

Perceptions of Human Immunodeficiency Virus (HIV) Testing Services Among HIV-Positive Persons Not in Medical Care

ELLEN T. RUDY, PhD,*† PAMELA J. MAHONEY-ANDERSON, PhD,† ANITA M. LOUGHLIN, PhD,‡§
LISA R. METSCH, MD,¶|| PETER R. KERNDT, MD,*† ZANETA GAUL, PhD,|| AND CARLOS DEL RIO, MD#

Background and Objectives: Human immunodeficiency virus (HIV) counseling, testing, and referral (CTR) are provided in a wide variety of settings.

Goal: To compare, by test setting, the perceptions of the testing experience among HIV-positive persons who were not receiving medical care.

Design: A baseline questionnaire was administered at enrollment into the Antiretroviral Treatment Access Study by the use of audio computer-assisted self-interview.

Results: Of 316 respondents, 27% reported that the counselor did not spend enough time with them and 22% that the counselor did not answer all questions. The odds were higher that persons in the following settings, compared with those at HIV test sites, would report that the counselor did not spend enough time with them: office of private physician or health maintenance organization (HMO) (adjusted odds ratio [AOR], 5.24; 95% confidence interval, 1.26–21.7), jail (AOR, 5.10; 95% CI, 1.06–24.6), and emergency room (ER) or hospital overnight visit (AOR, 2.93; 95% CI, 1.15–7.44). Similarly, the odds were higher that persons in the following settings compared with those at HIV test sites would report that the counselor did not answer all questions: office of private physician or HMO (AOR, 9.62; 95% CI, 2.22–41.7), jail (AOR, 7.87; 95% CI, 1.50–41.4), and ER or hospital

From the *Sexually Transmitted Diseases Program, Los Angeles Health Department, Los Angeles, California; †Health Research Association, Los Angeles, California; ‡Department of Epidemiology, Boston University, Boston, Massachusetts; §Department of Epidemiology, Johns Hopkins University, Baltimore, Maryland; ¶Department of Epidemiology and Public Health, University of Miami, Miami, Florida; ||Division of HIV/AIDS Prevention, National Center for HIV, STD, and TB Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia; and the #Center for AIDS Research, Emory School of Medicine, Atlanta, Georgia

overnight visit (AOR, 3.32; 95% CI, 1.11–9.90).

Conclusion: Further training and quality assurance in HIV CTR may be needed in some test settings.

HUMAN IMMUNODEFICIENCY VIRUS (HIV) prevention counseling, testing, and referral (CTR) play a critical role in HIV prevention in the United States.¹ Early knowledge of HIV infection has been shown to lead to behavior change that has reduced the risk of transmission of HIV and other sexually transmitted diseases (STDs).^{2–4} Despite the widespread availability of HIV testing, an estimated 200,000 HIV-infected persons in the United States are unaware of their serostatus,⁵ and many receive a diagnosis of acquired immunodeficiency syndrome (AIDS) shortly after a positive result from their initial HIV test.^{6–8} Reasons for not being tested sooner include perceived low risk,^{9–12} denial of risk,^{10,11} fear of results,^{9,11,12} and fear of discrimination.^{9,13} Moreover, many persons living with HIV delay seeking medical care, treatment, or preventive services.^{8,14} One study noted a significant proportion of persons waited over a year after their HIV-positive test result to enter into HIV medical care.¹⁵ Delayed medical care may be partly due to the lack of awareness or denial of being infected with HIV and partly due to the inaction of the test setting to give referrals or follow-up whether the client accessed referral services.^{7,8,15}

Historically, HIV testing has been offered at publicly funded HIV test sites and in clinical settings that serve populations at high risk of acquiring HIV infection.¹⁶ In 1996, of the approximately 24 million HIV tests performed, only 2 million were performed at HIV test sites; most were performed in medical care settings such as the offices of physicians or health maintenance organizations (HMOs).¹⁷ In 2001, the Centers for Disease Control and Prevention (CDC) revised the guidelines for HIV CTR and highlighted the importance of early knowledge of HIV status and of making HIV testing more accessible and addressed ways to improve the quality of HIV CTR in diverse settings.¹ Several studies have

