

Behavioral and Clinical Characteristics of Patients Receiving HIV Care in King County: Medical Monitoring Project in 2009-2011

Background

As of December 31, 2010, the estimated number of persons with a *diagnosis* of human immunodeficiency virus (HIV) infection or acquired immunodeficiency syndrome (AIDS) was 803,771 for the United States and 6,749 for King County, WA. HIV surveillance programs in the United States collect limited information about people who have received diagnoses of HIV infection and AIDS. Supplemental surveillance projects collect more detailed information about care-seeking behaviors, healthcare use, and other behaviors among persons living with HIV. Together, these data informs program planning, resource allocation, HIV prevention efforts, evaluation of existing clinical and social services, and development of new HIV-related interventions.

Methods

The Medical Monitoring Project (MMP) is a supplemental surveillance system that collects annual cross-sectional clinical, sociodemographic, and behavioral data on randomly selected HIV-infected adults who are in care. MMP uses a three stage sampling design to obtain representative samples of adults receiving HIV/AIDS care. Data collection for MMP is conducted in 16 states and Puerto Rico, areas where 73% of the total PLWH population in the United States reside. During face-to-face or telephone interviews, information on demographics, adherence to HIV medication regimens, behavioral risk factors, and service utilization is collected. Medical record abstractions (MRA) are conducted to collect clinical data pertaining to diagnoses, medications, laboratory results, and health service utilization. A more detailed description of the MMP methodology is available elsewhere.

In this article, we describe key health indicators of persons who receive HIV care in King County. This article is modeled after a report that was generated for the *national* MMP sample, available here:

<http://www.cdc.gov/hiv/pdf/>

[MMP_2010_surveillancesummary.pdf](#). We included data from participants in the 2009, 2010, and 2011 data collection cycles who had linked interview and MRA records, yielding an analytic dataset comprised of 509 records. The data were weighted for probability of selection and nonresponse to be representative of adults receiving outpatient medical care for HIV in King County. It should be noted that the MMP sampling design was intended to yield estimates for the HIV

infected population in care in Washington State, not to yield county-level estimates; as such, the results from this analysis should be interpreted with caution. Statistical software (SAS, version 9.3) was used for analysis of weighted data. Data are not reported for variables with <5 responses or a coefficient of variation of $\geq 30\%$.

Results

The 509 MMP participants included in this analysis represent 5,078 adults who receive HIV care in King County. The majority of patients receiving HIV care in King County are male (87%), White (64%), 40 years or older (80%), have a high school degree or higher (70%), were born in the United States (85%), and have lived with HIV for 10 or more years (59%) (**Table 1**). More than 10% of patients experienced homeless and 5% experienced incarceration in the 12 months preceding their interview. Nearly all patients had some health insurance coverage, but 15% of patients experienced some type of lapse of coverage in the prior 12 months. Roughly half of patients were financially supported by salary or wages, 30% received Supplemental Security Income or Social Security Disability Insurance. Almost one-third of respondents (30%) were at or below the federal poverty line.

The vast majority of adults living with HIV in care in King County had at least one CD4 and one viral load test in the last 12 months (95% and 94%, respectively) (**Table 2**). Averaged across all CD4 tests in the prior 12 months, less than half (47%) of respondents had a geometric mean CD4 count exceeding 500 cells per microliter. Regarding most *recent* viral load test, 79% of participants were undetectable or had a viral load <200 copies/mL. The majority of patients were currently taking antiretroviral therapy (90%). There was a slight increase in percent virally suppressed by MMP data collection cycle (**Figure 1**), though the increase was non-statistically significant.

In the 12 months preceding the MMP interview, 46% of patients had a syphilis test and 22-23% of patients had a chlamydia and gonorrhea test documented in their medical charts (**Table 3**). STD testing was more commonly documented for persons who reported any recent sexual activity and any condomless sex. In the last 12 months, 7% of patients were diagnosed with syphilis and 2% were diagnosed with gonorrhea.

Based upon documentation in medical records in the 12 months prior to the MMP interview, 28% of patients had hypertension, 10% had diabetes, and 13% had dyslipidemia (**Table 4**). With regard to hepatitis, 16% of patients had a history of Hepatitis C and 10% had a history of Hepatitis B. According to interview responses to the *Public Health Questionnaire-8*, which asks about depressive symptoms in the two weeks prior to the MMP interview, 23% of patients had major or other depression.

