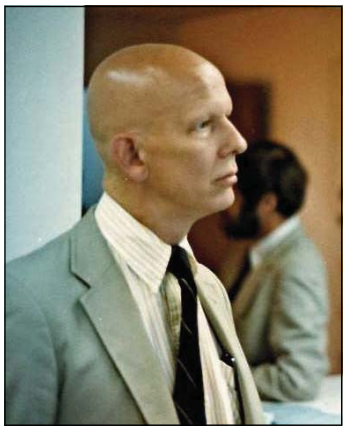
hiv/aids

2nd HALF `09 EPIDEMIOLOGY REPORT

WASHINGTON STATE • SEATTLE & KING COUNTY



Dr. Bob Wood,

Former Director, HIV/AIDS Control Program,

Public Health Seattle & King County

In Recognition of His Many Years of Service

Dr. Robert W. Wood, known to many as "Doctor Bob", was born in Elmira, New York. He attended Hamilton College, where he majored in mathematics, and then went on to receive his MD at the University of Rochester. His post-graduate education in Internal Medicine included residencies and fellowships with Dartmouth-Hitchcock Hospitals in New Hampshire, and the University of Washington.

In the 1970's, Bob served as a commissioned officer in the United States Navy and Public Health Service, with assignments taking him to Pensacola, Florida, Fort Chaffee, Arkansas, and, eventually, to Seattle. In his role as Director of Research at the Seattle US Public Health Service Hospital (which eventually became Pacific Medical Center), he led many studies and authored many papers dealing with applying decision theory and mathematical modeling to the ways that clinicians make choices in treating acute illnesses, bone injuries, psychiatric emergencies, and minor illnesses.

Bob's growing interest in identifying and responding to the health care needs of gays and lesbians led him to become involved in HIV/AIDS and he later volunteered for the national Gay and Lesbian Medical Association, and the Seattle Gay Clinic. Dr. Bob was a leader in some of the earliest community-based responses to the AIDS epidemic in the 1980's and provided care to some of the first local cases of AIDS. He served on the Board of the Northwest AIDS Foundation from 1983 to 1985.

When the Seattle–King County Department of Public Health created its HIV/AIDS Program, Bob became its Medical Director and HIV/AIDS Disease Control Officer; he served in that capacity for 23 years. His work at the health department included seeing patients newly diagnosed with HIV in the One-on-One program and "deputizing" them to help break the chain of further HIV transmissions. He also has served on and chaired or co-chaired numerous local and national committees, including the Governor's Advisory Council on HIV/AIDS, Seattle EMA HIV/AIDS (Ryan White) Planning Council, the CDC Advisory Committee for HIV & STD Prevention, the Center for HIV and AIDS Research (CFAR) Socio-behavioral Prevention Research Core, and the University of Washington Institutional Review Board (IRB). His CV includes nearly 90 publications and numerous awards and honors, including the Belding Scribner Award for Courage in Health Care and the Lifetime Achievement Award, by the Divisions of Alcohol & Substance Abuse and of Mental Health, of the Washington State Department of Social and Health Services.

"Bob has been a real leader in HIV prevention. King County was extremely lucky to have such a committed, imaginative, and clear thinking leader in the critical first decades of the HIV epidemic", commented Dr. Matthew Golden, the new Director of the PHSKC HIV/STD Program. "His legacy is an extremely strong program populated by talented and devoted people."

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

Credits

This 75th edition of the HIV/AIDS Epidemiology Report includes data available through the end of December 2009. This report is produced jointly by Public Health – Seattle & King County (PHSKC) and the Infectious Disease and Reproductive Health Assessment Unit, Washington State Department of Health. It is funded partly by a Centers for Disease Control and Prevention cooperative agreement for HIV/AIDS surveillance. We thank the medical providers caring for people with HIV/AIDS and the clinics and patients participating in epidemiologic projects. Their cooperation with public health department HIV/AIDS control efforts permits the collection of data included in this report which are used for further prevention and planning efforts. We also wish to acknowledge the outstanding assistance of our staff, including Faythe Crosby, Tom Jaenicke and Christy Johnson (disease investigation), Sandy Hitchcock (data entry and quality assurance), Shirley Zhang and Leslie Pringle (data management), Amy Bennett and Christina Thibault (epidemiologists), and Susan Buskin (senior epidemiologist).

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HIV/AIDS Reporting Requirements

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

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

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

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

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

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

Summary of Tables and Figures

HIV/AIDS Epidemiology and Surveillance News

Executive Summary

We dedicate this issue of the Washington State-King County HIV/AIDS Epidemiology Report to Dr. Robert (Bob) Wood. After 23 years of serving as AIDS Control Officer for Public Health—Seattle & King County, Dr. Bob is taking a well-deserved retirement, although he does plan to resume working with the Center for AIDS Research Sociobehavioral Core at the University of Washington in July 2010.

Reporting requirements for HIV are summarized on page iii. Although HIV case reporting may be initiated by laboratory reporting and completed by health department staff, we greatly appreciate medical providers submitting case reports directly–especially for persons newly diagnosed with HIV. Case report forms are available at http://www.kingcounty.gov/healthservices/health/communicable/hiv/epi/.aspx or by calling (888) 367-5555 (state) or (206) 296-4645 (King County).

Although reporting for recent years may be incomplete, every three year interval 1989 through 2009 in King County has shown a decline in the numbers of new HIV diagnoses and deaths (Figure 1). Washington state HIV deaths and incident cases have also declined, but not as consistently (Figure 2). Meanwhile, largely because of decreases in deaths among persons with HIV/AIDS, the total number of persons living with HIV/AIDS (PLWHA) is increasing. Including persons with undiagnosed infection, PHSKC estimates that 7,200 to 8,000 PLWHA now reside in King County. The total number of PLWHA in Washington state is estimated to be 11,500-12,700 people (Table 1).

The first section of this edition is comprised of standard tables and figures that summarize HIV reports through 12/31/2009. Because of a change in the methods used to calculate race, a number of cases previously displayed in Tables 3, 4, 8, and 9 as Native American are now counted under Multiple Race. Use of stricter guidelines for counting blood-borne infections has moved several cases previously considered blood-borne to the undetermined risk category. Highlights include:

- 6,754 people reported living with HIV or AIDS (PLWHA) and not known to have died were residents of King County (see Table 1)
- 10,532 PLWHA not known to have died were residents of Washington state (Table 1)
- 62% of Washington PLWHA reside in King County, 9% in Pierce County, and 6% in Snohomish County. These three counties have the largest populations of PLWHA (Table 2)
- In King County, males comprise 90% of PLWHA, most of them men who have sex with men (MSM) (77%, Table 4)
- In Washington, PLWHA were 86% male and 70% MSM (Table 5)
- The most common decade of life for diagnosis of HIV was 30-39 for men and 20-29 for women (Table 6)
- 15% of Washington PLWHA were foreign-born (Table 7)
- Between 2001 and 2009, the percent of PLWHA with known risk who were MSM increased and the percent of injection drug users decreased (Tables 8 and 9). The absolute number of new cases who were MSM decreased over this same period.
- Beginning with the prior edition, the percents displayed in Tables 8 and 9 exclude individuals with unknown HIV exposure category, race/ethnicity, and place of birth in order to be consistent with the statistical test for trend.

Around half of all people newly-diagnosed with HIV are included in our surveillance of transmitted antiretroviral (ARV) drug resistance, and of these, 12% have an HIV strain resistant to one or more ARV, but only 1% have multi-class drug resistance, defined as high-level resistance to at least one ARV in at least two ARV classes (page 16).

We have just completed our fourth year of interviews and medical record abstractions for the Medical Monitoring Project (pages 11–13), cumulatively collecting data on nearly 500 people in the four years of the project. This article looks at preventive care and includes these important findings:

- 90% of MMP participants had been screened for TB
- 88% of those with a nadir CD4+ lymphocyte count below 350 cells per microliter were prescribed ARVs
- 59% had any hepatitis vaccination documented
- 40% of women had an annual Pap smear documented

New ARV recommendations are summarized (pages 17–18), including when to initiate ARV and which regimen to use. The University of Washington AIDS Clinical Trials Unit is investigating three initial ARV regimens, salvage ARV treatment, and other studies of the prevention and treatment of HIV-related co-morbidities (pages 17–21).

We hope you enjoy this 75th edition of our Epidemiology Report.

