1.8)
	Pierce	1,381	576	(42)	365	440	805	(8.9)
Region 5	**Subtotal**	**1,663**	**693**	**(42)**	**440**	**530**	**970**	**(10.7)**
	Clallam	74	31	(42)	19	24	43	(0.5)
	Clark	560	213	(38)	149	198	347	(3.8)
	Cowlitz	125	52	(42)	34	39	73	(0.8)
	Grays Harbor	71	33	(46)	16	22	38	(0.4)
	Jefferson	32	18	(56)	6	8	14	(0.2)
	Lewis	48	26	(54)	7	15	22	(0.2)
	Mason	97	23	(24)	22	52	74	(0.8)
	Pacific	25	11	(44)	8	6	14	(0.2)
	Skamania	7	5	(71)	0	2	2	(0.0)
	Thurston	235	77	(33)	63	95	158	(1.7)
	Wahkiakum	3	0	(0)	1	2	3	(0.0)
Region 6	**Subtotal**	**1,277**	**489**	**(38)**	**325**	**463**	**788**	**(8.7)**
Total		**15,502**	**6,425**	**(41)**	**3,991**	**5,086**	**9,077**	**(100.0)**

1. Percent of county cases who have died (row %).
2. Percent of total presumed living cases in Washington State (column %).

Table 3: Demographic characteristics of people presumed living with HIV/AIDS - reported as of 12/31/2005 - King County, other Washington Counties, all Washington State, and U.S.

	King County		Other Counties		Washington State		Estimated U.S.AIDS[1]	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Sex								
Male	5,227	(90)	2,650	(80)	7,877	(87)	315,147	(78)
Female	553	(10)	647	(20)	1,200	(13)	90,779	(22)
Age Group at diagnosis of HIV								
Under 13	24	(0)	30	(1)	54	(1)	3,927	(1)
13-19	114	(2)	91	(3)	205	(2)	N/A[a]	
20-29	1,699	(29)	999	(30)	2,698	(30)	N/A[a]	
30-39	2,528	(44)	1,239	(38)	3,767	(42)	N/A[a]	
40-49	1,125	(19)	697	(21)	1,822	(20)	N/A[a]	
50-59	254	(4)	195	(6)	449	(5)	N/A[a]	
60 and over	36	(1)	46	(1)	82	(1)	N/A[a]	
Race/Ethnicity								
White[2]	4,068	(70)	2,385	(72)	6,453	(71)	146,544	(36)
Black[2]	915	(16)	383	(12)	1,298	(14)	172,278	(42)
Hispanic	518	(9)	336	(10)	854	(9)	80,263	(20)
Asian & Pacific Islander[2]	143	(2)	89	(3)	259	(3)	3,826	(1)
Asian [2,3]	*135*	*(2)*	47	*(1)*	*182*	*(2)*	*N/A*	
Native Hawaiian & Other PI [2,3]	*8*	*(0)*	11	*(0)*	*19*	*(0)*	*N/A*	
Native American or Alaskan Native[2]	83	(1)	78	(2)	161	(2)	1,498	(0)
Multiple Race[2,3]	30	(1)	2	(0)	32	(0)	N/A	
Unknown Race[4]	23	(0)	24	(1)	47	(1)	1,517	(0)
HIV Exposure Category								
Male-male sex	4,043	(70)	1,593	(48)	5,636	(62)	182,989	(45)
Injection drug use (IDU)	347	(6)	495	(15)	842	(9)	98,901	(24)
IDU & male-male sex	496	(9)	272	(8)	768	(8)	24,334	(6)
Heterosexual contact	429	(7)	515	(16)	944	(10)	89,009	(22)
Blood product exposure	38	(1)	45	(1)	83	(1)	N/A	
Perinatal exposure	20	(0)	26	(1)	46	(1)	3,788	(1)
Undetermined/other[4]	407	(7)	351	(11)	758	(8)	6,905[b]	(2)
Total	**5,780**	**(100)**	**3,297**	**(100)**	**9,077**	**(100)**	**405,926**	**(100)**

1. US AIDS data were reported as of 12/31/2003 and are the most recent statistics available. These include 401,999 adult and 3,927 pediatric AIDS cases. Estimates for the states and areas with confidential name-based HIV infection reporting were not readily available.
   a. Age related data for person's ages 13+ were grouped differently by CDC, and could not adequately be redistributed to agree with Washington State intervals.
   b. Includes hemophilia, blood transfusion, and risk not reported or not identified.
2. And not Hispanic. All race and ethnicity categories are mutually exclusive.
3. The federal Office of Management and Budget revised Asian & Pacific Islander race into two classifications (Asian versus Native Hawaiian and other Pacific Islander), and added Multiple Race. Some previously collected data could not be reassigned and are shown only in the old category.
4. Includes persons for whom exposure information is incomplete (due to death, refusal to be interviewed, or loss to follow-up), patients still under investigation, patients whose only risk was heterosexual contact and where the risk of the sexual partner(s) was (were) undetermined, people exposed to HIV through their occupation, and patients whose mode of exposure remains undetermined.

Table 4: People presumed living with HIV/AIDS by gender, race or ethnicity, and HIV exposure category - reported as of 12/31/2005 - King County

HIV Exposure Category	White[1]		Black[1]		Hispanic		Asian & PI[1,2]		Native Am/AN[1,3]		Total[4]	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male												
Male-male sex	3,204	(79)	333	(36)	346	(67)	99	(69)	30	(36)	4,043	(70)
Injection drug use (IDU)	111	(3)	72	(8)	31	(6)	3	(2)	7	(8)	228	(4)
IDU & male-male sex	400	(10)	36	(4)	34	(7)	5	(3)	14	(17)	496	(9)
Heterosexual contact	46	(1)	96	(10)	20	(4)	6	(4)	2	(2)	171	(3)
Blood product exposure	17	(0)	2	(0)	2	(0)	1	(1)	0	(0)	22	(0)
Perinatal exposure	1	(0)	3	(0)	0	(0)	1	(1)	0	(0)	5	(0)
Undetermined/other	75	(2)	121	(13)	41	(8)	15	(10)	4	(5)	262	(5)
Male Subtotal	**3,854**	**(95)**	**663**	**(72)**	**474**	**(92)**	**130**	**(91)**	**57**	**(69)**	**5,227**	**(90)**
Female												
Injection drug use (IDU)	62	(2)	36	(4)	4	(1)	0	(0)	17	(20)	119	(2)
Heterosexual contact	107	(3)	109	(12)	24	(5)	7	(5)	7	(8)	258	(4)
Blood product exposure	4	(0)	10	(1)	2	(0)	0	(0)	0	(0)	16	(0)
Perinatal exposure	4	(0)	8	(1)	2	(0)	1	(1)	0	(0)	15	(0)
Undetermined/other	37	(1)	89	(10)	12	(2)	5	(3)	2	(2)	145	(3)
Female Subtotal	**214**	**(5)**	**252**	**(28)**	**44**	**(8)**	**13**	**(9)**	**26**	**(31)**	**553**	**(10)**
Total	**4,068**	**(70)**	**915**	**(16)**	**518**	**(9)**	**143**	**(2)**	**83**	**(1)**	**5,780**	**(100)**

Table 5: People presumed living with HIV/AIDS by gender, race or ethnicity, and HIV exposure category - reported as of 12/31/2005 - Washington State

HIV Exposure Category	White[1]		Black[1]		Hispanic		Asian & PI[1,2]		Native Am/AN[1,3]		Total[4]	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male												
Male-male sex	4,479	(69)	444	(34)	480	(56)	135	(58)	54	(34)	5,636	(62)
Injection drug use (IDU)	353	(5)	117	(9)	63	(7)	6	(3)	15	(9)	559	(6)
IDU & male-male sex	621	(10)	55	(4)	53	(6)	7	(3)	23	(14)	768	(8)
Heterosexual contact	129	(2)	137	(11)	50	(6)	14	(6)	5	(3)	337	(4)
Blood product exposure	45	(1)	2	(0)	7	(1)	1	(0)	0	(0)	56	(1)
Perinatal exposure	7	(0)	7	(1)	2	(0)	2	(1)	1	(1)	19	(0)
Undetermined/other	227	(4)	155	(12)	81	(9)	24	(10)	5	(3)	502	(6)
Male Subtotal	**5,861**	**(91)**	**917**	**(71)**	**736**	**(86)**	**189**	**(81)**	**103**	**(64)**	**7,877**	**(87)**
Female												
Injection drug use (IDU)	170	(3)	65	(5)	13	(2)	3	(1)	31	(19)	283	(3)
Heterosexual contact	303	(5)	178	(14)	77	(9)	23	(10)	21	(13)	607	(7)
Blood product exposure	8	(0)	13	(1)	3	(0)	3	(1)	0	(0)	27	(0)
Perinatal exposure	10	(0)	11	(1)	4	(0)	2	(1)	0	(0)	27	(0)
Undetermined/other	101	(2)	114	(9)	21	(2)	12	(5)	6	(4)	256	(3)
Female Subtotal	**592**	**(9)**	**381**	**(29)**	**118**	**(14)**	**43**	**(19)**	**58**	**(36)**	**1,200**	**(13)**
Total	**6,453**	**(71)**	**1,298**	**(14)**	**854**	**(9)**	**232**	**(3)**	**161**	**(2)**	**9,077**	**(100)**

1. And not Hispanic. All race and ethnicity categories are mutually exclusive.
2. Due to small cell sizes, data have been combined for Asians, Native Hawaiians, and other Pacific Islanders.
3. Native American or Alaskan Native.
4. Totals include 31 King County and 32 Washington State people classified as multiple race, and 23 King County and 47 Washington State people with missing race.

Table 6: People presumed living with HIV/AIDS by gender and age at HIV diagnosis - reported as of 12/31/2005 - King County and Washington State

Age at HIV Diagnosis	King County				Washington State			
	Male		Female		Male		Female	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Under 13 years	8	(0)	16	(3)	24	(0)	30	(3)
13-19 years	82	(2)	32	(6)	138	(2)	67	(6)
20-29 years	1,505	(29)	194	(35)	2,287	(29)	411	(34)
30-39 years	2,342	(45)	186	(34)	3,379	(43)	388	(32)
40-49 years	1,045	(20)	80	(14)	1,613	(20)	209	(17)
50-59 years	213	(4)	41	(7)	368	(5)	81	(7)
60 years and over	32	(1)	4	(1)	68	(1)	14	(1)
Total	**5,227**	**(100)**	**553**	**(100)**	**7,877**	**(100)**	**1,200**	**(100)**

Table 7: People presumed living with HIV/AIDS by gender, race or ethnicity, and place of birth[1] - reported as of 12/31/2005 - King County and Washington State

Race / Ethnicity	King County				Washington State			
	U.S.-born		Foreign-born		U.S.-born		Foreign-born	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
White, non-Hispanic	3,806	(98)	85	(2)	6,083	(98)	124	(2)
Black, non-Hispanic	609	(68)	281	(32)	921	(73)	342	(27)
Black, non-Hispanic male	*487*		*157*		*710*		*181*	
Black, non-Hispanic female	*122*		*124*		*211*		*161*	
Hispanic	205	(43)	269	(57)	316	(41)	455	(59)
Asian & PI, non-Hispanic	43	(33)	87	(67)	77	(36)	134	(64)
Native American, non-Hispanic	78	(96)	3	(4)	155	(97)	4	(3)
Multiple or unknown race	41	(91)	4	(9)	57	(86)	9	(14)
Total	**4,782**	**(87)**	**729**	**(13)**	**7,609**	**(88)**	**1,068**	**(19)**

1. Table 7 does not include 269 King County and 400 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 - reported as of 12/31/2005 - King County

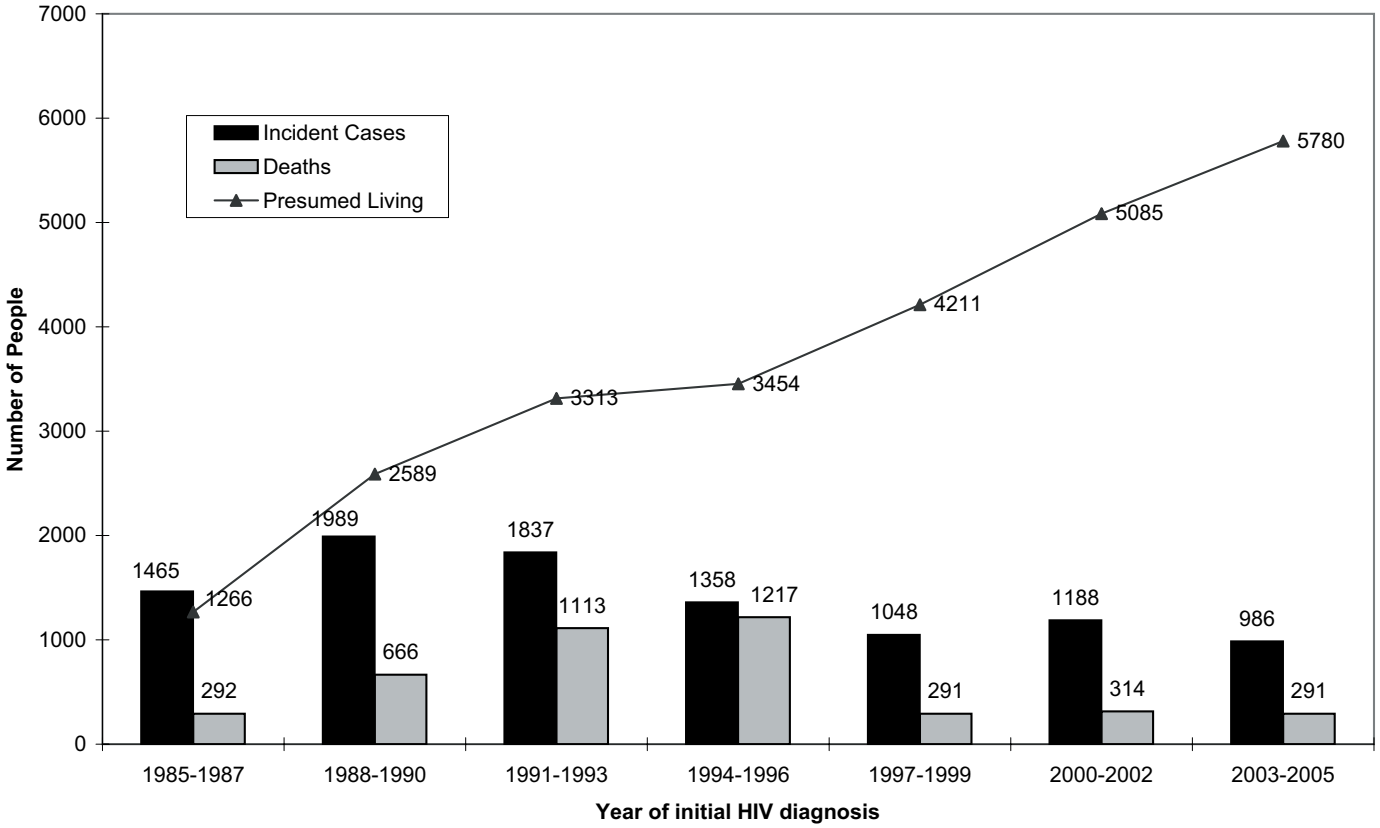


Figure 2: Number of new HIV/AIDS diagnoses, deaths, and people living with HIV/AIDS at end of three year intervals - reported as of 12/31/2005 - Washington State

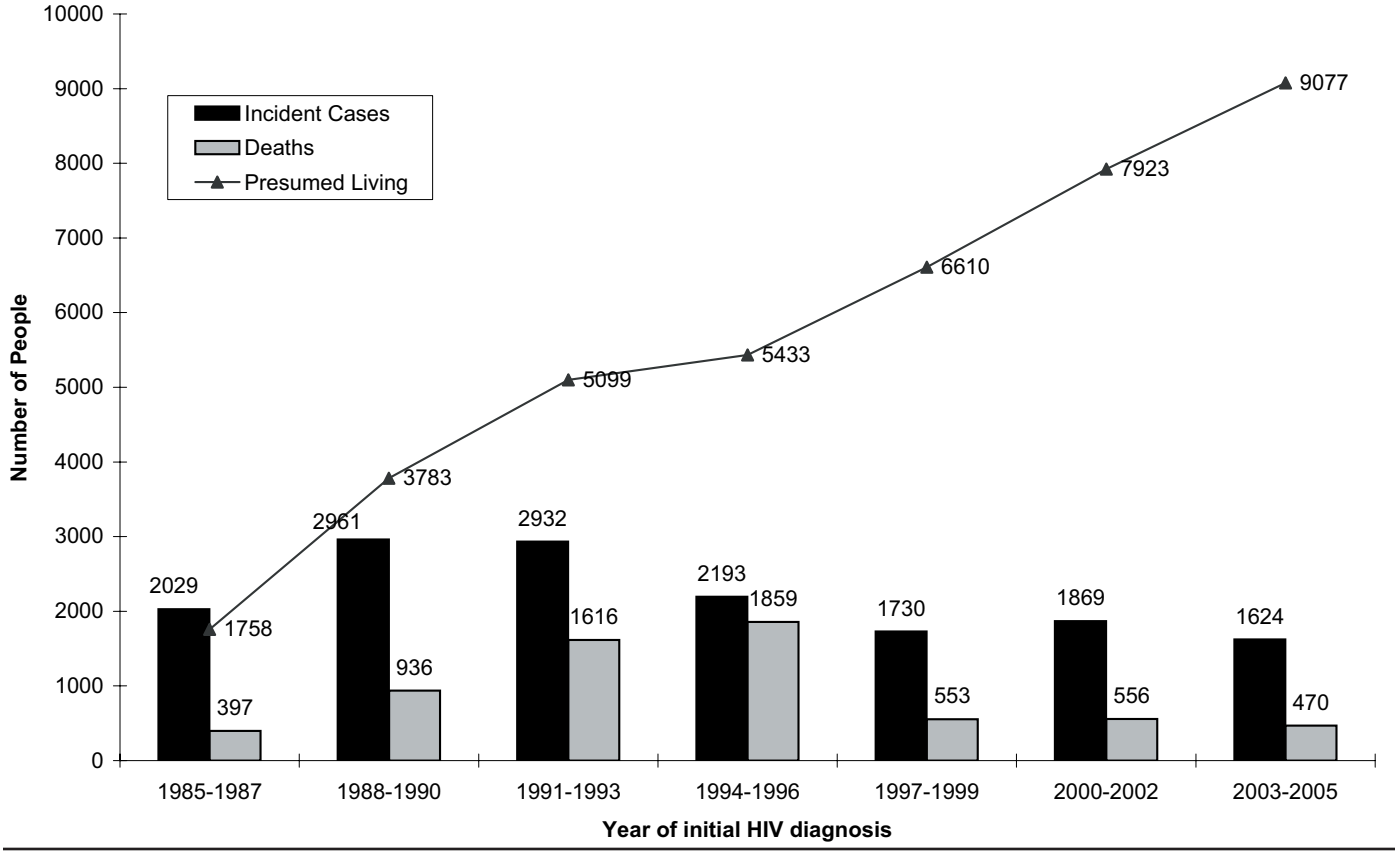


Table 8: Demographic characteristics of King County residents diagnosed 1981-2005 and reported through 12/31/2005, by date of HIV diagnosis

