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HCV in Incarcerated Populations: An Analysis of Gender and Criminality on Risk‡

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Abstract

While studies have explored the prevalence and correlates for hepatitis C (HCV) infection in substance-using and incarcerated populations these studies have not examined the attributes of criminal histories for those with HCV infection. This study examines the HCV infection rate as it relates to criminal risk factors using baseline data from a randomized trial of re-entering offenders and examines how these risk factors vary by gender. The HCV-positive population had a longer amount of time in confinement (105 vs. 61 months) than those who tested negative. HCV positive men were more likely to currently be receiving drug treatment than women. Criminal risk was positively associated with HCV infection while controlling for major risk factors (OR 1.25, 95% CI: 1.07, 1.46), suggesting that the relationship was not spurious. While criminologists tend to examine risk relative to public safety threats, it appears that the public health needs equally require attention. Policy issues are examined regarding how services can be delivered to treat those with HCV infections within the correctional system and address criminal risk factors.

Keywords

gender; HCV; incarceration; substance use

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The increasing size of the correctional population in the United States and the unique problems faced by the individuals under correctional control, whether in confinement or under community supervision, has created an ongoing public health concern. Prisoners have higher rates of many infectious diseases, including HIV, hepatitis, and tuberculosis as well as higher rates of some chronic diseases such as asthma (MacNeil, Lobato & Moore 2005; Baillargeon et al. 2003). Increased rates of risky behaviors and engagement in factors associated with poor health outcomes have been found in offending populations, including alcohol and other drug use, tobacco use, unprotected sex, and irregular health care (BJS 2005).

Hepatitis C (HCV) is an infectious disease transmitted through blood that is endemic in drug-using populations (CDC 1998). Chronic hepatitis C infection (longer than six months), occurring in approximately 80% of all HCV cases, is often asymptomatic (Spaulding et al. 2006), can progress to symptomatic liver disease and death, and is the most common reason for liver transplant in the US. Injection drug use (IDU) is the behavior most associated with HCV infection, accounting for 57% of all HCV cases in the nonincarcerated population from 1999 to 2002. While prevalence of HCV was estimated at 1.6% in the US in 2002 (Armstrong et al. 2006), it is most likely that this is an underestimate, since the National Health and Nutrition Examination Survey (NHANES) data excludes homeless and incarcerated persons; these populations are more likely to have higher rates of HCV than the general population. Hepatitis C (HCV) is more common among offenders than the general population. In a study using the data from incarcerated offenders in 1997, Hammett, Harmon & Rhodes (2002) estimated that the prevalence of HCV infection in the correctional population ranged from 17% to 24%. They also estimated that 29% to 43% of all persons with HCV passed through the correctional system in 1997.

Studies of HCV in correctional populations in the United States have mostly examined offenders in state systems. One study in Texas compared the prevalence rates of HCV across jails, prisons and state substance abuse treatment facilities (n = 3712) and found the rates for males is similar overall, ranging from 27% to 29.7%; however, females incarcerated in prison had higher rates of infection (48.3%) compared to women in jails and substance abuse centers (35.1 % and 38.3% respectively). A study in Rhode Island state prisons found a prevalence rate of 23.1 % in sample of 4,263 men and 40.5% in a sample of 499 women, with increasing age and injection drug use being the most significant risk factors (Macalino, Dhawan & Rich 2005). In an overview of HCV studies done in correctional settings worldwide, Macalino and colleagues (2004) found length of previous incarcerations and number of previous incarcerations to be risk factors for HCV, along with IDU and other drug use.

Recent work by Piquero and colleagues (2007) found that chronic offenders tend to suffer from more health problems than those who desist from crime early in life (early 20s). Using the Baltimore stratification of the National Collaborative Perinatal Project (n = 1,758 subjects), they examined the trajectories of individuals 27 to 33 years old and found a pattern among those with chronic criminal histories. Individuals who had eight or more arrests in their lifetime were classified as “life-course persistent” and these offenders had a higher prevalence of risky behaviors than nonoffenders or those that had fewer criminal histories. The life-course persistent offenders had higher rates of alcohol and other drug use and cigarette smoking than the desisters. After controlling for offending and health factors such as age, gender, race, IQ, education level, birth weight, body mass index, drug use, cigarette use, and alcohol use, they found a significant relationship between adverse health outcomes and being a life-course persistent offender. This is one of the few studies that establishes some linkage between criminal risk factors and health disorders.