- *Contributed by Susan Buskin and Jim Kent*

Table 1: Surveillance of reported[a] HIV/AIDS cases, deaths, and people living with HIV/AIDS - King County, other Washington counties, Washington, and the United States (reported as of 12/31/2009)

		Adult/Adolescent		Pediatric[b]	
		HIV	AIDS	HIV or AIDS	Total
King County	New cases reported in 2nd half 2009	91	41	2	134
	Cases reported year-to-date	207	133	4	344
	Cumulative cases	3,001	8,019	41	11,061
	Cumulative deaths	155	4,322	9	4,486
	Persons living (prevalent cases)	2,846	3,697	32	**6,575**
Other Counties in Washington	New cases reported in 2nd half 2009	53	23	4	80
	Cases reported year-to-date	171	77	7	255
	Cumulative cases	1,751	4,664	57	6,472
	Cumulative deaths	125	2,376	14	2,515
	Persons living (prevalent cases)	1,626	2,288	43	**3,957**
Washington	New cases reported in 1st half 2009	144	64	6	214
	Cases reported year-to-date	378	210	11	599
	Cumulative cases	4,753	12,682	98	17,533
	Cumulative deaths	280	6,698	23	7,001
	Persons living (prevalent cases)	4,472	5,985	75	**10,532**
United States[c]	Estimated cases as of 12/31/2007				
	Cumulative cases	265,062	1,009,220	9,209	1,283,491
	Cumulative deaths	8,699	557,376	5,417	571,492
	Persons living (prevalent cases)	256,363	451,844	3,792	**711,999**

a. There are an estimated 11,500 to 12,700 persons living in Washington with HIV infection including AIDS. These include the 10,532 prevalent cases reported above. In King County, there are an estimated 7,200 to 8,000 persons living with HIV infection including AIDS. These include the 6,575 prevalent cases reported above. The difference between the estimated cases and the reported prevalent cases include three groups:
   i. A small number of persons diagnosed with AIDS but not yet reported (probably fewer than 5% of the total AIDS reports).
   ii. An unknown number of persons diagnosed with HIV infection but not yet reported.
   iii. An unknown number of persons (10-20% of the total) infected with HIV but not yet diagnosed or reported.

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

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

Table 2: Cumulative HIV/AIDS case counts and deaths by resident county and AIDSNet region at diagnosis, Washington (reported as of 12/31/2009)

		Cumulative Cases	Deaths		Presumed Living			
			N	%[a]	HIV	AIDS	Total	Total %[b]
Region 1	Adams	7	1	14%	1	5	6	0.1%
	Asotin	23	8	35%	4	11	15	0.1%
	Columbia	8	4	50%	1	3	4	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	39	10	26%	9	20	29	0.3%
	Pend Orielle	9	6	67%	0	3	3	0.0%
	Spokane	731	318	44%	169	244	413	3.9%
	Stevens	26	15	58%	6	5	11	0.1%
	Walla Walla	64	32	50%	7	25	32	0.3%
	Whitman	21	4	19%	4	13	17	0.2%
	Subtotal	**940**	**406**	**43%**	**202**	**332**	**534**	**5.1%**
Region 2	Benton	125	40	32%	32	53	85	0.8%
	Chelan	65	26	40%	18	21	39	0.4%
	Douglas	6	2	33%	1	3	4	0.0%
	Franklin	81	21	26%	25	35	60	0.6%
	Grant	51	22	43%	10	19	29	0.3%
	Kittitas	23	10	43%	3	10	13	0.1%
	Klickitat	16	6	38%	7	3	10	0.1%
	Yakima	265	94	35%	61	110	171	1.6%
	Subtotal	**632**	**221**	**35%**	**157**	**254**	**411**	**3.9%**
Region 3	Island	86	39	45%	20	27	47	0.4%
	San Juan	26	12	46%	6	8	14	0.1%
	Skagit	98	41	42%	22	35	57	0.5%
	Snohomish	1,024	370	36%	259	395	654	6.2%
	Whatcom	237	93	39%	61	83	144	1.4%
	Subtotal	**1,471**	**555**	**38%**	**368**	**548**	**916**	**8.7%**
Region 4	King	**11,061**	**4,486**	**41%**	**2,870**	**3,705**	**6,575**	**62.4%**
Region 5	Kitsap	319	127	40%	81	111	192	1.8%
	Pierce	1,603	645	40%	449	509	958	9.1%
	Subtotal	**1,922**	**772**	**40%**	**530**	**620**	**1,150**	**10.9%**
Region 6	Clallam	83	39	47%	20	24	44	0.4%
	Clark	662	238	36%	189	235	424	4.0%
	Cowlitz	150	61	41%	43	46	89	0.8%
	Grays Harbor	85	34	40%	19	32	51	0.5%
	Jefferson	38	18	47%	9	11	20	0.2%
	Lewis	56	27	48%	10	19	29	0.3%
	Mason	116	30	26%	28	58	86	0.8%
	Pacific	33	12	36%	12	9	21	0.2%
	Skamania	8	6	75%	1	1	2	0.0%
	Thurston	273	96	35%	63	114	177	2.0%
	Wahkiakum	3	0	0.0%	1	2	3	0.0%
	Subtotal	**1,507**	**561**	**37%**	**395**	**551**	**946**	**9.0%**
Total		**17,533**	**7,001**	**40%**	**4,522**	**6,010**	**10,532**	**100%**

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

Table 3: Demographic characteristics of people presumed living with HIV/AIDS – King County, other Washington counties, Washington, and the United States (reported as of 12/31/2009)

	King County		Other Counties		Washington		Estimated U.S. AIDS[a]	
	N	%	N	%	N	%	N	%
Sex								
Male	5,903	90%	3,170	80%	9,073	86%	349,180	77%
Female	672	10%	787	20%	1,459	14%	106,456	23%
Age Group at Diagnosis of HIV								
Under 13 years	32	0%	43	1%	75	1%	3,792	1%
13-19 years	115	2%	103	3%	218	2%	*Not Known*	
20-29 years	1,858	28%	1,178	30%	3,036	29%	*Not Known*	
30-39 years	2,767	42%	1,410	36%	4,177	40%	*Not Known*	
40-49 years	1,376	21%	869	22%	2,245	21%	*Not Known*	
50-59 years	355	5%	273	7%	628	6%	*Not Known*	
60 years and over	72	1%	81	2%	153	1%	*Not Known*	
"Current" Age as of 12/31/09								
Under 13 years	9	0%	15	0%	24	0%	889	0%
13-19 years	26	0%	27	1%	53	1%	3,340	1%
20-29 years	401	6%	332	8%	733	7%	20,736	5%
30-39 years	1,282	20%	823	21%	2,105	20%	84,866	19%
40-49 years	2,695	41%	1,453	37%	4,148	39%	190,315	42%
50-59 years	1,625	25%	958	24%	2,583	25%	117,289	26%
60 years and over	537	8%	349	9%	886	8%	38,201	8%
Race/Ethnicity[b]								
White	4,444	68%	2,771	70%	7,215	69%	159,338	35%
Black	1,102	17%	487	12%	1,589	15%	199,124	44%
Hispanic	657	10%	459	12%	1,116	11%	86,244	19%
Asian & Pacific Islander	210	3%	119	4%	329	3%	4,828	1%
Asian	*196*	*3%*	95	*2%*	*291*	*3%*	*4,398*	*1%*
Native Hawaiian & Other PI	*14*	*0%*	24	*1%*	*38*	*0%*	*430*	*0%*
Native American or Alaskan Native	81	1%	84	2%	165	2%	1,700	0%
Multiple Race	78	1%	22	1%	100	1%	4,402*	1%
Unknown Race	3	0%	15	0%	18	0%	* *included in multiple race*	
HIV Exposure Category								
Male-male sex	4,525	69%	1,971	50%	6,496	62%	213,510	47%
Injection drug use (IDU)	331	5%	489	12%	820	8%	97,167	21%
IDU & male-male sex	555	8%	326	8%	881	8%	28,691	6%
Heterosexual contact[c]	652	10%	717	18%	1,369	13%	106,865	23%
Blood product exposure[d]	30	0%	35	1%	65	1%	N/A[d]	
Perinatal exposure	25	0%	36	1%	61	1%	3,592	1%
Other/Undetermined[d]	457	7%	383	10%	840	8%	5,811	2%
Total	**6,575**	**100%**	**3,957**	**100%**	**10,532**	**100%**	**455,636**	**100%**

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

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

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

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

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

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

Table 4: People presumed living with HIV/AIDS by gender, race or ethnicity, and HIV exposure category – King County (reported as of 12/31/2009)

