Patterns of HIV risk and alcohol use among African-American crack abusers

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Abstract:
Although the association between heavy alcohol use and HIV risk has been studied in treatment populations, we know little about patterns of alcohol use and HIV risk among out-of-treatment African-American drug users. This study examines the extent to which alcohol use affects HIV risk in a sample of 495 African-American crack users who did not inject drugs. We present differences between levels of alcohol and crack use with regard to sexual practices (including sex while impaired), number of partners, frequency of sexual activity, and condom use. The findings suggest an intimate relationship between alcohol use, crack use, and sexual risks for HIV infection. Respondents who reported frequent use (15–30 days in the last 30 days) of alcohol, crack, or both displayed significantly greater risk than those who reported less than frequent use.
Keywords: African-American; Alcohol; Crack; HIV; Sexual risk

Article:

1. Introduction

The severity of the problem of substance abuse in the US has been exacerbated in recent years by the AIDS epidemic, which poses additional serious health risks to substance abusers. Although interventions targeted at injecting drug users (IDUs) have been effective at reducing HIV risk behaviors in that population, it is now well established that individuals who abuse crack cocaine are also at high risk for HIV infection, primarily because of their high rate of unprotected sexual activity (Tims and Leukefeld, 1993; Washton and Stone-Washton, 1993; Wechsberg et al., 1998). Some evidence further suggests that crack users are often heavy alcohol users (Dennis et al., 1995), but the relationship between crack use, alcohol use, drug-impaired sex, and HIV risk behaviors is not well understood.

What little is known about the relationship between drug use, alcohol use, and HIV infection is based largely on studies done with IDUs entering treatment, currently in treatment, or in various stages of post-treatment (Watkins et al., 1992; Fitterling et al., 1993). These studies suggest that a relationship exists between drug and alcohol use and HIV infection in those populations. Several studies have also reported elevated sero-prevalence rates for HIV in patients who are under treatment for alcohol abuse. These studies further indicate that alcohol abusers practice high risk behaviors that place them at increased risk for HIV infection (Jacobson et al., 1992; Boscarino et al., 1995; Scheidt and Windle, 1995; Woods et al., 1996). Such behaviors may include injecting drug use, non-injecting drug use, multiple sexual partners, IDU sexual partners, sexual contact with sex workers, and non-monogamous sex partners (Reiger et al., 1990). A study of subjects in inpatient and outpatient settings in San Francisco found that HIV infection was associated with increased alcohol impairment (Boscarino et al., 1995). Other studies suggest that heavy alcohol use by itself may be associated with increased HIV risk (Scheidt and Windle, 1995; Shillington et al., 1995), but little is known about the patterns of HIV risk among heavy-drinking crack users and how their risk compares with those who drink less. Preliminary findings from other studies indicate that heavy alcohol use is also associated with high risk sexual behaviors, sex with

multiple partners, and non-monogamous partner (Malow and Ireland, 1996; Woods et al., 1996). It should be noted, however, that none of these studies focused primarily on either African-Americans or crack users.

In our North Carolina study of HIV risk behaviors in out-of-treatment substance abusers, a large proportion of our participants were African-American crack abusers with alcohol problems. This paper focuses on the extent to which alcohol and crack use affects HIV risk behaviors in this population. Specifically, it ad-dresses the question as to whether or not the use of alcohol exacerbates the HIV risk inherent in the use of crack.

2. Method

Data for this study were collected as part of the North Carolina Cooperative Agreement for AIDS Community-Based Outreach, Intervention, and Re-search (NC CoOp). That research program was one of 23 sites in the US and abroad funded by the National Institute on Drug Abuse (NIDA) and targeting out-of-treatment IDUs and crack users for HIV risk reduction and research. To be included in the study, an individual had to (a) provide informed consent; (b) be over 18; (c) have been out of treatment for at least 30 days; (d) self-report injection or crack drug use in the last 30 days; and (e) have either visible needle tracks or a positive urine test for opiates or cocaine. Data were collected by self-report using NIDA's Risk Behavior Assessment (RBA), the standard instrument used at all Cooperative Agreement sites. The instrument focuses on the respondent's current behavior (past 30 days). The RBA is an 80-item questionnaire covering ten domains: demographics, drug use, drug injecting, drug use in the last 48 h, drug treatment, sexual activity, sex for money or drugs, health, arrests, and sources of income. The RBA has been found to be a reliable and valid research tool in this population (Weatherby, et al., 1994).

