6-1-1998

Impact of HIV Counseling and Testing on HIV-Infected Men who have Sex with Men: The South Beach Health Survey

William W. Darrow
Florida International University, darroww@servax.fiu.edu

Robert D. Webster
Florida International University

Steven P. Kurtz
Nova Southeastern University, steven.kurtz@nova.edu

Abraham K. Buckley
Florida International University

Kesuri I. Patel
Florida International University

See next page for additional authors

Author(s)

William W. Darrow, Robert D. Webster, Steven P. Kurtz, Abraham K. Buckley, Kesuri I. Patel, and Robert R. Stempel

Impact of HIV Counseling and Testing on HIV-Infected Men Who Have Sex with Men: The South Beach Health Survey

William W. Darrow,[1,2,3] Robert D. Webster,[1] Steven P. Kurtz,[2] Abraham K. Buckley,[1] Kesuri I. Patel,[1] and Robert R. Stempel[1]

The impact of HIV counseling and testing on sexual risk-taking and related behaviors reported by HIV-infected men who have sex with men (MSM) was examined in a cross-sectional study conducted among a representative sample of residents living in a resort area. Participants provided specimens of oral mucosal transudate for HIV-antibody testing, were interviewed in their homes, and completed a self-administered questionnaire. Specimens were tested by modified ELISA and, if repeatedly positive, confirmed by Western blot. Of 205 men enrolled, 51 (24.9%) tested positive for antibody to HIV. All 51 had been counseled and tested for antibody to HIV-1 (median = 4 tests); 37 (74%) of 50 reported that their most recent test was positive. Twenty (39.2%) said they had engaged in unprotected insertive anal intercourse in the past year; 15 (29.4%) engaged in unprotected insertive anal intercourse with partners who may have been susceptible to HIV infection. Men who reported that their last HIV-antibody test was positive were three times more likely to have engaged in unprotected insertive anal intercourse in the past year (45.9%) as those who did not know they were infected with HIV (15.4%). Counseling and testing is ineffective as a measure for promoting behavior change among HIV-positive MSM in South Beach. More effective social and behavioral interventions must be developed, implemented, and evaluated.

KEY WORDS: HIV testing and counseling; HIV prevention; impact evaluation; homosexual men; sexual behavior.

INTRODUCTION

Shortly after a serologic test was developed and approved in 1985 to test for antibody to human immunodeficiency virus type-1 (HIV-1) in the United States, the Public Health Service (PHS) announced a national strategy to prevent HIV-1 transmission (Coolfont Report, 1986). The strategy contained three interrelated components: counseling and testing, referral for case management, and partner notification (CTRPN). Americans who might have been exposed to the virus that causes AIDS were encouraged to seek counseling and testing (C&T) to determine their HIV-antibody status (Centers for Disease Control, 1986).

Pretest counseling was designed to educate individuals about the course of HIV disease, inform them of the advantages and limitations of the blood test, and help them make an informed decision about taking the test. Posttest counseling was designed to give people who decided to take the test their results, describe implications of test results for the health of individuals and safety of others, and assist those in need to obtain follow-up services. Together, pretest and posttest counseling intended to start individuals at risk of HIV infection—or infected with the AIDS vi-

[1]Department of Public Health, Florida International University, Miami, Florida.

[2]Department of Sociology and Anthropology, Florida International University, Miami, Florida.

[3]Correspondence should be directed to William W. Darrow, Department of Public Health, Florida International University, 3000 N.E. 151st Street, ACI-394F, North Miami, Florida 33181-3600 (e-mail: DARROWW@SERVAX.FIU.EDU).

rus—on a path to behavior change (Centers for Disease Control, 1987).

Evaluations of C&T as a method of initiating behavior change have failed to demonstrate that it has produced a significant and beneficial effect on sexual or prophylactic behaviors (Phillips and Coates, 1995). One study conducted in a Miami public health clinic by Centers for Disease Control and Prevention (CDC) and State of Florida epidemiologists suggested that C&T had a deleterious effect on sexually transmitted disease (STD) incidence by reinforcing risky behaviors among those who were told they were HIV-antibody-negative (Otten *et al.*, 1993). In 1994 an External Review Committee concluded that CTRPN was ineffective in changing behaviors among persons at risk and recommended that CDC develop more effective social and behavioral interventions to reduce sexual risk-taking (CDC Advisory Committee, 1994).

Although C&T has been discredited as a method of behavior change, CDC continues to support C&T through grants as high as $124,000,000 each year to state and local health departments to find new cases of HIV disease and refer HIV-infected individuals for medical assessment (Doll and Kennedy, 1994). CDC argues that such expenditures are justified for three reasons: (1) surveillance to define more precisely the extent of the problem of HIV disease and national needs for medical care, (2) biomedical intervention to identify individuals as soon as possible after HIV infection so they can benefit from immediate medical attention, and (3) partner notification to warn others of their possible risk of HIV infection. Disadvantages of this strategy include: (1) early biomedical interventions may benefit HIV-infected individuals by extending their quality of life (secondary prevention) and postponing death (tertiary prevention), but may hinder community efforts in stopping the spread of HIV (primary prevention), and (2) scarce resources invested in C&T cannot be used elsewhere for effective social and behavioral interventions targeted for those at greatest risk (Irwin *et al.*, 1996).