HIV Exposure Category	White[a] N	White[a] %	Black[a] N	Black[a] %	Hispanic N	Hispanic %	Asian & PI[a,b] N	Asian & PI[a,b] %	Native Am/AN[a,c] N	Native Am/AN[a,c] %	Total[d] N	Total[d] %
Male												
Male-male sex	3,495	79%	382	35%	434	66%	136	65%	33	41%	4,525	69%
Injection drug use (IDU)	108	2%	64	6%	30	5%	5	2%	6	7%	216	3%
IDU & male-male sex	435	10%	42	4%	41	6%	4	2%	17	21%	555	8%
Heterosexual contact	45	1%	108	10%	26	4%	6	3%	1	1%	187	3%
Blood product exposure	15	0%	3	0%	0	0%	0	0%	0	0%	18	0%
Perinatal exposure	1	0%	5	0%	0	0%	1	0%	0	0%	8	0%
Undetermined/other	112	3%	167	15%	74	11%	34	16%	2	2%	394	6%
Male Subtotal	**4,211**	**95%**	**771**	**70%**	**605**	**92%**	**186**	**89%**	**59**	**73%**	**5,903**	**90%**
Female												
Injection drug use (IDU)	60	1%	36	3%	4	1%	1	0%	12	15%	115	2%
Heterosexual contact[e]	150	3%	240	22%	39	6%	19	9%	10	12%	465	7%
Blood product exposure	4	0%	8	1%	0	0%	0	0%	0	0%	12	0%
Perinatal exposure	3	0%	11	1%	2	0%	1	0%	0	0%	17	0%
Undetermined/other	16	0%	36	3%	7	1%	3	1%	0	0%	63	1%
Female Subtotal	**233**	**5%**	**331**	**30%**	**52**	**8%**	**24**	**11%**	**22**	**27%**	**672**	**10%**
Total	**4,447**	**68%**	**1,102**	**17%**	**657**	**10%**	**210**	**3%**	**81**	**1%**	**6,575**	**100%**

Table 5: People presumed living with HIV/AIDS by gender, race or ethnicity, and HIV exposure category – Washington (reported as of 12/31/2009)

HIV Exposure Category	White[a] N	White[a] %	Black[a] N	Black[a] %	Hispanic N	Hispanic %	Asian & PI[a,b] N	Asian & PI[a,b] %	Native Am/AN[a,c] N	Native Am/AN[a,c] %	Total[d] N	Total[d] %
Male												
Male-male sex	5,039	70%	525	33%	620	56%	187	57%	58	35%	6,496	62%
Injection drug use (IDU)	340	5%	105	7%	64	6%	7	2%	14	8%	534	5%
IDU & male-male sex	699	10%	63	4%	66	6%	7	2%	25	15%	881	8%
Heterosexual contact	136	2%	164	10%	64	6%	14	4%	6	4%	386	4%
Blood product exposure	40	1%	3	0%	2	0%	0	0%	0	0%	45	0%
Perinatal exposure	7	0%	11	1%	3	0%	2	1%	1	1%	25	0%
Undetermined/other	281	4%	220	14%	145	13%	47	14%	6	4%	706	7%
Male Subtotal	**6,542**	**91%**	**1,091**	**69%**	**964**	**86%**	**264**	**80%**	**110**	**67%**	**9,073**	**86%**
Female												
Injection drug use (IDU)	178	2%	63	4%	15	1%	4	1%	24	15%	286	3%
Heterosexual contact[e]	430	6%	346	22%	117	10%	48	15%	30	18%	983	9%
Blood product exposure	6	0%	10	1%	1	0%	3	1%	0	0%	20	0%
Perinatal exposure	10	0%	19	1%	5	0%	2	1%	0	0%	36	0%
Undetermined/other	49	1%	60	4%	14	1%	8	2%	1	1%	134	1%
Female Subtotal	**673**	**9%**	**498**	**31%**	**152**	**14%**	**65**	**20%**	**55**	**33%**	**1,459**	**14%**
Total	**7,215**	**69%**	**1,589**	**15%**	**1,116**	**11%**	**329**	**3%**	**165**	**2%**	**10,532**	**100%**

[a] And not Hispanic. All race and ethnicity categories are mutually exclusive.
[b] Due to small cell sizes, data have been combined for Asians, Native Hawaiians, and other Pacific Islanders.
[c] Native American or Alaska Native.
[d] Totals include 78 King County and 100 Washington state persons classified as multiple race, and 3 King County and 18 Washington persons with missing race.
[e] Includes presumed heterosexual cases (females who deny injection drug use but have had sexual intercourse with a man whose HIV status and HIV risk behaviors are unknown).

Table 6: People presumed living with HIV/AIDS by gender and age at HIV diagnosis – King County and Washington (reported as of 12/31/2009)

	King County				Washington			
Age at HIV Diagnosis	**Male**		**Female**		**Male**		**Female**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Under 13 years	13	0%	19	3%	32	0%	43	3%
13-19 years	82	1%	33	5%	144	2%	74	5%
20-29 years	1,634	28%	224	33%	2,547	28%	489	34%
30-39 years	2,544	43%	223	33%	3,711	41%	466	32%
40-49 years	1,270	22%	106	16%	1,987	22%	258	18%
50-59 years	298	5%	57	8%	519	6%	109	7%
60 years and over	62	1%	10	1%	133	1%	20	1%
Total	**5,903**	**100%**	**672**	**100%**	**9,073**	**100%**	**1,459**	**100%**

Table 7: People presumed living with HIV/AIDS by race or ethnicity and place of birth[a] – King County and Washington (reported as of 12/31/2009)

	King County				Washington			
Race / Ethnicity	**U.S.-born**		**Foreign-born**		**U.S.-born**		**Foreign-born**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
White, non-Hispanic	4,151	97%	111	3%	6,744	98%	153	2%
Black, non-Hispanic	662	62%	406	38%	1,022	66%	515	34%
Male Black, non-Hispanic	*528*		*216*		*788*		*262*	
Female Black, non-Hispanic	*134*		*190*		*234*		*253*	
Hispanic	234	39%	368	61%	373	37%	639	63%
Asian & PI, non-Hispanic	50	26%	143	74%	81	27%	218	73%
Native American, non-Hispanic	73	94%	5	6%	155	97%	5	3%
Multiple or unknown race, non-Hispanic	66	87%	10	13%	95	87%	14	13%
TOTAL	**5,236**	**83%**	**1,043**	**17%**	**8,470**	**85%**	**1,544**	**15%**

[a] Table 7 does not include 295 King County and 518 Washington cases missing place of birth information.

Figure 1: Number of new HIV/AIDS diagnoses, deaths, and people living with HIV/AIDS at end of three-year intervals – King County (reported as of 12/31/2009)

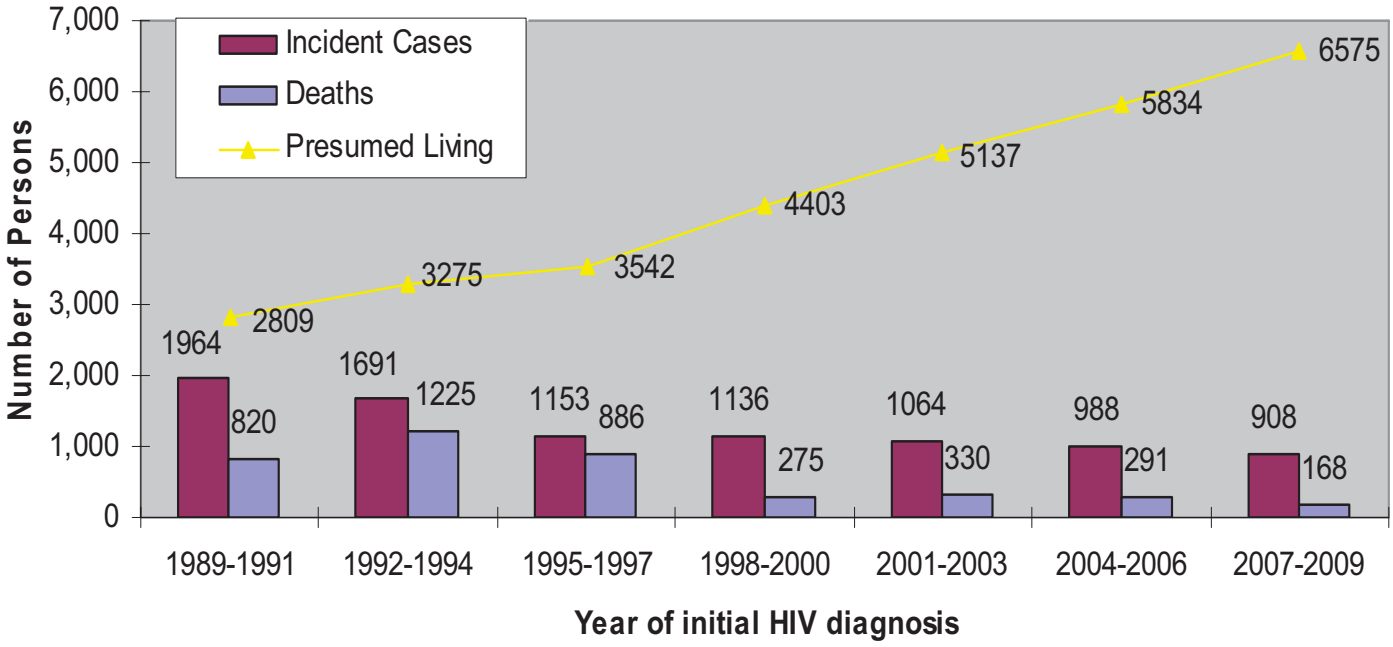

Figure 2: Number of new HIV/AIDS diagnoses, deaths, and people living with HIV/AIDS at end of three-year intervals – Washington (reported as of 12/31/2009)

