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Linkage to Community-Based Health Services for HIV-Infected Alcohol Users Leaving Jail

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Master of Public Health

Global Epidemiology

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Bachelor of Science, Biochemistry

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2004

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Linkage to Community-Based Health Services for HIV-Infected Alcohol Users Leaving Jail

By Rose Wanjala

Alcohol use disorders continue to be a serious public health problem in the U.S. with more than half of the American population aged 12 years or older reporting current alcohol use. Crimes associated with alcohol use range from driving while intoxicated to assault and homicide. Approximately 40% of the inmates in the U.S report to have been under the influence of alcohol at the time of offence. A strong dose-relationship has been reported between alcohol use and increased high risk behaviors for HIV transmission, and poor adherences to HIV medication. If alcohol use is associated with poorer linkage to care upon release from jails, greater efforts to assess and treat alcohol disorders in jail settings may be warranted. This research aims at determining if problematic alcohol use among HIV-infected detainees influences linkage to HIV care in the community upon release from jails.

Methods: The analysis was conducted as part of Enhance Link Initiative a multi-site evaluation project across 10 jail sites. A longitudinal study design was used where data were collected on 348 HIV infected individuals at study enrollment, post release and six month after jail release. A composite score (CS) from the Addiction Severity Index was used to determine the severity of alcohol and drug use. Multivariate logistic regression was used to test the hypotheses.

Results: More than half of the participants reported using alcohol in the past 30 days before their incarceration. Among them, 40% reported using alcohol with no drug involvement. There was a trend among the 120 individuals whose alcohol CS was greater than 0.23 to be less likely to link to care but the association was not statistically significant. Significant predictors of linkage included male gender and taking HIV medication in the 7 days before incarceration.

Discussion:

Findings suggest the need to treat alcohol use disorders among HIV-infected jail detainees in order to enhance linkage to community HIV care .Substance abuse treatment in jail settings tends to focus on availing treatment to people using drugs. HIV infected individuals who abuse alcohol may need alcohol specific services to improve rates of linkage to community health care.

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BACKGROUND AND LITERATURE REVIEW

Substance abuse remains a significant problem among incarcerated populations. According to a recent report by the Bureau of Justice and Statistics (BJS), there are 2.3 million U.S adults behind bars [1]. 1.9 million have some kind of substance abuse implicated in the reasons for their incarceration [2]. Findings from a survey on inmates carried out in 2002 by BJS indicates that more than two–thirds of the jail inmates were found to be dependent on or to abuse alcohol or drugs [3]. One and half million met the definition for substance abuse or addictions using the DSM IV medical criteria, while 458,000, though they did not meet the strict DSM IV criteria, had histories of substance abuse, were under the influence of alcohol or other drugs at the time of their crime, committed offense to get money to buy drugs, were incarcerated for alcohol or drug law violation, or shared some combination of these characteristics [3].

In a recent report by the National Center on Addiction and Substance Abuse (CASA), it was reported that of the $38 billion spent on corrections in 1996, more than $30 billion was spent on incarcerating individuals who had a history of drug and/or alcohol abuse, were convicted of drug and/or alcohol violations, were using drug and/or alcohol at the time of their crimes, or had committed crimes to get money to buy drugs [4]. There are several studies that have been carried out to investigate and establish the problem of substance abuse among incarcerated populations especially among drug users. The Drug Use Forecasting (DUF) study established in 1987 [5], that later became the Arrestee Drug Abuse Monitoring (ADAM) program successfully demonstrated the problem of drugs in jail and prison settings and the need for monitoring substance use in correctional settings [5, 6]. Other relevant substance abuse studies in jail populations include a New York study where 80% of respondents reported that they had

substance abuse problems [7]. Another study is the Rhode Island study of HIV positive jail inmates where most participants reported having a history of substance use and identified cocaine and alcohol as the most commonly used substances [8].

Substance abuse lies at the base of most problems in correctional settings, a fact widely acknowledged by public health professionals. Strategies to help minimize the involvement of inmates in drugs and/or alcohol use are necessary if progress is to be made in ameliorating the problem. Effective strategies will not only benefit the health of the inmates but also their societal networks including family and friends. Children with incarcerated parents, who are substance involved, suffer because of separation from their parents when parents are sent to prison. Most often children are not united with their parents or end up going back to substance abused homes [9, 10]. Most of these children are affected emotionally and may remain stigmatized as they grow up [10]. They might end up becoming substance abusers themselves later on in life and a high probability of ending up in incarceration [11]. Addressing issues of substance use among incarcerated men and women who are parents in the community is therefore beneficial to the health of these children as well.

Alcohol use and risky behaviors'

Alcohol use disorders continue to be a serious public health problem in the United States. The Substance Abuse and Mental Health Services Administration reports that in 2008 , slightly more than half of Americans aged 12 or older reported being current drinkers of alcohol, more than one-fifth participated in binge drinking, and about seven percent were heavy alcohol drinkers [12]. In a study by hasin et al based on results from the National Epidemiologic Survey on alcohol and related conditions, it was reported that between 2001 and 2002, 8.5% of adults

experienced alcohol use disorders in the prior 12 months, while 30.3% experienced alcohol use disorders during their lifetime and these disorders were associated with significant disability [13].

Alcohol abuse is reported in over half of inmates in the United States [14]. Abuse of alcohol is related to several crimes ranging from intoxicated driving, assault, domestic violence to homicide [15]. Approximately 40 percent of inmates in local jails and state prisons are reported to have been under the influence of alcohol at the time of their offense [16]. Estimates from the National Crime Victimization Survey indicate that about 3 million crimes occur each year in which victims sense that the offender had been drinking at the time of the offence [17]. Each year there about 183,000 rapes and sexual assaults, 197,000 robberies, 661,000 aggravated assault, and nearly 1.7 million simple assaults that involve alcohol use in the United States [18].

Inmates' involvement in high HIV risk behaviors has been shown to occur before, during, and after incarceration [19-21]. These include exchanging sex for drugs, sharing needles, engaging in unsafe sexual practices, prostitution, and having multiple sexual partners; all factors associated with increased risk for HIV transmission [22, 23] . A strong relationship between use of alcohol and the increased HIV incidence has been found [24]. The link between alcohol and HIV transmission is often due to individuals having sex with more than one partner or not using condoms while intoxicated [25]. Use of alcohol has also been attributed to worsening of the AIDS condition particularly as a result of poor adherence to HIV medication [26]; although it is still unclear how alcohol use independently contributes to the worsening effects of the disease .