Differences in HCV infection rates and risk for HCV have been found by gender. A study of crack cocaine users done in Canada found a higher prevalence of HCV among women who had never injected crack, with 58% positive for women vs. 40% for men (Shannon et al. 2008). The women were also more likely to have exchanged sex for drugs while the men had a longer history of crack use. A meta-analysis of HCV prevalence in prison populations was done in 2008 and found that women in the criminal justice system had a higher risk of HCV compared to men, with an adjusted OR of 1.44 for women. The authors of this study conclude that this relationship may be “spurious, however, affected by other non-controlled confounders” (Vescio et al. 2008). Criminal history was not considered as a variable in any of the cited studies.

While studies have examined HCV prevalence and risk factors in the incarcerated population, few studies have examined the characteristics of criminal offending behaviors and HCV risk factors. Also, little work has been done to determine gender-specific differences in HCV risk, especially in the offender population. In order to inform policy on prevention and medical service delivery in the justice system, this study analyzes the sample from a multisite, randomized trial. The relationship between HCV infection, gender, and criminal justice history is examined, including recidivism, types of crimes committed, lifetime involvement in the criminal justice system and type of incarceration site.

METHODS

This study uses baseline data from the HIV/HEPC study conducted as part of the National Institute on Drug Abuse's Criminal Justice Drug Abuse Treatment Studies (NIDA CJ-DATS) (Inciardi et al. 2007). The multisite randomized trial was led by the University of Delaware and was implemented by the University of Delaware, the University of Kentucky and George Mason University. The main purpose of the three-armed study was to examine the effectiveness of a peer-based DVD intervention on risky drug and sexual behaviors after release from prison. The peer intervention was tested against the NIDA standard HIV-prevention intervention (Wechsberg et al. 1997), an individualized prevention session with cue cards delivered by a health counselor. Those in the control condition received a basic HIV prevention video. The peer intervention consisted of one initial session that took place approximately a month before release, with gender/race matched testimonials and scenarios that were presented along with prevention and education information in an interactive format on a DVD and a booster session delivered two weeks later. The NIDA standard was a one-session intervention.

The study was conducted at four sites in three states (Delaware, Kentucky, and Virginia) and includes intake data on 685 subjects recruited into the study between September 2006 and May 2008. The settings for recruitment varied by state, with one state working in two prisons (KY), one working in a halfway house (DE), and one at a local jail (VA). Recruitment was done in a small group setting, with an introduction about the study and a basic HIV education video shown to potential participants. Those willing to be in the study were screened and, if eligible, were asked for consent, given a baseline interview, and randomized into one of three study groups. Testing for HIV and HCV was conducted by the interventionists, usually at the time of the individual intervention session for those in the NIDA Standard group and the DVD facilitated group. For HIV, the OraSure rapid oral test was used, one shown to have high acceptance rates in incarcerated populations (Bauserman et al. 2001). For HCV, a finger prick blood sample was drawn. For those in the control group, testing was usually performed at the time the baseline interview was completed, either by the interventionist or the research interviewer. Testing was voluntary and did not affect other participation in the study. All subjects were given information about the testing procedures and what the potential outcomes of the tests were. Test results were generally

delivered between one and three weeks after testing and included post-test counseling on the meaning of the results and referral information for those testing positive.

This study was approved by institutional review boards at each research institution, as well as the Office of Human Research Protections (OHRP) in the Department of Health and Human Services. Conduct of the study was overseen by the NIDA DESPR Data Safety and Monitoring Board (DSMB), who reviewed the study quarterly for interim progress and adverse events.

Measures

The dependent variable, HCV seropositivity, was determined from a serum ELISA antibody assay performed on all enrolled subjects. All other data came from subject self-report, namely the intake interview done prior to the testing and intervention. The baseline instrument from the HIV/HEPC study was used to obtain data on correlates of HCV. It was adapted from the CJ-DATS intake (CJ-DATS 2004), which includes sections on social characteristics and demographics, employment, relationships with friends and family, criminal history, substance use history, HIV risk factors, and drug treatment history. The HIV/HEPC intake also included questions relating to additional risk variables for HIV and HCV as well as the offender's knowledge of infectious disease transmission. Since most persons were incarcerated at the time of the baseline interview, the majority of questions referred to the time prior to the arrest that led to the most recent incarceration.

