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Drug Use and Sexual Risk Behavior Among Gay and Bisexual Men Who Attend Circuit Parties: A Venue-Based Comparison

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Context: HIV risk behavior among urban gay/bisexual men has recently increased. High-risk sexual activity and drug use may be particularly high during circuit party (CP) weekends, during which gay/bisexual men congregate for social activities and dancing.

Objectives: To compare prevalence of risk behaviors during CP weekends with those during non-CP weekends.

Design: Cross-sectional study.

Participants: 295 gay/bisexual men from the San Francisco Bay Area.

Main Outcome Measures: Drug use and sexual risk behavior during a San Francisco CP weekend, a CP weekend held in another geographic area (distant weekends), and two non–CP weekends.

Results: During their most recent distant CP weekend, 80% of participants used methylenedioxymethamphetamine (ecstasy), 66% ketamine, 43% crystal methamphetamines, 29% gamma-hydroxybutyrate or gamma-butyrolactone (GHB/GBL), 14% sildenafil (Viagra), and 12% amyl nitrites (poppers); 53% used four or more drugs. Drug use prevalence was greater during CP than non-CP weekends ($p < .001$). Unprotected anal sex with partners of unknown or opposite HIV serostatus was most prevalent during distant CP weekends, reported by 21% of HIV-positive and 9% of HIV-negative participants. In multivariate analysis, predictors of unprotected anal sex with opposite or unknown HIV serostatus partners included being HIV-positive (odds ratio [OR], 3.2; 95% confidence interval [CI], 1.4–7.5), and weekend use of crystal methamphetamines (OR 2.4; 95% CI, 1.1–4.9), sildenafil (OR, 3.8; 95% CI, 2.0–7.3), and amyl nitrites (OR, 2.2; 95% CI, 1.3–4.0).

Conclusions: Prevalence of high-risk activity during these weekends suggests significant potential for HIV transmission in this population. Public health programs in communities hosting CPs should aim to reduce rates of drug use and sexual risk behavior among CP participants, especially HIV-positive men.

Key Words: HIV—Risk behavior—Drug use—Club drugs—Sildenafil.

Some previous studies suggest that risk behavior among gay/bisexual men is increasing (1–4). Within the public health field and among health care providers, there is increasing concern that sexual and drug-use behaviors may be high at circuit parties (CPs), which are events where mainly gay men congregate for social activities and dancing. The term "circuit" refers to the phenomenon of many gay/bisexual men traveling on an annual basis to attend specific party events in different U.S. and international cities. The typical CP involves a weekend-long series of social events, culminating in a main dance event during which thousands of gay/bisexual men may dance and socialize for 24 continuous hours or

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longer. In addition, there are often many smaller gatherings before or after the main party. These events include smaller dance parties and after-hour parties during which sexual risk behavior and drug use may be particularly high (5).

In the United States, CPs attract hundreds of thousands of men on an annual basis, with some individual parties involving over 20,000 participants (6–8). There are many anecdotal reports of high-risk sexual activity and high levels of drug use by gay/bisexual men during CP weekends, and some believe that CPs may be associated with increased risk activity among both HIV-positive and HIV-negative gay/bisexual men (9). One community-based HIV prevention organization canceled its annual weekend-long party event due to several drug over-use incidents among attendees, and several popular press articles have criticized the risk behaviors witnessed at these events (10). However, to date no studies have quantified the degree of risk behavior practiced among the CP population or evaluated whether risk is elevated during CP weekends compared with during non-CP weekends. In this cross-sectional study, we describe the sexual and drug use behavior among a sample of gay/bisexual men who reported attending CPs during the previous 12 months. We compared risk behaviors reported during CP weekends with those reported during other weekends to determine whether risk behaviors were more commonly practiced during CP weekends, and tested for associations between high-risk sexual activity and HIV serostatus and drug use.

METHODS

Men who identified themselves as gay or bisexual who were at least 18 years of age, who lived or worked in the San Francisco Bay Area (CA, U.S.A.), and who had attended any CP in the previous 12 months were eligible to participate. A CP was defined as "a gathering of mostly gay or bisexual men that is open to the public where the main event occurs only once a year and has an emphasis on dancing." Special events leading up to or following the main event were also included in the definition. Participants were recruited at dance clubs, bars, gyms, and other gay-owned businesses; through advertising in gay-oriented publications; and through referral by other participants.

