

Assessing Targeted Screening and Low Rates of HIV Testing

Leigh A. Kennedy, DO, Fred M. Gordin, MD, and Virginia L. Kan, MD

Given that approximately 25% of individuals with HIV are unaware of their infection, the Centers for Disease Control and Prevention (CDC) has recommended HIV testing for patients aged to 13 to 64 years in all US health care settings since 2006.¹ In January 2009, the American College of Physicians offered guidance for clinicians to adopt HIV screening as part of routine medical care and to encourage patients to be tested.² Screening has been shown to be cost effective in areas where the rate of undiagnosed HIV is estimated at 1% or above,³ as earlier HIV diagnosis and linkage to care leads to timely initiation of antiretroviral therapy,³ decreased transmission rates,⁴ and reduced HIV-associated morbidity and mortality.⁵

The CDC has suggested various strategies for increasing routine HIV testing rates, such as opt-out screening programs, no requirement for specific or separate written consent for HIV testing, and no prevention counseling linked with the HIV testing process.¹ In San Francisco, increased testing rates were reported after the city adopted an opt-out screening strategy in which consent procedures were simplified.⁶

The Veterans Affairs (VA) Health Care System is the largest provider of medical care in the United States, with 7.8 million veterans enrolled in 2007. The VA is also the single largest US provider of health care services for HIV-infected individuals, with 23 750 such patients in care in 2007.

Prior to August 2009, HIV testing within the VA, by federal law, required written informed consent and pretest and posttest counseling. Section 124 of the Veterans' Benefits and Services Act of 1988⁷ directed the VA to offer testing to patients receiving care for injection drug abuse, to patients with diseases associated with HIV, to patients at high HIV risk, and to patients requesting the test. The VA was not alone; 8 states required written consent with any (pretest or posttest) counseling, and 4 of these states (Michigan, New York, Pennsylvania, Rhode Island) required written

Objectives. We assessed rates of HIV testing based on targeting patients with identified risk factors at the Veterans Affairs Medical Center in Washington, DC (VAMC-DC), where written informed consent along with pretest and posttest counseling had, until recently, been required by federal law.

Methods. A cumulative retrospective review of the period 2000 through 2007 was conducted to assess the number of patients who were provided medical care at VAMC-DC, tested for HIV, and underwent confirmatory testing. Data on demographic characteristics and risks for HIV acquisition were also collected.

Results. At VAMC-DC, 3.8% to 4.9% (mean=4.25%) of patients in care without known HIV infection underwent HIV screening annually. On average, HIV was confirmed at a yearly rate of 3.4% among those tested. During the study period, HIV prevalence ranged from 2.1% to 2.5%. Among patients receiving HIV care, 41.5% disclosed no risk factors for HIV acquisition.

Conclusions. Given that the HIV prevalence observed in this study was above 2% and that 41.5% of patients in care did not disclose any acquisition risks, targeted HIV screening has not been sufficient. HIV testing must be broadened and offered as part of routine medical care. (*Am J Public Health.* 2010;100:1765–1768. doi:10.2105/AJPH.2009.182790)

consent with both pretest and posttest counseling.⁸ As a result of these legislative constraints, many patients may not have been offered HIV screening as recommended.^{1,2}

According to data from 2008, the District of Columbia had the highest HIV/AIDS case rate in the United States, at 2983 cases per 100 000 population.⁹ This rate represented an increase in HIV/AIDS cases of 22% from 2006 to 2007.⁹ The Veterans Affairs Medical Center in Washington, DC (VAMC-DC), is a tertiary-care facility providing comprehensive medical care to veterans residing in the Washington metropolitan area. Because of the VA requirements for HIV testing, most HIV screening at VAMC-DC has been offered to patients with known high-risk behaviors. However, this strategy has produced suboptimal results, as demonstrated in 1 hospital's report that 40% of its patients with HIV were diagnosed late in their disease or during their initial presentation for opportunistic infections.¹⁰ To understand the impact of the then-current law for HIV testing targeting those with identified risks, we evaluated the results of the VAMC-DC HIV testing program during the years 2000 through 2007.

METHODS

We conducted a cumulative retrospective review of our VAMC-DC clinical database for the period 2000 through 2007 to assess the number of veterans who received medical care each year, the number of patients who underwent HIV testing, and the number of patients with HIV Western blot confirmation. In addition, we used data from the VA Clinical Case Registry for HIV (CCR-HIV) at VAMC-DC to evaluate the number of veterans with HIV who received care and their reported risk factors for HIV acquisition between 2000 and 2007.