Substance use in the 12 months prior to the MMP interview was commonly reported by adults living with HIV and receiving care in King County (**Table 5**). A large proportion of patients (35%) were current smokers and 27% of patients were former smokers. Binge drinking was reported by 16% of patients. Non-injection drug use was reported by 42% of patients; 8% reported injection drug use. The most commonly reported drugs were marijuana, methamphetamines, and poppers, which were utilized by 34%, 15%, and 14% of patients, respectively.

The majority (70%) reported oral, vaginal, or anal sex in the prior 12 months (**Table 6**). Condomless sex was reported by 38% of patients; condomless sex with an HIV-negative or status unknown partner was reported by 12% of patients. Among men who have sex with men (MSM), 48% reported having insertive anal sex in the past 12 months, 33% reported condomless insertive anal sex, and 6% reported condomless insertive anal sex with an HIV-negative or status unknown partner. These percentages did not vary

tremendously by partner type (e.g. main partner or casual partner) (**Table 7**).

Dental care, HIV case management, public benefits, mental health services, and the AIDS Drug Assistance Program (ADAP) were the most needed ancillary services (**Table 8**). A large proportion (19%) of those who needed dental care could not get dental care. Eleven-percent of patients indicated that they needed peer group support and could not get peer group support. Otherwise, unmet need for other support service categories was reported by less than 10% of patients.

Discussion

Although many of the metrics presented in this article are generally positive, the following points should be underscored: 30% of adults living with HIV and receiving care in King County were below the federal poverty line, 10% recently experienced homelessness, 35% were current smokers, 15% were methamphetamine users, and 12% had condomless sex with an HIV-negative or status unknown partner. Many PLWH have not been able to utilize dental care and medical record abstraction data suggest that STD testing rates might be sub-par. Nonetheless, about 80% of patients receiving HIV care in King County are estimated to be virally suppressed, which is higher than national MMP estimates (74%). For more information about MMP in King County, please visit our website: tinyurl.com/kcmmp.

Contributed by Julia Hood

Table 1. Characteristics of patients who receive HIV care in King County, Medical Monitoring Project, 2009-2011

| | Weighted Percent | Weighted 95% Confidence Interval |
|---|------------------|----------------------------------|
| Gender | | |
| Male | 87 | 83, 91 |
| Female | 12 | 9, 16 |
| Sexual Orientation | | |
| Homosexual | 71 | 66, 76 |
| Heterosexual | 18 | 15, 22 |
| Bisexual | 8 | 5, 10 |
| Other/unclassified | 3 | 1, 4 |
| Race/ethnicity | | |
| White, non-Hispanic | 64 | 60, 69 |
| Black, non-Hispanic | 15 | 11, 18 |
| Hispanic or Latino ^x | 11 | 8, 14 |
| Other/Unclassified | 10 | 7, 13 |
| Age at time of interview (years) | | |
| 18-29 | 5 | 3, 8 |
| 30-39 | 15 | 11, 19 |
| 40-49 | 43 | 38, 47 |
| ≥50+ | 37 | 31, 43 |
| Education | | |
| Less than high school | 9 | 6, 12 |
| High school diploma or GED | 21 | 18, 24 |
| More than high school | 70 | 66, 74 |
| Born in the United States | 85 | 81, 89 |
| Time since HIV diagnosis (years) | | |
| <5 | 18 | 14, 22 |
| 5-9 | 20 | 16, 24 |
| ≥10 | 59 | 54, 64 |
| Homeless^A at any time (past 12 months) | 11 | 7, 14 |
| Incarcerated >24 hours (past 12 months) | 5 | 3, 8 |
| Had Health insurance or coverage* (past 12 months) | 98 | 97, 99 |
| Any lapse in health coverage (past 12 months) | 15 | 11, 18 |
| Most common types of health insurance (past 12 months) | | |
| Private health insurance | 46 | 40, 52 |
| Medicaid | 30 | 25, 35 |
| Medicare | 22 | 19, 25 |
| Primary source of financial support (past 12 months) | | |
| Salary or wages | 51 | 46, 56 |
| Supplemental Security Income (SSI) or Social Security Disability Insurance (SSDI) | 30 | 25, 34 |
| Other public assistance (welfare) | 9 | 6, 11 |
| Family, partner, or friend(s) | 4 | 3, 6 |
| Pension or retirement fund | 3 | 2, 5 |
| Combined yearly household income^o (US\$) | | |
| \$0 to \$19,999 | 51 | 45, 57 |
| \$20,000 to \$39,999 | 20 | 17, 23 |
| \$40,000 to \$74,999 | 14 | 11, 17 |
| \$75,000 and more | 15 | 10, 20 |
| At or below poverty threshold[†] | 30 | 25, 35 |

