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**Behavioral and Clinical Characteristics of Persons Receiving Medical Care for HIV Infection
– Medical Monitoring Project, San Francisco 2009-2010.**

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INTRODUCTION

As of December 31, 2011, there were 15,489 diagnosed and reported persons living with human immunodeficiency virus (HIV) infection in San Francisco, California; 1.9% of the total population [1]. California State law requires dual reporting from the diagnosing provider and the laboratory to the local county health department of all HIV cases including all tests indicative of HIV including HIV diagnostic and HIV viral load tests [2]. As of 2008, CD4+ lymphocyte test results are also reportable to the county health department by state law [2]. Through a combination of active and passive surveillance activities, the San Francisco Department of Public Health collects diagnostic, demographic, and mode of HIV acquisition information for all reported HIV cases [1, 3-5]. This information is stored in the Enhanced HIV/AIDS Reporting System (eHARS) case registry. In 2005, the Institute of Medicine issued a report stating the need to better understand care utilization, unmet needs for supportive services, sexual behaviors, substance use, treatment and adherence among people living with HIV [6]. This information is not available from core surveillance. In response, CDC implemented the Medical Monitoring Project (MMP) in 2005 to collect this information in a representative sample of people living with HIV [6]. San Francisco has conducted MMP since 2007.

METHODS

Sample

MMP utilizes a three-stage sampling approach to obtain an annual cross-sectional, locally representative, population-based sample to monitor clinical and behavioral outcomes of adults receiving outpatient HIV care. The three sampling stages are: 1) U.S. states and territories, 2) outpatient facilities providing HIV care, and 3) HIV-infected adults aged ≥ 18 years who had at least one medical care visit to a participating facility during the population definition period (January–April) for each cycle. San Francisco was one of 23 project areas funded to conduct MMP. Data from the 2009 and 2010 cycles of MMP in San Francisco are included in this report. Details on MMP methods have been described previously [7-10].

Data Collection

Interview

Trained interviewers conducted a face-to-face, computer-assisted structured interview in either English or Spanish with sampled patients. Interviews were conducted in a private location (such as at the San Francisco Department of Public Health, the patient's home or the patient's medical appointment) and took about 45 minutes to complete. If a patient was unable to complete the standard interview, due to illness for example, they were offered a shorter interview (approximately 20 minutes) with an abbreviated questionnaire. The standard interview collected information on demographics, access to and use of health care, met and unmet needs for supportive services, sexual behavior, depression, gynecologic and reproductive history (for females), drug and alcohol use, and use of HIV prevention services. Participants were reimbursed \$40 for their time.

Medical Record Abstraction

Trained MMP staff reviewed and abstracted medical records for patients after the interview was conducted. Information collected in the medical record abstraction (MRA) included: demographics, HIV diagnosis, history of opportunistic infections, co-morbidities, prescription of antiretroviral therapy and other medications, HIV laboratory test results, and health care visits in the 12 months before interview.

Human Subjects Protection

San Francisco MMP in 2009 and 2010 was conducted as a research study and was approved by the four Institutional Review Boards covering the medical facilities from which patients were sampled, including public and private hospitals. All participants signed a written informed consent prior to the interview and gave permission for the medical record abstraction.

Minimum Dataset

Limited data on demographic and HIV diagnosis variables was extracted from the San Francisco eHARS for all sampled patients, including those who were not interviewed. Data unavailable from eHARS was obtained from the sampled patient's medical facility. This minimum dataset was used for weighting procedures and for non-response adjustment.

Data Weighting

Data were weighted for the probability of selection based on known probabilities of selection at each sampling stage. In addition, data were weighted to adjust for nonresponse using predictors of patient level response, including facility size, race/ethnicity, time since HIV diagnosis, and age group.

Data Management and Statistical Analyses

After data collection, data were encrypted and transmitted to CDC through a secure data portal. Statistical weighting and cleaning procedures were conducted at CDC before data was returned to San Francisco via a secure data portal for data analysis. SAS v9.3 statistical software was used for analysis of weighted data. Prevalence estimates (weighted percentages) and associated 95% confidence intervals (CIs) were calculated using information from participants who completed both the standard questionnaire and also had a MRA conducted. Data are not reported for variables with fewer than five responses to protect patient confidentiality. Confidence intervals are not reported for variables with a coefficient of variation >30% due to unstable estimates. The term "patients" in this report refers to adults living with HIV infection receiving outpatient medical care in San Francisco. The time period referenced is the 12 months before the patient interview unless otherwise noted.

RESULTS

Facility and Patient Response Rates

During the 2009 and 2010 MMP cycles, 41 facilities out of 51 sampled eligible facilities in San Francisco agreed to participate, resulting in a facility response rate of 80%. Of the 800 patients sampled from participating facilities, 419 patients completed interviews using the standard questionnaire and had a corresponding medical record abstraction completed. The adjusted patient response rate, defined as number of patients interviewed divided by total number of eligible patients (adjusting for eligibility rate), was 54%. The overall response rate, defined as facility response rate \times adjusted patient response rate, for patients with both an interview and a medical record abstraction was 43%. After weighting the MMP sample, as described above, the 419 respondents represent an estimated 12,420 adults living with HIV who received outpatient HIV care in San Francisco.