This report examines how the national prevention strategy promoted by CDC (CTRPN) may be affecting decisions by HIV-infected men who have sex with men (MSM) to have unprotected sexual activities that could transmit the virus that causes AIDS. MSM are of particular interest because they have been suffering from the impact of AIDS to a greater extent than others in the United States since the epidemic was first recognized in 1981 (Lifson,

1992). Furthermore, recent reports indicate that MSM may be returning to patterns of increased risk.

Prevention efforts focused on MSM in the early 1980s. Reductions in numbers of sex partners, increases in condom use, and declines in HIV-infection rates were linked to an organized response by gay communities to the extensive problem described in the mid-1980s (Centers for Disease Control, 1991). However, more recent reports suggest a new generation of MSM is engaging in considerable sexual risk-taking (Hays *et al.*, 1990) and older men are becoming less vigilant in their safer-sex practices (Ekstrand and Coates, 1990). The major dependent variable of interest in this investigation is the sex act most likely to transmit HIV to uninfected MSM: unprotected insertive anal intercourse (UIAI). This study examines patterns of drug use and sexual risk-taking reported by HIV-infected MSM residing in a resort area and how UIAI is associated with sociodemographic characteristics, knowledge of HIV-antibody status, sexual partnerships and other lifestyle choices.

METHOD

A cross-sectional study with simple random samples of residential addresses, household units, and eligible MSM was conducted from January 20 through December 19, 1996, in a four census-tract area of Miami Beach, Florida. The area contains the "Art Deco" preservation district on the lower third of an island. Commonly known as "South Beach," it is popular as a vacation resort for homosexual (gay) men, other Americans, and international tourists. South Beach was operationally defined for our survey as census tracts 42–45 of Miami-Dade County, Florida.

Sample

A three-stage sampling scheme was developed to select a probability sample of MSM living in South Beach. First, all residential addresses listed for South Beach in the Miami-Dade County Property Appraisal Department as of January 1, 1995, were recorded; then, 20% of the addresses were selected at random for visitation. Second, field workers (mostly, graduate students) from Florida International University (FIU) visited each address, determined the number of household units, and, if four or fewer, attempted to contact a resident in each unit. If the household contained five or more units, field workers

selected 20% of listed units at random for personal contact. Third, field workers attempted to contact a resident at each selected unit to determine if anyone living there was eligible.

To avoid overrepresenting couples and under-representing roommates who were not sex partners, we decided to select eligible MSM living in the same household at random. If more than one MSM living in a household was eligible, potential participants were selected at random by asking for the day of each resident's birth. Eligible residents contacted on an odd-numbered calendar day were considered for participation if their birthday was on an odd-numbered day. Those contacted on an even-numbered calendar day were invited to participate only if their birthday fell on an even-numbered day.

Unmarried men 18 years of age and older who reported ever having had sex with a man and having been a resident of South Beach for at least 30 days constituted the population of interest for our study. For the purpose of ascertaining eligibility to participate, "ever having sex with a man" meant that the eligible participant or his male partner ejaculated while engaging in close, interpersonal sexual activities at some time during the participant's lifetime. If a male resident for at least 30 days in South Beach admitted to homosexual contact by our operational definition, that man was considered eligible for participation in our survey.

After an eligible participant was identified, study procedures were described and informed consent was sought. Consent forms, questionnaires, and other study materials were only available in English because a pilot study of gay bar and club patrons conducted 1 year earlier in South Beach by FIU students indicated that very few MSM could not read and speak English. Participation was completely anonymous. No personal identifying information was requested or recorded. Follow-up of individual participants was impossible under the conditions of this cross-sectional study.

Data Collection

MSM who gave voluntary, informed consent were interviewed for sociodemographic characteristics and current health status, alcohol and recreational drug use, and experiences with HIV testing. Patterns of geographic mobility and participation in social activities, such as attending gay bars and nightclubs, were included in a 25-item, standardized interview

guide. During the interview, participants were asked: (1) "How many times have you had the AIDS virus (HIV-antibody) test?" (2) "When was your last test for the AIDS virus?" and (3) "Where have you gone to have your blood tested for the AIDS virus (HIV)?" Personal interviews were conducted by field team members who were trained in didactic and role-playing sessions and were supervised by more experienced graduate students, staff, and faculty members. Interviews were conducted in private at the participant's place of residence in South Beach.

Participants were also asked to complete and return a 25-item, self-administered questionnaire regarding their sexual practices with primary and other partners, current HIV-infection status, and risk-related beliefs and practices. One question inquired about frequency of cruising for sex partners in public parks and other places during a typical month in the past year. Another question asked participants if they had made a commitment to never engage in unprotected anal sex. An open-ended question asked respondents to give their reasons for engaging in UIAI during the past year. Questions about HIV-antibody test results included: (1) "What was the result of your last HIV-antibody (AIDS virus) test?" (2) "If you have tested positive, when did you first learn of your positive test results?" and (3) "If positive, are you currently under medical care and/or counseling for your HIV infection, and, if so, where?"

All participants were asked to collect a specimen of oral mucosal transudate with an oral fluids collection device (Emmons et al., 1995). Specimens were stored in vials and shipped to a certified Department of Health Laboratory in Jacksonville, Florida, for HIV-1 antibody testing. Testing for HIV-1 antibody in oral fluids by modified ELISA, confirmed by Western blot, has been shown to have a high degree of sensitivity, specificity, and predictive value (Gallo et al., 1997).

