Causes of Hospitalization and Perceived Access to Care Among Persons Newly Diagnosed with HIV Infection: Implications for HIV Testing Programs

Lokesh Shahani, M.D., M.P.H.,¹ Christine Hartman, Ph.D.,^{2,3} Cathy Troisi, Ph.D.,^{1,4}
Asha Kapadia, Ph.D.,¹ and Thomas P. Giordano, M.D., M.P.H.^{2,3}

Abstract

There has been little research on the causes of hospitalization when patients are first diagnosed with HIV in the hospital. Reduced access to care could partially explain inpatient diagnosis. We sought to determine if the patients diagnosed as inpatients are hospitalized due to a HIV-related cause versus some other causes, to compare access to care of patients diagnosed with HIV in hospital and outpatient settings, and to determine factors associated with access to care. Participants were newly diagnosed with HIV and recruited between January 2006 and August 2007. The reason for hospitalization was classified as HIV-related, other infectious cause, noninfectious cause, or miscellaneous cause. Access to care was self-reported using a six-item scale and scores were compared with the *t* test. Multivariate linear regression determined factors associated with improved access to care. Of 185 participants in the study, 78 were diagnosed in hospital and 107 in outpatient settings. Thirty-two percent of participants were female, 90% were racial/ethnic minority, 45% had no high school diploma, and 85% were uninsured. HIV-related conditions accounted for 60% of admissions, followed by non-infectious causes (20%) and other infectious causes (17%). Inpatients did not report less access to care than patients diagnosed while outpatients. Multivariate analysis demonstrated improvement in access to care with better health insurance ($p=0.01$) and greater education ($p=0.08$). HIV-related preventable conditions account for many hospitalizations when patients are first diagnosed with HIV. While socioeconomic factors are associated with perceived access to care, persons diagnosed in the inpatient setting do not report lower perceived access to care than persons diagnosed as outpatients, suggesting other barriers to earlier diagnosis.

Introduction

ACCORDING TO THE Centers for Disease Control and Prevention (CDC), at the end of 2006, an estimated 1,106,400 persons (95% confidence interval 1,056,400–1,156,400) in the United States were living with HIV infection, with 21% undiagnosed.¹ The CDC has estimated that approximately 50,000 persons in the United States become infected with HIV each year.²

With the advent of highly active antiretroviral therapy (HAART), HIV infection can be managed with great effectiveness. HAART has been shown to reduce the mortality and morbidity associated with HIV.³ Various studies have reported a decrease in opportunistic infection^{3,4} and hospi-

talization rates^{5,6} among HIV-infected patients after the introduction of HAART. HAART is not as effective when started in patients with low CD4 cell counts and higher HIV viral loads.⁷ Ongoing HIV care including HAART has been shown to reduce HIV transmission by encouraging safe sex behavior and reducing the viral load.^{8,9}

Poor access to care may lead to underutilization of routine medical care and hence delayed diagnosis. HIV-infected persons from impoverished or socially marginalized groups, such as racial/ethnic minorities, women, and drug users, may have a difficult time addressing basic subsistence needs, such as food, clothing, and housing. These needs compete with the needs to obtain medical care. Visiting a doctor might be difficult for people who have limited insurance, insecure

¹University of Texas Health Science Center at Houston School of Public Health, Houston, Texas.

²Department of Medicine, Baylor College of Medicine, Houston, Texas.

³Houston Health Services Research and Development Center of Excellence, Michael E. DeBakey VA Medical Center, Houston Texas.

⁴Department of Health and Human Services, City of Houston, Houston, Texas.

financial resources, or limited transportation or mobility due to health conditions.^{10,11} A large proportion of the HIV-infected population does not utilize outpatient resources,¹² suggesting that limited access to medical care might contribute to delayed diagnosis of HIV infection.

More than a quarter of patients with HIV in the United States are diagnosed in hospital settings, most often with advanced HIV-related conditions.¹³ Hospitalization in patients with HIV infection could be either due to a HIV-related condition, other comorbid conditions or a combination of both. While others have studied reasons for hospitalization among patients with HIV infection, we are unaware of research documenting the causes of hospitalization among patients first diagnosed with HIV during hospitalization.