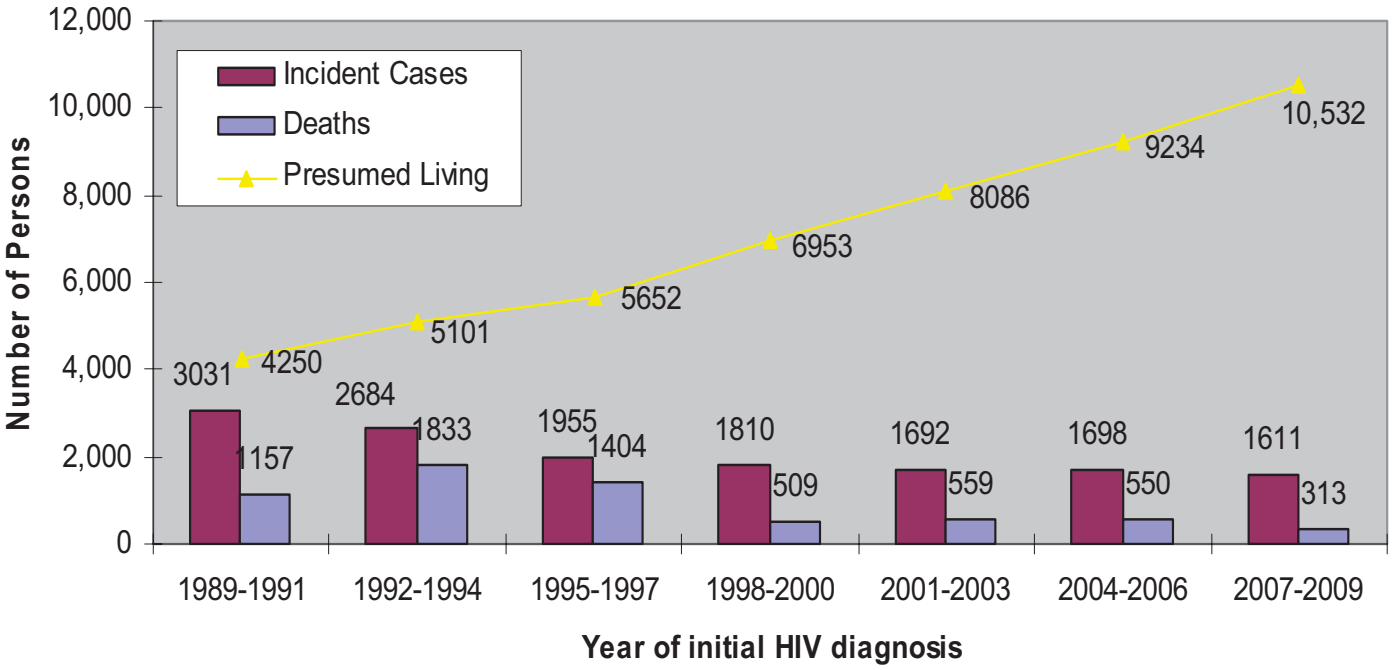

Table 8: Demographic characteristics of King County residents diagnosed 1982-2009, by date of HIV diagnosis (reported through 12/31/2009)

	1982-2000		2001-2003		2004-2006		2007-2009[a]		Trend[b]
	N	%	N	%	N	%	N	%	2001-2009
TOTAL	**8,100**	**100%**	**1,064**	**100%**	**988**	**100%**	**909**	**100%**	
HIV Exposure Category[d]									
Men who have sex with men (MSM)	6,025	77%	687	69%	610	70%	552	74%	up
Injection drug user (IDU)	459	6%	68	7%	53	6%	28	4%	down
MSM-IDU	829	11%	84	8%	87	10%	62	8%	
Heterosexual contact[c]	416	5%	156	16%	115	13%	99	13%	
Blood product exposure	93	1%	4	0%	1	0%	1	0%	
Perinatal exposure	27	0%	0	0%	1	0%	5	1%	
SUBTOTAL- known risk	*7,849*	*100%*	*999*	*100%*	*867*	*100%*	*747*	*100%*	
Undetermined/other[d]	251	N/A	65	N/A	121	N/A	162	N/A	N/A
Sex & Race/Ethnicity[d]									
Male	*7,577*	*94%*	*937*	*88%*	*876*	*89%*	*793*	*87%*	
White male[e]	6,055	75%	624	59%	544	55%	474	52%	down
Black male[e]	740	9%	144	14%	147	15%	122	13%	
Hispanic male	499	6%	108	10%	111	11%	125	14%	up
Other male[e]	283	3%	61	6%	74	7%	72	8%	
Female	*523*	*6%*	*127*	*12%*	*112*	*11%*	*116*	*13%*	
White female[e]	254	3%	30	3%	33	3%	29	3%	
Black female[e]	185	2%	73	7%	60	6%	68	7%	
Hispanic female	36	0%	10	1%	7	1%	11	1%	
Other female[e]	48	1%	14	1%	12	1%	8	1%	
Race/Ethnicity[d]									
White[e]	6,309	78%	654	62%	577	58%	503	55%	down
Black[e]	925	11%	217	20%	207	21%	190	21%	
Hispanic	535	7%	118	11%	118	12%	136	15%	up
Asian & Pacific Islander[e]	140	2%	33	3%	53	5%	51	6%	up
Native American or Alaska Native[e]	98	1%	21	2%	9	1%	6	1%	down
Multiple race[e]	91	1%	20	2%	24	2%	23	3%	
SUBTOTAL- known race/ethnicity	*8,098*	*100%*	*1,063*	*100%*	*988*	*100%*	*909*	*100%*	
Unknown race[e]	2	N/A	1	N/A	0	N/A	0	N/A	N/A
Place of Birth[d]									
Born in U.S. or Territories	7,251	92%	818	78%	718	77%	629	72%	down
Born outside U.S.	630	8%	227	22%	216	23%	247	28%	up
SUBTOTAL- known birthplace	*7,881*	*100%*	*1,045*	*100%*	*934*	*100%*	*876*	*100%*	
Birthplace unknown	219	N/A	19	N/A	54	N/A	33	N/A	N/A
Age at diagnosis of HIV									
0-19 years	136	2%	14	1%	8	1%	26	3%	up
20-29 years	2,128	26%	225	21%	228	23%	242	27%	up
30-39 years	3,627	45%	498	47%	388	39%	275	30%	down
40-49 years	1,662	21%	243	23%	272	28%	228	25%	
50-59 years	446	6%	70	7%	76	8%	101	11%	up
60+ years	101	1%	14	1%	16	2%	37	4%	up
Residence									
Seattle residence	6,971	86%	822	77%	735	74%	628	69%	down
King County residence outside Seattle	1,129	14%	242	23%	253	26%	281	31%	up

[a] Due to delays in reporting, data from recent years are incomplete.
[b] Chi-square statistical trends ($p<.05$) were calculated for the periods 2001-2003, 2004-2006, and 2007-2009.
[c] Includes presumed heterosexual cases (females who deny injection drug use but have had sexual intercourse with a man whose HIV status or HIV risk behaviors are unknown).
[d] Cases with undetermined risk, race/ethnicity, or place of birth are not included in percent or trend calculations.
[e] All race and ethnicity categories are mutually exclusive; Asian, Native Hawaiian and Pacific Islanders were grouped due to small cell sizes.

Table 9: Demographic characteristics of Washington residents diagnosed 1982-2009, by date of HIV diagnosis (reported through 12/31/2009)

	1982-2000		2001-2003		2004-2006		2007-2009[a]		Trend[b]
	N	%	N	%	N	%	N	%	2001-2009
TOTAL	**12,532**	**100%**	**1,692**	**100%**	**1,698**	**100%**	**1,611**	**100%**	
HIV Exposure Category[d]									
Men who have sex with men (MSM)	8,412	70%	979	63%	946	64%	891	68%	up
Injection drug user (IDU)	1,133	9%	157	10%	139	9%	78	6%	down
MSM-IDU	1,268	11%	129	8%	136	9%	109	8%	
Heterosexual contact[c]	937	8%	291	19%	255	17%	226	17%	
Blood product exposure	212	2%	5	0%	4	0%	2	0%	
Perinatal exposure	59	0%	2	0%	3	0%	14	1%	
SUBTOTAL- known risk	*12,021*	*100%*	*1,563*	*100%*	*1,483*	*100%*	*1,320*	*100%*	
Undetermined/other[d]	511	N/A	129	N/A	215	N/A	291	N/A	N/A
Sex & Race/Ethnicity									
Male	*11,353*	*91%*	*1,433*	*85%*	*1,439*	*85%*	*1,343*	*83%*	
White male[e]	9,102	73%	963	57%	958	56%	812	50%	down
Black male[e]	1,018	8%	210	12%	209	12%	194	12%	
Hispanic male	796	6%	167	10%	169	10%	223	14%	up
Other male[e]	437	3%	93	5%	103	6%	114	7%	
Female	*1,179*	*9%*	*259*	*15%*	*259*	*15%*	*268*	*17%*	
White female[e]	666	5%	100	6%	107	6%	104	6%	
Black female[e]	296	2%	109	6%	92	5%	102	6%	
Hispanic female	103	1%	23	1%	31	2%	37	2%	up
Other female[e]	114	1%	27	2%	29	2%	25	2%	
Race/Ethnicity[d]									
White[e]	9,768	78%	1,063	63%	1,065	63%	916	57%	down
Black[e]	1,314	10%	319	19%	301	18%	256	18%	
Hispanic	899	7%	190	11%	200	12%	260	16%	up
Asian & Pacific Islander[e]	212	2%	54	3%	74	4%	82	5%	up
Native American or Alaska Native[e]	180	1%	36	2%	28	2%	24	1%	
Multiple race[e]	143	1%	27	2%	30	2%	33	2%	
SUBTOTAL- race/ethnicity	*12,516*	*100%*	*1,689*	*100%*	*1,698*	*100%*	*1,611*	*100%*	
Unknown race[e]	16	N/A	3	N/A	0	N/A	0	N/A	