Analyses and Interpretation

Analyses for this report were restricted to men who tested positive for antibody to HIV-1. Data from the interview guide, self-administered questionnaire, and laboratory report were linked by an identification number, merged into a database, and analyzed with the assistance of standard statistical programs and computer software (Norusis, 1990).

Tables were created to examine independent, intervening, and dependent variables of interest. Pear-

son chi-square tests for statistical significance and associated levels of probability (*p*) were recorded from contingency table analyses. Results of these and other analyses (such as logistic regression) are displayed in the text and tables that follow.

RESULTS

Of 205 men enrolled, 51 (24.9%) tested positive for antibody to HIV. HIV-infected men ranged in age from 23 to 49 years old (mean = 34; *SD* = 6.4) and reported annual incomes ranging from $4,000 to $120,000 (mean = $36,000; *SD* = $18,500). Twenty-seven (52.9%) considered themselves to be White and non-Hispanic. Most of the others considered themselves to be Hispanic, Latino, or of Spanish heritage. Forty-seven (92.2%) identified themselves as "homosexual" or "gay;" 3 (5.9%) as "bisexual," and 1 (2.0%) as "heterosexual" or "straight."

HIV-infected men said they had been living in South Beach from 1 month to 11.2 years (mean = 30.8 months; *SD* = 32.6) when they agreed to participate in our study. Fourteen (27.5%) of the 51 men infected with HIV had lived in South Beach for less than 1 year when we invited them to participate. Thirteen (25.5%) had resided in the area from 1 to 2 years, 9 (17.6%) from 2 to 3 years, 3 (5.9%) from

3 to 4 years, and another 3 from 4 to 5 years. Nine HIV-infected men reported living in South Beach for 5 or more years.

All 51 HIV-infected men living in South Beach had been tested for antibody to HIV at least once before enrolling in our study. Half of the sample said they had been tested four or more times (median = 4). Thirty-seven (74%) knew they were infected with HIV when they agreed to participate. Thirty-five provided dates for their earliest HIV-positive tests. For these 35 men, the average length of awareness of HIV infection was over 5 years (median = 65.8 months; range = 3.5 months to 11.9 years).

HIV-Antibody Status and Sexual Risk-Taking

Twenty (39.2%) of the 51 HIV-antibody positive men studied reported engaging in UIAI in the past 12 months. Seventeen (85.0%) of the 20 men infected with HIV who had engaged in UIAI reported that their last HIV-antibody test was positive, 2 (10.0%) said it was negative, and 1 (5.0%) did not answer the question.

Five of 20 (25.0%) who knew they were HIV-positive said they were in a mutually monogamous relationship with an HIV-infected partner and had no other sex partners (Table I). One who knew he was HIV-positive was in a relationship with an HIV-nega-

Table I. HIV-Positive Men Who Reported Unprotected Insertive Anal Intercourse in the Last Year

Respondent[a]	No. months HIV-positive	Primary partner	Insertive anal sex	Other anal partners	Insertive anal sex	Ejaculation w/o condom	Ejaculation w condom
R1	44	HIV-pos	Always	99	Usually	Usually	Sometimes
R2	101	No	—	64	Sometimes	Sometimes	Sometimes
R3	Unknown	No	—	49	Sometimes	Never	Sometimes
R4	73	No	—	34	Sometimes	Never	One partner
R5	Unknown	HIV-pos	Sometimes	29	Sometimes	Never	One partner
R6	121	HIV-neg	Always	23	Sometimes	Sometimes	Sometimes
R7	5	No	—	19	Usually	—	Sometimes
R8	Unknown	No	—	19	Sometimes	Never	Sometimes
R9	77	No	—	19	Sometimes	Never	Usually
R10	18	HIV-neg	W condom	19	Sometimes	Never	One partner
R11	Unknown	No	—	11	Sometimes	Never	Sometimes
R12	100	Unknown	No	9	Always	Never	W 4 partners
R13	143	No	—	7	Sometimes	Never	Sometimes
R14	134	No	—	4	Usually	Never	Usually
R15	87	HIV-neg	Usually	0	—	—	—
S1	97	HIV-pos	Sometimes	0	—	—	—
S2	61	HIV-pos	Sometimes	0	—	—	—
S3	5	HIV-pos	Usually	0	—	—	—
S4	4	HIV-pos	Sometimes	0	—	—	—
S5	4	HIV-pos	Sometimes	0	—	—	—

[a]Respondents were identified as engaging in risky (R1–R15) or safer UIAI (S1–S5) in the past year.

tive primary partner, sometimes inserted his penis without a condom into the rectum of his partner, but always ejaculated into a condom and reported no other partners. Of the remaining 14 MSM who engaged in UIAI with other partners, 10 said they only ejaculated while using condoms, 3 ejaculated while using condoms most or some—but not all—of the time, and 1 did not answer the question about frequency of condom use in the past year.

Sociodemographic and other characteristics of HIV-positive men who engaged in UIAI in the last

year ($n = 20$) and those who engaged in "risky" UIAI with partners who might have been susceptible to HIV infection ($n = 15$) were compared with HIV-positive men who did not engage in these behaviors. No differences were found by age group, race/ethnicity, sexual identity, geographic mobility, health status, depressive mood, or the number of persons known by the respondent to have HIV disease or AIDS (Table II). Men who reported earning less than $30,000 in 1995 were more likely than others to report engaging in UIAI in the last year ($p < .01$).