The ARTAS group consists of the authors and Dr Lytt I. Gardner, Dr Scott D. Holmberg, Dr Stephanie L. Sansom, Dr Ramses Sadek, Zaneta Gaul, and Christopher S. Krawczyk from the Centers for Disease Control and Prevention; Dr Carlos del Rio, Sonya Green, Maribel Barragan, Dr Wayne Duffus, Dr Michael Leonard, Christine O'Daniels, Catherine Abrams, Felicia Berry, Valerie Hunter, Howard Pope, and Giselle C. Hicks from the Emory University School of Medicine, Division of Infectious Diseases; Dr Steffanie Strathdee, Dr Anita Loughlin, Steven Huettner, Matt Woolf, Ovedia Burt, and Janet Reaves, from the Johns Hopkins Bloomberg School of Public Health; Dr Pamela Anderson-Mahoney, Dr Peter Kerndt, Bobby Gatson, Brandon Schmidt, Norma Perez, Amy Chan, Lawrence Fernandez, Jr, Shannon Curreri, Eric Valera, Stella Gutierrez, from Health Research Association; Dr Lisa Metsch, Dr Clyde McCoy, Dr Gordon Dickinson, Dr Toye Brewer, Dr Orlando Gomez, Eduardo Valverde, Brad Wohler-Torres, Lauren Gooden, Dr Wei Zhao, Faye Yeomans, and Yolanda Davis Camacho from the University of Miami School of Medicine; and Dr Harvey A. Siegal, Richard C. Rapp, Teri L. Rust, and Dr Jichuan Wang, from the Wright State University School of Medicine. The authors thank Marie Morgan for her detailed editorial review of an earlier draft of the manuscript. The preparation of this manuscript was supported in part by the National Research Services Award T32 HS00046 from the Agency for Health Care Research Quality.

Correspondence: Ellen Thometz Rudy, Los Angeles Health Department Sexually Transmitted Disease Program, 2615 S. Grand Avenue, Los Angeles, CA 90007. E-mail: erudy@dhs.co.la.ca.us.

Received for publication June 16, 2004, and accepted September 9, 2004.

shown the benefit of HIV screening in emergency rooms (ERs), hospitals, and urgent-care settings.^{18–20} In 2003, the CDC advocated HIV prevention be incorporated into routine medical care and in high-prevalence areas outside medical settings, such as jails.²¹

The CDC guidelines recommend that all settings periodically assess the quality of their HIV CTR services to ensure that clients' needs and expectations are met.¹ Greater patient satisfaction has been associated with adherence to prescribed medical care and treatments and with the use of health services.^{22,23} Little attention has been given to the evaluation of clients' perceptions of the CTR experience in any setting.²⁴ According to studies that have been focused on the process of HIV testing and counseling, persons who had been tested considered the following important: the emotional support provided by the counselor, the quality of the information given, and referrals to preventive and social services.^{25,26–28} Not receiving sufficient information or not having enough time with the counselor was associated with less satisfaction with the HIV testing process.^{25,29} One study found that freestanding HIV test sites performed better in terms of client-centered counseling than did STD clinics, drug-treatment centers, and family-planning clinics.³⁰ More research is needed to better understand how the HIV CTR experience in varied settings could be improved for the diverse populations served.

We assessed the quality of HIV CTR from the perspective of the HIV-positive client in a variety of settings. We compared perceptions of the CTR experience by type of test setting among HIV-positive persons who were not receiving medical care.

Materials and Methods

Study Design

We surveyed HIV-positive adults who were not receiving medical care and who were enrolled in the Antiretroviral Treatment Access Study, a multicity, randomized, intervention trial designed to facilitate linkage to, and the sustained use of, HIV medical care. Details of the intervention trial are presented elsewhere.³¹ Participants were recruited from STD clinics, community clinics, public health departments, university-based research clinics, drug-treatment centers, inpatient services in hospitals, HIV test sites, and through local advertisements in Atlanta, Baltimore, Los Angeles, and Miami. Recruiters did not directly approach persons about screening for the study; instead, clinic and agency personnel provided potential participants with brief information about the study and then referred interested participants to study recruiters. Eligibility was restricted to HIV-positive persons who had never received antiretroviral therapy and who had not visited an HIV medical care provider more than once. Enrollment of participants began in March 2001 and was completed in May 2002. Participants were scheduled for 6- and 12-month follow-up interviews. Clients were compensated \$25 for the baseline interview, \$30 for the 6-month follow-up, and \$35 for the 12-month follow-up interview. Questionnaires were administered by the use of audio computer-assisted self-interview³² using the NOVA Research Company, Questionnaire Development System, version 1.1 software.³³ Institutional review boards at the CDC and all localities approved the study.