Sociodemographic Characteristics

The majority of patients were male (92.8%); 4.2% were female, and 3.0% were transgender (Table 1). Most patients identified as homosexual, gay or lesbian (81.9%); 10.6% identified as heterosexual or straight and 7.5% as bisexual. An estimated 11.3% were black or African American, 58.0% were white, 18.6% were Hispanic or Latino (including any race), 4.1% were Asian or Pacific Islander and 7.9% were multiracial or another race. Almost half (47.0%) were 50 years or older. The majority of patients (81.0%) had higher than a high school education, were diagnosed more than 10 years prior to interview (72.3%) and were born in the United States (85.7%). An estimated 14.7% were homeless during the 12 months prior to interview and 10.5% had household incomes at or below the federal poverty guidelines. An estimated 43.3% of patients received financial support in the past 12 months primarily from salary or wages and 42.1% from Supplemental Security Income (SSI) or Social Security Disability Insurance (SSDI). Almost all patients (97.8%) had health insurance coverage during the past 12 months; 52.3% had private insurance, 35.8% had Medicaid and 33.3% had Medicare.

Table 1. Number* and percentage† of persons, by selected characteristics—Medical Monitoring Project, San Francisco, 2009-2010.

Characteristic	No.	%	(95% CI)
Gender			
Male	388	92.8	(89.8-95.8)
Female	19	4.2	(2.0-6.4)
Transgender	12	3.0	
Sexual orientation			
Heterosexual or straight	49	10.6	(7.1-14.0)
Homosexual, gay, or lesbian	324	81.9	(77.3-86.4)
Bisexual	34	7.5	(4.7-10.4)
Race/Ethnicity			
Black or African American	48	11.3	(8.2-14.4)
White	240	58.0	(50.7-65.4)
Hispanic or Latino	80	18.6	(12.3-25.0)
Multiracial/Other	32	7.9	(5.3-10.5)
Asian/Pacific Islander	18	4.1	(2.1-6.2)
Age at time of interview (years)			
25-39 years	55	13.2	(9.4-17.0)
40-49 years	171	39.7	(35.4-44.1)
50-59 years	136	32.8	(28.0-37.6)
≥60 years	57	14.2	(9.2-19.3)
Education			
<High School	25	5.4	(2.7-8.0)
High School diploma or equivalent	62	13.6	(10.5-16.8)
>High School	332	81.0	(76.7-85.4)
Country or territory of birth			
United States	356	85.7	(78.8-92.5)
Other	63	14.3	(7.5-21.2)
Time since HIV diagnosis			
<5 years	59	13.6	(10.2-17.0)
5-9 years	58	14.0	(10.3-17.8)
≥10 years	302	72.3	(67.1-77.5)
Homeless at any time in the past 12 months			
	68	14.7	(10.1-19.3)
Incarcerated for longer than 24 hours in the past 12 months			
	14	3.0	
Had health insurance coverage, past 12 months[§]			
	409	97.8	(94.8-100.0)
Type of health insurance, past 12 months[§]			
Private health insurance	201	52.3	(40.7-63.8)
Medicaid	164	35.8	(27.5-44.2)
Medicare	141	33.3	(28.3-38.3)
Tricare/CHAMPUS and Veterans Administration	19	4.5	
Other public insurance	31	6.4	(3.2-9.7)
Primary source of most financial support in the past 12 months			
SSI or SSDI [†]	185	42.1	(35.5-48.7)
Salary or wages	171	43.3	(36.8-49.8)
Other (including savings/investments/pensions)	47	11.0	(6.5-15.5)
Family, partner, or friend(s)	15	3.6	(1.9-5.3)
Combined yearly household income from all sources before taxes in last calendar year (dollars)			
\$0 to \$9,999	26	8.1	(4.7-11.5)
\$10,000 to \$19,999	78	24.1	(17.4-30.9)
\$20,000 to \$39,999	49	17.1	(12.5-21.8)
\$40,000 to \$74,999	57	21.2	(15.4-27.1)
\$75,000 or more	79	29.4	(20.9-37.9)
Poverty level			
Above poverty level	365	89.5	(85.7-93.3)
At or below poverty level	50	10.5	(6.7-14.3)
Total	419		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for some estimates where the coefficient of variation >0.30.

§Participants could select more than one insurance or coverage type. Persons were considered uninsured if they reported having health costs paid only by Ryan White-funded programs.

†Supplemental Security Income (SSI) or Social Security Disability Insurance (SSDI).

Clinical Characteristics

Table 2 describes the distribution of HIV infection using the CDC stage of disease classification for HIV infection [11]. The majority of patients in San Francisco had stage 3 HIV disease (64.2%); 26.5% had stage 2 disease and 9.3% had stage 1 disease (Table 2). Although the majority of patients had stage 3 disease, only 14.3% of patients had a CD4+ lymphocyte count <200 cells/ μ L in the last 12 months (Table 3). The overall estimated geometric mean CD4+ count was 551 cells/ μ L and the median CD4+ count was 530 cells/ μ L (range: 4-2349).

Table 2. Number* and percentage† of persons by stage of disease - Medical Monitoring Project, San Francisco, 2009-2010.

Stage of disease[§]	No.	%	(95% CI)
Stage 1: No AIDS, CD4+ lymphocyte count \geq 500 cells/ μ L (or CD4 percentage \geq 29%)	36	9.3	(6.5-12.1)
Stage 2: No AIDS, CD4+ lymphocyte count 200-499 cells/ μ L (or CD4 percentage 14% to <29%)	109	26.5	(21.9-31.1)
Stage 3: Clinical AIDS or CD4+ lymphocyte count <200 cells/ μ L (or CD4 percentage <14%)	273	64.2	(59.6-68.7)
Total	418		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for some estimates where the coefficient of variation >0.30.

§CDC case definition for HIV infection.

Table 3. Number* of participants and percentage† of persons by geometric mean CD4+ lymphocyte count and lowest CD4+ lymphocyte count in the 12 months before the interview - Medical Monitoring Project, San Francisco, 2009-2010.