Table II. Characteristics of HIV-Positive MSM and Unprotected Insertive Anal Intercourse (UIAI) in Last Year

Characteristic	n	Any UIAI[a] (%)	p	"Risky" UIAI[b] (%)	p
Age 18–29 years old	15	40.0	.94	33.3	.69
Age 30 years and older	36	38.9		27.8	
White, non-Hispanic	27	33.3	.36	29.6	.97
Asian, Black, Hispanic, other	24	45.8		29.2	
Annual income <$30,000	16	68.8	.004	50.0	.03
Annual income ≥$30,000	34	26.5		28.6	
Homosexual or gay	47	38.3	.65	29.8	.84
Bisexual or heterosexual	4	50.0		25.0	
Moved >once in past 5 years	29	41.4	.72	31.0	.77
Moved once or not at all	22	36.4		27.3	
Health status excellent	25	40.0	.91	24.0	.41
Health status good, fair, poor	26	38.5		34.6	
Sometimes depressed	24	41.7	.74	29.2	.97
Never or rarely depressed	27	37.0		29.6	
Know 10 or more PWH/A	26	46.2	.30	38.5	.15
Know 9 or fewer PWH/A	25	32.0		20.0	
HIV-antibody tests 4 or more	27	40.7	.81	29.6	.97
HIV-antibody test 1–3 times	24	37.5		29.2	
Last HIV-antibody test: Positive	37	45.9	.047	32.4	.24
Last test negative or unknown	13	15.4		15.4	
Total	51	39.2		29.4	

[a]For each characteristic (e.g., age group), respondents who reported that they had engaged in unprotected insertive anal intercourse in the past year (e.g., 40% of 15 men aged 18–29 years old) were compared with other men who reported the same (e.g., 38.9% of 36 men aged 30 years and older).

[b]For each characteristic (e.g., age group), respondents who reported that they had engaged in unprotected insertive anal intercourse in the past year with a partner whose HIV-infection status was unknown or who was known to be HIV-negative (e.g., 33.3%) were compared with other HIV-infected men who reported they had engaged in the same behavior (e.g., 27.8%).

Those who had been tested more frequently were not any more likely to avoid insertive anal intercourse or always practice safer insertive anal sex. MSM who reported that their last HIV-antibody test was positive were three times more likely to have engaged in UIAI in the past year (45.9%) as those who did not know they were infected with HIV (15.4%; p = .047).

Alcohol Use, Drug Use, and Sexual Risk-Taking

Among HIV-infected men in South Beach, alcohol and recreational drug use in the past year was common. Forty-three (84.3%) said they had imbibed alcoholic beverages in the past year. Forty-one (80.4%) had tried at least one street drug. Over half (51.5%) had smoked marijuana; slightly less than half (49.0%) had taken a designer drug (amphetamine, ecstasy, or "special k") in the last year. Five men (9.8%) infected with HIV reported a history of injection drug use.

Frequency of attending gay bars and nightclubs, number of days drinking alcoholic beverages in the past year, and the amount of alcohol consumed during a day of drinking were not significantly associated with UIAI (Table III). Nor were marijuana or cocaine use in the past year. Use of nitrite inhalants ("poppers"), amphetamines, ecstasy, and "special k," however, was associated at the 95% level of confidence with UIAI in the last year, but only the use of inhalants was associated with UIAI among HIV-infected MSM with partners who might be susceptible to HIV-1 infection.

Removing the five men who said they were in mutually monogamous relationships with HIV-1 infected partners diminished the strength of relationships between designer drug use (ecstasy, amphetamines, and "special k") and self-reports of UIAI. To a lesser extent, transferring these five men from one category ("risky") to another ("safer") also affected the observed association between nitrite inhalant use and UIAI in the past year.

Sexual Practices and Sexual Risk-Taking

Age for first sexual experience with a male partner ranged from 5 to 27 years old (median = 15). Many of the HIV-positive men in our sample (60.8%) reported engaging in sexual activities with 100 or more male partners during their lifetimes. Almost all (94.1%) said they had engaged in oral or anal sex with at least one male partner in the last year.

The majority (58.8%) of HIV-infected men said they had visited parks, beaches, public rest rooms, bookstores, and other cruising places to meet sex partners in the last year. One out of four (27.4%) said he was high on alcohol or drugs at least half of the time while having anal sex with a man in the past year. The median number of anal sex partners in the last year was 5 (range = 0–100).

One-third of the HIV-positive men studied in South Beach said they were in a sexual relationship with a primary partner at the time of interview. Number of partners reported in the past year was associated with relationship status. Six men who said they had a "special commitment" with a primary partner reported no other partners in the past year, but, as noted above, all six reported engaging in UIAI with their primary partners.

HIV-infected men who engaged in UIAI tended to cruise public places looking for sex partners (Table IV). Those who did not had made a commitment to others to never engage in unprotected anal intercourse. When the five men who only had UIAI with primary partners who were known to be infected with HIV were eliminated from analyses, a commitment to self and commitment to others reduced sexual risk-taking. For men without primary partners, number of male partners in a lifetime and in the past year were associated with insertive anal intercourse without a condom.