There were three aims of the current study. First, we sought to determine if patients newly diagnosed with HIV infection during a hospitalization were hospitalized due to an HIV-related cause or due to other causes. We anticipated that patients first diagnosed with HIV in a hospital setting were more likely to be admitted with an HIV-related condition than due to some other cause. Second, we sought to compare the access to care of patients diagnosed in hospital and outpatient settings. We hypothesized that inpatients had lower access to care than patients who were diagnosed in an outpatient setting. Third, we sought to determine factors associated with perceived access to care in this population. This research could provide further justification for routine HIV testing programs to ensure an early diagnosis of HIV and to reduce these types of hospitalizations.

Methods

The data for this study was derived from a prospective observational cohort study, Attitudes and Beliefs and Steps of HIV Care, the Steps Study. Study participants were patients newly diagnosed with HIV infection, both in inpatient and outpatient settings. Participant inclusion criteria included diagnosed with HIV for less than 3 months, no prior receipt of outpatient HIV care, age greater than 18 years, and ability to speak English or Spanish. Participants were recruited between January 2006 and August 2007. Participants were recruited from Ben Taub General Hospital and Lyndon B. Johnson General Hospital (both publicly funded hospitals of the Harris County Hospital District [HCHD] in Houston, Texas), the Houston VA Medical Center, the community outpatient clinics of the Harris County Hospital District, and City of Houston clinics for sexually transmitted diseases.

At the time of recruitment, all participants were asked to complete an interviewer-administered baseline survey. Research coordinators conducted these interviews in either English or Spanish, at sites of care or other sites agreeable to the subject to minimize the potential for psychological distress and breach of confidentiality.

Access to care was assessed with a scale validated and used in English and Spanish in the HIV Cost and Services Utilization Study (HCSUS), a benchmark health services study of persons with HIV from across the United States.¹⁴ The scale includes the following six statements: If I need hospital care, I can get admitted without any trouble; It is hard for me to get medical care in an emergency; Sometimes I go without the medical care I need because it is too expensive; I have easy access to medical specialists I need; Places where I can get

medical care are easy to get to; and, I am able to get medical care whenever I need it. Each item was answered on a 6-point scale, from "strongly agree" to "strongly disagree." Substance use was assessed by self-report of a positive CAGE screen¹⁵ for alcohol use, use of illicit drugs, or recommendation for substance use treatment in the past 3 months. Psychiatric comorbidity was assessed by self-report of use of psychiatric care, a recommendation for psychiatric care, or use of psychiatric medications in the past 3 months.

Hospitalization data for patients diagnosed in an inpatient setting were reviewed. The primary and secondary diagnoses from hospital discharge reports were extracted. The primary diagnosis was the diagnosis considered responsible for the admission, excluding HIV infection. The primary diagnoses were classified as HIV-related, other infectious causes, non-infectious causes, and miscellaneous causes. Two physician reviewers (T.G. and L.S.) independently classified the diagnoses into the categories. Disagreements were resolved through consensus. Medical records of all participants were reviewed and initial CD4 cell count and HIV viral load results were extracted.

Data analysis

The percentage of hospitalizations due to each category was calculated. Access to care for the individual was calculated by adding the score for each response. Because items 2 and 3 had reverse directionality compared to the other items, scores for these questions were reversed (the score of 1 corresponds to 6, 2 corresponds to 5, and so on). The responses to the six statements were summed and the final score was used as the measure of access to care, with higher scores indicating less perceived access to care. The mean individual item and total access to care scale scores were compared between the hospitalized group and the outpatient group. The two groups were also compared on the basis of their demographic characteristics such as age, gender, race, educational level, income, and health insurance at the time of diagnosis. Health insurance at the time of diagnosis was divided in the following three categories: patients with any insurance (private, Medicare and/or Medicaid, VA), patients registered for HCHD-subsidized care at HCHD facilities (indicated by possession of a "Gold Card"), and uninsured patients. The groups were also compared on the presence of substance abuse, psychiatric comorbidities and HIV risk factor. We used multivariate linear regression to identify factors associated with access to care score. Test results were considered significant when p-values were less than 0.05. SAS for Windows, Version 9.2 (SAS, Cary, NC), was used for statistical analyses.

The study was approved by the Baylor College of Medicine Institutional Review Board and the University of Texas Health Science Center at Houston Committee for the Protection of Human Subjects. All patients provided written informed consent.