Patients are entered into the CCR-HIV after their initial HIV visits with clinicians in the Infectious Diseases Clinic and after their standardized adult HIV/AIDS confidential case reports have been completed by our HIV coordinator nurses. Data on HIV risk factors were obtained from veterans' responses to the patient history section of this case report form without further updates or validation. No individual-level assessments or chart reviews were conducted for any aspect of this project.

We used only deidentified, aggregate data. Queries regarding patient demographics and risk factors were made on the CCR-HIV. Data were stored in spreadsheet files on a secured research server with VA firewall security. Stata 8 statistical software (StataCorp LP, College Station, TX) was used in conducting all descriptive analyses.

RESULTS

Between 2000 and 2007, VAMC-DC cared for 34 973 to 44 015 veterans annually. As shown in Table 1, under the practice of targeting those with identified risk factors for HIV testing, an average of 4.25% (range=3.8%–4.9%) of our patients without known HIV were tested each year. Of the 13 300 HIV tests performed, HIV diagnosis was confirmed

among 447 patients, with an average yearly rate of 3.4%. HIV was newly diagnosed among 27 to 76 individuals each year, representing 1.5% to 4.9% of those tested. The average incidence of newly diagnosed HIV was 0.15% among all patients in care without known HIV infection during the study period.

CCR-HIV data indicated that 1557 veterans with HIV received care at VAMC-DC between 2000 and 2007; 97% were men and 3% women. On the basis of the known number of HIV-infected patients in care and the total number of patients receiving any medical care, the yearly prevalence of patients with HIV receiving care was 2.1% to 2.5% (Table 1).

During 2000 through 2007, the median age of individuals undergoing HIV screening ranged from 47 to 52 years, and the median age range of those newly diagnosed with

HIV was 44 to 49 years (Table 1). The median age of veterans with HIV in care at VAMC-DC increased from 45 years in 2000 to 51 years in 2007 (Table 1). Among the 1557 veterans with HIV in care, 31 (2%) were 70 years or older.

Tables 2 and 3 present data on risk factors among patients with known HIV during the study period. Table 2 summarizes the numbers of risk factors reported by our patients; 38% to 44% of patients did not disclose any listed risk factors for any single given year during the study period. Table 3 summarizes the numbers of patients in our care disclosing any of the 13 specific risk factors addressed by the CCR-HIV. Among the 1557 veterans with HIV, 58% disclosed a specific risk factor (Table 3). Sex with a female partner, sex with a male partner, injection drug use, and heterosexual

TABLE 1—Summary of Demographic Characteristics, HIV Testing, New HIV Diagnoses, and Known HIV Infection Among Patients at the Veterans Affairs Medical Center in Washington, DC (VAMC-DC) 2000–2007

	2000	2001	2002	2003	2004	2005	2006	2007
Patients in care at VAMC-DC								
No.	34 973	35 495	37 761	38 740	40 950	43 777	43 831	44 015
Male, %	88.8	88.3	88.2	88.1	87.4	86.8	86.2	86.3
African American, %	69.9	69.6	70.3	72.3	73.2	73.4	74.3	75.2
White, %	29.7	29.9	29.3	27.2	26.3	26.1	25.3	24.4
Asian/Pacific Islander, %	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
American Indian, %	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Patients tested at VAMC-DC								
No. of patients without known HIV	34 095	34 607	36 824	37 814	40 014	42 832	42 896	43 080
No. of patients tested for HIV per year	1 444	1 544	1 594	1 602	1 710	1 644	2 121	1 641
Patients tested per year, %	4.2	4.5	4.3	4.2	4.3	3.8	4.9	3.8
Median age, y	48	47	48	49	48	49	52	49
Male, %	86.0	85.0	86.0	86.0	81.0	79.0	83.0	78.0
African American, %	84.0	86.0	84.0	88.0	87.0	85.0	83.0	91.0
Infections among those tested at VAMC-DC								
No. of patients with new HIV-positive diagnoses	57	76	64	54	66	55	50	25
New diagnoses among those tested, %	3.9	4.9	4.0	3.4	3.9	3.3	2.4	1.5
New diagnoses among those in care, %	0.17	0.22	0.17	0.14	0.16	0.13	0.12	0.06
Median age, y	44	45	46	47	49	49	49	46
Male, %	92.9	96.1	95.3	96.3	93.9	100.0	96.0	96.0
African American, %	91.2	89.5	90.6	98.1	87.9	92.7	94.0	100.0
Known patients with HIV in care at VAMC-DC								
No. of known patients with HIV	878	888	937	926	936	945	935	935
Known HIV infection, %	2.5	2.5	2.5	2.4	2.3	2.2	2.1	2.1
Median age, y	45	46	47	47	48	49	50	51
Male, %	97.0	95.9	96.1	96.0	96.0	97.0	96.0	96.0
African American, %	88.0	88.9	88.0	88.0	88.0	87.0	87.0	87.0