Table 9 continued on next page

[a] Due to delays in reporting, data from recent years are incomplete.
[b] Chi-square statistical trends ($p<.05$) were calculated for the periods 2001-2003, 2004-2006, and 2007-2009.
[c] Includes presumed heterosexual cases (females who deny injection drug use but have had sexual intercourse with a man whose HIV status or HIV risk behaviors are unknown).
[d] Cases with undetermined risk, race/ethnicity, or place of birth are not included in percent or trend calculations.
[e] All race and ethnicity categories are mutually exclusive; Asian, Native Hawaiian, and other Pacific Islanders were grouped due to small cell sizes.

Table 9: (Continued) Demographic characteristics of Washington residents diagnosed 1982-2009, by date of HIV diagnosis (reported through 12/31/2009)

	1982-2000		2001-2003		2004-2006		2007-2009[a]		Trend[b]
	N	%	N	%	N	%	N	%	2001-2009
TOTAL	**12,532**	**100%**	**1,692**	**100%**	**1,698**	**100%**	**1,611**	**100%**	
Place of Birth[d]									
Born in U.S. or Territories	11,232	92%	1,331	81%	1,296	81%	1,127	75%	down
Born outside U.S.	956	8%	312	19%	308	19%	373	25%	up
SUBTOTAL- known birthplace	*12,188*	*100%*	*1,643*	*100%*	*1,604*	*100%*	*1,500*	*100%*	
Birthplace unknown	344	N/A	49	N/A	94	N/A	111	N/A	N/A
Age at diagnosis of HIV									
0-19 years	272	2%	26	2%	22	1%	60	4%	up
20-29 years	3,405	27%	351	21%	402	24%	427	27%	up
30-39 years	5,391	43%	732	43%	576	34%	476	30%	down
40-49 years	2,535	20%	416	25%	490	29%	397	25%	
50-59 years	722	6%	123	7%	171	10%	180	11%	up
60+ years	207	2%	44	3%	37	2%	71	4%	up
Residence[f]									
Region 1- Spokane area	654	5%	86	5%	100	6%	100	6%	
Region 2- Yakima area	407	3%	72	4%	80	5%	73	5%	
Region 3- Everett area	1,016	8%	132	8%	169	10%	154	10%	
Region 4- Seattle area	8,100	65%	1,064	63%	988	58%	909	56%	down
Region 5- Tacoma area	1,343	11%	176	10%	198	12%	205	13%	up
Region 6- Olympia area	1,012	8%	162	10%	163	10%	170	11%	

[a] Due to delays in reporting, data from recent years are incomplete.
[b] Chi-square statistical trends ($p<.05$) were calculated for the periods 2001-2003, 2004-2006, and 2007-2009.
[c] Includes presumed heterosexual cases (females who deny injection drug use but have had sexual intercourse with a man whose HIV status or HIV risk behaviors are unknown).
[d] Cases with undetermined risk, race/ethnicity, or place of birth are not included in percent or trend calculations.
[e] All race and ethnicity categories are mutually exclusive; Asian, Native Hawaiian, and other Pacific Islanders were grouped due to small cell sizes.
[f] The counties and regions are: Region 1-Adams, Asotin, Columbia, Ferry, Garfield, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman; Region 2-Benton, Chelan, Douglas, Franklin, Grant, Kittitas, Klickitat, and Yakima; Region 3-Island, San Juan, Skagit, Snohomish, and Whatcom; Region 4-King; Region 5-Kitsap and Pierce; Region 6-Clallum, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Skamania, Thurston, and Wahkiakum.

Preventive Care Among Participants in the Medical Monitoring Project 2005-2009

The Medical Monitoring Project (MMP) is an ongoing population-based surveillance system designed to assess behaviors and clinical outcomes among a representative sample of HIV-infected adults receiving care in the US. The MMP is currently conducted in 17 states and six cities by local and state public health departments in collaboration with the Centers for Disease Control and Prevention (CDC). The MMP arose out of the need for a nationally-representative, population-based surveillance system to assess clinical outcomes, risk behaviors, adherence data, and clinician treatment patterns impacting the quality of HIV care. Washington state has completed three cycles of data collection in 2005, 2007, and 2008, and we are currently in the final months of data collection for 2009.

For each cycle of the MMP, 40 facilities across Washington that provide medical care to HIV-infected patients are randomly selected and invited to participate. The facilities are large and small, urban and rural, HRSA (Federal Health Resources Services Administration) and non-HRSA funded. Among the facilities randomly selected in King County, participation throughout the four cycles of the project has ranged from 73-94% (Table 10).

Across Washington, a random sample of 400 patients with HIV seen at participating facilities within a defined four-month period is selected; some participating facilities will not have seen a patient with HIV during the four-month period. The selected patients are contacted and invited to participate in the project. Patient participation rates in King County have ranged from 30-47% throughout the cycles (Table 10). Since 2005, 479 King County residents have participated in the project, an overall 40% participation rate.

In order to collect comprehensive information on each individual participating in the MMP, a questionnaire with modules covering access to health care, treatment adherence, sexual behaviors, drug use behaviors, and access to prevention services is administered to each participant. Data from the questionnaire is combined with information from a review of the participant's medical records. At this time, only information from the questionnaire is available for the four years of data collection.

As people with HIV live longer, it is increasingly imperative that they receive adequate and consistent primary care with appropriate screenings and immunizations. This article utilizes data from the MMP interview, based on self report, to assess whether the MMP participants are receiving the recommended preventive care.

The demographic characteristics of King County MMP participants are displayed in Table 11. Most of the participants were male (88%), and white (67%). The modal age category was 45-54 years (42%). Almost all of the participants (97%) had health insurance in the 12 months preceding the interview.

The majority of participants (90%) reported that they had ever received PPD screening for tuberculosis (TB). Guidelines for TB screening of HIV-infected persons

Table 10. Facility and Patient Participation, Medical Monitoring Project, King County 2005–2009

	2005	2007	2008	2009
Facilities				
# Selected	22	22	31	27
# Agreed	16	16	26	19
# with HIV patients during study period	15	14	3	5
% participated	73%	82%	94%	89%
Patients				
# Selected	299	297	288	314
# Agreed	89	133	134	123
% participated	30%	45%	47%	39%

call for TB screening when HIV infection is first diagnosed.[1] Over three-quarters (76%) of participants reported receiving an influenza vaccination in the previous 12 months. US Public Health Service (USPHS) guidelines call for annual vaccination against influenza for adults and children who have immunosuppression caused by HIV.[2]

Over three-quarters (77%) of all participants reported being screened for hepatitis B. Almost half (47%) of the MMP participants who reported being hepatitis B negative or not knowing their hepatitis B status said they had received hepatitis B immunization. The USPHS guidelines state that all providers should know the hepatitis B status of their HIV-infected patients; for patients who are hepatitis B negative, vaccination is recommended.