Participants were enrolled through two intake sites in the cities of Durham and Raleigh, NC, from February 1995 to October 1997. The study sample 495 African-American crack abusers (subsetted from the larger NC CoOp sample) who also self-reported alcohol use and did not report any injecting. For analysis purposes, levels of alcohol and crack use were defined as frequent and less than frequent, with frequent use defined as 15–30 days out of the last 30 days. Further, respondents were categorized into four groups based on their level of use of alcohol and crack, as follows: (1) frequent use of both alcohol and crack; (2) frequent use of crack and less than frequent use of alcohol; (3) frequent use of alcohol and less than frequent use of crack; and (4) less than frequent use of both alcohol and crack. These groups were analyzed by demographics and pro-portion of sexual risk (discussed below).

Because the population, by definition, did not include IDUs, HIV risks were limited to sexual practices — we did not include risks associated with injecting. We specifically considered: (1) sex while under the influence of crack or alcohol; (2) number of sexual partners; (3) frequency of sex (including vaginal, oral, and anal), and (4) frequency of sex without barrier protection (i.e. condom or dental dam).

The level of use of both alcohol and crack was based on the number of days of use in the last 30 days. In order to give some qualitative sense of the level of alcohol consumption, we have also reported the number of drinks per day by the reported number of days alcohol was used. The corresponding data on the number of times crack was used per day was not available. However, given the fact that crack users typically do 'crack runs' lasting for several hours or even for days, the number of days of use appears to be a realistic indicator of level of use.

All variables are categorical, and appropriate modeling and hypothesis-testing methods were used. For modeling frequencies in 2-way tables, poisson regression models were used. For modeling binary response variables, logistic regression was used. For both of these methods, maximum likelihood model estimates were fit, and the resulting likelihood ratio statistics were used for inference (Agresti, 1990). When the response was ordered categorical, weighted least squares models were used to estimate population means. Inferences were made using the associated assymtotic variance estimates of parameters of interest (Grizzle et al., 1969).

Gender was included in the models, but the results are reported by gender for only the two cases where significant effects were found: number of sex acts and number of sex acts without condoms. Other demographic variables were tested, but their effects were considered trivial in all models.

3. Results

Demographic characteristics of the sample are shown in Table 1. Although men and women were nearly equally represented in the sample, women were more likely to report frequent crack use than men, and men were more likely to report frequent alcohol use than women. Nearly 40% of the sample, however, reported frequent use of both. The majority of the respondents were between ages 26 and 45 years, with 83.3% of the sample falling in that range. However, frequent users of both tended to be younger than the other groups: 53.6% in the 26–35 range and only 34.2% in the 36–45 range. A substantial portion of the sample (40%) had less than a high-school education, although, surprisingly, the greatest proportion of respondents with less than a high-school education were less-than-frequent users. A very low proportion of the sample was married or living as married, ranging from 10.7% of frequent users of both to 15.6% of frequent alcohol users. Only 32.7% of the sample was employed, with the frequent crack users reporting the lowest rate of employment (26.5%). The homeless rate for the sample was high (39.1%); the rate was particularly high for those reporting frequent use of both (46.4%) and considerably lower for those reporting less than frequent use (25.2%). Alcohol use began earlier than crack use: 76.9% of the sample had begun alcohol use by age 18 but only 5.9% had begun crack use. Nearly a quarter (23.6%) of those reporting frequent use of both had begun alcohol use before 11 years of age. More than half the sample (55.0%) began crack use after the age of 25 years, compared to only 1.2% who began alcohol use after the age of 25. Approximately half the sample had previously been in drug treatment.