Reasons given by respondents for engaging in insertive anal intercourse without a condom were similar for those with and without primary partners. HIV-infected men who engaged in UIAI with a primary partner said they did so for rational reasons ("At that point I knew we were both positive"), hedonistic reasons ("[I] Love it !!"), or empathetic reasons ("He wanted it!"). Those who knew they were HIV-positive and engaged in insertive anal intercourse with men who were not primary partners said, "Because he wanted me to, knowing my HIV-positive status—also, I literally have no pre-cum," "Better sensation than [with] a condom," and "They didn't say no."

HIV-infected men who thought they were still negative or were uncertain of their current HIV-antibody status gave very similar explanations. One said, "I'm at less risk, plus I had no cuts on my penis and did not cum inside." Another said, "I wanted badly to feel it." And a third man who was infected with HIV and didn't know it said, "It felt more natural." Other reasons for UIAI cited by HIV-infected men in South Beach were: "They don't ask [you] to put on a condom so they don't care" and "Stupidity."

Table III. Alcohol Use, Drug Use, and Unprotected Insertive Anal Intercourse (UIAI) during Last Year

Variable	n	Any UIAI[a] (%)	p	"Risky" UIAI[b] (%)	p
Bars/clubs at least once a week	21	42.9	.66	33.3	.61
Bars, clubs less than once a week	30	36.7		26.7	
Alcohol 3 or more days in a week	16	31.3	.39	25.0	.74
Drinks less than 3 days in a week	27	44.4		29.6	
Drinks: 3 or more in a day	28	42.9	.42	32.1	.46
Less than 3 drinks in a day	22	31.8		22.7	
Smoked marijuana in last year	26	38.5	.91	34.6	.41
Did not smoke marijuana in last year	25	40.0		24.0	
Used cocaine in last year	22	45.5	.43	27.3	.77
Did not use cocaine in last year	29	34.5		31.0	
Used ecstasy in last year	22	54.5	.05	36.4	.34
Did not use ecstasy in last year	29	27.6		24.1	
Used nitrite inhalants in last year	20	60.0	.01	45.0	.05
Did not use amyl or butyl nitrites	31	25.8		19.4	
Used amphetamines in last year	15	66.7	.01	40.0	.28
Did not use amphetamines	36	27.8		25.0	
Used "special k" during last year	21	61.9	.01	42.9	.08
Did not use "special k" in last year	30	23.3		20.0	
Used at least one designer drug[c]	25	56.0	.02	40.0	.10
Did not use designer drug in last year	26	23.1		19.2	
Total	51	39.2		29.4	

[a]For each variable, respondents who reported that they had engaged in unprotected insertive anal intercourse in the past year (e.g., 42.9% who visited gay bars and clubs at least once a week) were compared with men who reported the same (e.g., 36.7% who visited less often).
[b]For each variable, respondents who reported that they had engaged in unprotected insertive anal intercourse in the past year with a partner whose HIV-infection status was unknown or who was known to be HIV-negative were compared with others who reported the same behavior.
[c]Respondents who reported using ecstasy, "special k," or methamphetamines in the past year were compared with other HIV-infected men who did not report using any of these drugs.

Multivariate Analyses

Logistic regression analyses tended to support bivariate analyses of variables associated with UIAI. Lower annual income, the use of designer drugs or nitrite inhalants, cruising public places, and number of anal sex partners in the past year were the best predictors of UIAI. For example, a simple model that included annual income, nitrite inhalant use, and number of anal sex partners in the past year as independent variables successfully predicted 82% of UIAI reported by respondents (p < .01).

When the five mutually monogamous HIV-positive couples were reassigned from risky to safer, variables measuring drug use were no longer significant in logistic regression models. HIV-positive men who were most likely to engage in insertive anal intercourse that could transmit the virus that causes AIDS tended to have lower incomes, were not committed to a primary partner, cruised public places looking for

Table IV. Sexual Practices and Unprotected Insertive Anal Intercourse (UIAI) in Last Year

Variable	n	Any UIAI[a] (%)	p	"Risky" UIAI[b] (%)	p
First sex with a man: 16 or younger	33	39.4	.97	36.4	.14
First sex with a man: 17 or older	18	38.9		16.7	
Lifetime sex partners 100 or more	31	48.4	.09	41.9	.01
Lifetime sex partners 99 or less	20	25.0		10.0	
Oral or anal sex in last year	48	41.7	.15	31.3	.25
No oral or anal sex in last year	3	0		0	
Had anal sex while high in last year	27	51.9	.05	37.0	.20
No anal sex while high in last year	24	25.0		20.8	
Eight or more partners in last year	27	44.4	.42	44.4	.01
Seven or fewer partners in last year	24	33.3		12.5	
Four or more anal partners in last year	30	46.7	.19	46.7	.001
Three or fewer anal partners in last year	21	28.6		4.8	
Had a primary partner in last year	17	64.7	.01	35.3	.51
No primary partner in last year	34	26.5		26.5	
Self-commitment to safer sex	35	34.3	.22	20.0	.02
Made no such commitment	13	53.8		53.8	
Made commitment to others	22	22.7	.03	13.6	.03
Made no such commitment	26	53.8		42.3	
Cruised public places looking for sex	30	53.3	.01	46.7	.001
Did not cruise during the past year	21	19.0		4.8	
Total	51	39.2		29.4	

[a]For each variable (e.g., first sex with a man: 16 or younger), respondents who reported that they had engaged in unprotected insertive anal intercourse in the past year (e.g., 39.4% of 33) were compared with other men who reported the same behavior (e.g., 38.9% of 18).