Criminal history was collected on 25 different types of crimes, with questions asked about the number of times each crime had been committed by the subject in their lifetime, in the last six months, and in the last 30 days. For this analysis, crimes were classified into categories which included drug crimes (public intoxication, DUI, possession of drugs, possession of drug paraphernalia), drug entrepreneur (manufacture or selling of drugs), violent crimes (kidnapping, terrorism, homicide, weapons, arson), personal (auto theft, robbery, assault, sex offenses), property (burglary, shoplifting), and other (prostitution, gambling, fencing, forgery, vandalism, other).

A criminal risk scale was constructed from a number of items on the intake form, including lifetime arrests, age at first arrest, total number of times incarcerated, total incarceration time, and number of parole violations. This is similar to standard risk factors (Taxman 2006). The use of lifetime arrests and age at first arrest was based on the Lifetime Criminality Screening Form (LCSF) developed by Walters and McDonough (1998), which assesses a person's criminality with a 14-question instrument. The number of times in jail, total jail time and number of parole/probation violations have been found in previous literature to relate to recidivism and are markers for continued involvement in the criminal justice system. Each measure had three levels, coded as 2 for the highest level, 1 for the moderate level, and 0 for the lowest level. For lifetime arrests and number of times incarcerated, five or more was the highest level, two to four was moderate, and one or zero was low. Age at first arrest was categorized as 14 or younger for the highest level, 15 to 19 for the moderate, and 20 or older for the lowest. Number of parole violations was 10 or more for the highest level, one to nine for the moderate, and zero for the lowest. For number of months incarcerated lifetime, over 24 months was the highest, 12 to 24 months was moderate and less than 12 was the lowest. Overall, this scale had a Cronbach's alpha of .7, indicating moderate reliability and internal consistency.

Statistical Methods

The focus of the analysis was the criminal behavior and other correlates of being HCV positive in a reentry population. Bivariate analyses first examined the level of association

with HCV status stratified by gender. Logistic models regressed HCV status on known HCV risk factors, gender and criminal risk factors. Two sets of logistic regression models were generated. Explanatory variables in the first set aggregated the criminal justice history variables into a scale constructed from number of lifetime arrests, number of times incarcerated, age of first arrest, total months incarcerated, and number of parole violations. The second set of models added variables found to be associated with HCV infection in the general population in previous literature: age, injection drug use, HIV status, and number of sex partners. Site was also included in the adjusted models, as those who were in jail or prison were thought to have a different level of risk than those in the halfway house.

RESULTS

Of the 685 subjects recruited in this study, 509 (74.3%) tested negative and 157 (22.9%) tested positive for HCV. A small number of subjects ($n = 19$) tested reactive or indeterminate for HCV and were referred to a medical site for further testing. Only those who tested positive or negative for HCV were included in these analyses. The 19 subjects were analyzed separately and their characteristics were similar to those who tested positive for HCV.

Overall Characteristics

Tables 1 through 6 present the results of the bivariate analysis that was done in SPSS, using the chi-square tests for categorical variables and T-tests for continuous variables. Table 1 presents demographics and basic physical and emotional health characteristics of the sample. Those who tested HCV-positive were more likely to be older, White, and female than those who tested negative. Positive subjects also had less education and were less likely to never be married and more likely to be divorced or separated. In addition, offenders who tested positive perceived themselves as being in worse health than those who tested negative. They also reported being in more physical pain, having more lifetime hospitalizations and suffering more from serious depression than those who tested negative.

As expected, those who tested positive for HCV had marked differences in criminal justice factors than those who were HCV negative (Table 2). The positive group had more lifetime arrests, a higher percentage of drug arrests, more periods of incarceration, and a higher number of months in confinement. HCV-positive offenders reported that they had more drug-related crimes and violent crimes than those testing negative. The HCV-positive population was less likely to report selling drugs as their major source of income, but was more likely to have reported selling sex as their major source of support. Those recruited in prison were more likely to be HCV positive, whereas those recruited at the halfway house were more likely to be seronegative. Criminal risk was significantly higher for those with HCV. Also, the measure of delineating life-course persistent offenders used by Piquero and colleagues (2007), eight lifetime arrests or more, was significantly different for the two groups, with the HCV positives having a higher percentage.