TABLE 2—Summary of Numbers of Risk Factors Reported by Patients With HIV in Care at the Veterans Affairs Medical Center in Washington, DC: 2000–2007

	2000 (n=878)	2001 (n=888)	2002 (n=937)	2003 (n=926)	2004 (n=936)	2005 (n=945)	2006 (n=935)	2007 (n=935)
No. of Risk Factors, %								
0	38	40	43	44	44	43	41	39
1	23	22	22	23	24	26	29	31
2	25	23	22	21	22	20	20	20
3	14	14	12	11	10	10	10	10
≥4	<1	<1	<1	<1	<1	<1	<1	<1

relations with an injection drug user were the 4 risks most commonly reported.

DISCUSSION

Between 2000 and 2007, under a program of targeted HIV testing in alignment with the VA requirements for written informed consent and pretest and posttest counseling, only 4.25% of the veterans in care at VAMC-DC were screened for HIV. Despite this low testing rate, 3.4% of those tested were newly diagnosed with HIV infection. However, many of these patients may not have been offered testing if their clinicians were not aware of any HIV risks.

Low HIV testing rates are not unique to VAMC-DC. A retrospective review of 4 large, geographically dispersed VA Medical Centers showed that only 36% of 13 991 patients at risk for HIV, including those with a history of substance abuse, hepatitis, and sexually transmitted infections, had been tested.¹¹ Another study from the northwestern VA regional network reported that only 5.5% of 293 445 veterans were tested for HIV during 1998 through 2003, and only 34.8% of hepatitis C patients had been tested for HIV coinfection,¹² suggesting that barriers to HIV testing remain even among patients known to be at highest risk.

Among the patients with HIV in care at VAMC-DC, an average of 41.5% disclosed no risk factors for HIV. Many of these patients may not have been offered HIV testing under our practice of targeted testing. However, nondisclosure is not unique to veterans in care. For example, in 13.8% of newly reported AIDS cases in Washington, DC, during 2003 through 2007, no acquisition risk factors were identified.⁹ A limitation of our study is that our risk factor data were derived solely from information entered in the CCR-HIV, with no individual-level

chart review or validation. These data may reflect underreporting on case reports.

There is a clear and urgent need for HIV testing to become part of routine care within the VA Health Care System. A retrospective review focusing on veterans with HIV who had not previously been treated and were presenting for care at VA Medical Centers across the United States between 1998 and 2002 showed that 55% of 3760 patients had a baseline CD4 cell count below 200 cells/mm³, and 36% had an AIDS complication within 1 year of their presentation.¹³ Forty percent of patients had accessed VA services for a median duration of 3.7 years prior to their HIV diagnoses,¹³ indicating that many missed opportunities not only for HIV screening but for linkage to appropriate care.

In a mathematical simulation model, Paltiel et al. found that routine HIV screening was

cost effective both in a high-risk population (3.0% prevalence of undiagnosed HIV and 1.2% annual incidence) and in a threshold population (1.0% prevalence of undiagnosed HIV and 0.12% annual incidence).¹⁴ In a subsequent analysis, the same group reported one-time HIV screening to be cost-effective in areas with a 0.20% or higher prevalence of HIV infection.¹⁵

At VAMC-DC, the prevalence of known HIV infection was 2.1% to 2.5% during the study period, and annual rates of new HIV diagnosis were 0.06% to 0.22% among those without known HIV who were in care. Furthermore, approximately 4% of those tested were confirmed to have HIV infection. In 2007, 15 120 residents of the District of Columbia had HIV/AIDS.⁹ The 935 patients with HIV in care at VAMC-DC in 2007 represented 6.2% of these cases, making VAMC-DC a major HIV provider