[b]For each variable, respondents who reported that they had engaged in unprotected insertive anal intercourse in the past year with a partner whose HIV-infection status was unknown or who was known to be HIV-negative (e.g., 36.4% of 33) were compared with other HIV-infected men (e.g., 16.7% of 18) whose partners might have been susceptible.

sex partners, and reported having anal intercourse with many partners during the past year. For this sample of MSM in South Beach, a simple model used to predict reports of UIAI based on measures of annual income and number of anal sex partners successfully predicted 92% of risky sexual behavior ($p < .001$).

Reliability of Self-Reports

Two questions were asked at the end of the self-administered questionnaire to assess the reliability of self-reports of HIV-antibody status, sexual risk-taking, and other behaviors. Forty-five (88.2%) of the

51 men who tested positive said their answers to the interviewer were "completely honest," 5 (9.8%) said "mostly honest," and 1 (2.0%) said "somewhat honest." Forty-seven (92.2%) said their written responses to the more sensitive questions in the self-administered instrument were "completely honest" and 4 (7.8%) said "mostly honest."

DISCUSSION

Our research with HIV-infected men in South Beach provides further evidence for continued sexual risk-taking among MSM and against current public

health measures to prevent HIV transmission (Landis et al., 1992). Few HIV-infected men, including those who know they are HIV-positive, become celibate (Martin et al., 1989). Most (over 90% in our sample) continue to engage in oral or anal sexual activities with other men, but make accommodations based on their social situations, personal characteristics, and evidence available to them (Siegel et al., 1988).

Compromises include restricting unprotected sexual activities to a primary partner, using a condom when ejaculating during anal intercourse, and negotiating safer sex in other ways (Offir et al., 1993). Thirty percent of our sample reporting UIAI restricted their interpersonal sexual activities to a primary partner. In most cases, the partner was reported to have a concordant HIV-infection status, but troubling was the observation that three of five of these men may have become infected in the past year by having unprotected anal intercourse with an HIV-positive primary partner. More disturbing was the admission by a man who knew he was infected that his sole partner for UIAI was HIV-antibody negative.

Among those with multiple anal sex partners in the past year, condoms were used frequently. However, condoms were not always used by HIV-infected men who engaged in insertive anal intercourse with partners who might have been susceptible to HIV infection. When condoms were used, they were usually unfurled over the erect penis just before ejaculation and were placed there to capture semen. UIAI before ejaculation was a common adaptation reported by HIV-infected MSM in South Beach.

Three sets of reasons for engaging in risky sexual behaviors that can transmit the AIDS virus were offered by study participants: rational, hedonistic, and empathetic. Some men seemed to be taking the information available to them in public health messages and rationally calculating their chances of transmitting HIV infection (an undesirable outcome) against their chances for mutual enjoyment (a desirable outcome) (Pinkerton and Abramson, 1992). By focusing more exclusively on their own sexual satisfaction, other men expressed little concern about the risk they might be creating for themselves or their sex partners (Gold et al., 1994). Still others, however, appeared to be very much concerned about pleasing their sex partners as much as themselves and, for such empathetic reasons, agreed to participate in unsafe sex (Sacco and Rickman, 1996). Knowledge of one's HIV-infection status appeared to be a minor

consideration in the final outcome of sexual scenarios. Other factors that cannot be adequately addressed in one or two brief counseling sessions were more important (Bauman and Siegel, 1987).

Correlates of Sexual Risk-Taking

Earlier studies conducted in northern, midwestern, and western states indicated that younger (Stall et al., 1992) and minority (Lemp et al., 1994) MSM were more likely to report engaging in risky sex. Investigators have postulated that risk-takers are not being reached by HIV-prevention messages and have not witnessed the deaths of many friends and companions (Doll et al., 1990). In South Beach, no differences were found by age or minority status: older HIV-infected men were just as likely as younger HIV-infected men, and White, non-Hispanic men were just as likely as Hispanic and other minority men to report engaging in UIAI in the past year.

The lack of association of UIAI with age and minority status may be attributed to the transiency of the population of gay men in South Beach. As we have shown, most of our HIV-infected respondents arrived in the past 5 years and came to South Florida aware of their HIV-infection status. The gay community in South Florida is not as well organized to combat AIDS and promote HIV prevention as gay communities elsewhere and some men may have moved to South Beach to escape constant reminders of the plague in their midst (Albin, 1995). Alternatively, our more recent research may mark a dissipation in differences among subpopulations not noted in studies conducted before the introduction of combination drug therapies for HIV disease. Additional research will be required to determine if our findings are unique or indicative of a national trend.

Although we found no differences in self-reports of UIAI by age or race/ethnicity, we observed a significant difference in reports of UIAI by income. HIV-infected MSM living in South Beach on lower annual incomes were more likely to report engaging in UIAI in the last year than those with higher incomes. In logistic regression models, lower income levels and larger numbers of anal partners were the two best predictors of UIAI. No one to our knowledge has found lower income to be such an important predictor of risky sex. Our finding may be spurious or unique to the resort area of South Beach and our focus on HIV-infected men who live there. Research now being conducted by our research team

intends to explore and further characterize the culture of sexual celebration that has been identified with the area.