As expected, HCV-positive inmates had more HCV risk factors, including times injecting drugs in the last 30 days, times injecting drugs with others, HIV positivity, and reported hepatitis B infection, than those who were HCV negative (Table 3). All other risk factors are slightly higher among the positive group but not statistically significant. The HCV-positive group also tended to report more unprotected sex with someone who injected drugs. The positive group had higher rates of TB (approaching significance), HIV and hepatitis B, indicating a confluence of infectious diseases in this population. Also, only 54% of those who tested positive for HCV indicated that they knew they had HCV prior to testing, indicating that the testing in this study found a significant population of previously unknown cases ($n = 85$).

HCV-positive offenders were more likely to report heroin or cocaine as a serious problem, used drugs in various settings, and have had more times that they overdosed. This group also reported more times in treatment and viewed treatment as important. They also had a higher likelihood of having attended self-help meetings. The HCV-positive persons were slightly less likely to currently be in drug treatment, although they felt treatment was more important than the HCV-negative group.

Differences between HCV Positive Male and Females

Tables 4 through 6 present the characteristics for the HCV-positive population by gender. The total sample consists of 111 men (70.7%) and 46 women (29.3%). Many of the characteristics were similar between the two groups, including the previously identified risk factors for HCV such as injection drug use, being HIV positive, being hepatitis B positive, having blood transfusions, and having unprotected sex. The HCV-positive women were more likely to have tried to commit suicide and were also slightly less likely to be divorced or separated. The women had a much greater number of sex partners, averaging 48.3 in the last six months and also were more likely to have traded sex for money or drugs and to have had unprotected sex with someone who smoked crack or meth. The exposure to hepatitis B, TB, and blood transfusions were similar across the genders. Women were more likely than men to have known that they were HCV positive prior to testing.

More significant differences were observed among the criminal justice characteristics by gender. The HCV-positive women had more lifetime arrests and a higher number of times incarcerated than men, but had a shorter duration of time spent in jail or prison. The criminal risk and life-course persistent offender measure of arrests (eight or more), however, were not significantly different between the groups. Women also reported more violent crimes than men, but had similar amounts of drug crimes. Congruent with the information on sex partners and trading sex, women reported selling sex as their main source of income more than men. HCV-positive women were also more likely to be recruited from a jail or prison setting rather than the halfway house (due to space limits at the halfway house).

As expected, many of the substance abuse characteristics were similar across the genders. Women were more likely to have cocaine as their main drug of choice and were also less likely to report currently being in drug treatment. Women also reported drug use as more of a problem in their life, with a higher percentage reporting emotional stress and other life effects from drug use.

The Importance of Criminal History: Multivariate Models

To assess the association between criminal risk and HCV, a set of logistic regression models examined the factors that affect being HCV positive. As shown in Table 7, two sets of models were generated. The first one presents the results overall and the second set examine the factors for each gender. The models included the criminal risk scale and the main HCV risk factors – injection drug use, age, and number of sex partners (and the overall adjusted model also included gender). Site was also included, with those in jail or prison compared to those in the halfway house. In the overall model, age, injection drug use, and criminal risk were significantly associated with HCV infection, with IDU having the highest level of association. Age and criminal risk had approximately the same levels of association. Those with higher levels of criminal risk were about 1.2 (95% CI: 1.07, 1.46) times more likely to have HCV. Number of sex partners and site were not significant.

In the model for men, the associations were similar to the overall model, but for females, the criminal risk was not significantly associated with HCV infection. Because women were a

small percentage of the sample (20%) and the number of HCV infections was low ($n = 46$), true associations may be difficult to assess.

The results for the criminal risk scale were checked against the measure of life-course persistent offenders used by Piquero and colleagues (eight lifetime arrests or more). The arrest measure was not significantly associated with HCV status when controlling for IDU, age, number of sex partners and gender. This indicates that using only lifetime arrests may not be a sufficient measure of criminality for assessing differences in health risks.

DISCUSSION

The overall prevalence of HCV found in this study was 23.6%, which is consistent with previous estimates of 16% to 24% (Hammett, Harmon & Rhodes 2002). These studies affirm that HCV infection is highly prevalent in correctional populations. The failure to include correctional populations in national prevalence estimates may underestimate the true reach of the disease, especially as the incarcerated population continues to grow. It is also important to note that over half of the persons who tested positive for HCV in this study did not know they had the disease.

