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Attitudes About Combination HIV Therapies: The Next Generation of Gay Men at Risk

Beryl A. Koblin, Thomas Perdue, Leigh Ren, Hanne Thiede, Vincent Guilin, Duncan A. MacKellar, Linda A. Valleroy, and Lucia V. Torian

ABSTRACT *This study examined awareness of and attitudes about highly active antiretroviral therapies (HAARTs) among adolescent and young men who have sex with men (MSM). As part of the multisite Young Men's Survey, 813 MSM aged 15–22 years who attended public venues in two cities were questioned about HAART in 1997–1998. Overall, 45.1% had heard of HAART, 61.6% in Seattle, Washington, and 35.0% in New York City. MSM in New York City who were the youngest, men of color, men who were human immunodeficiency virus (HIV) antibody negative, and men who resided in New Jersey were significantly less likely to be aware of HAART. Attitudes about HAART were not associated with sexual risk behaviors. Prevention efforts among young MSM should focus on other determinants of risk, but also include information on the changing nature of HIV therapies.*

KEYWORDS *Gay men, HIV treatment, Sexual behaviors.*

Important advances have been made in the treatment of persons with human immunodeficiency virus type 1 (HIV-1) infection. Significant declines in both HIV-related morbidity and mortality have been well documented, attributed to the introduction of highly active antiretroviral therapy (HAART).[1–3] These advances were accompanied by considerable media coverage about the successes of HAART, leading to speculation that HIV can be eradicated from the body; thus, HIV would become a curable disease.[4]

A number of reports indicated that, among men who have sex with men (MSM), advances in treatment have been associated with reduced concerns about becoming infected, severity of HIV disease, and the need to maintain safer sex practices.[5–9] Furthermore, increases in the occurrence of HIV sexual risk behaviors, sexually transmitted diseases (STDs), and incidence of HIV infection have been noted since the introduction of HAART.[10–17] However, few data are available on the attitudes of adolescent and young MSM and young minority MSM toward HAART since MSM populations surveyed thus far were predominantly white and in their 30s.

Dr. Koblin, Mr. Ren, and Mr. Guilin are with the New York Blood Center, New York City; Mr. Perdue and Dr. Thiede are with Public Health—Seattle and King County, Seattle, Washington; Mr. MacKellar and Dr. Valleroy are with the Centers for Disease Control and Prevention, Atlanta, Georgia; and Dr. Torian is with the New York City Department of Health.

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Correspondence and reprints: Beryl A. Koblin, PhD, Laboratory of Epidemiology, The New York Blood Center, 310 East 67th Street, New York, NY 10021. (E-mail: bkoblin@nybc.org)

This analysis presents the awareness of and attitudes about treatment advances in a diverse group of adolescent and young MSM in the time period just after HAART was adopted as a standard of care.[18–21] These subgroups of MSM are of particular concern given reports of high levels of unprotected sex and HIV infection.[18,21] Furthermore, this time was accompanied by extensive media coverage of the effects of the new treatments,[4] and we expected that the attitudes of young MSM about HAART would be forming. These data may help to prepare the prevention field about reactions to future announcements about HIV treatment advancements.

METHODS

Study Subjects and Data Collection

Subjects were from a multisite, anonymous, cross-sectional study of HIV seroprevalence and risk behaviors among young MSM, aged 15–22 years, who attended public venues in seven urban areas.[22] The data included in these analyses were from the New York City and Seattle, Wash., sites and were collected[18–20] from October 1997 to October 1998.

As previously described,[20,22] potential recruitment venues were identified by a community assessment process, and venues frequented by young MSM were included in a sampling frame that was updated on a monthly basis.[18] Each month, venues and their associated high-attendance periods were randomly selected. Potential participants were systematically approached at the selected venues, and enrollment was offered to those who were eligible. Eligibility criteria were age (15–22 years) and residence (New York City metropolitan area or Seattle–King County).

After informed consent was obtained in the study van, a standardized interview was administered by a trained interviewer. The interview included items on sociodemographics, sexual and drug use behaviors, HIV testing history, and psychosocial factors relating to risk. Participants also were asked whether they had heard of HAART, phrased as "new treatments for HIV or AIDS, cocktail or protease inhibitors." Those responding affirmatively were asked to respond to six attitude items using a four-item Likert scale, from "strongly disagree" to "strongly agree." The statements were: "The new treatments are a cure for AIDS"; "With the news about new treatments, I am less concerned about becoming infected with HIV or the seriousness of HIV infection"; "Persons with undetectable virus or a low viral load are probably not infectious"; "Persons taking the new treatments are probably not infectious"; "If my partner is taking the new treatment, it is okay for me to have unprotected anal sex with him"; and "If my partner has undetectable virus or a low viral load, it is okay for me to have unprotected anal sex with him." The entire questionnaire was piloted in the target population prior to study initiation. Spanish-speaking staff were available at the New York City site, as needed.