^xHispanics or Latinos might be of any race. Participants are classified in only one category.

^ALiving on the street, in a shelter, in a single-room-occupancy hotel, or in a car.

*Participants could select more than one response for health insurance or coverage for antiretroviral medications.

^oIncome from all sources, before taxes, in the last calendar year.

[†]Poverty guidelines as defined by the Department of Health and Human Services (HHS); more information regarding the HHS poverty guidelines can be found at <http://aspe.hhs.gov/poverty/faq.cfm>.

Table 2. CD4 and viral load monitoring, prescription of antiretroviral therapy, and viral suppression during the 12 months before the interview—Medical Monitoring Project, King County, 2009-2011

| | Weighted Percent | Weighted 95% Confidence Interval |
|--|------------------|----------------------------------|
| Number of CD4 tests in 12 month period | | |
| 0 | 5 | 3, 7 |
| 1 | 19 | 15, 23 |
| 2 | 28 | 24, 32 |
| ≥3 | 48 | 41, 54 |
| Geometric mean CD4 count (cells/μL) in last 12 months | | |
| Missing/Unknown | 5 | 3, 7 |
| 0–199 | 11 | 8, 14 |
| 200–349 | 16 | 13, 19 |
| 350–499 | 22 | 18, 25 |
| ≥500 | 47 | 42, 51 |
| Lowest CD4 count (cells/μL) in the last 12 months | | |
| Missing/Unknown | 5 | 3, 7 |
| 0–49 | 4 | 2, 5 |
| 50–199 | 10 | 7, 12 |
| 200–349 | 20 | 17, 24 |
| 350–499 | 25 | 21, 28 |
| ≥500 | 36 | 32, 41 |
| Number of Viral Load tests in 12 month period | | |
| 0 | 6 | 4, 9 |
| 1 | 16 | 13, 19 |
| 2 | 28 | 25, 32 |
| ≥3 | 49 | 44, 54 |
| Most recent viral load documented undetectable or <200 copies/mL | 79 | 75, 83 |
| Prescribed ART in 12 month period | 90 | 87, 93 |
| <i>Note:</i> This table summarizes medical record abstraction data | | |