CD4+ lymphocyte count (cells/μL)	No.	%	(95% CI)
Geometric mean count			
0-199	38	8.7	(5.7-11.7)
200-349	68	16.1	(13.2-19.0)
350-499	78	18.6	(14.5-22.6)
\geq 500	226	56.6	(51.7-61.6)
Lowest count			
0-49	11	2.5	
50-199	51	11.8	(8.7-15.0)
200-349	76	18.6	(15.0-22.3)
350-499	103	25.2	(20.9-29.4)
\geq 500	169	41.9	(36.7-47.1)
Total	410		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for some estimates where the coefficient of variation >0.30.

Use of Health-Care Services

Almost all patients (99.8%) had one usual place, such as a physician’s office or clinic, where they received most of their HIV medical care. On average it took 35 minutes for patients to travel to their usual HIV care provider. An estimated 75.9% of patients had three or more CD4+ count or HIV viral load tests in the last 12 months (Table 4). Most patients had three or more CD4+ count tests (71.4%) and three or more HIV viral load tests (65.5%) in the past 12 months. The majority of patients had at least one viral load test in each 6-month interval (80.4%) and at least one CD4+ test annually (98.2%) which is within the recommended guidelines [12]. ART prescription was documented in the medical chart for 89.3% of patients. The majority of patients had an undetectable (≤ 200 copies/mL) viral load at last measurement (79.6%). Additionally, all HIV viral load tests in the past 12 months were undetectable (≤ 200 copies/mL) for 70.1% of patients.

Table 4. Number* of participants and percentage† of persons who received CD4+ lymphocyte cell count and viral load monitoring who were prescribed antiretroviral therapy and achieved viral suppression in the 12 months before the interview—Medical Monitoring Project, San Francisco, 2009-2010.

	No.	%	(95% CI)
Number of outpatient laboratory tests for CD4+ lymphocyte cell count or HIV viral load[§]			
0	8	1.7	
1	26	6.3	(3.4-9.1)
2	68	16.2	(11.9-20.5)
≥ 3	317	75.9	(70.4-81.4)
Number of outpatient laboratory tests for CD4+ lymphocyte count[§]			
0	9	1.8	
1	27	6.5	(3.6-9.4)
2	85	20.2	(16.1-24.4)
≥ 3	298	71.4	(65.8-77.1)
Number of outpatient laboratory tests for HIV viral load[§]			
0	30	6.7	(4.1-9.3)
1	31	7.3	(3.9-10.6)
2	88	20.6	(16.4-24.8)
≥ 3	270	65.5	(59.1-71.8)
Viral load measured at least once every 6 months	333	80.4	(75.4-85.3)
CD4+ lymphocyte count measured at least once annually	410	98.2	(96.6-99.7)
Prescribed ART			
Yes	378	89.3	(84.1-94.4)
No or missing/unknown	41	10.7	(5.6-15.9)
Viral suppression			
Most recent HIV viral load undetectable or ≤ 200 copies/mL	330	79.6	(75.2-84.0)
> 200 copies/mL or missing/unknown	89	20.4	(16.0-24.8)
All HIV viral load measurements in the past 12 months			
All HIV viral load measurements in the past 12 months undetectable or ≤ 200 copies/mL	290	70.1	(65.0-75.2)
Any HIV viral load measurement in the past 12 months > 200 copies/mL or missing/unknown	129	29.9	(24.8-35.0)
Total	419		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for some estimates where the coefficient of variation > 0.30 .

§Only includes tests with a documented result.

Among the estimated 14.3% of patients clinically eligible for *Pneumocystis carinii* pneumonia (PCP) prophylaxis (i.e. their nadir CD4+ was <200 cells/ μ L in the past 12 months), 69.4% (CI: 57.5% - 81.2%) had a prescription for PCP prophylaxis documented in their medical chart. Among the estimated 2.5% of patients clinically eligible for *Mycobacterium avium* complex (MAC) prophylaxis (i.e. their nadir CD4+ was <50 cells/ μ L in the past 12 months), 70.1% (CI: 44.5% - 95.6%) had a prescription for MAC prophylaxis documented in their medical chart. Most patients had received the influenza vaccine in the past 12 months [78.2% (CI: 73.4% - 83.1%)]. Among sexually active patients, 42.0% had documentation in the medical record of gonorrhea testing, 42.4% for chlamydia, 77.2% for syphilis, and 38.1% had documentation of testing for all three of these sexually transmitted diseases (Table 5).

Table 5. Number* of participants and percentage† of persons who received testing for selected sexually transmitted diseases in the 12 months before the interview, by type of testing‡ and self-reported sexual activity¶ - Medical Monitoring Project, San Francisco, 2009-2010.

	No. in sample	%	(95% CI)	No. of sexually active persons	%	(95% CI)
Gonorrhea testing						
Yes, received testing	151	35.7	(27.4-44.0)	137	42.0	(32.7-51.3)
No testing documented	268	64.3	(56.0-72.6)	186	58.0	(48.7-67.3)
Chlamydia testing						
Yes, received testing	152	36.0	(27.7-44.3)	138	42.4	(33.1-51.7)
No testing documented	267	64.0	(55.7-72.3)	185	57.6	(48.3-66.9)
Syphilis testing						
Yes, received testing	317	73.1	(63.4-82.8)	257	77.2	(67.2-87.2)
No testing documented	102	26.9	(17.2-36.6)	66	22.8	(12.8-32.8)
Gonorrhea, chlamydia, and syphilis testing						
Yes, received testing for all three STDs	139	32.6	(24.5-40.8)	125	38.1	(29.0-47.1)
No testing documented	280	67.4	(59.2-75.5)	198	61.9	(52.9-71.0)
Total	419			323		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for some estimates where the coefficient of variation >0.30.