This analysis found a number of factors associated with HCV infection in an offender population consistent with the prior literature in this area. Criminal history factors that predict further involvement in the justice system such as lifetime arrests, longer periods of incarceration, and age at first arrest affect the likelihood that an offender is likely to be HCV positive. Offenders who were HCV positive tended to be more engaged in some positive behaviors such as involvement in substance abuse treatment. Current involvement in substance abuse treatment varied by gender, with HCV-positive males more likely to be in treatment than HCV-positive women. The drug of choice also appeared to be important, with HCV positive persons more likely to have heroin and cocaine as their most serious drug problem, and cocaine as the drug of choice more prevalent with HCV positive women than men.

Not surprisingly, health-related characteristics also had significant associations with HCV infection, with the positive group having more hospitalizations, and reporting being in poor or fair health. Suicide attempts were associated with HCV infection and more likely in HCV-positive women than men. These results, coupled with the criminal history, demonstrate that those who have had more lifetime involvement with the justice system do appear to have health issues more than those who have less involvement as measured by number of arrests and time incarcerated. This lends support to an ongoing thesis about the importance of life-course persistent offenders in that they are at greater risk for poor physical health than those with less involvement in the correctional system (Piquero et al. 2007).

Age was also found to have an effect on HCV status, with an average age of 42 for those who were HCV positive, compared to 33 for those who did not have HCV. Also, being divorced or separated was associated with HCV infection, particularly among men. Blood transfusions did not appear to be associated with HCV infection in this population; this is most likely because transfusions prior to 1992 have been shown to be associated with HCV and the majority of transfusions reported in this study were after 1992. Being HIV positive and being hepatitis B positive, as well as having TB were associated with HCV infection, but no TB was reported among the HCV-positive women. The confluence of infectious diseases supports the literature that clusters HCV infection with these health problems.

The study also found that there were some important gender differences in the HCV positive group, including more reported awareness of HCV status among women and a higher impact

of drug use on daily life reported by women. More HCV-infected women had been sex workers at some point, and the women reported a much higher number of sex partners than the men, although the number of times having unprotected sex was similar between men and women. This may indicate that HCV prevention efforts for women should be targeted towards sex workers, while for men the IDU population may be more appropriate. In the multivariate logistic models, criminal risk had a significant association with HCV infection for men but not for women, indicating that criminal history may not be as important a factor in HCV risk for women, who may have other influences, such as sex work and the types of sex partners they have. A larger sample of women is needed to explore these issues further.

This study has a number of limitations. An actuarial scale of criminal risk was not available from the data and the scale that was developed may not capture all the elements of risk. The number of HCV-positive women was low ($n = 46$), making it difficult to analyze patterns within this population. This study was conducted in three sites with diverse populations, but the sample cannot be said to be generalizable to the entire correctional population, especially as type of correctional site was nested within state. Data were not available on whether the HCV infection was chronic, which would be important in assessing future health problems, treatment options and costs to the correctional and health care systems.

The prevalence of HCV among offender populations presents challenges to the correctional and public health system. The correctional system has responsibility for delivering preventive and health services to offenders who have a large burden of unmet public health needs. In addition to direct health effects on inmates, if unaddressed, the problem of HCV in correctional settings will continue to increase costs to society and offenders will serve as a potential infection source for the community population as they move in and out of the criminal justice system. A recent study of the services provided in the correctional system found that prisons and jails, due to constitutional mandates, are better equipped to provide medical care for offenders than community correctional agencies (Taxman, Perdoni & Harrison 2007). Community correctional agencies are infrequently a provider of some medical care. Even jails have a lower rate than prisons of providing offenders with appropriate medical services, with 79% of prisons offering HCV screening, whereas only 23.5% of jails offered this and only 11.3% of community correctional agencies reported screening for HCV. Since offenders under correctional control are at high risk for infectious diseases, and involvement with the justice system can facilitate the offender's engagement in more prosocial behavior, building bridges to medical care is important.

Given the risks associated with HCV-positive offenders, and the likelihood that such offenders are going to be in the community, a major challenge is that the correctional system does not have a significant public health mandate. Nor is it recognized as a potential service provider, which minimizes its current role in addressing the risk factors of these individuals to society and the quality of life of offenders. Since offenders under correctional control are more likely to be at risk for these diseases, and involvement with the justice system can facilitate the offender to be engaged in more prosocial behavior, building bridges to the medical care community is important. As shown in this study, HCV-positive offenders have different characteristics than those who are negative. Providing access to appropriate treatment may serve to reduce their risk of recidivism as well as to increase their involvement in positive actions.