Figure 1. Most recent viral load documented undetectable or <200 copies/mL

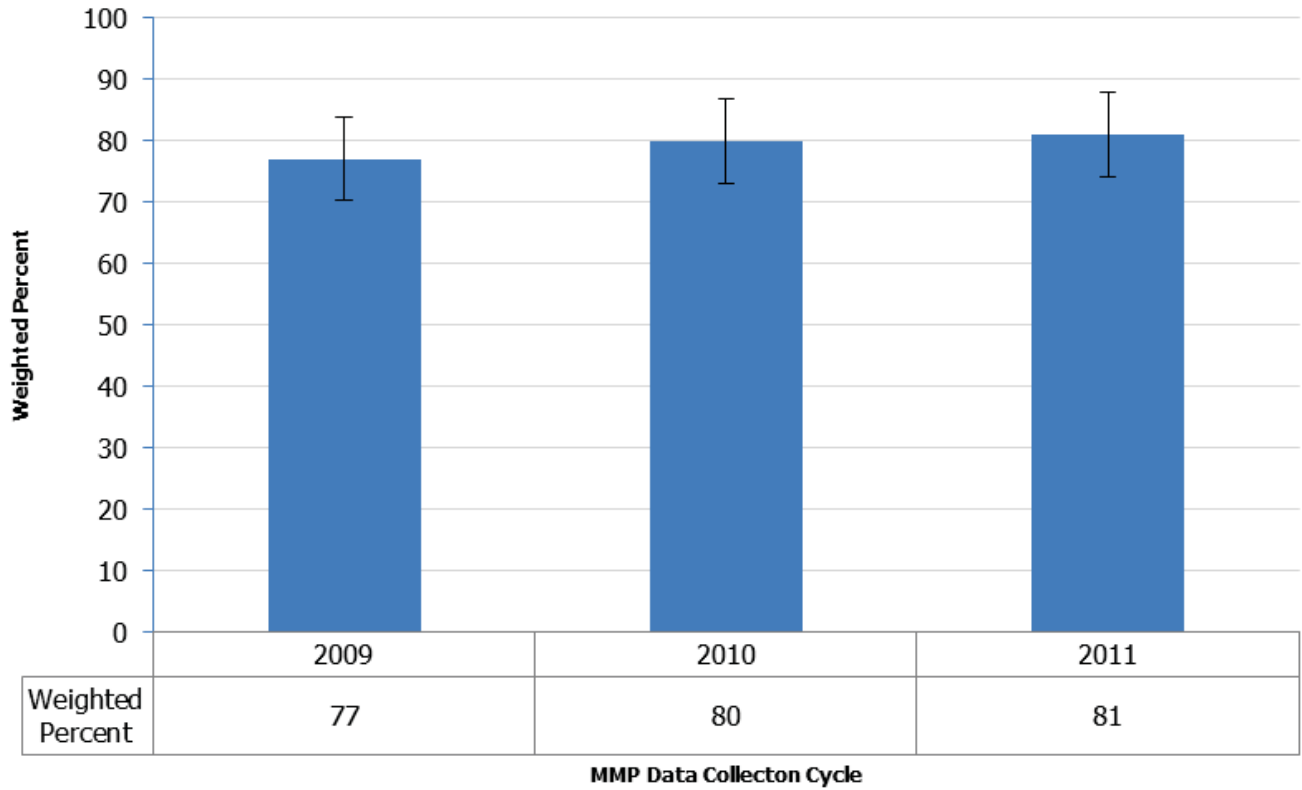


Table 3. Sexually transmitted disease testing during the 12 months before the interview—Medical Monitoring Project, King County, 2009-2011

| | All patients | | Sexually active patients only | | Patients who Reported Condomless Sex | |
|--|------------------|----------------------------------|-------------------------------|----------------------------------|--------------------------------------|----------------------------------|
| | Weighted Percent | Weighted 95% Confidence Interval | Weighted Percent | Weighted 95% Confidence Interval | Weighted Percent | Weighted 95% Confidence Interval |
| Chlamydia testing | 22 | 18, 27 | 27 | 22, 32 | 33 | 22, 44 |
| Gonorrhea testing | 23 | 19, 27 | 28 | 23, 33 | 36 | 26, 46 |
| Syphilis testing | 46 | 39, 53 | 52 | 44, 59 | 59 | 49, 68 |
| Gonorrhea, chlamydia, & syphilis testing | 18 | 14, 21 | 21 | 16, 26 | 27 | 18, 37 |
| Chlamydia diagnosis | -- | -- | -- | -- | -- | -- |
| Gonorrhea diagnosis | 2 | 1, 2 | -- | -- | -- | -- |
| Syphilis diagnosis | 7 | 5, 9 | -- | -- | -- | -- |

Note: Information on STD testing and diagnoses was based on documentation in medical records; designation of being 'sexually active' based upon interview data. The symbol, --, indicates that the cell size was too small to yield stable estimates. *Neisseria gonorrhoeae* testing was defined as documentation of a result from culture, gram stain, the nucleic acid amplification test (NAAT), or the nucleic acid probe. *Chlamydia trachomatis* testing was defined as a result from culture, direct fluorescent antibody (DFA), enzyme immunoassay (EIA) or enzyme-linked immunoassay (ELISA), the nucleic acid amplification test (NAAT), or nucleic acid probe. Syphilis testing was defined as a result from non-treponemal syphilis tests (rapid plasma reagin [RPR], Venereal Disease Research Laboratory [VDRL]); treponemal syphilis tests (*Treponema pallidum* hemagglutination assay [TPHA], *T. pallidum* particle agglutination [TP-PA], microhemagglutination assay for antibody to *T. pallidum* [MHA-TP], fluorescent treponemal antibody absorbed [FTA-ABS] tests), or dark-field microscopy.

