Race, Gender, Drug Use, and Participation in AIDS Clinical Trials

Lessons from a Municipal Hospital Cohort

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OBJECTIVES: **To determine whether participation rates of women, persons of color, and injection drug users in AIDS clinical trials are similar to those of other HIV/AIDS patients, and to examine whether differences in patients' knowledge of clinical trials or reasons for not participating explain differences in participation rates by gender, race, or drug use.**

DESIGN: **Cross-sectional survey of patients with HIV disease.**

SETTING: **Ambulatory practice of a municipal teaching hospital.**

PATIENTS: **Two hundred sixty patients receiving primary care for HIV disease.**

MEASUREMENTS AND MAIN RESULTS: **Overall, 22.3% of patients had participated in a clinical trial. Women, patients of color, and drug users were significantly less likely to have ever participated in an AIDS clinical trial ($p < .05$). Multiple logistic regression confirmed being a person of color (odds ratio [OR] 2.14; 95% confidence interval [CI] 1.12–4.08) and injection drug use (OR 2.09; 95% CI 1.08–4.04) as significant predictors of nonparticipation in AIDS clinical trials ($p < .05$). Patients of color and women reported less knowledge of clinical trials, and were less likely to have been told about clinical trials for which they were eligible ($p < .05$). Patients of color were half as likely as whites to cite ineligibility as their reason for not participating (10.4% vs 22.4%), and more likely to hold unfavorable opinions of clinical research (50.7% vs. 40.5%). Reasons for nonparticipation did not differ by gender.**

CONCLUSIONS: **Even when AIDS clinical trials are available on-site, persons of color, women, and drug users are less likely to participate. Educational efforts for patients and providers are needed to remedy continuing disparities in participation by race, gender, and risk factor group in AIDS clinical trials.**

KEY WORDS: **women; AIDS; clinical trials; race; injection drug use.**

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HIV infection and AIDS[1] are having an increasing impact on mortality and quality of life for women and persons of color in the United States.[2–4] In 1995, the AIDS incidence rate among blacks and Latinos was more than six times and two times, respectively, the rate among whites in the United States.[4] The incidence of AIDS is also increasing more rapidly among women than men; AIDS is now the third leading cause of death for all U.S. women aged 25 to 44 years.[2,5] This disease is increasingly afflicting women from all U.S. communities, but there has been a disproportionate increase in the prevalence of AIDS among minority women, particularly African Americans, Latinas, and Caribbean blacks. Women from communities of color together have accounted for nearly 76% of all reported cases of AIDS in women, while these groups represent only 21% of the general population of U.S. women.[2,5] And notably, the most common route of HIV acquisition among both women and persons of color diagnosed with AIDS to date has been injection drug use.[5]

Despite their growing representation among AIDS cases, women, racial or ethnic minorities, and injection drug users have generally been underrepresented in clinical trials of drugs for the treatment of AIDS and early HIV disease.[6–10] To date, most clinical trials of treatment for HIV and HIV-related complications have been composed primarily of homosexual white men, with low participation of women, persons of color, and injection drug users.[6–10] Failure to include adequate numbers of women and persons of color may limit the generalizability and usefulness of study results for clinical practice. Furthermore, these subpopulations of HIV-infected individuals—women, persons of color, and injection drug users—have not had the benefit of early access to new treatments and prophylaxis for HIV and its complications that clinical trials have provided for participants.[6–12]

It has been hypothesized that the lower participation of women, persons of color, and drug users primarily reflects impaired access to trials, due to several factors. Most initial AIDS Clinical Trials Units (ACTUs) were in centers that cared for few minorities, women, or drug users with HIV[8–10]; and until recently, AIDS clinical trials have had restrictive eligibility criteria for women and injection drug users.[11,13–15] Finally, minority patients, especially African Americans, may avoid participation in clinical trials because of suspicions about medical research resulting from a legacy of past studies that misused subjects.[8,10,16,17] Currently, there is little information about the relative rates of participation of women, minorities, and drug users in clinical trials when an ACTU is located

within the medical center in which they receive their care. In the present study, we compared the participation rates of women, minorities, and drug users in AIDS clinical trials with those of others seen in a municipal hospital that serves a diverse group of HIV-infected patients and has an on-site ACTU. We also measured patients' knowledge of the clinical trials program and examine reasons for nonparticipation in clinical trials to determine whether they accounted for differences found in participation rates by gender, race and injection drug use.