Variable Selection

The baseline questionnaire comprised demographics, HIV testing history, HIV risk information, knowledge and attitudes about HIV care and treatment (including antiretroviral therapy), barriers to care such as lack of transportation or time and competing life

stresses, past and current drug use, legal issues and life events, social service needs, and social support. Our analysis was focused on the response to 5 questions that measured the perception of HIV counseling and testing quality: Did the counselor answer all your questions? Did the counselor spend enough time with you? Were you treated with respect? Were you told where to receive health care? and Were you referred to a case manager? Response choices included yes, no, and did not receive counseling. We collapsed the responses no and did not receive counseling into 1 category for analysis. We included 9 types of testing sites in our analysis: HIV test sites, STD clinics, HIV/AIDS and infectious disease clinics, drug-treatment centers, family-planning clinics, offices of physicians or HMOs, ER/hospitals, jails, and blood banks. All tests at ER/hospitals were performed in the acute-care setting.

We explored other variables that may affect the HIV CTR experience. We included age, gender, and sexual orientation in all our models, assuming that these variables are related to the HIV CTR quality outcomes. We identified potential confounders in 2 ways. First, site of study and "time since first positive HIV test result" were identified a priori as confounders and included in all models. We included site of study in our models to control for potential selection confounding due to different recruitment methods among the study sites. We included the variable "time since first positive HIV test result" to control for potential recall and response bias from participants with differing lengths of time since their HIV CTR experience. Second, we identified a list of potential confounders and used a forward-selection strategy, forcing each potential confounder in the models, and tested the confounder-outcome association without adjustment for other potential confounders. Variables with a *P* value of less than 0.20 were kept in the models. Limited model-simulation studies have shown that raising the *P* value to 0.20 for rejecting the null provides adequate power to detect important confounder effects.^{34,35} Potential confounders included race/ethnicity, income, education, insurance status, unprotected sex with an HIV-negative partner or a partner of unknown HIV status during the past 30 days, heroin use during the past 30 days, and crack use during the past 30 days.

Statistical Methods

All analyses were performed by using Statistical Analysis Software (SAS), version 8.2,³⁶ and Stata, version 8.0.³⁷ We used the Pearson χ^2 test in bivariate analysis to estimate the association of the main exposure variable, HIV testing setting, and the other selected variables with the outcome variables, the 5 questions that measured the perception of HIV counseling and testing quality. Unadjusted and adjusted prevalence odds ratios (ORs) and 95% exact confidence intervals (CIs) were estimated by logistic regression.

Results

A total of 316 persons were enrolled. Most were men (72%), and the average age was 37 years (SD = 8.9 years). By race/ethnicity, 58% were black, 27% Hispanic, 9% white, and 6% mixed or other ethnicities. Most (66%) of participants reported an income of less than \$10,000 per year; 84% did not have health insurance. In response to questions about risk behaviors during the past 30 days, 27% reported crack use, 27% reported unprotected sex with a partner who was HIV negative or of unknown HIV status, and 13% reported heroin use.

Of the total, 81% had a recent (within the past year) diagnosis of HIV infection; 48% received the diagnosis after their first HIV test. The most common reasons for getting an HIV test were as follows: possibility of having been exposed or just a desire to

know (46%), feeling sick (26%), and testing recommended by a physician (14%). Participants had been tested most recently at various settings: 28% in an ER or during a hospital visit, 21% at an STD clinic, 18% at an HIV test site, 7% at an AIDS or infectious disease clinic, and 4% in the office of a private physician or an HMO. The participants' responses to the 5 HIV counseling quality questions were as follows: 55% reported that the counselor did not refer them to a case manager; 27% that the counselor did not spend enough time with them; 22% that the counselor did not answer all of their questions, 20% that they were not told where to receive care; and 7% that they were not treated with respect.