‡Laboratory testing for sexually transmitted diseases was documented in the medical record abstraction component of the Medical Monitoring Project.

¶Sexual activity was self-reported in the interview component of the Medical Monitoring Project and was defined as oral sex or anal or vaginal intercourse.

An estimated 5.6% of patients were seen in an emergency department or urgent care center once, and 2.3% were seen at least five times in the last 12 months (Table 6). An estimated 4.5% of patients were admitted to a hospital once, and 0.3% had been admitted at least five times (Table 7).

Table 6. Number* of participants and percentage† of persons reporting use of an emergency department or urgent care clinic for HIV medical care in the 12 months before the interview — Medical Monitoring Project, San Francisco, 2009-2010.

No. times in an emergency department or urgent care clinic	No.	%	(95% CI)
0	357	86.6	(82.8-90.4)
1	26	5.6	(3.4-7.9)
2-4	26	5.6	(3.1-8.0)
≥5	10	2.3	
Total	419		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for some estimates where the coefficient of variation >0.30.

Table 7. Number* of participants and percentage† of persons reporting hospital admissions for an HIV-related illness in the 12 months before the interview — Medical Monitoring Project, San Francisco, 2009-2010.

No. times admitted to hospital	No.	%	(95% CI)
0	382	92.6	(89.9-95.3)
1	22	4.5	(2.5-6.5)
≥2	14	2.9	
Total	418		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for estimates where the coefficient of variation >0.30.

Self-Reported Antiretroviral Medication Use and Adherence

The estimated prevalence of current ART use was 90.6% (CI: 87.7%-93.5%). Among the estimated 5.9% (CI: 3.4%-8.4%) of patients with no history of ART use, 52.3% (CI: 34.9%-69.6%) reported never taking ART because a physician advised them to delay treatment, while 28.0% reported they believed medications were unnecessary because they felt healthy or believed their HIV laboratory test results (e.g., CD4+ count and HIV viral load) were good.

Among patients currently taking ART, an estimated 56.1% (CI: 51.1%-61.1%) reported they were never troubled by ART side effects during the past 30 days, while 25.1% (CI: 20.7%-29.4%) reported they were rarely troubled. Payment for patients' ART medications most commonly came from: private health insurance (48.8%, CI: 37.7%-59.9%), the AIDS Drug Assistance Program (40.3%, CI: 31.9%-48.6%), out of pocket (30.2%, CI: 22.1%-38.3%), or Medicaid (24.5%, CI: 17.2%-31.7%).

ART adherence to dose, schedule and instructions during the past 3 days was 86.3% (CI: 82.2%-90.3%), 75.1% (CI: 70.5%-79.7%) and 71.3% (CI: 63.7%-78.9%), respectively. An estimated 9.5% of patients reported taking a drug holiday in the past 12 months (CI: 5.7%-13.3%). Most patients (93.9%) currently taking ART were very or extremely sure that they could take all of their medication as directed, and 88.9% believed their medication would have a positive effect on their health (Table 8). Of the estimated 63.6% (CI: 59.5%-67.7%) who were currently taking ART but reported having ever missed a dose, 36.6% missed their last dose because they forgot to take it and 28.5% missed their last dose because of a change in a daily routine (Table 9).

Table 8. Medication beliefs regarding antiretroviral therapy for HIV infection among participants currently taking antiretroviral medications — Medical Monitoring Project, San Francisco, 2009-2010.

Characteristic	No.*	% [†]	(95% CI)
How sure are you that you will be able to take all or most of your medication as directed?			
Not at all sure	5	1.3	
Somewhat sure	19	4.7	(2.3-7.1)
Very sure	105	27.5	(22.6-32.5)
Extremely sure	249	66.4	(60.6-72.3)
How sure are you that your medication will have a positive effect on your health?			
Not at all sure	10	2.7	
Somewhat sure	33	8.5	(5.6-11.4)
Very sure	135	35.8	(30.8-40.8)
Extremely sure	198	53.1	(48.3-57.9)
How sure are you that if you do not take your medication exactly as instructed, the HIV will become resistant to HIV medications?			
Not at all sure	42	11.1	(7.6-14.6)
Somewhat sure	81	23.2	(18.5-27.8)
Very sure	112	29.6	(25.5-33.8)
Extremely sure	134	36.1	(31.6-40.6)
Total	378		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

[†]Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for estimates where the coefficient of variation >0.30.

Table 9. Number* of participants and percentage[†] of persons reporting reasons[‡] for not taking last missed antiretroviral therapy dose, among those who missed a dose — Medical Monitoring Project, San Francisco, 2009-2010.

Reason for missing last ART dose	No.	%	(95% CI)
Forgot to take them	98	36.6	(30.8-42.4)
Change in daily routine including travel	73	28.5	(22.7-34.4)
Felt sick or tired	32	12.3	(7.4-17.3)
Problem with prescription or refill	29	10.9	(6.6-15.2)
Drinking or using drugs	16	5.5	(2.7-8.3)
Due to side effects	12	4.4	(2.0-6.8)
Felt depressed or overwhelmed	6	2.1	
Money or insurance issues	2	0.8	
Had too many pills to take	1	0.4	
Total	266		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

[†]Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for estimates where the coefficient of variation >0.30.

[‡]Participants could report more than one reason.

Depression

Major depression or other depression was measured using the eight-item Patient Health Questionnaire (PHQ-8) algorithm based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria [13, 14]. The estimated prevalence of depression was 17.1% (CI: 12.1%-22.2%), including 7.9% (CI: 4.8%-11.0%) with major depression. An estimated 18.6% (CI: 13.8%-23.5%) of patients had current moderate or severe depression, using the score-based method (a PHQ-8 score of ≥ 10).