METHODS

Patient Population and Study Setting

This study was a cross-sectional survey of symptomatic HIV-infected patients receiving ongoing ambulatory care at a municipal teaching hospital. HIV-infected adult patients who received ambulatory care in one of three clinics at Boston City Hospital (BCH) between September 1993 and August 1994 and had kept a minimum of two physician appointments, following their initial clinical evaluations, were eligible for participation in this study. All three of these clinic sites assign patients to a specific primary care physician and primary nurse who provide continuity of care, help access on-site social service support, and provide referrals and information about AIDS clinical trials. Two of the three clinics, the Immunodeficiency Clinic and Project TRUST, treat only HIV patients; the third site, the Primary Care Center, is a general medical practice that treats a wide spectrum of medical patients including those with HIV disease. The ambulatory and inpatient care of HIV-infected patients is coordinated by the Clinical AIDS Program, which provides additional services for patients and educational programs for providers, and maintains a computerized patient database for clinical and research purposes. Many clinical trials are available to Clinical AIDS Program patients including those offered on-site by the AIDS Clinical Trials Group, funded by the National Institute of Allergy and Infectious Diseases (NIAID). Most patients are informed of the availability of clinical trials by their primary physician or nurse. These clinical staff were updated on a monthly basis regarding active AIDS clinical trials on-site and used this information (both written and verbal) to discuss trials with their patients. Patients who expressed an interest in learning more about a specific study or about clinical trials in general were referred to speak with one of the research nurses.

We contacted a convenience sample of 283 patients for this study; of these, 260 patients (92%) were enrolled and interviewed. There were no significant differences between the study respondents and the total eligible pool of patients with HIV disease at the study site ($N = 594$) in terms of gender, route of HIV acquisition, education, site of care, CD4 count, age, or payer status. However, African-American patients were significantly overrepresented ($p < .05$) among the study respondents (53.4% vs 42.1%); and the study patients were significantly more likely ($p < .05$) to have an AIDS diagnosis than the overall population of HIV patients in care at our site (55.7% vs 47.0%).

Data Sources

Eligible patients were initially approached about this study by their medical care providers or a study research assistant. If consent was obtained, they underwent a one-time face-to-face interview in their preferred language. English, Spanish, and Haitian Creole versions of the interview instrument were available, as were study interviewers fluent in each of these languages.

In the study interview, patients were asked about many aspects of their medical care experiences and level of satisfaction with the care they had been receiving for HIV disease. The interview included questions regarding participation in clinical trials, knowledge of clinical trials, and if applicable, reasons for nonparticipation in clinical trials. Patient characteristics such as race, ethnicity, country of birth, gender, payer status, and educational attainment as a proxy for socioeconomic status were also elicited during the interview.

Clinical and disease severity data, including Centers for Disease Control and Prevention (CDC) classification of the patient's HIV disease,[1] CD4 lymphocyte count, and HIV risk behavior were obtained from the BCH Clinical AIDS Program computerized database or the patient's medical record.

Outcome Variables

Our three outcomes of interest were: (1) clinical trials participation rates, (2) knowledge of clinical trials, and (3) reasons for nonparticipation in clinical trials. The first outcome, clinical trial participation, was based on patients' responses to a question that asked whether they had ever been enrolled in an HIV-related clinical research study. This question was accompanied by a simple explanation of what was meant by an HIV-related clinical research study.

The second outcome, knowledge of clinical trials, was based on four questions that endeavored to determine how much knowledge or awareness of the clinical trials program each patient had. Specifically, these asked if the patient's provider has: kept him or her informed about new treatments and experimental drugs for HIV; informed him or her about specific clinical trials in which he or she was eligible to participate; informed him or her that the research nurses were available to discuss clinical trials; and also asked if he or she had ever spoken with one of the research nurses about clinical trials.