	1981-1996		1997-1999		2000-2002		2003-2005[1]		Trend[2]
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	1997-2005
TOTAL	**6,765**	**(100)**	**1,048**	**(100)**	**1,188**	**(100)**	**986**	**(100)**	
HIV Exposure Category									
Men who have sex with men (MSM)	5,134	(76)	723	(69)	750	(63)	630	(64)	down
Injection drug user (IDU)	376	(6)	62	(6)	87	(7)	57	(6)	
MSM-IDU	726	(11)	86	(8)	92	(8)	67	(7)	
Heterosexual contact	227	(3)	68	(6)	149	(13)	89	(9)	up
Blood product exposure	90	(1)	5	(0)	7	(1)	5	(1)	
Perinatal exposure	23	(0)	3	(0)	2	(0)	0	(0)	
SUBTOTAL- known risk	*6,576*		*947*		*1,087*		*848*		
Undetermined/other[3]	189	(3)	101	(10)	101	(9)	138	(14)	up
Sex & Race/Ethnicity									
Male	*6,404*	*(95)*	*940*	*(90)*	*1,040*	*(88)*	*878*	*(89)*	
White Male[4]	5,300	(78)	663	(63)	696	(59)	543	(55)	down
Black Male[4]	577	(9)	126	(12)	172	(14)	157	(16)	up
Hispanic Male	335	(5)	105	(10)	112	(9)	107	(11)	
Other Male[4]	192	(3)	46	(4)	60	(5)	71	(7)	up
Female	*361*	*(5)*	*108*	*(10)*	*148*	*(12)*	*108*	*(11)*	
White Female[4]	197	(3)	42	(4)	49	(4)	28	(3)	
Black Female[4]	110	(2)	55	(5)	70	(6)	63	(6)	
Hispanic Female	23	(0)	4	(0)	15	(1)	10	(1)	
Other Female[4]	31	(0)	7	(1)	14	(1)	7	(1)	
Race/Ethnicity									
White[4]	5,497	(81)	705	(67)	745	(63)	571	(58)	down
Black[4]	687	(10)	181	(17)	242	(20)	220	(22)	up
Hispanic	358	(5)	109	(10)	127	(11)	117	(12)	
Asian & Pacific Islander[4]	104	(2)	29	(3)	42	(4)	36	(4)	
Native American or Alaskan Native[4]	95	(1)	17	(2)	17	(1)	15	(2)	
Multiple Race[4]	22	(0)	2	(0)	11	(1)	15	(2)	up
Unknown Race[4]	2	(0)	5	(0)	4	(0)	12	(1)	up
Place of Birth									
Born in U.S. or Territories	6,256	(92)	831	(79)	917	(77)	740	(75)	
Born outside U.S.	373	(6)	147	(14)	234	(20)	206	(21)	up
Birthplace unknown	136	(2)	70	(7)	37	(3)	40	(4)	down
Age at diagnosis of HIV									
0-19 years	125	(2)	20	(2)	18	(2)	8	(1)	
20-24 years	549	(8)	66	(6)	96	(8)	80	(8)	
25-29 years	1,369	(20)	181	(17)	168	(14)	127	(13)	down
30-34 years	1,618	(24)	260	(25)	263	(22)	176	(18)	down
35-39 years	1,375	(20)	233	(22)	279	(23)	232	(24)	
40-44 years	829	(12)	143	(14)	183	(15)	175	(18)	up
45-49 years	472	(7)	74	(7)	90	(8)	104	(11)	up
50-54 years	215	(3)	43	(4)	58	(5)	46	(5)	
55-59 years	131	(2)	16	(2)	18	(2)	23	(2)	
60-64 years	47	(1)	4	(0)	9	(1)	7	(1)	
65 + years	35	(1)	8	(1)	6	(1)	8	(1)	
Residence									
Seattle residence	5,887	(87)	878	(84)	966	(81)	756	(77)	down
King Co. residence outside Seattle	878	(13)	170	(16)	222	(19)	230	(23)	up

1. Due to delays in reporting, data from recent years are incomplete.
2. Statistical trends ($p < .05$) were identified from the chi-square test for trend, calculated for the periods 1997-99, 2000-02, and 2003-05.
3. Includes people for whom exposure information is incomplete (due to death, refusal to be interviewed, or loss to follow-up), patients still under investigation, patients whose only risk was heterosexual contact and where the risk of the sexual partner(s) was (were) undetermined, people exposed to HIV through their occupation, and patients whose mode of exposure remains undetermined.
4. And not Hispanic. The groups Asian, Native Hawaiian, & other Pacific Islanders were grouped due to small cell sizes. All race and ethnicity categories are mutually exclusive.

Table 9: Demographic characteristics of Washington State residents diagnosed 1981-2005 and reported through 12/31/2005, by date of HIV diagnosis

	1981-1996		1997-1999		2000-2002		2003-2005[1]		Trend[2]
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	1997-2005
TOTAL	**10,279**	**(100)**	**1,730**	**(100)**	**1,869**	**(100)**	**1,624**	**(100)**	
HIV Exposure Category									
Men who have sex with men (MSM)	7,080	(69)	1,041	(60)	1,060	(57)	910	(56)	down
Injection drug user (IDU)	897	(9)	174	(10)	206	(11)	137	(8)	down
MSM-IDU	1,089	(11)	141	(8)	134	(7)	106	(7)	
Heterosexual contact	559	(5)	172	(10)	271	(14)	205	(13)	up
Blood product exposure	218	(2)	10	(1)	10	(1)	12	(1)	
Perinatal exposure	53	(1)	5	(0)	3	(0)	2	(0)	
SUBTOTAL- known risk	*9,896*		*1,543*		*1,684*		*1,372*		
Undetermined/other[3]	383	(4)	187	(11)	185	(10)	252	(16)	up
Sex & Race/Ethnicity									
Male	*9,442*	*(92)*	*1,494*	*(86)*	*1,575*	*(84)*	*1,378*	*(85)*	
White Male[4]	7,824	(76)	1,081	(62)	1,068	(57)	900	(55)	down
Black Male[4]	792	(8)	177	(10)	239	(13)	215	(13)	up
Hispanic Male	537	(5)	157	(9)	177	(9)	162	(10)	
Other Male[4]	289	(3)	79	(5)	91	(5)	101	(6)	
Female	*837*	*(8)*	*236*	*(14)*	*294*	*(16)*	*246*	*(15)*	
White Female[4]	513	(5)	119	(7)	126	(7)	97	(6)	
Black Female[4]	188	(2)	82	(5)	104	(6)	92	(6)	
Hispanic Female	70	(1)	17	(1)	30	(2)	31	(2)	
Other Female[4]	66	(1)	18	(1)	34	(2)	26	(2)	
Race/Ethnicity									
White[4]	8,337	(81)	1,200	(69)	1,194	(64)	997	(61)	down
Black[4]	980	(10)	259	(15)	343	(18)	307	(19)	up
Hispanic	607	(6)	174	(10)	207	(11)	193	(12)	
Asian & Pacific Islander[4]	156	(2)	47	(3)	67	(4)	61	(4)	
Native American or Alaskan Native[4]	162	(2)	37	(2)	35	(2)	37	(2)	
Multiple Race[4]	25	(0)	2	(0)	11	(1)	16	(1)	up
Unknown Race[4]	12	(0)	11	(1)	12	(1)	13	(1)	
Place of Birth									
Born in U.S. or Territories	9,514	(93)	1,406	(81)	1,469	(79)	1,273	(78)	
Born outside U.S.	570	(6)	216	(12)	316	(17)	298	(18)	up
Birthplace unknown	195	(2)	108	(6)	84	(4)	53	(3)	down
Age at diagnosis of HIV									
0-19 years	252	(2)	32	(2)	33	(2)	18	(1)	
20-24 years	955	(9)	120	(7)	156	(8)	154	(9)	up
25-29 years	2,066	(20)	277	(16)	247	(13)	204	(13)	down
30-34 years	2,396	(23)	400	(23)	393	(21)	266	(16)	down
35-39 years	1,975	(19)	375	(22)	417	(22)	334	(21)	
40-44 years	1,242	(12)	251	(15)	290	(16)	280	(17)	
45-49 years	695	(7)	130	(8)	159	(9)	189	(12)	up
50-54 years	324	(3)	77	(4)	94	(5)	93	(6)	
55-59 years	208	(2)	41	(2)	41	(2)	52	(3)	
60-64 years	85	(1)	12	(1)	20	(1)	16	(1)	
65 + years	81	(1)	15	(1)	19	(1)	18	(1)	
Residence[6]									
Region 1- Spokane area	508	(5)	103	(6)	107	(6)	88	(5)	
Region 2- Yakima area	303	(3)	80	(5)	71	(4)	69	(4)	
Region 3- Everett area	809	(8)	149	(9)	131	(7)	157	(10)	down
Region 4- Seattle area	6,765	(66)	1,048	(61)	1,188	(64)	986	(61)	
Region 5- Tacoma area	1,073	(10)	198	(11)	214	(11)	178	(11)	
Region 6- Olympia area	821	(8)	152	(9)	158	(8)	146	(9)	

1. Due to delays in reporting, data from recent years are incomplete.
2. Statistical trends ($p < .05$) were identified from the chi-square test for trend, calculated for the periods 1997-99, 2000-02, and 2003-05.
3. Includes people for whom exposure information is incomplete (due to death, refusal to be interviewed, or loss to follow-up), patients still under investigation, patients whose only risk was heterosexual contact and where the risk of the sexual partner(s) was (were) undetermined, people exposed to HIV through their occupation, and patients whose mode of exposure remains undetermined.
4. And not Hispanic. The groups Asian, Native Hawaiian, & other Pacific Islanders were grouped due to small cell sizes. All categories are mutually exclusive.
5. 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- Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Skamania, Thurston, and Wahkiakum.

EDITORIALS:
Emergency Rule change allows state to retain HIV names

From September 1999 until March 8, 2006, Washington State used a name-to-code system for reporting of asymptomatic HIV, in addition to the preexisting name-based reporting of AIDS and symptomatic HIV. All HIV and AIDS cases were reported by name at the state or local health department, but asymptomatic HIV cases names were converted to a coded identifier. Names were destroyed within 90 days of completing a case report. Except for the coding step, case reports on HIV and AIDS are handled in the same highly confidential manner. Names are never sent to the federal government. Strict security measures are in place at health department sites where HIV and AIDS surveillance is conducted and include training, physical protections, passwords, firewalls, and other restrictions on data access.

In late 2005 the Centers for Disease Control and Prevention stipulated that named systems are required to promote uniform HIV reporting across the country and that non-named systems are inadequate for de-duplication across states. Washington HIV case reports have not been accepted by the CDC into the national HIV database because of the name-to-code reporting system. Failure to adopt a name-only system would likely result in Washington losing a portion of federal Ryan White CARE Act (RWCA) funding for the care and treatment of persons with HIV or AIDS. This funding supports HIV case management, HIV treatment regimens, and HIV specific medical care in Washington State.

Emergency Rules.

On March 8, 2006, the Washington State Board of Health unanimously approved an emergency rule change to the Washington Administrative Code (WAC). The current status of HIV reporting laws are:

There is NO change in these procedures:

- Reports of HIV or AIDS cases by health care providers and laboratories continue to include name.
- Local health departments destroy names within 90 days.

Procedures with significant changes include:

- Local health departments now send HIV names to the State Department of Health (DOH)
- DOH retains (does not delete) HIV names
- DOH and local health departments will review previously reported HIV cases and go back to original reporting sources to re-ascertain the names.
- Local health departments must destroy re-ascertained names within 3 days of reporting to DOH.

By definition, this emergency rule is temporary and very limited. A permanent rule is scheduled to be heard by the State Board of Health on June 14, and will contain several provisions beyond those authorized by the emergency rule.
To stay informed about the emergency rule and the proposed permanent HIV reporting rule, please visit: http://www.doh.wa.gov/cfh/HIV_AIDS/Prev_Edu/HIV_Policy_Review.htm.

These reporting requirements have applied and will continue to apply only to testing and diagnoses that are conducted in health care settings where patients register using their full names. Public Health continues to support the availability of anonymous HIV testing options (per RCW 70.20.400(3-b-i)). The proposed changes do not impact the availability of anonymous HIV testing services. Positive tests diagnosed via anonymous services are not reportable under either the current or proposed rules.

International Focus Issue

Ever feel that you are missing something important in your work? We think many, if not most, U.S. HIV epidemiologists do. We are missing crucial prevention and care epidemiology opportunities in the less developed, non-Western, and/or poorer areas of the world that experience about 90% of the HIV/AIDS burden globally. Yet, it's impressive how many of us do have projects with global significance and/or that are conducted abroad in areas with larger HIV/AIDS needs than that in Washington State. In this 67th edition of the HIV/AIDS Epidemiology Report we are highlighting some of our and our local colleagues' international HIV/AIDS work. Although the primary focus of this report will always be Washington State, we hope that showcasing the diverse international work of our HIV/AIDS epidemiologists and clinicians will encourage additional collaborations and further the sharing of relevant knowledge. Please feel free to send comments on this issue, including sending new articles on additional international projects to us. Depending on the feedback received, this focus issue may result in a regular column, a periodic focus issue, or just be a one-time effort. We hope you enjoy reading about the projects conducted by each of the editors as well as other local researchers, including the AIDS Clinical Trial Group and Dr. Lisa Frenkel's laboratory at the University of Washington.

• *Editors Maria Courogen, Jim Kent, and Susan Buskin*

Review of HIV and AIDS among Washington State residents outside of King County, including a comparison with King County

Introduction

Washington State's first case of AIDS was diagnosed in 1982 in Seattle-King County. Since that time, the majority (64%) of people diagnosed with HIV infection (including those concurrently diagnosed with HIV and AIDS) resided in Seattle-King County at the time of initial HIV diagnosis. Although the annual number of newly diagnosed HIV infections has declined statewide since 1990 both inside and outside King County, the decline was greatest for cases that are White (non-Hispanic) and male. Recent surveillance data indicate that HIV/AIDS case rates across the state have stabilized since the late 1990's. HIV-infected individuals who live outside King County collectively represent about a third of the statewide disease burden. These cases contribute significantly to the changing profile of the Washington State epidemic. Recent trends observed outside King County include higher proportions of infections diagnosed among both women and racial/ethnic minorities, and more HIV transmission attributed to heterosexual contact.

Methods

This report is based on 14,926 HIV and AIDS cases diagnosed among Washington State residents through December 31, 2004 and reported to the Department of Health as of December 31, 2005. AIDS cases include those HIV-infected individuals who were diagnosed with an opportunistic infection since 1982, as well as those diagnosed with severe immunodeficiency since 1993. The assignment of newly diagnosed (or incident) HIV infections (including concurrent diagnoses of HIV and AIDS) to a specific geographic region is based on residence of the patient at the time of initial HIV diagnosis. The assignment of prevalent HIV and AIDS cases to a specific geographic region is based on residence of the patient at the time of their most recent HIV or AIDS diagnosis. All-inclusive reporting of HIV infection in Washington State was implemented in September 1999. Consequently, diagnoses reported since then include patients with all stages of HIV disease. Due to reporting delays, some patients diagnosed in more recent periods may not have been reported; therefore, absolute numbers of cases diagnosed in 2004 are provisional and should be interpreted with caution.

For the following analyses, cases were categorized as King or non-King County and by AIDS Service Network (AIDSNet) Region according to the county of residence at HIV or AIDS diagnosis. The lead (most populous) county for the Regions are Spokane (Region 1), Yakima (Region 2), Snohomish (Region 3), Pierce (Region 5), and Clark (Region 6). Region 4 contains only King County. Data for Eastern Washington and Western Washington (excluding King County) are also presented. These regions were delineated using counties lying east vs. west of the Cascade mountain range. Hence, AIDSNet Regions 1 and 2 form Eastern Washington, while Western Washington contains Regions 3, 5, and 6.

HIV/AIDS Incidence and Mortality

Figure 1 shows the HIV epidemic curves within King County vs. elsewhere in Washington State. It appears as though the peak of the HIV epidemic in King County occurred in 1990, while non-King County diagnoses peaked the following year. After declining steadily for several years, King County diagnoses rose again in 1998, as did non-King County cases the next year. Between 1998 and 2004, the annual number of new HIV diagnoses has been relatively stable, averaging 583 cases per year (63% residing in King County, on average).

From the start of the epidemic, the annual number of AIDS cases diagnosed in Washington State increased each year until peaking with 943 AIDS cases in 1993 (Figure 2). The AIDS case definition was expanded in 1993 by the Centers for Disease Control and Prevention (CDC) to include asymptomatic HIV infection with laboratory evidence of severe immunodeficiency. Consequently, people were reported earlier in the course of their disease, a phenomenon contributing to the apparent peak in AIDS incidence. After 1993 the number of AIDS diagnoses declined both inside and outside King County. In 1998, the number of AIDS diagnoses among non-King County residents was 57% lower than in 1993 (142 vs. 332), while the number of King County cases was 60% lower (368 vs. 611). Between 1998 and 2004, the annual number of AIDS diagnoses stabilized, averaging 235 and 164 cases per year among King County and non-King County residents, respectively.

Deaths among people diagnosed with AIDS in Washington State have also decreased greatly since the mid-1990s. Outside King County, the annual number of deaths reached a high of 234 in 1994. Five years later, in 1999, 66 deaths were reported among people with AIDS, only 28% of the earlier peak. Between 2000 and 2004, the annual number of deaths reported among those diagnosed with AIDS stabilized, averaging 90 and 69 deaths per year among King County and non-King County AIDS cases, respectively.

Figure 1. King County and Non-King County HIV Diagnoses, Washington State 1981-2004. (Note: 2004 counts are considered incomplete due to reporting delays.)

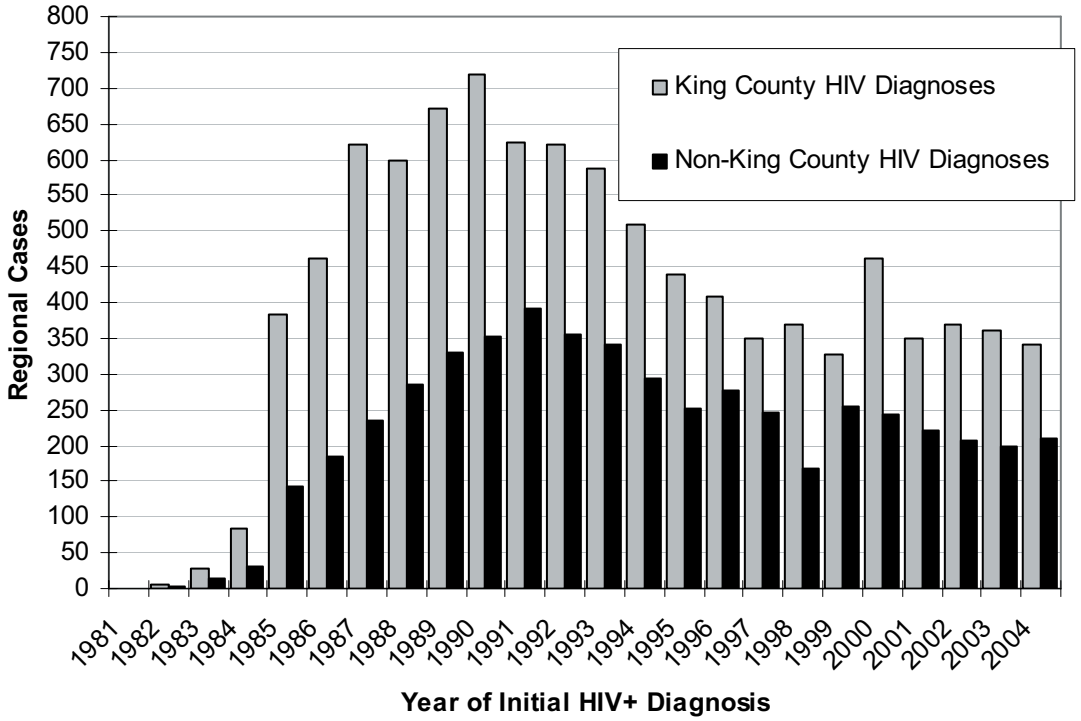


Figure 2. King County and Non-King County AIDS Cases and Associated Deaths, Washington State. (Note: 2004 counts are considered incomplete due to reporting delays.)