Results

Two hundred thirty-nine persons newly diagnosed with HIV infection were approached before the target sample of 200 participants was recruited. The persons who refused enrollment were similar in demographic characteristics to those who enrolled (data not shown). Fifteen of the 200 participants were not included in the analysis because of incomplete data

or ineligibility (false-positive HIV test result or medical record review revealing that the patient was not newly diagnosed).

Data from 185 participants are included in this analysis. Seventy-eight participants were newly diagnosed with HIV infection during hospitalization and the remaining 107 participants were newly diagnosed with HIV infection in an outpatient setting. Demographic characteristics of the participants are presented in Table 1. Of note, 68% of the participants were male, 51% were non-Hispanic black, 39% were Hispanic, and 10% were non-Hispanic white patients. Approximately 45% of the participants did not complete high school, 66% had an annual income below \$15,000 and 15% had any health insurance (private, Medicare, Medicaid or VA) at the time of diagnosis.

Participants diagnosed as outpatients and inpatients had similar demographic characteristics. Outpatients had higher CD4 cell counts than inpatients (median 332 versus 72 cells/mm³; $p < 0.01$) and participants diagnosed as outpatients were more likely to have reported psychiatric comorbidities. Inpatients tended to be older and less often had insurance (both p values 0.07; Table 1).

Reasons for hospitalization

Hospitalization data for the 65 patients who were diagnosed in HCHD hospitals were reviewed. Detailed hospitalization data were not available for the remaining 13 patients who were diagnosed in other hospitals in and around Houston. The average length of hospital stay was 12 days (range, 1–38 days). HIV-related conditions were the leading cause of admission (Table 2), accounting for 60% of total admissions. *Pneumocystis pneumonia* accounted for 43% of these hospitalizations, followed by cryptococcosis (12%) and *Mycobacterium tuberculosis* (10%). Other infectious and noninfectious causes accounted for 17% and 20% of admissions, respectively. Among the hospitalizations due to other infectious causes, the gastrointestinal system (36%) was most commonly affected, followed by conditions affecting the respiratory system and the genitourinary tract (27% each). Last, among the hospitalizations due to noninfectious causes, renal causes (31%) were the most predominant followed by respiratory (15%) and hematologic (15%) causes.

TABLE 1. DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS IN THE STEPS STUDY, BY SETTING OF HIV DIAGNOSIS

Characteristic	Diagnosed in hospital setting		Diagnosed in outpatient setting		p Value
	Number (n=78)	Percentage	Number (n=107)	Percentage	
Gender (n=185)					0.36
Male	57	73	69	65	
Female	21	27	38	35	
Race (n=185)					0.87
Non-Hispanic white	8	10	11	10	
Non-Hispanic African American	38	49	56	52	
Hispanic	32	41	40	38	
Age (n=185)					0.07
<30	15	19	37	35	
30–49	50	64	54	50	
50–59	11	14	10	9	
60 and above	2	3	6	6	
Education (n=182)					0.16
No degree	40	53	42	39	
High school/GED	20	26	30	29	
Any college	16	21	34	32	
Household income (n=179)					0.54
0–\$14999	52	70	66	64	
\$15000–\$24999	15	20	21	20	
\$25000 or more	8	10	17	16	
Health insurance (n=184)					0.07
Uninsured	21	27	29	27	
Gold Card	50	65	57	53	
Private, Medicare, Medicaid or VA	6	8	21	20	
CD4 count, cells/mm³ (n=175)					<0.001
<50	31	40	14	15	
50–200	27	34	16	16	
201–350	13	17	20	21	
351–500	4	5	16	16	
>500	3	4	31	32	
HIV risk factors (n=183)					0.59
Injection drug use	7	9	8	7	
Men who have sex with men	21	28	37	35	
Heterosexual or other	48	63	62	58	
Substance abuse (n=183)	40	53	49	46	0.36
Psychiatric comorbidity (n=182)	4	5	18	17	0.02

Percentages rounded to nearest whole number.

TABLE 2. HOSPITALIZATIONS DURING WHICH HIV INFECTION WAS DIAGNOSED AMONG PARTICIPANTS IN THE STEPS STUDY, CLASSIFIED ACCORDING TO THE PRIMARY DIAGNOSIS

Diagnosis category	Number (n=65)	Percentage
HIV-related	39	60
Other infectious causes	11	17
Noninfectious causes	13	20
Miscellaneous causes	2	3

Percentages rounded to nearest whole number.