Following the interview, pretest counseling was delivered, and a blood specimen was drawn for testing for HIV antibody. Test results were offered 10–14 days following the interview. Participants were referred for social and health services as needed.

Statistical Analysis

The statistical analysis was restricted to men who reported having at least one male partner in the previous 6 months. Participant characteristics in the two cities were compared. For each attitude item, the percentage of men agreeing or strongly agreeing was calculated.

The magnitude of associations (odds ratios and 95% confidence intervals) between participant characteristics and awareness of HAART were calculated. The participant characteristics included demographics (age, race/ethnicity), lifetime history of an STD, sexual identity, and area of residence (New York City only). Sexual risk behaviors in the previous 6 months included sex with anyone who had AIDS (acquired immunodeficiency syndrome) or was HIV antibody positive, number of male partners, and unprotected anal sex. More detailed analyses of sexual behaviors were conducted to examine unprotected receptive and insertive anal sex with exchange and casual and steady partners. However, a summary variable, unprotected anal sex, was used. In addition, the analysis included HIV antibody status, defined as antibody negative, antibody positive and already knew it prior to testing by the study, or antibody positive and did not know it prior to testing by the study.

Finally, participants were asked to describe how "out" they currently were about having sex with men; responses were based on a 7-point scale, from "not out to anyone" to "out to everyone." Variables determined significantly associated ($P < .05$) with awareness of HAART were included in a multiple logistic regression model.

To assess the impact of each attitude on sexual risk, we examined associations between each attitude and the following measures of recent (last 6 months) sexual risk: 10 or more male partners, unprotected insertive anal sex, unprotected receptive anal sex, and any unprotected anal sex. Chi-square or exact tests were utilized. Because of small numbers, multivariate analyses were not conducted.

RESULTS

Of the 541 men enrolled in New York City who ever had sex with men, 497 reported sex with at least one male partner in the previous 6 months. In Seattle, 365 men who had sex with men were enrolled, and 316 reported sex with at least one male partner in the previous 6 months. Demographic and behavioral data are presented by site in Table 1. The men enrolled were at high risk of HIV infection: 35.5% reported having unprotected receptive anal sex in the last 6 months, 32.5% reported unprotected insertive anal sex, 16.0% had ever had an STD, and 8.6% were already HIV antibody positive. Compared to Seattle participants, New York City participants were younger and more likely to be men of color, to be out to less than half of the people they knew, and to be HIV antibody positive. New York City participants were less likely to report having an HIV antibody positive sex partner in the last 6 months.

Overall, 45.1% of participants had heard of HAART, although those enrolled in Seattle were significantly more likely to have heard about HAART (61.6%) compared to those enrolled in New York City (35.0%) ($P = .001$). However, the geographic differences were only apparent among men of color (31.1% in New York City vs. 54.9% in Seattle; $P = .001$).

In univariate analyses of the New York City data, men who were younger, men of color, men who were HIV antibody negative, and men who resided in Brooklyn, Bronx, or New Jersey were significantly less likely to have heard about HAART. Also, men who had 10 or more male partners, an HIV antibody positive partner, or identified as being gay were significantly more likely to have heard of HAART (Table 2). In multivariate analyses, men who were the youngest, men of color, men who were HIV antibody negative, and men who resided in New Jersey remained

TABLE 1. Characteristics of study population, Young Men's Survey—New York City and Seattle, Washington, 1997–1998 (n = 816)

Characteristic	New York City (n = 497), %	Seattle (n = 316), %	*P*
Age, years			
15–18	38.6	28.8	.004
19–22	61.4	71.2	
Race/ethnicity			
Asian/Pacific Islander	1.8	7.6	.001*
Black	24.3	8.5	
Latino	41.6	3.5	
White	11.9	63.6	
Mixed race	15.9	13.3	
Caribbean/West Indian	3.8	0.0	
Native American	1.0	1.6	
Other	0.0	1.9	
Educational level			
≤High school/tech/vocational training	67.4	61.4	.07
Some college	29.0	32.0	
≥College graduate	3.6	6.6	
In past 6 months:			
Median number of male partners	3	2–3	.90
One or more partner who was HIV antibody positive	4.6	8.9	.02
Unprotected receptive anal sex	35.4	35.8	.92
Unprotective insertive anal sex	31.0	34.8	.26
Ever had a sexually transmitted disease	16.7	14.9	.49
"Out" aboute sexuality to less than half of the people they know	23.1	16.2	.02
HIV antibody positive	12.6	2.6	.001

*Comparing first five categories.

significantly less likely to be aware of HAART (Table 2). In Seattle, no factors were significantly associated with awareness of new treatments (data not shown).