To better understand the participants' choice of testing setting, we looked at the frequency of reasons for getting an HIV test at the various settings (Table 1). Of the 83 persons tested in ERs or hospitals, 48 reported that they had sought testing because they were sick. Of the 21 clients who reported going to an AIDS/infectious disease clinic for testing, 13 reported that they thought they had been exposed or just wanted to know, 6 reported they were sick, and 2 that testing had been recommended by a physician.

The testing settings differed significantly in the proportion of persons who reported inadequate counseling services (i.e., answered no to one of the questions about the quality of HIV counseling) (Table 2). The smallest proportions of persons who reported inadequate counseling services were tested at family planning clinics and blood banks; the largest proportions were tested in jails or the offices of private physicians or HMOs.

By other bivariate analysis, a higher proportion of whites, compared with blacks or Hispanics, reported not having all their questions answered ($P = 0.03$) and not being given enough time ($P \leq 0.01$). A larger proportion of the persons with health insurance reported that not all of their questions were answered ($P = 0.01$), that they were not treated with respect ($P \leq 0.01$), and that they were not told where to receive care ($P = 0.04$). A larger proportion of the persons who reported crack cocaine use during the past 30 days reported that they were not given enough time ($P = 0.03$).

Final multivariate analyses of counseling quality indicators among HIV testing settings are presented in Table 3. The outcome variable "not treated with respect" was not modeled because of sparse data. In all the final models of quality outcome, we included age, gender, sexual orientation, site of study, time since first positive HIV test result, and crack use during the past 30 days.

Race/ethnicity was included in the models for whether the counselor answered all questions, spent enough time with the person, and told the person where to receive care. Having insurance was included in the model for whether the counselor answered all questions, education was included in the model for whether the counselor spent enough time with the person tested, and heroin use during the past 30 days was included in the model for whether the counselor told the person where to receive care. In the adjusted analysis, persons tested in the office of private physicians or HMOs (OR, 9.62; 95% CI, 2.22–41.7), jails (OR, 7.87; 95% CI, 1.50–41.4), and ERs/hospitals (OR, 3.32; 95% CI, 1.11–9.90), compared with those at HIV test sites, were more likely to report that the counselor did not answer all their questions, and persons tested in the offices of private physicians or HMOs (OR, 5.24; 95% CI, 1.26–21.7), jails (OR, 5.10; 95% CI, 1.06–24.6), and ERs/hospitals (OR, 2.93; 95% CI, 1.15–7.44), compared with the HIV test sites, were more likely to report that the counselor did not spend enough time with them. Analysis by race/ethnicity yielded higher odds that whites, compared with blacks, reported that the counselor did not answer all their questions (OR, 3.89; 95% CI, 1.42–10.6) and that they were not told where to receive care (OR, 3.30; 95% CI, 1.22–8.95). Persons who used crack cocaine, compared with persons who did not use crack cocaine, were more likely to report that the counselor did not spend enough time with them (OR, 2.26; 95% CI, 1.08–4.77). No significant differences among age groups or between genders in the perception of HIV testing services were found in the final multivariate models.

Discussion

Expanding HIV CTR services to a wide variety of settings while ensuring the provision of high-quality HIV CTR services predominates the 2001 revised CDC HIV CTR guidelines.¹ More recent guidelines further emphasize HIV testing as part of routine medical care and in high-prevalence areas outside the medical setting, including jails.²¹ Our survey of HIV-positive persons not in medical care revealed deficiencies in the HIV counseling services in jails, in offices of private physicians or HMOs, as well as in ERs or hospitals. Persons who tested in these settings were more likely to report that the counselor did not answer all of their questions or did not spend enough time with them. Interpersonal skills such as the counselor's ability to convey emotional support^{25,28} and use active listening skills¹ have been identified as important contribu-