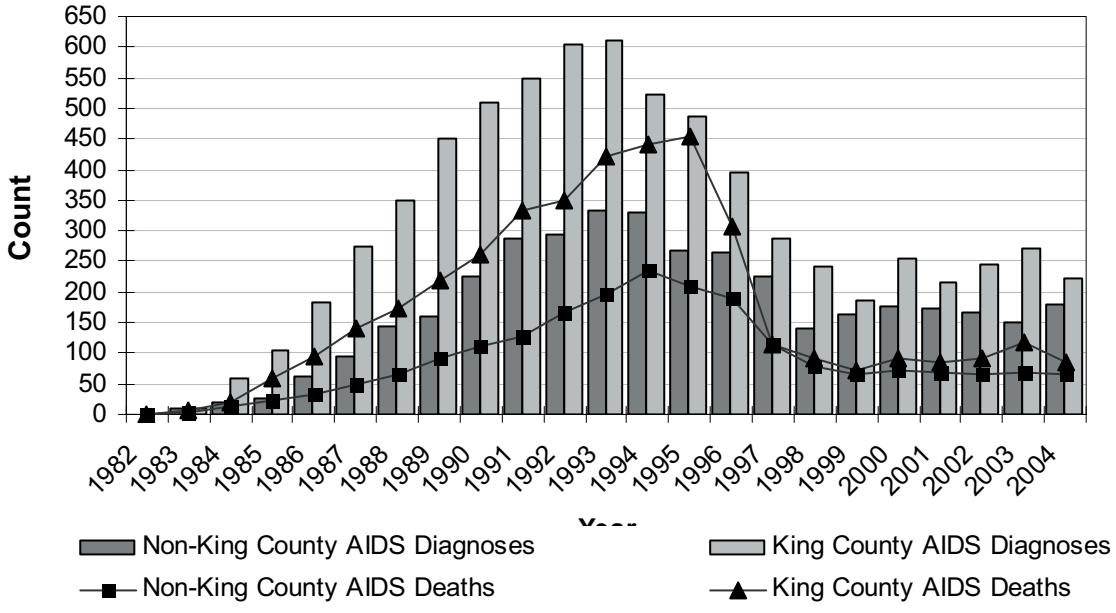
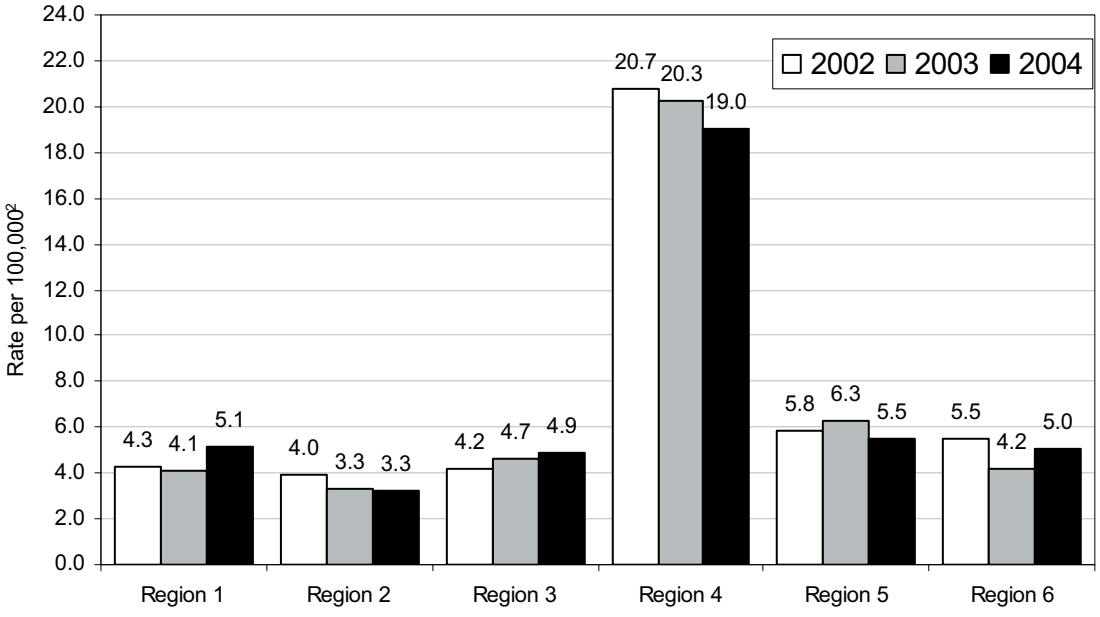


Figure 3 displays annual HIV incidence rates by AIDSNet region for the years 2002, 2003 and 2004. Incidence rates are defined here as the number of HIV diagnoses per 100,000 individuals estimated to be living in the region during the year of diagnosis. Outside King County, Region 5 had the highest HIV incidence rates with an average of 5.9 diagnoses per 100,000 per year, while the lowest incidence rates were observed in Region 2 with an average of 3.5 diagnoses per 100,000 per year. Rates among King County residents were roughly three to six times higher than those among non-King County residents.

Figure 3. HIV Incidence[1] Rates by AIDSNet Region, 2002-2004, Washington State



1. HIV incidence includes new HIV diagnoses within the period.
2. Crude Rate, not adjusted for age, calculated using Intercensal /Postcensal Population Estimates, 2004, WA State Office of Financial Management.

Note: Does not include those who have only been tested anonymously for HIV. The lead (most populous) county for the Regions are Spokane (Region 1), Yakima (Region 2), Snohomish (Region 3), King (Region 4) Pierce (Region 5), and Clark (Region 6).

Trends in Demographic Characteristics in Eastern and Western Washington

Washington State surveillance data indicate increases over time in the proportion of HIV and AIDS cases diagnosed among women, racial/ethnic minorities, and those acquiring HIV via heterosexual contact (Table 1). These increases are most prominent among cases residing outside of King County at the time of diagnosis. Between 1981 and 2004, 4,297 HIV diagnoses were made among people who, at the time of earliest HIV diagnosis, lived outside King County. Small numbers prevented our ability to analyze these data at the level of county or AIDSNet Region. Instead, cases have been divided into those residing in Eastern Washington vs. Western Washington (excluding King County) upon initial HIV diagnosis.

Eastern Washington

HIV cases diagnosed in Eastern Washington between 1998 and 2004 were predominately male (80%) and White (64%; Table 1). While over half (54%) of the individuals diagnosed during this time period were both White and male, the proportion of recent cases belonging to a racial/ethnic minority group (46%; 1998-2004) represents a significant increase over that observed during the previous time period (23% in 1990-1997). Among subgroups defined by sex and race/ethnicity, the second and third largest proportions of recent HIV diagnoses were comprised of Hispanic males (18%) and White females (10%), respectively.

The proportion of cases in Eastern Washington that are female has more than doubled since the epidemic began. Regardless of sex, diagnoses among Hispanics have proportionally increased the most of any racial/ethnic minority group. The percent of diagnoses among Eastern Washington Hispanics rose from 7% in 1981-1989 to 24% in 1998-2003. Hispanic females, who accounted for less than 1% of diagnoses in 1981-1989, comprised 6% of all cases in 1998-2004. The majority of recent diagnoses were among individuals who were at least thirty years old (74% 1998-2004), and an increasingly larger proportion of new cases are over forty (38% in 1998-2004 vs. 29% in 1990-1997). The proportion of new HIV diagnoses among Eastern Washington residents under the age of thirty has steadily declined over the course of the epidemic.

Cases attributed directly to men having sex with men (MSM) made up nearly half (48%) of recent diagnoses in Eastern Washington, though this proportion has slowly declined over time. The proportion of cases with dual exposure (MSM/IDU) also decreased from 16% in 1981-1989 to 7% in 1998-2004, while the proportion

Table 1. Trends in the demographics of HIV and AIDS cases[1] who, based upon earliest HIV diagnosis, resided in Eastern and Western Washington State (excluding King County)[2]

Region	Western Washington (excluding King County)						Eastern Washington					
Year of HIV diagnosis:	1981-1989		1990-1997		1998-2004		1981-1989		1990-1997		1998-2004[3]	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Sex by Race/Ethnicity												
Male	866	(92)	1567	(81)	866	(78)	257	(91)	520	(88)	321	(80)
White Male	757	(80)	1269	(66)	637	(58)	225	(80)	414	(70)	214	(54)
Black Male	54	(6)	143	(7)	111	(10)	8	(3)	22	(4)	22	(6)
Hispanic Male	26	(3)	98	(5)	63	(6)	19	(7)	68	(12)	71	(18)
Asian/PI Male	10	(1)	21	(1)	36	(3)	0	(0)	3	(<1)	3	(<1)
Native Am. or AK Native	15	(2)	27	(1)	16	(1)	5	(2)	12	(2)	4	(1)
Multi / Other / Unknown	4	(<1)	9	(<1)	3	(<1)	0	(0)	1	(<1)	7	(2)
Female	75	(8)	356	(19)	239	(22)	25	(9)	69	(12)	78	(20)
White Female	62	(7)	226	(12)	126	(11)	21	(7)	38	(6)	40	(10)
Black Female	9	(1)	71	(4)	63	(6)	2	(<1)	8	(1)	8	(2)
Hispanic Female	1	(<1)	31	(2)	16	(1)	1	(<1)	17	(3)	23	(6)
Asian/PI Female	1	(<1)	15	(<1)	15	(<1)	0	(0)	3	(<1)	1	(<1)
Native Am. or AK Native	2	(<1)	13	(<1)	17	(2)	1	(<1)	3	(<1)	4	(1)
Multi / Other / Unknown	0	(0)	0	(0)	2	(<1)	0	(0)	0	(0)	2	(<1)
Race												
White (non-Hispanic)	819	(87)	1495	(78)	763	(69)	246	(87)	452	(77)	254	(64)
Black (non-Hispanic)	63	(7)	214	(11)	174	(16)	10	(4)	30	(5)	30	(8)
Hispanic	27	(3))	129	(7)	79	(7)	20	(7)	85	(14)	94	(24)
Asian/Pacific Islander	11	(1)	36	(2)	51	(5)	0	(0)	6	(1)	4	(1)
Native Am. or AK Native	17	(2)	40	(2)	33	(3)	6	(2)	15	(3)	8	(2)
Multi / Other / Unknown	4	(<1)	9	(<1)	5	(<1)	0	(0)	1	(<1)	9	(2)
Age as of 12/31/05												
12 and Under	12	(1)	18	(<1)	2	(<1)	2	(<1)	8	(1)	2	(<1)
13-19	35	(4)	34	(2)	15	(1)	8	(3)	10	(2)	10	(3)
20-29	330	(35)	528	(27)	241	(22)	120	(43)	161	(27)	92	(23)
30-39	366	(39)	782	(41)	412	(37)	96	(34)	241	(41)	142	(36)
40-49	131	(14)	409	(21)	301	(27)	42	(15)	106	(18)	97	(24)
50-59	44	(5)	106	(6)	98	(9)	11	(4)	45	(8)	47	(12)
60+	23	(2)	46	(2)	36	(3)	3	(1)	18	(3)	9	(2)
Exposure Category												
MSM	600	(64)	966	(50)	495	(45)	164	(58)	306	(52)	191	(48)
IDU	94	(10)	342	(18)	187	(17)	41	(15)	85	(14)	50	(13)
MSM/IDU	119	(13)	160	(8)	59	(5)	44	(16)	63	(11)	29	(7)
Heterosexual Contact	40	(4)	258	(13)	192	(17)	8	(3)	63	(11)	70	(18)
Blood Product Exposure	57	(6)	37	(2)	7	(<1)	17	(6)	13	(2)	2	(<1)
Pediatric	5	(<1)	17	(<1)	2	(<1)	1	(<1)	8	(1)	2	(<1)
NIR	26	(3)	138	(7)	163	(15)	7	(2)	51	(9)	55	(14)
Total in Region	941	(100)	1923	(100)	1105	(100)	282	(100)	589	(100)	399	(100)

1 All data were reported to the HIV/AIDS Reporting System as of December 31, 2005.
2 Regions are delineated by counties lying east vs. west of the Cascade mountain range.
3 Case counts for recent years may be incomplete due to reporting delays.
PI=Pacific Islander; AN=Alaska Native; MSM=men who have sex with men; IDU = Injection Drug User; NIR=no identified risk

of cases attributed to IDU (13%; 1998-2004) has not changed appreciably over time. Nearly one in five recently diagnosed cases (18%; 1998-2004) were attributed to heterosexual contact. However, the growing proportion of cases attributed to heterosexual sex is most likely the result of a relative decrease over time in MSM transmission rather than an actual increase in heterosexual transmission.

Western Washington excluding King County

HIV cases diagnosed in Western Washington between 1998 and 2004 were also predominately male (78%; Table 1). However, White male cases decreased from 80% in 1981-1989 to 58% in 1998-2004. Non-White HIV-infected males have comprised an increasingly higher proportion of newly diagnosed cases. Between 1982 and 1989, 13% of all HIV diagnoses among Western Washington residents belonged to a racial/ethnic group other than White. Most recently (1998-2004), 31% of all diagnoses were non-White. The proportion of cases that are female has also increased over time (8% in 1981-1989 vs. 22% in 1998-2004.). This increase has occurred regardless of race or ethnicity. Similar to trends observed in Eastern Washington, the majority of recently detected HIV infections (78%; 1998-2004) were among people who were at least thirty years old, and the proportion of newly diagnosed individuals who are forty or older has nearly doubled over the course of the epidemic (21% in 1981-1989 vs. 39% in 1998-2004). There has been significant decrease over time in the proportion of cases diagnosed at ages 13-19 (4% 1981-1989 to 1% 1998-2004) and ages 20-29 (35% 1981-1989 to 22% 1998-2004).

HIV transmission as a result of men having sex with men has explained the highest proportion of HIV cases diagnosed in Western Washington. However, this proportion has dropped significantly over time, from 64% in 1981-1989 to 45% in 1998-2004. The proportion of HIV diagnoses attributed to both MSM and IDU also decreased from 13% in 1981-1989 to 5% in 1998-2004; the proportion infected via contaminated blood products fell similarly (from 6% in 1981-1989 to less than 1% in 1998-2004). The proportion of cases attributed to IDU alone has remained steady in recent years (17% in 1998-2004). Heterosexual transmission has been attributed to a higher proportion of new diagnoses (17% in 1998-2004 vs. 13% in 1990-1997), though the actual number of cases has decreased somewhat during the same time period (258 vs. 192, respectively).

People Living with HIV

Table 2 describes the demographic characteristics of 8,668 prevalent HIV and AIDS cases reported to the State Department of Health by December 31, 2005. These cases were presumed to be living as of December 31, 2004. Prevalent cases are presented by region of residence at the time of their most recent diagnosis of HIV or AIDS (in each AIDSNet region, as well as in King County vs. elsewhere in Washington State). These data may not necessarily represent where they acquired HIV or where they are currently living.

There were 3,101 cases (37% of prevalent HIV/AIDS cases) that resided outside of King County at the time of their most recent diagnosis. Excluding Region 4, cases were distributed relatively evenly across the remaining AIDSNet regions. Within each AIDSNet region, the proportion of cases residing in the lead health district ranged from a low of 42% in Region 2 to a high of 83% in Region 5. The overall prevalence rate of HIV infection outside King County was 71 cases per 100,000 population. Region 5 had the highest prevalence rate (94 per 100,000) followed by Region 6 (73 per 100,000). Of all prevalent HIV cases residing outside King County, 1,789 (58%) had progressed to AIDS.

Most HIV/AIDS cases presumed to be living outside King County were male (80%). Region 5 had the highest percentage of Black male cases (13%), while Region 2 had the highest percentage of Hispanic male cases (27%). Nineteen percent of cases living outside King County were female. Region 5 and Region 2 had the highest proportions of female cases (23% and 25% respectively). The majority of people living with HIV outside King County were White (non-Hispanic; 73%). Approximately one in five prevalent cases outside King County were either Black (non-Hispanic; 11%) or Hispanic (10%). Region 5 had the highest proportion of Black (non-Hispanic) individuals (20%) living with HIV.

In 2005, 40% of HIV/AIDS cases living outside King County were between the ages of 40 and 49, and 21% were fifty or older. Region 2 was the only AIDSNet Region in which over half (51%) of prevalent cases were under the age of forty and more than ten percent (12%) of cases were 20-29.

Men having sex with men was the most commonly reported mode of HIV transmission for cases living outside of King County. Forty-eight percent reported MSM alone, while 8% had dual risk behaviors of MSM and IDU. Fifteen percent of cases were attributed directly to IDU and 15% were explained by heterosexual contact. Cases living outside of King County were more likely than those in King County to have been the result of either injection drug use or heterosexual contact, and less likely to have been caused by MSM exposure. Region 5 had the highest proportion of prevalent cases attributed to injection drug use (19%). The proportion of prevalent cases attributed to heterosexual contact was highest in Region 2 (22%) and lowest in Region 1 (9%).

Table 2. Characteristics of Washington State HIV and AIDS cases presumed living as of December 31, 2004 (n=8,668; reported as of December 31, 2005)[1]

AIDSNET Region:	1		2		3		5		6		Outside King Co.		King Co.	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Sex by Race/Ethnicity														
Male	376	(88)	231	(75)	575	(82)	706	(77)	602	(81)	2490	(80)	5039	(91)
White Male	304	(71)	132	(43)	471	(67)	498	(54)	497	(67)	1902	(61)	3746	(67)
Black Male	24	(6)	10	(3)	37	(5)	123	(13)	38	(5)	232	(8)	633	(11)
Hispanic Male	27	(6)	83	(27)	38	(5)	53	(6)	39	(5)	240	(8)	445	(8)
Asian/PI Male	2	(<1)	1	(<1)	16	(2)	18	(2)	14	(2)	51	(2)	120	(3)
Native Am. or AK Native Male	12	(3)	5	(2)	10	(1)	13	(1)	5	(<1)	45	(2)	57	(1)
Multi /Other /Unknown	7	(2)	1	(<1)	3	(<1)	1	(<1)	9	(1)	21	(<1)	38	(<1)
Female	53	(12)	75	(25)	130	(18)	215	(23)	138	(19)	611	(20)	528	(9)
White Female	34	(8)	38	(12)	77	(11)	109	(12)	103	(14)	361	(12)	208	(4)
Black Female	8	(2)	5	(2)	23	(3)	65	(7)	20	(3)	121	(4)	237	(4)
Hispanic Female	2	(<1)	30	(10)	9	(1)	20	(2)	5	(<1)	66	(2)	13	(<1)
Asian/PI Female	3	(<1)	0	(0)	9	(1)	11	(2)	5	(<1)	28	(<1)	38	(<1)
Native Am. or AK Native Female	4	(<1)	2	(<1)	11	(2)	10	(1)	4	(<1)	31	(<1)	25	(<1)
Multi /Other /Unknown	2	(<1)	0	(0)	1	(<1)	0	(0)	1	(<1)	4	(<1)	4	(<1)
Race														
White (non-Hispanic)	338	(79)	170	(56)	548	(78)	607	(66)	600	(81)	2263	(73)	3954	(71)
Black (non-Hispanic)	32	(7)	15	(5)	60	(9)	188	(20)	58	(8)	353	(11)	870	(16)
Hispanic	29	(7)	113	(37)	47	(7)	73	(8)	44	(6)	306	(10)	486	(9)
Asian/Pacific Islander	3	(<1)	2	(<1)	25	(4)	29	(3)	19	(3)	80	(3)	133	(2)
Native Am. or AK Native	16	(4)	5	(2)	21	(4)	23	(3)	9	(1)	74	(2)	82	(2)
Multi /Other /Unknown	9	(2)	1	(<1)	4	(<1)	1	(<1)	10	(1)	25	(<1)	42	(<1)
Age as of 12/31/04														
12 and Under	4	(1)	3	(1)	1	(<1)	4	(<1)	3	(<1)	15	(<1)	12	(<1)
13-19	5	(1)	0	(0)	3	(<1)	5	(<1)	2	(<1)	15	(<1)	15	(<1)
20-29	33	(8)	36	(12)	49	(7)	79	(9)	52	(7)	249	(8)	355	(6)
30-39	102	(24)	117	(38)	202	(29)	276	(30)	215	(29)	912	(29)	1688	(30)
40-49	201	(47)	101	(33)	284	(40)	379	(41)	284	(38)	1249	(40)	2335	(42)
50-59	59	(14)	37	(12)	132	(19)	139	(15)	148	(20)	515	(17)	960	(17)
60+	25	(6)	12	(4)	34	(5)	39	(4)	36	(5)	146	(5)	202	(4)
Exposure Category														
MSM	214	(50)	138	(45)	369	(52)	421	(46)	359	(49)	1501	(48)	3921	(70)
IDU	67	(16)	38	(12)	71	(10)	175	(19)	127	(17)	478	(15)	342	(6)
MSM/IDU	47	(11)	24	(8)	56	(8)	73	(8)	57	(8)	257	(8)	480	(9)
Heterosexual Contact	39	(9)	67	(22)	113	(16)	152	(17)	106	(14)	477	(15)	412	(7)
Blood Product Exposure	5	(1)	2	(<1)	11	(2)	10	(1)	14	(2)	42	(1)	36	(<1)
Pediatric	6	(1)	3	(<1)	3	(<1)	9	(<1)	5	(<1)	26	(<1)	20	(<1)
NIR	51	(12)	34	(11)	82	(12)	81	(9)	72	(10)	320	(10)	354	(6)
Current Status														
HIV only	161	(38)	125	(41)	295	(42)	417	(45)	314	(42)	1312	(42)	2546	(46)
AIDS	268	(62)	181	(59)	410	(58)	504	(55)	426	(58)	1789	(58)	3021	(54)
Total in Region	429	(100)	306	(100)	705	(100)	921	(100)	740	(100)	3101	(100)	5567	(100)
Lead Health District	Spokane Co.		Yakima Co.		Snohomish Co.		Pierce Co.		Clark Co.		N/A		King Co.	
% Residing in Lead District	76%		42%		71%		83%		44%		66%		100%	
Disease Burden[2]	4.9%		3.5%		8.1%		10.6%		8.5%		35.8%		64.2%	
Prevalence Rate[3]	62.7		45.3		69.1		93.6		72.9		70.8		311.3	

1 Based on residence at time of most recent diagnosis; presumed living includes all persons reported with HIV or AIDS who are not known to have died based on periodic searches of national death records.
2 Percentage of prevalent cases who resided within AIDSNet Region at time of most recent diagnosis.
3 Cases per 100,000 residents.
PI=Pacific Islander; AN=Alaska Native; MSM=men who have sex with men; IDU = Injection Drug User; NIR=no identified risk

Comments

In the last decade, dramatic decreases have been observed in the number of AIDS cases diagnosed each year and the number of deaths among people diagnosed with AIDS. These trends have been observed in Washington State as well as nationally. In Washington, the declines were most noticeable in King County; however, AIDSNet regions outside of King County collectively observed a 33% reduction in the annual number of AIDS diagnoses between 1995 and 2004, and a 69% decrease in AIDS deaths. These declines were brought about primarily by the 1995-1996 introduction of antiretroviral drugs that effectively slow the progression of HIV infection to AIDS and from AIDS to death. Other factors contributing to the decline included more effective prophylaxis to prevent opportunistic infections, better monitoring of HIV progression, and the effect of health education and prevention messages.