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TABLE 1

Demographic Characteristics by HCV Status

Characteristic	HCV Negative	HCV Positive	P-Value
Total subjects	509 (76.4%)	157 (23.5%)	
Male	81.7%	74.3%	.058
African American	65.6%	43.4%	< .001
Average Age	32.9 years	41.8 years	< .001
High School Graduate	42.4%	30.9%	.016
Divorced or Separated	17.4%	31.6%	< .001
Number of Hospitalizations–Lifetime	1.7	3.1	.017
Rated Health as Poor or Fair	10.8%	28.7%	< .001
Reported Lifetime Serious Physical Pain	30.8%	41.9%	.016
Reported Serious Depression (> Two Weeks)	25.7%	36.3%	.018
Bothered by Emotional/Psychological Problems	12.3%	22.1%	.005
Ever Attempted Suicide	8.9%	14.7%	.052

TABLE 2**Criminal Justice Involvement Characteristics**

	HCV Negative	HCV Positive	P-Value
Number of Lifetime Arrests	16.3	23.9	.017
Percent of Arrests Drug-Related	50.5	70.3	< .001
Number of Times Locked Up Lifetime	12.2	19.5	.015
Time in Confinement (Months)	60.8	104.8	< .001
Number of Drug-Related Crimes–Lifetime	2310.73	2677.42	.033
Number of Violent Crimes–Lifetime	52.20	97.34	.051
Probation Violations–Lifetime	6.4	9.5	.504
Major Source of Income–Selling Drugs	38.2%	21.3%	< .001
Major Source of Income–Selling Sex	2.2%	6.6%	.012
Current Confinement–Local Jail	8.5%	12.5%	.160
Current Confinement–Prison	25.7%	37.5%	.007
Current Confinement–Halfway House	65.8%	50%	.001
Criminal Risk Scale	5.2	5.7	.001
Lifetime Arrests–Eight or More	56.5%	72.8%	.001

TABLE 3

Risk Behaviors and SA Characteristics by HCV Status

	HCV Negative	HCV Positive	P-Value
# Times Inject Drugs–30 Days	2.8	28.5	< .001
# Times Inject Drugs W/ Other People– 30 Days	2.3	15.5	< .001
# Times Loaned Needles W/O Cleaning–30 Days	.03	3.3	.001
# Sex Partners – Last Six Months	9.0	14.7	.265
# Times had Unprotected Sex – 30 Days	26.4	22.0	.383
# Times Unprotected Sex While Trading Sex for Drugs/Money–30 Days	2.1	4.5	.060
# Times had Unprotected Sex with Someone who Shot Drugs	0.6	3.1	.002
# Times had Unprotected Sex with Someone who Smokes Crack or Meth	3.6	6.4	.043
Have a Tattoo	63.5%	70.6%	.126
HIV Positive	.7%	5.1%	<.001
Self Report of Being HCV Positive Prior to Testing	.4%	45.9%	< .001
Reported Having TB	4.3%	8.1%	.080
Reported Having Hepatitis B	.9%	10.4%	< .001
Had Blood Transfusion	7.8%	9.6%	.510
Life Considerably or Extremely Stressful Because of Drug Use	34.9%	56.6%	< .001
Drug Use Affected Health Past Six Months	23.7%	28.7%	.236
Substance Abuse Treatment Important	51.3%	70.6%	< .001
Times in Substance Abuse Treatment	1.9	3.2	< .001
Ever Gone to Self Help Meetings	65.2%	80.9%	.001
Currently in Drug Treatment	55.1%	45.9%	.060
Heroin as Most Serious Drug Problem	9.6%	27.2%	< .001
Cocaine as Most Serious Drug Problem	25.7%	36.0%	.19
Age First Used Illicit Substances	14.4	14.9	.244
Number of Times Overdosed on Drugs	.21	1.55	.001