Eligibility screening was performed in the field using a brief confidential questionnaire; eligible men were later interviewed at the San Francisco Department of Public Health AIDS Office. Of those sampled who were potentially eligible on the basis of sexual orientation, age, and residence, 57% reported attending a CP in the 12 months before recruitment. There were no statistically significant differences with regard to age or race/ethnicity between eligible participants who completed the survey and those eligible who did not (11). Trained interviewers familiar with the target population conducted the interviews. Data were collected on sociodemographic status, self-reported HIV serostatus, sexually transmitted disease (STD) history, sexual activity, and partner serostatus.

Participants reported their drug use and sexual behaviors during two CP weekends: their most recent CP in the San Francisco Bay Area (SF CP) and their most recent CP attended elsewhere (distant CP). Participants were also asked about their activities during the most recent weekend during which they went to a dance club but not a CP, and about their most recent weekend when they did not go to a dance club or CP (nonevent weekend). To minimize the effects of the order in which questions were asked, four versions of the questionnaire, differing in the order in which these weekends were assessed, were used. Only weekends that occurred within the 12 months before interview were included. To avoid potential carryover effects of CP weekends, we asked participants to exclude nonevent and dance club weekends that occurred within 1 week of any CP they attended. We also asked them to exclude weekends during which they were too sick to "do the things you usually do." To obtain a broad assessment of risk behavior over these periods, we defined weekends as the period from 8 PM Friday until 8 PM Monday.

Serodiscordant unprotected anal sex (SDUA) was defined as having insertive or receptive anal sex without a condom with a partner of opposite HIV serostatus; sero-unknown unprotected anal sex (SUUA) was defined as having insertive or receptive anal sex without a condom with a partner of unknown HIV serostatus. Because engaging in either activity is high-risk behavior, we determined the proportion of participants who engaged in either behavior (SD/SUUA) during the four weekend periods. Seroconcordant unprotected anal sex (SCUA) was defined as anal sex without a condom with a partner of the same reported HIV serostatus.

Bivariate relationships between demographic characteristics and HIV serostatus were assessed using the Fisher exact test. Sexual and drug use behaviors during the four weekends were compared using multivariate repeated-measures logistic models estimated by generalized estimating equations (12,13). In these models, a participant contributed an observation for each weekend he reported. By accounting for intrasubject correlation between outcomes at different weekends, these models increase the efficiency of between weekend prevalence comparisons and ensure correct standard errors. Multivariate Wald tests based on generalized estimating equations (GEE) parameter estimates and robust covariance matrix were used to assess homogeneity of drug use and sexual behavior across venues. To determine whether CP weekends were associated with increased incidence of SD/SUUA compared with other weekends, the dance club weekend served as the reference weekend, because dance clubs have historically been common meeting places for gay/bisexual men. In supplementary analyses, pair-wise comparisons of weekends (distant CP vs. SF CP, SF CP vs. dance club, and dance club vs. nonevent weekend) were conducted among participants who attended both weekends, to reduce the potential for confounding of weekend effects.

All participants provided informed consent and were reimbursed $25 (all amounts are in U.S. dollars) for their visit. The protocol was approved by the Institutional Review Boards at the University of California, San Francisco, and the CDC.

RESULTS

From April to August 1999, 305 participants were enrolled. Ten participants were excluded from the analysis because their HIV serostatus was unknown, precluding accurate determination of whether they potentially placed themselves or others at risk for HIV infection. Thirty-two percent of the analytic sample were men of

color and 40% had annual incomes of <$40,000; 10% reported having an STD in the previous 12 months (Table 1). Participants reporting they were HIV-negative had been tested a median of 7 months before interview. Seventeen percent of participants reported they were HIV-positive; median time from first positive HIV test result was 60 months. Of these participants, 40% had a prior AIDS diagnosis and 74% were currently receiving antiviral treatment. Compared with HIV-negative participants, HIV-positive participants were significantly older ($p < 0.001$) and more had insurance ($p < .002$).