In more recent years, the trends in AIDS incidence and deaths have leveled off, both within King County and elsewhere in Washington State. There are a number of possible reasons for this. Barriers may exist that prevent access to or utilization of health services by HIV-infected people or people at high risk for infection. These barriers may result in HIV-infected individuals getting tested for HIV later in the course of their disease. Also, some HIV-infected individuals may not be receiving appropriate treatment, and many of those who are receiving treatment may be having difficulty adhering to treatment regimens or experiencing treatment failures due to the development of more resistant strains of HIV. In addition, as infected people get older, they are more likely to die of conditions unrelated to their HIV infection.

HIV treatment regimens have altered the natural course of HIV infection by delaying progression to AIDS and death. For this reason, data on AIDS incidence and deaths do not adequately describe the HIV epidemic. Since full reporting of HIV was initiated in September 1999, it is now possible to report emerging trends in HIV diagnoses. The next step in understanding and describing the leading edge of the HIV epidemic will be to conduct population-based HIV incidence surveillance. Use of STARHS (serologic testing algorithm for recent HIV seroconversion) on a routine basis for those who are newly diagnosed with HIV will allow better characterization of those populations that are becoming newly infected. Data collection activities for HIV incidence surveillance have been initiated in all parts of Washington State and results will be presented in future issues of this report.

Despite diminishing AIDS diagnoses and deaths, the number of people living with HIV infection in Washington State continues to grow. Each year outside of King County there are approximately three (2.7) new HIV infected people diagnosed for every AIDS death. The epidemic also continues to shift, and is affecting a larger proportion of females and those who are not White (particularly Blacks and Hispanics). Cases among women and Hispanics continue to comprise an increasingly larger proportion of Eastern Washington cases. Similarly, female and non-Hispanic Black cases constitute an increasingly larger proportion of Western Washington cases (excluding King County). AIDSNet regions should continue to take into account their local data, and target groups most-at-risk with appropriate HIV prevention and education messages and interventions.

• Contributed by Jason Carr, MPH and Todd E. Rime, MA

Summary results from the Adult and Adolescent Spectrum of HIV Disease Project

The Adult and Adolescent Spectrum of HIV Disease Project (ASD) was a medical record review surveillance project conducted in selected medical facilities in Atlanta, Dallas, Denver, Detroit, Houston, Los Angeles, New Orleans, New York City, Bayamon (Puerto Rico), San Antonio and Seattle from January, 1990, through June, 2004. The Centers for Disease Control and Prevention (CDC) funded the project to monitor the presentation, treatment, and outcomes of HIV in the US. Now the Medical Monitoring Project (MMP) continues these aims with a more scientifically rigorous multistage sampling scheme. In ASD a broadly representative convenience sample of HIV-infected individuals aged >13 years who attended participating clinics were eligible for enrollment. Nationally, over 60,000 people were observed in ASD.

Methods

Locally, nine confidential Seattle/King County clinics participated in the project and data from a cumulative total of 4,721 people have been collected by ASD to date. Data collected on patients seen at Seattle ASD sites 1990 through 2003 were used for this analysis, as 2003 is the most current year for which we have relatively complete data. However the 2003 cohort is incomplete, so data from this year must be interpreted cautiously.

Medical records of ASD patients were reviewed for the 12 months before their enrollment date and at subsequent 6-month intervals until death, relocation, or loss to follow-up (defined as 18 months with no contact at this facility). Information collected included demographic data, risk factors for HIV transmission, prescription of antiretrovirals and other medications, CD4+ T-lymphocyte counts, HIV-1 RNA plasma viral load, complete history of AIDS-defining opportunistic illnesses (OIs), other infections or medical conditions, number of outpatient, inpatient and ER visits, insurance status, and certain behaviors related to HIV transmission. Women and non-White men were oversampled relative to White men.

Results

The gender stratified and aggregate demographic characteristics of the Seattle ASD cohort are displayed in Table 1. Nearly half (48%) of ASD participants were 30-39 years old. The vast majority of the cohort members were male (85%) and White (65%). Nineteen percent were Black, 11% were Hispanic and 5% of other race/ethnicity. Nearly three quarters (71%) of the patients were men who have sex with men (MSM), including the 15% of the entire cohort who were MSM and injection drug users (MSM/IDU) and 12% had injection drug use (IDU) as their primary risk for HIV. One percent of the patients had acquired HIV infection from blood products/transfusions and seven percent through heterosexual risks due to a partner with known HIV infection or risk.

Fifty-four percent of patients had CD4 counts less than 200 at their most recent interval, indicating severe immunosupression (Figure 1). About a third (34%) of the entire cohort would still be available for follow-up, as 26% have died and the remaining 40% are lost to follow-up (Figure 2—see next page). Overall, the incidence of AIDS opportunistic illnesses (OI) has decreased in the HAART era (Table 2). The most common AIDS defining conditions over the entire project period were severe immunosuppression (92% of all people diagnosed with AIDS) *Pneumocystis* pneumonia (PCP) (30%), esophageal candidiasis (20%), and M. avium or kansasii (15%). Other OI conditions are included in Table 2. Primary malignant neoplasm rates (including AIDS-defining cancers) declined from a high of 12 per 100 person years in 1990 to a low of 2 per 100 person years in 1998-2002 (Table 3).

Death rates are shown in Figure 3 for the ASD cohort, stratified by clinical status. Historically, the death rate was much higher for people with AIDS including a history of an OI than those without, lower for severe-immunosuppression alone as an AIDS-defining illness, and lowest yet for people with no AIDS diagnosis. From 1999 through 2002 the death rate for people with OIs lessened, approaching the rate of others with HIV/AIDS. In 2003, the death rates may look artificially high due to differential inclusion of cohort members who died.

In Figures 4 and 5 the lowest CD4 per year (Figure 4) and the highest viral load per year (Figure 5) are shown over time. These indicators show important improvements in the populations living with HIV receiving medical care as monitored by ASD. For example, the percent of severely immunosuppressed people, with CD4+ lymphocyte counts less than 200 cells per micoL declined from about 40% in 1993-1994 to about 18% in 2003. Similarly low levels of viremia (<10,000 copies) increased from about 25% in 1996 to 62% in 2003.

Despite changes in treatment standards over time, HAART therapy has generally been recommended for those patients with a CD4 <350 or an AIDS OI. Among those who meet these criteria, prescription of antiretrovirals has remained stable in the past few

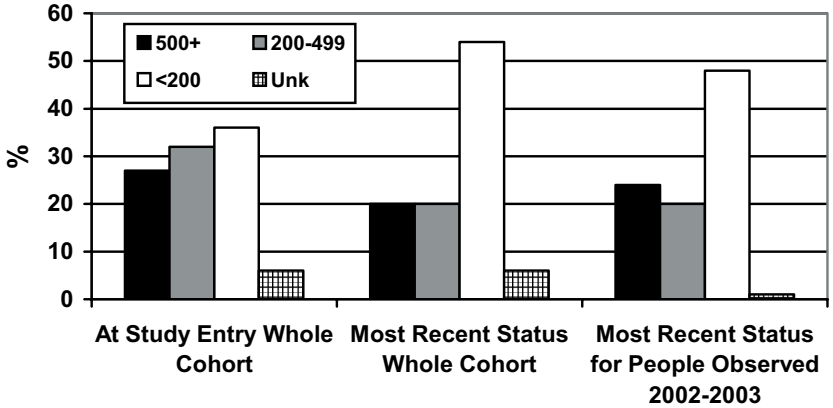
Table 1. Demographic Characteristics of the Adult/Adolescent Spectrum of HIV-related Diseases (ASD) Project, Seattle WA, 1990 - 2003

	Men		Women		Both	
	No.	(%)*	No.	(%)*	No.	(%)*
Age Group (at baseline)						
13-19	25	(1)	37	(5)	62	(1)
20-29	1042	(26)	231	(33)	1273	(27)
30-39	1963	(49)	298	(43)	2261	(48)
40-49	811	(20)	97	(14)	908	(19)
50+	179	(4)	38	(5)	217	(5)
Race/ethnicity						
White, not Hispanic	2711	(67)	350	(50)	3061	(65)
Black, not Hispanic	675	(17)	228	(33)	903	(19)
Hispanic	445	(11)	55	(8)	500	(11)
Asian / Pacific Islander	97	(2)	21	(3)	118	(2)
American Indian/AK native	88	(2)	45	(6)	133	(3)
Residence (at baseline)						
Seattle	3283	(82)	391	(56)	3674	(78)
King Co. (not Seattle)	325	(8)	133	(19)	458	(10)
Outside King Co.	416	(10)	179	(26)	595	(13)
Exposure category						
Male-male sex	2648	(66)	0	(0)	2648	(56)
Inj. drug use (IDU)	345	(9)	241	(34)	586	(12)
IDU and male-male sex	726	(18)	0	(0)	726	(15)
Heterosexual contact	65	(2)	242	(35)	307	(7)
Blood (transfusion)	19	(<1)	10	(1)	29	(1)
Undetermined/other**	217	(5)	208	(30)	425	(9)
Clinic type						
HIV/AIDS specialty	1884	(47)	606	(86)	2490	(53)
Other	2136	(53)	95	(14)	2231	(47)
Total (row percent)	4020	(85)	701	(15)	4721	(100)

* Percents are column percents except for total row.

** Includes persons for whom exposure information is not recorded in the medical record, or otherwise unknown, heterosexuals whose partners are of unknown risk, those with occupational exposure, etc.

Figure 1. Immunologic Characteristics (CD4 counts) of the ASD Project, Seattle WA, 1990 - 2003



CD4 counts used are those closest to the end of the baseline interval for "At Study Entry" and closest to the last contact date for "Most Recent"

Figure 2. Vital and Follow-up Status of the ASD Project, Seattle WA, 1990 - 2003

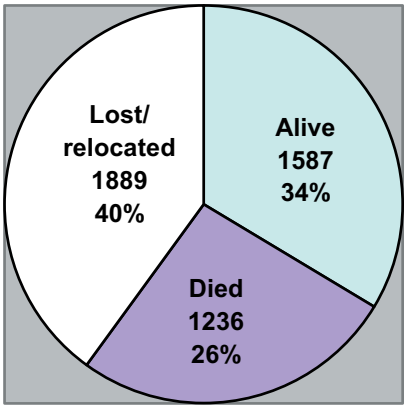


Table 2. AIDS Indicative Conditions of the Adult/Adolescent Spectrum of HIV-related Diseases Project, Seattle WA, 1990 - 2003

	Pre-HAART (1990 – 1995)		HAART era (1996 – 2003)		Ever in ASD (1990 – 2003)	
	No.	(%)	No.	(%*)	No.	(%*)
Severe immunosuppression**	1204	(97)	1336	(87)	2540	(92)
Pneumocystis pneumonia (PCP)	608	(49)	233	(15)	841	(30)
Candidiasis, esophageal	340	(27)	222	(15)	562	(20)
M. avium or kansasii	323	(26)	104	(7)	427	(15)
Kaposis sarcoma	302	(26)	116	(8)	418	(15)
Wasting syndrome	323	(24)	103	(7)	426	(15)
HIV encephalopathy	257	(21)	127	(8)	384	(14)
CMV retinitis	215	(17)	62	(4)	277	(10)
Recurrent pneumonia	151	(12)	97	(6)	248	(9)
CMV, invasive	165	(13)	62	(4)	227	(8)
HSV, chronic	90	(7)	23	(2)	113	(4)
Cryptosporidiosis	80	(6)	23	(2)	103	(4)
Toxoplasmosis, brain	77	(6)	24	(2)	101	(4)
Cryptococcosis	68	(6)	26	(2)	94	(3)
Pulmonary TB	58	(5)	30	(2)	88	(3)
Lymphoma, immunoblastic	54	(4)	32	(2)	86	(3)
P.M. leukoencephalopathy	40	(3)	19	(1)	59	(2)
Lymphoma, primary, brain	39	(3)	5	(<1)	44	(2)
Candidiasis, pulmonary	35	(3)	2	(<1)	37	(1)
M. TB, dis. or extrapul.	21	(2)	23	(2)	44	(2)
Mycobacterium other or unk	26	(2)	12	(1)	38	(1)

* Percents are percent of people with 1993 AIDS.
** CD4 < 200 cells/□l or CD4 percent < 14.

Table 3. Neoplasms (including AIDS-defining KS & lymphomas) Adult/Adolescent Spectrum of HIV-related Diseases Project, Seattle WA, 1990 - 2003

Year	Number	Person-Years	Neoplasms per 100 Person-Year
1990	96	820	12
1991	69	1191	6
1992	92	1321	7
1993	81	1348	6
1994	58	1320	4
1995	64	1252	5
1996	45	1205	4
1997	28	1190	2
1998	21	1222	2
1999	25	1239	2
2000	23	1289	2
2001	22	1317	2
2002	22	1295	2
2003	19	1262	2

Figure 3. Death Rate for Adult/Adolescent Spectrum of HIV-related Diseases Project, Seattle WA, by Calendar Year: 1990-2003

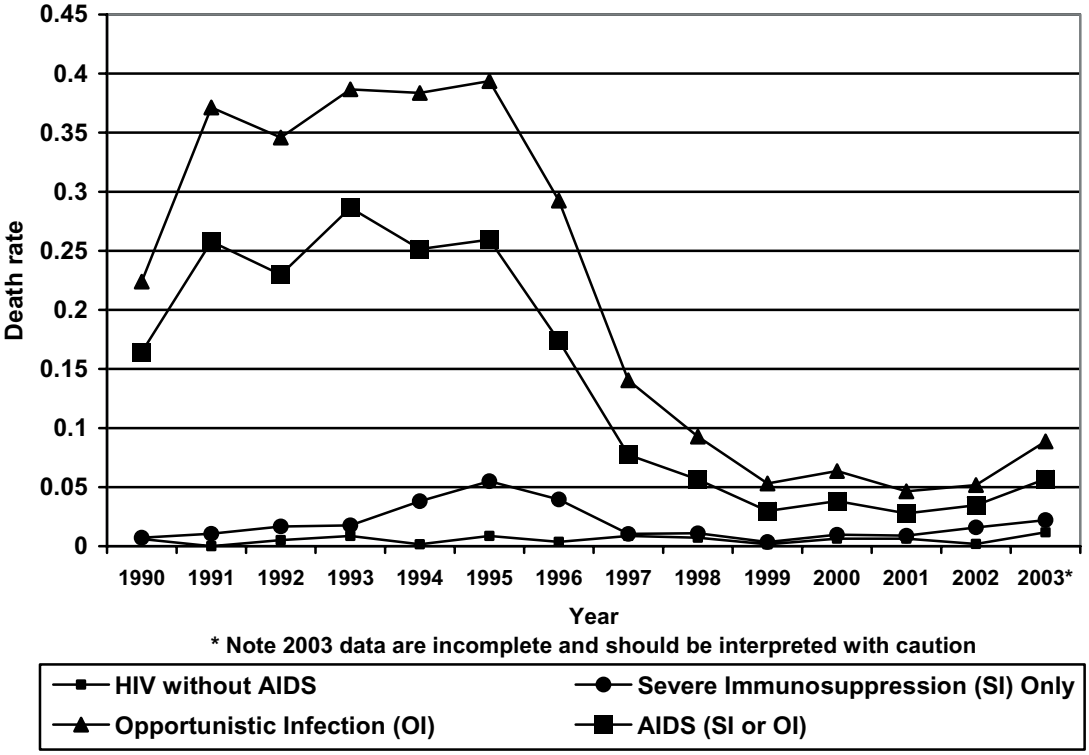
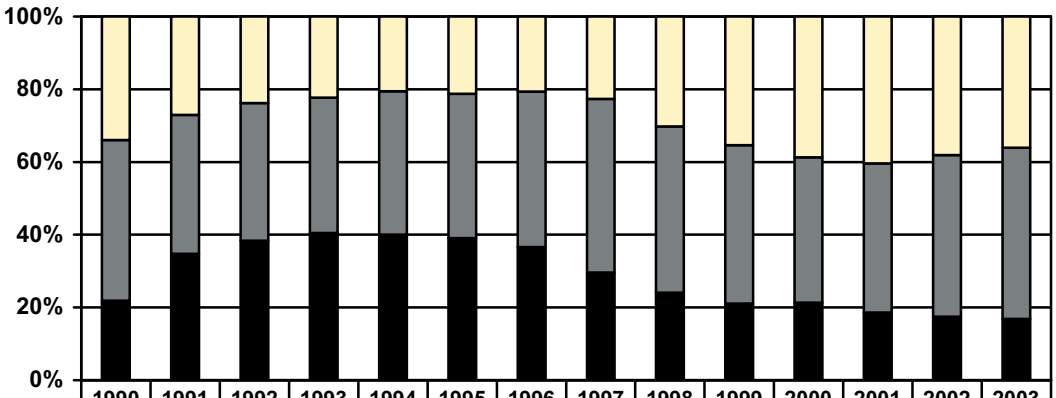
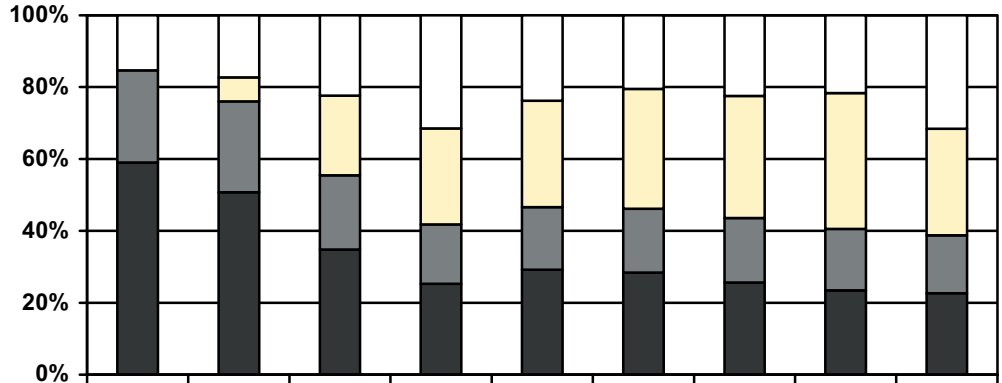


Figure 4. Lowest Annual CD4 Count Among All Patients Adult/Adolescent Spectrum of HIV-related Diseases Project, Seattle WA, 1990 - 2003



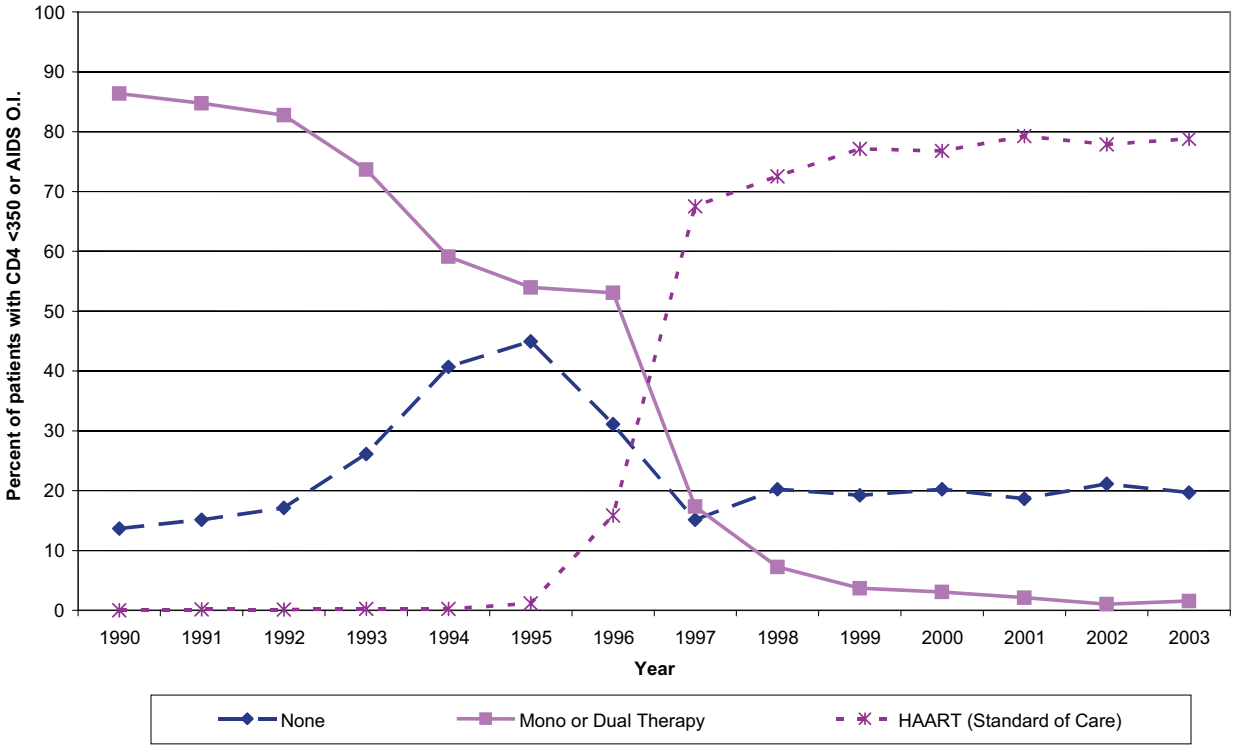
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
500+	73	148	172	190	163	162	162	196	271	321	376	402	413	401
200-499	95	209	274	317	313	302	335	414	410	396	389	408	482	523
0-199	47	190	278	345	318	298	287	256	216	191	207	185	190	187

Figure 5. Highest Annual Viral Load Among All Patients Adult/Adolescent Spectrum of HIV-related Diseases Project, Seattle WA, 1990 - 2003



	1995	1996	1997	1998	1999	2000	2001	2002	2003
Not detected	6	96	235	338	236	240	276	276	395
1-9,999	0	37	233	287	293	391	417	482	370
10,000-49,999	10	141	217	177	173	208	220	218	201
50,000+	23	282	366	271	289	333	315	299	283

Figure 6. Trends in Prescription of Antiretrovirals: Seattle ASD, 1990-2003



years. In 2003, 79% of those for who HAART therapy is recommended were prescribed HAART (Figure 6). Adherence to HAART therapy continues to improve among the cohort, 45% of those for whom adherence information was available were 96-100% adherent in 2003 (Figure 7).