Of the 364 men who had heard about HAART, 9.7% agreed with the statement that the new treatments are a cure for AIDS; 9.2% agreed that, with the news about new treatments, they were less concerned about becoming infected or the seriousness of HIV infection. Few men endorsed that persons were probably not infectious if they had low viral loads (5.8%) or were on new treatments (4.7%). Very few men endorsed the statements that it was okay to have unprotected sex with someone on new treatments (0.8%) or with someone with a low viral load (0.6%).

Table 3 presents the association of four of the attitudes with age, race/ethnicity, and several measures of sexual risk. The other two attitudes were not included because they were endorsed by only a few participants. Younger men and men of color were significantly more likely to agree with three of the four statements. Only one significant association was found with sexual risk: Those with less concern about becoming infected or the seriousness of HIV infection were more likely to

TABLE 2. Unadjusted and adjusted analyses of awareness of highly active antiretroviral therapy (HAART), Young Men's Survey—New York City (n = 497)

Characteristic	% aware*	OR (95% CI)†	
		Unadjusted	Adjusted
Age, years			
15–18	25.0	0.47 (0.32–0.70)	0.59 (0.37–0.92)
19–22	41.3	1.00	1.00
Race/ethnicity			
White	64.4	1.00	1.00
Black	33.1	0.27 (0.14–0.53)	0.28 (0.13–0.58)
Latino	30.4	0.24 (0.13–0.45)	0.21 (0.10–0.41)
Other	30.0	0.24 (0.12–0.46)	0.21 (0.10–0.45)
HIV antibody status			
Positive, knew it	76.9	1.00	1.00
Positive, did not know	48.9	0.29 (0.07–1.18)	0.36 (0.08–1.60)
Negative	32.1	0.14 (0.04–0.52)	0.18 (0.05–0.71)
Male partners in last 6 months			
1–9	33.3	1.00	1.00
10+	46.3	1.73 (1.03–2.91)	1.28 (0.68–2.40)
HIV antibody-positive male partner in last 6 months			
No/don't know	34.0	1.00	1.00
Yes	56.5	2.52 (1.08–5.87)	1.81 (0.64–5.14)
Unprotected anal sex in last 6 months			
No	33.6	1.00	NC
Yes	36.7	1.15 (0.79–1.66)	
Ever had a sexually transmitted disease			
No	34.6	1.00	NC
Yes	37.4	1.12 (0.69–1.84)	
"Out" about sexuality			
To less than half of people they know	27.8	1.00	NC
To half or more of the people they know	37.2	1.54 (0.97–2.43)	
Sexual identity			
Bisexual	25.7	1.00	1.00
Gay	39.6	1.89 (1.23–2.93)	1.54 (0.96–2.47)
Residence			
Manhattan	45.0	1.00	1.00
Queens	41.8	0.88 (0.49–1.56)	0.92 (0.48–1.77)
Other New York state	39.3	0.79 (0.34–1.83)	0.93 (0.38–2.31)
Bronx	29.6	0.51 (0.29–0.90)	0.67 (0.35–1.29)
Brooklyn	29.4	0.51 (0.29–0.88)	0.71 (0.38–1.32)
New Jersey	23.8	0.38 (0.19–0.76)	0.42 (0.19–0.91)

OR, odds ratio; CI, confidence interval; NC, not included in multiple regression.
*Aware of HAART.

TABLE 3. Association of attitudes about highly active antiretroviral therapy (HAART) with age, race/ethnicity, and HIV sexual risk behaviors in last 6 months, Young Men's Survey—New York City and Seattle, Washington, 1997–1998 (n = 364)

	Race/ ethnicity, %		Age (years), %		10+ partners, %		Unprotected insertive anal, %		Unprotected receptive anal, %		Unprotected anal sex, %	
Attitudes*	W*	MOC*	15–18	19–22	No	Yes	No	Yes	No	Yes	No	Yes
The new treatments are a cure for AIDS	6.7	12.3†	14.9	7.9†	9.6	10.3	11.7	5.8	10.6	8.1	10.9	8.3
Persons taking the new treatments are probably not infectious	1.8	7.2†	7.6	3.7†	5.0	3.4	5.0	4.1	5.5	3.2	6.3	2.9
Persons with undetectable virus or a low viral load are probably not infectious	3.6	7.7†	10.8	4.1†	5.6	6.8	7.1	3.3	5.6	6.3	4.7	6.8
With the news about new treatments, I am less concerned about becoming infected with HIV or seriousness of HIV infection	8.4	9.8	9.6	9.0	7.3	19.0†	9.2	9.2	10.3	7.1	10.5	7.6

W, white; MOC, men of color.