TABLE 4

Demographic Characteristics by Gender– HCV Positives Only

Characteristic	Male	Female	P-Value
Total Subjects	111	46	
African American	39.6%	54.3%	.131
Average Age	41.2	42.0	.648
High School Graduate	33.7%	22.9%	.233
Divorced or Separated	42.6%	25.7%	.077
Number of Hospitalizations–Lifetime	2.3	5.1	.105
Rated Health as Poor or Fair	26.7%	34.3%	.395
Reported Lifetime Serious Physical Pain	38.6%	51.4%	.185
Reported Serious Depression (>Two Weeks)	24.7%	70 %	< .001
Bothered by Emotional/Psychological Problems	18.8%	31.4%	.121
Ever Attempted Suicide	8.9%	31.4%	.001

TABLE 5**Criminal Justice Involvement Characteristics by Gender – HCV Positives Only**

	Male	Female	P-Value
Number of Lifetime Arrests	21.5	30.8	.074
Percent of Arrests Drug-Related	68.3%	76.5%	.257
Number of Times Locked Up Lifetime	17.4	25.6	.062
Time in Confinement (Months)	118.1	66.7	.037
Number of Drug-Related Crimes–Lifetime	2647.1	2764.9	.717
Number of Violent Crimes–Lifetime	40.7	240.6	.002
Probation Violations–Lifetime	6.7	17.4	.170
Major Source of Income–Selling Drugs	23.8%	14.3%	.238
Major Source of Income–Selling Sex	1.0%	22.9%	< .001
Current Confinement–Local Jail	8.9%	22.9%	.032
Current Confinement–Prison	31.7%	54.3%	.017
Current Confinement–Halfway House	59.4%	22.9%	< .001
Criminal Risk Scale	5.3	5.9	.067
Lifetime Arrest–Eight or More	71.4%	73.3%	.833

TABLE 6

Risk Behaviors and SA Characteristics by Gender – HCV Positives Only

	Male	Female	P-Value
# Times Inject Drugs–30 Days	27.5	31.3	.812
# Times Inject Drugs with Other People– 30 Days	14.9	17.1	.831
# Times Loaned Needles W/O Cleaning–30 Days	3.3	3.4	.984
# Sex Partners–Last Six Months	3.1	48.3	.010
# Times had Unprotected Sex–30 Days	21.5	23.4	.760
# Times Unprotected Sex While Trading Sex for Drugs/Money–30 Days	1.7	12.3	< .001
# Times had Unprotected Sex with Someone who Shot Drugs	3.7	1.1	.378
# Times had Unprotected Sex with Someone who Smokes Crack or Meth	4.8	11.1	.085
Have a Tattoo	73.3%	62.9%	.244
HIV Positive	5.0%	5.7%	.860
Self Report of Being HCV Positive Prior to Testing	42.4%	60%	.073
Reported Having TB	10.9%	0.0%	.042
Reported Having Hepatitis B	11.1 %	8.6%	.673
Had Blood Transfusion	9.0%	11.4%	.675
Life Considerably or Extremely Stressful Because of Drug Use	23.8%	42.9%	.031
Drug Use Affected Health Past Six Months	71.4%	51.5%	.040
Substance Abuse Treatment Important	69.3%	74.3%	.577
Times in Substance Abuse Treatment	3.3	2.9	.537
Ever Gone to Self Help Meetings	79.2%	85.7%	.399
Currently in Drug Treatment	55.0%	20.0%	< .001
Heroin as Most Serious Drug Problem	28.7%	22.9%	.502
Cocaine as Most Serious Drug Problem	26.7%	62.9%	< .001
Age First Used Illicit Substances	14.6	16.0	.188
Number of Times Overdosed on Drugs	1.8	.83	.569

TABLE 7

Adjusted Logistic Model Results

Variable	Overall Odds Ratio	Male OR	Female OR
Injection Drug Use	14.25 (7.53,26.97) **	11.88 (5.88,23.99) **	34.78 (6.29,192.28) **
Age	1.11 (1.08,1.14) **	1.11 (1.08,1.54) **	1.19 (1.05, 1.19) **
Criminal Risk	1.25 (1.07,1.46) **	1.28 (1.07,1.54) **	1.09 (.78,1.51)
Number of Sex Partners	.84 (41,1.74)	.43 (.15, 1.25)	2.11 (.66, 6.75)
Gender	.59 (34,1.03)	NA	NA
Jail or Prison Site	.73 (43,1.24)	.71 (.39,1.31)	.65 (.20,2.09)

Numbers in parentheses are 95% confidence intervals

**
p < .01