Over half (55%) of the sexually active MMP participants said they had been screened for a sexually transmitted disease (STD) in the last 12 months. USPHS Guidelines state that screening for STDs should be done at the initial care visit and then repeated periodically (i.e., at least annually) if the patient is sexually active or if earlier screening revealed STDs. Screening should be done more frequently (e.g., at 3-6-month intervals) for asymptomatic persons at higher risk.[3] Local care guidelines recommend that all men who have sex with men (MSM) be tested for syphilis at least annually, and that MSM with any of the following risks be tested for syphilis and other STDs every three months: 1) bacterial STD diagnosis in the last year; 2) methamphetamine use or "popper" use; 3) unprotected anal sex with a partners of unknown or discordant HIV status.[4]

Table 11. Characteristics of Medical Monitoring Project Participants, King County 2005-2009 (N=479)

Gender	**N.**	**%**
Male	423	88%
Female	55	12%
Transgender	1	<1%
Age		
18-34	48	10%
35-44	158	33%
45-54	199	42%
≥55	74	15%
Race		
White	321	67%
Black	86	18%
Latino	57	12%
Native American/Alaska Native	32	7%
Asian	10	2%
Health insurance last 12 months	463	97%
Ever PPD screen (2005-2008 only)	320/356	90%
Influenza vaccine	364	76%
Pap smear (women only)	22/55	40%
Any hepatitis vaccine	284	59%
Screened for hepatitis B (2005-2007 only)	170/222	77%
Hep B vaccination among HBV negatives or never screened (2005-2007 only)	84/179	47%
STD screen last 12 months (sexually active only)	176/322	55%
Nadir CD4 <350 currently on ART	260/296	88%
Nadir CD4 350-500 currently on ART	33/42	79%

Forty percent of female participants reported receiving a Pap smear in the previous 12 months. USPHS guidelines recommend that a Pap smear be obtained twice during the first year after diagnosis of HIV infection and, if the results are normal, annually thereafter.

Eighty-eight percent of participants with a self-reported nadir CD4 count of < 350 cells/µL indicated that they were currently taking antiretrovirals for HIV, and 79% with a nadir CD4 count of 350-500 cells/µL reported taking antiretrovirals. The newly-updated US Department of Health and Human Services (DHHS) guidelines for HIV treatment state that all adolescents and adults with HIV infection and CD4 counts ≤350 cells/µL, including pregnant women, should be started on antiretroviral therapy immediately, regardless of whether they have clinical symptoms. The new guidelines also recommend antiretroviral therapy in patients with CD4 counts between 350 and 500 cells/µL.[5]

It appears that there are high levels of TB screening among patients in the MMP and a high percent of participants with CD4 counts <350 cells/µL or between 350-500 cells/µL who report use of antiretrovirals. Areas for improvement in preventive care may include Pap smear screening for women, STD screening among sexually active patients, screening for hepatitis B, and hepatitis B and influenza immunizations.

These data are based on interviews and may suffer from recall bias, or participants may not know whether they received specific screening tests or immunizations. In addition, the data presented here are not locally representative due to low participation rates and the results may not be generalizable.

This analysis provides an important first step in evaluating whether people with HIV in King County are receiving appropriate and adequate preventive care. It will be important to link data from the MMP interview with data from the medical record abstractions when it is available for a more comprehensive look at preventive care among MMP participants. The information provided by the MMP may be used by clinicians and Ryan White planning groups to assess whether patients are receiving optimal care and help them advocate for additional resources.

As patients with HIV live longer, they are increasingly affected by other medical conditions, and care providers should ensure patients undergo recommended screening tests and immunizations in order to reduce their risk for these comorbidities.

- *Contributed by Elizabeth Barash*

[1]Centers for Disease Control and Prevention. Prevention and treatment of tuberculosis among patients infected with human immunodeficiency virus: Principles of therapy and revised recommendations. MMWR Recomm Rep 1998 Oct 30;47(RR-20):1-58. http://www.cdc.gov/mmwr/preview/mmwrhtml/00055357.htm

[2]Centers for Disease Control and Prevention. Guidelines for Prevention and Treatment of Opportunistic Infections in HIV-Infected Adults and Adolescents Recommendations from CDC, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America MMWR 2009;58(RR-4). http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5804a1.htm

[3]CDC. Recommendations and Reports: "Incorporating HIV Prevention into the Medical Care of Persons Living with HIV". July 18, 2003/52(RR12);1-24. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5212a1.htm

[4]Public Health – Seattle and King County 2008 Sexually Transmitted Diseases (STD) Epidemiology Report http://www.kingcounty.gov/healthservices/health/communicable/std/statistics.

[5]Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. December 1, 2009; 1-161. http://www.aids-ed.org/aidsetc?page=etres-display&resource=etres-103

New Program Manager at Washington State Department of Health HIV and Adult Viral Hepatitis Services

On April 16, David (Dave) Kern will join the Washington State Department of Health's Office of Infectious Disease and Reproductive Health (IDRH) as manager of the HIV and Adult Viral Hepatitis Services program. Dave is moving to this Washington from the "other" one, where he was employed with the National Alliance of State and Territorial AIDS Directors (NASTAD) as Director of Strategic Initiatives. In that position, Dave was responsible for leading national efforts related to the organization's priority areas, including gay men's health; viral hepatitis; and service integration across HIV/AIDS, sexually transmitted diseases, viral hepatitis and tuberculosis. Previously Dave served as NASTAD's Director of Prevention and was responsible for efforts to provide national leadership on HIV/AIDS and viral hepatitis prevention issues.

In addition to leading national efforts, Dave also has experience working at the local level. He was employed with the Chicago Department of Public Health from 2001 to 2006, first as the Associate Director of the Office of Lesbian, Gay, Bisexual and Transgender Health, and then as the Director of HIV Prevention. Prior to working for the health department, he was the Community Co-Chair of Chicago's HIV Prevention Planning Group, and so is very familiar with the community planning process.

Dave has 15 years of professional experience in public health and human services, working in both government and non-profit sectors. His wealth of community- and national-level experience makes him well qualified to take on the challenges and opportunities facing Washington state's HIV and Adult Viral Hepatitis Services program in the coming years. We are excited to welcome Dave to the IDRH team.

- *Contributed by Maria Courogen*

Update on HIV Incidence Surveillance

HIV Incidence Surveillance (HIS) is a national, CDC-funded supplemental surveillance activity being conducted at 34 sites nationwide. King County has been participating in HIS since it was a pilot study in 2003. A primary objective of HIS is estimating the number of new HIV infections occurring annually at the local and national level. To this end, HIS sites collect the following information on each person newly diagnosed with HIV: (1) the individual's HIV testing history, including the date of the last negative HIV test and the frequency of testing during the previous two years, and (2) the result of an antibody assay performed on remnant HIV test sera collected within three months of the HIV diagnosis. The laboratory assay (called the BED assay) measures the concentration of HIV-specific antibody present in the leftover serum, and the result provides an indication if the infection occurred recently (within the past year) or further in the past. Population-based HIV incidence is then estimated using a statistical approach that is analogous to that used to estimate a population total from a sample survey.

Approximately 85% of people newly diagnosed with HIV in King County have information about their HIV testing history available. About 55% of newly-diagnosed cases have a serum specimen available for the antibody assay.

HIS incidence estimates for 2006 through 2008 indicate that there are around 350 new HIV infections annually in King County. The number of people diagnosed in King County each year has ranged from 300 to 350 in recent years, but we know that not all of those who are newly-diagnosed are newly-infected. Some individuals who become infected in a given year will not be tested and diagnosed for many years. Newly-diagnosed cases are a mix of both people who have been recently infected and those who have been infected for many years. HIS surveillance indicates that around one-quarter of people who are diagnosed with HIV each year are recently infected, that is, within the past 12 months.

We also calculated incidence estimates for men who have sex with men (MSM) for 2006 through 2008. These estimates suggest that about 250 local MSM are newly-infected with HIV each year, about 71% of estimated new infections; MSM represented 69% of diagnosed infections for the same time period.

HIS has contributed to local incidence estimates that allow us to follow the numbers of new infections in King County and the proportions of new infections occurring in MSM, the population at highest risk for HIV locally.

- *Contributed by Christina Thibault*

Update on HIV Antiretroviral Resistance Surveillance

For the past seven years, Public Health–Seattle & King County (PHSKC) has conducted "Variant, Atypical, and Resistant HIV Surveillance" (VARHS), to monitor resistance to antiretroviral (ARV) drugs among treatment-naïve people newly-diagnosed with HIV infection. To accomplish this, laboratories that conduct genotypic resistance testing report these results to PHSKC; selected laboratories also submit leftover sera from diagnostic HIV testing for genotypic testing performed at a CDC-designated laboratory.

To be included in VARHS, a genotype must be conducted within three months of HIV diagnosis, and while the person was still antiretroviral naïve. Coverage of VARHS has increased since 2003 (Figure 3). For the past several years, about half of newly-diagnosed HIV cases in King County have had a VARHS-eligible genotype.

Genotype sequences are analyzed for high-level resistance to three classes of antiretrovirals: nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), and protease inhibitors (PIs). Among King county residents diagnosed with HIV during the past three years (2007-2009), 12% were infected with strains that were highly-resistant to at least one of these three drug classes (Table 12). Resistance to one or more drugs in the NNRTI class was most common (10%), followed by resistance to NRTIs (2%) and PIs (2%). Only 1% of sequences showed multi-class drug resistance, that is, high-level resistance to ARVs in two or more drug classes. These proportions have not changed significantly since 2003 (data not shown).