The third outcome, reasons for nonparticipation in clinical trials, was ascertained by asking those who reported never being in a clinical trial to give their reasons for nonparticipation. The survey instrument provided the

following "reasons" for nonparticipation as options that patients could choose: (1) Not eligible, (2) Did not want to or Not interested, (3) Fear of experimentation, (4) Not given information about trials, (5) Did not have enough time, and (6) Other. Patients who chose "Other" were able to provide free text responses that best described their reason(s) for not participating. Many patients (67 of 260) provided additional reasons in this manner. These responses were categorized and, along with the five options provided, comprise the list of reasons for nonparticipation presented in the Results section. Relatively few patients provided more than one reason (27 of 260), and none of these patients gave more than two reasons.

Key Predictor Variables

The key predictor variables of interest in this study were gender, race or ethnicity, and the HIV risk factor of injection drug use. These were ascertained as detailed above in Data Sources. The CDC's hierarchical classification of HIV acquisition route for AIDS case reporting was utilized to categorize the study patients' HIV risk factors.[1,18] Thus, the injection drug use group included 3.5% of patients with both injection drug use and homosexual or bisexual risk factors. Patients categorized as injection drug users were those who had a reported route of HIV acquisition of injection drug use. Thus, these were patients with any history of injection drug use, not necessarily currently active drug users. Many of them, in fact, had been drug-free for quite some time. Race/ethnicity categories were constructed using patients' responses to the race, ethnicity, and country of birth question. Blacks born in the United States were categorized as African American; blacks born in non-Hispanic Caribbean countries (e.g., Haiti, Jamaica) were categorized as Caribbean blacks; whites, blacks, and others who identified themselves as Latino were categorized as Latinos. The "other" category consists of three patients who were Native American or of mixed racial backgrounds with Latino and African-American ancestry. Because it is likely that the influences and experiences of HIV-infected African-Americans, Latinos, and blacks born in the Caribbean may differ substantially,[8,17,19–21] we initially analyzed the responses of each race/ethnicity separately. However, because the results were similar for the subgroups of patients of color, a composite race category of "persons of color" was created by combining African Americans, Caribbean blacks, Latinos, and others, and is used throughout for reporting our results.

Other Potential Predictor Variables

Several other variables were considered potentially important predictors of participation in clinical trials. These variables included: disease severity measured in two ways—one was CDC classification of the patient's HIV stage[1] at the time of interview and the other was CD4 count determination obtained closest to the date of interview; clinic type categorized as HIV-only or general medicine clinic; medical insurance (payer) status and type; patient age; and educational attainment as a proxy for socioeconomic status. We have previously found educational attainment to be more useful than income as a measure of socioeconomic status in AIDS patients.[22] All of these variables were chosen because they were perceived either as important confounders of race or gender or as potential independent predictors of successful recruitment into AIDS clinical trials.

Statistical Analysis

The statistical analysis focused on the three outcomes of interest. The first outcome, clinical trials participation, was examined initially by calculating the unadjusted rates of participation overall and stratified by the three predictor variables: gender, race/ethnicity, and HIV risk factor (injection drug use vs other). We assessed the association between the trials participation rate and each of these three predictor variables using the χ^2 test. We then performed multiple logistic regression with nonparticipation in trials as the dependent variable, to adjust for important patient characteristics, and to identify which of the key predictors and other predictor variables were significantly associated with nonpartipation in trials. The independent variables in this logistic regression model were the three key predictor variables, gender, race/ethnicity, and HIV risk factor, and these other predictor variables: disease severity, clinic type, age, and educational attainment. These variables were chosen for inclusion in the logistic regression models because they had a p value = .15 or less in the univariate analysis. Two separate logistic regressions were performed, one using HIV diagnosis (AIDS vs not AIDS) as the disease severity measure, and one using CD4 count as the disease severity measure.

The second outcome of interest was patients' knowledge of clinical trials. For each of these items, we determined the frequencies overall, and the frequencies and percentage responding affirmatively stratified by the three predictor variables of interest: gender, race/ethnicity, and HIV risk factor. We then assessed the associations between each of these knowledge-related items and the three key predictor variables using the χ^2 test.

The final outcome of interest was patients' reasons for nonparticipation in clinical trials. This outcome was examined by determining the frequencies with which each reason for nonparticipation was cited overall; we then assessed the associations between each reason for nonparticipation in clinical trials and the three predictor variables using the χ^2 test.