Other studies have suggested that heavy use of alcohol may have a direct physiological impact on risk behaviors such as increased sexual desire [27, 28] . Findings from a cross-cultural

study in eight countries show that alcohol is commonly used to lower inhibition and as a sex facilitator especially amongst men. Among women, alcohol use is associated with increased involvement in risky sexual encounters and sexual victimization [29]. In another cohort study of drug users, risky sexual behaviors were shown to increase across higher levels of alcohol use in both male and female drug users [30]. The gay and lesbian communities in the U.S have been shown to consume high levels of alcohol [31], which has been linked to engagement in unprotected anal intercourse, particularly anal intercourse with casual sex partners [32]. This could contribute to the high rates of HIV infections observed in this population.

Evidence from a prospective study of drug users suggest that a strong dose–response relationship exists between alcohol consumption and subsequent HIV acquisition [24]. Alcohol use is therefore a known predictor of high sexual risk behaviors and an indirect determinant of HIV acquisition [27]. Another study finding indicated that individuals who consumed any alcohol had a 77% higher risk for HIV infection compared to those who did not consume alcohol. And among those who consumed alcohol before having sex, there was 88% increased risk. Those involved in binge drinking , had two times higher risk as compared to the non-binge drinkers [26]. Cook et al find that 19% of HIV- infected primary care patients reported having drinking problems, and 33% consumed mild to moderate amounts of alcohol. Compared to the non-problem drinkers, problem drinkers were more likely to not take their antiretroviral medications on schedule.[33]

HIV/AIDS in correctional settings

The burden of infectious disease among persons passing through the correctional facilities (CFs) is tremendously high. This is driven by the large number of people released from

correctional facilities, with jails releasing an estimated 7.2 million individuals annually [35]. The HIV prevalence (1.5%) of incarcerated persons in the United States is reported to be approximately four times greater than the prevalence of the general population (0.4%) [36]. Amongst Americans living with HIV/AIDS in the U.S today, at least 17% go through a correctional facility, and at least 14% are released annually. And of all Americans living with AIDS, approximately 10 % are released from a CF [37].

Morbidity and mortality data strongly suggest that inmate populations experience higher rates of disease and disability than the general population [22]. This high prevalence of HIV infection in overcrowded correctional facilities poses a public health challenge [38]. Estimated data from 2007 statistics show that the confirmed AIDS cases among state and federal prison population (0.41%) was more than two times the rate in general population. By end 2008, inmates that were HIV positive or had confirmed AIDS accounted for 1.5% of the total custody population held in prisons. The confirmed AIDS cases amounted for a quarter (24%) of all HIV/AIDS cases [39]. In the U.S, jails are short-term holdings for people with minor changes. Depending on the offense committed, jails can hold inmates for an hour, one day or several days but not more than one year. Prison on the other hand comprise of individuals who are serving long-term offenses and are frequently transferred from the jails [23, 34]. Because prison populations comprise of individuals transferred from jails, the burden of HIV/AIDs accounted for in prisons can be extrapolated to jail populations.

The CDC recommends routine HIV testing as part of medical evaluation at all correctional settings [40]. Despite the challenges faced in implementing routine testing in jails due to the rapid turnover among detainees [41], significant progress has been made towards

incorporating HIV testing within jail facilities in the U.S. During the year 2008, there were 24 states that reported testing inmates, among them 23 reported testing inmates at admission, 5 during custody , and 6 at release [39]. The 2004 BJS survey on prison inmates reported that sixty nine percent of state inmates, and 77% of federal inmates reported being tested for HIV since admission, and of those tested since admission, 1.9% of state inmates and 1.1% of federal prisons reported being diagnosed with HIV infection. Among those tested, African Americans (2.0%) and Hispanic (1.8%) state inmates reported higher rates of HIV infection than whites (1.0%) [42]. There is limited documented data on the number of jails in the U.S offering HIV testing to inmates, however progress is being made towards establishing HIV testing programs in U.S. jail settings[43, 44].

Early diagnosis of HIV- infected individuals is crucial, it enables the implementation of successful antiretroviral interventions and prevention of secondary transmissions [45]. Testing in jails helps identify undiagnosed individuals and captures those who are in the initial stage of the disease, enabling the initiation of treatment at an early phase, and monitoring of disease progress. Armed with the results, it is easier to link inmates to treatment and support services in the community after release. Testing also increases awareness of individual HIV status that may impact change in social behavior and potentially less involvement in high risk activities. This may help reduce the spread of HIV within an inmate's sexual and societal networks. Since all persons entering CF's are eventually released back into the communities, the effective interventions do not only benefit CF populations , but also communities to which these inmates return on release[46].

Linkage to care interventions in jails

Correctional facilities are important settings for public health interventions [47]. Successful primary and secondary interventions within these settings can result in a reduction in the overall HIV prevalence in the U.S. [37], since the prevalence rates in this population are much higher than that of the general population. Access to health care services is a major problem for inmate population especially when released to the community. A large number of inmates undergo their first medical checkup when they are in incarceration [48]. Therefore it is beneficial to society at large if those released from jails are able to access continuous HIV care in their communities. Programs have been established to help improve access and ensure that before inmates are released from jail, they are linked to services, and have case management while in the community. Collaborative action between correctional systems, public health departments and community–based organizations is needed as it offers cost-effective interventions that benefit the health of inmates. There has been limited sharing of information and resources between correctional systems and public health agencies [49] to date. Intensifying this collaboration is important if we are to reach a goal of improving the health of the incarcerated populations.

Discharge planning encompasses a wide variety of services which may include community linkages, case management, and continuity of care; adherence to treatment regimens, availability of housing, quick access to benefit programs, and particular needs of people living with HIV/AIDS [50]. Several programs have been established to demonstrate the importance of linkage in incarcerated populations. The CDC funded randomized Antiretroviral Treatment Access Study (ARTAS-1) demonstrated the importance of case management for detainees upon release from jails. The study compared “brief strength-based case management intervention with

standard-of-care referral in linking recently diagnosed HIV-infected persons to a primary medical care provider" [51]. The outcome measured was attendance of individual for at least one HIV medical care visit within six months after enrollment. It was found that 78% of participants in the case management arm versus 60% in the standard-of-care control arm attended at least one HIV primary care visit within six month [51].