Figure 3: Proportion of cases with genotype obtained within 3 months of HIV diagnosis included in VARHS, King County 2003-2009

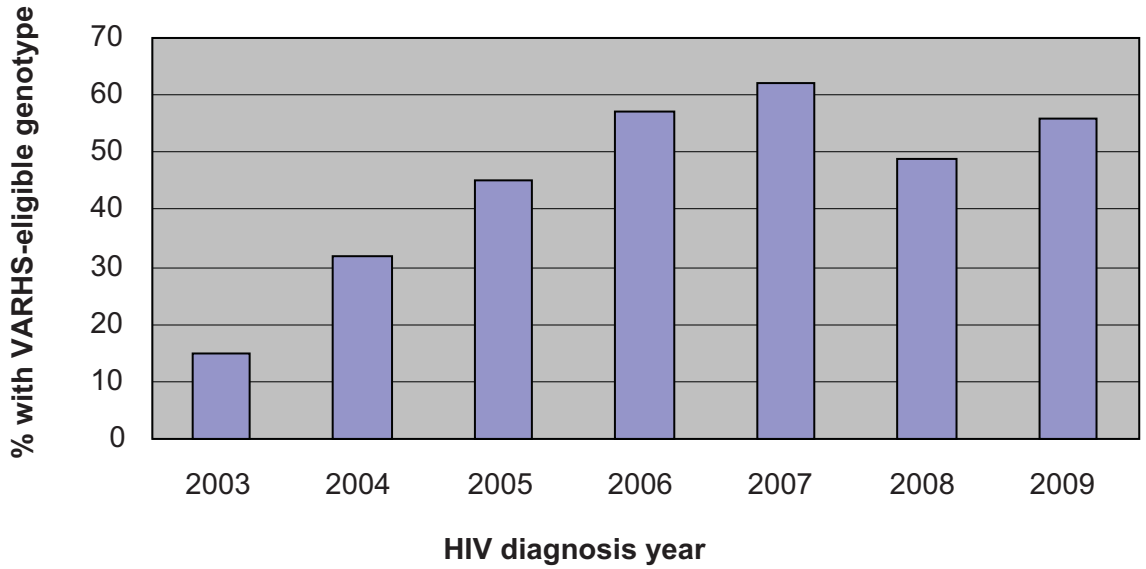

Table 12: Prevalence of high-level antiretroviral resistance among HIV cases included in VARHS, King County 2007-2009

	N=523
Any high-level resistance	12%
High-level resistance to NNRTI	10%
High-level resistance to NRTI	2%
High-level resistance to PI	2%
High-level multi-class drug resistance	1%

VARHS is intended to be population-based, so the goal is to obtain a genotype for all HIV-infected persons at the time of their HIV diagnosis. Coverage of VARHS in King County appears to have leveled at between 50% and 60%, but we hope completeness will increase as additional labs submit genotype sequences. We've found that high-level transmitted ARV resistance affects about one in eight people newly-diagnosed with HIV in King County, and transmitted multi-class drug resistance remains low, currently at about one in 100 people newly diagnosed with HIV.

- *Contributed by Christina Thibault*

Antiretroviral Therapy for Treatment-Naïve Patients

Antiretroviral therapy has dramatically decreased morbidity and mortality in people infected with HIV. The number of approved antiretrovirals (ARVs) continues to grow, and patients are often able to achieve excellent responses with minimal side effects. With the numerous options available and as new information arises daily, the care of HIV-infected patients continues to be transformed. To assist health care providers, the Department of Health and Human Services (DHHS) developed treatment guidelines for the use of ARV agents in HIV-1-infected adults and adolescents.[1] These guidelines were recently updated to incorporate data from recent studies that impact the timing of initiation of therapy as well as providing the optimal or preferred choices for ARVs.

The timing of initiation of ARV therapy for HIV infection has changed over the years. The initial DHHS guidelines published in June of 1998 recommended initiation of ARVs in any infected patient with a CD4 count <500 cells/µL or an HIV viral load of >20,000 copies/mL. These guidelines have undergone many revisions, and in February of 2001, initiation of ARV therapy was recommended for patients with a CD4 count <350 cells/µL or an HIV viral load >55,000 copies/mL. This CD4 count remained the "standard number" for initiation of therapy until the NA-ACCORD investigators published new data in 2009. They reported higher death rates for patients who deferred ARV therapy until their CD4 counts fell below 500 cells/µL, compared to patients who began therapy with CD4 counts still above 500 cells/µL.[2] This data, combined with the current ease of treatment, and the concern that untreated HIV infection may increase the risk of non-AIDS-defining diseases including cardiovascular disease, kidney disease, liver disease, and cancer, has resulted in the following changes to the guidelines:

- Patients ***should*** begin ARV therapy if they develop an AIDS-defining illness or if they have a CD4 count <350 cells/µL.
- It is ***recommended*** that patients with a CD4 count between 350 and 500 cells/µL begin ARV therapy.
- Patients with a CD4 count >500 cells/µL ***should consider*** ARV therapy.

These new guidelines take into account the marked improvement in the medications currently available to treat HIV. The recommended agents for first line therapy have changed with the new and improved therapies that are available and as new data are presented on the efficacy and tolerability of certain combinations of ARVs.

The new DHHS guidelines recommend:

- A combination of two nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs), **plus**
- a non-nucleoside reverse transcriptase inhibitor (NNRTI), **or**
- a protease inhibitor (PI) boosted with ritonavir, **or**
- an integrase strand transfer inhibitor (INSTI).

The currently preferred regimens have been studied in randomized, controlled trials and have optimal virologic efficacy, favorable toxicity profiles, and simple dosing schedules. The following regimens are currently listed in the DHHS guidelines as the preferred treatments for naïve patients: efavirenz, atazanavir or darunavir (both boosted with ritonavir), or raltegravir. Each of these should be combined with tenofovir + emtricitabine (Truvada).[1]

Tenofovir/emtricitabine is now the standard dual NRTI in use. Studies have shown it to be superior to zidovudine/lamivudine based on virologic response and limb fat loss.[3] AIDS Clinical Trials Group Study 5202 recently reported abacavir/lamivudine (Epzicom) had an increased rate of virologic failure in subjects with a pretreatment viral load of >100,000 copies/mL com-

[1]Panel on Antiretroviral Guidelines for Adults and Adolescents. Guideline for the use of antiretroviral agents in HIV-1 infected adults and adolescents. Department of Health and Human Services. December 1, 2009; 1-161.
[2]Kitahata, M, et al. Effect of early versus deferred antiretroviral therapy for HIV on survival. New England Journal of Medicine. 2009;360 (18):1815-26.
[3]Arribas, J, et al. Tenofovir disoproxil fumarate, emtricitabine, and efavirenz compared with zidovudine/lamivudine and efavirenz in treatment-naïve patients; 144-week analysis. Journal of Acquired Immune Deficiency Syndrome. 2008; 4791):74-78.

pared to tenofovir/emtricitabine.[4] There have also been recent reports indicating increased risk of cardiovascular events in subjects taking abacavir,[5] so abacavir/lamivudine is now considered an alternative dual NRTI.

The preferred NNRTI is efavirenz. This drug is widely used and well tolerated; however, resistance is present in approximately 7% of those newly infected with HIV. Also, women of reproductive potential should not take this medication due to risk of birth defects, and a significant number of patients develop neuropsychiatric adverse side effects with this medication. Therefore, efavirenz is not an option for a substantial number of patients.

Protease inhibitors have changed HIV therapy since their introduction in 1995. The two that are currently recommended as preferred therapies are atazanavir and darunavir. Atazanavir was shown to be non-inferior to lopinavir/ritonavir in a randomized trial and was found to be better tolerated and have less effect on lipid profiles.[6] Darunavir was shown to be superior to lopinavir/ritonavir and also had fewer gastrointestinal side effects and less increases in triglycerides than lopinavir/ritonavir in a large randomized trial.[7] Both of these medications are given once daily and are well tolerated.

The newest class of antiretrovirals is the integrase strand transfer inhibitors (INSTI). These medications block the insertion of the HIV genetic material into the DNA of the host cell. Raltegravir is an INSTI that was initially approved for treatment-experienced patients but is now also approved for treatment-naïve patients. This approval was based on results from a randomized study comparing raltegravir to efavirenz. All subjects also received tenofovir/emtricitabine. Raltegravir was shown to be as effective as efavirenz, and subjects receiving raltegravir achieved virologic suppression quicker. There were also fewer side effects reported with raltegravir.[8] Raltegravir is well tolerated and appears to be very effective. It is taken twice daily.

The new DHHS guidelines provide HIV-infected individuals with many effective and tolerable regimens and have expanded the number of HIV-infected patients who qualify for therapy. Additional data is needed to determine which of these regimens may prove superior or have less toxicity. **The University of Washington AIDS Clinical Trials Unit (UW ACTU) is currently participating in a study investigating three of the preferred regimens for the initial treatment of HIV.** Participants will all receive tenofovir/emtricitabine and then be randomized to receive either atazanavir boosted with ritonavir, darunavir boosted with ritonavir, or raltegravir. Medications except for ritonavir are provided through the study. Eligible volunteers must be naïve to HIV therapy (except ARVs taken as prophylaxis or during pregnancy) and must not have any genomic resistance to the medications used in the study.