RESULTS

The demographic characteristics of the study patients are displayed in Table 1. The 260 study patients

Table 1. Patient Demographics (*n* = 260)

Characteristics	*n*	%
Gender		
Male	186	71.5
Female	74	28.5
Race/ethnicity		
African American	107	41.1
Latino	33	12.7
Caribbean black	32	12.3
White	85	32.7
Other	3	1.2
Age		
21–34	92	35.4
35–49	150	57.7
50 and above	18	6.9
Education		
High school and graduation or less	159	61.2
Some college or more	101	38.8
Payer status		
Medicaid	125	49.0
Uninsured	80	31.4
Medicare	34	13.3
Private/HMO	16	6.3
HIV risk factor		
Injection drug use*	138	53.1
Heterosexual contact	69	26.5
Homosexual/bisexual contact*	51	19.6
Blood product recipient	2	0.8
AIDS		
Yes	136	55.7
No	108	44.3
CD4 count		
>500	31	12.3
500–201	101	39.9
200–101	43	17.0
≤100	78	30.8
Type of clinic		
HIV only	200	76.9
General medicine	60	23.1

**Patients with both injection drug use and homosexual/bisexual risk factors (*n* = 9) were grouped with the injection drug use risk factor patients.*

*Data was not available for entire cohort for several characteristics: Payer status (*n* = 255); AIDS (*n* = 244), and CD4 count (*n* = 253).*

were diverse in terms of gender, race/ethnicity, educational attainment, payer status, and age. About half of the cohort (53.1%) had injection drug use as their primary HIV risk factor. This group also included 3.5% of patients with both injection drug use and homosexual/bisexual risk factors. More than half of the study patients (55.7%) had CDC-defined AIDS at the time of enrollment. The study patients had a wide range of CD4 counts: the vast majority (87.7%) had CD4 counts of 500 or less, including many (30.8%) with counts of 100 or less. Consistent with their relatively high level of severity, most of the patients were followed in one of the two HIV-only clinics (76.9%).

Table 2. Clinical Trial Participation Stratified by Race, Gender, Injection Drug Use, and Disease Severity*

Characteristics	% (*n*)	*p* Value	OR	95% CI
Overall	22.3 (58)			
Gender				
Male	25.8 (48)	.03†	2.23	1.06–4.68
Female	13.5 (10)			
Grouped race				
Persons of color	17.7 (31)	.01†	2.16	1.19–3.94
White	31.8 (27)			
HIV risk factor				
Injection drug use	17.4 (24)	.04†	1.83	1.02–3.32
Other	27.9 (34)			
AIDS				
Yes	27.9 (38)	.02†	2.08	1.10–3.92
No	15.7 (17)			
CD4 count				
>200	18.2 (24)	.15	1.55	0.85–2.83
≤200	25.6 (31)			

**This table shows the percentage of patients in each substratum who reported participating in a clinical trial and compares the rates within each stratum overall.*

†*Significant difference comparing substrata with stratum at* p ≤ *.05. AIDS status and CD4 count were available for only 55 of those who had participated in clinical trials.*

Participation in Clinical Trials

Overall, 22.3% of the patients reported that they had participated in a clinical trial. Participation rates varied significantly by patient gender, race/ethnicity, and HIV risk factor (Table 2). Women, patients of color, and those who had acquired HIV through injection drug use were all significantly less likely to have ever participated in a clinical trial ($p < .05$). Odds ratios for these relations ranged from 1.83 to 2.23, as shown in Table 2. Also shown in Table 2 are the clinical trials participation rates stratified by the two disease severity measures. Greater disease severity as measured by AIDS diagnosis was significantly associated ($p = .02$) with higher clinical trials participation rates. However, CD4 count was not significantly associated with a difference in clinical trials participation rates.

Multiple logistic regression was performed to control for confounding, and to determine which of our predictor variables (gender, race/ethnicity, injection drug use), if any, were independently associated with nonparticipation in clinical trials. This logistic regression identified two of our predictor variables of interest (being a person of color and having acquired HIV by injection drug use) as significantly ($p < .05$) associated with nonparticipation in clinical trials (Table 3). We tested for interaction between the two identified predictors "person of color" and "injection drug use" and the outcome of interest, and no significant interaction was identified. A second logistic regression using CD4 count (as a continuous variable) as the disease severity measure identified the same two predictor variables as significant, with similar point estimates and confidence intervals.