Table 1
Demographics by frequency of alcohol and crack use

	Frequent use of both[a] ($n = 196$) (%)	Frequent crack only[b] $N = 98$ (%)	Frequent alcohol only[c] $n = 90$ (%)	Less than frequent use[d] $n = 111$ (%)	Total $n = 495$ (%)
Gender					
Male	52.0	48.9	52.2	53.2	50.5
Female	48.0	57.1	47.8	46.9	49.5
Age					
18–25	6.1	10.2	5.6	15.3	8.9
26–35	53.6	43.9	47.8	36.9	46.9
36–45	34.2	36.7	40.0	36.9	36.4
46+	6.1	9.2	6.7	10.8	7.9
Education					
Less than H.S.	35.7	38.8	41.1	47.8	40.0
GED or more/H.S.	64.3	61.2	58.9	52.3	60.0
Married/living as married	10.7	13.3	15.6	11.7	12.3
Employed	31.6	26.5	40.0	34.2	32.7
Homeless	46.4	38.8	40.5	25.2	39.1
Age first alcohol use					
<11	23.6	11.2	18.9	12.6	17.8
11–17	59.0	63.3	53.3	60.4	59.1
18–25	16.4	24.5	25.6	26.1	21.9
>25	1.3	1.0	2.2	0.9	1.2
Age first crack use					
<11	5.2	0.0	0.0	0.0	0.2
11–17	8.3	4.1	4.4	3.6	5.7
18–25	38.7	38.8	32.2	46.0	39.2
>25	52.6	57.1	63.3	50.5	55.0
Ever been in treatment[e]	53.1	53.1	43.3	49.6	50.5

[a] Frequent use, 15–30 days in last 30 days.
[b] Frequent crack use and less than frequent alcohol use.
[c] Frequent alcohol use and less than frequent crack use.
[d] Less than frequent alcohol and crack use.
[e] Includes drug and alcohol treatment.

Table 2 presents the relationship between usual drinks per day and number of days of drinking per month. The usual number of drinks per day was classified into three ordered categories (0–3, 4–10, and 11 or more) and cross-tabulated with the categorical days of alcohol use in the past 30 days (0–4, 5–14, and 15–30 days). A test of no general association was significant ($\chi^2 = 60.02$, df = 4, $P = 0.0000$). The linear-by-linear trend was significant ($\chi^2 = 44.18$, df = 1, $P = 0.0000$), and the residual was reasonably small ($\chi^2 = 6.0443$, df = 3, $P = 0.1095$). This trend shows a tendency for subjects who drank on more days in the previous month to have had more drinks per day.

Table 2
Days of alcohol use by number of drinks per day

	Days of alcohol use in last 30 days		
	1–4[a] ($n = 115$)[b]	5–14 ($n = 94$)	15–30 ($n = 286$)[c]
Usual drinks per day			
0–3 ($n = 256$)	89	59	108
4–10 ($n = 189$)	20	30	139
11+ ($n = 46$)	5	5	36

[a] Includes 13 people who reported drinking but also reported usual drinks per day as zero.
[b] One case missing.
[c] Three cases missing.

Table 3
Days of crack use by days of alcohol use

	Days of alcohol use in last 30 days		
	1–4 ($n = 115$)	5–14 ($n = 94$)	15–30 ($n = 286$)
Days of crack use in last 30 days			
1–4 ($n = 91$)	33	18	40
5–14 ($n = 110$)	30	30	50
15–30 ($n = 294$)	52	46	196

Table 4
Attitudes toward drinking by days of alcohol use

	Days of alcohol use in last 30 days		
	1–4 ($n = 115$)	5–14 ($n = 94$)	15–30 ($n = 286$)
Proportion reporting yes			
You think you're a normal drinker	68.4	71.3	64.9
Friends think you're a normal drinker	61.1	61.1	50.9