TABLE 1. Reasons for Getting Tested for HIV, by HIV Test Setting

	Reasons for Getting Tested for HIV, No. (%)				
	Sick (n = 80)*	Thought Exposed/ Wanted to Know (n = 144)	Ordered by Physician/Clinic/ER (n = 43)	Blood Donor (n = 20)	Other (n = 19)
ER/hospital	40 (48)	16 (19)	26 (31)	0 (0)	1 (1)
STD clinic	17 (26)	38 (58)	4 (6)	2 (3)	4 (6)
HIV test site	11 (20)	39 (70)	1 (2)	3 (5)	2 (4)
Drug treatment center	1 (4)	20 (80)	1 (4)	3 (12)	0 (0)
AIDS/infectious disease clinic	6 (29)	13 (62)	2 (10)	0 (0)	0 (0)
Family planning clinic	2 (11)	8 (44)	6 (33)	0 (0)	2 (11)
Blood bank	0 (0)	2 (13)	0 (0)	12 (80)	1 (7)
Private physician/HMO	3 (23)	5 (38)	3 (23)	0 (0)	2 (15)
Jail	0 (0)	3 (30)	0 (0)	0 (0)	7 (70)

AIDS = acquired immunodeficiency syndrome; ER = emergency room; STD = sexually transmitted disease; HIV = human immunodeficiency virus; HMO = health maintenance organization.

*Row percentages exclude 10 missing responses.

TABLE 2. Distribution of Counseling-Quality Indicators, Demographics, and Risk Behaviors, by HIV Test Setting

	HIV Test Setting, No. (%)*										
	HIV	ER/ Hospital (n = 85)	STD Clinic (n = 65)	HIV Test Site (n = 57)	Drug Treatment Center (n = 25)	AIDS/ Infectious Disease Clinic (n = 21)	FP Clinic (n = 18)	Blood Bank (n = 15)	Private Physician/ HMO (n = 13)	Jail (n = 10)	P values
Not all questions answered	68	19 (28)	14 (21)	7 (10)	6 (9)	3 (4)	2 (3)	3 (4)	7 (10)	5 (7)	0.02
Not enough time with counselor	86	29 (34)	15 (17)	12 (14)	7 (8)	3 (3)	4 (5)	2 (2)	7 (8)	6 (7)	0.03
Not told where to receive care	63	18 (29)	12 (19)	11 (17)	6 (10)	3 (5)	0 (0)	2 (3)	6 (10)	4 (6)	0.09
Not referred to a case manager	173	52 (30)	29 (17)	35 (20)	18 (10)	9 (5)	6 (3)	6 (3)	10 (6)	6 (3)	0.04
Not treated with respect	21	8 (38)	5 (24)	0 (0)	2 (10)	2 (10)	0 (0)	0 (0)	1 (5)	3 (14)	0.04
Mean age	37	38	35	36	39	38	34	38	37	35	0.37†
Race/ethnicity											