Following positive outcomes from the ARTAS-I trial, CDC funded another demonstration project (ARTAS-II) in ten health departments to evaluate the feasibility of implementing linkage to care model in local and state health departments, and non-profit community-based organizations. The study found that 79% of all participants enrolled in the program visited a HIV clinic at least once within the first six months [52]. Higher linkages were observed in sites with "co-located HIV medical care" [53]. This finding support the importance of implementing HIV testing in jails and integrating it with linkage to community based care, and be able to link them to needed care. "Linkage to care is the important bridge between HIV counseling and testing and HIV medical care. Successful implementation of a linkage to care program requires attention to all the program practices described"[53].

The COMPASS program at the Rhode Island Department of Corrections was designed to help link HIV-positive detainees released from the jail to HIV care, and other clinical and social services in the community. Upon release of detainees, the COMPASS program ensures that those released receive case management services and are linked to substance abuse treatment, mental health care services, health insurance programs and any other public assistance programs [8]. In a qualitative study carried out by the program to evaluate participants' views on the benefits received and the impact of the services on their lives, participants acknowledged maintaining their appointments and having improved access to medical care and social services including

routine HIV care. The study found that relapse to substance abuse and re-incarceration was the major challenge faced by most inmates after release from jail. Alcohol and drug use were reported to be reason behind the poor adherence to HAART in the population [8].

Project Bridge a federally funded project in Rhode Island state prison with an objective to increase continuity of medical care using a harm reduction strategy in addressing substance abuse found that most ex-offenders face addiction as the greatest barrier to continuity of care and social stabilization. “Addictions affect their health seeking behavior, medication adherence, and social relationships”. The study findings emphasize the need for enforcing substance abuse treatment plans in the initial period following prison release so as to address the problem of relapses and reduce the involvement in high risk behaviors. [54].

In New York City, the health Link model was designed to assist jailed women reduce the use of drugs and lessen involvement in risky behaviors when they return to their communities. Findings from these programs show that when women are released from jails, they may have intentions of changing their behavior but this is hindered by relapse into substance abuse, making them more likely to commit crime and be involved in risky behaviors especially for the many inmates returning to communities plagued with poverty and inadequate social support systems or safety nets [55].

Despite the continuous efforts to enhance linkages in correctional populations, low linkage rates still persist. There is decreased adherence to medications and worsening effects of HIV among inmates when they are released to the community [56]. It has been shown that those re-incarcerated are found to have worsening effects including higher viral loads and lower CD4 counts when they return to prison [56]. Decreased adherence to ART regimens has also been indicated as a major problem among younger populations who are reported to use high levels of

drugs and/or alcohol [57]. HIV-infected inmates are reported to have poor survival rates which have been attributed to the increased decline in retention of individuals in HIV care. A study found that persons who were not retained in HIV care experienced less improvement in $CD4^+$ cell count and plasma HIV concentration in response to HAART in a one year follow-up period as compared to those who continued to access HIV care [58].

In the Rhode Island qualitative study of HIV-infected inmates, substance use was linked to individuals missing medical appointments and poor HAART adherence [8]. One participant responded that he experienced drug relapse between the time he was released and his first meeting with the case manager, while several other participants reported that their substance abuse relapse contributed largely to their poor adherence to medications [8]. This finding support the need for implementing substance abuse treatment programs immediately after the inmates are released into the community.

Another study related heavy alcohol drinking to decreased medication adherence; persons with problem drinking were reported to be more likely to miss taking their dose of medication because of actively consuming either alcohol or drugs [33]. It is important to recognize that active drug use and alcohol consumption are thus the main impediment in adherence to HAART and maintenance of HIV-1 RNA and CD4 lymphocytes level [59]. Interventions to increase utilization of medical care in communities are a necessity for incarcerated populations and need to address a broad range of issues affecting the incarcerated. It is necessary to recognize that substance abuse and relapse during post release affects the extent to which inmates access care and maintain their medical appointments while in the community.

Substance abuse treatment in correctional facilities

A lot of efforts have been put forward in addressing problematic substance use in correctional facilities. Several treatment options are available to address inmates' needs and situations in the correctional facilities. "The therapeutic communities (TCs) are intensive, long-term, self-help, highly structured residential programs especially for hardcore drug users. Pharmacological maintenance programs involve long-term administration of a medication that either replaces the illicit drug or blocks its actions. They include methadone; a narcotic analgesic which is an effective substitute for heroin, morphine, codeine and other opiates, naltrexone; an opiod antagonist that blocks the effect of opiod such as heroin thus discouraging its use, buprenorphine; a medication that is still in the experimental stage that exhibits mixed opiod–like and opiod-antagonistic properties, and long lasting opiod maintenance compounds such as LAAM (Levo-alpha-acetylmethadol), that overcome the need for the daily clinic attendance that is required by methadone maintenance" [4].

The CDC and World Health organization (WHO) recommend that correctional facilities should offer health programs to prevent drug use relapse upon community transitions [60]. The methadone maintenance therapy (MMT) has been reported to be effective among drug users. Reduction of HIV and Hepatitis C Virus (HCV) transmissions and drug-related criminal activities as well as increased participation in drug treatment programs has been observed among individuals who undergo MMT therapy. Buprenorphine maintenance treatment (BMT) has been linked with improved housing and employment stability, reduced heroin use and decreased risk of HIV, Hepatitis B virus (HBV) and HCV infections [60-62]. Despite the recommendations to provide treatment in all jails in U.S, relatively few facilities have established treatment plans for substance inmate abusers. Among those that provide treatment, it is reported that 70 percent offer

treatment within the general population of the facility , 31 percent offer treatment in specialized units and 8 percent offer treatment in hospital or psychiatric unit [63]. Provision of these pharmacological therapies to inmates especially those with severe problems during jail stay and after jail stay is essential in achieving successful linkages in inmates after release. Low participation rates in the available treatment programs are a key issue to address in addressing substance abuse problems. One study reports that prisoners who abused alcohol were found to be less likely to report participation in alcohol treatment than in other abuse treatment [64]. It is therefore necessary to encourage participation in these programs by providing health education programs in jail settings that provide information to the detainees on the risks associated with substance abuse and the importance of treatment.

Established treatment programs have focused more on treatment of individuals with drug problems, while alcohol treatment programs have not been emphasized. It is important to recognize that alcohol is often used concurrently with drugs, and therefore needs to be addressed independently. Findings from a national randomized cohort study of French prisoners found that alcohol was frequently used by prisoners with nearly a fifth of the prisoners presenting alcohol abuse. The study also found that the prisoners who had alcohol abuse disorders differed from those who used drugs their socio-demographic characteristics, childhood history, imprisonment characteristics and psychiatric co-morbidity [65]. These results can be inferred to jail populations since prisons acquire their inmates from jails.