The relationship between alcohol and crack use is shown in Table 3. The days of crack use in the last 30 days were classified as 1–4, 5–14, and 15–30 days and cross-tabulated with the categorical days of alcohol use in the past 30 days. A test of no general association between crack and alcohol use is significant at any reasonable level ($\chi^2 = 26.25$, df = 4, $P = 0.0000$), implying that crack and alcohol use are associated. It is therefore reasonable to expect that respondents in a higher use category for one of the substances would be likely to be in a higher use category for the other substance, and that low use of one substance would be associated with low use of the other. A test of the linear-by-linear trend is consistent with this hypothesis ($\chi^2 = 20.68$, df = 1, $P = 0.0001$). Further, the residual from the linear-by-linear trend is consistent with the hypothesis of no other effects ($\chi^2 = 5.28$, df = 3, $P = 0.1522$).

Despite the high levels of drinking reported by the sample, many respondents considered their drinking patterns normal. As indicated in Table 4, responses to the questions 'Do you think that you are a normal drinker?' and 'Do your friends think that you are a normal drinker?' were cross-tabulated with the categorical days of alcohol use in the past 30 days. In fact, there was little difference between the three groups in their own attitudes toward their drinking. For those who said they considered themselves normal drinkers, there was no apparent association by use group ($\chi^2 = 1.456$, df = 2, $P = 0.4828$). For those who said their friends considered them normal drinkers, the overall test suggests that there may be an association ($\chi^2 = 4.972$, df = 2, $P = 0.0832$). For the two lowest use groups, about 61% of the respondents reported that their friends think they are normal drinkers, compared to about 50% in the highest use group. The contrast of the two lowest groups with the highest group is significant, ($\chi^2 = 4.949$, df = 1, $P = 0.0261$), and the residual is small ($\chi^2 = 0.0001$, df = 1, $P = 0.9943$). The estimated odds ratio is 1.5.

Because the sample is comprised of non-injectors, most of the respondents' risk for HIV infection is associated with their sexual behaviors. The proportions of respondents reporting yes to alcohol-impaired sex, crack-impaired sex, and two or more sexual partners are shown in Table 5. These sexual behaviors were modeled as

functions of the four crack and alcohol use groups and of gender. Two hundred and eighty-eight respondents (58%) reported alcohol-impaired sex. In general, respondents who reported frequent use of alcohol, crack, or both displayed significantly greater risk than those who reported no frequent use. Alcohol-impaired sex was reported by 71% of the frequent alcohol use group but only 40% of the less-than-frequent group, an odds ratio of 3.7 (χ^2 = 46.30, df = 1, P = 0.0000). No other effects had important relations with alcohol-impaired sex (χ^2 = 2.3 1, df = 6, P = 0.8887). Two hundred and seventy-eight respondents (56.2%) reported crack-impaired sex. In the model, more crack-impaired sex was associated with both more alcohol use (odds ratio = 1.9) and more crack use (odds ratio = 2.1). Since these effects are approximately the same, a model with equal odds ratios was fit. The estimated odds ratio for greater alcohol or crack use was 2.0 (P = 0.0000), while the test of loss of fit demonstrates that this forced equality is reasonable (χ^2 = 0.06, df = 1, P = 0.8065), and the overall model fit is good (χ^2 = 2.4 1, df = 6, P = 0.8779). Thus, the effects of either frequent use of alcohol or frequent use of crack on crack-impaired sex were about the same.

Table 5
Sexual risk by frequency of crack and alcohol use

Risk behavior/last 30 days	Frequent use of both[a] (n = 196)	Frequent crack use[b] (n = 98)	Frequent alcohol use[c] (n = 90)	Less than frequent use[d] (n = 111)
Proportion reporting yes				
Alcohol-impaired sex	71.9	37.8	70.0	42.3
Crack-impaired sex	68.4	57.1	55.6	34.6
Two or more sex partners	38.3	35.7	33.3	18.2

[a] Frequent use, 15–30 days in the last 30 days.
[b] Frequent crack use and less than frequent alcohol use.
[c] Frequent alcohol use and less than frequent crack use.
[d] Less than frequent, <15 days use of both in last 30 days.