Access to care

The participants diagnosed as inpatients had a total mean access to care score of 18.8 (standard deviation [SD] 5.5), while the group diagnosed as outpatients had the same mean access to care score (18.8, SD 5.8; *p* value 0.99). Similarly, there were no significant differences between the groups on individual items in the access to care instrument (Table 3).

In univariate analyses, the statistically significant predictors of access to care were education level (*p* value 0.02) and type of health insurance (*p* value 0.003). There was also a borderline significant improvement in access to care score with increasing age (*p*=0.1). The multivariate linear regression model of access to care score included site of diagnosis, age, gender, race/ethnicity, education, health insurance, income, HIV risk behavior, substance use, and psychiatric comorbidity. There was a statistically significant improvement in access to care with better health insurance (uninsured group=19.8, Gold Card group=18.2 and any insurance group=15.1; *p* value 0.01); and a trend toward improvement in access to care (reduction in access to care scores) with advancing education level (no degree/never finished high school group=18.4, high school diploma or GED group=18.7 and some college education group=16.1; *p* value 0.08). Site of diagnosis was not significant (inpatient group=17.4, outpatient group=18.1; *p* value 0.42).

Discussion

This study included 185 participants who were newly diagnosed with HIV infection in publicly funded hospitals and clinics in Houston, Texas. We are not aware of any other published data describing causes of hospitalization or perceived access to care among persons newly diagnosed with HIV infection. We found that HIV-related conditions were the leading cause of hospitalization, accounting for 60% of admissions, followed by noninfectious causes (20%) and other

infectious causes (17%). We did not find differences in perceived access to care between participants diagnosed in hospital and participants diagnosed in outpatient settings. Access to care was predicted by socioeconomic status (insurance status and, to a lesser extent, education).

Various studies have reported a decrease in opportunistic infections^{3,4} and hospitalization rates^{5,6} among HIV-infected persons after the introduction of HAART. In studies that assessed the causes of hospitalization among HIV-infected individuals (most of whom were not newly diagnosed), AIDS-defining conditions accounted for the majority of hospitalizations,^{16,17} consistent with our results. In a study from Cook County Hospital, hospitalizations due to other infectious causes were more common than those due to HIV-related causes.¹⁸ The patients in that study were not necessarily newly diagnosed, and many of them were already in care for their HIV (48% of the previously diagnosed patients in that study were on HAART). In the absence of routine testing for HIV infection in the hospital setting, the majority of HIV diagnoses appear to be prompted by the diagnosis of an HIV-related condition.

The median CD4 cell count of hospitalized patients was 72 cells/mm³, while that of outpatients was 332 cells/mm³. Only 4% of participants diagnosed in the hospital had a CD4 cell count above 500 cells/mm³, compared to 32% of participants diagnosed in the outpatient setting. Ninety-one percent of hospitalized participants had a CD4 cell count below 350 cells/mm³ at diagnosis, the level at which they should have been started on HAART according to treatment guidelines at the time. Furthermore, 74% of the inpatient group had a CD4 cell count below 200 cells/mm³, the level at which the CDC recommends additional prophylaxis against opportunistic infections. Earlier diagnosis of HIV could help facilitate patients' entry into the health care system and improve their clinical outcomes.¹⁹ Together, the causes of hospitalization and severity of immunosuppression at diagnosis suggest that, had these participants been diagnosed earlier and linked to outpatient HIV care, it is very possible that many if not most of these hospitalizations could have been prevented. In addition, the average length of stay during these inpatient admissions was 12 days, further emphasizing the morbidity and costs that could be prevented if the patients were diagnosed early and linked to care. These findings suggest that earlier diagnosis of HIV infection via routine screening has the potential to prevent patient morbidity and hospitalizations.