There are three medications disulfiram, naltriexone, and acamprosate that are approved by the U.S. Food and Drug Administration for use among individuals with indications of alcohol problems. “Disulfiram, an aversive agent reported to have significant adverse effects, and compliance difficulties with no clear evidence that it increases abstinence rates, decreases relapse

rates, or reduces cravings. In contrast, naltrexone, an anti-craving agent has been indicated to reduce relapse rates, cravings and increase abstinence rates. Acamprosate has also been reported to reduce relapse rates and increases abstinence rates". [66]. The use of these drugs in correctional facilities for alcohol treatment has not been explored to help prevent withdrawal symptoms and alcohol associated problems

Factors contributing to increased substance abuse after jail release include; inadequacy in housing for inmates after release, the lack of social support in the community, and poor follow-up from case managers [8, 67]. It is imperative to integrate all the necessary components including social services to improve linkage to health services provided , if preventive services are to be effective [68, 69]. One study reported that some of the reasons that inmate respondents gave for not linking to care included; "lacking transportation or childcare, scheduling conflicts, being too ill, drug or alcohol problems and forgetfulness" [70]. Homelessness is a major difficulty for inmates when they are released from correctional settings. They often do not often have a stable home to which to return; some end up sleeping on the street, some stay in shelters, while others live with friends. The estimated lifetime prevalence of incarceration among homeless people has been reported to range between 23% and 50% , and being homeless has been associated with individuals having history of arrest [71]. Because of the lack of stable homes, homeless individuals end up wandering the streets, often indulging in unhealthy behaviors and the tendency to commit crimes is high.

Jails may provide unique opportunities for the assessment and treatment of alcohol disorders. The alcohol use disorders identification test may be useful in evaluating the severity of heavy drinking and in selecting appropriate interventions [16]. Inmate awareness of their alcohol problem and the negative health effects associated with severe alcohol use, followed by a

treatment plan to help them cope with the addictions may contribute extensively to the reduction of many health problems associated with alcohol drinking, including HIV/AIDs. Medications may provide a safe and effective means to facilitate detoxification from alcohol. The opioid antagonist naltrexone has been documented to be useful in alcohol dependent individuals [72]. Research needs to be carried to determine if use of the naltrexone before inmate release will enhance linkage of alcohol users to care when in the community. This study purpose is to establish the extent of linkage among alcohol users to community care within Enhance Linkage, an initiative funded by the Health Resources and Services Administration.

METHODS

This study was conducted as part of the Enhance Link Initiative, a five-year multi site evaluation of ten demonstration projects in the US that aims at describing effective approaches to identifying HIV-infected inmates and developing innovative methods for providing care, and treatment to HIV-infected individuals in jail settings who are transitioning to their communities. The program was implemented in the jails at the end of 2007 and is currently ongoing. The sites are primarily located in the northeastern and southern regions of the US and they include: AID Atlanta (Atlanta, GA) , AIDS Care Group (Chester, PA) , University of Illinois Chicago (Chicago, IL) , Yale University (New Haven, CT), Bay State Medical Center (Springfield, MA), New York City Department of Health & Mental Hygiene (NYC, NY), Care Alliance Health Center (Cleveland, OH) , Philadelphia FIGHT (Philadelphia, PA), Miriam Hospital/Rhode Island Department of Corrections (Providence, RI), and University of South Carolina Research Foundation (Columbia, SC). These organizations partner with the local jails to provide HIV screening and diagnosis, prescribe antiretroviral therapy, and link clients to care[44].

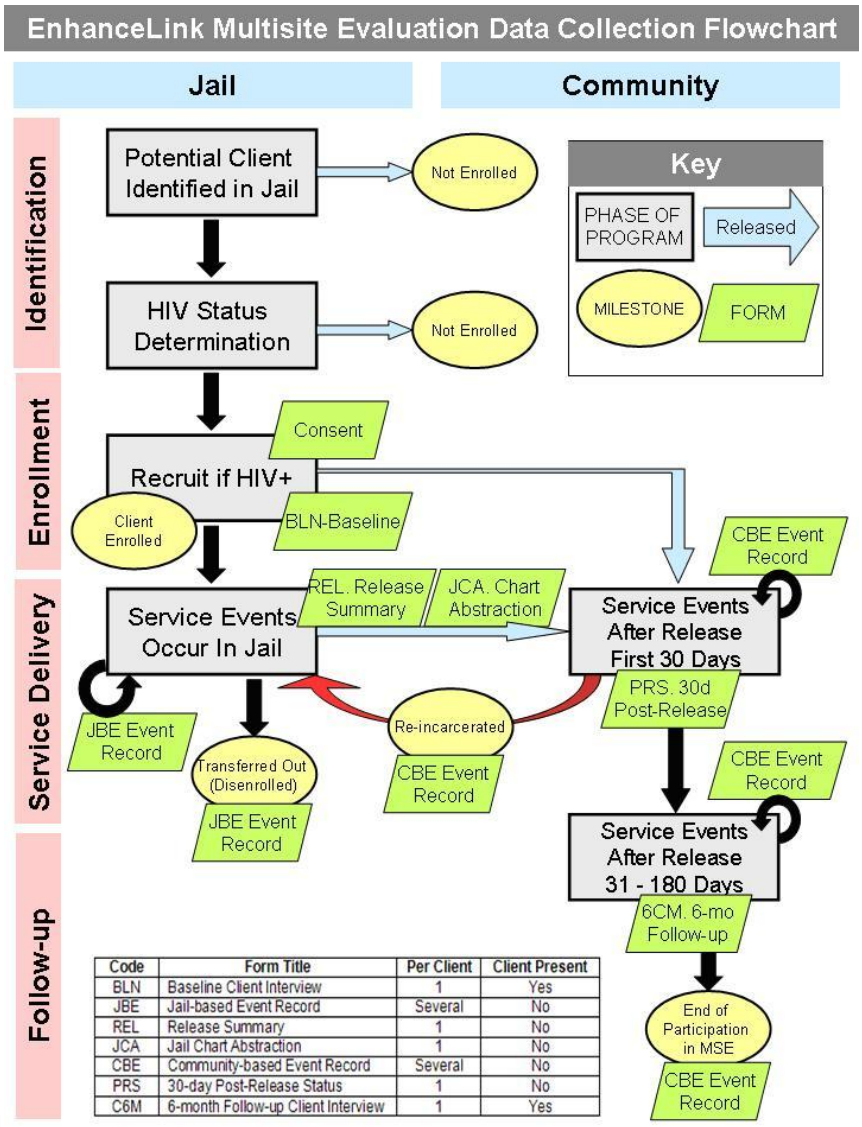
Participants included in this study were a subset of the enrolled 1206 jail inmates from all the 10 sites in the Enhance Link study. They were men and women between the ages of 18 and 65 who successfully completed the mental and physical health assessment at intake, and were identified as having a positive HIV serostatus. All subjects who met eligibility criteria for the client evaluation provided written informed consent prior to enrollment in the multi-site evaluation study and had the right to opt out at anytime. The Enhance Link project excluded men and women found to be unstable on a physical and mental health assessment at intake, inmates who tested HIV negative, inmates who spoke neither Spanish nor English, and inmates who were inebriated. There were neither monetary rewards received nor reduction in the participants' length of stay for participation in the program during jail stay.