TABLE 3—Summary of 13 Specific Acquisition Risk Factors Reported by Patients With HIV in Care at the Veterans Affairs Medical Center in Washington, DC: 2000–2007

Risk Factor	Sample (n=1557), No. (%)
Sex with female partner	549 (35.3)
Sex with male partner	399 (25.6)
Injection drug use	342 (22.0)
Heterosexual relations with injection drug user	202 (13.0)
Heterosexual relations with partner with HIV/AIDS infection	39 (2.5)
Heterosexual relations with bisexual male partner	19 (1.2)
Receipt of transfusions other than clotting factor	15 (1.0)
Employment in health care clinic or laboratory	15 (1.0)
Heterosexual relations with partner with hemophilia/coagulation disorder	1 (0.06)
Heterosexual relations with transfusion recipient with HIV	1 (0.06)
Heterosexual relations with transplant recipient with HIV	1 (0.06)
Receipt of transplant or artificial insemination	0 (0.0)
Receipt of clotting factor treatment for hemophilia/coagulation disorder	0 (0.0)

Note. Some patients disclosed more than 1 risk factor.

in the urban area with the highest HIV prevalence in the United States.

Given these high rates of known disease, it is critically important that HIV testing be broadened and offered as part of routine health care.^{1,2} Successful implementation of routine HIV testing in all patient settings at VAMC-DC could have profound clinical significance for our patients, given that earlier diagnosis would provide timely linkage to HIV care and result in reduced morbidity, improved survival, and decreased HIV transmission.

The federal law requiring written informed consent with pretest and posttest counseling encumbered HIV testing within the VA. Many barriers impede HIV testing as part of routine care,¹⁶ and thus testing has primarily targeted those with reported risk behaviors. However, the lack of risk factors has been highlighted among new HIV cases both in our population and in the broader community. As mentioned, no risks were identified in 13.8% of newly reported AIDS cases in Washington, DC, between 2003 and 2007⁹; within our own registry of veterans with HIV in care during the same time period, an average of 41.5% of patients disclosed no risk factors, representing a 3-fold higher proportion than that reported by the District of Columbia. There have been and will be many missed opportunities for HIV diagnosis and early HIV treatment if screening targets only those with traditional risk factors. This is particularly relevant given the recommendation that individuals with CD4 counts at or below 500 cells/mm³ undergo antiretroviral treatment.¹⁷

Section 407 of the Veterans' Mental Health and Other Care Improvements Act, enacted in October 2008, repealed the VA requirement for separate written HIV informed consent with pretest and posttest counseling.¹⁸ The VA revised its national policy on HIV testing, effective August 17, 2009, such that written HIV testing consent with pretest and posttest counseling is no longer required; however, it is recommended that patients provide verbal consent for HIV testing and be offered educational materials.¹⁹ At this time, it is unknown whether legislative changes occurring in the VA and in some states²⁰ will increase HIV screening rates nationally. Clinicians should offer HIV screening routinely throughout the VA as recommended,^{1,2} given that the 0.3% prevalence of known HIV infection within the entire VA network exceeds

CDC's recommended 0.1% threshold prevalence for routine testing.¹

The need for routine HIV screening is highlighted by the low rates of testing among patients with known risk factors and the substantial proportion of HIV patients reporting no risk factors. These phenomena may be due to inadequate clinician recognition of individuals at risk, a failure to offer HIV testing, or patients' nondisclosure of risky behaviors. Integrating HIV screening into routine medical practice not only within the VA but more broadly across the United States will improve medical outcomes by avoiding missed opportunities for earlier HIV diagnosis and reducing unknowing HIV transmission. ■

About the Authors

At the time of this study, the authors were with the Infectious Diseases Section, VA Medical Center, Washington, DC, and George Washington University, Washington, DC.

Correspondence should be sent to Virginia L. Kan, MD, ID Section (151B), VA Medical Center, 50 Irving St, NW, Washington, DC 20422 (e-mail: virginia.kan@va.gov). Reprints can be ordered at <http://www.ajph.org> by clicking on the "Reprints/Eprints" link.

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Contributors

L.A. Kennedy collected and analyzed aggregate data and drafted and revised the article. F.M. Gordin reviewed and revised the final version of the article. V.L. Kan originated and designed the project, interpreted the data, and critically revised the article.

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Human Participant Protection

Because only deidentified, aggregate data were used, our study protocol was exempt from human subjects committee review and was approved by the Research and Development Committee of the VA Medical Center, Washington, DC.

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