Substance Use

The estimated prevalence of current smoking was 31.5% (CI: 24.9%-38.1%), with 23.2% (CI: 17.5%-29.0%) smoking daily, 4.5% (CI: 2.7%-6.4%) smoking weekly, and 3.7% (CI: 1.6%-5.3%) smoking monthly or less than monthly. Current alcohol use was reported by 77.7% of patients (CI: 74.1%-81.3%), with 12.4% (CI: 9.3%-15.5%) using daily, 29.9% (CI: 24.5%-35.3%) weekly, 16.2% (CI: 12.2%-20.3%) monthly, and 19.1% (CI: 14.9%-23.4%) less than monthly. An estimated 68.5% (CI: 64.1%-72.9%) of patients reported drinking alcohol during the past 30 days. Among these patients, the estimated average typical consumption on days when alcohol was consumed was 2.6 drinks and the average daily consumption was 1.0 drinks. Binge drinking was reported by 23.0% of male patients and 12.6% of female patients in the past 30 days. Among patients who drank alcohol in the past 30 days, the estimated mean number of binge drinking days was 1.7 for male patients and 0.9 for female patients.

Non-injection drug use for nonmedical purposes was reported by 46.5% (CI: 40.0%–52.9%) of patients. An estimated 30.1% of patients used marijuana, 11.0% used cocaine, 7.4% used crack, 17.9% used amyl nitrite, and 17.7% used crystal methamphetamine (Table 10). An estimated 39.6% (CI: 34.3%-45.0%) of patients drank alcohol before or during sex and 30.6% (CI: 25.0%–36.2%) used non-injection drugs before or during sex. The estimated prevalence of injection drug use for nonmedical purposes was 8.2% (CI: 4.2%-12.2%). An estimated 6.8% injected crystal methamphetamine, 2.0% heroin, 0.8% cocaine, 1.2% both heroin and cocaine, and 0.9% amphetamines. Among the patients who used injection drugs, an estimated 91.2% (CI: 80.2%-100.0%) used injection drugs before or during sex.

TABLE 10. Number* of participants and percentage† of persons who used non-injection drugs‡ for nonmedical purposes in the 12 months before the interview, by type of drug — Medical Monitoring Project, San Francisco, 2009-2010.

Non-injection drug	No.	%	(95% CI)
Marijuana	123	30.1	(25.1-35.2)
Amyl nitrate (“poppers”)	71	17.9	(13.7-22.1)
Crystal methamphetamine (“tina, crack, ice”)	74	17.7	(13.3-22.1)
Cocaine that is smoked or snorted	46	11.0	(8.5-13.6)
X or Ecstasy	39	10.2	(7.3-13.0)
GHB	35	8.4	(5.5-11.4)
Crack	32	7.4	(3.6-11.2)
Painkillers (e.g. Oxycontin, Vicodin, or Percocet)	29	7.0	(4.5-9.5)
Hallucinogens such as LSD or mushrooms	21	4.9	(2.8-7.0)
Downers (e.g. Valium, Ativan, or Xanax)	20	4.7	(3.0-6.4)
Special k (ketamine)	19	4.6	(2.4-6.8)
Amphetamines (“speed”)	16	3.9	(2.1-5.6)
Heroin/opium that is smoked or snorted	10	2.3	(0.9-3.6)
Steroids	4	1.0	
Total	416		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for estimates where the coefficient of variation >0.30.

‡Non-injection drugs include all drugs that were not injected (i.e., administered by any route other than injection). These drugs include all drugs, including legal drugs that were not used for medical purposes.

Gynecologic and Reproductive Health

An estimated 15.4% of female patients received HIV care at an obstetrics and gynecology clinic and 84.1% (CI: 69.5%-98.7%) received a Papanicolaou (Pap) test. An estimated 6.1% of female patients had been pregnant at least once since testing positive for HIV infection.

HIV-risk Classification, Gender Identity and Sexual Behavior

An estimated 85.5% (CI: 81.1%–89.8%) of patients were men who have sex with men (MSM); 7.2% (CI: 4.5%–10.0%) were men who exclusively have sex with women (MSW); 4.3% (CI: 2.0%–6.5%) were women who have sex with men (WSM); and 3.0% were transgender. An estimated 78.9% (CI: 74.9%–82.8%) of patients were sexually active, 44.5% (CI: 38.5%–50.4%) engaged in unprotected sex, and 20.4% (CI: 15.2%–25.7%) engaged in unprotected sex with a partner with negative or unknown HIV status.

Among MSM, an estimated 83.0% (CI: 78.8%–87.3%) engaged in anal intercourse or oral sex with at least one man, 49.2% had any unprotected anal intercourse, and 21.7% had unprotected anal intercourse with a negative or unknown HIV status partner (Table 11). During the past 12 months the estimated mean number of sex partners among sexually active MSM was 9.2 (range: 1–150).

Table 11. Number* of participants and percentage† of men who have sex with men§ who reported sex risk behaviors in the 12 months before the interview, by type of partner—Medical Monitoring Project, San Francisco, 2009-2010.