Data collection

The design utilized the longitudinal approach where data were collected at different points in time during the inmates' jail stay and during the post release follow-up period. Interviews were conducted in either Spanish or English by project staff contracted from community based organizations, correctional facilities and local health departments spanning ten sites. All assessment instruments were administered using structured interviews, and questionnaires were used in data collection. The procedures included an opt-out screening of jailed persons at intake for HIV status followed by recruitment of clients by case managers. Each client who accepted the services was then introduced to the evaluation, and those who consented participated in a 45-minute baseline interview which was administered in the jail facility before release (or within the seven days after release), and before significant services were delivered. The clients were then monitored while in jail, and data were collected after each significant contact or event such

as discharge planning meeting, individual or group HIV prevention or counseling session etc. Upon release from the jail, the site project staff reviewed the medical charts from the jail stay, and a copy of the discharge plan was provided to the community-based case manager who then worked with the client after release. A post-release interview was conducted 30 days following release which summarized the issues at discharge such as the status at post release (probation, parole, whether released to a residential treatment program), discharge plan (appointments and referrals to community case management and other specified services), and access to social, medical, and mental health services in the month after release; enrollment in benefits; housing and employment status. After the post-release interview, the following months involved community follow-up by community case manager and data collection after each significant client contact or event in the community. Six months after release, the client participated in a 30 to 45 minute interview which was similar to the baseline interview and covered client linkages to services after release, drug and alcohol use, and re-incarceration. This interview also included optional childhood trauma, social support and risk behavior modules for sites focusing on these services.

Figure 1: The data collection flowchart



[1]

[43]

Included in the study analysis were client level data that included the 10 domains assessed at baseline and 11 on the follow-up which included: Health and Well-being, Family/Social relationships, Living conditions, HIV and Health, Medical Status and Health Insurance, Drug

[1] Source: http://enhancelink.org/sites/HivJailStudy/default.aspx

and Alcohol Use, Psychiatric status, Criminal Justice/legal status, Employment, while Demographic and Client level satisfaction was assessed at follow-up only. In addition, clinical data including CD4 and viral load, measurements were collected from the jail medical chart and the community clinic charts. The multi site evaluation study was approved by Rollins School of Public Health of Emory University and Abt Associates Institutional Review Board

Methods of analysis

Analysis of data was limited to participants released from the jails before March 2010 so as to capture individuals who had stayed in the community for at least seven months after their release and to minimize the issue of missing data as the data collection process was still ongoing. Exclusion from the analysis included; individuals with no release dates (these persons were assumed to still in be in incarceration), those who stayed in the evaluation but received medical care somewhere else or stayed in evaluation but were re-incarcerated, those who dropped out while in the community but had plans of medical management from other clinics, those who died in jail before release or disenrolled while in jail, transferred to other facilities such as prisons, resettled in other cities upon discharge from jail or disenrolled within the one month of stay in the community after their release. After exclusion there were 348 individuals eligible for in study analysis.

We hypothesized that;

a) Individuals who used alcohol were less likely to link to HIV care in the community during their post release follow up period than those who did not use alcohol.

b) Among those who used alcohol, those who receive substance abuse treatment within the 30 day period after jail release were more likely to link than those who use alcohol and did not receive treatment.

Dependent variable definition

The primary outcome measured was linkage to HIV care in the community. The outcome was determined from the follow-up chart review form that records the client's health care for the six month period after they are released into the community. In this study analysis linkage is defined as having at least one CD4 count measurement taken in the community after inmate was released from jail. Included in the analysis were 219 subjects defined as linked and 129 individuals classified as not linked.

Independent variable definition

Our primary predictor variable was having severe drinking problems in the past 30 days before incarceration. Alcohol measurement was self-reported from baseline, and a weighted composite score based on the Addiction Severity Index (ASI) was used to measure the alcohol problem severity [73]

Statistical analysis

Statistical analysis was performed using SAS 9.2 statistical software package (Cary NC). Demographic statistics as reported at enrollment were calculated using means and standard deviations for the continuous variables, and frequencies and proportion for categorical variable. Characteristics of individuals were compared at baseline, and at follow-up based on the six month evaluation form. The composite score to determine alcohol severity was determined by six questions which included; days of any alcohol use in the past 30 days, days of alcohol to intoxication in the past 30 days, number of days in the past 30 days that one was troubled or bothered by any alcohol problems, how bothered or troubled one had been in the past 30 days by alcohol problems, and how important the treatment for this alcohol problem was. Thirteen questions were used to determine the composite score for drug use [73]. A chi-square test of independence was conducted to assess the associations of variables measured at post-release with linkage among those with six month evaluation data. Characteristics of individuals and their association with linkage was assessed using bivariate analysis. Screening to assess variables that were confounders and/or effect modifiers was done to determine the variables to be included in the model. Logistic regression was used to assess confounding and interaction in order to determine the best model to use in the analysis. Those variables found not to be individually significantly associated with linkage, and were not confounders or effect modifiers were dropped from the model. A multivariate logistic regression analyses were performed to test the hypotheses that alcohol consumption as reported at baseline was associated with linkage to HIV care in the community controlling for other variables that potentially influenced linkage. No interaction was present and thus included in the model were variables determined to be

confounders, those found to be significant in bivariate analysis and those specified in literature to have an association with linkage to HIV medical care. They included age, gender, race and ethnicity, marital status, drug use, taking medication in the past seven days, and being homeless. Unemployment was measured from the post release chart reviews carried out 30 days after release into the community. A chi- square test of association was used to determine the effect of substance abuse treatment on linkage among alcoholic users.