Our second goal was to evaluate if there was a difference in the access to care for patients diagnosed in inpatient versus outpatient settings. We hypothesized that participants who

TABLE 3. MEAN (STANDARD DEVIATION) SCORES ON THE INDIVIDUAL ITEMS ON THE ACCESS TO CARE SCALE FOR THE PARTICIPANTS IN THE STEPS STUDY, BY SETTING OF HIV DIAGNOSIS

Access to care items	Diagnosed in hospital setting	Diagnosed in outpatient setting	<i>p</i> Value
If I need hospital care, I can get admitted without any trouble.	2.4 (1.2)	2.5 (1.2)	0.47
It is hard for me to get medical care in an emergency.	3.1 (1.5)	3.0 (1.4)	0.93
Sometimes I go without the medical care I need because it is too expensive.	4.2 (1.5)	4.0 (1.6)	0.37
I have easy access to medical specialists I need.	3.2 (1.5)	3.4 (1.5)	0.45
Places where I can get medical care are easy to get to.	3.0 (1.5)	2.9 (1.3)	0.52
I am able to get medical care whenever I need it.	2.9 (1.5)	3.0 (1.4)	0.78
Total score	18.8 (5.5)	18.8 (5.8)	0.99

were diagnosed with HIV in hospital settings would have lower access to care than participants who were diagnosed in outpatient settings. This hypothesis was not supported by the data. It is possible that the lack of a difference was due to inadequate sample size, although the mean access to care scores were so similar that this is unlikely.

More likely, diagnosis of HIV infection is not driven by access to care, or at least perceived access to care, even in settings not conducting opt-out HIV screening. Many patients seek HIV testing when they start experiencing symptoms and are often in the advanced stage of the disease by the time of diagnosis.^{20,21} Poor awareness of HIV's risk factors could contribute to delayed diagnosis of HIV infection.²² Our study results suggest on the one hand that clinicians do not test for HIV infection until it is clinically apparent, and on the other hand that patients do not seek HIV testing until they are symptomatic. Routine HIV testing would alleviate both of these problems.²³ Programs to increase HIV awareness and testing need to be an integral part of activities aimed at decreasing the spread of HIV in the community.²⁴

The lack of association between access to care and site of diagnosis could also be explained if the access to care instrument did not actually measure true access to care. The results of analyses to achieve our third goal, to determine the factors associated with perceived access to care, suggest otherwise. Better health insurance and, to a lesser degree, greater education, were independent predictors of greater perceived access to care. In a study by CDC based on data from 1990 to 1992 evaluating the predictors of delayed diagnosis, lower education was associated with delayed diagnosis.²⁵ Education increases the ability of an individual to understand basic health information, possibly promoting appropriate health care seeking behavior. Higher education could also improve patient's ability to interpret the information available on HIV infection. Insurance affects the way people access medical care, with uninsured or under-insured patients more dependent on emergency departments than outpatient providers to meet their health care needs. Patients from the HCSUS study who were either uninsured or underinsured had difficulties accessing outpatient care as well as medications.²⁶ A later study found that uninsured patients had fewer ambulatory visits and worse retention in care.²⁷ Our study findings associating perceived access to care with education and insurance are therefore consistent with previous research, suggesting that the access to care instrument is adequately measuring the construct in our population.

Our study found statistically borderline increases in both inpatient diagnosis and access to care with increasing age, paradoxical findings. Medical comorbidities drive health care seeking behavior and health care utilization. Since age increases the risk of medical comorbidities, age may be associated with greater perceived access to care even after adjusting for insurance status. Advancing age also increases the risk of hospitalization in general, likely explaining the association between age and inpatient diagnosis. In contrast, younger patients are less likely to receive regular medical care and hence less likely to be tested.²⁸ Our data suggest that younger patients have worse access to care. HIV testing programs should aggressively target younger patients since they may interact with the health care system less frequently.

Participants diagnosed as outpatients were more likely to report psychiatric comorbidities. Substance use may con-

found this finding, as it was not confirmed in multivariate analysis. Nonetheless, HIV infection is many times more prevalent among people with severe mental illness in the United States than in the overall population.²⁹ The high prevalence of comorbid HIV infection and psychiatric diagnosis has prompted calls for better awareness among mental health professionals regarding the risk, diagnosis, and treatment of HIV exposure and illness among patients.³⁰

Some previous studies have shown race and gender to be associated with access to care.^{31,32} Our study did not find these factors to be significantly related to access to care. Our sample overrepresents indigent and uninsured or underinsured populations typically served by public facilities. This is not a representative sample of the general U.S. population, perhaps explaining why our results are not in keeping with those of other studies.