Drug use was highly prevalent and markedly elevated during CP weekends compared with non-CP weekends, with the exception of alcohol and marijuana use (Table 2). Most participants reported using methylenedioxymethamphetamine (ecstasy, also known as MDMA) and ketamine during distant CP weekends, and substantial proportions reported using crystal methamphetamines and gamma-hydroxybutyrate or gamma-butyrolactone (GHB/GBL). Compared with drug use during distant CP weekends, ketamine, crystal methamphetamines, and cocaine were used significantly less frequently during SF CP weekends, and fewer participants reported using four or more drugs (in pair-wise comparisons, $p = .046$ for ketamine use; $p < .001$ for use of crystal methamphetamines, cocaine, and use of four or more drugs). Significantly fewer participants reported using drugs (with the exception of alcohol) during dance club weekends compared with SF CP weekends (in pair-wise comparisons, $p < .001$ for ecstasy, ketamine, crystal methamphetamines, GHB/GBL, cocaine, and use of four or more drugs; $p = .005$ for amyl nitrites; $p = .030$ for marijuana; $p = .037$ for sildenafil; $p = .529$ for alcohol). In contrast to overall high rates of drug use during CP or dance club weekends, drug use prevalence was generally low during nonevent weekends. The median number of drugs used during weekends reflected prevalence patterns of individual drug use, with a median of four drugs used during distant CP weekends, compared with a median of one drug used during nonevent weekends. Additional pair-wise (distant CP vs. SF CP, SF CP vs. dance club, dance club vs. nonevent) analyses of drug use during weekends, restricted to participants reporting both weekends compared, gave similar results.

TABLE 1. *Characteristics of participants*

Characteristics	HIV-negative ($n = 244$)		HIV-positive ($n = 51$)		p value for Fisher exact test
	n	%	*n*	%	
Age					<.001
<25	21	9	1	2	
25–29	76	31	7	14	
30–34	75	31	11	22	
35–39	49	20	14	27	
≥40	23	9	18	35	
Race/ethnicity					.337
White	163	67	42	82	
Asian/Pacific islander	41	17	4	8	
Latino	19	8	2	4	
African American	9	4	1	2	
Other	12	5	2	4	
Pretax income[a]					.800
<$20 K	23	9	7	14	
$21–40 K	72	30	16	32	
$41–60 K	62	26	13	26	
$61–100 K	57	23	10	20	
>$100 K	29	12	4	8	
Education					.858
High school or less	22	9	4	8	
Some college	56	23	9	18	
College degree	102	42	24	47	
More than college degree	64	26	14	27	
Health care coverage					.002
Private	201	82	44	86	
None	35	14	2	4	
Medical/Medicaid	0	0	3	6	
Other	8	3	2	4	
Sexually transmitted disease during previous 12 *mo*	22	9	8	16	.208

[a] Income data missing for 2 participants; money is given in U.S. dollars.

TABLE 2. *Drug use among participants[a] during 72-hour weekend periods*

	Distant CP weekend (n = 211)	SF CP weekend (n = 265)	Dance club weekend (n = 276)	Nonevent weekend (n = 260)	p value for test of homogeneity[b]
	% reporting use				
Methylenedioxymethamphetamine (ecstasy)	80	75	50	3	<.001
Ketamine	66	58	37	5	<.001
Alcohol	58	52	54	55	.480
Crystal methamphetamines	43	32	25	6	<.001
GHB/GBL	29	25	15	4	<.001
Marijuana	24	27	24	21	.182
Cocaine	27	15	7	2	<.001
Amyl nitrite (poppers)	12	10	5	5	.003
Sildenafil (Viagra)	14	9	5	4	<.001
Lysergic acid diethylamide (LSD)	6	3	2	0	NA
≥2 drugs	84	80	63	26	<.001
≥4 drugs	53	38	21	3	<.001
Median number of drugs used	4	3	2	1	

[a] Numbers vary by weekend because not all participants attended every venue.
[b] Adjusted for age, race/ethnicity, income, education, and HIV serostatus.
CP, circuit party; SF, San Francisco, California, U.S.A.; GHB, gamma-hydroxybutyrate; GBL, gamma-butyrolactone; NA, not applicable, due to low prevalence of use of these drugs.