The UW ACTU continues to evaluate treatment strategies for both the initial therapy of HIV and rescue (salvage) treatment. We are also conducting other studies investigating the treatment of HIV-related neuropathy and studies evaluating the safety and efficacy of the herpes zoster (varicella zoster) vaccine and the human papilloma virus vaccine (Gardasil) in HIV-positive people. We seek referrals for these and other studies. For more information, visit our web site at www.uwactu.org or call us at (206) 744-3184.

- *Submitted by Shelia Dunaway*

[4] Sax, et al. Abacavir-lamivudine versus tenofovir-emtricitabine for initial HIV-1 therapy. New England Journal of Medicine. 2009;361 (23) 2230-40.

[5] Sabin, C, et al. use of nucleoside reverse transcriptase inhibitors and risk of myocardial infarction in HIv-infected patients enrolled in the D:A:D study; a multi-cohort collaboration. Lancet. 2008; 371(9622):1417-1426.

[6] Molina, J, et al. Once-daily atazanavir/ritonavir compared with twice-daily lopinavir/ritonavir, each in combination with tenofovir and emtricitabine, for management of antiretroviral-naive HIV-1-infected patients: 96-week efficacy and safety results of the CASTLE study. Journal of Acquired Immune Deficiency Syndrome. 2010;53(3):323-32.

[7] Mills, A. et al, Once-daily darunavir/ritonavir vs. lopinavir/ritonavir in treatment-naive, HIV-1-infected patients: 96-week analysis. AIDS. 2009;23(13):1679-88.

[8] Lennox, j, et al. Safety and efficacy of raltegravir-based versus efavirenz-based combination therapy in treatment-naive patients with HIV-1 infection: a multicentre, double-blind randomised controlled trial. Lancet. 2009;374(9692):796-806.

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

March 2010

Antiretroviral Studies		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• HIV-positive men and women 18 years or older • Viral load more than 1000 copies/ml • No major HIV resistance mutations • Have not taken ARVs (for more than 9 days • Lab tests within certain limits • Negative pregnancy test for women and use of contraception • Need to take a medication not allowed on the study.	**(Study 5257)** To compare three different antiretroviral (ARV) regimens in people who have not taken ARVs before.	Medications while on study: At entry you will be randomly assigned (like flipping a coin) to one of three different groups. The treatment groups are: **Group 1**: Atazanavir (ATV) 300 mg once daily (QD) + ritonavir (RTV) 100 mg QD + emtricitabine/tenofovir disoproxil fumarate (FTC/TDF) 200/300 mg QD **Group 2**: Raltegravir (RAL) 400 mg twice daily (BID) + FTC/TDF 200/300 mg QD **Group 3**: Darunavir (DRV) 800 mg QD + RTV 100 mg QD + FTC/TDF 200/300 All study drugs will be provided except ritonavir. **Length of Study**: 96 weeks from the last enrollment (estimated to be a maximum of 192 weeks). **Schedule of Study Visits**: Screening, pre-entry, entry and at weeks 2, 4, 8, 16, 24, 36, 48, 63, 80, and 96), plus additional visits every 16 weeks thereafter until the study ends. Visits include physical exams and blood draws. **Metabolic Substudy**: Includes tests to investigate how the study drugs affect fat deposits in blood vessels and the abdomen. These tests include: computer tomography (CT) scans, ultrasounds of the carotid arteries (CIMT), tests of an artery in the arm (FMD), and dual x-ray absorptiometry (DEXA).

Rescue Studies		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• HIV-infected people at least 16 years of age • HIV viral load (HIV level) currently 1000 copies/µl or higher • Currently on an HIV drug regimen that includes a protease inhibitor (PI) • Have resistance to multiple types of HIV medications • Had exposure to multiple types of HIV medications	**(Study 5241)** To determine if adding nucleoside analogue reverse transcriptase inhibitors (NRTIs) to a novel antiretroviral regimen for volunteers who are triple-class antiretroviral-experienced or resistant is beneficial. Two strategies will be evaluated: 1) including or not including NRTIs in a new regimen, and 2) the use of continuous phenotype susceptibility (cPSS) score to help choose study regimens. The treatment response will then be observed. The study will make available several new drugs, including raltegravir, darunavir, tipranavir, etravirine, enfuvirtide and, if a subject has R5-tropic HIV, maraviroc.	<u>Part 1 – Continue current medications</u> • Genotype/phenotype/tropism assays performed – these tests determine what HIV medications would be effective • A regimen is identified with a sum of at least 2 active mediations • Study clinician, primary health care provider, and volunteer select study regimen and NRTIs from among options identified <u>Part 2 - New Study Regimen</u> • Randomization if cPSS >2.0 (greater than 2 active HIV medications) **Arm A**: Study Regimen plus NRTIs for 48 weeks **Arm B**: Study Regimen **without** NRTIs for 48 weeks • Registration if cPSS ≤2.0 (Observational Arm) **Arm C**: Study Regimen plus NRTIs for 48 weeks Up to 100 subjects may be enrolled **Schedule of Study Visits:** Screening, Part 2 pre-entry, Part 2 entry and then at weeks 1, 4, 8, 12, 16, 24, 36 and 48. Visits include physical exams and blood draws.
Complications of HIV and Other Conditions		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• HIV-positive male or female, age 18 or older • CD4≥ 200 and undetectable viral load • On a combination of antiretrovirals and not planning on changing them • History of chickenpox or herpes zoster (Shingles) more than one year prior to the study or positive for varicella zoster virus (VZV) • No prior vaccination with varicella (chickenpox) or zoster vaccine • Not pregnant or planning pregnancy, and willing to use birth control if needed • Not breast feeding • Lowest ever (nadir) CD4≥100 cells/µl.	**(Study 5235)** To see if Zostavax® vaccine is safe and effective at making the body produce a reaction (antibody) to the vaccine in HIV-positive individuals. Zostavax® is used to vaccinate people over age 60 against varicella zoster virus (herpes zoster) which is the virus that causes shingles and post-shingles pain.	**Medications while on study:** 2 doses of vaccine or placebo. For every 3 people who receive the vaccine, 1 will receive the placebo. The ZOSTER/Placebo vaccine will be provided to you by the study. **Length of Study:** 12-24 weeks **Schedule of Study Visits:** Screening, entry, and visits at 2, 6, 8, and 12 weeks. There will be a safety telephone call 2-3 days after each vaccination and at 24 weeks.

Neuropathy		
Eligibility	**Study Purpose**	**Study Drug or Treatment**
• HIV positive ≥ 18 years old • HIV-associated neuropathy • Successful completion of a daily baseline pain diary over one week • Female subjects must use birth control if able to get pregnant • On stable or no ARVs for 30 days prior to entry and have no plans to change • No history of substance abuse or alcohol abuse within 6 months of entry	**(Study 5235)** This trial will look at two drugs used alone and in combination for treatment of painful peripheral neuropathy, a painful condition that affects primarily the hands and feet. The drugs are duloxetine and methadone. Acetaminophen will be available for backup pain management.	**Medications On Study:** Subjects will receive methadone alone, duloxetine alone, methadone and duloxetine together, and methadone and duloxetine placebos. Each drug regimen will last for four weeks with a week in-between the treatments. . **Length of Study:** About 23 weeks (20 weeks on study drugs) **Schedule of Study Visits:** Screening, pre-entry, entry and at weeks 4, 5, 9, 10, 14, 15, 19, 20.

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

Visit our new website at www.uwactu.org and find out about our latest studies, meet our staff, and find out about our outreach programs.

Key to Terms
3TC: lamivudine (Epivir)
ABC: abacavir (Ziagen)
APV: amprenavir (Agenerase)
ARV: antiretroviral
AZT: zidovudine (Retrovir)
CBV: combivir (lamivudine/zidovudine)
ddIL didanoisne (Videx)
d4T: stavudine (Zerit)
ddc: zalcitabine (Hivid)
EFV: efavirenz (Sustiva)
FTC: emtricitabine
HAART: highly-active antiretroviral therapy
HBV: hepatitis B
HCV: hepatitis C
IDV: indinavir (Crixivan)
LPV/r: lopinavir/ritonavir (Kaletra)
NFV: nelfinavir (Viracept)
NNRTI: non-nucleoside reverse transcriptase inhibitor
NRTI: nucleoside reverse transcriptase inhibitor
NVP: nevirapine (Viramune)
PI: protease inhibitor
RBV: ribavirin
RTV: ritonavir (Norvir)
TDF: tenofovir
UWMC: University of Washington Medical Center

> : greater than
< : less than
≥ : greater than or equal to
+ : positive

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