The percentage of eligible persons receiving appropriate PCP prophylaxis (those with a CD4<200 within 6 months) has been decreasing over the past several years. Going from a peak of 90% in 1991 and 1992, to 76% in 2003. In 2003, 62% of patients received appropriate mycobacterium avium complex (MAC) prophylaxis after CD4 counts dropped below 50 (Figure 8). These less than ideal levels of coverage my be due to providers focusing on bolstering the immune system via HAART prescription, for example for patients near the threshold of needing OI prophylaxis, rather than relying on OI prophylaxis.

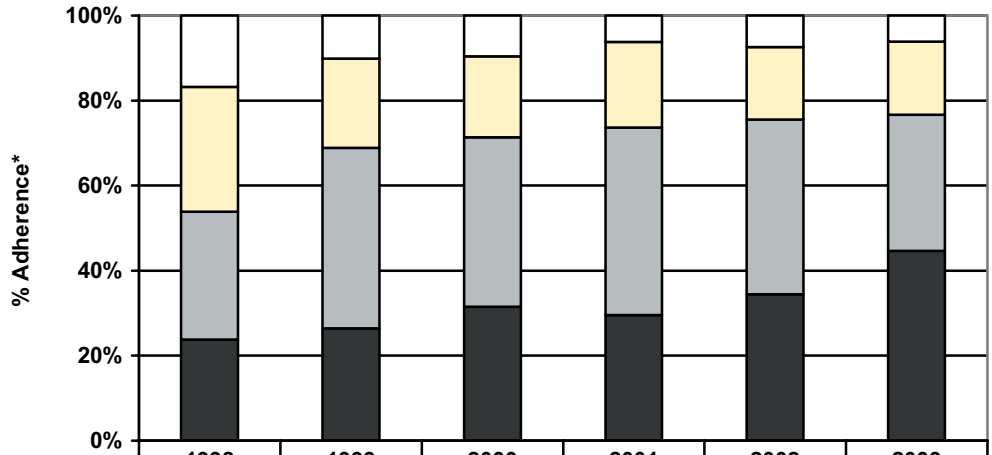
The comorbid conditions of substance use and/or mental illness were very frequently present among the ASD cohort. Forty-seven percent of ASD patients had documentation of any substance abuse, including alcohol problems and either injection or non-injection use of illegal drugs (Figure 9). Fifty-nine percent had documentation of mental illness, which included depression severe enough to warrant treatment, bipolar illness or psychosis.

Throughout the ASD project health care utilization has been monitored. Due to general improvements in health care delivery (such as prescription of trimethoprim-sulfamethoxazole rather than aerosolized pentamidine for PCP prophylaxis) and individual and population health improvements due to HAART (as shown in Figures 4 and 5) health care utilization has dramatically decreased. This decrease was especially present for those with HIV-induced immunosuppression (CD4 < 200) and only modest for intermediate ranges of CD4 counts and not present for those with close to normal immune function (CD4 > 500). In general, patients with a CD4 count less than 200 had higher number of outpatient visits, emergency room visits and hospitalizations per year (data not shown) relative to those with a stronger immune function.

In sum, the excess morbidity and premature mortality experience by patients followed in the ASD cohort has improved considerably since the advent of HAART.

• Contributed by Elizabeth Barash, MPH, Erin Kahle, MPH, and Susan Buskin, PhD, MPH

Figure 7. Adherence to ARVT regimens, Seattle ASD 1998 - 2003

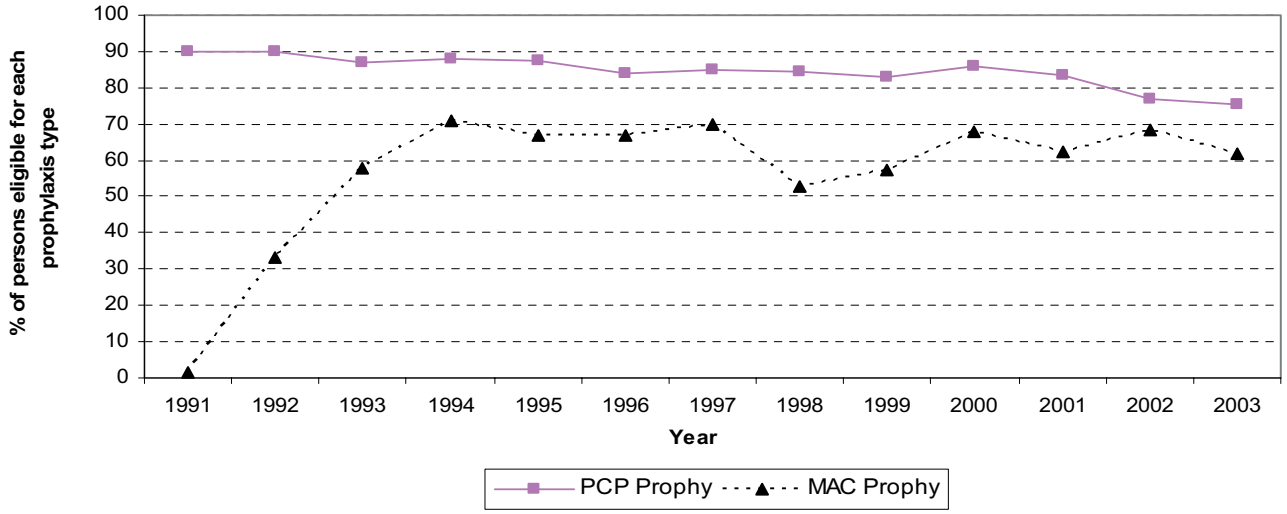


	1998	1999	2000	2001	2002	2003
Poor 0-45%	24	60	69	47	59	48
Moderate 46% - 75%	42	124	137	152	135	135
Good 76% - 95%	43	251	286	333	326	251
Excellent 96%-100%	34	156	226	223	273	350

Year	1998	1999	2000	2001	2002	2003
Total Enrollees on ARVT	1234	1225	1316	1356	1400	1311
Adherence Sought	213	808	937	977	978	964
Adherence Found	143	591	718	755	793	784

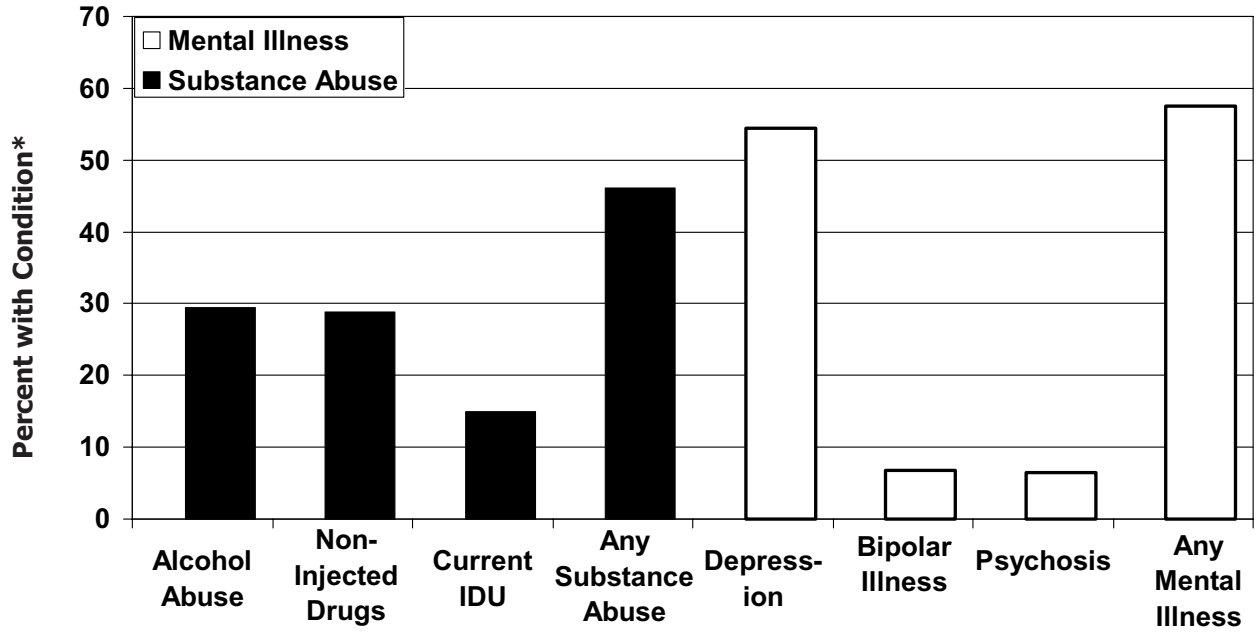
*Percent adherence is estimated from textual description in medical chart if missed doses or percent adherence are not specifically stated.

Figure 8. Trends in Prescription of AIDS O.I. Prophylaxis, Seattle ASD 1990-2003



- Current recommendations for the use of Opportunistic Infection prophylaxis have been applied to the entire time period for comparability.
- PCP Prophy= Pneumocystis pneumonia prophylaxis and includes TMP-SMX, dapsone, & pentamidine; eligible persons have a recent (within 6 months) CD4<200.
- MAC prophy=Mycobacterium avium complex prophylaxis and includes azithromycin, clarithromycin, & rifabutin; eligible persons have a recent (within 6 months) CD4<50

Figure 9. Mental Illness and Substance Abuse among Persons Active in Seattle ASD 1990 - 2003*



* Persons active in ASD include those with any contact during past 24 months. Persons are included in a category if the condition was ever documented in the medical record.

** Includes alcohol abuse and the use of illegal drugs, either injected or other route.

*** Includes depression, bipolar illness and psychosis.

An Assessment of the Reliability of Information Collected for HIV/AIDS Surveillance in Washington State

The date of an individual's first positive HIV test is a key variable used in HIV/AIDS surveillance and epidemiologic reports for accurately counting diagnoses per year and in assessing intervals between initial HIV diagnosis and accessing care, AIDS diagnosis, death, or other HIV-related events. The date of HIV diagnosis may be reported from a variety of sources, such as inpatient records, physician offices, laboratories, or HIV counseling and testing clinics, and is taken from the earliest reported positive laboratory test result or physician diagnosis of HIV infection. Because surveillance data come from a variety of sources, a standard used to assess the validity of the date of first HIV diagnosis has not been determined. This article uses the date of the first positive HIV test reported by respondents in an interview study (the Supplement to HIV/AIDS Surveillance Project, SHAS) and compares them with the HIV diagnosis date reported to the Centers for Disease Control and Prevention (CDC) through routine surveillance activities (HIV/AIDS Reporting System, HARS). The agreement between the dates of diagnosis recorded in HARS and the interview study was calculated to determine the potential for errors in our state surveillance data. It is important to note that the SHAS study is not considered the standard in determining the accuracy of surveillance data.

Methods

HARS includes people with HIV and AIDS, who tested for HIV confidentially or, for those with asymptomatic HIV, who received HIV-related care after 1999. People who tested anonymously are not captured in the surveillance system until they entered care; however, a physician record of HIV infection based on results from an anonymous test and the physician diagnosis would be reported to HARS.[1] Information on demographic characteristics, laboratory test results, opportunistic infections, and other factors for individuals with HIV/AIDS is collected from a variety of sources, entered into the HARS system, and electronically forwarded to CDC each month without personal identifying information.

SHAS was a CDC-sponsored, cross-sectional interview study that was conducted in Washington State from 1991-June 2004. The purpose of the study was to obtain self-reported, supplemental descriptive information on a range of behavioral topics from individuals with HIV/AIDS, aged 18 or older, who had been reported through routine surveillance to the state or local health department. Information about the date of first positive HIV test and the reasons for being tested and place of testing were analyzed. Respondents were identified from cases reported to HARS and the HARS case identification number was retained to enable later linkage between the two sources. Of the 3,513 individuals eligible for SHAS, 2,127 (61%) completed an interview.

Information from the SHAS study was merged with information reported to HARS for these individuals. Of the 2,127 matched cases, information on the date of the first positive HIV test was missing from the SHAS dataset for 196 cases and 346 HARS cases, and 10 cases were removed because they reported diagnosis dates before 1982, leaving 1,575 cases for analysis. Of these, 231 (15%), were initially reported with HIV infection without AIDS (HIV reporting was initiated in October 1999 in Washington State), and 439 (28%) were interviewed after May 2000 and had additional information available on whether their first HIV test was anonymous or confidential.

The information obtained from HARS included age, sex, race/ethnicity, and mode of HIV exposure. In HARS, the date of HIV diagnosis is considered to be the date of the earliest laboratory HIV test with a positive result or the date of physician diagnosis. If the earliest reported date of HIV diagnosis for an individual with AIDS was later than the date of AIDS diagnosis, or if the date of HIV diagnosis was missing, the date of AIDS diagnosis was used as the date of first HIV diagnosis. The information obtained from SHAS included the reported date of the first positive HIV test. Participants in SHAS were asked, "When did you first find out you had tested positive for HIV?" Additional information obtained from SHAS included the reason and place of respondents' first HIV test, who had recommended the test, and whether the test was anonymous or confidential.

The purpose of comparing HARS and SHAS data was to determine the agreement between the year of diagnosis recorded in HARS and the year of diagnosis reported by respondents to the survey. The analysis does not focus on the agreement of exact dates of diagnosis (month and year, or the difference of months between the dates) because surveillance data are summarized by year of diagnosis. This comparison may be used to assess the accuracy of future surveillance reports.

For cases that had both month and year available for the date of the first positive test from both SHAS and HARS (n=1,575 of the total 2,127 available for analysis), the difference in months between the two dates was calculated to assess the distribution of these differences. The percentage of agreement between the two data

sources was calculated, as well as the percentage of self-reported dates with a diagnosis year earlier or later than the diagnosis year recorded in HARS. The percentage of agreement by selected demographic characteristics and the time interval between the date of diagnosis recorded in HARS to the date of interview was analyzed. Kappa statistics were calculated, weighted to account for differences in agreement, for agreement on the year of diagnosis overall and for subgroups. Kappa statistics and p-values were calculated using the Cicchetti-Allison weight type in SAS.[2] A kappa statistic (k) greater than 0.75 was defined as excellent agreement, 0.40 to 0.75 as fair to good, and less than 0.40 as poor agreement.[3]

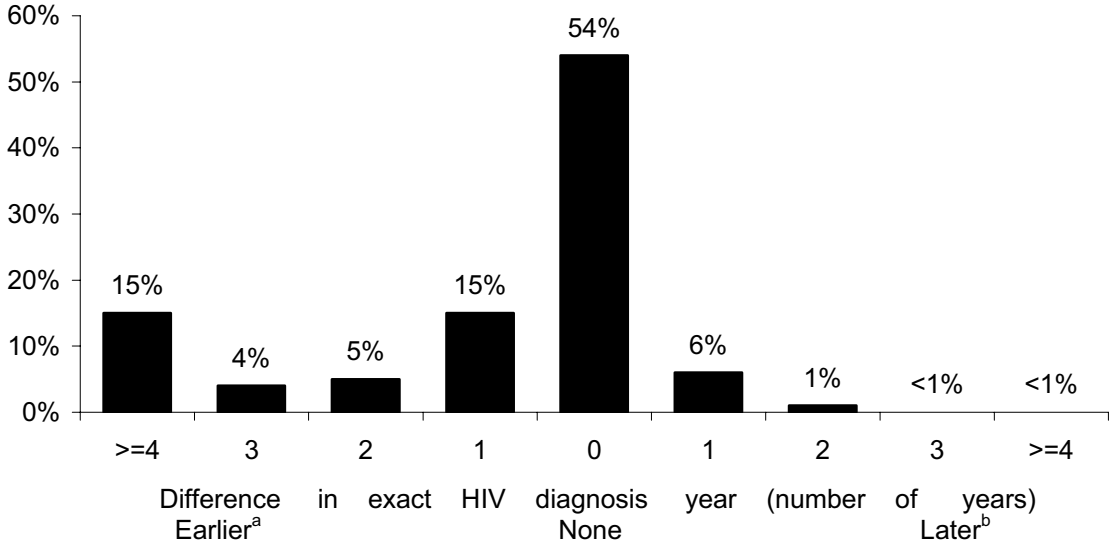
Results

Of the 1,575 HARS-SHAS pairs that had month and year of HIV diagnosis available, 1,065 (68%) had dates within 12 months of each other. Not all of these 1,065 cases matched calendar year of diagnosis; 453 (43%) had the same calendar year, 282 (26%) had a later year self-reported than was recorded in HARS, and 330 (31%) had an earlier year self-reported than was recorded in HARS. Overall, 858 (54%) of all 1,575 HARS-SHAS date pairs had the same year of diagnosis; 107 (7%) of the SHAS respondents reported a later year than HARS, and 610 (39%) reported an earlier year than HARS (Figure 1).

The percentage of HARS-SHAS date pairs that agreed on the same calendar year of diagnosis varied by the year (time period) cases were reported to HARS, with 46% in agreement for cases reported in 1991-1995 and 67% in agreement in 2000-2004. The proportion of respondents who reported an earlier year of diagnosis than was recorded in HARS was 49% in 1991-1995 and 26% in 2000-2004.

Agreement on the year of diagnosis differed by gender (53% in males and 62% in females) and by age group; the highest agreement (66%) was among those 18-24 years of age, the lowest (50%) among those 45-54 years of age (Table 1). Agreement varied by race; the highest agreement (70%) was among American Indian / Alaskan Natives and the lowest (43%) was among Asian / Pacific Islanders. Agreement also varied by exposure categories; the highest agreement (66%) was among those exposed through heterosexual contact and the lowest (51%) was among men who have sex with men, and men who have sex with men and also inject drugs. Agreement varied slightly by the length of time between the date of diagnosis recorded in HARS and the date of the interview; the highest agreement (58%) was found in participants interviewed within 12 months, and the lowest agreement (52%) among those interviewed between 13-24 months after diagnosis.