Table 3. Relation of Race, Gender, and Drug Use to Nonparticipation in Clinical Trials*

Characteristic	OR	95% CI
Persons of color	2.14	1.12–4.08
Injection drug use	2.09	1.08–4.04
Female	1.77	0.81–3.87

**Based on a logistic regression model adjusting for disease severity (AIDS/not AIDS), age, education, and clinic type (*n* = 244).*

Knowledge of Clinical Trials

When patients were asked about their knowledge and awareness of the clinical trials program, there was substantial variation by patient gender and race, but little difference by HIV risk factor (Table 4). As judged by patient responses, women and patients of color were significantly less likely to be kept informed about new HIV treatments and experimental drugs ($p < .05$), and significantly less likely to be informed about clinical trials in which they were eligible to participate ($p < .05$). No significant differences were evident with regard to knowledge about access to research nurses. In contrast, injection drug users reported equal information and awareness on each of these items as persons who had acquired their HIV via other routes.

Reasons for Not Participating in Clinical Trials

The 202 patients who had never participated in a clinical trial were asked to provide one or more reasons why they had not been in a trial. Reasons cited most frequently by patients who had not participated in trials were: not informed about trials (28%), did not want to or not interested (28%), fear of experimentation (20%), and not eligible (14%). Other reasons given and the frequency with which they were cited by patients were as follows: haven't had time (13%), not sick enough (6%), side effects of experimental drugs (2%), transportation problems (1%), being screened for a trial now (1%), too sick (1%), and experimental drugs not effective (0.5%).

To examine whether reasons for nonparticipation might explain the variation in trials participation by gender, race/ethnicity, and HIV risk factor, we determined the four most commonly cited reasons stratified by these three predictor variables (Table 5). In general, there was substantial consistency from one subgroup to another in the percentage of patients citing each of these reasons for nonparticipation, and few significant differences by gender, race/ethnicity, or HIV risk factor. However, Latino patients were significantly more likely ($p < .01$) to cite "not informed" (48%) as their reason for nonparticipation in trials compared with patients of other races or ethnicities. Patients of color as a group were significantly less likely ($p < .05$) to cite ineligibility as their reason for nonparticipation. White patients were significantly less likely ($p < .05$) to cite lack of interest in trials (16%) as their reason for nonparticipation in trials compared with patients of other races or ethnicities. There were no significant differences by gender, nor were patients who were black or injection drug users significantly more likely than others to cite particular reasons for their nonparticipation.

DISCUSSION

This analysis demonstrated that persons of color and injection drug users were significantly less likely to participate in clinical trials than others with HIV, despite having on-site access to trials; these results persisted even after controlling for potential confounders. In addition, our unadjusted analysis found that women with HIV were also less likely to enroll in clinical trials. This is probably explained in part by the fact that most women with HIV are from communities of color, and many are

Table 4. Knowledge of Clinical Trials Program*

Characteristics	Kept Informed of New Treatments & Experimental Drugs % (*n*)	Told of Clinical Trials for Which He/She Is Eligible % (*n*)	Aware That Research Nurses Available to Discuss Clinical Trials % (*n*)	Spoken with Research Nurse About Clinical Trials % (*n*)
Overall	76.5 (199)	73.8 (192)	60.8 (158)	34.2 (89)
Gender				
Male	79.0 (147)†	77.4 (144)†	62.9 (117)	37.1 (112)
Female	70.3 (52)	64.9 (48)	55.4 (41)	27.0 (20)
Grouped race				
Persons of color	72.0 (126)†	69.1 (121)†	57.1 (100)	31.4 (55)
White	85.9 (73)	83.5 (71)	68.2 (58)	40.0 (34)
HIV risk factor				
Injection drug use	79.7 (110)	76.8 (106)	63.0 (87)	35.5 (49)
Other	73.3 (88)	70.8 (85)	58.3 (70)	32.5 (39)

**Represents the percentage and number of patients who responded affirmatively to each of these four questions.*
†*Significant difference between responses given comparing substrata with the specific stratum at* $p < .05$.