Table 6
Sexual acts by frequency of crack and alcohol use

Risk behavior/last 30 days	Frequent use of both[a] (n = 196[e])	Frequent crack only[b] (n = 98[e])	Frequent alcohol only[c] (n = 90[e])	Less than frequent use[d] (n = 111)
Number of sex acts (columnwise %)[f]				
Males	n = 102	n = 42	n = 46	n = 59
0	14.8	33.3	13.0	33.9
1–10	50.0	42.9	47.8	44.1
11+	35.3	23.8	39.1	22.0
Females	n = 93	n = 55	n = 43	n = 52
0	14.0	16.4	14.0	7.7
1–10	32.2	50.9	51.2	67.3
11+	53.8	32.7	34.9	25.0

[a] Frequent use, 15–30 days in the last 30 days.
[b] Frequent crack use and less than frequent alcohol use.
[c] Frequent alcohol use and less than frequent crack use.
[d] Less than frequent, <15 days use of both in last 30 days.
[e] Total n includes one missing case.
[f] Sex acts include vaginal, oral, and anal sex.

Although sexual partners who are IDUs represent a significant risk factor for HIV infection, only 8% (n = 39) of the respondents in this sample reported IDU sexual partners. However, multiple sex partners also represent a significant risk, and 32% (n = 160) of the respondents reported two or more sex partners in the last 30 days. Having two or more sex partners was associated with both alcohol and crack use and their interaction (P = 0.0255, 0.0063, and 0.0943, respectively). An inspection of the data indicates that the less-than-frequent-use group had the lowest probability of having two or more sex partners, while among the other three use groups the probability was about the same. A model reflecting this fact estimated 18.0% of the less-than-frequent group and 36.5% of all other groups report having two or more sex partners. The loss of fit for this restriction shows that the restriction is reasonable (χ^2 = 0.74, df = 2, P = 0.6907), and the overall model fit is good (χ^2 = 3.85, df = 6, P = 0.963).

The number of sex acts is of interest primarily as an indication of the overall level of sexual activity in the groups. The proportion of respondents reporting sex acts in each use group is summarized by gender in Table 6. The number of sex acts was reported as three ordered categories: 0, 1–10, and 11 +. Values of 0, 5.5, and 20 were placed on the categories, and a means model was fit. An unweighted average of 9.4 sex acts in the last 30 days was reported across populations. Both alcohol and gender were significant in this model. Frequent alcohol

users averaged 2.8 more sex acts than did less than frequent users (χ^2 = 16.64, df = 1, P = 0.0000), and females averaged 1.8 more sex acts than males (χ^2 = 6.72, df = 1, P = 0.0096). The overall model fits well (χ^2 = 4.14, df = 5, P = 0.5296). Crack use was not significant.

Table 7
Sex acts without condoms by frequency of crack and alcohol use (columnwise %)

Risk behavior/last 30 days	Frequent use of both[a] (n = 167)	Frequent crack use[b] (n = 74)	Frequent alcohol use[c] (n = 77)	Less than frequent use[d] (n = 87)
Number of sex acts without condoms[e]				
Males	n = 87	n = 28	n = 40	n = 39
0[f]	19.5	32.1	27.5	25.6
1–10	44.8	46.4	45.0	48.7
11+	35.6	21.4	27.5	25.6
Females	n = 80	n = 46	n = 37	n = 48
0[f]	15.0	21.7	29.7	27.1
1–10	31.3	39.1	37.8	54.2
11+	53.8	39.1	32.4	18.7

[a] Frequent use, 15–30 days in the last 30 days.
[b] Frequent crack use and less than frequent alcohol use.
[c] Frequent alcohol use and less than frequent crack use.
[d] Less than frequent, <15 days use of both in last 30 days.
[e] Sex acts include vaginal, oral, and anal sex.
[f] Always used condoms or no reported sex acts.