Figure 1. Date of first positive HIV test: difference in exact years between self-reported year from SHAS & year reported to the HIV/AIDS Reporting System, n=1575, 1991-2004, Washington State



a. Diagnosis year self reported in SHAS earlier than year recorded in HARS.
b. Diagnosis year self reported in SHAS later than year recorded in HARS.
SHAS = Supplement to HIV and AIDS Surveillance (SHAS) Project; HARS = HIV/AIDS Reporting System

Table 1. Date of first positive HIV test: comparison of self-reported year of diagnosis from SHAS to that reported to HARS, Washington State, 1991-2004

	Same calendar year reported by each					Earlier year reported in SHAS
	No.[a]	(%)[b]	k[c]	95% CI[c]	p[d]	(%)[e]
Total						
Month and Year	1,575	(29)	.42	.38,.45		(50)
Year	1,575	(54)	.70	.67,.72		(39)
Sex					<.02	
Male	1,313	(53)	.68	.65,.71		(40)
Female	262	(62)	.77	.70,.83		(31)
Age (years)					.10	
18-24	62	(66)	.83	.71,.94		(31)
25-34	508	(55)	.71	.66,.76		(39)
35-44	684	(55)	.69	.64,.73		(37)
45-54	266	(50)	.64	.57,.71		(44)
55-64	47	(60)	.70	.51,.88		(34)
Race					<.01	
White	1,113	(53)	.68	.64,.71		(40)
Black	227	(56)	.73	.66,.81		(35)
Hispanic	168	(59)	.72	.63,.81		(38)
Asian/Pacific Islander	23	(43)	.72	.53,.91		(35)
American Indian/Alaskan Native	33	(70)	.90	.84,.97		(24)
Other/unknown	11	(45)	.43	.03,.83		(45)
Mode of Exposure					.17	
Men who have sex with men	851	(51)	.67	.63,.71		(42)
Injection drug use	244	(59)	.74	.67,.81		(34)
Men who have sex with men and inject drugs	234	(51)	.66	.58,.74		(43)
Heterosexual contact	180	(66)	.77	.68,.85		(26)
Other/unknown	66	(62)	.69	.53,.85		(35)
Time between date of diagnosis recorded in HARS and date of SHAS interview					.4	
0-12 months	446	(58)	.68	.62,.73		(41)
13-24 months	301	(52)	.73	.67,.79		(42)
25-36 months	209	(53)	.65	.56,.74		(40)
>36 months	619	(54)	.69	.65,.74		(35)
Year (time period) reported to HARS					<.01	
1991-1995	803	(46)	.44	.39,.48		(49)
2000-2004	343	(67)	.73	.66,.79		(26)
Reason for Testing					<.01	
Self/Partner at risk for HIV	451	(47)	.61	.55,.67		(47)
Partner Notification/offered	49	(49)	.62	.43,.80		(43)
Illness	530	(67)	.82	.78,.86		(26)
Required	311	(46)	.62	.55,.69		(46)
Wanted to Know	87	(62)	.71	.59,.83		(29)
Other	127	(44)	.50	.39,.61		(50)

Table 1. (cont.) Date of first positive HIV test: comparison of self-reported year of diagnosis from SHAS to that reported to HARS, Washington State, 1991-2004

	Same calendar year reported by each					Earlier year reported in SHAS
	No.[a]	(%)[b]	k[c]	95% CI[c]	P[d]	(%)[e]
Type of Test[f]					.8	
Anonymous	97	(59)	.73	.62,.84		(36)
Confidential	286	(66)	.74	.67,.81		(25)
Recommendation of Testing					.08	
Someone else	199	(64)	.81	.74,.87		(30)
Self	198	(66)	.72	.64,.81		(25)
Required	42	(60)	.59	.37,.81		(29)
Place of Testing[f]					<.01	
HIV required site	24	(54)	.57	.30,.83		(46)
HIV testing site	49	(59)	.71	.56,.87		(31)
Hospital/Emergency Room	73	(78)	.79	.66,.91		(16)
Health clinic	61	(67)	.82	.71,.93		(21)
Jail	24	(63)	.64	.38,.91		(29)
Private site	61	(62)	.79	.66,.91		(33)
Public site	145	(61)	.74	.64,.83		(29)

a. Number of SHAS-HARS date pairs
b. Percentage of SHAS-HARS date pairs that agree on year of diagnosis
c. Weighted kappa coefficient and 95% confidence interval (CI)
d. Test for equal kappa coefficients
e. Percentage of SHAS-HARS date pairs where SHAS year of diagnosis was earlier than HARS year of diagnosis
f. This information was available only for cases interviewed during 2000-2004; for place of testing additional options were added during that time.

SHAS = Supplement to HIV/AIDS Surveillance (SHAS) Project
HARS = HIV/AIDS Reporting System

HARS and SHAS agreement on the year of diagnosis also differed by self-reported factors, including reasons and recommendations for testing and type and place of testing. The most frequent reason for testing was illness (530 of 1,575 [34%] for whom this information was available). Among those who said they were tested because of illness, the calendar year of diagnosis agreed between HARS and SHAS for 67% (Table). Among those interviewed for SHAS after May 2000, most received their first positive HIV test results from a confidential test (286 of 383 [75%] for whom this information was available), and agreement was 66% among this group. For those who tested anonymously, agreement was 59%. Agreement was 64% when someone else recommended testing and 66% when participants sought testing on their own. The highest agreement by place of testing was observed for those who tested in a hospital or emergency room (78%), and the lowest among those who were tested in an HIV testing required site (i.e.; blood bank, military, or insurance clinic).

The kappa statistic revealed overall good agreement between self-reported years of diagnosis and years of diagnosis reported in HARS (k = 0.70; 95% CI .67, .72). The test for equal kappa coefficients showed significant differences in agreement between race/ethnicity, sex, year (time period) reported to HARS, reasons for testing, and place of testing ($p<0.05$).

According to self-reports, about 39% of HIV diagnoses may have occurred in an earlier year than recorded in HARS, but this varied among sub-groups. Earlier years of diagnosis were most commonly reported by those who tested at a blood bank, military, or insurance clinic (HIV test required sites, 46%), were men who reported sex with men and injecting drugs (43%), were reported to HARS in an earlier time period (1991-1995) of HIV/AIDS reporting (49%), sought testing because they or their sex or drug using partner was at risk for HIV (47%), or were 45-54 years of age (44%).

Discussion

Overall, agreement on the year of diagnosis was good according to self-reports and information recorded in HARS and it appears that over time, reporting

of surveillance data has improved; data from earlier reporting years (1991-1995) compared to data from later years (2000-2004) show marked improvement in the accuracy of reporting the first HIV positive test. However, as many as 39% of the HIV diagnoses may in fact have been made in an earlier year than those recorded in HARS. Even among SHAS participants who were interviewed within 12 months of the diagnosis date recorded in HARS, 41% reported an earlier year than was recorded in HARS. Agreement varied by demographic and behavioral characteristics as well as by the circumstances of testing, such as the reason or place of testing.

The results are subject to several limitations. Participants may not remember dates correctly (recall bias). Many eligible subjects could not be interviewed because they were deceased, not located, too sick, or refused to be interviewed. The effect that anonymous testing had on this analysis is unknown; lower agreement among those who indicated they had ever had an anonymous test suggests that anonymous testing may account for some, but not all, of the self-reports of receiving a diagnosis earlier than reported in HARS. About 23% of the SHAS participants indicated that the HIV test they had had was anonymous (question added June 2000), and therefore this test may not have been reported to HARS. Reporting practices may have affected the information collected. HIV reporting was initiated in October of 1999 in Washington State.[1] Reporting of new HIV diagnoses was relatively comprehensive but prevalent HIV diagnoses were only reported sporadically as the patient sought care, through laboratory reporting, and/or by progressing to AIDS. Thus for prevalent HIV cases, information on the date of earlier HIV tests may have been more difficult to obtain and less reliable since it was collected later.

The practice of laboratory reporting, including electronic reporting, may increase the level of agreement in date of HIV diagnosis despite laboratory reporting being incomplete in Washington State (only detectable viral loads and CD4 counts below 200µls are reportable to the surveillance system).[4] In addition, the migration of individuals with HIV between states may hinder accurate data collection. For example, a later date of diagnosis may be recorded in HARS if information from the state where the first diagnosis occurred is not available to the new state. The minimum performance standards of the CDC Guidelines for National Human Immunodeficiency Virus Case Surveillance include a standard on data quality: "All HIV/AIDS surveillance systems should collect the recommended standard data in a reliable and valid manner."[5] The performance standard, however, does not specify a maximum error rate for individual data elements or records. Misclassification of the year of diagnosis can lead to inaccurate annual case counts and trends in diagnosis rates, as well as inaccurately calculated follow-up times between HIV diagnosis and AIDS or death.

In summary, HARS appears to correctly capture the majority of dates of first positive HIV tests. Future studies should evaluate the potential for errors in reporting by survey participants and ask for the specific location where the first positive HIV test was conducted to permit a review of records and verify self-reports. The recent implementation of HIV Incidence Surveillance in Washington State will permit evaluation of HIV diagnosis dates, because these questions have been added to the case report form. Using laboratory reporting to compare diagnosis dates may also increase validity of HARS data on the date of an individual's first positive test. Increased use of electronic laboratory reporting as well as efforts to improve efficiency, standardization, and completeness of laboratory reporting will ensure that HIV surveillance data are of sufficient quality for effective planning and allocation of resources for HIV prevention and care, particularly because approximately 70% of surveillance data in Washington State come from laboratory reporting. Current plans to revise Washington Administrative Code (WAC) to include the reporting of all viral load and CD4 results in order to have complete laboratory data; and the implementation of electronic laboratory reporting by the state public health lab by end of 2006 should lead to better data. Although HARS appears to correctly capture the majority of dates of first positive test results, complete and reliable case counts are essential for resource allocation for HIV treatment and prevention efforts; therefore, recent and upcoming changes to the Washington State HIV/AIDS surveillance system may address the validity of HIV diagnosis dates and the reasons why HARS has failed to accurately capture some initial diagnosis dates.

• *Contributed by Alexia Exarchos, MPH*

1. Washington State Legislature. Washington Administrative Code (WAC), WAC 246-101. Available from: URL: http://apps.leg.wa.gov/WAC/default.aspx
2. SAS Institute. SAS/STAT User's Guide. Version 8. Cary, NC: SAS Institute; 1999. p 1309-11.
3. Fleiss JL. Statistical methods for rates and proportions. 2nd ed. New York: Wiley; 1981.
4. Washington State Legislature. Washington Administrative Code (WAC), WAC 146-100-207. Available from: URL: http://apps.leg.wa.gov/WAC/default.aspx
5. Centers for Disease Control and Prevention (US). Guidelines for national human immunodeficiency virus case surveillance, including monitoring of human immunodeficiency virus infection and acquired immunodeficiency syndrome. MMWR Recomm Rep 1999; 48 (RR-13):11-7.

Trends in Utilization and Cost of HIV-Related Hospitalizations, Washington State, 1995-2004

Background

HIV-related hospital stay information is an important data source to examine the efficacy and availability of publicly funded HIV treatment services, including the frequency and associated costs of HIV-related hospital stays among persons with HIV infection. Ryan White CARE Act funds are provided to states and territories, including Washington State, with the explicit intention of reducing morbidity associated with HIV infection and reducing the burden of associated costs on the local hospitals. Comprehensive hospital discharge data are available for all people admitted to hospital facilities in Washington State. Previous analyses of these data[1] found that the number of people admitted to in-patient care for HIV-related illness decreased significantly between 1995 and 1999. However, for this same time period, the percentage of people admitted through emergency room presentation and the mean inflation-adjusted charge for HIV-related admissions increased substantially. The present study continues exploration of these important trends by adding additional years of data for 2000 through 2004.

Methods

Data were obtained from the Washington State Comprehensive Hospital Abstract Reporting System (CHARS), which contains hospital admission data from non-military facilities in Washington State. CHARS data are collected and maintained by the Washington State Department of Health (DOH), Office of Hospital & Patient Data Systems. For these analyses, CHARS discharge records for hospital stays in 1995 through 2004 were used. To better reflect hospitalizations specifically related to HIV infection, analyses were performed only on cases assigned an HIV-specific Diagnostic Related Group (DRG) code of 488, 489 or 490 at discharge.

Charge data analyses excluded admissions resulting in the death of the patient.[2] Previous studies have shown that cost of care sharply increases prior to death due in part to resuscitation procedures.[3] Excluding decedents may provide a more realistic indication of the ongoing cost of HIV care. Further, cost data are presented as 5% trimmed (excluding both upper and lower 5%) means in order to limit the effect of outliers. Charges reported for 1995 through 2004 were adjusted for inflation to 2004 dollars according to the Consumer Price Index for Medical Care (base period 1982-84).[4] The Mantel-Haenszel chi-square test for trend was used to determine the statistical significance of trends in categorical data such as admission type and primary payers. The Kruskal-Wallis test was used to assess the significance of trends in charges.

Results

Inpatient service utilization data for the years 1995 through 2004 are presented in Table 1. The number of hospitalizations and the number of patients hospitalized for HIV-related conditions declined from 1995 to 1999 by 56% and 53% respectively. From 2000 to 2004 the number remained stable at close to 700 hospitalizations among approximately 450 patients per year. However the rate of hospitalizations based on surveillance data for the number of people living with HIV declined steadily throughout the 10 years. Among those with any hospitalizations, the mean number of admissions per patient was 1.5 in 2004 and the average length of hospitalization per admission was 6.7 days (median = 4), which has not changed significantly since 1995. Inpatients with HIV were hospitalized an average of 10 days per year for HIV-related conditions, also unchanged since 1995. However, the proportion of admissions for Pneumocystis pneumonia (PCP) decreased significantly from 23% in 1995 to 16% in 1999 ($p=0.002$). PCP admissions increased slightly in 2000 to 21% of admissions, then significantly decreased again to 12% in 2004 ($p< 0.0001$). In addition, there has been a steady and significant increase in the proportion of HIV-related hospitalizations admitted through the emergency room (ER); from 40% in 1995 to 63% in 2004 ($p<0.0001$).

The total charges incurred for HIV-related hospitalizations decreased from $28.8 million in 1995 to $14.4 million in 1998 (inflation-adjusted to 2004 dollars). Total charges increased in 1999 and 2001, but then stabilized to approximately 18 million in 2002, 2003 and 2004. Figure 1 illustrates the change in inflation-adjusted charges for inpatient care for HIV infected persons from 1995 through 2004.

The mean charge per HIV patient per year has steadily increased from $24,137 in 1995 to $29,762 in 2004 ($p=0.001$). The mean charge per admission and per day also increased over the entire study period. However, the trend increase was only significant from 1995 to 1999. The mean charge per admission rose from $14,933 in 1995 to $18,751 in 1999 ($p<0.0001$), then remained relatively stable at close to $20,000 through 2004. The mean charge per day rose from $2,868 in 1995 to $3,489 in 1999 ($p<0.0001$), but remained fairly constant for the period 2000 through 2004. The mean charges per ER and PCP admission have increased in a similar fashion. The mean charge per ER admission was $16,018 in 1995, rose to $20,316 in 1999 ($p=0.003$) then hovered around $20,000 through 2004. The mean PCP admission charge was $16,933 in 1995 and increased to $22,543 in 1999 ($p=0.001$). Mean

Table 1. HIV-Related Hospital Utilization, Washington State, 1995-2004

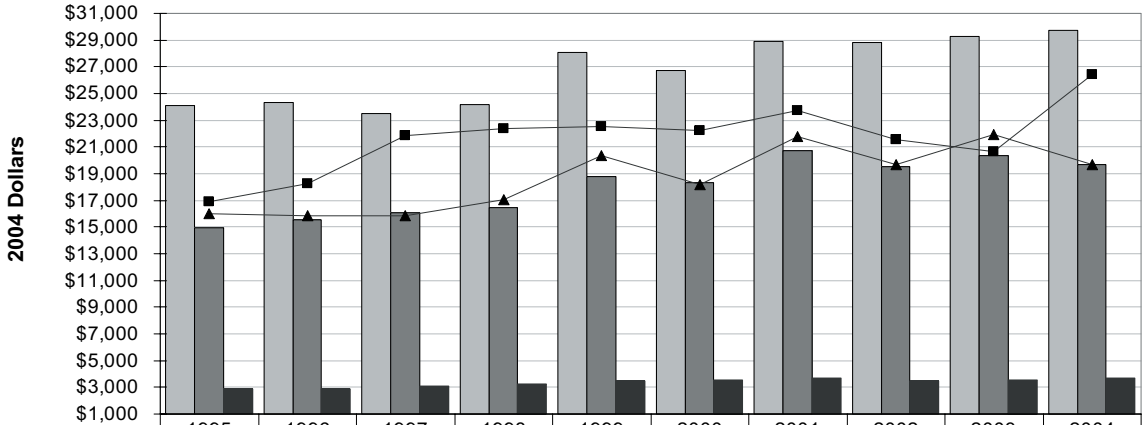
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
TOTAL ADMISSIONS	**1,524**	**1,246**	**764**	**698**	**674**	**651**	**705**	**698**	**658**	**694**
TOTAL PATIENTS	**942**	**772**	**512**	**458**	**446**	**449**	**493**	**468**	**442**	**456**
Rate of hospitalization per 1,000†	354.3	230.7	129.3	102.6	89.2	79.2	78.2	67.1	57.6	54.4
Mean admissions per patient	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5
Mean length of stay per admission in days (median) Range	6.4 (4.5) 1-111	6.4 (5.0) 1-45	6.5 (4.0) 1-62	6.3 (4.0) 1-72	6.7 (4.0) 1-82	6.9 (5.0) 1-65	7.1 (5.0) 1-89	7.0 (4.0) 1-60	6.9 (5.0) 1-56	6.7 (4.0) 1-71
Mean days hospitalized per year	10.3	10.3	9.7	9.6	10.1	9.9	10.1	10.5	10.2	10.2
Admitted from emergency room (ER)††	40.0 %	44.1 %	46.5 %	51.7 %	53.7 %	56.2 %	60.0 %	58.9 %	59.0 %	63.0 %
Admitted with *Pneumocystis* pneumonia (PCP) †††	22.5 %	19.3 %	19.6 %	20.2 %	16.0 %	21.2 %	17.3 %	15.9 %	14.3 %	11.8 %

† Annual hospitalization rate per 1,000 based on prevalent HIV/AIDS cases diagnosed and not known to be deceased by year, reported through 12/2005

†† 1995-1999 trend significant, p<0.0001; 2000-2004 trend significant, p=0.04; 1995-2004 trend significant, p<0.0001

††† 1995-1999 trend significant, p=0.002; 2000-2004 trend significant, p<0.0001; 1995-2004 trend significant, p<0.0001

Figure 1. Charges for Hospitalizations Among HIV-infected People, Washington State, 1995-2004*



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mean Charge Per Patient †	24,137	24,337	23,536	24,168	28,061	26,720	28,881	28,858	29,280	29,762
Mean Charge Per Admission ††	14,933	15,538	16,080	16,465	18,751	18,314	20,708	19,540	20,326	19,644
Mean Charge Per Day ††	2,868	2,890	3,070	3,230	3,489	3,527	3,685	3,486	3,575	3,696
Mean Charge Per ER Admission ‡	16,018	15,866	15,884	17,087	20,316	18,190	21,739	19,665	21,916	19,652
Mean Charge Per PCP Admission ‡‡	16,933	18,232	21,821	22,390	22,543	22,188	23,708	21,565	20,668	26,393

* Admissions resulting in death are excluded from all charge analyses. Means are 5% trimmed.

† 1995-2004 trend significant, p= 0.001

†† 1995-1999 trend significant, p< 0.0001; 1995-2004 trend significant, p< 0.0001

‡ 1995-1999 trend significant, p= 0.003; 1995-2004 trend significant, p< 0.0001

‡‡ 1995-1999 trend significant, p= 0.001; 1995-2004 trend significant, p< 0.0001

PCP admission charges were about $22,000 each year through 2003 and then spiked to $26,393 in 2004.

Table 2 shows the proportion of HIV admissions for each designated primary payer in the ten-year period. It should be noted that that the primary payer is determined at the time the patient is discharged and may be subject to change through billing and adjustment processes. A significant increase in reliance on Medicare for payment of inpatient charges related to HIV infection occurred from 1995 (20%) to 1999 (33%, $p<0.0001$). However, this trend has stabilized at about 32% of admissions from 2000 to 2004. The proportion of hospitalizations for which Medicaid was the primary payer also increased significantly from 25% in 1995 to 32% in 1999 ($p<0.0001$), further increased to 36% in 2000 and then to 39% by 2004. This increasing reliance on federally funded programs for in-patient care is accompanied by a concurrent decrease in reliance on private insurance, health maintenance organizations (HMOs) and health care service contractors (HCSCs). A significantly smaller percentage of admissions indicated commercial insurance (private health care plans other than health maintenance organizations) as their primary payer in 1999 (11%) than in 1995 (19%, $p<0.0001$). HMOs' share of the hospitalization costs steadily decreased from about 13% of HIV admissions in 1995 to only 2% in 2004. Similarly, HCSCs went from paying for about 16% of admissions in 1995 to 5% in 2004. Of particular note, the observed number of admissions that were "paid for" by the patient increased from 5% in 1995 to 8% in 2004.