Table 4. Estimated prevalence of co-morbidities, Medical Monitoring Project, King County, 2009-2011.

| | Weighted Percent | Weighted 95% Confidence Interval |
|--|------------------|----------------------------------|
| Hypertension* | 28 | 24, 32 |
| Diabetes* | 10 | 8, 12 |
| Dyslipidemia* | 13 | 9, 16 |
| History of Hepatitis C | 16 | 13, 19 |
| History of Hepatitis B | 10 | 8, 12 |
| Depression based on DSM-IV criteria [†] | | |
| No depression | 74 | 70, 78 |
| Other depression | 11 | 8, 13 |
| Major depression | 12 | 10, 15 |

Note: With the exception of depression, all estimates presented in this table summarize medical record abstraction data.
*Per medical record documentation in the 12 month period prior to interview
[†]Based upon interview data ; responses to the 8 items on the Patient Health Questionnaire (PHQ-8) were used to define "major depression" and "other depression," according to criteria from the *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. (DSM-IV-TR). "Major depression" was defined as having at least 5 symptoms of depression, while "other depression" was defined as having 2-4 symptoms of depression.

Table 5. Reported substance use during the 12 months before interview, Medical Monitoring Project, King County, 2009-2011.

| | Weighted Percent | Weighted 95% Confidence Interval |
|---|------------------|----------------------------------|
| Smoking status | | |
| Never smoked | 38 | 34, 42 |
| Former smoker | 27 | 22, 31 |
| Current smoker | 35 | 31, 39 |
| Any alcohol use[°] (during past 12 months) | 75 | 71, 79 |
| Binge drinking[×] (during past 30 days) | 16 | 13, 20 |
| Use of any non-injection drugs (during past 12 months) | 42 | 38, 47 |
| Use of any injection drugs (during past 12 months) | 8 | 6, 10 |
| Types of drugs used (injection or non-injection) | | |
| Marijuana | 34 | 30, 39 |
| Methamphetamine (crystal meth, tina, crank, ice) | 15 | 12, 18 |
| Poppers (amyl nitrate) | 14 | 11, 17 |
| Crack | 7 | 5, 9 |
| Cocaine | 7 | 5, 9 |
| GHB | 6 | 4, 7 |
| Downer (e.g., Valium, Ativan, or Xanax) | 4 | 2, 6 |
| Heroin or opium | 3 | 2, 5 |
| Painkiller (e.g., Oxycontin, Vicodin, or Percocet) | 2 | 1, 4 |
| X or Ecstasy | 2 | 1, 4 |

Note: Information on substance use was based on patient report during interview.
[°]Participants who drank at least 1 alcoholic beverage during the 12 months preceding the interview. Alcoholic beverage was defined as a 12-ounce beer, 5-ounce glass of wine, or 1.5-ounce shot of liquor.
[×]Participants who drank ≥5 alcoholic beverages at one sitting (≥4 for women) during the 30 days preceding the interview.

Table 6. Sexual activity during the 12 months before the interview, Medical Monitoring Project, King County, 2009-2011

| | Weighted Percent | Weighted 95% Confidence Interval |
|---|------------------|----------------------------------|
| Classification of sexual partnership types | | |
| Any MSM (MSM only, and men who have sex with men and women) | 78 | 73, 82 |
| Men who have sex with women only | 8 | 6, 11 |
| Any women who have sex with men (women who have sex with men only, and women who have sex with men and women) | 11 | 8, 14 |
| Any sexual activity (during past 12 months) | 70 | 66, 74 |
| Engaged in any unprotected sex with... | | |
| Any partner | 38 | 33, 43 |
| Any partner whose HIV status was negative or unknown | 12 | 10, 15 |