RESULTS

The calculated alcohol composite had a mean score of 0.23 (SD=0.23) and median score of 0.13, while that of drug use had a mean score of 0.21 (SD=0.15), and median score of 0.18. The mean score of each variable was used as the threshold value; 120 individuals were classified as having severe alcohol problems, and 159 with severe drug problems. Comparing those with severe alcohol problems to those without, the proportion of those who linked was 65 % lower among those with severe alcohol problems.

There were 223 (64.08%) individuals who had completed six month evaluation forms among those included in the analysis. Among them, 183 (52.29%) had linked and 40 (11.50%) had not linked to HIV care in the community. Among those who had not completed their six month evaluation, 36 (10.34%) had linked, and 89 (25.57%) had not linked.

As indicated in Table 1, the study population mostly comprised of unmarried individuals with mean age of 42.3 years (SD=8.79), and median of 43.3 years. Higher proportions were men (63.37%), blacks (73.14%), and 50.58% indicating less than high school or G.E.D., while 54.97% reporting being unemployed in the past 3 years before their current incarceration.

Table 2 compares characteristics of the respondents as reported at baseline and at six month follow-up, among individuals with six month evaluation data. Results show that there was a reduction in proportion of individuals involved in substance abuse after they go through jail and then released back to community. The proportion of those who reported to use alcohol regularly at baseline decreased from 57.01% to 37.44 % at six months evaluation, and a similar trend was observed among those who used alcohol to excess. Among those who reported using drugs at baseline, there was a 24% decline in drug use at the six month post release evaluation. A high number of individuals reported to have been treated as an outpatient for alcohol or drug use at six month evaluation (32.74%) as compared to the baseline (18.83%)

Among those with six month evaluation data, there were significant associations ($P < 0.05$) observed with linkage to care among those who considered themselves homeless (OR=0.43: 95% CI=0.2-0.9), had prior health care provider (OR=5.23: 95% CI=2.1-12.9), and those treated as an outpatient for alcohol/drugs in the past 30 days (OR=2.66: 95% CI = 1.1-6.3).

Table 3 shows the bivariate associations of linkage of several predictors as reported at baseline among HIV-infected jail inmates included in this analysis. Significant predictors of linkage in the study cohort included having ever been treated for drug abuse (OR = 1.76: 95% CI=1.1-2.8), taking HIV medications in the last seven days before incarceration (OR = 3.07; 95% CI=1.2-8.0), male gender (OR = 3.13: 95% CI= 2.0-5.0), and age, with those being older being more likely to link to care (OR=2.00: 95% CI=1.3-3.2). Those who were classified as having problem with drug use, and those who had ever experienced alcohol Delirium Tremens (DTs) in their life were found to less likely to link to care however these associations were not significant.

Table 4 shows results of bivariate associations with linkage among individuals with severe alcohol problems. Male gender was the only significant predictor of linkage in this population with the men being 2.42 times more likely to link to care than women. Lower linkages were found among those who experienced alcohol DTs (OR=0.73), treated as outpatient in the last 30 days (OR=0.62), and those who took HIV medication in the last seven days before incarceration (OR=0.56). Higher linkages were observed among severe alcohol drinkers who had severe drug problems, had been treated for drug abuse before incarceration, among those with high school or G.E.D or some college, and among those of age greater than 40 years.

In Table 5, multivariate logistic regression found that individuals with severe drinking problems were less likely to link to care upon release into the community [adjusted OR (AOR) =0.95% CI= 0.2-1.6], however this association was not statistically significant. Significant predictors in the multivariate analysis were male gender and taking HIV medication seven days before incarceration. Male participants were significantly ($P<0.05$) more likely to link to care than the female participants (AOR=4.41; 95%CI=1.7-11.5), and those who reported having been taking HIV medication in the last seven days before their incarceration, were significantly more likely ($P<0.05$) to link to care (AOR=3.69; 95%CI=1.1-12) as compared to those who were not taking HIV medications. Controlling for other factors, the odds of linking to HIV care was found to be lower among individuals of age less than 40 years, those who identified as Hispanic or Latino, those who had drug problems, and those who considered themselves to be homeless. The odds of linking to HIV care were found to be higher among blacks, and those married or cohabiting.

After release from jail, 70% of the study population was not released with HIV medication, among them 34 % had severe alcohol problems. A higher proportion of the cohort included in the analysis (77%) reported having ever taken HAART medication at some point in their life. The overall linkage to HIV care was significantly higher in this population, with those having history of taking HIV medication being 3.85 times more likely to link (P=0.0005). At discharge, 90% of them were indicated to have been released with HIV medication, and the odds of linkage significantly higher among them, with those released with medication been 4.23 times more likely to link than those who were not released with medication. For those who had severe alcohol problems, 74% reported having a history of ever taking HIV medication, and their linkage was 18 % higher compared to those who had no history of taking medication. According to the Jail Chart Review (JCR) chart, indicated that 62.5% of this cohort was taking HIV medication at the time of release, and 98% of them were released with HIV medication.

Comparing the likelihood of client going to their first scheduled appointment with substance abuse treatment in the 30 days period after release, those with severe alcohol problems were more likely to attend their appointments (OR=1.39: 95% CI=0.8-2.3). Overall participation in the substance treatment programs was very low with 8 % of those who were classified as having severe alcohol problems participating in the 12-step AA program, 2 % in the methadone maintenance treatment program, and about 10 % participating in other outpatient or in-patient program. Among those who had the composite score below the threshold, 46% attended their first substance abuse treatment appointments. There were only 6% who attended the 12-step AA program and were found to have significantly higher linkage rates than those who did not attend the program (OR= 7.2: 95% CI=0.9-56). 10 % attended methadone maintenance treatment

program and were also significantly more likely to link to care (OR=6.39; 95% CI=1.4-28) than those who did not receive treatment.

Unemployment after jail release was found to be a significant predictor of linkage in this study cohort with those who reported being unemployed during post- release having higher odds of linkage than those who were employed (OR=2.25: 95%CI=1.4-3.5).

DISCUSSION

The Use of alcohol has recently been identified as a potential modifiable characteristic associated with poor adherence to HIV medication [33, 74], decreased healthcare utilization, and poor HIV treatment outcomes among HIV infected individuals [75]. Our results are consistent with other studies that have associated alcohol to low HIV linkage rates in communities [8, 38, 49, 52, 60]. We confirmed that a trend exists between alcohol use especially among individuals using alcohol to excess, and poor linkages of HIV-infected jail inmates upon release from jail with participants from our study with severe drinking problems having a 37% lower likelihood to link to care in the community. The association found in our analysis was not statistically significant.