Discussion

Previous analyses of hospitalization trends suggested that the observed reduction in the number of persons hospitalized each year for HIV-related conditions for the period 1995-1999 reflected the availability and widespread uptake of highly active antiretroviral therapy (HAART). While the actual number of persons admitted for in-patient care for HIV-related morbidity by year for the period 2000 through 2004 has not decreased as dramatically as in the previous 5 years, adjusting these data for the estimated prevalence of persons living with HIV in Washington State[5] demonstrates an ongoing decline in utilization of in-patient medical services (Table 1). As suggested elsewhere,[6,7] this trend provides additional evidence that availability of HAART continues to have a significant and increasingly positive impact on HIV-related morbidity. Similarly, admissions for PCP as a percentage of all hospitalizations decreased almost 50% across the 10 year study period indicating that guidelines for prophylaxis have been particularly efficacious when coupled with widespread use of HAART.

While there are significant limitations to CHARS data with respect to analyzing exact costs and payer source for in-patient hospitalizations, overall trends observed remain robust. The relative proportion of costs for HIV-related hospital stays shifted significantly away from private insurance coverage toward federally funded Medicare and Medicaid coverage across the study period. This trend may be due in part to successful efforts by the Washington State's AIDS Drug Assistance Program (ADAP) to shift HIV infected clients to more

Table 2. Primary Payment Source for Hospitalizations Among HIV-infected People, Washington State, 1995-2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
TOTAL ADMISSIONS	**1,524**	**1,246**	**764**	**698**	**674**	**651**	**705**	**698**	**658**	**694**
Medicare†	20.2%	24.3%	26.0%	30.5%	33.4%	32.3%	29.8%	32.6%	32.4%	32.4%
Medicaid†	25.3	26.6	32.1	33.1	31.5	35.8	39.0	38.5	33.0	38.6
Health maintenance organization††	13.3	14.0	10.5	6.7	5.5	4.8	4.1	3.6	3.2	2.2
Commercial insurance†	18.8	12.0	8.4	7.2	11.4	14.9	11.6	11.4	12.3	11.8
Self pay‡	5.4	6.0	9.2	8.7	7.1	3.8	7.9	6.6	8.1	8.4
Health care services contractor†	16.3	16.5	13.6	13.0	10.1	7.4	6.4	6.8	10.5	5.0
Other	0.6	0.6	0.1	0.7	1.0	1.1	1.1	0.6	0.6	1.6

† 1995-1999 trend significant, $p< 0.0001$
†† 1995-1999 trend significant, $p< 0.0001$; 2000-2004 trend significant, $p= 0.006$
‡ 1995-1999 trend significant, $p= 0.004$; 2000-2004 trend significant, $p= 0.004$

comprehensive and cost efficient coverage for HIV-related medications. Cost containment measures implemented by private insurers such as HMOs and HCSCs to minimize private-sector costs associated with the treatment of HIV infected persons may also contribute to an apparent redistribution in costs of in-patient medical care to public-sector payers.

Previously observed trends in source of admission, most notably an increase in in-patient admissions through the emergency room, continued in the most recent analysis. Increasing admission from emergency care settings previously raised questions regarding ease of access to, and utilization of, on-going HIV primary care among persons with HIV. However, the mean length of stay and mean charge per admission, while on balance slightly greater for ER admissions across the study period, do not represent a significantly different burden to the care continuum than admissions from other sources (data not shown). Additional investigation is needed to determine if ER admissions are an indicator of potential problems with access to routine HIV primary care.

CHARS data continue to be a valuable source of information about care patterns and overall morbidity among those infected with HIV in Washington State. Future analyses of these data will focus on providing insight into potential disparities in hospitalization rates, costs and payment sources by demographic and geographic factors.

• Contributed by Todd E. Rime, MA and Mark Stenger, MA

1. Rime, Todd E, Mark Stenger, and Jo Hoffman. Trends in Utilization and Cost of HIV-Related Hospitalizations, Washington State, 1995-1999. HIV/AIDS Semi-Annual Epidemiology Report 1st Half 2001, 18-21.
2. In 1995, 124; 1996, 94; 1997, 55; 1998, 46; 1999, 36; 2000, 40; 2001, 39; 2002, 47; 2003, 55; and 2004, 33 admissions resulted in the death of the patient, and were excluded from change analyses.
3. Fleishman, John A., Vincent Mor, and Linda L. Laliberte. Longitudinal Patterns of Medical Service Use and Costs among People with AIDS. Health Services Research 1995; 30:3.
4. Federal Bureau of Labor Statistics, Consumer Price Index for Medical Care, U.S. (base period 1982-1984).
5. Washington State Department of Health, Infectious Disease & Reproductive Health, Assessment Unit, AIDS Surveillance Program, cases diagnosed through 12/2004 and reported as of 12/2005.
6. Palella, FL Jr, et al, Declining Morbidity and Mortality Among Patients with Advanced Human Immunodeficiency Virus Infection. HIV Outpatient Study Investigators., N Engl J Med 1998;338:853-60.
7. Torres, RA, Baar, M, Impact of Combination Therapy for HIV Infection on Inpatient Census. N Engl J Med 1997;336:1531-2.

International Focus: HIV/AIDS in India – Creation of an Epidemiologic Profile for One Indian State.

Through its Global AIDS Technical Assistance Program, the National Alliance of State and Territorial AIDS Directors (NASTAD), in collaboration with the Centers for Disease Control and Prevention (CDC), sends HIV/AIDS prevention, care, or surveillance experts from U.S. health departments to work with their international colleagues. As part of this technical assistance program, since 2003 I have been traveling to Andhra Pradesh, India to assist health department colleagues at the Andhra Pradesh State AIDS Control Society (AP SACS) in producing a profile of the local HIV/AIDS epidemic. Staff at AP SACS are interested in describing their local epidemic as accurately as possible in order to effectively target limited resources and evaluate programmatic activities, much as we attempt to do here in the United States.

The initial trip to India consisted of working with health department staff to create a compendium of data sources for the profile and an examination of the strengths and limitations of these sources. Subsequent trips involved identifying public health partners to collaborate on the profile, working in one specific district to create a pilot profile by abstracting already-existing data from clinics, hospital, and other routine serosurveillance studies, and providing training in data collection using EpiInfo. Creation of the pilot profile has resulted in better understanding of the local epidemic and service needs for that district, increased appreciation of the collection of complete, accurate data in the clinic setting, and interest in broadening the geographic scope of future profiles. This year I will also help AP SACS to train the new Surveillance/Monitoring/ Evaluation coordinator.

What has been most striking to me about this work is how, whether at a health department in Washington State or Andhra Pradesh, India, we struggle with the same issues. How do we collect and analyze data that help us to best describe our epidemics and evaluate program activities without making the activities too burdensome for care providers? How do we most effectively present the data to policy makers so that they actually take them into consideration as they are strategizing about how to address the epidemic and allocate resources? How do we function within our respective bureaucracies? How do we make the best use of technology as we do our work? Although I go to India to act as a technical assistance provider, I bring home at least as many ideas as I contribute, as well as an appreciation of how small the world really is.

• *Contrubuted by Maria Courogen, MPH*

International Focus: HIV/AIDS in China – Knowledge, Attitudes, and Beliefs of Public Health Workers and Medical Students.

In 1999 I traveled to the city of Chengdu, in Sichuan Provence in the People's Republic of China. While there, I conducted informational lectures on the epidemiology and prevention of HIV/AIDS. To better understand the educational needs of the audience and to assess the efficacy of the lectures, my hosts and I administered a brief pre-and post lecture knowledge, attitudes, and beliefs survey. The results were published [Buskin et al. HIV/AIDS Knowledge and Attitudes in Chinese Medical Professionals before and after an informational lecture on HIV/AIDS. J Pub Health Pract Mgmt 2002]. There were two lectures: one to a group of public health professionals at a large city health department, the other delivered to a group comprised predominantly of medical university students. There were no important differences in the two cohorts so the results were combined. In brief, knowledge of HIV transmission routes was high pre-lecture, but there were mistaken beliefs about HIV being transmitted casually, by insects, by kissing, etc. that were greatly reduced post-lecture. Stigma, as measured by discriminatory attitudes towards HIV-infected co-workers, classmates, and family members was high both pre- and post-test, but significantly reduced post-test. Although these findings may just represent the audience answering the questions in a manner they believe they were expected to answer (social desirability bias), audience members simply may not have previously heard good scientific explanations of why HIV was not spread by mosquitoes or casual contact.

Six years later, on another trip to China, I again lectured on HIV/AIDS – this time in Jinan, Shandong, at the Jinan Central Hospital. Although there was no pre and post lecture assessment, the audience showed a high level of understanding by their questions. At the time of the lectures, neither region of China had a high HIV prevalence. Further the lectures included material of a sensitive nature (e.g., homosexuality, injection drug use, blood selling, and the prevalence of HIV in China) that are topics many Chinese, including medical professionals, don't typically discuss. Yet, or maybe partly because of these, attendance for these voluntary lectures was good, and, participation rewarding.

• *Contributed by Susan Buskin, PhD, MPH*

International focus: HIV/AIDS among foreign-born individuals in King County.

An increasing proportion of King County residents diagnosed with HIV were born outside of the United States. This article reviews some of the local, national, and world data leading to our conclusion that HIV among foreign-born persons is a growing concern for local prevention efforts.[1]

Worldwide distribution. UNAIDS estimates as of December 2005 that approximately 40 million people worldwide are living with HIV or AIDS. Worldwide rates of HIV infection range from 5-30% of adults in African countries, to 5-10% in certain countries in Southeast Asia, and are generally under 1% in most developed countries of Europe and North America.[2] In the United States, an estimated 1.1 million people are infected[3], and in Washington an estimated 12,000 to 14,000 people are living with HIV.[4]

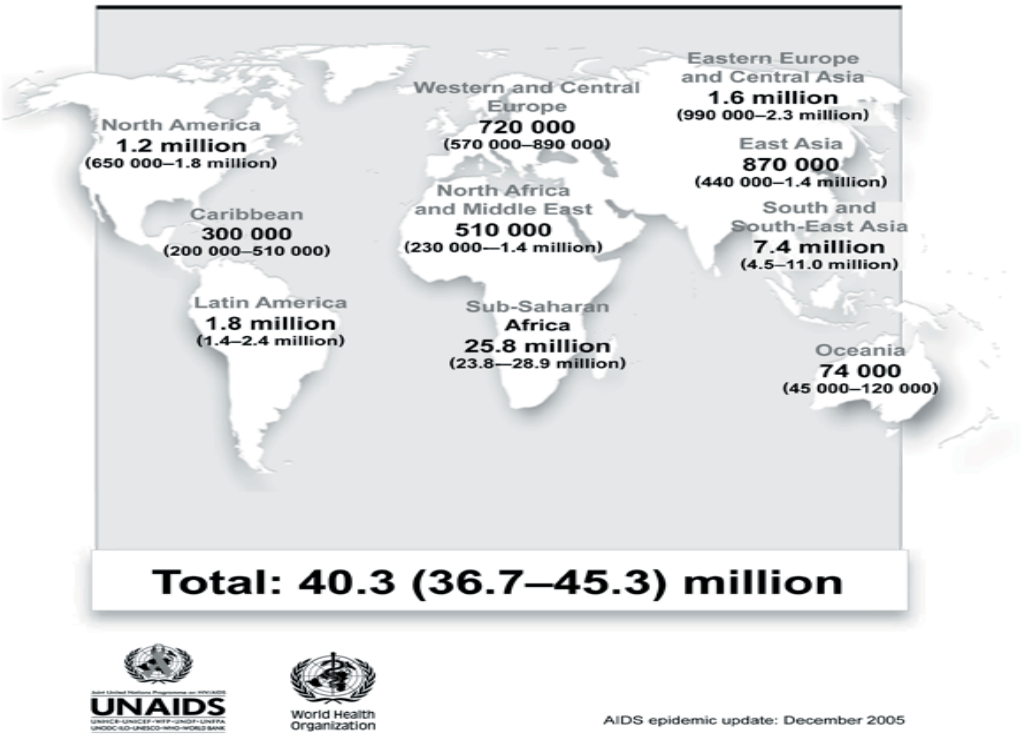
Given these dramatically different rates, it is not surprising that many immigrants, particularly those from African countries, are HIV infected. HIV prevalence rates in selected areas of the world are shown in Table 1[2,3,4] and graphically in Figure 1.[2]

Table 1. HIV Prevalence Rates in selected areas worldwide, as of the end of 2005

Area	Estimated HIV+ Range	Infection rate Midpoint	Prevalence among Adults 15-49
King County	[7,200-8,400]	7,800	0.6%
Washington State	[12,000-14,000]	13,000	0.3%
World	[36.7-45.3 million]	40.3 million	1.1%
United States	[1.04-1.2 million]*	1.1 million	0.6%
North America	[650,000-1.8 million]	1.2 million	0.6%
Caribbean	[200,000-510,000]	300,000	1.6%
Latin America	[1.4-2.4 million]	1.8 million	0.6%
Middle East & N Africa	[230,000-1.4 million]	510,000	0.2%
W & Central Europe	[570,000-890,000]	720,000	0.3%
E. Europe, Central Asia	[990,000-2.3 million]	1.6 million	0.9%
Asia	[5.4-12.0 million]	8.3 million	0.4%
Sub-Saharan Africa	[23.8-28.9 million]	25.8 million	7.2%
Oceania	[45,000-120,000]	74,000	0.5%

* US at end of 2003

Figure 1. Estimated numbers of people infected with HIV world-wide by region, as of the end of 2005



Immigration practices: Since the late 1980's, federal policies have required proof of a negative HIV test and have prohibited individuals known to be HIV-infected from immigrating to the U.S. Waivers may be granted for various humanitarian reasons. Foreigners who move to the U.S. under student or work visas, or travel for business or pleasure, may not be subject to the testing requirement. Undocumented immigrants would obviously have no health screening mandated. Therefore HIV-infected persons may enter into the United States in a variety of ways.

HIV surveillance methods: HIV and AIDS cases are generally counted based upon the residence at the time of diagnosis. In addition, documented and undocumented immigrants are counted based on residence at the time of first seeking care in the U.S.[5] We usually do not know how long the person has been living in the U.S. (whether 1 year or 40 years), their citizenship status, or where the person was living when they first became infected. The result is that most King County HIV cases were living here at the time of diagnosis, but some were infected and diagnosed in other countries.

Surveillance results: Among 5,780 persons living reported living with HIV or AIDS as of 12/31/2005, 96% had complete country of birth information. Two-thirds of those cases missing country of birth are either white MSM or Hispanic MSM. Since 1996, the proportion of new cases that are among foreign-born residents has increased steadily (Table 2). Since 1997, this trend has been largely driven by increases among foreign-born Blacks. MSM and IDU make up well over two-thirds of cases among all groups, except for foreign-born Blacks. Among that group, 44% are heterosexually transmitted infections, and 42% are undetermined (Table 3).

Foreign-born Blacks: Foreign Born Blacks are analyzed separately for three reasons. After reviewing the data, it becomes clear that a) trend is up among this group but not among others, b) the risk profile for Blacks is substantially different than for other foreign born individuals, and there were concerns about this population, largely from portions of Africa with the highest HIV rates globally.

• Contributed by Jim Kent, MS

1. JB Kent. Impact of Foreign-Born Persons on HIV Diagnosis Rates Among Blacks in King County, Washington, AIDS Education and Prevention, 2005, 17B:60-67.
2. UNAIDS/WHO AIDS Epidemic Update: December 2005, available at http://www.unaids.org/epi/2005/doc/report_pdf.asp
3. M. Glynn, P Rhodes. Estimated HIV prevalence in the United States at the end of 2003 [Abstract T1-B1 101], presented at the National HIV Prevention Conference, Atlanta, GA, June 2005.
4. WA Department of Health. HIV Prevalence Estimation in Washington (working document).
5. Centers for Disease Control. Technical Guidance for HIV/AIDS Surveillance Programs, Case Residency Policy. 2005.

Table 2. HIV/AIDS diagnoses by birthplace, Seattle/King County 1981 - 2005

Year of HIV Diagnosis	N	%U.S.-born birthplace	%Foreign-born birthplace	% Unknown birthplace
1981-90	3570	95%	4%	1%
1991-93	1837	93%	6%	2%
1994-96	1358	87%	8%	5%
1997-99	1048	79%	14%	7%
2000-02	1188	77%	20%	3%
2003-05	986	75%	21%	4%

Table 3. Mode of by birthplace and race, Seattle/King County 1981 - 2005.

Race	Birthplace	N	MSM or IDU	Heterosexual	Unknown
White	U.S.	7155	94%	3%	2%
White	Foreign	176	81%	8%	7%
Black	U.S.	991	78%	9%	10%
Black	Foreign	313	12%	44%	42%
Hispanic	U.S.	333	91%	3%	4%
Hispanic	Foreign	332	72%	13%	14%
Asian	U.S.	69	88%	3%	3%
Asian	Foreign	129	69%	9%	20%

International HIV projects conducted in the laboratory of Dr. Lisa Frenkel (ongoing as of December 2005)

Our laboratory research projects focus on practical questions related to the prevention and treatment of drug-resistant HIV-1 infections in children and women. Four international collaborative projects, detailed below, are being conducted. The projects are diverse and focus on evaluation of the selection and dynamics of drug-resistant HIV-1 mutants during antiretroviral therapy (ART) and peripartum chemoprophylaxis. Another area of keen interest within our group is the implementation of interventions to prevent mother-to-child-transmission in resource-strapped communities. In addition, we aim to develop and transfer practical and economical assays for HIV-1 detection in infants, and monitoring of treatment and drug-resistant mutants in "developing" communities. Our projects include collaborative studies with colleagues in India, Peru, Mozambique, Thailand, the USA and Zimbabwe.

1. HIV-1 evolution and compartmentalization in the female genital tract in Seattle, Rochester, and Nairobi Kenya.

We hypothesize that the greatest reservoir of HIV-1 in women infected during sex is within the genital tract. Viral genetic diversity is also predicted to be greatest in the genital tract virus. Increased viral diversity as well as local inflammation due to infections could enhance the conditions for viral replication in the genital tract and increase the likelihood of that drug-resistant virus is selected. Furthermore, antiretrovirals may not achieve therapeutic levels in the genital tract, which would also favor viral replication and selection of drug-resistant viral variants.

We also hypothesize that HIV-1 RNA shedding will occur intermittently from the female genital mucosa, similar to viral RNA 'blips' in the plasma. Evolution of drug resistance mutations will be detectable in genital tract virus of women with subsequent failure of ART. Whereas, the genital and plasma HIV-1 RNA detected in 'blips' among women who continue to exhibit suppression of replication will be 'wild type'.

In this project we are characterizing the frequency, quantity and genotype of HIV-1 RNA shed from the genital tract of women before and during effective HAART. Using specimens from women with undetectable plasma virus (<50 copies/mL), we are characterizing the HIV-1 pol and env genomes in the genital RNA and in provirus from cytobrush and biopsies of the uterine cervix. In addition, we are evaluating whether mutations associated with drug resistance are detected first in the blood or genital tract and the timing of interchange between these viruses.

2. Prevention of mother-to-child-transmission of HIV-1 infection in Zimbabwe and Mozambique.

Etiology of mastitis: Breastfeeding accounts for nearly half of mother-to-child transmission of HIV-1 (MTCT).[1] Safe and affordable alternatives to breastfeeding are not available for the majority of infants born to HIV-1 infected women. Numerous studies support the role of mastitis in increasing breastfeeding transmission, likely from the increase in breast milk HIV-1 load associated with inflammation of the lactating breast. Clinical mastitis, characterized by pain, redness and swelling, occurs in up to one-third of lactating women. Subclinical mastitis, without symptoms, but with an increased breast milk sodium ([Na+]), is even more prevalent and has also been associated with increases breast milk HIV-1 RNA and MTCT. There are no published studies elucidating the etiologies of subclinical mastitis, nor mastitis in HIV-1 infected women. Veterinary studies of mastitis implicate a broad range of bacteria, mycobacteria, fungi, mycoplasmas and herpes group viruses. We hypothesize that mastitis, especially subclinical mastitis, in HIV-1 infected women is also caused by a variety of organisms, and that mastitis increases milk HIV-1 load within the breast, independent of the blood, presumably by immune stimulation of latently infected cells. By identifying the infectious agents associated with high levels of HIV-1 in breast milk, treatment and prophylaxis strategies can be developed that may reduce HIV-1 transmission to breastfeeding infants. Studies are in progress to examine associations between breast milk virus, cells and [Na+] and blood virus; and, to determine the infectious etiologies of mastitis in HIV-1 infected women.