Prevalence of sexual behaviors during weekends is shown in Table 3. In general, HIV-positive participants reported higher rates of sexual activity than HIV-negative participants. Prevalence of anal sex was high, with between one third and one half of participants reporting this behavior during each type of weekend. Fewer participants reported UA with more than one partner on any weekend; this behavior was most prevalent during distant CP weekends, and elevated compared with findings during SF CP weekends (p = .051). Prevalence of SCUA varied little across weekends, with approximately one quarter of HIV-positive and one fifth of HIV-negative participants reporting SCUA during each period. SD/SUUA was most commonly reported by HIV-positive participants, and ranged from 9 to 21% across weekends; SD/SUUA rates among HIV-negative participants ranged from 4 to 9%. SD/SUUA was most prevalent during distant CP weekends and was elevated com-

TABLE 3. *Sexual behavior among participants[a] during 72-hour weekend periods*

	Distant CP weekend (n = 211) 173 HIV-negative 38 HIV-positive	SF CP weekend (n = 260) 217 HIV-negative 43 HIV-positive	Dance club weekend (n = 274) 226 HIV-negative 48 HIV-positive	Nonevent weekend (n = 258) 217 HIV-negative 41 HIV-positive	p value for test of homogeneity[b]
	% reporting behavior during weekend				
Any anal sex	51	44	42	39	.072
HIV-negative	50	42	42	37	
HIV-positive	58	53	42	49	
Any UA	27	26	27	25	.927
HIV-negative	25	24	26	22	
HIV-positive	39	37	31	39	
UA with >1 partner	7	3	3	2	.039
HIV-negative	5	2	1	1	
HIV-positive	16	9	12	7	
SCUA	18	21	22	20	.486
HIV-negative	17	20	21	18	
HIV-positive	24	26	26	27	
SD/SUUA	11	6	5	6	.014
HIV-negative	9	4	4	4	
HIV-positive	21	14	9	17	

[a] Numbers vary by weekend because not all participants attended every venue; no sexual behavior data were reported during SF CP weekends by 4 participants, by 2 participants during dance club weekends, nor by 4 participants during nonevent weekends.
[b] Adjusted for age, race/ethnicity, income, education, and HIV serostatus.
SF, San Francisco, California, U.S.A.; CP, circuit party; UA, unprotected anal sex; SCUA, seroconcordant unprotected anal sex; SD/SUUA, unprotected anal sex with a partner of opposite or unknown serostatus.

pared with SF CP weekends ($p = .043$). As in the case of drug use, pair-wise weekend comparisons of sexual behavior restricted to participants reporting both weekends gave similar results. Most SD/SUUA across all weekends consisted of SUUA, reported by 6% of all HIV-negative participants; 2% reported SDUA. Among HIV-positive participants, 16% reported SUUA, 18% SDUA.

Additional supplementary analysis of participants reporting SD/SUUA partners showed the total number of SD/SUUA partners summed across participants to be greater during distant CP weekends than SF CP weekends. Participants reported a total of 33 unprotected receptive anal sex partners of opposite or unknown HIV serostatus during distant CP weekends compared with 6 such partners during SF CP weekends, and 43 versus 9 unprotected insertive anal sex partners of opposite or unknown HIV serostatus during distant and SF CP weekends, respectively.

Because SD/SUUA includes sexual behaviors most likely to transmit HIV among gay/bisexual men, we examined factors associated with this behavior. Multivariate analysis, controlling for participants' sociodemographic characteristics, showed SD/SUUA prevalence to be greater during distant CP weekends than during dance club weekends (odds ratio [OR], 2.1; 95% confidence interval [CI], 1.3–3.5) and SF CP weekends (OR, 1.8; 95% CI, 1.0–3.1). SD/SUUA prevalence was also higher among HIV-positive than among HIV-negative participants (OR, 3.6; 95% CI, 1.7–7.6). Further analysis showed that the significant variation in drug use across weekends (Table 2) appeared to mediate the relationship between venue and SD/SUUA. Specifically, the associations between CP weekends and SD/SUUA were attenuated and no longer statistically significant in a larger multivariate model that also included drug use (Table 4). In this model, we found that users of crystal methamphetamines, amyl nitrites, and sildenafil were more likely to engage in SD/SUUA, whereas HIV-positive participants remained more likely to report SD/SUUA compared with HIV-negative participants.

TABLE 4. *Variables associated with SD/SUUA among circuit party participants, multivariate logistic regression model, adjusted for age, race/ethnicity, income and education* (n = *295)*

Predictor	Adjusted odds ratio	95% confidence interval	*p* value
Weekend type			
Dance club weekend	reference		
SF CP weekend	0.8	0.4–1.7	.614
Distant CP weekend	1.2	0.7–2.3	.483
Nonevent weekend	1.5	0.8–2.7	.253
HIV serostatus			
HIV-negative	reference		
HIV-positive	3.2	1.4–7.5	.008
Crystal meth use			
No crystal meth use	reference		
Crystal meth use	2.4	1.1–4.9	.021
Amyl nitrite ("poppers") use			
No amyl nitrite use	reference		
Amyl nitrite use	2.2	1.3–4.0	.006
Sildenafil (Viagra) use			
No sildenafil use	reference		
Sildenafil use	3.8	2.0–7.3	<.001
Number of drugs used at specific venue (continuous variable)	1.1	0.9–1.3	.580

SD/SUUA, unprotected anal sex with a partner of opposite or unknown serostatus; SF, San Francisco, California, U.S.A.; CP, circuit party, crystal meth, crystal methamphetamine; reference, exposure variable with which other odds ratios are compared.