Several studies have found alcohol to be a significant predictor of linkage to HIV care. Samet et al found that regardless of amount of alcohol consumed, it negatively impacted adherence to antiretroviral therapy [76]. A cohort study of 140 patients, found that adjusting for demographic and clinical factors, those who actively used drugs took 59% of doses of HAART medication vs. 72% non-users, and among those drinking alcohol 66% took doses vs. 74% for non-drinkers [77]. Use of alcohol has also been shown to impact the virological outcomes of HIV-infected patients receiving HAART. A study found that heavy alcohol users receiving

antiretroviral therapy were more likely to have CD4 counts below 500 cells/µl, and less likely to achieve suppression. Heavy alcohol users were found to more likely to be male between ages 35 and 45 years of age [78]. Similarly, results in our study identified men to have severe alcohol problems; however they were more likely to be individuals of age less than 40 years.

Multiple factors may influence the inability of alcohol users to link to care when released to the communities. Our study found that alcohol users who considered themselves homeless were less likely to link to care in the community. Our results support findings from a study that found one-third of homeless and marginally housed persons receiving HAART, discontinued therapy during follow-up [79]. Homeless people exhibit high rates of mental illness and drug or alcohol abuse [80]. Most of the current evidence about the relationship between homelessness and substance use supports a social selection model that indicates that severe substance abuse may be a direct pathway to homelessness [81]. A majority of the homeless often state alcohol and/or drugs as an intermediate factor for being homeless [82]. Alcohol use among the homeless complicates adherence to outpatient care and is associated with increased inpatient utilization among HIV-infected veterans.[83].

Unemployment has been known to negatively influence the utilization of health care services in populations; however in this cohort (N=348), alcohol users who were unemployed were more likely to link to care than those employed. This is possibly because they have more free time, and hence can easily access and avail themselves to the community based services. The increased linkages observed among individuals who reported having health care provider, those who were taking HIV medication, and among those who were released with HIV

medication highlights the importance of enhancing linkages through provision of discharge planning, case management and continuity to care.

It is necessary to recognize and address the needs of alcohol users in jail settings. More than half of the participants in this study reported using alcohol in the past 30 days before their incarceration. Among them, 40% reported using alcohol with no drug involvement. This study finding reinforces the importance of implementing alcohol treatment plans that address the needs of people using alcohol independently. Many of the treatment modalities available in jail settings focus on availing treatment to people using drugs [84]. Among alcohol users in this study, more than 50% reported to have been treated for drug abuse in their lifetime as compared to 16% who reported to have been treated for alcohol abuse. The reason for these could be because many jail settings have established drug treatment programs in place and mechanisms to screen or diagnose individuals with drug addictions. The 2010 report on substance abuse treatment by the Federal Bureau of Prisons lays down a detailed description of identifying offenders with drug abuse treatment needs in prison settings [85], but it does not include the criterion that can be applied in jail settings. The described guidelines are specified for drug users with no specific description for individuals experiencing alcohol problems. The specified criterion may identify some of the alcohol users who concurrently use drugs, but for those who use alcohol independently do not benefit from the available programs.

Participation in the available alcohol treatment programs was very low among severe alcohol users in our study. Among those who reported alcohol use, less than 10% said they participated in substance treatment programs for alcohol treatment including the 12-step AA program and methadone maintenance program. This reinforces the need to establish better

screening methods to identify individuals with alcohol problem and introduce them to available services.

There are several limitations that should be considered when examining the findings reported. The differential effect observed between alcohol consumption and community based health care utilization may be attributed to the different ways in which studies measure alcohol use. In some studies alcohol consumption is determined by the number of days alcohol was used or amount consumed per day. In our analysis, alcohol was measured as number of days one used alcohol in the last 30 days. This however may not establish the severity or extent of intoxication that hindered participants from seeking care. It is plausible that someone may have consumed alcohol for the 30 days but still was able to link to care.

The study variables used in the analysis were measured based on the inmate report at enrollment. This analysis does not account for change of behavior while in jails which could be a contributing factor to the poor linkages in the community. It is possible that some individuals who reported not to use alcohol at baseline may have started drinking after release from jails. The analysis does not account for predisposing factors that could influence linkage such as case management, mental health treatment or provision of housing, important factors that may influence the linkage rate.

The analysis does not exclude people who were not aware of their HIV status at the time of enrollment, and this could bias some of the results. For example the reason why some individuals were not taking HIV medication in the last 7 days before incarceration or did not have a history of ever taking HIV medication might be because they were unaware of their status before incarceration. Because the study is still ongoing, there was large number of missing data.

This could be as a result of delay in data entry or the participant did not answer the specific questions

In conclusion, more studies need to be performed to fully establish the effect of alcohol use on HIV linkage to care, to help present sufficient evidence to support the postulated association of alcohol use with linkage. Linkage to HIV care is difficult to define and studies have different ways on how linkage is defined and this could be the reason for the different effects observed across studies.

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Table1: Baseline characteristics of individuals (N=348) released before March 2010

VARIABLES	N (%)
Alcohol composite score (mean, SD)	0.23(0.2)
Drug composite score (mean, SD)	0.21 (0.2)
Age (mean, SD)	42.3 (8.8)
Age Group	
<40	119(34.2)
>40	229(65.8)
Race	
White	75 (26.5)
Black	207 (73.1)
Other racial groups	1 (0.4)
Ethnicity (Latino or Hispanic/Spanish)	
Yes	64 (19.2)
No	269 (80.8)
Gender	
Male	218 (63.4)
Female	118 (34.3)
Transgender	8 (2.3)
Education	
No formal education	3 (0.9)
Less than High School Diploma or G.E.D.	173 (50.6)
High School Diploma or GED Received	108 (31.6)
Some College	57 (16.7)
Employment Status in past 3 years	
Full time (40 hours/week)	42 (12.3)
Part time (regular hours)	16 (4.7)
Part time (irregular, day work)	33 (9.7)
Student	3 (0.9)
Military Service	0
Retired/Disability	48 (14.0)
Unemployment	188 (55.0)
In controlled environment	12 (3.5)

[2]

[2]Where totals in strata's do not add up to 223 (100%), is as a result of missing data.