Black	184	56 (30)	32 (17)	37 (20)	21 (11)	9 (5)	7 (4)	7 (4)	8 (4)	6 (3)	0.09
White	27	5 (19)	6 (22)	7 (26)	2 (7)	1 (4)	1 (4)	2 (7)	2 (7)	1 (4)	
Hispanic	85	21 (25)	21 (25)	9 (11)	1 (1)	10 (12)	9 (11)	5 (6)	3 (4)	1 (1)	
Mixed or other ethnicity	20	3 (15)	6 (30)	4 (20)	1 (5)	1 (5)	1 (5)	1 (5)	0 (0)	2 (10)	
Male	228	66 (29)	46 (20)	40 (18)	15 (7)	15 (7)	10 (4)	13 (6)	8 (4)	9 (4)	0.30
Site of study											
Atlanta	80	42 (53)	11 (14)	14 (18)	5 (6)	2 (3)	2 (3)	1 (1)	2 (3)	1 (1)	<0.01
Baltimore	61	11 (18)	6 (10)	14 (23)	16 (26)	6 (10)	2 (3)	0 (0)	3 (5)	2 (3)	
Los Angeles	98	27 (28)	15 (15)	15 (15)	3 (3)	12 (12)	12 (12)	3 (3)	5 (5)	2 (2)	
Miami	77	5 (6)	33 (43)	14 (18)	1 (1)	1 (1)	2 (3)	11 (14)	3 (4)	5 (6)	
Sexual orientation											
Heterosexual	191	62 (32)	37 (19)	31 (16)	18 (9)	11 (6)	10 (5)	9 (5)	7 (4)	5 (3)	0.17
Gay/lesbian	79	11 (14)	19 (24)	19 (24)	4 (5)	7 (9)	3 (4)	4 (5)	6 (8)	2 (3)	
Bisexual	28	8 (29)	6 (21)	5 (18)	2 (7)	1 (4)	2 (7)	1 (4)	0 (0)	3 (11)	
Education											
Eighth grade or less	65	19 (29)	14 (22)	9 (14)	7 (11)	5 (8)	3 (5)	4 (6)	0 (0)	3 (5)	0.59
Any high school	169	45 (27)	37 (22)	32 (19)	16 (9)	9 (5)	11 (7)	5 (3)	8 (5)	5 (3)	
Any college or advanced degree	80	21 (26)	14 (18)	16 (20)	2 (3)	7 (9)	4 (5)	6 (8)	5 (6)	2 (3)	
Income less than \$10,000	209	55 (26)	40 (19)	39 (19)	19 (9)	18 (9)	10 (5)	11 (5)	5 (2)	10 (5)	0.07
Uninsured	265	71 (27)	56 (21)	52 (20)	18 (7)	21 (8)	16 (6)	11 (4)	10 (4)	9 (3)	0.16
HIV diagnosis within the last year	255	75 (29)	54 (21)	48 (19)	15 (6)	14 (5)	16 (6)	11 (4)	10 (4)	7 (3)	0.05
Used crack cocaine in past 30 d	53	9 (17)	10 (19)	11 (21)	8 (15)	4 (8)	2 (4)	3 (6)	3 (6)	3 (6)	0.35
Used heroin in past 30 d	25	8 (32)	2 (8)	6 (24)	3 (12)	1 (4)	1 (4)	0 (0)	2 (8)	2 (8)	0.43
Had unprotected sex with HIV-unknown or -negative partner	84	18 (21)	25 (30)	14 (17)	8 (10)	3 (4)	5 (6)	5 (6)	2 (2)	3 (4)	0.32