The proportion of reported sex acts without condoms in each use group is summarized by gender in Table 7. The number of sex acts without condoms was measured on respondents who had at least one sex act and placed into the same ordered categories with the same weights as in Table 6. The unweighted average number of sex acts without condoms in the last 30 days across all subpopulations was 8.8. The effects for alcohol use, crack use, and gender were significant. Frequent alcohol and frequent crack use were each associated with almost two additional sex acts with no condom (χ^2 = 5.59, df = 1, P = 0.0180 and χ^2 = 6.86, df = 1, P = 0.0088, respectively). Females averaged 1.5 more sex acts with no condom than did males (χ^2 = 3.76, df = 1, P = 0.0526). The fit statistic (χ^2 = 4.22, df = 4, P= 0.3769) again implies a good fit.

Table 8
Percentage of sex acts without condoms by frequency of crack and alcohol use (columnwise %)

Risk behavior/last 30 days	Frequent use of both[a] (n = 167)	Frequent crack use[b] (n = 74)	Frequent alcohol use[c] (n = 77)	Less than frequent use[d] (n = 87)
Percentage of sex acts without condoms (%)[e]				
0[f]	17.4	25.7	28.6	26.4
1–49	14.4	12.2	9.1	9.2
50–99	15.6	16.2	13.0	5.8
100	52.7	46.0	49.4	58.6

[a] Frequent use, 15–30 days in the last 30 days.
[b] Frequent crack use and less than frequent alcohol use.
[c] Frequent alcohol use and less than frequent crack use.
[d] Less than frequent, <15 days use of both in last 30 days.
[e] Sex acts include vaginal, oral, and anal sex.
[f] Always used condoms or no reported sex acts.

As shown in Table 8, four categories were formed for the percentage of sex acts without condoms: 0%, 1–49, 50–99, and 100%. These ordered categories were given weights of 0, 25, 75, and 100, and the mean was modeled. The means differed only trivially among the use and gender groups (χ^2 = 3. 10, df = 7, P = 0. 8756). The similarity between groups is not indicative of equivalent risk, however, particularly because the non-frequent users were much less likely to have multiple partners.

4. Discussion

Our sample of African-American alcohol and crack users who did not report injecting are part of a marginal population: in general, they are relatively young, poorly educated, single, and underemployed. A surprising finding, and perhaps the one most indicative of the marginal status of this group, is that 193 respondents reported homelessness — almost 40% of the sample. Further, respondents reporting frequent use of one or both

substances were substantially more likely to also report homelessness than respondents reporting less frequent use.

Alcohol use is a serious problem in this population. For most respondents, the first use of alcohol occurred 5–10 years before the first use of crack, during their mid-to-late teen years. This was especially true of the men in the sample. Previous studies have suggested that alcohol use alone may be a major risk for HIV infection (Boscarino et al., 1995; Scheidt and Windle, 1995; Shillington et al., 1995). Respondents in this study may have significant HIV risk related to their use of alcohol before they began crack use.

A further indication of the marginal status of this sample is seen in their expressed attitudes toward alcohol use. Despite the high levels of reported use, two-thirds of the respondents felt that their drinking behavior was normal, and over half felt that their friends considered their drinking normal. This attitude points to a subculture norm of drinking practices that may or may not be consistent within the larger African-American community. Within the context of the subculture, the respondents' drinking may indeed be normal. If this is true, it suggests the need for interventions that target the subculture in order to change perceptions of normal alcohol use. The neglect of subculture-focused interventions may compromise interventions designed to target individuals in this community for alcohol and drug treatment and HIV risk reduction.