With the possible exception of nitrite inhalants, alcohol and drug use appeared to be unrelated to UIAI among HIV-infected men in South Beach. Cross-sectional studies of MSM conducted in the mid-1980s showed global associations between risky sex and alcohol and drug use, but subsequent cohort studies suggested that these associations decreased as MSM changed their behaviors in response to AIDS awareness (Leigh and Stall, 1993). HIV-infected men who continue to engage in UIAI may use amyl and isobutyl-nitrite inhalants and other recreational drugs to a greater extent than those who avoid UIAI (Robins *et al.*, 1994), but there is little evidence to support the popular contention that inebriation leads to unsafe sex.

HIV-infected MSM who engaged in UIAI tended to do so with their primary partners or with casual partners that they might have encountered while cruising public places looking for sex partners. The greater the number of anal sex partners in the past year, the greater the likelihood that the respondent would report engaging in UIAI. Our findings regarding risky sexual behaviors and situations that could transmit HIV seem to be consistent with those reported for MSM from as far away as Sydney, Australia (Gold *et al.*, 1994), and as close by as Tampa, Florida (Sacco and Rickman, 1996), suggesting that our observations may not be unique to South Beach.

Implications

Caution must be exercised when considering the implications of our findings. Our sample of HIV-infected men was small, limited information was obtained, and our study was not designed to evaluate the efficacy of C&T under ideal conditions. South Beach has evolved as a popular destination for gay men within the last 10 years; the area is undergoing rapid transformation. In contrast to San Francisco, New York, and other large metropolitan areas, few MSM have lived in South Beach for 5 years or longer; a gay community is struggling to form here. However, our research site has not been previously surveyed for AIDS-related risk behaviors, our data were collected very recently (1996), and our study is one of two with a representative sample of young MSM living in households (Osmond *et al.*, 1994). Importantly, our findings are consistent with other stud-

ies which indicate C&T has very limited effectiveness in changing sex and prophylactic behaviors (Higgins *et al.*, 1991) and may be harmful to the extent that some HIV-infected men continue to behave as if they are uninfected if they know their most recent test result was negative (Phillips *et al.*, 1995).

Recommendations

C&T, designed to be a cornerstone in national prevention efforts, serves to assist HIV-infected MSM who receive their HIV-1-positive test results to enter into medical care, but it does not stop many men from having sex (Valdiserri *et al.*, 1988). Quite often, the sex is safe. Sometimes, it is not. At this point in the AIDS epidemic, C&T delivered in health care facilities is ineffective in promoting and maintaining the level of behavior change required to stop HIV infections among MSM. A new generation of more promising social and behavioral interventions is needed to reduce the level of sexual risk-taking occurring among MSM in South Beach and elsewhere in the United States.

Resources will be required to develop, implement, and evaluate more effective social and behavioral interventions for HIV prevention (Auerbach *et al.*, 1994). These resources must be committed to primary prevention and therefore must come from the public sector. If new resources cannot be obtained by those in leadership positions, resources now devoted to CTRPN and other activities of little value to primary HIV-disease prevention must be redirected. The American people deserve a more effective HIV-prevention program than the one currently in place (Committee on Government Operations, 1993).

ACKNOWLEDGMENTS

REFERENCES

Albin, G. (1995). To live and die in South Beach. *Out, 1995 May,* 73–77, 125–128.

Auerbach, J. D., Wypijewska, C., and Brodie, H. K. H., Eds. (1994). *AIDS and Behavior.* Washington, DC: National Academy Press.

Bauman, L. J., and Siegel, K. (1987). Misperceptions among gay men of the risk of AIDS associated with their behavior. *Journal of Applied Social Psychology, 17,* 328–349.

CDC Advisory Committee on the Prevention of HIV Infection. (1994). *External Review of HIV Prevention Strategies: Final Report.* Atlanta, GA: Centers for Disease Control and Prevention.

Centers for Disease Control. (1986). Additional recommendations to reduce sexual and drug abuse-related transmission of human T-lymphotropic virus type III/lymphadenopathy-associated virus. *Morbidity and Mortality Weekly Report, 35,* 152–155.

Centers for Disease Control. (1987). Public health service guidelines for counseling and antibody testing to prevent HIV infection and AIDS. *Morbidity and Mortality Weekly Report, 36,* 505–509.

Centers for Disease Control. (1991). Patterns of sexual behavior change among homosexual/bisexual men—Selected U.S. sites, 1987–1990. *Morbidity and Mortality Weekly Report, 40,* 792–794.

Committee on Government Operations. (1993). *The Politics of AIDS Prevention at the Centers for Disease Control.* Washington, DC: U.S. Government Printing Office (ISBN 0-16-041155-6).

Coolfont Report. (1986). A PHS plan for prevention and control of AIDS and the AIDS virus. *Public Health Reports, 101,* 341–348.

Doll, L. S., and Kennedy, M. B. (1994). HIV counseling and testing: What is it and how well does it work? In G. Schochetman and J. R. George (Eds.), *AIDS Testing,* 2nd ed. (pp. 302–319). New York: Springer-Verlag.

Doll, L. S., O'Malley, P., Pershing, A., Darrow, W. W., Hessol, N., and Lifson, A. (1990). High-risk sexual behavior and knowledge of HIV antibody status in the San Francisco city clinic cohort. *Health Psychology, 9,* 253–256.

Ekstrand, M. L., and Coates, T. J. (1990). Maintenance of safer sexual behaviors and predictors of risky sex: The San Francisco Men's Health Study. *American Journal of Public Health, 80,* 973–977.