There are certain limitations of our study. It includes a sample of patients recruited from the HCHD hospitals and other public clinics in Houston, Texas that serve uninsured or underinsured patients. Thus it overrepresents underprivileged, indigent patients and is not a representative sample of the general U.S. population, although many of the people living with HIV are poor and inadequately insured. Published assessments of the reliability and validity of HCSUS access to care scale are not available, although it was developed by RAND and employed in a large national survey. The access to care analyses assigned numeric values to qualitative responses, as is commonly done with psychometric instruments. Whether these quantifications accurately reflect the relative strengths of the qualitative responses is not known. Complete medical record data including hospitalization data and other laboratory values were not available for the patients who were diagnosed in the clinics and hospitals not affiliated with the HCHD.

Our study supports the hypothesis that preventable HIV-related processes, especially *Pneumocystis pneumonia*, account for many hospitalizations during which patients are first diagnosed with HIV infection. Perceived access to care, while associated with socioeconomic status, does not predict inpatient versus outpatient diagnosis of HIV infection, suggesting other barriers to earlier diagnosis.

Acknowledgments

Supported by National Institutes of Mental Health grant R34MH074360, the Baylor/UTHouston Center for AIDS Research grant P30AI036211, and the facilities and resources of the Harris County Hospital District and the Michael E. DeBakey VA Medical Center. Dr. Giordano is a researcher at the Michael E. DeBakey VA Medical Center Health Services Research and Development Center of Excellence, Houston, Texas. The views expressed in this article are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs.

Author Disclosure Statement

No competing financial interests exist.