HIV = human immunodeficiency virus; ER = emergency room; STD = sexually transmitted disease; AIDS = acquired immunodeficiency syndrome; FP = family planning; HMO = health maintenance organization.

*Row percentages exclude missing values.

†Analysis of variance test.

‡Pearson χ^2 test unless otherwise noted.

tors to greater satisfaction and better outcomes among clients.^{25,38} All settings should integrate a basic HIV counseling training program that trains counseling staff to engage the client to identify his or her risk of acquiring or transmitting HIV and to set attainable goals to reduce this risk. Additional training for HIV counseling staff may focus on developing interpersonal skills and may be improved by, for example, training staff in answering the

unasked question, in conveying support and establishing trust, and by enabling and encouraging staff to allow enough time to answer all questions. Given the CDC's commitment to the provision of high-quality HIV CTR services and its recent progress to integrate routine HIV testing in medical care settings and rapid HIV testing in jails,³⁹ our data underscore a need to incorporate counseling training and evaluation in all settings to ensure high-quality HIV

TABLE 3. Effects of HIV Testing Site, Demographics, and Selected Variables on Counseling-Quality Indicators*

	Counselor Did Not							
	Answer All My Questions (n = 293)†		Spend Enough Time With Me (n = 293)‡		Tell Me Where to Receive Care (n = 278)§		Refer Me to a Case Manager (n = 293)	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
HIV test setting								
HIV test site	1.00	Reference	1.00	Reference	1.00	Reference	1.00	Reference
ER/hospital	3.32	(1.11–9.90)	2.93	(1.15–7.44)	1.90	(0.72–5.07)	1.44	(0.65–3.17)
STD clinic	2.65	(0.86–8.16)	1.62	(0.61–4.36)	1.06	(0.38–2.93)	0.54	(0.24–1.18)
Drug-treatment center	1.49	(0.38–5.79)	0.85	(0.24–2.99)	0.86	(0.23–3.16)	1.05	(0.34–3.22)
AIDS/infectious disease clinic	1.60	(0.33–7.76)	0.67	(0.15–2.96)	0.63	(0.14–2.88)	0.45	(0.14–1.44)
Family-planning clinic	0.63	(0.06–6.62)	1.33	(0.28–6.22)	—	NA	0.44	(0.12–1.57)
Blood bank	2.08	(0.37–11.7)	0.78	(0.13–4.70)	0.78	(0.13–4.63)	0.34	(0.09–1.26)
Private physician/HMO	9.62	(2.22–41.7)	5.24	(1.26–21.7)	3.68	(0.94–14.4)	2.50	(0.58–10.8)
Jail	7.87	(1.50–41.4)	5.10	(1.06–24.6)	2.70	(0.56–13.1)	0.73	(0.17–3.16)
Site of study								
Atlanta	0.69	(0.22–2.17)	0.73	(0.26–2.04)	0.91	(0.30–2.81)	1.55	(0.78–3.09)
Baltimore	2.80	(0.85–9.16)	2.54	(0.83–7.73)	4.71	(1.25–17.7)	4.38	(1.78–10.8)
Los Angeles	1.00	Reference	1.00	Reference	1.00	Reference	1.00	Reference
Miami	1.02	(0.34–3.07)	0.95	(0.33–2.72)	1.45	(0.49–4.36)	1.84	(0.84–4.02)
Race/ethnicity								
Black	1.00	Reference	1.00	Reference	1.00	Reference	NI	NI
White	3.89	(1.42–10.6)	2.14	(0.80–5.70)	3.30	(1.22–8.95)		
Hispanic	0.85	(0.28–2.54)	0.45	(0.15–1.33)	1.20	(0.41–3.53)		
Mixed or other ethnicity	1.54	(0.42–5.71)	1.80	(0.53–6.12)	2.00	(0.55–7.34)		
Sexual orientation								
Heterosexual	1.00	Reference	1.00	Reference	1.00	Reference	1.00	Reference
Gay/lesbian	0.67	(0.27–1.65)	0.94	(0.39–2.26)	1.82	(0.77–4.29)	1.53	(0.78–3.03)
Bisexual	0.71	(0.21–2.36)	1.96	(0.72–5.32)	1.56	(0.50–4.83)	2.18	(0.85–5.60)
HIV diagnosis within the last year								
≤1 y	1.00	Reference	1.00	Reference	1.00	Reference	1.00	Reference
> 1 year	1.34	(0.58–3.08)	1.36	(0.61–3.03)	1.43	(0.63–3.22)	1.34	(0.64–2.79)
Used crack cocaine in past 30 d								
No	1.00	Reference	1.00	Reference	1.00	Reference	1.00	Reference
Yes	2.04	(0.93–4.49)	2.27	(1.08–4.77)	1.84	(0.83–4.09)	1.59	(0.79–3.17)

HIV = human immunodeficiency virus; OR = adjusted odds ratio; CI = confidence interval; ER = emergency room; STD = sexually transmitted disease; AIDS = acquired immunodeficiency syndrome; HMO = health maintenance organization; NI = not included in model.

*Bold for estimates with *P* values of <0.05. All models include age and gender, but results are not shown.

†Model also includes insurance status.

‡Model also includes education.

§Model also includes used heroin in past 30 d.

||Category did not have any failures with complete data. Observations were dropped from analysis.

counseling services. The CDC revised guidelines for HIV CTR may provide a foundation on which testing settings can build HIV counseling and quality-assurance protocols specific to their setting and population.

A large proportion of our respondents had been tested in an ER or a hospital; 48% reported that they sought testing because they were feeling sick. ERs and hospitals have an opportunity to test persons (asymptomatic or symptomatic) who do not have access to regular medical care. According to one study, persons who perceived their risk as low (e.g., those in monogamous relationships) became aware of their HIV-positive serostatus at urgent-care centers.²⁰ Routine testing in hospitals has been suggested for areas with an HIV prevalence rate of >1%.⁴⁰ Our data support the importance of expanding testing to persons who, unaware of their own risk, do not seek voluntary testing.