	Any partners [‡]			Main partner ^{**}			Casual partner ^{††}		
	No.	%	(95% CI)	No.	%	(95% CI)	No.	%	(95% CI)
Any anal intercourse									
Yes	227	66.7	(60.5-73.0)	133	39.1	(33.7-44.5)	170	50.3	(44.1-56.5)
No	116	33.3	(27.0-39.5)	210	60.9	(55.5-66.3)	173	49.7	(43.5-55.9)
Any unprotected anal intercourse									
Yes	159	49.2	(42.9-55.6)	90	27.1	(21.3-33.0)	116	36.2	(30.4-41.9)
No	169	50.8	(44.4-57.1)	250	72.9	(67.0-78.7)	212	63.8	(58.1-69.6)
Unprotected anal intercourse with partners of negative or unknown HIV status									
Yes	68	21.7	(16.1-27.4)	32	9.7	(6.5-12.8)	44	14.1	(9.6-18.6)
No	257	78.3	(72.6-83.9)	308	90.3	(87.2-93.5)	283	85.9	(81.4-90.4)
Insertive anal intercourse									
Yes	197	57.7	(51.6-63.9)	110	31.9	(27.3-36.4)	145	42.9	(36.1-49.6)
No	146	42.3	(36.1-48.4)	233	68.1	(63.6-72.7)	198	57.1	(50.4-63.9)
Unprotected insertive anal intercourse									
Yes	136	40.4	(34.8-45.9)	68	20.0	(15.6-24.4)	97	29.1	(24.2-34.1)
No	207	59.6	(54.1-65.2)	275	80.0	(75.6-84.4)	245	70.9	(65.9-75.8)
Unprotected insertive anal intercourse with partners of negative or unknown HIV status									
Yes	33	9.7	(6.7-12.6)	15	4.3	(2.2-6.4)	19	5.8	(3.6-8.0)
No	309	90.3	(87.4-93.3)	328	95.7	(93.6-97.8)	323	94.2	(92.0-96.4)
Receptive anal intercourse									
Yes	173	51.8	(44.8-58.8)	101	30.0	(24.2-35.7)	126	37.8	(32.5-43.1)
No	162	48.2	(41.2-55.2)	239	70.0	(64.3-75.8)	209	62.2	(56.9-67.5)
Unprotected receptive anal intercourse									
Yes	129	39.9	(33.8-46.0)	77	23.3	(17.7-28.9)	91	27.9	(23.3-32.5)
No	199	60.1	(54.0-66.2)	263	76.7	(71.1-82.3)	238	72.1	(67.5-76.7)
Unprotected receptive anal intercourse with partners of negative or unknown HIV status									
Yes	56	18.2	(12.6-23.8)	28	8.5	(5.8-11.2)	35	11.5	(7.0-15.9)
No	270	81.8	(76.2-87.4)	312	91.5	(88.8-94.2)	293	88.5	(84.1-93.0)

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for estimates where the coefficient of variation >0.30.

§Men who have sex with men were defined as 1) men who reported sex with men in the 12 months before interview, regardless of whether they also reported sex with women or 2) if no sexual activity was reported, men who identified as homosexual, gay, or bisexual.

‡Any sex partner.

**A sex partner whom the respondent felt committed to more than anyone else.

††A sex partner whom the respondent did not feel committed to or did not know very well.

Among MSW, an estimated 66.9% (CI: 52.0%–81.7%) engaged in oral sex, vaginal intercourse, or anal intercourse with at least one woman; 18.3% had any unprotected vaginal intercourse; and 11.1% had unprotected vaginal intercourse with a partner with negative or unknown HIV status (Table 12). During the past 12 months the estimated mean number of female sex partners among sexually active MSW was 3.9 (range: 1–19).

Table 12. Number* of participants and percentage† of men who exclusively have sex with women§ who reported sex risk behaviors in the past 12 months, for any type of partner — Medical Monitoring Project, San Francisco, 2009-2010.

	No.	%	(95% CI)
Vaginal intercourse			
Yes	22	63.4	(48.0-78.8)
No	12	36.6	(21.2-52.0)
Unprotected vaginal intercourse			
Yes	7	18.3	
No	27	81.7	(68.5-94.9)
Unprotected vaginal intercourse with partners of negative or unknown HIV status			
Yes	4	11.1	
No	30	88.9	(78.2-99.7)
Anal intercourse			
Yes	5	16.0	
No	29	84.0	(71.0-97.0)
Unprotected anal intercourse			
No	34	100.0	(100.0-100.0)
Unprotected anal intercourse with partners of negative or unknown HIV status			
No	34	100.0	(100.0-100.0)

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for estimates where the coefficient of variation >0.30.

§Men who have sex with women were defined as 1) men who reported sex only with women in the 12 months before interview or 2) if no sexual activity reported, men who identified as heterosexual/straight.

Among WSM, an estimated 38.5% (CI: 18.1%–59.0%) engaged in anal intercourse, oral sex, or vaginal intercourse with at least one man, 11.0% had any unprotected vaginal intercourse, and 4.4% had unprotected vaginal intercourse with a partner with negative or unknown HIV status (Table 13). Among sexually active WSM, the estimated mean number of male sex partners was 1.3 (range: 1–3).

Table 13. Number^{*} of participants and percentage[†] of women who have sex with men[§] who reported sex risk behaviors in the preceding 12 months, for any type of partner — Medical Monitoring Project, San Francisco, 2009-2010.

	No.	%	(95% CI)
Vaginal intercourse			
Yes	6	31.3	
No	12	68.7	(42.7-94.6)
Unprotected vaginal intercourse			
Yes	2	11.0	
No	16	89.0	(73.8-100.0)
Unprotected vaginal intercourse with partners of negative or unknown HIV status			
Yes	1	4.4	
No	17	95.6	(87.0-100.0)
Anal intercourse			
Yes	1	4.4	
No	17	95.6	(87.0-100.0)
Unprotected anal intercourse			
No	18	100.0	(100.0-100.0)
Unprotected anal intercourse with partners of negative or unknown HIV status			
No	18	100.0	(100.0-100.0)

^{*}Number represents unweighted frequencies. Values may not add to total due to missing data.