Table 2: Comparison of inmate characteristics at baseline and for those with 6 month follow-up evaluation (N=223)

VARIABLES	BASELINE (%)	6 MONTHS (%)
Used alcohol in last 30 days	126 (57.01)	76 (37.44)
Used alcohol to intoxication in last 30 days	62 (28.44)	36 (18.56)
Used drugs in last 30 days	148 (67.89)	87 (43.50)
Experienced alcohol DTs	23 (10.31)	22 (9.87)
Treated for alcohol abuse	59 (26.46)	58 (26.01)
Treated for drug abuse	157 (70.40)	145 (65.02)
Treated as an outpatient for alcohol or drugs in the 30 days	42 (18.83)	73 (32.74)
Experienced alcohol problems in last 30 days	50 (22.42)	26 (11.66)
Bothered or troubled with alcohol problems	37 (16.59)	30(13.45)
Lived with someone with alcohol problem	59 (26.58)	32(14.61)
Lived with someone with drug problem	84(38.01)	46(21)
Considered themselves homeless	83(37.56)	59(26.94)
Had usual healthcare provider	173(82.38)	194(88.99)
Married/Living with someone	53(23.77)	49(22.07)
Taking HIV Medications in last 7 days	109 (61.93)	164 (87.23)

[3]

Table 3: Bivariate associations with Linkage among HIV-Infected Jail Inmates (N=348)

[3] Where totals in strata's do not add up to 348, is as a result of missing data.

VARIABLES	Linked	Not Linked	Crude OR	95%CI
Problem Drinking (score>0.23)	77	43	1.08	0.7-1.7
Drug Use (score >0.21)	104	55	1.22	0.8-1.9
Experienced alcohol DTs	22	15	0.84	0.4-1.7
Ever been treated for alcohol abuse	57	31	1.11	0.6-1.8
Ever been treated for drug abuse	148	70	1.76	1.1-2.8
Treated as an outpatient in last 30 days	41	20	1.26	0.7-2.3
Experienced alcohol problems in last 30 days	46	25	1.11	0.6-1.9
Lived with someone with alcohol problem	57	26	1.35	0.8-2.3
Lived with someone with drug problem	77	39	1.23	0.8-2.0
Considered themselves homeless	83	56	1.23	0.5-1.2
Had usual healthcare provider	160	81	1.56	0.9-2.6
Took HIV Medication in last seven days	141	23	3.07	1.2-8.0
Married/living together	52	26	1.21	0.7-2.1
Educated	108	57	1.22	0.8-1.9
Age greater than 40	157	72	2.00	1.3-3.2
Male Gender	160	59	3.13	2.0-5.0

[4]

Table 4: Bivariate associations with Linkage among HIV-Infected jail inmates with severe alcohol problems (N=120)

[4] Table only presents results for individuals who responded yes to the questions

VARIABLES	Linked	Not Linked	Crude OR	95%CI
Drug Use (score >0.21)	47	22	1.50	0.7-3.2
Experienced alcohol DTs	17	12	0.73	0.3-1.7
Ever been treated for alcohol abuse	42	24	0.95	0.5-2.0
Ever been treated for drug abuse	58	28	1.63	0.7-3.7
Treated as an outpatient in last 30 days	15	12	0.62	0.3-1.5
Experienced alcohol problems in last 30 days	41	22	1.09	0.5-2.3
Lived with someone with alcohol problem	30	16	1.08	0.5-2.4
Lived with someone with drug problem	29	17	0.95	0.4-2.1
Considered themselves homeless	38	21	1.08	0.5-2.3
Had usual healthcare provider	56	33	0.90	0.4-2.2
Took HIV Medication in last seven days	44	13	0.56	0.1-5.1
Married/living together	15	9	0.91	0.4-2.3
Educated	37	17	1.45	0.7-3.1
Age greater than 40	57	28	1.53	0.7-3.4
Male Gender	56	22	2.42	1.1-5.3

[5]

[6]

[5] Table only presents results for individuals who responded yes to the questions

[6] * implies significant results

Table 5: Multivariate association with linkage among individuals with baseline and post-release evaluation data

	Adjusted OR	95% C1	P-value
Problem Drinking			
No	1.00		
Yes	0.63	0.2-1.6	0.3358
Age			
<40	1.00		
>40	0.90	0.3-2.6	0.8435
Gender			
Female	1.00		
Male	4.41	1.7-11.5	0.0024*
Race			
White	1.00		
Black	1.14	0.4-3.2	0.8034
Hispanic			
No	1.00		
Yes	0.60	0.1-3.7	0.5776
Marital status			
Single	1.00		
Married	1.39	0.4-4.4	0.5921
Taking medication in last 7 days			
No	1.00		
Yes	3.69	1.1-12	0.0304*
Drug use (Score >0.27)			
No	1.00		
Yes	0.99	0.4-2.6	0.9819
Consider themselves homeless			
No	1.00		
Yes	0.51	0.2-1.3	0.1742

APPENDICES

EMORY UNIVERSITY

Institutional Review Board

TO: Anne Spaulding, MD, MPH
Principal Investigator

CC: Freeman Shalonda Epidemiology
Jacob Arriola Kimberly Behavioral Science

DATE: July 16, 2010

RE: **Notification of Continuing Review Expedited Approval**
CR2_IRB00009279

IRB00009279
Enhancing Linkages to HIV Primary Care and Services in Jail Settings Initiative

This is your notification that your above referenced Continuing Review was reviewed and APPROVED under the Expedited review process per 45 CFR 46.110 and 21 CFR 56.110. The approval is valid from **7/12/2010 until 7/11/2011**. Thereafter, continued approval is contingent upon the submission of a continuing review request that must be reviewed and approved by the IRB prior to the expiration date of this study.

Any reportable events (serious adverse events, breaches of confidentiality, protocol deviation or protocol violations) or issues resulting from this study should be reported immediately to the IRB and to the sponsoring agency (if any). Any amendments (changes to any portion of this research study including but not limited to protocol or informed consent changes) must have IRB approval before being implemented.

Sincerely,

Aryeh Stein, PhD
Co-Chair
Emory University Institutional Review Board
This letter has been digitally signed

EMORY UNIVERSITY

Institutional Review Board

TO: Anne Spaulding, MD, MPH
Principal Investigator

CC: Freeman Shalonda Epidemiology
Jacob Arriola Kimberly Behavioral Science

DATE: October 11, 2010

RE: **Notification of Amendment Approval**
AM11_IRB00009279
Amendment 11 for IRB Study #IRB00009279
Enhancing Linkages to HIV Primary Care and Services in Jail Settings Initiative

This is your notification that your above referenced amendment was reviewed and APPROVED by the IRB on **10/11/2010**.

Personnel Change only: Addition of Rose Wanjala as study staff.

All correspondence and inquiries concerning this research study must include the IRB ID, the name of the Principal Investigator and the Study Title.

Sincerely,

Donna Thomas
Senior Office Assistant
Emory University Institutional Review Board
This letter has been digitally signed