DISCUSSION

Our results show that SD/SUUA is strongly associated with drug use and that many participants are at high risk for engaging in HIV-transmitting behaviors during CP weekends, when drug use is widespread and significantly elevated compared with non-CP weekends. Although SD/SUUA was reported by a minority of men in this study, these behaviors were assessed over only 72-hour intervals. The cumulative effect of such sexual risk activity over a number of weekends among men who attend CPs may be contributing to increased HIV transmission rates among gay/bisexual men (14). The high potential for HIV transmission among this population is further supported by the high rate of self-reported STDs in this sample, rates similar to those in high-risk cohorts of men who have sex with men (MSM) with documented HIV seroincidence rates of 1.5 to 2.3% (15).

We found that most participants used ecstasy and ketamine during CP weekends, and that many used crystal methamphetamines, GHB/GBL, and other substances. The prevalence of drug use during CP and dance club weekends was extremely high. For comparison, prevalences of ecstasy, crystal methamphetamine and cocaine use during distant CP weekends alone was greater than what other San Francisco Bay Area MSMs have reported over periods of months (16–17). In contrast to other drugs, alcohol and marijuana were used by many participants during the nonevent weekend, suggesting that these drugs are the drugs of choice outside of party or dance events. That alcohol use is not even higher during CP weekends may be a result of the increased potential for adverse reactions when alcohol is used with other drugs, particularly ecstasy and GHB/GBL (18).

A substantial proportion of participants were sexually active and engaged in high-risk behavior, with nearly one quarter of HIV-negative participants and one third of HIV-positive participants reporting having had unpro-

tected anal sex during at least one of the four weekend periods. In addition, rates of SCUA were substantial. Although to some extent the prevalence of SCUA among HIV-negative participants may be with known HIV-negative partners, it is likely that such behavior places some individuals at greater risk for HIV infection because of incorrect assumptions about their own or their partners' HIV serostatus. Among HIV-positive participants, the prevalence of SCUA raises concern about the potential for transmitting STDs and drug-resistant strains of HIV. Although only limited data address whether superinfection occurs (19), HIV-positive men should be counseled regarding the potential risks of SCUA to themselves and their partners.

SD/SUUA was most prevalent during distant CP weekends, indicating that when CP participants leave their local communities, risk behavior may increase. Although there may be many causes of this increase in SD/SUUA, higher levels of drug use, increased anonymity, availability of new partners, absence of regular sex partners, and shifts in the social-normative climate at distant CPs compared with more local events may facilitate CP participants' increased risk behavior at out-of-town events. These results are similar to those of other reports that have documented increased risk behavior during vacation periods compared with nonvacation periods (20).

The association of recreational drug use with SD/SUUA reinforces concern about the degree to which drug use is influencing participants' decisions to have unprotected anal sex. Drugs may have a disinhibitory effect among participants who would otherwise have protected anal sex. Drug use may also lead to misidentification of participants' own or their partners' HIV serostatus, so that participants unknowingly engage in riskier behavior than they would without drugs. Alternatively, participants may intentionally use drugs before engaging in high-risk behavior to reduce anxiety or inhibitions about potential disease transmission. Our findings are consistent with those of other reports of associations of drug use with high-risk sexual behavior (21–27). In particular, use of amyl nitrites and crystal methamphetamines have been found to be associated with high-risk activity and seroconversion in other cohorts (28–29). However, the high prevalence of crystal methamphetamine use among CP participants, compared with other gay/bisexual populations, suggests that use of this drug may be contributing to the high-risk behavior of the CP population in particular, especially on the U.S. west coast, where use of this drug is high compared with findings in other regions (17). Although it may be expected that sildenafil would be used to increase or improve sexual performance, our finding of its association with increased risk of SD/SUUA indicates it is specifically associated with high-risk sexual behavior. One third of sildenafil users were HIV-positive, despite the fact that only one fifth of the entire sample was HIV-positive. These participants may have been prescribed sildenafil for sexual dysfunction caused by HIV or side effects of antiretroviral therapy (ART); at least one study has demonstrated increased sexual dysfunction in HIV-infected men taking ART (30). It is also possible that HIV-positive and HIV-negative CP participants are taking sildenafil for sexual purposes related to sexual dysfunction because of concomitant use of club drugs such as ecstasy or ketamine. These findings and reports from others (31) suggest that physicians should reinforce safer-sex messages before prescribing sildenafil, and that HIV prevention programs should address potential recreational sildenafil use.