[†]Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for estimates where the coefficient of variation >0.30.

[§]Women who have sex with men were defined as 1) women who reported sex with men in the 12 months before interview, regardless of whether they also reported sex with women, or 2) if no sexual activity was reported, women who identified as heterosexual, straight, or bisexual.

Among transgender persons, an estimated 69.1% (CI: 43.2%–95.0%) engaged in any vaginal or anal intercourse with at least one partner. The estimated mean number of sex partners among sexually active transgender persons was 4.3 (range: 1–20).

Met and Unmet Need for Supportive Services

The top 5 supportive services reported to have been received were: dental care (76.5%), public benefits including Supplemental Security Income or Social Security Disability Insurance (51.9%), medicine through the AIDS Drug Assistance Program (40.6%), mental health services (35.0%) and HIV case management services (33.8%) (Table 14). An estimated 16.1% of patients had unmet needs for dental care, 10.2% for HIV peer support, 8.6% for mental health services, 8.6% for transportation services and 5.9% for HIV case management services.

Table 14. Number* of participants and percentage† of persons who needed, received, or did not receive supportive services in the 12 months before the interview — Medical Monitoring Project, San Francisco, 2009-2010.

Service [§]	Received service			Needed but did not receive service			Did not receive or need service		
	No.	%	(95% CI)	No.	%	(95% CI)	No.	%	(95% CI)
Dental care	307	76.5	(71.8-81.2)	76	16.1	(11.9-20.3)	34	7.3	(3.8-10.8)
Public benefits including Supplemental Security Income or Social Security Disability Insurance	228	51.9	(45.1-58.7)	9	2.1		181	45.9	(39.3-52.6)
Medicine through the AIDS Drug Assistance Program	175	40.6	(33.1-48.2)	12	2.9	(1.4-4.4)	227	56.4	(49.1-63.8)
Mental health services	151	35.0	(29.3-40.8)	35	8.6	(6.3-10.9)	233	56.3	(50.1-62.5)
HIV case management services	151	33.8	(24.4-43.3)	27	5.9	(3.5-8.2)	241	60.3	(51.0-69.6)
Meal or food services	135	29.9	(23.0-36.8)	22	4.6	(2.7-6.5)	262	65.5	(57.9-73.1)
Counseling about how to prevent the spread of HIV	97	22.1	(14.8-29.3)	3	0.9		319	77.0	(69.5-84.5)
Transportation services	89	20.0	(14.8-25.2)	37	8.6	(5.2-11.9)	293	71.4	(64.2-78.7)
HIV peer group support	77	17.4	(11.8-23.1)	44	10.2	(7.4-13.0)	297	72.3	(66.2-78.5)
Shelter or housing services	66	14.7	(10.1-19.2)	13	3.0	(1.4-4.5)	340	82.3	(77.7-87.0)
Professional help remembering to take HIV medicines on time or correctly	55	11.9	(7.9-15.8)	17	4.2		346	83.9	(78.9-88.9)
Drug or alcohol counseling or treatment	50	11.0	(8.0-14.0)	21	4.8	(2.5-7.1)	347	84.2	(79.8-88.5)
Home health services	46	10.7	(7.2-14.2)	14	2.9	(1.4-4.3)	359	86.4	(82.6-90.3)
Interpreter services	10	2.1		2	0.5		407	97.4	(94.8-100.0)
Domestic violence services	8	1.7		5	1.0		406	97.3	(95.6-99.0)
Total	419			419			419		

*Number represents unweighted frequencies. Values may not add to total due to missing data.

†Percentages are weighted percentages and CIs are weighted CIs for those percentages. Weighted CIs are not reported for estimates where the coefficient of variation >0.30.

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

Prevention Activities

An estimated 31.4% (CI: 25.5%–37.4%) of patients received counseling from a physician, a nurse, or another healthcare worker about HIV and STD prevention; 16.2% (CI: 9.3%–23.1%) had a one-on-one conversation with an outreach worker, a counselor, or a prevention program worker about prevention, and 13.6% (CI: 9.1%–18.2%) participated in an organized session involving a small group of persons (excluding discussions with friends) to discuss prevention of HIV and other STDs.

The majority of patients received free condoms [60.6% (CI: 55.4%–65.9%)] from a variety of organizations; of these, 33.4% (CI: 23.0%–43.8%) received free condoms from a physician’s office or other health clinic, 29.5% (CI: 24.5%–34.4%) from an HIV/AIDS-focused community-based organization, 39.4% (CI: 32.6%–46.3%) from a social venue (i.e., bar, club, bathhouse, gym or bookstore), 7.3% (CI: 4.2%–10.3%) from an STD clinic, 19.9% (CI: 12.9%–27.0%) from a special event and 3.5% from an injection drug use outreach organization (including needle exchange programs).

LIMITATIONS

This report is subject to several limitations. The overall response rate was 43%. However the data were weighted to adjust for probabilities of selection and for non-response bias. In addition, many of the measures described in this report were taken from self-reported information during the patient interview and are subject to social-desirability bias, where socially-desirable outcomes such as condom use may be over-reported and socially-undesirable outcomes such as cigarette smoking or drug use may be under-reported. Some measures published in this report come from data in the medical record abstraction which may be subject to incomplete or missing data. For instance, if a patient had obtained medical care at more than one medical provider, or outside of San Francisco, only care from the MMP participating facility would have been captured. In addition, it is important to remember that MMP represents the experiences of patients who are in HIV care and their experiences may not be representative of HIV infected persons without a usual source of care.