Evaluation of HIV-1 specific immunization of infants by breastfeeding from infected mothers during nevirapine chemoprophylaxis: Considerable data indicate that HIV-1 specific humoral immunity can protect from infection and that cellular immunity modulates HIV-1-associated immune depletion. We hypothesize that when HIV-1 infection of infants is prevented by administration of nevirapine to breastfeeding infants, sufficient exposure to virus will result in HIV-1 specific immunization. We are evaluating whether HIV-1 specific primed-T cell and IgA responses in infants can be induced by repeated exposure to virus in maternal breast milk. If currently available drug regimens provide simultaneous prophylaxis of breastfeeding infants from HIV-1 infection and allow induction of HIV-1-specific immune responses, this would provide a rationale for studies to evaluate the protective effect of these immune responses after the prophylaxis is discontinued. If protective immunity can be induced during a short period of chemoprophylaxis

while breastfeeding, this would provide the basis for a novel strategy for the immunization of infants in countries where breastfeeding remains their primary source of nutrition, and of HIV-1 infection.

3. Defining reservoirs of nevirapine-resistant HIV-1 in women and infants selected by peripartum nevirapine chemoprophylaxis regimens in Mozambique.

Nevirapine chemoprophylaxis is moderately effective in reducing mother-to-infant HIV-1 transmission at a low cost. Nevirapine, however, rapidly selects for drug resistant HIV-1 because only a single base mutation, (i.e. K103N, Y181C and G190A), confers high-level resistance. Drug-resistant mutants, once selected, appear to persist in reservoirs. When antiretrovirals with cross-resistance are prescribed, these mutants proliferate rapidly and can foreshorten the benefits of ART even when started months after single-dose nevirapine (note: first-line ART in most countries includes nevirapine).

Studies are underway to provide insight into the establishment, modification and persistence of drug-resistant viral reservoirs as related to therapies administered to reduce mother-to-child-transmission of HIV-1. This information is critical to the development of global programs that synergize strategies for the reduction of mother-to-child-transmission of HIV-1 with the treatment of HIV-1 disease in adult women.

We hypothesize that recently selected drug-resistant virus is highly represented in short-lived lymphocytes, that without prolonged selection few mutants will enter long-lived reservoirs, and that most mutants in short-lived cells will decay to clinically insignificant levels. To evaluate these hypotheses we are quantifying the selection of NVP-resistant viruses in women exposed to "single-dose" NVP, the persistence of these mutants and whether the frequency of mutants at the initiation of ART is predictive of the efficacy of HAART in Thai and Mozambican women.

4. Development of a rapid and inexpensive test for drug-resistant HIV-1 suitable for use in resource poor settings; project conducted in many countries, including China, South Africa, Thailand, India, Peru, and Mozambique.

A sensitive, specific and high-throughput oligonucleotide ligation assay (OLA) for detection of genotypic HIV-1 resistance to nucleoside, non-nucleoside reverse transcriptase inhibitors and protease inhibitors has been developed and evaluated. This ligation-based assay uses differentially modified oligonucleotides specific for wild-type and mutant sequences. The assay allows sensitive and simple detection of both genotypes in a single well of a microtiter plate. The OLA detects genetic subpopulations more often than consensus sequencing. Reproducible and semiquantitative detection of the mutant and the wild-type genomes by the OLA was observed by analysis of wild-type and mutant plasmids mixtures containing as little as 5% of a mutant genotype in a background of wild-type genome. This rapid, simple, economical and highly sensitive assay provides a practical alternative to dideoxy-sequencing for genotypic evaluation of HIV-1 resistance to antiretrovirals. Currently work is ongoing to optimize the assay for testing of non-B subtypes and transfer technology to Peru and Mozambique.

For more information, including a bibliography of published works, please visit our web site at: http://depts.washington.edu/idimmweb/faculty/frenkel.html

• Contributed by Dr. Lisa Frenkel

1. Newell ML. Current issues in the prevention of mother to child transmission of HIV-1 infection. Trans R Soc Trop Med Hyg 2006;100:1-5.

University of Washington Adult AIDS Clinical Trials Unit (UW ACTU) Update: International Antiretroviral Research and Therapy Issues

Unique clinical and research challenges occur as use of antiretroviral therapy (ART) has expanded to resource-limited settings. In care settings, the clinical tools that we take for granted, such as HIV viral load measurements, frequent CD4+ T cell counts, and HIV drug resistance testing are often not available. Drug availability is also much more limited; often only one first line and one second line regimen are available and access to protease inhibitors is limited or non-existent. In research settings, while resources for laboratory testing may be better, how to ensure access to antiretroviral drugs after a research study has been completed is a major issue, and one that has delayed the start or prevented some research protocols from being done in international settings.

One potential treatment strategy to expand resources in resource-limited settings would be to use intermittent antiretroviral therapy to periodically suppress HIV and improve immunological responses. Small studies have suggested that this might be a promising way to reduce drug costs and drug-associated side effects. A large clinical trial to investigate this strategy was undertaken through a multinational collaboration led by National Institute of Allergy and Infectious Diseases (NIAID) funded investigators. The study involved 318 clinical sites in 33 countries. The Strategies for Management of Anti-Retroviral Therapy (SMART trial) was designed to determine whether continuous or intermittent ART would result in a better clinical outcome. HIV-infected subjects were randomly assigned to continuous ART or intermittent therapy. Those assigned to intermittent therapy received ART when their CD4+ T cells dropped below 250 cells per mm^3 and ART was stopped whenever their CD4+ T cells were above 350 cells per $mm.^3$ In addition to reducing drug costs, it was hoped that the intermittent therapy (drug conservation strategy) would reduce drug side effects. NIAID stopped the study as designed in January 2006 because the subjects receiving intermittent therapy had twice the risk of disease progression (development of clinical AIDS or death) than those in the continuous therapy group. Surprisingly, side effects were greater in the intermittent therapy group. When enrollment was stopped, 5,472 volunteers had joined the study and been followed for an average of 15 months. While this is a disappointing outcome, it is an important management question to have answered definitively.

The AIDS Clinical Trials Group (the national research organization which includes the UW ACTU) is conducting a 1,500 person international trial (ACTG 5175) comparing three ART regimens at 12 international sites in Africa, South America, the Caribbean and Asia, with a small proportion of the enrollment also coming from the U.S. This 3 arm study includes a protease inhibitor-containing regimen as well as non-nucleoside reverse transcriptase inhibitor-containing regimens, since it was felt important to obtain prospective, comparative data on different types of regimens. It is only through collaborations between government and industry that this type of treatment study can be conducted. The importance of large trails was underscored by the recently completed ACTG 5095 study. That study compared a simple twice-a-day triple nucleoside regimen (fixed dose combination of zidovudine/lamivudine/abacavir) to a standard two-class regimen of efavirenz plus zidovidine/lamivudine. In smaller studies, the triple nucleoside combination seemed to be as effective as other current regimens. However, in this 1,200-person study, the triple nucleoside regimen did not perform as well as the efavirenz regimens to which it was compared. These types of randomized studies are the most efficient and effective way to obtain comparative data about treatment strategies that can be of benefit to the broader HIV community worldwide.

Other important strategies under investigation in international settings include optimizing the timing of ART in persons coinfected with tuberculosis, which is a major challenge in many resource-limited settings, and identifying less expensive testing and monitoring strategies for persons receiving antiretroviral therapy.

For the last three years, the UW AIDS Clinical Trials Unit has been working with IMPACTA, a community-based research site in Lima, Peru, to help build the infrastructure necessary to conduct clinical trials of HIV treatments. This project is an extension of collaboration between the UW and Peruvian investigators that has been going on for over 15 years. Over 35 Peruvian investigators have trained at UW. In addition to the treatment collaboration, IMPACTA has ongoing collaborations to conduct HIV prevention and vaccine studies with UW and Fred Hutchinson Cancer Research Center investigators.

In 2005, IMPACTA enrolled their first 10 patients on ACTG protocol A5175, the 3 arm, comparative antiretroviral study described above. It was very rewarding to achieve this milestone after three years of planning and training. In 2006, IMPACTA will enroll an additional 90 patients into the study. The collaborative relationships which have developed between the UW ACTU and the IMPACTA staff members have proved to be mutually rewarding – both groups have enjoyed the opportunity to work together to achieve an important and shared goal. The work was accomplished by a

combination of in-person visits to Seattle and to Lima, conference calls, and a lot of email communication. The UW ACTU is looking forward to continued collaboration as IMPACTA expands the number and types of treatment studies that they will be able to offer to their patients.

• Contributed by: Jeff Schouten, MD, JD and N. Jeanne Conley, RN

Visit our website at http://depts.washington.edu/actu and find out about our latest studies, meet our staff, and find out about our outreach and Positivamente Latino programs. You can send your questions, comments, and suggestions to us via email at actu@u.washington.edu. For information in Spanish call us at 206.731.3497

The following tables list studies open for enrollment as of January 1, 2006. 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 UW ACTU at 206.731.3184 and ask for Lori for appointments or additional information.

University of Washington AIDS Clinical Trials Unit
325 9th Avenue, 2-West Clinic; Box 359929
Seattle WA 98104; 206.731.3184 (voice) 206.731.3483 (fax)
http://depts.washington.edu/actu (website)

Therapeutic Vaccine Study		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• On current ARV regimen ≥ 4 weeks • Current HIV RNA <50 • Suppressed HIV RNA <500 for last 2 years • CD4 >500 • Willingness to stop ARV's for 16 weeks after vaccine is given	**(Study # 5197)** To see if **MRK Ad5 HIV-1 Gag vaccine** is able to lower viral load levels after stopping ARV's for 16 weeks ***This study has 4 steps*** **Step 1**: Immunization with vaccine **Step II**: ARV's will be stopped for 16 weeks **Step III**: Continue ARV interruption or restart ARV's **Step IV**: Long-term safety follow-up	MRK Ad5 HIV-1 Gag vaccine or Vaccine **placebo** **Vaccine given by injection into arm at week 0, 4, and 26**
Antiretroviral Studies		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• Acute AIDS-defining opportunistic infection (OI) or serious bacterial infection (BI) • CD4 <200 for subject w/BI • No ARV treatment within last 8 weeks or ≥31 days within last 6 months • Not pregnant	**(Study # 5164)** **Immediate vs deferred** HIV treatment in patients presenting with acute OI's and BI's to see if it is better to start treatment right away or to wait until the infection has resolved.	**Arm A**: ARV treatment within 2 weeks after starting treatment for OI or BI **Any FDA-approved ARV regimen will be allowed. Kaletra, D4T, and D4T XR will be provided if chosen as part of the regimen.** **Arm B**: ARV treatment deferred until after OI or BI resolved (4-32 weeks after entry)
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• Treatment naïve (<7 days of ARV treatment) • HIV RNA >1000 • No evidence of any major resistance (genotype not required)	**(Study 5202)** This study is being done to compare the effectiveness and safety of drug combinations in the **initial treatment of HIV infection.**	Will be randomized to one of the following groups: Group A: EFV plus FTC/TDF or plus ABC/3TC placebo Group B: EFV plus ABC/3TC plus FTC/TDF placebo Group C: ATV with RTV plus FTC/TDF plus ABC/3TC placebo Group D: ATV with RTV plus ABC/3TC plus FTC/TDF placebo
Rescue Studies		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• Failure of current ARV regimen • Failure of at least one PI containing regimen • HIV RNA ≥ 1000 • Planning to start a PI containing salvage regimen	**(Study # 5146)** To learn if monitoring drug levels, ***therapeutic drug monitoring (TDM)***, is useful in lowering viral load by increasing doses of PI's based on *Normalized Inhibitory Quotient (NIQ)*	No medications provided Doses of PI's may be increased

Complications of HIV and Other Conditions		
Neuropathy		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• Peripheral neuropathy related to either d4T, ddI, or ddC • Current regimen must contain d4T, ddI, or ddC • Must be on current regimen for ≥ 8 weeks • HIV RNA < 10,000 • Not pregnant	**(Study # 5157)** To see if acetyl-L-carnitine (ALC) reduces neuropathy symptoms in patients taking d4T, ddI, or ddC. This study will also assess the safety and tolerability of this investigational treatment for peripheral neuropathy	**Day 1-7** Acetyl-L-carnitine (ALC) 500mg (1 tablet) twice a day **Day 8-14** ALC 1000mg (2 tablets) twice a day **Day 15-Week 24** ALC 1500mg (3 tablets) or maximum tolerated dose twice a day
Pathogenesis Study		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• No active or chronic heart or lung disease • No cigarette smoking in last 90 days • Not pregnant • No use of inhaled nasal or lung medication • No respiratory infection or bronchitis within 3 weeks	**(Study # 080)** To see if alveolar macrophages is a reservoir for HIV	No study drug or treatment The macrophage cells will be collected by a bronchoalveolar lavage procedure (BAL) in the pulmonary lab
Women's Health Study		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• HIV positive **women** 13 years or older • HIV RNA < 55,000 copies/ml • CD4 count ≥ 200/mm^3 • **NOT** pregnant • Either taking LPV/r or **NO** protease inhibitors • NNRTI's and TDF are **NOT** allowed • Current use of oral contraceptives, Depo-Provera, or Lunelle **NOT** allowed • Current use of the contraceptive patch Ortho Evra **IS** allowed • Must weigh less then 198 pounds	**(Study # 5188)** This study will examine the interaction between lopinavir/ritonavir (LPV/r, Kaletra) and the transdermal (patch) contraceptive system (TCS), Ortho Evra.	Arm A: LPV/r (LPV 400 mg plus ritonavir 100 mg) twice a day plus two or more NRTI's. • Single dose of Ortho Novum 5-7 days after start of menses • Ortho Evra contraceptive patch for 3 weeks Arm B: Either not on any ARV's or taking NRTI's only. • Single dose of Ortho Novum 5-7 days after start of menses • Ortho Evra contraceptive patch for 3 weeks Note: **ARV therapy (including LPV/r) is** NOT **supplied. The study drugs Ortho Novum and Ortho Evra** ARE **supplied.**
Studies for HIV 'Negative' participants		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• HIV negative • Male or non-pregnant female, age 18-40 • No history of heart, liver, or kidney disease • No history of cardiac disease, abnormal EKG, or bradycardia (HR<60). • No smoking for at least one month before and throughout the study. • No history of diabetes or fasting glucose >110 mg/dl.	**(Study # 165)** To determine if cytochrome P450 (CYP) enzymes and the multidrug resistant transporter (P-gp), are increased after chronic administration of ritonavir and nelfinavir	**Part One (First 14 subjects)** Visit Set One : Day 1: Mini-cocktail (digoxin & midazolam) Day 2: 4-drug cocktail (caffeine, tolbutamide, dextromorphan, & midazolam) Day 3-17: Nelfinavir or rifampin Visit Set Two: Day 17: Mini-cocktail Day 18: 4-drug cocktail Day 19-44: No drugs administered Day 45-59: Rifampin or nelfinavir Visit Set Three: Day 59: Mini-cocktail Day 60: 4-drug cocktail **Part Two (Next 14 subjects)** ***Same as above, except ritonavir will be used in place of nelfinavir.*** ***ALL ON-STUDY VISITS WILL BE AT THE CLINICAL RESEARCH CENTER AT UWMC***

Update from the Seattle Antiretroviral Drug Resistance Testing Surveillance (ARVDRT) project

Public Health – Seattle and King County began the CDC-sponsored Antiretroviral Drug Resistance Testing (ARVDRT) project in July 2003 to assess drug resistance among newly diagnosed HIV-infected people at Public Health sites in King County. The study was expanded in October 2004 to include a local clinic primarily serving men who have sex with men (MSM), and expanded again in April 2005 to include leftover sera from the University of Washington Virology laboratory. For additional information about Antiretroviral Drug Resistance Testing Surveillance, please contact the ARVDRT project line at (206) 205-1470.

• *Contributed by Libby Page and Erin Kahle, MPH*

Table 1. Characteristics of individuals eligible for antiretroviral drug resistance testing, Antitretroviral Drug Resistance Testing (ARVDRT) surveillance, Public Health – Seattle & King County 2003-2006

Registration status	Percent of cohort (n=365)
Confidential	62
Anonymous	38
Gender	
Male	87
Female	8
Unknown	4
HIV Risk category	
Men who have sex with men (MSM)	56
Injection drug user (IDU)	3
MSM & IDU	8
Other, including no risk identified	33
Race/ethnicity	
White	53
Black	16
Latino/Hispanic	8
Asian/Pacific Islander	6
Country of origin (excluding 41% with missing data)	
US	76
Other	24
Viral load (excluding 73% with missing information)	
< 20,000	40
> 20,000	60

Table 2. Results of genotyping from Antiretroviral Drug Resistance Surveillance (2003-2006) and Adult/Adolescent Spectrum of HIV-related Diseases (1998-2004), Seattle, Washington

Testing Results	Antiretroviral Naïve		Antiretroviral Experienced
	ARVDRT	ASD	ASD
	N=310	N=74	N=398
Any high level resistance	**11%**	**11%**	**66%**
Protease inhibitor (PI)	2%	3%	31%
Nucleoside reverse transcriptase inhibitor (NRTI)	4%	4%	55%
Non-nucleoside reverse transcriptase inhibitor (NNRTI)	9%	8%	32%
Multi-class resistance	**3%**	**3%**	**42%**
Non-B subtype	**8%**	**Unavailable**	**Unavailable**

Update from HIV Incidence Surveillance (HIS)

HIV Incidence Surveillance (HIS) is an expanded HIV/AIDS surveillance activity whose objective is to provide reliable regional and national population-based estimates of the number and rate of newly acquired HIV infections each year. In 2003, Public Health – Seattle and King County (PHSKC) and the Washington State Department of Health(DOH) received funding from the Centers for Disease Control and Prevention (CDC) to incorporate HIS into core HIV/AIDS surveillance activities. PHSKC began implementing HIS in April 2004 and DOH began implementing HIS throughout the state outside of King County in April 2005. Any person who is newly reported to HIV/AIDS case surveillance in Washington State is eligible to be included in HIS. In September 2005, the HIV/AIDS case report form was revised to include information, such as testing motivation and frequency, needed for HIS.

The protocol used to estimate HIV incidence is known as the serologic testing algorithm for recent HIV seroconversion (STARHS). STARHS uses remnant diagnostic HIV-positive serum and testing history information to estimate HIV incidence. CDC scientists developed the BED assay for STARHS testing and contracted with a single STARHS testing laboratory (New York State's Wadsworth Center) to perform all BED testing for national incidence surveillance. To date, two national commercial laboratories have begun shipping samples to the STARHS lab and a third commercial laboratory is anticipated to begin shipping soon. In addition, HIS was expanded to include leftover specimens from the University of Washington Virology laboratory in April 2005. With the inclusion of these laboratories, several of which conduct HIV testing for various clinics and medical care providers in Washington State, HIS is approaching true population-based incidence estimates.

Table 1. Demographic characteristics and proportion testing as recently infected with HIV per the serologic algorithm for recent HIV seroconversion (STARHS), HIV Incidence Surveillance, Seattle WA, 2005

	Proportion (%) of enrollees (n=157)	Proportion (%) with STARHS result (n =104) indicating recent HIV infection
Sex		
Male	68	22
Female	11	25
Missing	21	0
HIV risk category		
MSM or MSM-IDU	27	30
IDU	3	40
Heterosexual	9	27
Other	60	13
Test site		
HIV C&T	12	21
STD Clinic	20	39
Jail	5	20
Family Planning	3	0
Hospital / UW Lab	60	16
Age		
20-29	25	32
30-39	38	22
40 +	37	16
Race		
White	23	38
Black	11	14
Hispanic	4	0
Asian/Pacific Islander	3	0
Missing	59	18

Since implementation, 154 people with positive HIV tests in King County were eligible to be included in HIS. 63 (41%) people were tested at PHSKC sites and 91 (59%) people were tested by the UW Virology laboratory (mostly UW affiliated clinics with a few exceptions). Of the 104 specimens tested with the BED assay, 22% had a "low" result, indicating possible recent HIV infection. For additional information about HIV Incidence Surveillance, please contact Christina Lynch at (206) 205-0997 or christina.lynch@metrokc.gov.

• *Contributed by Libby Page and Christina Lynch, MPH*