Although other studies (32–33) have demonstrated that HIV-positive MSM engage in behaviors that place others at risk for infection, our finding that more HIV-positive than HIV-negative participants reported SD/SUUA suggests that targeted prevention strategies need to be developed to reduce the risk of HIV transmission among MSM who know they are HIV-infected. Such strategies might include encouraging the disclosure of HIV serostatus with potential partners and emphasizing the importance of protecting others from infection.

Our study has several limitations. This sample was limited to gay/bisexual men who lived or worked in the San Francisco Bay Area who had attended a distant or SF CP during the previous year. Although we attempted to recruit a diverse sample, our nonprobability sample may not be representative of CP participants from this or other communities. Additionally, the behaviors of men who chose not to participate in the study may have been different from those interviewed. The interviewer-guided questionnaire and recall format may have led to underreporting of sensitive behaviors. Because we assessed behaviors during weekends that could have occurred up to 12 months before interview, it is possible that participants misreported their drug use or sexual behavior. It is also important to note that CP attendees represent a subgroup of the gay/bisexual community, and their behaviors do not necessarily reflect those of the community as a whole. Future studies should include a comparison group of gay/bisexual men who have not attended CPs to determine whether risk behavior among CP participants is elevated.

Risk-reduction strategies that directly address the needs of men who attend CPs should be designed and tested. The increased risk behaviors at distant compared

with SF CPs suggest that programs may also be needed to help CP participants maintain safe practices outside of their local communities. Prevention programs should educate gay/bisexual men who attend CPs about the risks of drug use and associated high-risk sexual behavior and should particularly focus on HIV-positive men, with the goal of reducing their behaviors that place others at risk for HIV.