Table 7. Sexual risk behaviors during the 12 months before the interview among men who have sex with men, by type of partner, Medical Monitoring Project, King County, 2009-2011

| | MSM | | Main or Casual Partner | | Main* partner | | Casual ^A partner | |
|---|------------------|----------------------------------|------------------------|----------------------------------|------------------|----------------------------------|-----------------------------|----------------------------------|
| | Weighted Percent | Weighted 95% Confidence Interval | Weighted Percent | Weighted 95% Confidence Interval | Weighted Percent | Weighted 95% Confidence Interval | Weighted Percent | Weighted 95% Confidence Interval |
| Any anal sex | 62 | 56, 68 | 42 | 37, 47 | 40 | 33, 47 | 40 | 33, 47 |
| Any unprotected[†] anal sex | 43 | 37, 50 | 27 | 22, 31 | 29 | 23, 35 | 29 | 23, 35 |
| Unprotected[†] anal sex with partner whose HIV status was negative or unknown | 13 | 9, 16 | 5 | 3, 7 | 9 | 6, 12 | 9 | 6, 12 |
| Insertive anal sex | 48 | 43, 54 | 33 | 28, 38 | 30 | 24, 35 | 30 | 24, 35 |
| Unprotected[†] insertive anal sex | 33 | 28, 38 | 21 | 16, 25 | 21 | 16, 25 | 21 | 16, 25 |
| Unprotected[†] insertive anal sex with partner whose HIV status was negative or unknown | 6 | 4, 8 | 3 | 1, 4 | 4 | 2, 5 | 4 | 2, 5 |

Note. Men who have sex with men were defined as men who reported sex with men during the 12 months preceding the interview, regardless of whether they also reported sex with women, or if no sexual activity was reported, men who identified as homosexual, gay, or bisexual.

*A partner with whom the participant had sex and to whom he felt most committed to (e.g., boyfriend, spouse, significant other, or life partner).

^AA partner with whom the participant had sex but to whom he did not feel committed or whom he did not know very well.

[†]Neither the participant nor his partner used a condom.

Table 8. Met and unmet needs for ancillary services during the 12 months before the interview, Medical Monitoring Project, King County, 2009-2011

| | Persons who received service | | Persons who needed but did not receive services by time of interview | | Persons who did not need or receive services | |
|--|------------------------------|----------------------------------|--|----------------------------------|--|----------------------------------|
| | Weighted Percent | Weighted 95% Confidence Interval | Weighted Percent | Weighted 95% Confidence Interval | Weighted Percent | Weighted 95% Confidence Interval |
| Dental care | 68 | 64, 72 | 19 | 16, 22 | 13 | 10, 15 |
| HIV case management services | 55 | 49, 62 | 5 | 3, 7 | 39 | 33, 46 |
| Public benefits (e.g., SSI or SSDI) | 39 | 34, 43 | 8 | 5, 10 | 54 | 49, 59 |
| Mental health services | 33 | 28, 38 | 8 | 6, 11 | 59 | 54, 64 |
| Medicine through ADAP | 32 | 27, 37 | 4 | 2, 6 | 60 | 56, 65 |
| Meal or food services | 29 | 24, 34 | 5 | 3, 8 | 66 | 60, 72 |
| Transportation assistance | 18 | 14, 22 | 8 | 6, 10 | 74 | 70, 78 |
| Shelter or housing services | 19 | 15, 22 | 6 | 3, 8 | 75 | 71, 79 |
| Counseling about how to prevent spread of HIV | 24 | 20, 29 | -- | -- | 75 | 71, 80 |
| HIV peer group support | 11 | 9, 14 | 11 | 8, 14 | 77 | 73, 81 |
| Professional help remembering to take HIV medicines on time or correctly (adherence support services) | 20 | 16, 24 | 3 | 1, 4 | 77 | 73, 81 |
| Drug or alcohol counseling or treatment | 10 | 8, 13 | 4 | 2, 6 | 85 | 82, 89 |
| Home health services | 4 | 3, 6 | -- | -- | 94 | 92, 96 |
| Domestic violence services | -- | -- | -- | -- | 95 | 93, 98 |
| Interpreter services | 3 | 2, 5 | -- | -- | 96 | 94, 98 |
| Childcare services | -- | -- | -- | -- | 98 | 97, 100 |

Abbreviations: SSI, Social Security Supplemental Income; SSDI, Social Security Disability Insurance; ADAP, AIDS Drug Assistance Program.

Note. Participants could report receiving or needing more than one service.

The symbol, --, indicates that the cell size was too small to yield stable estimates.

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