Table 5. Most Commonly Cited Reasons for Nonparticipation in Clinical Trials Stratified by Race, Gender, and Injection Drug Use

Characteristics	Not Informed % (*n*)	Didn't Want to/ No Interest % (*n*)	Fear of Experimentation % (*n*)	Not Eligible % (*n*)
Overall	28 (56)	28 (56)	20 (41)	14 (29)
Gender				
Male	26.8 (37)	26.8 (37)	20.3 (28)	15.2 (21)
Female	29.7 (19)	28.1 (18)	20.3 (13)	10.9 (7)
Grouped race				
Persons of color	28.5 (41)	31.9 (46)*	18.8 (27)	10.4 (15)*
White	25.9 (15)	16.4 (9)	24.1 (14)	22.4 (13)
HIV risk factor				
Injection drug use	29.8 (34)	23.7 (27)	21.9 (25)	14.0 (16)
Other	25.0 (22)	31.8 (28)	18.2 (16)	13.6 (12)

**Significant difference compared with other substrata within the specific stratum at* $p < .05$.

also injection drug users.[2–5] The reasons cited by persons of color and injection drug users for their nonparticipation did not differ dramatically from those cited by nonparticipants of other races or risk groups. However, three important differences in reasons for nonparticipation were identified: nearly half of all Latino patients who did not participate in trials stated that it was because they had not been informed; and patients of color were less than half as likely to cite ineligibility as their reason for not participating, and twice as likely to cite a lack of interest in trials as their reason for not participating compared with whites.

Interestingly, when patients were asked about their knowledge and awareness of the AIDS Clinical Trials Program, a significantly lower percentage of women and persons of color reported having been informed of clinical trials for which they were eligible to participate compared with other patients. At first, this would appear to conflict with the finding that these groups were no more likely than others to cite "not informed" as their reason for not participating in trials. In fact, we do not believe these are conflicting data; rather, we believe these findings suggest that although persons of color were apparently less likely to be informed about trials, they did not perceive this lack of information to be an important determinant of their decision regarding trial participation. However, even if patients do not perceive the failure to provide them with information about clinical trials to be important, it should be recognized by research personnel and clinical providers as a major cause for concern.

A number of important steps have already been taken to increase the participation in AIDS Clinical Trials of underrepresented groups, such as persons of color, women, and injection drug users, after early studies left unanswered questions about the effectiveness of AZT, due to lack of adequate representation of these subpopulations.[10,14,15] These steps have included the funding of outreach programs in certain sites for minority, female, and pediatric patients; the requirement that ACTUs develop community advisory boards; the establishment of a collaborative relationship with the National Institute on Drug Abuse to reach and increase the number of injection drug users participating in AIDS Clinical Trials; and the establishment of a NIAID-funded community-based clinical trials program, the Community Programs for Clinical Research on AIDS, whose objective is to recruit previously underrepresented HIV-infected patients into clinical trials.[6,8] And, in a step that affects all clinical trials, not only HIV-related trials, the FDA reversed its long-standing policy excluding women with "childbearing potential" from early phases of clinical trials.[15]

The data presented here suggest, however, that these types of efforts alone may not be enough. Even in the face of access to trials on-site, patients of color and injection drug users disproportionately choose not to participate. We were surprised that patients of color, particularly African Americans, were not more likely to cite fear of experimentation than others as their reason for not participating in trials, given the legacy of abuses in the Tuskegee Syphilis Trial.[8,10,16,17,23] A possible explanation for this finding is that nearly all of the patients in this study were economically disadvantaged, which may make them more likely to identify with the experience of the Tuskegee Trial, and more likely to hold suspicions about clinical research independent of their race.[24,25] Although some patients of color in this study did admit to fears about experimentation, more cited a general lack of interest in trials. Both of these reasons reflect a lack of information about clinical research. In fact, our data suggest that providers are much less likely to inform patients of color about the clinical trials programs and its resources. Patients who know or understand little about clinical research are less likely to seek out studies and more likely to remain unaware of potential benefits and suspicious about potential harm.