Findings from our study indicate deficiencies in the referral process in some settings. All participants in the study were HIV positive and not engaged in regular HIV medical care. It is significant to note that 21 participants, 6 of whom (33%) reported feeling sick as the reason they sought care, tested at AIDS/

infectious disease clinics and were still not linked to regular HIV medical care. These participants exemplify the missed opportunities to link HIV-positive persons to medical care. In addition, 20% (63 out of 316) of the cumulative total of persons who tested in the various settings reported they were not told where to receive care. Some of these persons' recall may have been limited either due to the lapse in time since they received their diagnosis or due to the difficulty absorbing the information given to them at the time they learned they were infected. It is unclear in this study whether poor counseling experience affected the study population's linkage to care; however, poor counseling experience may directly or indirectly affect a person's care seeking behavior by lowering a person's self-efficacy to seek care or adversely affecting a person's attitude about and motivation to seek care. Factors that affect HIV-positive persons' perceptions of HIV testing services and the impact of counseling services on linkage to care deserve further research attention. Nevertheless, our data highlight the importance of counselors to assess the referral needs of their clients and to follow up persons newly diagnosed with HIV to ensure they enter into sustained medical care.

Our survey may reflect a need for all settings to increase their number of referrals to a case manager.⁴¹ Case management has been shown to influence positively the proportion of HIV-positive persons who receive medical care,³¹ underserved youths' access to HIV medical care,⁴² and infected persons' use of community-based support services.⁴³ Persons who used crack cocaine, compared with persons who did not, reported that they were not given enough time. This finding is consistent with the findings of other studies that crack users are disadvantaged in regard to receiving HIV primary care.^{44,45} Crack users are also at increased risk for HIV transmission and may need more counseling time because of their comorbid substance abuse problem; they may especially benefit from case management focused on their needs. More whites compared with blacks reported inadequacies. Whites may have higher expectations of services than do members of racial minority groups who have a history of institutional discrimination and who have less access to health care.⁴⁶ Whites in our study had similar income distributions and HIV testing frequency at offices of physicians or HMOs compared with other race/ethnicity groups. However, it may be worth exploring in future studies whether time constraints associated with testing in offices of physicians or HMOs may be a reason that counseling was considered inadequate, especially among whites, who are generally more likely to receive services at these settings.⁴⁷

Our study was limited by the use of convenience, rather than population-based, sampling; our sample included persons with a new diagnosis and persons who had known for several years that they were infected. However, the sample was recruited from diverse settings, including STD clinics, community clinics, public health departments, university-based research clinics, drug-treatment centers, inpatient services in hospitals, HIV test sites, and through local advertisements. In multivariate analysis, we included the site to control for differing recruitment methods and the time since diagnosis to control for recall bias. The small sample size limited the numbers in some strata (e.g., $n = 10$ in jails) and the precision of the estimates. Additionally, participants may have had a limited understanding of the title case manager or the difference between referrals to case managers and referrals to medical care, introducing another potential source of bias. According to one study, virtually all clients could identify someone who had helped them acquire services, but not all clients identified that person as a case manager.⁴⁸

In summary, the revised CDC HIV CTR guidelines highlight elements that could improve effective counseling and referral process and reduce the deficiencies reported in our study. Effective counselors need not have an advanced degree or extensive experience but must have basic HIV counseling training that aims to reduce the client's risk of acquiring or transmitting HIV infection. Additional counselor training that enhances interpersonal skills and the ability to assess client's needs and make appropriate referrals may lead to more effective counseling and greater client satisfaction with the HIV CTR process. Because of the advent of rapid HIV testing, an optimal choice in some settings might be to designate a trained staff member to do counseling, referrals, and follow-ups for persons with newly diagnosed HIV infection. Nevertheless, further research is imperative to determine the sufficient counseling practices that meet the needs and expectations of clients in all HIV testing settings and result in early access to care for persons with newly diagnosed HIV infection. The information from such research can supplement the CDC HIV CTR guidelines, ensuring optimal benefits from the guidelines and high-quality services for everyone who is tested.

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