DISCUSSION

Demographic characteristics

The 419 people living with HIV who participated in the San Francisco MMP 2009 and 2010 data collection cycles represent an estimated 12,420 HIV-positive adults who received outpatient HIV care in San Francisco. The majority of these were male (93%), white (58%), identified as homosexual, gay or lesbian (82%) and had higher than a high school education (81%). Almost half (47%) were over 50 years or older and 86% were born in the United States. Almost all patients in San Francisco had health insurance coverage (98%), with most having private insurance (52%).

There were some differences in the demographic characteristics of adults accessing HIV care in San Francisco compared to those at the national level. For example, a greater proportion of patients accessing HIV care nationally were black compared to San Francisco (41% vs 11%, respectively) and identified as heterosexual or straight (50% vs 11%, respectively) [9].

Other demographic characteristics nationally were similar to the MMP patients in San Francisco, with a majority in both populations male (71% and 93%, respectively), higher than high school education (51% vs 81%, respectively), born in the U.S. (83% vs 86%, respectively) and had medical care coverage (81% vs 98%, respectively). However, the majority of patients in San Francisco with health insurance coverage had private insurance (52%), while nationally the majority with health insurance were covered by Medicaid (40%) [9]. In both populations, the majority of patients were between the age of 40-49 years (39% and 40%, respectively) but nationally, the total proportion over 50 years was lower than in San Francisco (36% and 47%, respectively).

Clinical characteristics

In San Francisco, the majority of patients had stage 3 HIV disease (64%). Clinical care was available and recommended clinical guidelines for people living with HIV were met for the majority of people living with HIV. Almost all patients (99.8%) had one usual place for their HIV medical care and most had three or more CD4+ count tests (71%) and had three or more HIV viral load tests (66%) in the past 12 months. Nearly all the patients met the recommended clinical guidelines of at least one CD4+ test annually (98%) and 80% had at least one HIV viral load test in each six month interval prior to their interview. The

majority (80%) had an undetectable HIV viral load (≤ 200 copies/ml) at the last test. ART prescription was documented in the medical record for 89% of the patients. The clinical characteristics of patients in San Francisco were very similar to the national MMP patients although the frequency of CD4+ and viral load testing and the proportion of viral suppression was slightly higher in San Francisco. The proportion with a documented ART prescription was the same in both populations [9].

In San Francisco, testing for sexually transmitted diseases among sexually active patients was more frequent than nationally. In San Francisco, among sexually active patients, 42% had documentation of a gonorrhea test, 42% of a chlamydia test, 77% of a syphilis test and 38% had documentation of all three tests. Nationally the proportions for these tests were 23%, 24%, 55% and 20% respectively.

Substance Use and Sexual Behavior

Almost half of the patients in San Francisco (47%) reported using non-injection drugs for nonmedical purposes compared to 27% nationally. Non-injection drug use was more frequent in San Francisco compared to national percentages for all reported drugs including marijuana (30% vs 22%), cocaine (11% vs 6%), crack (7% vs 5%), amyl nitrites (18% vs 4%), and crystal methamphetamine (18% vs 3%). In San Francisco, the use of noninjection drugs before or during sex was common, 31% compared to 12% nationally. Similarly, injection drug use for nonmedical purposes was more frequent in San Francisco than nationally (8% vs 2%, respectively). In addition, among the patients who reported injection drug use, the proportion of patients who reported injection drug use before or during sex was higher in San Francisco (91%) compared to nationally (68%).

The majority of patients in San Francisco were men who have sex with men (86%). Seven percent of men reported sex exclusively with women, 4% were women who have sex with men and 3% were transgender. Overall, 79% of patients were sexually active, 45% engaged in unprotected sex and 20% reported unprotected sex with a partner with negative or unknown HIV status. MSM in San Francisco were more likely to reported unprotected sex with a negative or unknown HIV status partner than MSM nationally (22% vs 14%). This was also true for men who have sex with women (11% vs 9%). However, among women who have sex with men, the proportion reporting unprotected sex with a partner of negative or unknown HIV status was higher in the U.S (15%) than in San Francisco (4%).

Met and Unmet Supportive Services needs

In both San Francisco and the U.S., dental care, public benefits including Supplemental Security Income or Social Security Disability Insurance, medicine through the AIDS Drug Assistance Program, and HIV case management services were among the top five supportive services needed and reported to have been received. In San Francisco mental health services were ranked as the fourth most received supportive service, while nationally it was the seventh most received service. Dental care was the most frequently reported service needed but not received in both San Francisco and the United States.

HIV Prevention

Fewer than half of patients in San Francisco (34%) reported receiving HIV and sexually transmitted disease prevention counseling from a health-care provider and even fewer had a one-on-one conversation with a trained counselor about prevention (16%) or participated in an organized small group session (14%). Nationally, the proportion receiving HIV prevention services was higher; 45% received HIV or STD prevention counseling, 30% had a one-on-one prevention conversation with a trained counselor and 16% participated in an organized small group session. In both San Francisco and the U.S, more than half of patients received free condoms (61% vs 55%, respectively).

CONCLUSION

MMP provides a unique picture of health care, supportive services and HIV prevention service utilization in San Francisco that is unavailable elsewhere on the population level. The findings in this report indicate that most adults living with HIV in San Francisco who received medical care in 2009-2010 were taking ART, had CD4+ and HIV viral load testing at regular intervals, and had health insurance or other coverage. However, some disparities and gaps in adequate clinical care, unmet need for supportive services, and sexual behaviors that could transmit HIV to others and drug use were identified. Data from MMP, as an ongoing supplemental surveillance project, can inform health departments, community based organizations and health care policy makers at both the local and national level to assess and highlight disparities in care and services, to advocate for improvements and additional resources, and to guide prevention planning.

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