Special efforts may be needed to educate patients from these communities about current clinical research

practices, while acknowledging the historical tragedy of past abuse of research subjects, particularly in the Tuskegee Syphilis Trial.[8,10,17,23–25] Difficulties recruiting patients of color into clinical studies focusing on other diseases are frequently reported[8,16,17,24–28]; thus, the development of effective educational approaches and materials about clinical trials for patients of color would have benefits that extend beyond the boundaries of AIDS care. Providers must be educated about the need to discuss clinical trials with patients who do not ask about them spontaneously, and taught culturally competent ways to do so with patients from diverse backgrounds. Finally, AIDS clinical research programs need to incorporate structures that make it possible to accomplish this even when the patient is not fluent in English.[20,29,30] This particularly relates to Latinos and to patients of color whose first language may not be English. The fact that language differences were probably a major cause of decreased access to trials in our cohort is reflected by the fact that 48% of Latinos cited lack of information as the reason for their nonparticipation. Thus, any educational materials developed regarding HIV clinical trials ideally should be available in the patient's primary language to truly minimize this type of access barrier. With HIV/AIDS incidence rates rising so rapidly among Latinos, it is imperative that efforts like these be taken seriously.[30]

In the current study, women tended to perceive themselves as underinformed abut AIDS clinical trials. They were also less likely to participate in trials than were men in our cohort; this was particularly true of those women who were from communities of color or who acquired HIV via injection drug use. There has been recent widespread discussion of the inadequacy of the long-term practice of studying disease epidemiology and treatment in men and extrapolating to and treating women on this basis.[13,15,31–34] The National Institutes of Health Office of Research on Women's Health was recently created to help bring about change in this regard.[32–34] Several important women's health studies, such as the Women's Health Initiative, have also been funded in response to these concerns.[32–35] It is likely that clinical AIDS research will reap the benefits of enhanced recruitment of women owing to policy changes and heightened public awareness as a result of the momentum that has been created.[15]

This study addresses primarily recruitment and enrollment issues among groups that have historically been underrepresented in clinical trials. However, adherence, compliance, and retention of some of these patients once enrolled, particularly injection drug users, may be the greater concern for many clinical researchers. This is an important concern when patients are actively continuing to use drugs. However, many patients who have acquired HIV disease by injection drug use are in treatment for their addiction, and others have been drug-free for extended periods. These patients are often compliant with HIV medical care and can be expected to have similarly high compliance and adherence rates in AIDS clinical trials.[9,36–41] Thus, selecting only those injection drug users who are engaged in ongoing primary care and drug treatment, and demonstrate compliance in these settings, may be helpful in identifying those individuals with a drug use history who are most appropriate for AIDS clinical trials.[9,41]

These findings have importance for physicians involved in the care of patients with HIV disease, those who will read and evaluate the results of AIDS clinical trials for application to their own clinical practice and those involved in the design and conduct of these trials. These data should demonstrate to clinical providers the need to educate all of their HIV/AIDS patients about clinical trials while informing them about how to access such trials. Furthermore, these results demonstrate to the readers and users of AIDS clinical trials results the importance of reviewing who the participants of a trial were, before assuming the results are generalizable to their own patient population. AIDS clinical trials need to include adequate numbers of persons of color and those who have acquired HIV via injection drug use, in order to provide necessary information about the efficacy and adverse effects of study medications in these groups. This type of information will be essential to the clinical use of these medications in many practices, as a majority of individuals newly diagnosed with AIDS currently are persons of color, injection drug users, or both.[4]

This study has several limitations. It was performed in a single public hospital, which may limit its generalizability to other types of settings in other regions. However, the diversity of the patients included in our study sample is similar to that of patient populations of many hospitals in the country that serve HIV-infected patients of color. In addition, it was a relatively small study and may have failed to detect important differences. Further, we did not validate patients' self-reports of clinical trial participation. However, the data reported here are consistent with the enrollment data of the BCH ACTU. Of note, the ACTU based at our site has consistently had participation by large numbers of women, patients of color, and drug users. Nonetheless, as shown here, their relative participation rates are lower than expected, based on their representation in the HIV/AIDS clinical program.

In summary, this study demonstrated that patients of color, injection drug users, and also women with HIV disease were significantly less likely to participate in clinical trials despite having access to trials on-site, at least in part due to a lack of awareness and information about clinical trials. In particular, nearly half of all Latino nonparticipants reported that it was because they had not been informed. Furthermore, the percentage of these underrepresented patients reporting unfavorable opinions of clinical research, citing either fear of experimentation or general disinterest, was high, and also may explain their differential participation rates. Therefore, efforts that go beyond the placement of ACTUs in sites that disproportionately serve these patients are indicated. Educational interventions for both patients and providers will be nec-

essary to improve the participation of patients of color, drug users, and women in AIDS clinical trials.

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