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REFERENCES

1. U.S. Centers for Disease Control and Prevention: Increases in unsafe sex and rectal gonorrhea among men who have sex with men–San Francisco, California, 1994–1997. *MMWR Morb Mortal Wkly Rep* 1999;48:45–8.
2. Craib KJ, Weber AC, Cornelisse PG, et al. Comparison of sexual behaviors, unprotected sex, and substance use between two independent cohorts of gay and bisexual men. *AIDS* 2000;14:303–11.
3. Katz MH, McFarland W, Guilin V, et al. Continuing high prevalence of HIV and risk behaviors among young men who have sex with men: the Young Men's Survey in the San Francisco Bay Area in 1992 to 1993 and in 1994 to 1995. *J Acquir Immune Defic Syndr Hum Retrovirol* 1998;19:178–81.
4. Hickson FCI, Reid DS, Davies PM, et al. No aggregate change in homosexual HIV risk behavior among gay men attending Gay Pride festivals, United Kingdom, 1993–1995. *AIDS* 1996;10: 771–4.
5. Lewis LA, Ross MW. *A select body: the gay dance party subculture and the HIV/AIDS pandemic.* London: Cassell, 1995.
6. Reardon PT. Out on the circuit. *Chicago Tribune* February 23, 1998;Tempo section:1.
7. Kickin' Back in Pensacola. *Southern Voice* 2000;June 1: 12.
8. JS Enterprises. White Party. Available at http://www.jeffreysanker.com/site/wp2000_fwp2001.htm. Accessed February 5, 2001.
9. Brown L, Crain C. Unsafe sex, open drug use at AIDS benefit. *Southern Voice* 1997;November 6:1.
10. Signorile M. A troubling double standard. *New York Times* 1997; August 16(Sect. 1):21.
11. Mansergh G, Colfax G, Marks G, et al. The Circuit Party Men's Health Survey: findings and implications for gay and bisexual men. *Am J Public Health* 2001;91:953–8.
12. Liang K-Y, Zeger S. Longitudinal data analysis using generalized linear models. *Biometrika* 1987;73:13–22.
13. Zeger S, Liang K-Y. Longitudinal data analysis for discrete and continuous outcomes. *Biometrics* 1986;42:121–30.
14. Kellogg T, McFarland W, Katz M. Recent increases in HIV seroconversion among repeat anonymous testers in San Francisco. *AIDS* 1999;13:2303–4.
15. Buchbinder SP, Douglas JM, McKirnan DJ, et al. Feasibility of Human Immunodeficiency Virus vaccine trials in homosexual men in the United States: risk behavior, seroincidence, and willingness to participate. *J Infect Dis* 1996;174:954–61.
16. Gibson S, Kim A, Page-Shafer K, et al. Use of community-based outreach program data to monitor trends in HIV risk-related behavior among men who have sex with men [abstract ThPeD5816]. Presented at the XII World Conference on AIDS, Durban, South Africa, July 12, 2000.
17. Stall R, Paul JP, Greenwood G, et al. Alcohol use, drug use and alcohol-related problems among men who have sex with men: The urban men's health study. *Addiction* 2001, in press.
18. Chin RL, Sporer KA, Cullison B, et al. Clinical course of gamma-hydroxybutyrate overdose. *Ann Emerg Med*, 1998;31:716–22.
19. Angel JB, Kravick S, Balaskas E, et al. Documentation of HIV superinfection and acceleration of disease progression [abstract LB2]. Presented at the Seventh Conference on Retroviruses and Opportunistic Infections, San Francisco, California, U.S.A., February 2, 2000.
20. Clift S, Wilkins J. Travel, sexual behavior, and gay men. In: Aggelton P, Davies P, Hart G, eds. *AIDS: safety, sexuality, and risk.* London Tayk and Frances;1995:35–53.
21. Benotsch EG, Kalichman SC, Kelly JA. Sexual compulsivity and substance use in HIV-seropositive men who have sex with men: prevalence and predictors of high-risk behaviors. *Addict Behav* 1999;24:857–68.
22. Chesney MA, Barrett DC, Stall R. Histories of substance use and risk behavior: precursors to HIV seroconversion in homosexual men. *Am J Public Health* 1998;88:113–16.
23. Kalichman SC, Heckman T, Kelly JA. Sensation seeking as an explanation for the association between substance use and HIV-related risky sexual behavior. *Arch Sex Behav* 1996;25:141–54.
24. Ostrow DG, Beltran ED, Joseph JG, et al. Recreational drugs and sexual behavior in the Chicago MACS/CCS cohort of homosexually active men. Chicago Multicenter AIDS Cohort Study (MACS)/Coping and Change Study. *J Subst Abuse* 1993;5:311–25.
25. Paul JP, Stall RD, Crosby GM, et al. Correlates of sexual risk-taking among gay male substance abusers. *Addiction*. 1994;89: 971–83.
26. Lehman JS, Allen DM, Green TA, et al. HIV infection among non-injecting drug users entering drug treatment, United States, 1989–1992. Field Services Branch. *AIDS* 1994;8:1465–9.
27. Rhodes F, Deren S, Wood MM, et al. Understanding HIV risks of chronic drug-using men who have sex with men. *AIDS Care* 1999; 11:629–48.
28. Molitor F, Truax SR, Ruiz JD, et al. Association of methamphetamine use during sex with risky sexual behaviors and HIV infection among non-injection drug users. *West J Med* 1998;168:93–7.
29. Woody GE, Donnell D, Seage GR, et al. Non-injection substance use correlates with risky sex among men having sex with men: data from HIVNET. *Drug Alcohol Depend* 1999;53:197–205.
30. Colson A, Sax P, Keller M, et al. Sexual dysfunction in protease inhibitor recipients [abstract 63]. Presented at the Seventh Conference on Retroviruses and Opportunisitic Infections, San Francisco, CA, January 30, 2000.
31. Aldridge J, Measham F. Sildenafil (Viagra) is used as a recreational drug in England [letter]. *BMJ* 1999;318:669.
32. Dawson JM, Fitzpatrick RM , Reeves G, et al. Awareness of sexual partners' HIV status as an influence upon high-risk sexual behavior among gay men. *AIDS* 1994;8:837–41.
33. Simon PA, Thometz E, Bunch JG, et al. Prevalence of unprotected sex among men with AIDS in Los Angeles County, California, 1995–1997. *AIDS* 1999;13:987–90.