References

1. Centers for Disease Control and Prevention. HIV Prevalence Estimates—United States, 2006. *MMWR* 2008;57:1073–1076.

2. Prejean J, Song R, Hernandez A, et al. Estimated HIV incidence in the United States, 2006–2009. *PLoS ONE* 2011;6: e17502.
3. Palella FJ, Jr., Delaney KM, Moorman AC, et al. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. HIV Outpatient Study Investigators. *N Engl J Med* 1998;338:853–860.
4. Kaplan JE, Hanson D, Dworkin MS, et al. Epidemiology of human immunodeficiency virus-associated opportunistic infections in the United States in the era of highly active antiretroviral therapy. *Clin Infect Dis* 2000;30(Suppl 1):S5–14.
5. Paul S, Gilbert HM, Ziecheck W, Jacobs J, Sepkowitz KA. The impact of potent antiretroviral therapy on the characteristics of hospitalized patients with HIV infection. *AIDS* 1999;13:415–418.
6. Gebo KA, Diener-West M, Moore RD. Hospitalization rates in an urban cohort after the introduction of highly active antiretroviral therapy. *J Acquir Immune Defic Syndr* 2001; 27:143–152.
7. Dybul M, Bolan R, Condoluci D, et al. Evaluation of initial CD4+ T cell counts in individuals with newly diagnosed human immunodeficiency virus infection, by sex and race, in urban settings. *J Infect Dis* 2002;185:1818–1821.
8. Marks G, Crepaz N, Senterfitt JW, Janssen RS. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: Implications for HIV prevention programs. *J Acquir Immune Defic Syndr*. 2005;39:446–453.
9. Cohen MS, Chen YQ, McCauley M, et al. Prevention of HIV-1 Infection with Early Antiretroviral Therapy. *N Engl J Med* (in press).
10. Cunningham WE, Andersen RM, Katz MH, et al. The impact of competing subsistence needs and barriers on access to medical care for persons with human immunodeficiency virus receiving care in the United States. *Med Care* 1999; 37:1270–1281.
11. Rajabiun S, Mallinson RK, McCoy K, et al. “Getting me back on track”: The role of outreach interventions in engaging and retaining people living with HIV/AIDS in medical care. *AIDS Patient Care STDs* 2007;21(Suppl 1):S20–29.
12. Fleishman JA, Gebo KA, Reilly ED, et al. Hospital and outpatient health services utilization among HIV-infected adults in care 2000–2002. *Med Care* 2005;43(9 Suppl):III40–52.
13. Greenwald JL. Routine rapid HIV testing in hospitals: Another opportunity for hospitalists to improve care. *J Hosp Med* 2006;1:106–112.
14. Bozzette SA, Berry SH, Duan N, et al. The care of HIV-infected adults in the United States. HIV Cost and Services Utilization Study Consortium. *N Engl J Med* 1998;339:1897–1904.
15. Castells MA, Furlanetto LM. Validity of the CAGE questionnaire for screening alcohol-dependent inpatients on hospital wards. *Rev Bras Psiquiatr* 2005;27:54–57.
16. Betz ME, Gebo KA, Barber E, et al. Patterns of diagnoses in hospital admissions in a multistate cohort of HIV-positive adults in 2001. *Med Care* 2005;43(9 Suppl):III3–14.
17. Gebo KA, Fleishman JA, Moore RD. Hospitalizations for metabolic conditions, opportunistic infections, and injection drug use among HIV patients: Trends between 1996 and 2000 in 12 states. *J Acquir Immune Defic Syndr* 2005;40:609–616.
18. Pulvirenti JJ, Glowacki R, Muppidi U, et al. Hospitalized HIV-infected patients in the HAART era: a view from the inner city. *AIDS Patient Care STDs* 2003;17:565–573.
19. Kitahata MM. When to start antiretroviral therapy. *Top HIV Med* 2010;18:121–126.
20. Amanyire G, Wanyenze R, Alamo S, et al. Client and provider perspectives of the efficiency and quality of care in the context of rapid scale-up of antiretroviral therapy. *AIDS Patient Care STDs* 2010;24:719–727.
21. Mayben JK, Kramer JR, Kallen MA, Franzini L, Lairson DR, Giordano TP. Predictors of delayed HIV diagnosis in a recently diagnosed cohort. *AIDS Patient Care STDs* 2007;21: 195–204.
22. Samet JH, Freedberg KA, Savetsky JB, Sullivan LM, Stein MD. Understanding delay to medical care for HIV infection: The long-term non-presenter. *AIDS* 2001;15:77–85.
23. Branson BM, Handsfield HH, Lampe MA, et al. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. *MMWR* 2006; 55:1–17.
24. Arya M, Williams LT, Stone VE, Behforouz HL, Viswanath K, Giordano TP. A key strategy for reducing HIV in African American communities: Promoting HIV testing. *J Natl Med Assoc* 2010;102:1264–1266.
25. Wortley PM, Chu SY, Diaz T, et al. HIV testing patterns: Where, why, and when were persons with AIDS tested for HIV? *AIDS* 1995;9:487–492.
26. Shapiro MF, Morton SC, McCaffrey DF, et al. Variations in the care of HIV-infected adults in the United States: Results from the HIV Cost and Services Utilization Study. *JAMA* 1999;281:2305–2315.
27. Mugavero MJ, Lin HY, Allison JJ, et al. Failure to establish HIV care: Characterizing the “no show” phenomenon. *Clin Infect Dis* 2007;45:127–130.
28. Torian LV, Wiewel EW. Continuity of HIV-related medical care, New York City, 2005–2009: Do patients who initiate care stay in care? *AIDS Patient Care STDs* 2011;25:79–88.
29. Rosenberg SD, Goodman LA, Osher FC, et al. Prevalence of HIV, hepatitis B, and hepatitis C in people with severe mental illness. *Am J Public Health* 2001;91:31–37.
30. American Psychiatric Association. Practice guidelines for the treatment of patients with HIV/AIDS. *Am J Psychiatry* 2000;157:1–62.
31. Hightow-Weidman LB, Smith JC, Valera E, Matthews DD, Lyons P. Keeping them in “STYLE”: finding, linking, and retaining young HIV-positive black and latino men who have sex with men in care. *AIDS Patient Care STDs* 2011; 25:37–45.
32. Schwarcz S, Hsu L, Dille JW, Loeb L, Nelson K, Boyd S. Late diagnosis of HIV infection: trends, prevalence, and characteristics of persons whose HIV diagnosis occurred within 12 months of developing AIDS. *J Acquir Immune Defic Syndr* 2006;43:491–494.

Address correspondence to:

Thomas P. Giordano, M.D., M.P.H.

Michael E. DeBaey VA Medical Center (152)

2002 Holcombe Blvd

Houston, TX 77030

E-mail: tpg@bcm.tmc.edu