*Agree or strongly agree with statement.

†$P < .05$.

report 10 or more male partners in the previous 6 months. This association held for men of color and those aged 19 to 22 years (data not shown). No other significant differences between attitudes and sexual risk were observed when the analysis was restricted to HIV antibody negative men or stratified by age or race/ethnicity (data not shown).

DISCUSSION

To our knowledge, this is the first study to examine awareness of and attitudes about HAART among such a young and ethnically diverse population of young men who recently had sex with men. Examination of this issue among young MSM is of particular interest given the concern about the high prevalence of HIV infection found in this population.[18,20]

The results of this study suggest that HIV risk among this population of adolescents and young men who have sex with men was not significantly associated with awareness of HAART. Over half of these young men were not even aware of new treatments. Furthermore, of those who were aware, those men agreeing with statements reflective of less concern about the severity of HIV and the potential infectiousness of persons on treatment were not significantly more likely to report HIV risk behaviors compared to men who did not agree with any of these statements. These findings are supported by a few studies among older gay men.[23,24]

In contrast, in general, studies among older, white gay men have found an association of HIV risk behaviors with attitudes about HAART and changes in incidence of STDs and HIV corresponding to the introduction of these new therapies. Some differences have been noted between men who are HIV infected and uninfected.[5–17]

This study, however, has identified areas in need of more research and prevention efforts. Whereas no geographic differences in awareness of HAART were found among young white men, the young men of color in Seattle were much more likely to be aware of new treatments compared to New York City young men of color. Seattle is a smaller city than New York City, and information about HAART may have been more accessible in the early years of new treatments. In New York City, young men who are more marginalized may have had less access to such information. Among the New York City men, the youngest men, men of color, those HIV antibody negative, and those living outside the New York City area were less likely to be aware of new treatments. This study also found that adolescent men and young men of color were more likely to agree with the attitudes. These findings suggest that better understanding is needed about the lack of awareness about HAART and potential impact of misinformation about HAART within certain subpopulations of young MSM.

The study had several limitations. First, if this survey were conducted today, a higher percentage of young MSM may be aware of HAART. Second, the questions about attitudes toward new treatments were not directly linked to behaviors and were not asked in the context of receiving treatment. Thus, these are attitudes, rather than direct behaviors in response to treatment. Furthermore, due to the cross-sectional nature of the study, we cannot determine the direction of effect. That is, are new treatments causing increases in risk behaviors for a subgroup of young MSM, or are the new treatments a justification for those already engaging in sexual risk? Third, the questions were administered by an interviewer; thus, some participants may have been reluctant to endorse views considered socially undesir-

able. The use of other modes of questionnaire administration, such as audio computer-assisted self-interviews, might have helped with this potential bias.[25] The results also provide limited opportunities for generalization because the study sample was not representative of all young MSM in New York City and Seattle, although a large percentage of young men attend public venues, and attempts were made to identify all venues attended by young men.[20]

Finally, there have been several important changes in our knowledge about HAART since these data were collected. Several recent studies indicated that HIV transmission rates may be lower among persons on HAART.[26] Therefore, agreement with the statements that persons with undetectable virus or low viral load or taking the new treatments are probably not infectious might indicate that the respondents were well informed. On the other hand, recent data indicate that, despite prolonged treatment and undetectable viral loads, there can be persistence of a latent reservoir of HIV, ongoing viral replication, and virus in semen and anorectal mucosa.[27–30]

HIV prevention interventions have focused on numerous aspects, including knowing personal HIV antibody status, reviewing personal HIV risk behaviors, learning about communication strategies with partners, and examining the role of alcohol and drug use and other triggers for unsafe behavior.[31] This study suggests that HIV risk was not significantly associated with awareness of or attitudes about HAART in this sample of adolescent and young MSM, and prevention efforts for adolescent and young MSM should focus on other determinants of risk. However, new information about HAART and its advantages and limitations has a role in counseling protocols and educational campaigns. These discussions need to happen in a wide range of settings to reach the variety of subcultures within young populations.

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