In addition to HIV risk, there are other well-known health problems associated with the excessive use of alcohol. These problems include poor nutrition, pancreatitis, hepatitis, cirrhosis of the liver, and cancer of the liver. Studies also suggest an increased risk for infection as a consequence of decreased immune capacity in the heavy alcohol user (Roselle, 1992). These are significant health problems requiring costly, ongoing, inpatient and outpatient medical care. Furthermore, the growing number of hepatitis C cases among long-term substance abusers who continue to drink heavily poses an additional burden on the health care system. The respondents in the sample are under-employed and most likely without adequate health insurance and adequate access to health care. They are also likely candidates for health problems associated with excessive alcohol use.

Furthermore, despite the high levels of crack and alcohol use in the sample, a large proportion of the respondents had never been in drug treatment or detoxification. Only about half the sample (50.5%; $n = 250$) reported previous experience with treatment, and 38% of those who reported frequent use of alcohol, crack, or both had no previous history of drug treatment or drug detoxification.

The data on the first use of alcohol and crack, and the close association of alcohol and crack in sexual risk, point to important considerations for the focus and timing of interventions in similar populations. Earlier interventions targeting the reduction of alcohol consumption in younger people may help to reduce the numbers who move on to crack use and its associated risks; they may also help to reduce both the HIV risk associated with early alcohol use and the significant health problems associated with chronic excessive alcohol use. Such interventions may be particularly important given the fact that high proportions of the study population, even among the frequent users, reported no previous history of drug treatment.

High risk sexual behavior was the immediate HIV risk in the sample. Because the respondents were a group of alcohol and crack users who did not inject in the last 30 days, their measurable risks were not related to injecting drug use. The behaviors that increased their HIV risk included sex without condoms, multiple sexual partners, and alcohol- and crack-impaired sex. A relatively small number of the sample had IDU sex partners. This is consistent with previous findings that crack cocaine abusers (Tims and Leukefeld, 1993; Washton and Stone-Washton, 1993) and alcohol users (Jacobson et al., 1992; Boscarino et al., 1995; Scheidt and Windle, 1995; Woods et al., 1996) are at high risk for HIV infection due to their sexual activity.

In this sample, those reporting frequent use of both alcohol and crack were also more likely than those in the other three groups to report alcohol- and crack-impaired sex, two or more sexual partners, greater numbers of sexual acts, and greater numbers of sexual acts without condoms. Those reporting frequent use of both substances had higher risk compared to those reporting frequent use of alcohol or crack only. Many studies have

noted the sexual risk for HIV infection associated with crack use, but it is particularly noteworthy that, in this sample, the proportions reporting more than ten sex acts and more than ten sex acts without condoms were much higher for those reporting frequent use of both alcohol and crack than for those reporting frequent use of crack only. While these findings do not necessarily suggest that alcohol use exacerbates sexual risk, it does point up the increased risk for individuals using both substances frequently. In general, however, respondents reporting any frequent use of alcohol or crack were at higher risk than non-frequent users. Moreover, the findings indicate that women may be at higher risk than men, particularly because women who reported frequent use of alcohol and crack also re-ported greater numbers of sexual acts and greater numbers of sexual acts without condoms than men.

The findings suggest an intimate relationship between alcohol use and crack use and the associated sexual risks in the sample as a whole. Not only is the rate of crack-impaired sex higher for those who use alcohol frequently than for those who do not, but the rates of crack-impaired sex are nearly as high for those who report frequent use of alcohol (with some crack use) as for those who report frequent use of crack (with some alcohol use). Similar results are seen for the other sexual risk factors. However, it is not possible, based on this analysis, to determine the exact nature of the relationship between alcohol and crack use and how that relationship affects sexual risk. Additional research on the amount and circumstances of use is needed to give a clearer picture of this complex pattern of substance abuse. If alcohol use is, in fact, a fundamental component of crack use, then it may be a particularly dangerous component, especially given the attitudes expressed by many respondents who consider their drinking ‘normal’. In that case, an important approach to HIV risk reduction might begin by focusing on reducing alcohol use, especially among teenage African-Americans.

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