Emmons, W. W., Paparello, S. F., Decker, C. F., Sheffield, J. M., and Lowe-Bey, F. H. (1995). A modified ELISA and Western blot accurately determine anti-human immunodeficiency virus type 1 antibodies in oral fluids obtained with a special collecting device. *Journal of Infectious Diseases, 171,* 1406–1410.

Gallo, D., George, J. R., Fitchen, J. H., Goldstein, A. S., Hindahl, M. S., for the OraSure HIV Clinical Trials Group. (1997). Evaluation of a system using oral mucosal transudate for HIV-1 antibody screening and confirmatory testing. *Journal of the American Medical Association, 277,* 254–258.

Gold, R. S., Skinner, M. J., and Ross, M. W. (1994). Unprotected anal intercourse in HIV-infected and non-HIV-infected gay men. *Journal of Sex Research, 31,* 59–77.

Hays, R. B., Kegeles, S. M., and Coates, T. J. (1990). High HIV risk-taking among young gay men. *AIDS, 4,* 901–907.

Higgins, D., Galavotti, C., O'Reilly, K., Schnell, D., Moore, M., Rugg, D., and Johnson, R. (1991). Evidence for the effects of HIV antibody counseling and testing on risk behaviors. *Journal of the American Medical Association, 266,* 2419–2429.

Irwin, K. L., Valdiserri, R. O., and Holmberg, S. D. (1996). The acceptability of voluntary HIV antibody testing in the United States: A decade of lessons learned. *AIDS, 10,* 1707–1717.

Landis, S. E., Earp, J. L., and Koch, G. G. (1992). Impact of HIV testing and counseling on subsequent sexual behavior. *AIDS Education and Prevention, 4,* 61–70.

Leigh, B. C., and Stall, R. (1993). Substance use and risky sexual behavior for exposure to HIV: Issues in methodology, interpretation, prevention. *American Psychologist, 48,* 1035–1045.

Lemp, G. F., Hirozawa, A. M., Givertz, D., Nieri, G. N., Anderson, L., Lindegren, M. L., Janssen, R. S., and Katz, M. (1994). Seroprevalence of HIV and risk behaviors among young homosexual and bisexual men: The San Francisco/Berkeley Young Men's Study. *Journal of the American Medical Association, 272,* 449–454.

Lifson, A. R. (1992). Men who have sex with men: Continued challenges for preventing HIV infection and AIDS. *American Journal of Public Health, 82,* 166–167.

Martin, J. L., Garcia, M. A., and Beatrice S. (1989). Sexual behavior changes and HIV antibody in a cohort of New York City gay men. *American Journal of Public Health, 79,* 501–503.

Norusis, M. J. (1990). *SPSS Base System User's Guide.* Chicago, IL: SPSS.

Offir, J. T., Fisher, J. D., Williams, S. S., and Fisher, W. A. (1993). Reasons for inconsistent AIDS-preventive behaviors among gay men. *Journal of Sex Research, 30,* 62–69.

Osmond, D. H., Page, K., Wiley, J., Garrett, K., Sheppard, H. W., Moss, A. R., Schrager, L., and Winkelstein, W. (1994). HIV infection in homosexual and bisexual men 18 to 29 years of age: The San Francisco Young Men's Health Survey. *American Journal of Public Health, 84,* 1933–1937.

Otten, M. W., Jr., Zaidi, A. A., Wroten, J. E., Witte, J. J., and Peterman, T. A. (1993). Changes in sexually transmitted disease rates after HIV testing and posttest counseling, Miami, 1988 to 1989. *American Journal of Public Health, 83,* 529–533.

Phillips, K. A., and Coates, T. J. (1995). HIV counselling and testing: Research and policy issues. *AIDS Care, 7,* 115–124.

Phillips, K. A., Paul, J., Kegeles. S., Stall. R., Hoff, C., and Coates, T. J. (1995). Predictors of repeat HIV testing among gay and bisexual men. *AIDS, 9,* 769–775.

Pinkerton, S. D., and Abramson, P. R. (1992). Is risky sex rational? *Journal of Sex Research, 29,* 561–568.

Robins, A. G., Dew, M. A., Davidson, S., Penkower, L., Becker, J. T., and Kingsley, L. (1994). Psychosocial factors associated with risky sexual behavior among HIV-seropositive gay men. *AIDS Education and Prevention, 6,* 483–492.

Sacco, W. P., and Rickman, R. L. (1996). AIDS-relevant condom use by gay and bisexual men: The role of person variables and the interpersonal situation. *AIDS Education and Prevention, 8,* 303–312.

Siegel, K., Bauman, L. J., Christ, G. H., and Krown, S. (1988). Patterns of change in sexual behavior among gay men in New York City. *Archives of Sexual Behavior, 17,* 481–497.

Stall, R., Barrett, D., Bye, L., Catania, J., Frutchey, C., Henne, J., Lemp, G., and Paul, J. (1992). A comparison of younger and older gay men's HIV risk-taking behaviors: The Communications Technologies 1989 cross-sectional survey. *Journal of Acquired Immune Deficiency Syndromes*, 5, 682-687.

Valdisseri, R. O., Lyter, L. D., Leviton, C. M., Callahan, C. L., Kingsley, C., and Rinaldo, C. R. (1988). Variables influencing condom use in a cohort of gay and bisexual men. *American Journal of Public Health*, 78, 801-805.